



MACKENZIE VALLEY ENVIRONMENTAL

IMPACT AND REVIEW BOARD

ENVIRONMENTAL IMPACT STATEMENT (EIS)

ANALYSIS SESSIONS

GAHCHO KUE DIAMOND PROJECT

Mackenzie Valley Review Board Staff:

Facilitator Alan Ehrlich

Facilitator Chuck Hubert

HELD AT:

Yellowknife, NT

November 30th, 2011

Day 3 of 5

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7 Lisa Lowman (np) )

8 James Hodson )

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10 Sarah Olivier (np) ) DFO

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12 Kerri Garner (np) ) Tlicho Government

13 Henry Zoe )

14

15 Madelaine Pasquayak ) Ttitso Gameti

16 ) Government

17

18 Ron Desjarlais (np) ) Lutsel K'e

19

20 Sheryl Grieve (np) ) North Slave Metis

21 ) Alliance

22

23 Fred Sangris ) Yellowknives Dene

24 Todd Slack )

25 Shirley Tsetta (np) )

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3 Jeannie Martin ) Society

4 Nora Crookedhand )

5 Mary Joan Lafferty )

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7 B. Croft ) EWS WSR

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9 Sarah True ) SDR - NS

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11 Patrick Glans ) Mountain Province

12 Matthew Evans )

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14 St. Patrick's School Wildlife Class

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16 Remote Participants:

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18 Paul Wilkinson ) MVEIRB Consultants

19 Terry Antoniuk )

20 Petr Comers )

21 Anne Gunn )

22 Dave Tyson )

23 Doug Ramsey )

24

25

1	TABLE OF CONTENTS	
2		Page No.
3	List of Undertakings	7
4		
5	Recap	8
6		
7	Presentation by De Beers Canada	
8	re Air Quality	11
9	Question Period	40
10		
11	Presentation by De Beers Canada	
12	re Soils and vegetation	60
13	Question Period	79
14		
15	Presentation by De Beers Canada	
16	re Caribou	104
17	Question Period	133
18		
19	Presentation by De Beers Canada	
20	re Carnivores, Other Ungulates, Species at Risk	207
21	Question Period	226
22		
23		
24	Certificate of Transcript	250
25		

1	List of Undertakings	
2	Number	Page No.
3	1	
4	De Beers to reconcile its cumulative	
5	effects assessment, with respect	
6	to reasonably foreseeable future	
7	developments with those that have	
8	just been described from the	
9	Yellowknives Dene, specifically	
10	pointing out if De Beers disagree	
11	with some of the assumptions they	
12	just heard, and why	
13	(Provide by December 16, 2011)	185
14		
15		
16		
17		
18		
19		
20		
21		
22		
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25		

1 --- Upon commencing at 9:14 a.m.

2

3 THE FACILITATOR HUBERT: Good morning,  
4 everybody. It's Chuck Hubert with the Review Board.  
5 If we can take our seats and get started. It looks  
6 like -- good. I don't see anybody, you know,  
7 frantically removing coats anymore or anything. So, if  
8 we can get started that would be great.

9 My name is Chuck Hubert. Again, I am  
10 with Mackenzie Valley Review Board. I'm taking over  
11 panel manager duties from Alan, who is, you know,  
12 relinquishing the reins, reluctantly as always. But,  
13 he's -- he's doing so and that's great.

14 So, Alan will be with me here today.  
15 Also, Stacey, with the Review Board, as well. So,  
16 welcome. Thanks everybody for coming. It's great to -  
17 - to see everybody out.

18 Again, this is day 3. And the topic of  
19 air, land, and wildlife. De Beers will be presenting  
20 to us today. The point of the session here, is to  
21 discuss the breadth of the topics and -- and not go  
22 into too much depth, if we can. But, on the other  
23 hand, if -- if certain questions can be answered at  
24 this stage in the -- in the discussion and can avoid  
25 information requests, that's beneficial as well.



1 Just a note for people on the -- on the  
2 webcast. That, again, we are on day 3, and you should  
3 find the PDF on our website so you can keep track of --  
4 of where we are.

5 Let's see. Oh, we have the option of  
6 translation, if -- if necessary, and we'll use that on  
7 a -- on an as-needed basis. Also, the -- the meeting  
8 today will be transcribed and that will be posted on  
9 our public registry in the next day or two (2). Thank  
10 you, Alan, for reminding me. The -- Chuck Hubert  
11 again, with the Review Board. And please state your  
12 name prior to speaking. That -- that will assist Wendy  
13 in her transcription.

14 What I'd like to do quickly, is a note  
15 on party status. We -- back in -- four (4) or five (5)  
16 years ago, there was a call out for party status when  
17 this project was in the EA phase. Things have changed  
18 since then, so I -- I'd like to give the opportunity to  
19 update those organizations and participants who would  
20 like to be status -- or, who would like to have party  
21 status.

22 So what I'll do is, read out the list  
23 that we have so far. And, if your -- your organization  
24 is not on this list, I'd encourage you to apply for  
25 party status. So, the list is as follows: Fisheries

1 and Oceans Canada, Dene Nation, NWT Metis Nation,  
2 Environment Canada, North Slave Metis Alliance,  
3 Yellowknives Dene First Nation, Aboriginal Affairs and  
4 Northern Development Canada, Lutsel K'e First Nation,  
5 Akaitcho IMA Implementation Office, and the Government  
6 of Northwest Territories.

7 Now there are some notable organizations  
8 not on there. Tlicho Government comes to mind. And,  
9 perhaps a few government agencies as well. The -- I  
10 will send out a call officially on the public registry  
11 for parties to -- who are not on this list -- to -- to  
12 apply. And just -- just to note. The purpose of party  
13 status is to participate with information requests and  
14 during the hearing as a full participant.

15 With that, I'd like to -- to turn it  
16 over to De Beers, and I understand that there will be  
17 some followup comments from -- from Monday, I believe.  
18 And then, if De Beers can also introduce their new  
19 team, that would be excellent. Thanks.

20 MS. VERONICA CHISHOLM: Good morning.  
21 Veronica Chisholm, from De Beers. Thanks everyone for  
22 coming today.

23 As Chuck mentioned, it's air, land and  
24 water -- and wildlife day. So we have three (3)  
25 presentat -- or three (3) presenters today. Dennis

1 Chang will be presenting air. And just a -- an update  
2 in the agenda. We had noise planned for -- air and  
3 noise. The noise is not a subject of note. It is  
4 provided as an appendix to the caribou key line of  
5 inquiry in Section 7.2 of the EIS. It -- the  
6 assessment will be included as part of the wildlife  
7 presentations today. So if you have any questions on  
8 noise, that's where it is.

9 And so, today we will be presenting air  
10 and that will be Dennis Chang. And then it'll be  
11 followed by vegetation and wildlife, who will be -- and  
12 the presenters will be Cameron Stevens and John Virgl.  
13 So, I would invite Dennis to come on up.

14

15 (BRIEF PAUSE)

16

17 THE FACILITATOR HUBERT: Chuck Hubert,  
18 with the Review Board. Just to note before you begin,  
19 the Review Board does have some remote participants  
20 that are listening in at the moment. They are Dave  
21 Tyson and Doug Ramsey, of Tetratex. So I think you  
22 should just be aware of that. Thanks.

23

24 PRESENTATION BY DE BEERS RE AIR QUALITY:

25 MR. DENNIS CHANG: Can everybody hear

1 me okay? All right. Good morning, everybody. My name  
2 is Dennis Chang. I'm a air quality scientist from  
3 Golder Associates and I will be presenting the  
4 project's effect on air quality this morning.

5 My presentation contains nineteen (19)  
6 slides and it will take me approximately forty-five  
7 (45) minutes to go over my presentation, which will  
8 leave us approximately fifteen (15) minutes at the end  
9 of the presentation to an -- to answer any questions  
10 you might have.

11 Okay, we can start. So on slide number  
12 2 of my presentation is the outline of my presentation.  
13 My presentation will -- contains four (4) -- four (4)  
14 parts. Part 1 is the introduction. I'll be describing  
15 some of the key term of reference requirements relevant  
16 to air quality. And then I will mention the location  
17 of air quality information in the EIS, and then just  
18 briefly discuss the overall findings of the air quality  
19 assessment.

20 In part 2, I'll be discussing the  
21 environmental setting at the project site and as well  
22 as in the region. I'll be discussing some of the  
23 meteorological data and air quality data that had been  
24 collected at the project site and in the -- in the  
25 region. And, also, I will outline some of the

1 applicable ambient air quality criteria and air  
2 emission criteria that we'll consider in the  
3 assessment.

4 Part 3 of the presentation will be  
5 mainly focussed on -- on the assessment approach, the  
6 findings and any follow-up actions. And the last part  
7 of the presentation will just provide a overall summary  
8 of my presentation.

9 I'm now on slide number 3. There are  
10 four (4) key terms of reference, requirements that are  
11 relevant to air quality and they are listed as follow.  
12 The EIS must address the issue of emissions from Gahcho  
13 Kue project adding to pre-existing emissions. The EIS  
14 mu -- must provide air quality modelling for  
15 construction and operational phases, including worst-  
16 case scenarios. The EIS must further identify proven  
17 available technologies and best management practices to  
18 be used. And the last term of reference is that EIS  
19 must include an assessment of risk to human health. So  
20 when we conduct a air quality assessment, the  
21 assessment report was designed to address all these  
22 four (4) requirement.

23 I'm on slide number 4. I just wanted to  
24 mention where the air quality information can be found  
25 in the EIS. For baseline air quality data, these are

1 the meteorological and air quality data that have been  
2 collected at the project site and in the region.  
3 They've been summarized in Annex B of the EIS. The  
4 actual air quality assessment can be found under  
5 subject of note, Section 11.4.

6 Other than these two (2) locations in  
7 the EIS, I just want to point out the air quality  
8 assessment data were provided to other disciplines for  
9 addressing effects to wildlife, vegetation, water  
10 quality, and human health.

11 The overall air quality findings can be  
12 summarized in one (1) sentence, and it is as follows:

13 "Project emissions were determined  
14 not to have signi -- significant  
15 adverse effects to air quality,  
16 although there will be temporary  
17 changes to air quality."

18 And another outcome of the air quality -  
19 - and I want to kind of briefly mention on this slide  
20 is the predictions in the assessment were based on  
21 conservative emission assumptions. And later on in my  
22 presentation I will go into more details about what  
23 these conservative assumptions are.

24

25 (BRIEF PAUSE)

1 MR. DENNIS CHANG: I'm now on slide  
2 number 6. I just want to briefly discuss the  
3 environmental setting, the air quality environmental  
4 setting at the project site and in the region.

5 Meteorological data has been collected  
6 at the Gahcho Kue project site between 1998 and 2005.  
7 And the overall meteorological character at the project  
8 can be characterized as mostly north -- prevailing wind  
9 from the northeast, with temperature ranges between  
10 minus 45 degree Celsius to plus 25 degrees Celsius.

11 Precipitation data have been collected  
12 in the spring and summer season on site in 2004 and  
13 2005. And the data show that there's minimum  
14 precipitations occurring in the spring season and  
15 average precipitation -- daily precipitation at the  
16 project site during the summer is about 25 millimetre.  
17 And with most of the precipitation occurring in August  
18 and September. There are also ambient air quality --  
19 air quality monitoring station operated by various  
20 government agency in the region, and some of these  
21 include stations operated by GNWT in Yellowknife and  
22 other communities. Mostly these stations collect  
23 sulfur dioxide SO<sub>2</sub> and nitrogen dioxide concentrations.  
24 There is also another station operated  
25 by Environment Canada in Daring Lake, which is

1 approximately twenty (20) -- 200 kilometres north of  
2 the project site, and that station collects particular  
3 matter concentration, so PM data. So these -- the data  
4 collected at these stations help us to kind of get a --  
5 a better under -- understanding of the existing air  
6 quality in the region.

7                   At the project site the air quality is  
8 primar -- is mostly influenced by forest fire and  
9 windblown dust. There is a source of manmade emissions  
10 near the project, and that is the De Beers Snap Lake  
11 mine. Overall, based on the monitoring data collected  
12 at the en -- Yellowknife and Daring Lake, the SO2 and  
13 NO2 and PM concentrations are well below the applicable  
14 ambient air quality criteria. There have been  
15 occasionally higher readings of particulate matter  
16 concentrations, but typically there are results of  
17 forest fire in the region.

18

19                   (BRIEF PAUSE)

20

21                   MR. DENNIS CHANG: I'm now on slide  
22 number 7. I just want to briefly go over some of the  
23 ambient air quality criteria and air -- air emission  
24 criteria that we'll consider in this assessment.

25                   So am -- ambient air quality criteria



1 are, I guess, limits for ambient concentration that was  
2 set by various government agency in the interests of  
3 protecting the public health.

4                   And there are three (3) sets of ambient  
5 air quality criteria that were a concern in this  
6 assessment. And they are: Northwest Territories air  
7 quality standards, Canada-wide standards, and nation  
8 ambient air quality objectives. So when we conduct our  
9 assessment and we provide predictions of ground-level  
10 concentration, these are the criteria that we are  
11 trying to compare against.

12                   Other than ambient air quality criteria,  
13 there are also emission -- air emission criteria  
14 developed by various levels of government agency to  
15 minimize the emissions coming out of various sources.  
16 And I was just going to mention four (4) emission  
17 criteria. The first one (1) is low sulphur diesel  
18 regulation. These are regulations developed by the --  
19 the federal government which set the -- the maximum  
20 amount of sulphur in diesel.

21                   Another set of emission criteria is the  
22 non-road diesel engine emission standards. These are  
23 also standards set by the federal government on how  
24 much emissions can be emitted from diesel non-road  
25 engines. These are the engines that will be used on

1 various type of mining vehicles, like haul trucks,  
2 bulldozers, front-end loaders, and et cetera. So the  
3 limits are set by the federal government so that the  
4 manufacturer or the importer, the companies are  
5 importing these vehicles into Canada will have to make  
6 sure the -- these vehicles will meet these emission  
7 standards.

8                   The next set of emission criteria I want  
9 to mention is the Canadian Council of Ministers of  
10 Environment, short for CCME, emission guidelines for  
11 industrial boilers and heaters. Again, these are  
12 standards set by the federal government on the  
13 manufacture of the boilers and heaters, that they have  
14 to meet these standards.

15                   The last set of emission criteria I want  
16 to mention is Canada-wide standards for dioxins and  
17 furans found in waste incineration. And unlike other  
18 air emission criteria I mentioned earlier, this  
19 standard actually sets a -- is based on a concentration  
20 of dioxin and furans in the exhaust gas from the waste  
21 incinerator, rather than a actual maximum amount of  
22 dioxin and furans from the -- from the incinerators.

23

24                   (BRIEF PAUSE)

25

1 MR. DENNIS CHANG: I'm now on slide  
2 number 8, and I just want to briefly describe the type  
3 of emission sources at the project, and there are  
4 basically five (5) categories of emission sources at  
5 the Gahcho Kue project.

6 The first -- first category is  
7 stationary point sources. These include diesel power  
8 generation stacks, waste incinerator stack, auxiliary  
9 boiler, and crusher stack.

10 The second category is mobile -- mobile  
11 combustion equipment. These are sources that have  
12 exhaust gas coming from various type of mining  
13 equipment, such as haul trucks, bulldozers.

14 The third category are mining and  
15 material handling activities. These type of emissions  
16 also typically generate fugitive dust, or particular  
17 matter emissions. So mining activities such as  
18 blasting, bulldozing, loading/unloading, crushing, will  
19 be -- will fall under this category, and the activity  
20 is -- themselves will actually cause fugitive dust.

21 The fourth category is exposed Kennady  
22 Lake bed, and other exposed surfaces. So unlike -- so  
23 unlike the third category, these emission sources are  
24 not related to any particular activity. They were --  
25 they had the potential to generate some fugitive dust

1 or PM emissions because of wind erosion. So these are  
2 -- these include exposed Kennady Lake bed after it has  
3 been -- the lake has been drained, and other exposed  
4 surfaces such as mine rock or kimberlite stockpiles.

5 The last category of emission sources is  
6 winter access road traffic. These are exhaust gas  
7 coming from seasonal traffic on the winter access road.

8 There is another source of emission  
9 other -- that is not coming from the project, and that  
10 is De Beers' Snap Lake mine, which is located  
11 approximately 80 kilometres east of the -- or actually  
12 west of the project. So when we're -- when we conduct  
13 our assessment, we -- we consider not only the  
14 emissions coming from the project itself, but also the  
15 -- the closest industrial emission sources as well.

16 I'm now on slide number 9. I just want  
17 to briefly go over some of the emission estimate --  
18 estimation methods that we use in the assessment.  
19 There are generally three type of methods that we use.  
20 The first one is mass balance, so some of the emissions  
21 were estimated based on, for example, the -- the  
22 maximum fuel consumption rate or the maximum mine rock  
23 production rate or kimberlite production rate.

24 And the second category of -- of  
25 emission estimation method is based on engineering

1 estimations. So a lot of time we'll have equipment  
2 specifications or -- or equipment design specs that we  
3 use in the calculation. For example, all the -- we use  
4 the maximum fuel input ratings for all the diesel  
5 generators when estimating the emission coming from  
6 that type of sources.

7                   And another example would be -- there is  
8 a wet scrubber for controlling the fugitive dust coming  
9 out of one (1) of the crushers, and the wet scrubber is  
10 designed to be able to control a certain percent of it  
11 -- a certain percentage of dust coming out of that  
12 crusher.

13                   And where we don't -- we don't have very  
14 good information on the -- either the mass balance  
15 information or engineering specs of the equipment, we  
16 use emission -- published emission factors developed by  
17 the United States Environmental Protection Agency. And  
18 these emission factors were developed by EPA based on  
19 tests on similar type of equipment in the past. So  
20 where we're -- there's a -- a bit of a gap in the  
21 information, we try to use these emission factors in  
22 our emission estimation.

23                   And the last bullet on this slide just  
24 kind of provides a list of all the compounds that we  
25 assess in the air quality section of the EIS. They

1 include sulphur dioxide, SO<sub>2</sub>; nitrogen dioxide, NO<sub>2</sub>;  
2 carbon monoxide, CO; PM-2.5 -- these are fine  
3 particulate matter with a diameter less than 2.5; and  
4 PM-10 -- these are another category of fine particulate  
5 matter with a diameter less than 10 microns; and then  
6 the larger particulates, the TSP, total suspended  
7 particulates, and these are usually associated with  
8 part of the -- the dust that people are -- people  
9 associate with mining projects; VOC, volatile organic  
10 compounds; PAHs, polycyclic aromatic hydrocarbons;  
11 metals; dioxins; and furans.

12

13 (BRIEF PAUSE)

14

15 MR. DENNIS CHANG: I'm now on slide  
16 number 10, and I -- in the next couple of slides I just  
17 want to kind of explain some of the conservatism in the  
18 emission estimation in the EIS.

19 Generally, the -- the -- most of the  
20 conservatism come from two (2) sources. The first one  
21 is associated with the emissions scenario that we  
22 develop and use in assessment. And the second one is  
23 associated with the assumption that we use in  
24 estimating road dust emissions during the winter  
25 season.

1                   And I would just go to slide 11, to kind  
2 of help me to explain the first conservatism, which is  
3 related to our emissions scenario.

4                   One (1) of the challenges when assessing  
5 a mining project is that the emissions changes from  
6 year to year, depending on what's going on at the mine  
7 site. Some -- some years, the emission might be  
8 higher. Some years the emission might be lower. And  
9 not only that, where the emissions are released on the  
10 project site also changes throughout the life of a  
11 project.

12                  So if we only assess the year with the  
13 largest emissions it may not necessarily lead to the --  
14 the highest prediction off site because in that  
15 particular year most of the mining activities might be  
16 occurring in the centre of the -- of the mine  
17 footprint.

18                  So the predictions outside the -- the  
19 footprint, where we had to meet the ambient air quality  
20 criteria, they might actually be lower when compared to  
21 other years when the overall emission might be slightly  
22 lower, but a lot of the activities are taking place  
23 around -- near the perimeter of the -- the mine site.

24                  So really, picking a -- a specif -- a  
25 specific year to assess is one (1) of the chall -- one

1 (1) of the main challenges. And also we had to  
2 understand that when we're providing information to  
3 other discipline, most of the discipline need to have a  
4 boun -- a better understanding of how big of area will  
5 be impacted or be affected by the project's emissions.

6 So if we only look at one (1) snapshot  
7 during the course of the project life, we might not  
8 provide the -- the overall picture.

9 So -- now ideally, we can assess and --  
10 and model every single year during the life of a  
11 project. But that -- that -- that is many years. And  
12 logistically, there is some challenge to that because  
13 we had to do many diff -- modelling run and will have a  
14 very large amount of data that we had to sort through.

15 So the -- the goal of the assessment was  
16 to develop a -- a emission scenario that's fairly  
17 conservative. That might be more conservative than  
18 what will actually be happening on the ground in real,  
19 once the project starts.

20 But that scenario will be conservative  
21 enough to hopefully provide the maximum predicted  
22 ground level concentration outside the project  
23 footprint, and also will provide the largest area that  
24 might be affected by the project's emissions.

25 So when -- so what we end up doing is we



1 look at the emissions for every single year and based  
2 on the mine production rate, year 8 of the project,  
3 during the life of the project, will result in the  
4 highest emissions overall.

5                   However, during that year, most of that  
6 mining activity will be taking place in the centre of  
7 the footprint. So you won't -- probably will not  
8 result in the highest off site predictions.

9                   So we looked at the mine develop -- mine  
10 development plan in every year and we noticed that in  
11 the fir -- in the first few years of the project, most  
12 of the mining activity will be taking place in the  
13 southern end of the mine footprint. And this is mostly  
14 because the mine rock will be disposed to the south  
15 mine rock disposal area.

16                   So once the mine rock has been extracted  
17 at the pit, they will be transferred to the south  
18 disposal area, which is located at the very southern  
19 edge of the mine footprint.

20                   Later year -- in later years, the mine  
21 rocks will be disposed at the west mine rock disposal  
22 area, which is on the west end of the -- the mine  
23 footprint. And that's where most -- most of the  
24 emissions will be released from.

25                   So with that information what we did end

1 up doing was we took the maximum emission scenario and  
2 we released these emissions from two (2) different  
3 location, and one (1) based on the year 1 mine  
4 development plan and another based on year 5 of the  
5 mine development plan. That way, we'll have a be --  
6 better understanding of how -- what the offsite effects  
7 on -- on air quality will be.

8                   So we took these two (2) scenarios. We  
9 modelled them separately and we get two (2) sets of  
10 results. And what we end up doing to come up with the  
11 application results in the assessment is we -- every  
12 single receptor -- so I'm just going to point to the  
13 graph to the left under, "Assessment case."

14                   So we have receptors placed across the  
15 study area and for every single receptor we'll have one  
16 (1) set of predictions based on maximum emissions  
17 release from year 1 locations and another set of  
18 results from maximum emission release from the year 5  
19 predictions and we'll pick the highest of the two (2).  
20 So what -- so -- and which will form our assessment  
21 case predictions.

22                   So instead of having a -- having a  
23 concentration contour that is mostly focussed to the  
24 southern end of the -- the project footprint, such as  
25 in year 1, or to the western end of the project

1 footprint, as in year 5, the actual applica --  
2 application case results presented in the assessment is  
3 based on a combination of both, which will give us a  
4 area that covers both of the scenarios.

5 Because in -- in reality, the max -- in  
6 both year 1 and year 5 the emission rates will be lower  
7 than year 8 emissions, so that's where some of the  
8 conservatism will be coming from.

9 MR. DAVE FOX: Dave Fox, Environment  
10 Canada. It's a -- it's a very interesting concept to  
11 the way that you're approaching this. I -- I'm just  
12 curious, was this done for all of the pollutants or was  
13 it mainly aimed at the -- more the particular matter?

14 MR. DENNIS CHANG: It was done for all  
15 pollutants because we -- from an air quality  
16 perspective we have ambient air quality criteria for  
17 multiple pollutants, such as SO2 and O2, CO and PM, but  
18 also for in trying to assessing human health risk, and  
19 also effects on wildlife, terrestrial environment and -  
20 - and et cetera.

21 It is very important for the other  
22 discipline to also get the -- the conservative  
23 predictions from the air quality assessment. So we  
24 applied this approach to all compounds that we  
25 assessed.

1 THE FACILITATOR HUBERT: Chuck Hubert,  
2 with the Review Board. I appreciate your eagerness to  
3 ask questions, but hopefully we can contain them till  
4 the end of the presentation and collect them and then  
5 ask them. Thanks.

6 MR. DAVE FOX: Dave Fox, Environment  
7 Canada. Ideally, I've got a list of questions, but  
8 some questions could be addressed much easier  
9 immediately while the slide's still on the board. So I  
10 -- I'll try to keep them to the end, but sometimes I --  
11 I still might have to jump in.

12 THE FACILITATOR HUBERT: Chuck Hubert.  
13 Fair enough. You can have a few jumps. Thanks.

14 MR. DENNIS CHANG: So I'm -- I'm going  
15 back to slide number 10. So the second sort of  
16 conservatism in the emission estimation I mentioned  
17 earlier comes from our assumptions when estimating road  
18 dust emissions during the winter season.

19 We know that -- we know that road dust  
20 emissions during the summer season can be mitigated by  
21 watering of the haul roads to suppress the dust. In  
22 the winter, because of the snowfall and ice on -- on  
23 the road surface, the conventional approach is to  
24 assume negligible emissions during the winter.

25 Based on our understanding of the

1 project op -- operation will be is that the snow and  
2 ice will be constantly removed from the haul road  
3 surface and crushed mine rock will be placed on -- on  
4 the road surface to maintain traction during the  
5 winter. So, theoretically, there might still be a very  
6 low level of road dust being generated during the  
7 winter.

8                   Now one (1) -- the difficulty trying to  
9 estimate the -- what that level of road dust emission  
10 will be during the winter is that we know it will be  
11 low, it will probably be lower than the -- our  
12 mitigated road dust emission in the summer season, but  
13 exactly how low is not very clear. And the common  
14 approach used in most of the assessments including by  
15 the government agency when developing omission  
16 inventory is to assume negligible emissions.

17                   We feel in order to understand the  
18 potential effects of these winter road dust emissions,  
19 we should probably assign a -- a sort of number to what  
20 these emission might -- might be during the winter.

21                   Do the difficulty is do you think -- do  
22 you assume that it's going to be zero emissions, or  
23 it's going to be just -- there's going to be so much  
24 emission it's going to be similar to what you might  
25 thought it will be during the summer when the roads are

1 not being watered.

2 And there's no real good answer for  
3 that, because it's any -- anywhere in between. It  
4 could be 20 percent, it could be 30 percent, who knows.  
5 So because of that reason we took a very conservative  
6 approach.

7 We assumed the emissions from the road -  
8 - road dust during the winter will be just as high as  
9 the road dust that will be generated in the summer when  
10 it's unmitigated. So -- now that we know is a very  
11 conservative assumption and -- because we cannot  
12 exactly point out what the actual level of emissions  
13 will -- will be between zero and a hundred (100), we  
14 assume 100 percent emissions. And there is ongoing  
15 study which will help us to better understand that and  
16 shed some light into what the winter emissions will be.

17 So I just want to kind of point out the  
18 last bullet on slide number 10. The actual particulate  
19 matter concentration deposition rates predicted in the  
20 assessment are expected to be much lower than -- than  
21 what we projected in the assessment, because of mainly  
22 these two (2) sources of conservatism.

23

24 (BRIEF PAUSE)

25

1 MR. DENNIS CHANG: So I'm now on slide  
2 number 12, and I'm just going to briefly describe our  
3 modelling, dispersion modelling approach used in the  
4 assessment. The dispersion modelling was conducted  
5 using a model -- dispersion model called CALPUFF.

6 And this dispersion model was developed  
7 for USEPA for the purpose of determine near field and  
8 long-range pollutant transport. And this particular  
9 dispersion model have been adapted by various  
10 government agency in Canada, including the Government  
11 of the Northwest Territories.

12 The study area of the Air Quality  
13 Assessment is defined by area with a north/south extent  
14 of 80 kilometres and east/west extent of 160  
15 kilometres. I just want to make a note of this  
16 information. It's not necessarily outlined in the --  
17 on -- on slide number 12.

18 But this is -- so I just want to reiter  
19 --reiterate that the regional air quality stu -- study  
20 area is defined by an area with north/south extent of  
21 80 kilometres and east/west extent of 160 kilometres.  
22 And this area is large enough to capture the cumulative  
23 air quality effects from existing -- other existing  
24 emissions forces such as Snap Lake in combination with  
25 the emission coming from the -- the project.

1                   The local air quality study area is  
2 defined by an area of 15 kilometres by 15 kilometres  
3 centred on the project. And the local study area is --  
4 was used to focus on the -- the effects of -- on air  
5 quality that were solely contributed by the project.

6                   As I mentioned earlier, we assess a  
7 whole range of compounds, and these include SO<sub>2</sub>, NO<sub>2</sub>,  
8 CO, PM 2.5, PM 10, TSP, VOC, PAHs, metals, dioxins, and  
9 furans, and these are -- not only we pro -- we -- the  
10 dispersion modelling provide predicted ground level  
11 concentrations of these compounds in the atmos -- in  
12 the atmosphere, the model also provide prediction of  
13 deposition of certain compounds onto various surfaces,  
14 including ground and/or lakes.

15                  And the compound that we have  
16 predictions -- predicted our depositions include PM  
17 2.5, PM 10, TSP, PAHs, metals, and potential acid  
18 input. Potential acid input is a parameter that  
19 measures the potential acidification effects on the  
20 receiving environment.

21                  So I just wanted to point out that all  
22 modelling results were used to assess the effects on  
23 human health and wildlife.

24                  For other disciplines such as water  
25 quality, the TSP metal deposition, and the PAI results



1 were provided for -- to be used in -- in the water  
2 quality assessment.

3 And for the terrestrial assessment, the  
4 -- the NO<sub>2</sub>, nitrogen dioxide concentration, and the PAI  
5 data were provided.

6 I have about six (6) more slides to go,  
7 and I'm just going to -- in the next few slides I'm  
8 going to be discussing the -- that -- in details the  
9 assessment find -- findings.

10 So now I'm on slide 13. So the  
11 predicted carbon monoxide concentrations are all well  
12 below the applicable ambient air quality criteria.  
13 Same goes for SO<sub>2</sub>, predicated SO<sub>2</sub> concentrations.

14 For an NO<sub>2</sub> concentrate -- predicated NO<sub>2</sub>  
15 concentrations, we predict there will be some  
16 concentration that will be marginally above the  
17 applicable ambient air quality criteria immediately  
18 outside of the project development area.

19 And I'm just going to use the pointer to  
20 kind of explain the figure on the right-hand side of  
21 slide 13. So in this figure, there's a -- a thick  
22 black line that represent the project development area  
23 that was used in the air quality assessment.

24 And this -- outside of this line is  
25 where the predicted concentrations had to meet

1 applicable ambient air quality criteria.

2 Another important information in this  
3 figure is the area that's highlighted by dark purple,  
4 and it's outlined by a blue line.

5 The -- this area is the -- where the  
6 predicted concentrations are expected -- expected to be  
7 above the air quality criteria. So you can see to the  
8 southern end of the project footprint, there's a small  
9 area where the predictions are above the ambient air  
10 quality criteria.

11 And this is mostly a result of all the  
12 mining activity that will be taking place in the south  
13 mine rock disposal area, so all the emissions which are  
14 essentially in these areas, and that led to a higher  
15 concentration just on the other side of the project  
16 development boundary.

17

18 (BRIEF PAUSE)

19

20 MR. DENNIS CHANG: I'm now on slide  
21 number 14. There is a figure which kind of represent  
22 the PM-2 -- the predicted PM-2.5 concentrations.  
23 Overall, there are some predicted PM-2.5 concentration  
24 that are above the ambient air quality standard. And  
25 again, in the figure you can see the black line which

1 represents the project development area. And that's  
2 where we -- the ambient air quality standards had to be  
3 met. And the dark purple area shows where the  
4 exceedance will occur -- were likely to occur.

5                   Now the predictions are mostly -- the  
6 higher predictions are mostly a result of the  
7 conservative emission estimation that we use in our  
8 assessment, and also, the fact that a lot of the mining  
9 activities and the activities related to transport of  
10 the material will be occ -- will be happening along the  
11 perimeter of the project development boundary. So  
12 higher predictions are expected along the -- the  
13 boundary.

14                   And I have another slide to kind of try  
15 to explain the PM-2.5 predictions. And I'm on slide  
16 number 15. We have a figure which kind of shows how  
17 often do we expect the PM-2.5 standards, ambient air  
18 quality standards will be exceeded.

19                   So again, we have the black line which  
20 outlines the project development area. And then we  
21 have a light yellow contour that represents where some  
22 of the exceedance were likely to occurred. And as you  
23 can see, the -- the frequency of the exceedance  
24 decreased dramatically as -- as one moved away from the  
25 project boundary.

1                   And in the low -- lowest con -- contour  
2 level shown in the figure -- which is supposed to be  
3 light yellow but I think on the project -- projector  
4 the colour is a little bit different -- these are area  
5 where the predicted -- prediction indicate that there  
6 might be exceedance anywhere between one (1) to  
7 fourteen (14) days a year.

8                   And most of the higher frequency of  
9 exceedance will likely be limited to -- to -- to the  
10 area along the perimeter of the project development  
11 boundary and also on the other side of the boundary  
12 where most of the emissions will be released from.

13                  So in general, no concentrations abo --  
14 there will be no concentration above the Northwest  
15 Territory air quality standards predicted beyond 3  
16 kilometres from the project development area -- area  
17 boundary, and this is based on a very conservative  
18 emission estimate.

19                  I'm now moving on to slide number 16,  
20 and I'm going to try to explain the predicted TSP  
21 concentrations. Again, similar -- similar to the PM-  
22 2.5 predictions, because of the conser -- conservative  
23 emissions used, we see some predicted concentration of  
24 TSP above the ambient air quality standard. This is  
25 represent by the dark purple area in the figure on

1 slide number 16.

2 And in turn, on slide 17, I have a  
3 similar figure which shows the frequency of exceedance.  
4 Again, the frequency of exceedance will decrease  
5 dramatically as you move further away from the project.  
6 And based on the modelling, concentra -- there will be  
7 no concentration above Northwest Territory air quality  
8 standards predicted beyond 2 kilometres from the  
9 project development area.

10 And the area represented by light yellow  
11 in the figure are -- is area where we expect anywhere  
12 between one (1) to fifty-nine (59) days of exceedance  
13 in a year based on a very conservative emission  
14 estimation.

15

16 (BRIEF PAUSE)

17

18 MR. DENNIS CHANG: So I have two (2)  
19 more slides to go. I'm on slide number 18. There are  
20 some followup actions that De Beers is currently --  
21 that will be -- De Beers will be undertaking after the  
22 air quality assessments. Currently there -- we -- De  
23 Beers is continuing ongoing work to better understand  
24 the level of fugitive PM emissions to validate  
25 assessment results and to reduce the uncertainty in the

1 assessment.

2                   As I noted earlier, there -- there are a  
3 lot of conservatism that was used in the assessment and  
4 which might contribute to a very conservative result,  
5 and there's ongoing work to try to better understand  
6 some of these assumptions and to validate them and also  
7 to refine them.

8                   In most likely scenario, after this work  
9 have been done, the -- the estimated emissions from the  
10 project will probably be lower and resulting in lower -  
11 - a lower prediction than those presented in the  
12 assessment.

13                   Another follow-up action items is De  
14 Beers will develop a air quality management plan to --  
15 for the project. Another action item is De Beers will  
16 design and implement a monitoring program to validate  
17 the predictions in the assessment.

18                   So we have seen -- gove over some of the  
19 predictions that -- from the assessment, but will there  
20 -- will there actually be that level of predictions  
21 once the project starts? And this will be par --  
22 partially validated with a monitoring program.

23                   And the last item is De Beers will be  
24 committed to the proven management practices to  
25 minimize emissions and protect -- be protective of the

1 environment.

2 I'm on the very last slide, slide 19.

3 So I just want to summarize also -- the information that  
4 I have presented over the last forty (40) minutes. The  
5 key finding of the air quality -- quality assessment is  
6 the project emissions were determined not to have  
7 significant adverse effects to air quality, although  
8 there will be temporary changes to air quality. And  
9 these can be highlighted by the fact that predicted SO<sub>2</sub>  
10 and CO concentration are less than the Northwest  
11 Territory air quality standards.

12 The predicted NO<sub>2</sub> concentrations are  
13 near the guideline levels immediately outside  
14 the project development area. For predicted PM-2.5 and  
15 TSP concentrations the -- the predictions will be --  
16 are above nor -- Northwest air quality standards  
17 immediately outside the project development area.

18 And I would just like to highlight some  
19 of the key points I -- I mentioned in my presentation.  
20 The -- the predictions are based on very conservative --  
21 conservative assumptions. These include conservatism  
22 coming from pollution based on worst case emissions  
23 released from worst locations assuming no natural  
24 mitigation on road dust in the winter when there is  
25 probably some level of natural mitigation. And the

1 fact that there is ongoing -- currently ongoing work to  
2 review the emission estimation and the level of natural  
3 mitigation.

4 And to conclude the -- the presentation  
5 I just want to mention the fact that an air quality and  
6 emissions management plan will be developed for this  
7 project. And that's the end of my presentation.

8

9 QUESTION PERIOD:

10 THE FACILITATOR HUBERT: Chuck Hubert  
11 with the Review Board. Thanks very much for that  
12 presentation and you're right on the time that you said  
13 you would be. And thanks for holding off on -- on the  
14 questions. I know it's difficult, but I think it helps  
15 with continuity and flow of the presentation.

16 So questions, and you have the floor.

17 MR. DAVE FOX: Hi, Dave Fox,  
18 Environment Canada. Thank you for your presentation,  
19 it was very informative. It -- it does look like  
20 Golder has put a lot of thinking into this project and  
21 I -- and I appreciate that.

22 And I -- I really like your frequency  
23 plots. I find those very useful, so -- so thanks.  
24 It's nice to see those in -- incorporated in there.  
25 And I'll try to string these questions together and



1 make some sort of sense, starting with the -- the  
2 emissions side of things.

3                   You mentioned that Snap Lake is  
4 included. You know what, I'm going to -- I'm going to  
5 put a caveat on my questions, as well. I've -- I've  
6 given the -- the EIS a quick ready, but not a detailed  
7 read, so I apologize if some of this information is in  
8 there somewhere. It won't -- I won't be offended if  
9 you tell me that, so.

10                   So you mentioned that Snap Lake is  
11 included. Is -- is that included as a discreet  
12 emission source, and if so, what kind of emission  
13 source?

14                   MR. DENNIS CHANG:   Dennis Chang from  
15 Golder Associates. To answer Dave's questions, the  
16 emissions from the De Beers Snap Lake mine were  
17 modelled as discreet emission sources, and this include  
18 all of the emissions that have been presented in the  
19 Snap Lake EIA and other follow-up amendments.

20                   So any changes in Snap Lake's emissions  
21 over the course of the year -- over the course of year  
22 -- years were reflected in the assessment.

23                   MR. DAVE FOX:   Dave Fox, Environment  
24 Canada. Were all those emissions aggregated into like  
25 a single point source, because it is quite a ways away,

1 or were the individual emission sources left? Like  
2 you've got your area sources for the -- the pits,  
3 you've got your point sources for the -- the generation  
4 and various things.

5 MR. DENNIS CHANG: They were modelled  
6 as individual sources, just as they were modelled in  
7 the -- all the previous air quality assessments for the  
8 De Beers Snap Lake mine. So they were not grouped  
9 together into one (1) single sources -- one (1) single  
10 source.

11 MR. DENNIS FOX: Thanks for that. Dave  
12 Fox, Environment Canada. You also mentioned truck  
13 emissions and -- and various regulations on -- on  
14 emission standards for the trucks.

15 Now currently the -- the regulations are  
16 for Tier II trucks, but those -- those regs are being  
17 amended to -- up to -- to Tier IV. Tier IV isn't  
18 currently available yet. So I'm wondering in your --  
19 your emission estimates, what did you assume for -- for  
20 a tier -- or emission standard for the trucks?

21 MR. DENNIS CHANG: This is Dennis Chang  
22 from Golder. To answer Dave's question, in the  
23 assessment we used Tier II emission standards. I  
24 believe, and, Dave, you can probably shed some light  
25 into this, the Tier IV emission standard regulation

1 will be adopted next year and there will be a -- a -- a  
2 period which allows our manufacturer, or the importer  
3 of the -- the mining vehicles to -- able to design and  
4 develop engines that will meet the -- eventually meet  
5 the Tier IV emission standards.

6 MR. DAVE FOX: Dave Fox, Environment  
7 Canada. Yeah, I believe the -- the amended regs are  
8 supposed to come into effect around the 2015 stage, but  
9 we're not sure when they're actually going to be  
10 implemented. And just as an example, the -- the  
11 current standards or regs came in in 2006, but I  
12 believe the Tier II trucks just became available in  
13 2010. So we expect a bit of a lag time. So I -- I'm  
14 happy that you -- you chose the conservative route and  
15 -- and gone with the -- the Tier II trucks, which is  
16 probably more realistic for your time scale.

17 All right. I was curious, as well, for  
18 the -- the exposed lake bed, and just how you -- you  
19 estimated the dust from that. If you -- if you did  
20 anything special because it is -- well, I -- I've never  
21 seen any emission estimates from lake beds before, but  
22 that -- that could be a fairly significant source. So  
23 I'm just wondering if there's any different approaches  
24 that you guys used for that.

25 MR. DENNIS CHANG: This is Dennis Chang

1 from Golder Associate answering Dave's question.

2                   To address the potential air quality  
3 effects from dust coming off the exposed Kennady Lake  
4 bed, that is one (1) of the key term of reference  
5 requirements. Based on some information on other  
6 existing diamond mines in the region, there should be -  
7 - there shouldn't be a significant amount of dust  
8 coming off the exposed lake bed because typically there  
9 is a level of moisture that remains on -- on the -- on  
10 the lake surface even after the lake has been drained.

11                   And typically -- while based -- based on  
12 some of the information we gather, it -- it seems they  
13 -- the moisture will form a, I guess, a hard surface on  
14 the lake surface, which should minimize any potential  
15 windblown dust coming off the exposed lake bed.

16                   Now, in the EIS, the approach that we  
17 took is, even with that information, we took a -- we  
18 used a fairly conservative approach. We assume the  
19 lake bed will act just like any other exposed surface,  
20 such as a stockpile for mine rock and kimberlite, and -  
21 - and will actually have some windblown dust coming out  
22 the exposed lake bed.

23                   Now, the -- the one (1) thing we did  
24 include in our assessment is during the winter when the  
25 lake bed is expected to be covered by snow and ice,

1 there will be no emission coming out of the lake bed.  
2 And that's reasonable because those surfaces will not  
3 be disturbed once they -- the -- the lake has been  
4 drained.

5

6 (BRIEF PAUSE)

7

8 MR. DAVE FOX: For -- for the -- Dave  
9 Fox, Environment Canada. For the fine particulates  
10 that -- that the PM-2.5, I'm just curious if there was  
11 any analysis done between the -- the differences in  
12 emissions of PM-2.5 from -- from combustion sources as  
13 opposed to the fugitive sources.

14 And I'm asking that just because the --  
15 I realize that fugitive sources are inherently  
16 uncertain, and a bit of a dog's breakfast no matter how  
17 much effort you put into that, but the combustion side  
18 is much better defined. So I'm just curious if there  
19 was analysis, or if you can even give me an indication  
20 of the ballpark ratios between -- is there -- is there  
21 a lot more from the fugitive, or a lot more from the  
22 combustion?

23 MR. DENNIS CHANG: This is Dennis Chang  
24 answering Dave's question. Dave, you are correct about  
25 the uncertainty in terms of estimating fugitive PM-2.5

1 emissions. And I don't have the numbers in front of me  
2 at this moment, but based on my recollection the PM-2.5  
3 emission based on our estimation of the road dust,  
4 which is -- contains very high level conservatism, I  
5 believe it represent close to half of the PM-2.5  
6 emissions from the project. But I can verify that --  
7 that number for you maybe after the break, or later  
8 after lunch.

9                   Should -- typically PM-2.5 emissions  
10 come from mostly combustion sources. And the PM-2.5  
11 emissions coming from fugitive sources in terms of the  
12 -- the methodologies that -- that have been developed  
13 over the years by various regulators in the US and in  
14 Canada. They have -- they -- they have been highly  
15 suspect -- suspected.

16                   And there's currently not a lot of good  
17 understanding what that emission might be. But  
18 typically, they -- the fugitive dust or fugitive PM  
19 emissions are related to larger particulate matters.  
20 Because typically, finer -- fine particulate matter are  
21 formed during the combustion process.

22                   MR. DAVE FOX: Dave Fox, Environment  
23 Canada. And I'm curious about the project development  
24 area and how that was defined. Is -- can you -- can  
25 you explain? I -- I know in the south, facilities use

1 fence line type of -- of delineation. But that's not  
2 really practical up here. So -- and it doesn't really  
3 look like a -- a very rectangular area that you guys  
4 chose.

5 So I'm just curious how -- how you chose  
6 that?

7 MR. DENNIS CHANG: This is Dennis Chang  
8 from Golder. I can probably go back to one (1) of the  
9 slides which shows the project development area that  
10 was used.

11 Yeah. I'm on slide 15. So the thick  
12 black lines shows the project development area that was  
13 used in the -- in the assessment. The purpose of that  
14 line is for comparison of the pred -- ground level  
15 predictions to applicable ambient air quality  
16 standards. There will actually not -- there will not  
17 be actually, any physical fence line around the  
18 perimeter of the -- the project.

19 The -- because the project footprint has  
20 been minimized to -- has been minimized, what we --  
21 what the actual development area boundary that we  
22 picked is -- very closely followed the -- the actual  
23 mine footprint. With the exception to the west end,  
24 where these lakes are considered a disturbed area. And  
25 -- however, to make our assessment simpler and easier

1 to understand, we did not extend the project  
2 development boundary along these lakes to the west of  
3 the -- the projects.

4 MR. DAVE FOX: Dave Fox, Environment  
5 Canada. I'm curious also about the -- the particulate  
6 and pH modelling, and on a -- on a couple of aspects.  
7 One (1), just how it's conducted. I -- I suspect that  
8 you're using the TSP deposition predictions and then  
9 applying some speciation factor to that. Curious about  
10 the -- the different sources of the emissions of -- of  
11 pHs and metals, and whether there are consistent  
12 speciation profiles for those sources and how those --  
13 those source profiles are -- or what they're based on.

14 MR. DENNIS CHANG: This is Dennis Chang  
15 answering Dave's question. Especially for deposition  
16 of compounds such as particulate matters, PAH, and  
17 metals, the assumption was that PAH and metals are part  
18 of particulate matter. And when the particulate matter  
19 deposit on -- onto a surface, part of the particulate  
20 matter will include PAH and metals.

21 To answer your question regarding to the  
22 speciation of PAH and metals for various type of  
23 emissions sources, I can defer you to, I believe,  
24 Appendix B of -- of the SON section you have on point  
25 4. We have a technical appendix which describe all the



1 speciations that were used for each type of source.

2                   For example, I'll give you an example,  
3 for exam -- metals in particulate matter coming out of  
4 mining activity related to trans -- transportation of  
5 mine rock. So we'll -- we use the -- the metal analysis  
6 for the mine rock in our speciation, and the same thing  
7 when we assess the metals coming from any activity that  
8 related to transportation of kimberlite. We use the  
9 metal analysis for kimberlite.

10                   THE FACILITATOR HUBERT:   Chuck Hubert,  
11 the Review Board. Can we limit further questionings to  
12 one (1) question, please. Okay.

13                   MR. DAVE FOX:   Dave Fox, Environment  
14 Canada. I have one (1) last broad, multi-part  
15 question. It's -- it's to do with management plans.  
16 Now, you mentioned that there will be an air quality  
17 management plan drawn up. My first question is when do  
18 we expect to get some details on that or when will it  
19 be completed?

20                   The second part of that -- that single  
21 question is you mentioned incineration early on and  
22 dioxins and furans. Are you also planning on -- on  
23 completing that incineration management plan for the  
24 project as well and just when we should expect to see  
25 details and -- and that plan completed?

50

1                   Finally, just curious, in -- actually, I  
2    lied. I have one (1) other sub-question after this.  
3    But the monitoring plan, if -- when -- if and when you  
4    will be able to provide some details on the type of  
5    monitoring that you're planning on doing.

6                   And the other sub-bullet, sorry for a  
7 very long question, I was curious about the -- the PAI  
8 results and why you're getting such high numbers and if  
9 there's a reason for that. Those results surprised me  
10 a bit.

11

12 (BRIEF PAUSE)

13

14 MR. DENNIS CHANG: Dave, this is Dennis  
15 Chang, from Golder. Just before I answer your  
16 questions I just want to correct my response for your  
17 previous question about the emission speciation for  
18 various type of emission sources. There -- we have a  
19 appendix which describe all the emission speciation  
20 that we use in the assessment, and you can find that in  
21 Appendix 11.4.2. So it's part of the SON Section 11.4.

22                   And I will let Veronica answer your  
23 question regarding to the management plans.

24 MS. VERONICA CHISHOLM: Veronica  
25 Chisholm, from De Beers Canada. Yes, we're in the

1 process of developing the management plans, but  
2 obviously there'll be some consultation with  
3 Environment Canada over the next few months in order to  
4 ensure that we have the correct details in there. And,  
5 also, with respect to the monitoring program, it would  
6 follow a similar process in terms of consultation.  
7 Thank you.

8

9 (BRIEF PAUSE)

10

11 MR. DENNIS CHANG: This is Dennis  
12 Chang. In re -- regards to the PAI predictions, we --  
13 obviously we use a fairly conservative assumption when  
14 estimating the -- the combustion emissions. PAI are  
15 mainly contributed by SOx and NOx, And there's very li  
16 -- there's a very low level of SO -- SOx emissions from  
17 the project, so mainly the PAI is being -- is coming  
18 from the NOx emissions. And we use the -- in our  
19 emission estimation we use the Tier II emission  
20 standards for the mine fleet and there might be some  
21 conserve -- conservatism in the NOx emission coming  
22 from the diesel power gen -- generators.

23 We used the assumption that there will  
24 be -- all generators will be operating all year round,  
25 when, in fact, at least one (1) of them probably will

1 be offline for maintenance and -- and such during the  
2 year. So there is some conservatism in -- in that and  
3 we can further address that if you have any question.

4 THE FACILITATOR HUBERT: Chuck Hubert,  
5 Review Board. Thanks very much for the presentation,  
6 the questions, and answers. It's 10:30 now. I think  
7 we should take a health break for -- oh, sorry, and aft  
8 -- after ten (10) minutes we'll return with the soils  
9 and vegetation topic.

10 Thanks. See you then.

11

12 --- Upon recessing at 10:30 a.m.

13 --- Upon resuming at 10:48 a.m.

14

15 THE FACILITATOR HUBERT: Good morning,  
16 ladies and gentlemen. If we can get started again.  
17 And just a reminder to people coming into the room at  
18 the moment, and I notice they're signing in dutifully,  
19 and we encourage that. Please do sign in, as it makes  
20 it easier for us to have a good record of -- of who  
21 attended. Thanks very much.

22 So I'd like to restart again with some  
23 brief follow-up on air quality, and I believe Dennis  
24 will have some follow-up to a question from Dave --  
25 from Dave Fox earlier, and then we'll go to Madelaine

1 for a question.

2 So go ahead, Dennis.

3

4 (BRIEF PAUSE)

5

6 MR. DENNIS CHANG: Okay. This is  
7 Dennis Chang from Golder. Dave Fox from Environment  
8 Canada has had an earlier question regarding to what  
9 percentage of the projects total PM-2.5 emissions are  
10 from combustion sources versus fugitive sources.

11 I have that information for him. We  
12 estimate that 32 percent of tot -- project's total PM-  
13 2.5 emissions will be coming from const -- combustion  
14 sources and 67 percent of the project's total PM-2.5  
15 emissions will be coming from fugitive emission  
16 sources. And this is a ratio that we don't typically  
17 expect, because PM-2.5 are typically byproducts of  
18 combustion emissions and this -- this ratio basically  
19 just highlight the conservatism that we use in  
20 estimating the fugitive PM-2.5 emissions.

21 THE FACILITATOR HUBERT: Chuck Hubert,  
22 Review Board. Thanks very much for following up with  
23 that so quickly. So, Madelaine, follow up with air  
24 quality, please.

25 MS. MADELAINE PASQUAYAK: Thank you.

1 This is Madelaine Pasquayak. I just have a question  
2 regarding the -- the amount of pollutants, you know,  
3 that this project can anticipate over its -- over the  
4 years of its operations.

5 I was just wondering, given the amount  
6 of poll -- pollutants that would be -- that -- that  
7 will follow from -- from this project on land and  
8 water, I was just wondering what kind of impact would  
9 this have on the vegetation in the water, and what it  
10 would mean for the fish and for the wildlife that feed  
11 on this -- on the vegetation? Thank you.

12 MS. VERONICA CHISHOLM: Veronica  
13 Chisholm from De Beers Canada. Thank you, Madelaine,  
14 for that question.

15 The impacts to vegetation, water,  
16 wildlife, will be answered in presentations that we're  
17 going to have today and tomorrow, so those would be the  
18 effects portion of it. So we'll just follow up with  
19 those presentations. Thank you.

20

21 (BRIEF PAUSE)

22

23 THE FACILITATOR HUBERT: Thanks very  
24 much. Steve Ellis in the room, I believe. Oh, there  
25 you are, go ahead. Sorry.

1 MR. STEVE ELLIS: Yeah, Steve Ellis  
2 with the Treaty 8 Tribal Corporation. So this is a bit  
3 of an odd situation. While I wasn't in the room  
4 listening, there was someone on the phone listening who  
5 emailed me a question, so I'm completely unaware of the  
6 context of the question I'm asking, but he's written it  
7 out for me, so.

8 This is from the Yellowknives Dene:

9 "So there was a discussion about  
10 long-term, persistent organic  
11 pollutants, both in terms of  
12 guidelines and predictions. However,  
13 the modelling is based on best  
14 practices being implemented, and as  
15 we've seen at all the other mines,  
16 emissions exceedances should be  
17 expected rather than a remote  
18 possibility. The presentation  
19 doesn't discuss POPs. What kind of  
20 deposition and concentrations did the  
21 modelling predict for these  
22 persistent chemicals?  
23 2. Has the Company collected baseline  
24 for furans and dioxins in the  
25 surrounding environment in the local

1 study -- study area for parties to be  
2 able to evaluate effects, and  
3 generation of persistent pollutants  
4 of the mine during operations and  
5 post closure.

6 And third, does the Company's  
7 emissions air quality management plan  
8 include a resampling process for  
9 POPs, especially if exceedances are  
10 noted."

11 I will definitely not have a follow-up  
12 to these because I have no idea what he's talking  
13 about. Hopefully someone over there does.

14 THE FACILITATOR HUBERT: Thanks very  
15 much. And in your response, can you outline the  
16 acronym, POPs, for us, please.

17 MR. DENNIS CHANG: This is Dennis Chang  
18 from Golder Associates. When you say POPs, do you mean  
19 pH, or --

20 MR. STEVE ELLIS: Persistent organic  
21 pollutants.

22 MR. DENNIS CHANG: Okay. Regarding to  
23 deposition of these pollutants in -- in the receiving  
24 environment, and their -- what their effects will be on  
25 -- on vegetation, wildlife, and -- and so on, these



1 will be covered by a preceding (sic) presentation for  
2 terrestrial, and water quality, and wildlife, in the  
3 next two (2) days.

4 The presentation on air quality given  
5 this morning is mainly to discuss effects on air  
6 quality rather than the -- the other receiving  
7 environments.

8 MR. STEVE ELLIS: Steve Ellis here. I  
9 guess I do have a follow-up.

10 There was a question about if the  
11 Company's collected baseline for furans and dioxins.

12 MR. DENNIS CHANG: I'm not aware of any  
13 baseline monitoring of di -- dioxins and furans at the  
14 project site.

15 MR. STEVE ELLIS: I guess the point  
16 being made by the question asker here is that if  
17 baseline has not been collected for those elements, or  
18 items, chemicals, how does De Beers intend to monitor  
19 for change with regard to those furans and dioxins,  
20 which we -- from -- if I understand, the GNWT's concern  
21 is that stuff will be emitted through the -- the  
22 incinerator stacks.

23 MS. VERONICA CHISHOLM: Veronica  
24 Chisholm from De Beers. I -- I guess I'd like to  
25 remind you, and it's included in the emissions

1 inventory, that furans and dioxins are accounted for as  
2 part of the specifications for the incinerator.

3                   So that information, we have a -- we use  
4 that information to develop a baseline emissions case,  
5 and De Beers will be developing a management plan and a  
6 monitoring program to determine how best to follow up  
7 on monitoring of the sites. Thank you.

8

9                   (BRIEF PAUSE)

10

11                   MR. ALAN EHRLICH: It's Alan Ehrlich.  
12 I have a -- a question that you -- you might be able to  
13 shed light on fairly easily. It's regarding carbon  
14 emissions and the relative contribution of this project  
15 to the carbon emissions of the existing diamond mines  
16 in the cumulative context.

17                   So, of the reported emissions in the  
18 NWT, I know many cumulative sources of -- of carbon  
19 emissions are not reported in the NWT because they are  
20 small point sources. But they -- you know, I mean  
21 house heating and cars, that stuff's not reported. But  
22 larger industrial emissions, the larger sources are.  
23 And 80 percent -- as I recall, 80 percent of the -- the  
24 total for the NWT is coming from diamond mines and --  
25 and related industry.

1 I was wondering what kind of a  
2 contribution the proposed project is expected to make  
3 to that in terms of proportion? Thank you.

4 MR. DENNIS CHANG: This is Dennis Chang  
5 from Golder. To answer your questions, Environment  
6 Canada has issued annual reports on greenhouse gas,  
7 including a comprehensive greenhouse gas emission  
8 inventory for Northwest Territories. So that's a -- a  
9 good reference to use to understand the level of  
10 greenhouse gas emissions in the Northwest Territories.

11 The -- as for the project's greenhouse  
12 gas emissions and how much these contribution will be  
13 in -- in the curr -- current territorial greenhouse gas  
14 emission inventory, the green -- the project's  
15 greenhouse gas contributions is summarized in Appendix  
16 11.4.2 of the -- under the SON Section 11.4. And so, I  
17 don't have the actual greenhouse gas emission in front  
18 of me, but I would encourage Alan to take a look if --  
19 and hopefully you can get the information from -- from  
20 that appendix.

21 MR. ALAN EHRLICH: Thanks. I asked  
22 partly for the benefit of the parties. It would be  
23 helpful if De Beers can have a look at it and try to  
24 answer that question, perhaps sometime later today.

25 MS. VERONICA CHISHOLM: Veronica

1 Chisholm, from De Beers Canada. Yes, we'll try and  
2 provide that answer in the afternoon. Thank you.

3 MR. ALAN EHRLICH: Thank you.

4 THE FACILITATOR HUBERT: Chuck Hubert  
5 with the Review Board. Thanks very much. With that  
6 we'll close the topic of air quality and move on to  
7 soils and vegetation. So, De Beers, please once again  
8 state your name and occasional reference to slide  
9 numbers as you're going through your presentation. And  
10 we look forward to what you have to say. Thanks.

11

12 PRESENTATION BY DE BEERS RE SOIL AND VEGETATION:

13 MR. CAMERON STEVENS: Okay. Thank you.  
14 Thanks for being here. My name's Cam Stevens. I'm a  
15 biologist with Golder Associates in the Edmonton  
16 office. And I've been working on this project, on and  
17 off, since I started working at Golder. About five (5)  
18 years.

19 And we are -- John and I are really  
20 excited to share some of this work. It's -- it's --  
21 for us, it really challenged us and -- and before we  
22 begin, we want to thank ENR and their staff for some  
23 early feedback on this EIS. Their comments have  
24 certainly challenged us and -- and we believe that our  
25 conclusions are stronger because of the follow-up work

1 that has addressed some of these comments. Now, the  
2 dialogue of course, between Golder, De Beers, and ENR  
3 is ongoing.

4                   On slide number 2. These are some of  
5 the sections that are relevant to the terrestrial  
6 environment. There are actually more sections, they  
7 just didn't fit on to the slide. But the ones that  
8 we're going to focus on today, are Section 7, the key  
9 line of inquiry, caribou. Section 11.7, subject of  
10 note, vegetation. Subject of note, carnivore  
11 mortality, 11.10. Other ungulates, 11.11. And 11.12,  
12 species at risk in birds. There's another se --  
13 section I want to draw your attention to, and that's  
14 Section 5, and, specifically, 5.4, which provides a  
15 summary of -- of TK and related baseline summaries.

16                   I'm just going to begin here with the  
17 concluding statement for the terrestrial environment,  
18 and that is that the impacts from project will not have  
19 a significant negative influence on the persistence of  
20 terrestrial valued components. These include the  
21 vegetation community, caribou, musk ox, moose,  
22 wolverine, grizzly bear, and species at risk. This  
23 conclusion was based on a weight of ev -- on the weight  
24 of evidence from the analysis of primary pathways. And  
25 John went over this a little bit on Monday.

1                   The EIS embraced multiple assessment  
2 approaches and endpoints per species, and this was done  
3 to not only meet the terms of reference but was  
4 critical in reducing uncertainty in the predictions.  
5 The EIS also con -- considered a variety -- a suite of  
6 ecological conservatism throughout the assessment, and  
7 the idea was to -- to do this so that impacts would not  
8 be worse than predicted.

9                   This statement was also based on a  
10 number of mitigation and -- and measures being used to  
11 protect the environment. And in Appendix 7.1 there is  
12 a complete list of some of the -- of some of the  
13 mitigation and measures that De Beers is committed to.

14                  And, in summary, some of them include  
15 promoting natural re-vegetation and practising  
16 progressive reclamation as the mine develops. The  
17 application of water to roads to limit fugitive dust,  
18 enforcing speed limits, suspending blasting if caribou  
19 are within a da -- danger zone, using low po -- profile  
20 roads to facilitate movements of caribou, and the  
21 incineration of food waste on a frequent and regular  
22 basis to reduce holding time and any odours that might  
23 -- may occur on the site.

24                  5.5. So I'm kind of go -- going to  
25 break. Just an FI -- FYI here, that the structure of

1 today's presentation on the terrestrial environment is  
2 going to be a little bit different than what's in the  
3 agenda. I'm going to spend about twenty (20) minutes  
4 going over some key concepts in the assessment  
5 approach. And I'm going to go over some methods that  
6 apply to the subject of no vegetation, caribou,  
7 carnivore mortality, and other ungulates, so there's  
8 some re-occurring themes across all sections.

9 I'll spend about fifteen (15), twenty  
10 (20) minutes on vegetation, forty-five (45) minutes on  
11 caribou. The ma -- the reason why we're spending the  
12 majority of our time on caribou is that the terms of  
13 reference for caribou were quite extensive. And about  
14 fifteen (15) minutes for carnivore mor -- mortality,  
15 and twenty (20) to thirty (30) minutes for other  
16 ungulates and species at risk.

17 So again, a subject note, SON here, the  
18 SON is subject note. KLOI is key line of inquiry.  
19 Slide 6. The project is located at Kennady Lake about  
20 140 kilometres northeast of Lutsel K'ue and 280  
21 kilometres northeast of Yellowknife, 84 kilometres east  
22 of Snap Lake.

23 The project is in this transition eco  
24 zone ar -- surrounded by rolling tundra, boreal forest  
25 to the south, and a mosaic of large and small lakes

1 across the landscape. There are nu -- there are a  
2 number of lar -- large long eskers north of the project  
3 running in an east-west direction. To the north we  
4 have a characteris -- your -- the -- the rolling  
5 tundra. To the south we have the boreal forest and  
6 patches of spruce forest that you see here in this  
7 photograph.

8 Baseline surveys have recorded caribou,  
9 moose, musk ox, grizzly bear, wolf, upland birds, water  
10 -- waterfowl and a number of raptors over the years.  
11 John went over this on Monday. Our value components  
12 are vegetation communities, caribou, wolverine, grizzly  
13 bear, and wolf, moose, muskox, and species at risk.

14 A value component can be a species. It  
15 can also be a broader taxonomic group, like a ecosystem  
16 community.

17 Slide 7, going to slide 8. This --

18 MR. JOHN VIRGL: This is John Virgl  
19 from Golder Associates. Sorry, Cam, I didn't mean to  
20 interrupt you. I'd just like to make some  
21 clarification for a question that was raised on Monday  
22 during my presentation on the assessment approach.

23 And it asked a couple of questions about  
24 how cumulative effects were addressed in the EIS. And  
25 it fits in with what Cam is going to talk about here



1 because it is basically the pathways and -- and the  
2 measurement endpoints and the assessment endpoints.

3 And after some discussion with Alan  
4 Ehrlich, and reading the transcript on Monday, I have a  
5 better understanding now of what I was being asked, so  
6 I want to provide a little bit of clarification here.

7 I think some of the potential confusion  
8 arises from the way in which we screened certain  
9 effects determined to be under the category of  
10 secondary pathways, and whether we carried those  
11 forward in the cumulative effects assessment. Many of  
12 these secondary pathways represent smaller, or more  
13 detailed, scale interactions that occur within the  
14 context of primary pathways.

15 So with respect to the question by  
16 Julian Kanigan regarding whether we looked at the way  
17 in which the combination of changes to the environment  
18 from secondary pathways could result in cumulative  
19 project specific effects to assessment endpoints, the  
20 short answer is, yes. For example, in the vegetation  
21 subject note, six (6) secondary pathways were  
22 determined to result in minor changes to the  
23 environment and negligible residual effects on  
24 vegetation.

25 And these included physical changes to

1 soil and permafrost, physical changes from the winter  
2 access road footprint, physical damage to plants from  
3 being covered with dust, changes in soil quality from  
4 dust deposition and air emissions, dewatering of  
5 Kennady Lake can result in vegetation establishing on  
6 the lake bed, and introduction of invasive species.

7                   The changes from all these secondary  
8 pathways occur within the physical project footprint.  
9 The exception is changes from dust deposition and air  
10 emissions, which are predicted to extend up to 500  
11 metres to 1,000 metres from the project. The  
12 combination of five (5) of these six (6) pathways is  
13 not producing additional effects outside the actual  
14 physical disturbance of the -- from the project  
15 footprint. The small additional change of about 169  
16 hectares from dust and air emissions is predicted to  
17 have a negligible effect on vegetation.

18                   The key point here is that direct loss  
19 and fragmentation of vegetation ecosystems and plants  
20 from the project is a primary pathway. And the effects  
21 from this pathway are further analyzed and classified  
22 to determine significance.

23                   The combination of the project-specific  
24 cumulative effects from the secondary pathways on  
25 vegetation ecosystems and plant populations is captured

1 in a more detailed analysis of the assessment of the  
2 primary pathway. It's also important to understand that  
3 the assessment of effects to vegetation is completed  
4 from construction through closure, and post closure.

5 Now, with respect to question from the  
6 Board's cumulative effects consultant, Mr. Antoniuk,  
7 and the reference to the CEA agency practitioner's  
8 guide, and the question of whether effects predicted  
9 not to be significant are carried forward in the  
10 cumulative effects assessment, falls along the same  
11 lines of the reasons I just gave.

12 As I just mentioned, the key point is  
13 that although local-scale secondary pathways were  
14 determined to have negligible to insignificant effects,  
15 they are carried forward in the cumulative effects  
16 assessment because they're inherently considered in the  
17 analysis of primary pathways.

18 In the EIS, the objective was to be  
19 transparent and to demonstrate the smaller-scale  
20 relationships underlying effects assessed in the  
21 primary pathways. The assessment of secondary pathways  
22 was also done to evaluate the potential for smaller-  
23 scale effects to extend beyond the physical footprint  
24 of the project, and to make sure that we evaluated all  
25 potential impacts so that we could make reliable

1 predictions about what was likely to occur from the  
2 project, include -- including the potential for  
3 cumulative effects. Thank you.

4 THE FACILITATOR HUBERT: Chuck Hubert  
5 with the Review Board. Thank you very much for  
6 clearing that up. That's useful.

7 Please continue.

8 MR. CAMERON STEVENS: So what John is  
9 saying is essentially secondary pathways feed into the  
10 primary pathway assessment, and John presented this  
11 slide actually on Monday.

12 At the end of the day, we want to know  
13 what the effect is to the persistence of the caribou  
14 herd, the population of -- of grizzly bears, and to get  
15 at that -- that concept, get at that -- that question,  
16 we look at measurements or changes in habitat types,  
17 the area of habitat types, is there habitat loss. We  
18 look at changes in habitat quality, and changes to  
19 reproduction and survival.

20 Assessment of these measurement end  
21 points together provide the information needed to -- to  
22 answer the question whether or not the -- the project  
23 is affecting the persistence of the caribou population  
24 for a value component.

25 This -- and this -- this analysis takes

1 into consideration not only the project, but the  
2 existing environment, the natural environment, and the  
3 previous and existing number of developments that are  
4 on the landscape.

5                   Again the secondary pathways that John  
6 was talk -- was referring to are captured in the  
7 assessment of the primary pathways.

8                   Slide 9. We had multiple study areas  
9 for the assessment -- for the assessment; a local study  
10 area and regional study area is common practice for oth  
11 -- in the region for other mines in the region. And  
12 the study areas are similar in size to that being used  
13 at other mines in the region.

14                   The local study area, the LSA, was  
15 approximately 200 kilometres squared, and that is this  
16 orange square or rectangle on the finger -- on the --  
17 on the figure, and the LSA is used to measure direct  
18 effects, and immediate indirect effects from the  
19 project, such as these -- some of these secondary  
20 pathways.

21                   The local study area is the effects  
22 study area for vegetation and soils. It's where we --  
23 we conduct and coordinate quite a bit of field work.  
24 It also includes the winter access road, which is a 120  
25 kilometre winter access road extending from the project

1 going northwest to MacKay Lake.

2 The regional study area, identified by  
3 this purple square, is 5,700 kilometres squared, and  
4 for reference each of these grids on this figure is  
5 about 20 by 20 kilometres.

6 The intention of the RSA is to capture  
7 the maximum spacial extent of direct and indirect  
8 effects from the project where indirect effect --  
9 indirect effects may include noise, lights, sensory  
10 disturbances, for example.

11 The RSA is also used as the effects  
12 study area for wildlife value components such as moose,  
13 muskox, water fowl, raptors, and species at risk.

14 For assessing cumulative effects for  
15 species that have large home ranges, that have  
16 population units that extend beyond the regional study  
17 area, we used a larger cumulative effects study area.  
18 And for wolverine and grizzly bear, we used the Slave  
19 geological province. In this figure, that Slave  
20 geological province is identified by the black polygon.

21 The SGP, the Slave geological province,  
22 was 200 kilometres squared, and we chose this study  
23 area because it best met the terms of reference.

24 MR. ALAN EHRLICH: I'd just ask for a  
25 correction. I think you just said two hundred (200)

1 but I see a different number up there.

2 MR. CAMERON STEVENS: Two hundred (200)  
3 kil -- 200,000 kilometres squared.

4 MR. ALAN EHRLICH: Thank you.

5 MR. CAMERON STEVENS: Thank you. So  
6 this SGP area has been the focus of quite a bit of  
7 research on the animals, on grizzly bear and wolverine  
8 within this region. So this is a good reason why we  
9 should be using the study area.

10 Another reason is that this landscape  
11 has a high number of devel -- has a number of  
12 developments in this region. If you were to move the  
13 landscape to the right or to the left, you'd have fewer  
14 developments in your study area.

15 So it's an environmentally conservative  
16 approach to use the Slave geological province. The  
17 main point is that the Slave geological province, which  
18 encompasses an area of 200 -- 200,000 kilometres  
19 squared, best method terms of reference for the EIS.  
20 And so we are confident that this area provides  
21 ecologically relevant impact predictions for both  
22 wolverine and grizzly bear.

23 For your reference, the purple box here  
24 is a regional study area just to give you the scale of  
25 the -- or the size of the SGP compared to the RSA.

1 Slide 11. Processing cumulative effects  
2 to the persistence of caribou populations, there are  
3 multiple study areas delineated and determined using  
4 seasonal home ranges of the Bathurst and the Ahiak  
5 caribou herds.

6 We had seasonal home ranges for the  
7 summer, the northern -- northern migration, the rut and  
8 the winter range. And the figure to the right  
9 illustrates a number of different colour polygons. And  
10 each of these different colour polygons represents a  
11 seasonal home range.

12 And these seasonal home ranges were  
13 determined or based on thousands of collar locations  
14 collected over dozens of animals over a decade of study  
15 by ENR.

16 And what some of this ge -- analyses  
17 that generated this figure told us, was that the  
18 project is most likely to inter -- intersect or  
19 interact with the Gahcho Kue -- or the herd that's most  
20 likely to interact with the Gahcho Kue project is the  
21 Bathurst herd.

22 And also, there are many more  
23 developments in the Bathurst herd than there are in the  
24 Ahiak or Beverley herd. So with that said, most of the  
25 EIS and its presentation in this workshop emphasizes



1 effects to the Bathurst herd.

2

3 (BRIEF PAUSE)

4

5 MR. CAMERON STEVENS: So a big  
6 undertaking for this project was to first establish a  
7 database of previous, existing and foreseeable  
8 developments across the cumulative effect study areas.  
9 No one had done this before. This was a novel  
10 undertaking.

11 This is slide number 12. Thank you.  
12 There were numerous data sources for this exercise,  
13 INAC, the Resource Board, Natural Resource Canada. The  
14 majority of the developments that were identified were  
15 based on information, spatial and temporal information  
16 associated with land use permits.

17 We categorized about sixteen (16)  
18 different types of developments, ranging from mineral  
19 exploration sites, communities, fuel storage areas,  
20 lodges, outfitters, power plants, quarry pits, staging  
21 areas, transmission lines, all season roads, highways,  
22 winter access roads.

23 And part of this exercise was to  
24 determine what the footprint area for each of these  
25 developments were contributing to the landscape. And

1 we assigned footprint areas to some developments that  
2 we think overestimated the actual footprint. We -- we  
3 didn't know what the actual footprint was, but we -- we  
4 erred on the side of caution and -- and assigned larger  
5 values than -- than what may actually exist for some of  
6 these developments.

7                   For example, mineral exploration sites  
8 were assigned a footprint area of a 500 metre radius,  
9 which is approximately 79 hectares.

10                   So the footprint sizes vary, depending  
11 on the type of development. For communities and for  
12 mines, we actually used remote sensing information and  
13 digitized the actual footprint in a GIS.

14                   And one (1) other thing. We classified  
15 these developments as active or inactive. So a  
16 development that was active was -- was one (1) -- was  
17 one (1) where its permit was -- was active. It's a  
18 five (5) year permit. So during that time it was  
19 active, after which it was deemed inactive. It was  
20 still a permanent feature on the landscape but it was  
21 no longer active. And this is relevant for a zone of  
22 influence topic that I'll go over in a few slides.

23                   One (1) of the interesting things we  
24 found from this exercise was that mineral exploration  
25 sites are by far the most -- numerically by far the

1 most abundant feature on the landscape. Also, the  
2 footprint cover, if you add up all areas of all these  
3 footprints it's an incredibly small number. It's less  
4 than 1 percent of the annual home range for Bathurst  
5 caribou.

6 Slide 13. The next few slide -- the  
7 next few slides will briefly touch on the topic of  
8 habitat change and how it was assessed in the EIS.  
9 Change in habitat area for habitat types and for -- and  
10 for preferred habitat is a key measurement endpoint  
11 across all wildlife valued components.

12 Habitat was described using raster maps  
13 in GIS. So if you can imagine a paper map but on your  
14 computer comprised of thousands of little, tiny cells  
15 and each cell represents some type of information. And  
16 we did this to -- ri -- we assigned -- well, we  
17 described these cells two (2) ways.

18 First, we -- we described each cell on  
19 this large habitat map as either esker, forest, or  
20 heath tundra. And then we describe these cells  
21 according to their habitat suitability or the quality  
22 for a specific species, and we did this using models,  
23 habitat models, resource selection functions, where a  
24 small value approaching zero is not preferred habit,  
25 it's a poor quality habitat, and a value approaching 1

1 is -- is a preferred habitat or a high quality habitat.

2                   So upon creation of our habitat maps we  
3 looked at direct changes to habitat, and that was  
4 calculated from the deve -- development footprint. So  
5 when we overlay the development footprints on top of  
6 our habitat maps we remove the area underneath those  
7 footprints. Then we look at indirect changes. And  
8 indirect changes are calculated from -- from the  
9 effects of a zone of influence.

10                   Slide 14. The point of this slide here  
11 is to illustrate the habitat mapping method. In this  
12 example here we're looking at winter habitat for  
13 muskox. And on the left is the regional study area  
14 with the LSA boundary in the middle. This is the  
15 reference landscape and on the -- on the right is the  
16 application landscape. It's the landscape described by  
17 2010 baseline ap -- baseline conditions plus the  
18 project, so it's -- it's an application landscape.

19                   And so imagine this map here on the left  
20 comprised of thousands of little, tiny cells and each  
21 cell is assigned a score or a rank or a category. And  
22 then based that value we identified the dark green  
23 coloured -- the -- the -- we assign the higher ranking  
24 cells as dark green colours.

25                   So the dark gree -- dark green colours

1 represent high quality habitats. The brown colours,  
2 which here are lakes, represent poor quality habitat.  
3 And the take-home message here on the left is that  
4 there's a lot of high quality habitat for muskox in the  
5 RSA.

6                   Now when we add our development layer  
7 and their associated zones of influence we see changes  
8 in the colour of the cells around developments. This  
9 is a mineral expira -- this is -- this is an effect of  
10 a mineral exploration site. This is the effect of the  
11 project. In here we can see the effect of the road on  
12 the -- on the figure on the right.

13                   And this slide is a visual  
14 representation of 8 percent of cumulative change in  
15 high quality habitat from a reference landscape to an  
16 application landscape. An assumption across all our  
17 analyses were that the -- were -- was that the  
18 successional stage remained constant from one (1) --  
19 one (1) condition or one (1) scenario to the next. And  
20 we think that's a fair assumption, given the fact that  
21 this is the Arctic. Environments are harsh and -- and  
22 succession moves at an incredibly slow rate.

23                   I'm just at slide 15. I'm going to go  
24 over the concept of the zo -- of a zone of influence.  
25 Again, the zone of influence measures indirect effects

1 from -- from active developments, developments where  
2 their permit is active from -- they -- they have --  
3 there is permit from 2000-2005. That development  
4 during that time period is active, after which, it is  
5 inactive.

6                   And the zone of influence can extend  
7 from 1 to 15 kilometres from active developments. It's  
8 species specific. Some people -- some people -- some  
9 species, excuse me, are more sensitive to sensory  
10 disturbances than others. It's disturbance specific.  
11 Operating mines, communities obviously have a larger  
12 zone of influence than, say, a small remote lodge on  
13 the landscape or even a mineral exploration site.

14                   And it's not that animals are completely  
15 avoid or do not occur at all whatsoever around a mine  
16 or a mineral ex -- mineral exploration site. We know  
17 they come through communities on occasion. We know  
18 they come very close to the mine. But it's -- it's  
19 essentially describing avoidance where the probability  
20 of occurrence is lower near the project than it is  
21 outside the zone of influence.

22                   How does it work in the assessment? We  
23 have our habitat map and then we overlay in the GIS --  
24 we overlay our disturbance footprint and the assigned  
25 zone of influence and within the zone of influence, in

1 the circle here, cells are reduced. For example,  
2 within 0 to 1 kilometres of the footprint, in this zone  
3 right here, cells are reduced in quality by 75 to 100  
4 percent and the result is this mustard green colour.  
5 From 1 to 5 kilometres, cells are reduced about 25  
6 percent. The result is this lighter green colour.

7                   And the key assumption in our analyses  
8 for all species was that mineral exploration sites were  
9 active for the entire -- entire five (5) year permit  
10 period. But we know that isn't necessarily the case.  
11 Mining operations may only go for a month. They may  
12 only go for a year or two (2). But we assume, for that  
13 entire permit period that these camps were active for  
14 that entire time. And this actually had profound  
15 influences on -- on our effect sizes in the assessment  
16 of other value components.

17                   That pretty much sums -- sums up some of  
18 our key concepts and our approach to the assessment  
19 that is applicable to -- to -- to all sections in the  
20 terrestrial environment.

21                   I can take some questions now, or I can  
22 jump right into the vegetation assessment.

23

24 QUESTION PERIOD:

25                   THE FACILITATOR HUBERT: Chuck Hubert,

1 Review Board. If you're comfortable with questions, we  
2 can certainly take a couple.

3 Any parties with questions?

4

5 (BRIEF PAUSE)

6

7 THE FACILITATOR HUBERT: Excuse me,  
8 could you please come to the table and speak in front  
9 of a microphone? And state your name first, please.

10 MS. VELMA STEVENBERG: Yes, I started.  
11 I'm very sorry. I didn't expect to have any questions  
12 but I have just a couple. What GIS software do you use  
13 for your analysis, please?

14 MR. ALAN EHRLICH: Could you please  
15 start with your name?

16 MS. VELMA STEVENBERG: Oh. I -- I'm  
17 sorry. Velma Stevenberg, AANDC minerals division.

18 MR. CAMERON STEVENS: You bet. I can  
19 answer that. I believe it was ArcMap 9.2 at the  
20 beginning, but then I think -- but at some point we --  
21 we -- we upgraded to 9.3.

22 MS. VELMA STEVENBERG: One (1) more  
23 question. I noticed that you use raster instead of  
24 vector information. Was that just a matter of being  
25 able to produce the information in a more timely



1 manner? Because I know how much longer it takes to  
2 input vector information but I would rather...

3 MR. CAMERON STEVENS: That's a good  
4 question. Oh, my name is Cam Stevens, with Golder.  
5 It's a good question and this is the standard approach,  
6 not just for -- for impact assessments, but in similar  
7 types of studies you would see in the academic  
8 literature.

9 And I think the reason why is that it's  
10 -- it's not -- I found working with vectors can be --  
11 the analysis can be a little clumsy and -- and it --  
12 it's easier to summarize information. And it -- and  
13 when you're look -- working across massive geographic  
14 areas and -- and you have multiple data layers, this is  
15 -- from a data management perspective, this is the way  
16 to go. Yeah.

17 THE FACILITATOR HUBERT: Chuck Hubert,  
18 Review Board. Any further questions on the topic thus  
19 far?

20 MR. STEVE ELLIS: Yeah, Steve Ellis  
21 here. Just back to slide 3, if you can go back there.  
22 I think it's slide 3. Yeah, this is the one.

23 So I'm just curious, like the -- the  
24 question that the Review Board itself is asking itself  
25 is: Does this project have any significant adverse

1 impacts upon threshold value components?

2 The language that De Beers has used here  
3 has said, Will not have a significant negative  
4 influence on the persistence of terrestrial evaluated  
5 components.

6 Are we to take that to mean the same  
7 thing as no significant adverse impacts, or does that  
8 mean something different?

9 MR. CAMERON STEVENS: The answer is  
10 "yes".

11 MR. STEVE ELLIS: They are the same?  
12 Okay.

13 MR. CAMERON STEVENS: The same.

14

15 (BRIEF PAUSE)

16

17 MR. CAMERON STEVENS: Our statement  
18 sort of follows some concepts in the conservation  
19 literature, and maybe John could elaborate on that.

20 MR. JOHN VIRGL: John Virgl with  
21 Golder. Steve, it's -- you know, it's -- it means the  
22 same thing, okay. In -- in the EIS you probably see it  
23 stated a number of different ways, maybe two (2) or  
24 three (3) different ways.

25 Sometimes it'll have -- it's just in the

1 writing, you know, you -- you don't want to -- writers  
2 don't like to use the same sentence structure over and  
3 over and over again, but it is the same.

4                   The assessment endpoint persistence is -  
5 - is really a -- it's a -- it's a function of -- of  
6 maintaining resilient populations, and it's central  
7 concepts of con -- in conservation biology and resource  
8 management. And therefore, it's -- it's conserve --  
9 it's conservative and appropriate to meet the terms of  
10 reference, and for the EIS.

11                   MR. ALAN EHRLICH: It's Alan Ehrlich  
12 here. I've just a couple of minor questions. One (1)  
13 of them has to do with the -- the terminology aspect  
14 that you were just speaking to.

15                   So you were talking about maintaining  
16 viable populations if then you had a population that  
17 were reduced by half, but the remaining half was still  
18 viable. I presume that would still be considered a  
19 persistent population.

20                   I -- I don't know whether or not that  
21 would be considered a significant impact. I guess it  
22 would depend on -- on a number of other things.

23                   But I -- I think I understand the -- the  
24 question, and I've -- I've heard your answer a bit, and  
25 it's something that -- that we'll -- we'll certainly

1 look at, and if we have other questions, maybe IRs are  
2 -- are one (1) way we could get into clarifying the --  
3 the terms a bit. But I -- I do appreciate your effort  
4 to try to -- to clarify that one (1).

5 I've got two (2) other questions having  
6 to do with -- well, one's about terminology.

7 Cam, your presentation, you talked about  
8 footprint. It's always hazardous to discuss footprint  
9 without clarifying if you're talking about the -- the  
10 direct footprint or the ecological footprint because of  
11 the potentially vast difference between the two (2).

12 My read on your slide, when you say this  
13 is less than 1 percent of the home range of the  
14 Bathurst caribou herd, it looks like you're talking  
15 about direct footprint.

16 Is that correct?

17 MR. CAMERON STEVENS: Cam Stevens,  
18 Golder Associates. Yeah, you're correct, Alan. The  
19 direct -- the -- the footprint is the direct footprint.  
20 The zones of influence that -- that we used capture  
21 possibly something else that you're describing here.

22 MR. ALAN EHRLICH: Thanks, that helps.  
23 Also, can you go back to slide 14, please?

24

25 (BRIEF PAUSE)

1 MR. ALAN EHRLICH: So where it says on  
2 the bottom of slide 14, "about 8 percent cumulative  
3 change for the above assessment," do you mean for the  
4 purposes of illustration this is what an 8 percent  
5 change would look like, or are you saying about 8  
6 percent of the regional study area has been affected in  
7 a cumulative perspective as one (1) of your results?

8 MR. CAMERON STEVENS: So good question.  
9 Cam Stevens, Golder Associates. I'm going to that  
10 figure 14 here. People online probably can't see this,  
11 but -- okay. My -- my -- I guess my point is it's --  
12 it's 8 percent change in high quality habitat from here  
13 to here. That's what that 8 percent represents.

14 MR. ALAN EHRLICH: And are you saying  
15 that's one (1) of your findings within the regional  
16 study area or are you just using that as an example of  
17 how the visuals work?

18 MR. CAMERON STEVENS: Okay. Yes,  
19 John's going to be talking about other ungulates and  
20 this exact same slide this afternoon, so.

21 MR. ALAN EHRLICH: Okay. Well, I've  
22 got a couple other questions about this, but I'd -- I'd  
23 rather then wait just to -- to be sure I understand  
24 where you're headed with this before I spend any more  
25 time on it now. Thanks.

1 MR. STEVE ELLIS: Hey, Chuck, can I  
2 fire away? Okay.

3 Just a bit of a followup -- Steve Ellis  
4 here, with the Treaty 8 Tribal Corporation -- just with  
5 respect to the -- the language, significant and  
6 negative influence on the persistence. Thanks, Alan,  
7 for jumping in here. That's exactly what my concern  
8 is, is that the focus here is primarily on resilience.

9 And I guess the argument could be made  
10 if a wildlife population or whatever population of  
11 biotic being remains resilient, that's not a  
12 significant negative impact, but for people who use  
13 that resource on a regular basis the -- the  
14 availability of those resources for harvesting would be  
15 a significant adverse impact if they were changed or if  
16 it reduced people's ability to access those resources.

17 So you could still have a valued  
18 component, let's just say caribou, that is persistent  
19 and maintains its resilient -- resilience but is not as  
20 available as it was -- once was to people who harvest  
21 them, and that would be considered a significant  
22 adverse impact, certainly for the Akaitcho Dene.

23 So I think focussing entirely on  
24 resilience is not capturing the entire scope of what  
25 might be a significant adverse impact, certainly for

1 the First Nations sitting around the table.

2                   Yeah. And I guess just to follow up on  
3 what Alan was mentioning. He was mentioning sort of an  
4 extreme scenario, if 50 percent of a population was --  
5 the numbers were reduced but that remaining 50 percent  
6 was still persi -- able to persist or -- or be viable.

7                   Again, from the perspective of the  
8 Akaitcho Dene, I mean a 5 percent decrease in the  
9 Bathurst herd, even if that herd remains resilient and  
10 able to recover, would be a short-term, potentially a  
11 ten (10) year short-term significant adverse impact.  
12 So I think those are things that need to be considered,  
13 that certainly from the First Nation perspective, we're  
14 not entering this only as -- entering into the  
15 conversation purely from the perspective of the  
16 resilience of populations in the absence of human  
17 interactions with those populations.

18                   MR. JOHN VIRGL: Thank you, Steve.  
19 Those are -- those are good comments. John Virgl, with  
20 Golder. The other assessment endpoint we use in the  
21 wildlife assessment is the continued use by -- of --  
22 the continued opportunities for use of wildlife by  
23 traditional and nontraditional land users.

24                   So there's two (2) parts to the  
25 question. One (1) is -- is addressing the -- the

1 persistence of the population and the resilience of the  
2 population. The other one (1) looks at what that means  
3 to the availability of animals. And we assess how the  
4 availability of animals can change that could affect  
5 the use by human land users, both traditional and  
6 nontraditional.

7 THE FACILITATOR HUBERT: Chuck Hubert,  
8 Review Board. Thanks for that response. Further  
9 question on the...

10 (BRIEF PAUSE)

11

12 THE FACILITATOR HUBERT: And -- Chuck  
13 Hubert -- if you can state your name first, please.

14 MR. FRED SANGRIS: Fred Sangris,  
15 Yellowknives Dene. Very interesting on the habitat and  
16 wildlife in that area that's brought up here.

17 The Dene Nation, in 1974, did a study of  
18 wildlife and habitat study. Those habitat study's  
19 documents are still available. I looked at them many  
20 years ago. And because I was a barren land hunter and  
21 trapper, I -- I used to drive sled dogs in the same  
22 area. I spent ten (10) years living in the same area,  
23 between Great Bear and North Great Slave Lake,  
24 especially to the east arm, all along the treelines.

25 The most wildlife habitat is right --



1 right with Artillery Lake and to MacKay Lake and to  
2 what we call Kuelode (phonetic). "Kuelode" in my  
3 language is -- what do you call that sanctuary over to  
4 the east -- Thelon and -- what we call that Kuelode.  
5 Because most white -- white trappers -- white fox  
6 trappers like myself in the early 70s and 80s, we spent  
7 a lot of times there.

8 Concentrated with many of the hunters in  
9 1975, probably about fifteen (15) trappers in that area  
10 were working there. We focussed most of our -- our  
11 harvesting to the east of that same area. And because  
12 that was a rich wildlife habitat. And we were told as  
13 teenagers that if we ever run out of caribou or food,  
14 go east. You'll find musk ox, you'll find rabbit,  
15 you'll find all kinds of wildlife in that area.

16 And that's the reason why I took up the  
17 -- the research on Dene Nation's habitat and land use.  
18 And I did find a very rich habitat according to their  
19 interviews with the Elders at that time. Many of those  
20 Elders are gone now.

21 But when I look at that, you're talking  
22 about cells of -- many, many cells in that area. Are  
23 you saying that with the Kennady -- Kennady Lake  
24 project and two (2) other sites below it, are -- they  
25 don't have any value in habitat?

1                   Is -- is that what you're saying? Thank  
2 you.

3                   MR. CAMERON STEVENS:   Excuse me. Are -  
4 - are you referring to a specific slide? That slide?  
5 Okay.

6                   MR. FRED SANGRIS:    Yes.

7                   MR. CAMERON STEVENS:   This is just an  
8 ex -- this is just for the regional study area.  
9 There's certainly other habitats and -- and -- and I  
10 agree with you, there's probably better habitats to the  
11 east. There could be to -- to the east and other  
12 locations outside of this RSA.

13                   This is just a -- really, what it comes  
14 down to, is a mathematical exercise to understand  
15 losses from footprints, from zones of influence, and --  
16 and it's all relative. We're just describing habitat  
17 within this regional study area. And so, for musk ox,  
18 when I -- when I talk about it's comprised of thousands  
19 of little cells, it's -- it's a thousand little cells  
20 on your computer screen, using a GIS software package.  
21 And we just needed it described or quantified in some  
22 way so that we can draw comparisons between these two  
23 (2) types of landscapes.

24                   I'll go -- this is just an example and I  
25 just wanted to kind of go over how we did the

1 assessment in other sections. Later on this morning,  
2 and later today, we're going to spend more time on musk  
3 ox. We'll spend more time on -- on grizzly bear.  
4 We'll spend more time on -- on caribou and go over --  
5 go over their habitats and -- and those assessments in  
6 much more detail. And I'm thinking that some of this  
7 material will answer your questions.

8 MR. FRED SANGRIS: Thank you.

9 MR. CAMERON STEVENS: Yeah.

10 THE FACILITATOR HUBERT: Chuck Hubert.

11 Thanks very much. We have about ten (10) minutes  
12 before lunch. How would you like to proceed?

13 MR. CAMERON STEVENS: I -- if  
14 everyone's okay, I would be happy to go forward with  
15 the vegetation section. Okay. Break...?

16 MS. VERONICA CHISHOLM: Veronica  
17 Chisholm, from De Beers. We will leave that open to  
18 the -- to Chuck and panel to decide on how best to  
19 proceed. But De Beers would be happy taking a break if  
20 people would like a break.

21 THE FACILITATOR HUBERT: Chuck Hubert,  
22 Review Board. Let's take a break, in that case. I'll  
23 sense the mood of the crowd and then I'll take a -- a  
24 view of the consensus here.

25 Okay. So since we're breaking a little

1 early, can we reconvene at 1:00, please. See you then.

2 Bye.

3

4 --- Upon recessing at 11:47 a.m.

5 --- Upon resuming at 1:15 p.m.

6

7 THE FACILITATOR HUBERT: Chuck Hubert,  
8 Review Board. If -- I hope we all had a successful  
9 lunch, or tasty at least.

10 If we -- we can get started again, we'll  
11 continue with -- with De Beers, and I understand they  
12 have some discussions be -- prior to launching back  
13 into the presentation. Please proceed.

14 MR. JOHN FAITHFUL: Thanks, Chuck. Oh,  
15 sorry. Thanks, Chuck. John Faithful, Golder  
16 Associates. I'm just going to respond to some  
17 comments, and just follow up with Figure 14 -- or on  
18 page 14 of your slide show there, please, Cam.

19

20 (BRIEF PAUSE)

21

22 MR. JOHN FAITHFUL: Thanks, Cam. So I  
23 just want to point out that this figure is a visual  
24 representation of the influence of the project, and  
25 other developments, on the use of habitat by wildlife.

1                   It shows that the project and other  
2   considered developments influence the habitat that  
3   wildlife may use, or prefer. The change in colour does  
4   not indicate a loss of habitat, but a change in the way  
5   that wildlife may use the habitat.

6                   The dark green colour is habitat that  
7   wildlife would prefer, the altered colour represents a  
8   zone of influence or habitat that wildlife may chose to  
9   avoid due to factors such as development or the fact  
10   that the habitat is not -- is not preferen -- not  
11   preferred by specific wildlife. The habitat does not  
12   change as a result of those colour -- the -- the two  
13   (2) figures that you see presented there on the left  
14   and right.

15                  I want to remind people that the EIS  
16   predicts that there is no effect on the availability of  
17   wildlife to hab -- to hunters. And we're going to  
18   speak more specifically around wildlife effects, around  
19   the prediction of the wildlife effects later this  
20   afternoon.

21                  Thank you, Chuck.

22                  THE FACILITATOR HUBERT:   Chuck Hubert.  
23   Thanks for that clarification. And we can proceed  
24   then.

25                  MR. CAMERON STEVENS:    I was just

1 wondering if I could provide some clarification. My  
2 name is Cam Stevens, Golder Associates. Thanks,  
3 Andrew.

4 I just want -- want to make some  
5 clarification to Alan and Steve's comments earlier. I  
6 want to start off by saying in response to Alan's  
7 comment to there being a 50 percent change, that will  
8 not happen for any species, and we can talk about --  
9 more about this in this afternoon during sub -- sub --  
10 in subsequent slides.

11 The second --

12 MR. ALAN EHRLICH: Just -- just before  
13 you go into your second point -- Alan Ehrlich here.  
14 Sorry. My -- my suggestion wasn't that there would be  
15 any kind of a 50 percent change. I was just trying to  
16 say, theoretically, you know, some changes in abundance  
17 may not have bearing directly on persistence. I was  
18 just using the number 50 percent to exaggerate a point  
19 for the sake of clarity.

20 I certainly didn't mean to suggest that  
21 the Gahcho Kue project would in any way reduce the  
22 abundance of any species by 50 percent in the local or  
23 regional subject area. I apologize if I gave you that  
24 impression.

25 MS. VERONICA CHISHOLM: Thanks, Alan,

1 we appreciate -- Veronica Chisholm from De Beers -- we  
2 appreciate that clarification.

3

4 (BRIEF PAUSE)

5

6 MS. VERONICA CHISHOLM: Veronica  
7 Chisholm from De Beers. We're going to continue with  
8 the presentation. The next presentation is on  
9 vegetation, and Cam Stevens is going to provide that.

10

11 CONTINUED PRESENTATION BY DE BEERS RE SOILS AND  
12 VEGETATION:

13 MR. CAMERON STEVENS: Thanks, Veronica.  
14 Cam Stevens, Golder Associates. We are on slide 16,  
15 and this is kind of where we are in the presentation.  
16 I anticipate about fifteen (15) to twenty (20) minutes  
17 going over the subject of no vegetation. And following  
18 that will be caribou.

19 So the subject of note vegetation is  
20 located in Section 11.7 of the EIS. And as I begin  
21 each section I'm going to start with some directions or  
22 terms that were provided in the terms of reference.  
23 For example, in Section 5.2.12 it is stated that:

24 "The EIS must assess the probability  
25 of introducing foreign or invasive

1 species, must assess the potential of  
2 dust to adversely affect vegetation."

3 It's important to note that both of  
4 these terms or directions were addressed as secondary  
5 pathways, but together they were captured in the  
6 primary pathway of direct loss and fragmentation of  
7 vegetation ecosystems.

8 Slide 19. The baseline was -- was based  
9 in part on thirty-four (34) detailed plots within the  
10 LSA and RSA that describe soil types and generated a  
11 list of plant species in the -- in the RSA. And based  
12 on this detailed information compiled with additional  
13 information collected during ground -- ground  
14 inspections and reconnaissance level surveys, we  
15 completed terrain, soils, and vegetation mapping for  
16 the LSA and the RSA.

17 This approach is consistent with other  
18 mines in the region. We also followed up with surveys  
19 specifically for rare plants and traditional use plants  
20 in 2004 and 2005, and we mapped rare species habitat  
21 potential in the GIS. And we used a ranking system  
22 that compared -- that considered habitat requirements  
23 to support the listed plant species. And -- and rare  
24 species here were defined by GNWT's general status  
25 ranks of wild species as well as a book by -- by



1 McJannet published in 1995 as well as COSEWIC listings.

2 I'll just briefly go over some of our  
3 results from some of this extensive work. There are  
4 twenty-one (21) traditional land -- traditional use  
5 plants that were observed or identified, and these were  
6 identified with the assistance of the Lutsel K'e Dene  
7 First Nation. No rare plant species were detected.  
8 And, importantly, no invasive or exotic species were  
9 detected during baseline surveys. And -- and as a side  
10 note, to date, there have been no invasive or exotic  
11 species recorded at Snap Lake.

12 Slide 20. This is the LSA, the local  
13 study area. It's approximately 200 kilometres squared  
14 in area, about 14x14 kilometres. In the centre of this  
15 slide is the project camp and in -- to the left and to  
16 the northwest and east of that camp is Kennady Lake.

17 There are two (2) dominant types of  
18 vegetation cla -- ecosystem classes in the LSA, and in  
19 this figure those are the -- the light green polygons  
20 and the dark green polygons. So we have two (2)  
21 dominant types of ecosystem classes here. One's a  
22 scrub birch - Labrador tea unit and the other one's a  
23 scrub birch - cloudberry -- cloudberry unit.

24 There are other less common ecosystem  
25 classes or vegetation types in the LSA. And, for

1 example, I'm just going to highlight two (2) of them  
2 here. On the bottom right-hand corner is a willow  
3 nagoon shrub. This is a riparian-type of ecosystem  
4 class. This -- this class will not be affected by the  
5 project.

6                   And to the left we have a water sedge -  
7 narrow-leaved cotton-grass fen unit indicated by this  
8 dark blue colour, these dark blue polygons. And I'm  
9 just highlighting this -- this area right now because  
10 some of this area will be -- will be altered from some  
11 flooding from the operation of the project. Third  
12 column, fourth row is where the arrow is pointing.

13                   So there are common -- there -- there  
14 are common ecosystem classes, vegetation types in the  
15 LSA, and then there are less common vegetation types.

16                   The baseline work included measurements  
17 of metal concentrations in soil and selective plants in  
18 the LSA. And this assessment considered a range of  
19 plant species. For example, berries, willows, and  
20 lichens. These were species that had broad occurrence  
21 in the area. They are valid for human and/or wildlife  
22 consumption and -- and have value as a reclamation  
23 species as well. That's slide 21.

24                   Going to slide 22. Before I get into  
25 the details of some of the assessment, I'm going to

1 provide some of the summary statements in the subject  
2 of note section. The threshold footprint again was 393  
3 hectares, but in summary the project should not result  
4 in significant impacts to the persistence of  
5 vegetation, ecosystems, listed plant species, and the  
6 use of traditional plants.

7                   There are two (2) other pa -- secondary  
8 pathways that were assessed. These were captured,  
9 essentially, in the sum -- this first summary statement  
10 at the top of this slide. The potential for  
11 introduction of invasive species will have a minor  
12 influence on vegetation, ecosystem composition in the  
13 EIS. This is a secondary pathway and it's a secondary  
14 pathway for a number of reasons.

15                   First of all, there is a low incidence  
16 of invasive species in the Arctic and there's been none  
17 recorded at the camp or at Snap Lake to date, so far.  
18 Also, climatic conditions in the Arctic are harsh and  
19 supports only slow going envi -- excuse me, supports  
20 only slow growing environments for -- for plants.

21                   In our -- other things to consider, such  
22 as environmental design features that De Beers is  
23 committed to, such as cleaning equipment prior to  
24 transportation and this will limit the introduction of  
25 -- of -- of non-natives. As well as monitoring into

1 the future for the ef -- monitoring vegetation and dust  
2 into the future.

3                   This last point is -- summary statement  
4 is that changes in vegetation in communities due to  
5 dust depositions and air emissions are -- are  
6 anticipated to have -- to be minor relative to baseline  
7 conditions. And I'll expand on this point in a few --  
8 in a few slides and go over some of Dennis Chang's re -  
9 - results that were reported this morning.

10                   So with regards to the assessment  
11 itself, two (2) spatial data -- two (2) databases were  
12 used. The vegetation was described two (2) different  
13 ways. For the LSA we used this dominant ecosystem  
14 classification. And this classification is consistent  
15 with that being used at other mines in the region. And  
16 we also -- so this is something that De Beers  
17 developed. A broad ecosystem unit classification was  
18 also used. This was used for the RSA and this was  
19 based on a pre-existing classification by Matthew et  
20 al.

21                   So once we have the vegetation around  
22 the site mapped, we applied a project footprint to  
23 understand relative changes in ecosystem un -- units,  
24 relative changes in traditional land use plants. And  
25 some of the results from this assessment include that 2

1 percent of existing threshold vegetation will be  
2 altered in the LSA. Approximately 3 percent -- 3  
3 percent cover of ecosystems that's -- that are known to  
4 support traditional use plants will be altered. And 4  
5 percent cover of the systems that -- that may support  
6 rare plants will be altered.

7 I'm going to talk about rela -- we talk  
8 about -- a lot about relative changes and absolute  
9 numbers. Relative changes were largest for water  
10 sedge, for the water sedge, narrow-leaved cotton-grass  
11 fen unit. Approximately 8.7 hectares of available 47.4  
12 hectares will be altered from flooding. And it's  
13 important to note that, although uncommon at the LSA  
14 scale, this unit, this ecosystem unit is -- is more  
15 common and less restricted in its distribution at the  
16 RSA scale.

17 So moving forward to slide 24. Now  
18 these two (2) ecosystem units are -- will be altered  
19 the most in terms of hectares affected. And we have a  
20 -- a scrub birch - cloudberry -- cloudberry unit, 128  
21 hectares of it will be altered. But because it's so  
22 abundant in the RSA only .7 percent of it is altered at  
23 the LSA scale.

24 Similarly, we have a scrub birch -  
25 Labrador tea unit, approximately 176 hectares of it

1 will be altered, but rel -- the relative change is very  
2 small. It's less than 1 percent.

3 Slide number 25, please. Some of this  
4 material here was presented earlier by Dennis Chang.  
5 And again, he can elaborate on some of the details and  
6 conservat -- conservatisms that were considered in the  
7 models that were used for air quality modelling.

8 Again, a key -- a key assumption that  
9 Dennis described was that dust deposition for haul  
10 roads in winter was assumed to be the same as summer,  
11 under conditions of no water applications. You're not  
12 going to apply water to -- to winter roads in the  
13 winter for obvious reasons.

14 And this figure here illustrates the  
15 predictions for total suspended particulate deposition  
16 around the mine site. So this is Figure 11.4-15 in the  
17 EIS. And each of these grids in this figure represent  
18 approximately 2x2 kilometres. And the pink and purple  
19 polygons represent predictions for deposition. The  
20 lighter polygons represent lower or smaller deposition  
21 rates. The dark purple one represents the highest  
22 deposition rate.

23 And the dep -- the highest dep --  
24 deposition rates will be near haul roads -- within a  
25 hundred metres of haul roads. So for the most part,

1 des -- deposition is largely confined to the -- to the  
2 development area boundary. But they will extend  
3 approximately 1 to 2 kilometres from the lan -- from  
4 the land use -- land use area boundary, the project  
5 footprint.

6                   So with that said, these numbers were --  
7 were assessed for -- were considered in assessing  
8 changes to the properties of the soil and those -- that  
9 modelling work predicted that there'd be minor changes  
10 to elemental concentrations in the soil, and that these  
11 concentrations would remain below CCME -- the Canadian  
12 Council for -- of Ministry of Environment guidelines.  
13 CCME guidelines.

14                   And -- and given these results, this --  
15 this dust deposition was determined to have negligible  
16 effects on -- on vegetation. And that's why this was  
17 classified as a secondary pathway.

18                   There were similar predictions, as  
19 Dennis noted -- described this morning for potential  
20 acid input -- PAI. Except that the spatial extent of  
21 PAI will be a little bit smaller than that for dust.  
22 And about 170 hectares outside the development area  
23 boundary will receive PAI loads above recommended  
24 benchmarks. Just above recommended benchmarks.

25                   And so we could add that to the

1 footprint and redo some calculations. And -- and the  
2 point is that the changes in effect size will still  
3 remain small. For example, instead of a 2 percent  
4 change in veg -- vegetation at the LSA scale, the  
5 change would now be approximately -- well no more than  
6 2.5 percent. So it's -- it's a very small -- it's not  
7 going to affect the outcome of the assessment in any  
8 way.

9                   And that, more or less, sums up the --  
10 the section subject of note of vegetation. We can  
11 proceed into caribou, or I'd be happy to take some  
12 questions.

13                   THE FACILITATOR HUBERT: Chuck Hubert,  
14 Review Board. We have time for one (1) or two (2)  
15 questions, perhaps. Going once, twice, three (3)  
16 times.

17

18                   (BRIEF PAUSE)

19

20                   THE FACILITATOR HUBERT: Okay. Let's  
21 proceed with caribou then, please.

22

23 PRESENTATION BY DE BEERS RE CARIBOU:

24                   MR. CAMERON STEVENS: This is a key  
25 line of inquiry. The majority of this presentation



1 will focus on caribou for the reason that the terms of  
2 reference was extensive for caribou. And I'll go over  
3 some of those terms of reference in this section -- in  
4 a -- in a moment. In a few slides. Caribou is Section  
5 7 in the EIS.

6 On to page 28 -- or slide 28, sorry.

7 MR. ALAN EHRLICH: Just to -- to  
8 clarify for the remote participants. So that's slide  
9 28, and it's on the file that's on the Review Board  
10 website described as "Day 3 air quality and  
11 terrestrial," in the title. Slide number 28. And Cam  
12 has been doing a great job of keeping everyone abreast  
13 of what page you're on, but -- 28 is -- is where this  
14 one starts. Please keep up the good work.

15 I didn't even have to hold up my -- my  
16 sign with the word "Page number," with the question  
17 "Page number" on it, at any point. And so far you're  
18 the only presenter who's -- who's gone so far out of  
19 your way to accommodate the -- the remote audiences.  
20 We do appreciate it.

21 MR. CAMERON STEVENS: Thanks, Alan. So  
22 I have four (4) slides here that -- that I'm going to  
23 read right through them, and basically summarize the  
24 directions, the terms in the terms of reference. There  
25 are more terms that -- there are other terms that I

1 left out. I just tried to provide a snapshot of the  
2 important ones. And there are certainly a lot of terms  
3 to follow, and I'm going to go over them, I guess, as  
4 quickly as possible.

5                   In the terms of reference, the EIS must  
6 detail any effects on caribou as well as their  
7 significance and likelihood. The geographical scope  
8 must include the potentially affected portion of the  
9 range of any herd that may be affected, including but  
10 not restricted to the vicinity of the mine site, the  
11 access road from MacKay Lake, and the Tibbitt-Contwoyto  
12 Road.

13                   The EIS must include observations from  
14 existing diamond mines, and -- and show how they've  
15 been -- they've been used to establish how far from the  
16 mine site caribou show behavioural changes. And we've  
17 -- and we sort of captured this in our zones of  
18 influence and assessment of indirect effects.

19                   The next -- next slide, number 29, or  
20 page 29. The following information must be included in  
21 the caribou analysis: information on car -- on all  
22 caribou herds with ranges that include the area of the  
23 proposed development, as well as the Tibbitt-to-  
24 Contwoyto Road. And the herds are the -- the Bathurst  
25 herd, the Ahiak, and -- and the Beverly herds, but the

1 EIS and most of this presentation is going to focus on  
2 effects to the Bathurst herd.

3                   The analysis must include an estimate of  
4 the amount, absolute and relative, of habitat loss,  
5 change, degradation, or effect of habitat loss. In  
6 other words, loss of preferred habitats or high quality  
7 habitats for each potentially -- potentially affected  
8 herd for all life sta -- stages resulting from the  
9 development, estimate of the existing habitat  
10 fragmentation at the landscape, seasonal range and  
11 local -- and local scale, the expected increase and its  
12 possible effects on each caribou herd per life stage.  
13 And we did this even -- even though knowing that there  
14 are very low levels of development in the study years  
15 that are far below any ecological threshold.

16                   Page 30. EI -- EIS must include  
17 analysis of ways the development may influence the  
18 energy balance of caribou under different seasonal  
19 conditions, and to what extent this may effect birth  
20 rates. And this was a challenging one to address, but  
21 it was -- but it was -- but I mean, for a scientist it  
22 was a fun one. It was -- we really pushed the envelope  
23 here.

24                   The identification of all possible  
25 sources for increased caribou mortality, and I'll go

1 over this in a few slides. The identification of  
2 potential changes to predator-prey dynamics, and how  
3 this may affect the herds. This is a primary pathway  
4 in the -- in the assessment, and -- and it was  
5 qualitative -- qualitatively discussed, and I won't go  
6 into too much details on this -- on this pathway today.

7               The last one here is the identification  
8 of all cumulative effects of other past, current, or  
9 reasonably foreseeable future developments with the  
10 range -- with -- within the range of each potentially  
11 affected caribou herd, in combination with individual  
12 components or act -- activities of the proposed  
13 development. This one's a mouthful, and we address  
14 this, I think, elegantly using some population  
15 modelling tools that I'll go into some detail later.

16               Slide -- or page 31. This is our last  
17 slide on the terms of reference. Outline any potential  
18 measures, or actions, to minimize impacts. We covered  
19 some of this earlier. You can also see some more  
20 detail on the wildlife mitigation and management plan  
21 in -- in Appendix 7.1.

22               Explanation of how any proposed  
23 mitigation measures, including plans for progressive  
24 reclamation, will contribute to the suspa --  
25 sustainability of the herds, and outline any adaptive

1 management strategies and plans for monitoring effects  
2 on caribou into the future. And I'll go into some of  
3 these details in the slide on caribou. And De Beers is  
4 committed to monitoring caribou into the future.

5 Slide 32. Baseline information for  
6 caribou took into consideration traditional knowledge,  
7 and this is described in Section 5.4. Some of the  
8 surveys that we -- we -- that we -- we did in the area,  
9 in the LSA and the RSA and along the access road, have  
10 been -- have been done in the area going back to 1999.  
11 And we have surveys planned this year. And there'll be  
12 ple -- there'll be surveys again next year.

13 Much of the surveys and much of the --  
14 the work has been -- has been coordinated during the  
15 summer months when caribou are moving from the calving  
16 area to the wintering area, and this is a time when  
17 caribou are most likely to interact with the project.

18 We've done some other interesting  
19 things, such as the -- mapping summer historical trails  
20 in the RSA that was done in 2010. And there's also  
21 been some surveys for -- for caribou movements during  
22 their northern migration.

23 The baseline also summarized GNWT collar  
24 data, and that -- we use this information va --  
25 valuable information in the sense that we were able to

1 use it to describe seasonal home ranges that I went  
2 over earlier and to describe movement patterns in the  
3 region.

4                   And the figure on the right here is an  
5 illustration of some caribou movements in the region.  
6 We have the Gahchoe Kue project and their RSA. We have  
7 the Snap Lake project and it's RSA, and the Diavik and  
8 Ekati mines. And you can see the movement patterns of  
9 caribou in the area that are plotted using collar  
10 locations. Essentially we're -- we're connecting the  
11 dots here. That's how these paths are created.

12                   So I'm pointing here at the map, and  
13 there's a lot of lines. It looks like my 3-year-old  
14 had taken its crayon to the slide. But there -- there  
15 are some patterns here and -- and all this information  
16 was described using GNWT collar data.

17                   A key me -- a key measurement endpoint  
18 was with changes in the area of habitat type. And I'm  
19 going to first go over direct changes, changes from the  
20 footprint. And then I have a few slides on changes --  
21 indirect changes from the footprint plus the zone of  
22 influence. So these are direct changes. These are --  
23 these are losses or alterations directly from  
24 footprints of developments in the co -- the seasonal  
25 home ranges.

1                   And the first point I want to make is  
2   that no matter which seasonal home range scale that you  
3   look at, the cumulative direct disturbances of  
4   terrestrial habitat is incredibly low in all of these -  
5   - in all of these seasonal home ranges, so less than 2  
6   percent. One to 2 percent cover of these seasonal home  
7   ranges, and we're just looking at terrestrial cover, is  
8   actually under a development footprint.

9                   And another important statement is that  
10   the cumulative direct disturbance on the area of each  
11   habitat type, tundra, you know, heath boulder, will be  
12   less than 1 percent per seasonal home range, and this  
13   is for both the Ahiak and the Bathurst herd. So the  
14   impacts are neg -- negligible. They're very small.  
15   They're -- they're in fact so small that they're hard  
16   to measure given the scale of the analysis.

17                  So how do we do this? I -- I kind of  
18   went over this this morning and I'll briefly go over it  
19   again. And, first of all, we -- we create our habitat  
20   map in a -- in a GIS. And in -- in this case, we use  
21   the land cover of Canada classification, and we have  
22   various habitat types in the landscape, tundra, heath  
23   boulder, and eskers and these types of things. And  
24   then we apply our development database overtop. And  
25   these development databases remove the habitat that's

1 immediately underneath the -- the developments, the  
2 footprints.

3                   And we do this for a number of  
4 scenarios. We'll do it for the reference scenario,  
5 where there's no development on the landscape. Then  
6 we'll do it for 2010 baseline scenario. And we also  
7 did it for 2006 scenario. And then we did it for a --  
8 an application scenario, which is essentially the 2010  
9 baseline landscape plus the project. And then we  
10 considered a future scenario, which included the  
11 project and the Taltson development.

12                   So we have these various scenarios and  
13 then we'd -- we'd do some summary -- statistical  
14 summaries for each scenario, and then we look at  
15 relative changes. And that's how we -- we -- we look -  
16 - examine changes in our measurement endpoints.

17                   Now I'm going to speak to changes to  
18 habitat quality. The first statement I want to make  
19 here and this is in reference to the zone of influence,  
20 the combined changes from dust deposition, noise, and  
21 other sensory disturbances is predicted to be within 15  
22 kilometres from the project footprint. This is  
23 essentially what we call the zone of influence.

24                   It's important to note that from mining  
25 operations background -- the -- the noise from



1 background -- the noise from mining operations actually  
2 reach background levels at 3.5 kilometres from the  
3 footprint. So this 15 kilometres is a very  
4 conservative number based on the predictions from noise  
5 and air quality.

6                   Another statement -- key statement here  
7 I want to begin with is that the magnitude of  
8 cumulative declines in preferred habitat, these are  
9 high and good quality habitats, from direct and  
10 indirect effects, where indirect effects take into  
11 consideration the zones of influence, across seasonal  
12 ranges is predicted to be low, ranging from 3 to 7  
13 percent for the Bathurst herd.

14                   And the largest change in preferred  
15 habitat that -- that was serv -- was observed was for  
16 the autumn rut period. And I don't want to go into too  
17 much detail here, because we -- because we already went  
18 over this, but the approach is very similar to what I  
19 described for the direct effects. In this case here  
20 we're mapping preferred habitat using a model. And  
21 then we're over -- overlaying the footprints and then  
22 the zone of influence. And the zones of influence are  
23 really -- are -- are reducing the quality of -- of the  
24 habitat underneath that zone.

25                   And again, we -- we calculate -- we have

1 -- we have statistical summaries of the reference  
2 landscape of the 2006 baseline landscape, the 2010  
3 baseline landscape, the 2010 baseline landscape plus  
4 the application, or plus the project, which is the  
5 application landscape, and then we have a future  
6 scenario. So we have, I think, if I just said that  
7 correctly, we have six (6) conditions quantified across  
8 time for this assessment.

9                   Conclusions for the habitat assessment  
10 for caribou included the -- the -- the largest decrease  
11 in preferred habitat was -- was observed in the autumn  
12 rut range.

13                   And this table here on slide 35 --  
14 sorry, we're on slide 35. This table here is something  
15 that -- that's very similar to what is in the Section 7  
16 of the EIS. And I'll -- I'll take you through it.

17                   There's two (2) important points to make  
18 here. First of all the incremental decrease from 2010  
19 baseline to application was 1.4 percent. This is  
20 essentially a summary of the -- the two (2) numbers in  
21 the 2010 baseline to application column, the grey  
22 column, the two (2) top numbers.

23                   So that's actually minus 1.4 percent --  
24 or 3 -- 3.7 percent. The other number is the -- the  
25 summary of the two (2) -- two (2) numbers at the top

1 for the reference to future column, the brown column.  
2 That number sums to approximately 7.2 percent. So  
3 cumulative decrease from reference to future was 7.2  
4 percent.

5 A couple other interesting things to --  
6 to note here, first of all, the majority of losses on  
7 the landscape actually occurred prior to 2006. If you  
8 look -- be -- just at the top, the high and good  
9 quality numbers for the brown/green columns, add those  
10 numbers up and it's -- essentially suggests that the  
11 most losses occurred prior to 2006.

12 And another interesting observation is  
13 that there was actually gain in habitat from 2006 to  
14 2010. This is because of the slowdown in the -- in the  
15 economy and that there were fewer active mineral  
16 exploration sites on the landscape.

17 So the footprint may have -- we're -- we  
18 still -- we still consider the footprint -- their  
19 footprint on the landscape, but because their permit  
20 had expired, their permit wasn't renewed, those --  
21 those sites became inactive and that's why you see this  
22 kind of increase in habitat during that time.

23

24 (BRIEF PAUSE)

25

1 MR. CAMERON STEVENS: This -- this --  
2 these two (2) figures we have on the left, we have the  
3 -- we're on slide 36. On the left is a historical  
4 reference map of preferred habitats for caribou during  
5 the autumn rut range, and on the right is the future  
6 condition. And the purpose here of this slide is to  
7 show you what a 7 percent habitat loss looks like.

8 Remember that the dark green colours are  
9 -- are good -- these are the good habitats. The brown  
10 and mustard looking colours are the -- are the poor  
11 habitats.

12 The take-home message here is that, you  
13 know, there -- there remains an abundance of preferred  
14 habitats on the landscape despite the hundreds of  
15 developments and the zones of influences in the future  
16 condition.

17 One (1) of the assumptions in this  
18 analysis was that the successional stage --  
19 successional stages were static. They didn't change  
20 from one (1) condition to the next. And again, we --  
21 we thought this was a fair assumption, given the -- the  
22 Arctic environment and the pa -- the pace of -- the  
23 pace of succession in the Arctic.

24 I can highlight here a couple of  
25 developments on the map underneath the future condition

1 title. Here's the Gahcho Kue project. Here it's --  
2 you can see its effect around -- on -- on habitat by  
3 the brown ring around the mine site.

4 I'm going to try and find another mine  
5 here. Northwest of Gahcho Kue is the Ekati mine. And  
6 you can also see a similar effect on -- on habitat  
7 quality around the Ekati Diavik mine.

8 So the quality of these habitats were  
9 defined using a resource selection function by -- that  
10 was developed using GNWT collar data and it's published  
11 in a well published, well known paper in wild manag --  
12 Wildlife Monographs by Chris Johnson.

13 So I'm going to switch gears here a  
14 little bit and we're going to move to slide 37 and talk  
15 about energy bud -- budgets and caribou energetics.

16 Now first of all, why consider energy --  
17 energy budgets? Well, the first reason is that it was  
18 in the terms of reference, right? So why was it in the  
19 terms of reference?

20 Well, it's important because sufficient  
21 energy reserves must be met by late autumn for -- for  
22 cows, for caribou cows on the landscape to increase the  
23 likelihood of reproducing and producing a calf the  
24 following spring.

25 And from late -- and so from the post

1 calving period to -- to late autumn, there are a number  
2 of energetic costs that a caribou may encounter along  
3 her movements on the landscape, including the costs  
4 associated with disturbance or agitation from sensory  
5 disturbances, such as noise, a blasting, a moving  
6 vehicle, the presence of a human walking. These types  
7 of things could agitate and disturb a cow during her  
8 movements to the wintering areas, and while she's  
9 foraging on the -- on the -- on the summer seasonal  
10 home range.

11                   There are certainly other factors to  
12 consider here, such as insect harassment. Insect  
13 harassment can -- can also deplete, or -- or have  
14 energetic cost and -- and -- and affect the female  
15 while she is moving to the -- to -- to the wintering  
16 areas.

17                   So on the right here is a figure. This  
18 figure is not illustrated in the EIS. On the X axis is  
19 body mass in kilograms and on the Y axis is parturition  
20 rate. This is the probability -- it's a scientific  
21 term for def -- that's essentially defined as the  
22 probability of a caribou producing a calf the following  
23 spring.

24                   And the -- the -- the relationship that  
25 we essentially used in the EIS is this, the -- the

1 steeper line, the green line. And from that line --  
2 from that relationship, essentially we get that 1  
3 kilogram loss in mass, reduces parturition, calf  
4 production, by 0.063 units.

5                   And we used this relation because it was  
6 a very conservative relationship to use to understand  
7 effects to -- to caribou energetics and caribou  
8 populations.

9                   If we had used -- there's another model,  
10 it's a new model. It's -- it's in the grey literature.  
11 It's a model that's -- that's being considered by  
12 regional biologists. It's -- we'll just call it the  
13 Daniel model, the Daniel et al model. It's -- it's a  
14 relationship, essentially.

15                   If we had would have used that  
16 relationship in our EIS, we would get not a decrease of  
17 point zero-six-three (.063) units, but a decrease of  
18 point zero-two (.02) units.

19                   So our -- from this -- from this angle,  
20 our -- our energetics model is -- is three (3) times  
21 more conservative than that used by another researcher.

22                   Again I'll just go over this one (1)  
23 more time. So cows, cow on the landscape, after  
24 leaving the calving area, we encounter multiple sensory  
25 disturbance as she moves to the wintering area. And

1 because of those encounters, energy is expended. There  
2 -- the -- the animal loses weight. There's a loss of  
3 endogenous reserves. And because of that loss in  
4 weight and mass, there's a reduction in calf production  
5 the following spring.

6 We're on slide 38, sorry. And what this  
7 means is that there's potentially effects to the  
8 population. So this is my pathetic re -- recreation of  
9 how a caribou moves on the landscape.

10 So we try to quantify this using GNWT --  
11 well, we did quantify exactly what I just showed you  
12 here using real data.

13 Slide 39. And I'm going to begin first  
14 with the -- the main key -- key conclusion from this  
15 work, and that is that the magnitude of a cumulative  
16 decrease in fecundity or -- or parturition, sorry, from  
17 the project and other development is predicted to be  
18 low, less than 3.1 percent.

19 The first thing we did was to take the  
20 GNW's collar data, and -- and we constructed paths per  
21 year for each animal, and that resulted in a creation  
22 of a hundred and ninety-four (194) individual paths  
23 that were examined.

24 And because we were looking at the  
25 period from after the calving period to just before



1 winter started, the exposure period was a hundred  
2 thirty-eight (138) days .

3 And encounters were measured two (2)  
4 different ways. It was a GIS analysis, and I'll go --  
5 I'll just going to go over -- I'm just going to move to  
6 the...

7

8 (BRIEF PAUSE)

9

10 MR. CAMERON STEVENS: Can you hear me  
11 okay? So we calculated encounters with disturbance two  
12 (2) different ways. We looked at how -- how many times  
13 an animal would intersect a zone of influence. So  
14 here, this is a path for one (1) animal, this is a path  
15 here for another animal, this is a path here for  
16 another animal, and there are four (4) animals here  
17 going through the zone of influence. So that -- we  
18 called that one (1) encounter. And we followed this  
19 path through it's entire hundred (100) -- during this  
20 entire hundred and thirty-eight (138) day exposure  
21 period.

22 In addition to the number of times a  
23 caribou may encounter one (1) of these zones of  
24 influence, we were able to calculate the time an animal  
25 spends near a mine site by calculating the time it

1 enters this -- this circle, and the time it leaves, and  
2 we sum it up for the entire duration of her movements  
3 from the calving area to the -- to the wintering area.

4                   And then once we have that number, once  
5 we know how many times a caribou encounters a zone of  
6 influence during her movements, we relate -- we -- we  
7 try to understand energetic costs by -- by linking --  
8 by -- by understanding what the energetic cost is for  
9 one (1) disturbance.

10                   And using a previously published model  
11 by Corey Bradshaw published in 1988, Canadian Journal  
12 of Zoology, I believe, we determined that -- that one  
13 (1) intersection with the zone of influence results in  
14 -- in a loss of .047 kilograms.

15                   And there are a number of conservative  
16 assumptions associated with that number, point zero-  
17 four-seven (.047). It is assumed that the animals,  
18 when they did encounter a -- a zone of influence, a  
19 development, that the animals were excited for a twelve  
20 (12) hour period -- twelve (12) hour period and that  
21 they ran for 2 kilometres.

22                   So -- and another assumption was that  
23 weight loss from that disturbance event was permanent.  
24 There was no compensatory foraging or behaviour to make  
25 up for that cost.

1                   For comparison we calculated the energy  
2 cost during a day of insect harassment, which we define  
3 as a day of, you know, no -- very little wind and warm  
4 temperatures. You know, it drives us crazy. It drives  
5 the caribou crazy and there's an energetic cost for --  
6 in those environments.

7                   So using some long-term meteorological  
8 data we were able to answer the question of how many  
9 insect harassment days are caribou exposed to. And --  
10 and we propose that the caribou may face up to forty-  
11 four (44) days of high insects. And what does that  
12 mean for weight loss during the summer? It means that  
13 a female cow may lose up to 6.6 kilograms of mass.

14                  And with some pretty novel interesting  
15 GIS work we were able to answer the question of how  
16 many disturbances, zones of influences, do caribou  
17 encounter or intersect on average during -- during a  
18 movement on the landscape, and that number is about  
19 nineteen (19) disturbances.

20                  And based on that -- that value -- that  
21 nineteen (19) disturbances and -- and that value of  
22 .047 kilograms per disturbance shown on the previous  
23 slide results in a loss of -- of up to .5 kilograms of  
24 mass. So relative to insects, the effect is ver -- is  
25 very minor. And this number -- this conclusion assumes

1 a very strong respo -- response to most of the  
2 encounters that the -- that the -- that a female may --  
3 may inter -- interact with on the landscape.

4                   So what are the implications for -- for  
5 reproduction and for calf production the following  
6 spring? The effects are minor, a loss of 0.5  
7 kilograms, decrease of parturition -- parturition rate,  
8 reproduction by about 3 percent using the model that's  
9 in the EIS. If we use another relationship that's out  
10 there, parturition decreases by about approximately 1  
11 percent.

12                   So this just illustrates one (1) of the  
13 conservatisms in -- in our section that is really an --  
14 this -- it's just we've taken the conservative approach  
15 here and many other places, and this is just one (1)  
16 example.

17                   Okay, slide 41. I'm changing gears a  
18 little bit again. I'm not going to spend too much time  
19 on the statistics or the details here, but we -- we ran  
20 these population viability analyses tests to -- to --  
21 essentially to meet the terms of reference.

22                   And they were, like I said earlier, an  
23 elegant way of capturing population level effects from  
24 habitat loss and energetic costs. And, again, so we  
25 think it was the best way to meet the terms of

1 reference.

2 But the -- some of the key statements or  
3 conclusions from -- from this work were that  
4 incremental changes from the project did not influence  
5 the persistence of the Bathurst herd. Cumulative  
6 changes from the project and other developments were  
7 statistically significant and moderate in magnitude.  
8 And population persistence was most sensitive to  
9 changes in adult cal -- cow survival and changes in  
10 harvest rates.

11 So these statements here are based on  
12 the comparison of model outcomes. For example, we  
13 compare on outcome generated from the reference  
14 landscape to the outcome from a future -- future  
15 landscape. The goal here was in no way to -- to make  
16 specific predictions of population viability or  
17 abundances in thirty (30) years.

18 One (1) other point here I want to make  
19 is that these statements are based on simulations of  
20 models in -- using the -- the RAMAS software package,  
21 and there are hundred of PVA papers in the peer review  
22 literature, and many of these do exactly what we did in  
23 this EIS.

24 So graphically some of these conclusions  
25 are presented in the next couple of slides. And -- and

1 on the 'X' axis here we have our comparisons. And this  
2 first one (1) here is -- I've called EIS Incremental  
3 Effects, where we compared the 2010 baseline model  
4 simulation to the -- to the application model  
5 simulation. Take-home message here is that the  
6 incremental effects from the project are incredibly  
7 small.

8 In this simulation here we compare the  
9 reference landscape model to the output from a future -  
10 - future model and the percent change is minus 12.2  
11 percent.

12 So on -- on the Y axis here is a percent  
13 change at year thirty (30). All models were ran for --  
14 for thirty (30) year simulations. These are just  
15 models, they're simulations.

16 And the key message here is that the --  
17 the cumulative effects that were modelled are  
18 relatively small compared to changes in -- compared to  
19 other factors on the landscape.

20 If you compare a model at -- where you  
21 assume low insect harassment to a model that assumes  
22 high insect harassment, you have -- you have massive --  
23 you have large changes in -- in -- in the percent  
24 change at year thirty (30).

25 And we've done some follow-up work on --

1 on these PVA tests. And John and I want to acknowledge  
2 ENR for -- for challenging us on some of this work.  
3 And we've done some followup based on their comments.  
4 And one (1) of the interesting things that we found, if  
5 that -- if we do make some subtle changes to our  
6 energetics model it has profound in -- in -- effects --  
7 or implications for our PVA te -- PVA test.

8                   And on the previous slide I -- I  
9 reported this twelve (12) -- this change in this value  
10 of minus 12.2 percent. If we modify our energetics  
11 model and use a Daniel Model, that relationship that  
12 was described in that figure, cumulative effects are  
13 actually at minus 3.7 percent.

14                   And if you think our starting inputs for  
15 any of the vital rates that we use in our -- in our  
16 models are off, or potentially ina -- inaccurate, we've  
17 modified them within their natural ranges and run a  
18 sensitivity analysis to show that this -- this effect  
19 size remains consistent around 4 percent.

20                   So that value there of minus 4.4 percent  
21 is -- is the average of twenty-seven (27) new PVA tests  
22 where each test compares a reference landscape, the  
23 output from a reference landscape to the output from a  
24 future landscape.

25                   This is just -- is -- I'm -- I'm not

1 going to go into too much detail. This is just a slide  
2 to show you some of the output from some of this  
3 analysis. And, you know, we ran over fifty-five (55) -  
4 - we've -- we've run like well over fifty (50) new  
5 simulations and -- and twenty-seven (27) PVA tests and  
6 each test that -- that -- one (1) -- one (1) row here  
7 represents one (1) test.

8                   And essentially, each test represents a  
9 unique natural environmental trend that might influence  
10 vital rates over a thirty (30) year period. And the  
11 average of all these tests, there are twenty-seven (27)  
12 new ones, was minus 4.4 percent.

13

14                   (BRIEF PAUSE)

15

16                   MR. CAMERON STEVENS: I'm going to just  
17 spend a couple minutes -- a couple more minutes  
18 explaining this slide here. So this is a new -- this  
19 is a new PVA test, C -- C1F1 in the first row, this is  
20 a new PVA test we ran.

21                   And in this case here we assumed that  
22 spring condition was con -- and related effect to  
23 parturition rates, calf production the following  
24 spring, was constant across the thirty (30) year  
25 period.



1                   And then we -- then we said, Okay, well  
2 let's say insect harassment conditions are going to get  
3 worse over this thirty (30) year period and then change  
4 parturition based on this relationship between  
5 parturition and insect harassment.

6                   And in this case here we -- we decided  
7 to keep calf survival at a constant rate across the  
8 thirty (30) year period. And we would run that PVA  
9 test -- or we'd run two (2) models, compare the  
10 results, and in this case we have a difference of minus  
11 5.7 percent in the cumulative change on final  
12 abundance.

13                  We also have other statistics that we  
14 report. We report changes in risk curves, the D-  
15 statistic and associated P-value.

16                  So, I went over C1F1, multiple  
17 combinations and twenty-seven (27) combinations --  
18 actually more than twenty-seven (27) combinations were  
19 evaluated and the main point is that the effect size is  
20 insensitive to potentially inaccurate model inputs in  
21 our models.

22                  So the models overest -- estimated --  
23 slide 45. The models overestimated the effects of  
24 human development. The resu -- in other words, the  
25 results were biassed, but they were biassed in the

1 right direction.

2                   And we -- we've done some follow-up  
3 work, based on some feedback from ENR, and these  
4 sensitivity tests, using a natural range of inputs,  
5 show that the assessment conclusions don't -- don't  
6 change.

7                   In other words, the influence of  
8 potentially inaccurate inputs -- could be calf  
9 survival, carrying -- carrying capacity -- on the  
10 predictability of the assessment is minor.

11                   And the precision of the assessment was  
12 maintained in part by executing a thousand simulations  
13 per -- per sim -- per model, over a thirty (30) year  
14 period. And at the -- and at the end of the day, the  
15 approach provides confident and ecologically relevant  
16 impact predictions.

17                   Okay, on to slide 46 and changing gears  
18 a little bit again. This one (1) -- the next couple of  
19 slides will discuss the effects of the winter access  
20 road. And these -- these -- these slides are relevant  
21 for not just caribou but for moose, for muskox, for --  
22 for wolverine and grizzly bear.

23                   In the terms of reference for the  
24 project, the analysis must include potential  
25 development related changes, in other words, inc -- for

1 example, increases in access to harvest levels for each  
2 population.

3 In the EIS, this pathway was con --  
4 considered minor for wildlife species for the number --  
5 for the following considerations. First of all, access  
6 is restricted.

7 The Tibbitt-Contwoyto Road is open only  
8 on average for about two (2) months each year, sixty-  
9 four (64) days, from early February to mid-April.  
10 Harvest for residents and nonresidents is regulated and  
11 -- and De Beers -- De Beers' staff will be prohibited  
12 from hunting while -- while on site and while using  
13 that road.

14 There's additional considerations.  
15 First of all there's been no evidence of harvest along  
16 the Snap Lake winter access road. The Gahcho Kue  
17 winter access road for the project is at kilometre 271,  
18 and this is 43 kilometres further -- further than the  
19 winter turnoff -- the turnoff to the winter road for  
20 Snap Lake.

21 And there's other -- there's other  
22 considerations here. For the Bathurst cari -- caribou,  
23 the winter access road right now actually extends  
24 outside the current core winter range. Based on GNWT  
25 collar data, the existing core winter range, using 2006

1 to 2010 information, is west-northwest of the project.

2                   However, with that said, we admit that  
3 as the herd -- herd -- herd size grows over the next few  
4 years, we expect that the core winter range will expand  
5 and eventually overlap with the RSA. And with that  
6 said, De Beers is committed to monitoring, with -- with  
7 ENR, hunter use and harvest along the winter access  
8 road into the future.

9                   In summary, the landscape will remain  
10 intact. This is page -- or, sorry, slide 48. The  
11 landscape will remain intact and well below any  
12 ecological threshold where fragmentation effects can  
13 occur for wildlife.

14                   The impacts from the project should be  
15 reversible, except for the residual footprint, such as  
16 the mine rock piles. The project and other  
17 developments should -- will not have a significant,  
18 adverse effect on the persistence of caribou  
19 populations. And confidence in this prediction is  
20 based on consistently low effect sizes across the  
21 analyses and the suite of conservatisms that were  
22 considered in the -- in the models and in the various  
23 steps of the assessment.

24                   Slide 49. And I'd be happy to take some  
25 quest -- John and I and -- and De Beers would be happy

1 to take some questions, or take a break, whatever you  
2 guys would like to do.

3

4 QUESTION PERIOD:

5 THE FACILITATOR EHRLICH: We're going  
6 to do some questions before the break. See how many  
7 there are. We might break up the questions with the  
8 break, depending on if people have that many.

9 But, Cam, I -- I thank you for that --  
10 that presentation. I see that Henry Zoe of the Tlicho  
11 Government has a question, or comment.

12 MR. HENRY ZOE: Thank you. My  
13 question, I guess is, what is the likelihood of the  
14 project -- of this project -- would it slow down the  
15 Bathurst herd recovery over the mine's fifteen (15)  
16 year lifespan?

17 If you go back to slide -- I think it  
18 was on 41, it says that:

19 "Increment changes from the project  
20 did not specifically influence the  
21 persistence of the Bathurst herd."

22 However, rather than focus on  
23 persistence of the Bathurst herd as the endpoint for  
24 the analysis, is it possible to interpret the results,  
25 or run the models to address related by separate

1 question on effects to rate of herd recovery?

2                   For example, coal management in our  
3 area, decisions were made recently to drop the level of  
4 hunting on our Bathurst herd so that the population  
5 trend may stabilize, and -- and recover.

6                   I wonder if the analysis can address the  
7 question: In combination with previous, existing, and  
8 future development, what is the likelihood that this  
9 project would slow the Bathurst herd rate of recovery  
10 over the fifteen (15) year mine -- mine life?

11                   Thank you. That's my first question.

12                   THE FACILITATOR EHRLICH: Thank you for  
13 that. Does the De Beers want to discuss it for a  
14 minute, or are you good to respond?

15                   MS. VERONICA CHISHOLM: Give us two (2)  
16 seconds.

17                   THE FACILITATOR EHRLICH: Okay, you've  
18 -- a sign of a good question is always when they have  
19 to caucus to make sure that everyone's got the best  
20 thinking in the answer.

21                   I -- I suggest you hold off on your  
22 second question until -- until they've had a chance to  
23 answer the first, so we'll just take one (1) minute.

24

25                   (BRIEF PAUSE)

1 THE FACILITATOR EHRLICH: Okay, it  
2 sounds like De Beers' team is ready to go, so please  
3 proceed.

4 MS. VERONICA CHISHOLM: It's Veronica  
5 Chisholm, from De Beers. We appreciate your patience  
6 on that. And we just want to make sure that we  
7 understand your question so we can respond to it and  
8 get the right answer for you.

9 So your first question was: What's the  
10 likelihood of the project effects on the Bathurst herd?  
11 Is that correct?

12 MR. HENRY ZOE: Yep.

13 MS. VERONICA CHISHOLM: I'm going to  
14 have Cam respond to that first question.

15 MR. CAMERON STEVENS: Well, these  
16 models I think really kind of drive home the point that  
17 there -- there is no incremental affect from the  
18 project. These -- and the models that we ran were  
19 incredibly conservative and we really went out of our  
20 way to overestimate effects at various parts of that  
21 analysis. So the project itself will have no affect.

22 THE FACILITATOR EHRLICH: So if I  
23 understand what I've just heard from Cam, and I'm not  
24 sure that I did, did you just say that the project  
25 itself -- do you refer to that in isolation, not in a

1 cumulative context then, but by itself, that's what I'm  
2 getting out of that, will not have an effect on the  
3 rate of recovery of the Bathurst caribou herd?

4 Is that -- is that where you're headed?

5 MR. CAMERON STEVENS: That's correct.

6 And with regards to the project plus other developments  
7 on the landscape, the cumulative effect, we've -- you  
8 know, we're probably going to hang our hat on the  
9 number of about 4 percent, and that 4 percent change  
10 applies to -- what I was trying to illustrate in some  
11 of our follow-up work that we've done is -- is to  
12 illustrate the point that no matter if the -- the  
13 population is increasing or decreasing or stable at  
14 five hundred thousand (500,000) animals, the effect  
15 size is the -- is 4 percent.

16 So the cumulative effects of the project  
17 and all developments on the landscape is -- is 4  
18 percent -- is a 4 percent change in final abundance in  
19 thirty (30) years. Does that -- does that answer your  
20 question?

21 THE FACILITATOR EHRLICH: I'd like to  
22 just get a little clarification on that. If you could  
23 go to slide 43, please.

24 So the -- the part where I got confused  
25 is where it talks about new cumulative effects. Are we



1 talking about the project's addition to existing  
2 cumulative effects when you talk about new cumulative  
3 effects?

4 MR. CAMERON STEVENS: Sorry for -- for  
5 that, Alan. My name's Cam Stevens, Golder Associates.  
6 That -- it's just a new cumulative effects test.  
7 That's -- that's what that description was meant to --  
8 to convey. So this is -- that's -- and some follow-up  
9 work that John and I have done since the EIS has been  
10 submitted.

11 THE FACILITATOR EHRLICH: And you've  
12 mentioned in your response that part of this has to do  
13 with the conservatism of the model that was applied by  
14 De Beers. What was the reason for using a conservative  
15 approach by De Beers in this assessment? Why did you  
16 feel this would be a reasonable thing to do in this  
17 circumstance?

18 MR. JOHN VIRGL: John Virgl here,  
19 Golder. I just wanted to clarify, the -- the new  
20 cumulative effects tests that you see up there are the  
21 result of the -- of our discussions with ENR and -- and  
22 -- and their concerns over -- or chall -- challenges  
23 that they put forward to us in regards of -- of taking  
24 a more rigorous approach to the analysis. So that's  
25 what that means.

1                   The reasons why we use conservativisms  
2 in -- in -- in the assessment and throughout the  
3 assessment was to deal with the uncertainties around --  
4 around some of the information, the data and our -- and  
5 our knowledge about -- about caribou and wildlife in  
6 the Arctic.

7                   THE FACILITATOR EHRLICH:    Thank you.  
8 So that's why you used the EIS model instead of the  
9 Daniel model? Is it Daniel or Daniels model, if I  
10 understand the presentation correctly?

11                  MR. CAMERON STEVENS:    Hi, Cameron  
12 Stevens here, Golder Associates. That's a good  
13 question, Alan. At the time of the assessment that --  
14 again, that relation -- we didn't have a relationship  
15 in the peer review literature that was -- that was  
16 easily accessible, that we can go forward with.

17                  So based on some information published  
18 in the early 1990s, very good studies, very good work,  
19 I think this was for the porcupine herd, we -- we took  
20 that relationship and made it a little bit more  
21 conservative, right, because we wanted -- you know,  
22 there's some uncertainty here and we wanted to -- to  
23 reduce and eliminate uncertainty so we -- we -- we just  
24 applied a more conservative relationship in -- in  
25 understanding the effects of weight loss on -- on

1 parturition rates.

2 THE FACILITATOR EHRLICH: Thanks. So  
3 on slide 41, can you go back to 41 then?

4

5 (BRIEF PAUSE)

6

7 THE FACILITATOR EHRLICH: Two (2)  
8 slides back at slide 41. Yeah, that's -- I think,  
9 what, one (1) -- one (1) more. That's forty (40).  
10 There we go.

11

12 (BRIEF PAUSE)

13

14 THE FACILITATOR EHRLICH: I'll try --  
15 I'll try to do it without looking at the -- without  
16 looking at the slide. So if I understand that  
17 correctly then, what you're saying is that the EIS  
18 approach to the model that came up with the estimate of  
19 a 12 percent change at year thirty (30) in terms of  
20 cumulative impacts on caribou, you -- you since viewed  
21 as overly conservative and goes too far to compensate  
22 for the unknowns in the system.

23 So you're saying that there are  
24 presumably then less unknowns and you're comfort with  
25 the Daniel model has increased? I don't want to put

1 words in your mouth. I just want to make sure we  
2 understand why you've gone from the predicted 12  
3 percent change to 4 percent change, and -- and  
4 understand clearly the reasoning behind that, because I  
5 -- I -- I also understand the reasoning you've said  
6 you've taken the conservative approach.

7 And -- and so if -- if you're -- you're  
8 not -- if -- if you're going to adopt a different  
9 approach it -- it -- it helps us the better we can  
10 understand why. Thank you.

11 MS. VERONICA CHISHOLM: Veronica  
12 Chisholm from De Beers. Thank you, Alan. I think that  
13 I just want to take a step back as to what we mean by  
14 conservative approach and why we use that term.

15 Part of the reason why in environmental  
16 assessment you use a conservative approach is you want  
17 to be able to predict the maximum impacts. So you  
18 don't want to be able -- you want to be able to capture  
19 all the possible impacts associated with a project.

20 And sometimes we can over predict an  
21 impact, but we think that would be better than under  
22 predicting a -- an impact, and hence a conservative  
23 approach is often used. That's, I guess, an answer to  
24 one (1) question and I'll have John expand on the  
25 other.

1 MR. JOHN VIRGL: John Virgl from  
2 Golder. Alan, this goes back to my presentation on  
3 Monday, and do you remember one (1) of those slides at  
4 the end there talked about uncertainty in the EIS? And  
5 uncertainty in the EIS is not about just identifying  
6 the areas of uncertainty and why the -- they're -- we  
7 have uncertainty.

8 But it's about how we dealt with those  
9 uncertainties. And -- and when you -- and when you  
10 have uncertainty the best way to deal with it is to be  
11 conservative on the size that you won't -- the impacts  
12 will not be worse than predicted.

13 So that's the reasons why.

14 THE FACILITATOR EHRLICH: Got it. I  
15 think I -- I understand your response.

16 And, Mr. Zoe, do you have other  
17 questions? I believe you indicated you had more than  
18 one (1).

19 MR. HENRY ZOE: Yeah, I got -- I got a  
20 couple more anyway. On slide 48, in regards to 40  
21 percent habitat loss, I just want to know what De --  
22 can De Beers explain the thinking behind suggesting  
23 that caribou can sustain up to 40 percent habitat loss?

24 MR. CAMERON STEVENS: Hi. Cam Stevens,  
25 Golder Associates. I'm not exactly sure that's what

1 we're trying to say. This is just -- this is a -- this  
2 is ba -- this is based on some -- quite a bit of  
3 research, a synthesis of -- of a large number of  
4 fragmentation studies that have been conducted all  
5 around the world in various ecosystems.

6 And, at this threshold, it's -- you  
7 know, it's just -- it's -- it's an ecological  
8 threshold, a theoretical threshold, a point at which  
9 the effects of fragmentation begin to manifest itself.

10 It depends on the species. It depends  
11 on the -- the landscape setting. It depends on can --  
12 on how animals move. But it's -- it's -- it's an  
13 agreed -- it's a number that's accepted in the peer  
14 review literature. And it -- and it -- and it does  
15 provide a gauge as to -- as to the condition of the  
16 existing landscape for this assessment. And it's one  
17 (1) of many gauges.

18 Our -- John could -- could speak to some  
19 of the -- to the assessment approach and the effect  
20 sizes that were used in the assessment, which are  
21 consistent with this philosophy.

22 THE FACILITATOR EHRLICH: Before  
23 getting to John, I'd just like to ask the folks who  
24 recently came in. There's a sign-up sheet on the  
25 table, just back there. Please grab the sign-in sheet,

1 circulate it and make sure that everyone signs in.

2 Thank you.

3 And, John Virgl, do you want to add  
4 anything to Cam's response?

5 MR. JOHN VIRGL: John Virgl here with  
6 Golder. Thanks, Alan, I will. Yeah, to continue on  
7 with Cam's explanation there, we are not suggesting  
8 that the 40 percent is a threshold for caribou, that  
9 caribou could handle a 40 percent loss of habitat.  
10 It's a -- it's a value that's taken out of literature  
11 that -- that basically provides a benchmark, if you  
12 will.

13 The actual high magnitude classification  
14 in the EIS for all wildlife was a 20 percent change.  
15 Okay, so that's well below -- that's twice below the  
16 actual threshold from the literature. So, we were  
17 erring, again, on a side of a large margin of safety or  
18 conservatism. Even using that high magnitude of 20  
19 percent change, as Cam showed in his presentation, the  
20 maximum area within zones of influence on the landscape  
21 for the Bathurst herd is about 6 percent and the  
22 maximum habit change in -- in good and quality or  
23 preferred habitat was during the autumn season,  
24 basically from the post calving till October. And that  
25 was 7.3 percent change.

1 THE FACILITATOR EHRLICH: So if I can  
2 paraphrase, just so that I know that I -- at least I  
3 can tell you what I think I've heard. The 40 percent  
4 habitat loss doesn't refer to the total loss of  
5 habitat. It refers to when fragmentation effects start  
6 to matter with respect to the amount of habitat.

7 Habitat loss can affect wildlife in  
8 other ways besides fragmentation. And it -- it doesn't  
9 sound like it was your intention to suggest that 40  
10 percent habitat loss is going on, or that caribou could  
11 sustain a 40 percent loss of habitat.

12 I -- I -- I just want to make that quite  
13 clear because I don't want -- particularly our remote  
14 listeners who aren't able to see what's going in the  
15 room, to walk away with the wrong impression from this  
16 discussion.

17 MS. VERONICA CHISHOLM: Veronica  
18 Chisholm from De Beers. Yeah, I want to make it  
19 perfectly clear. The project is not predicting a 40  
20 percent habitat loss. This is just a way to evaluate  
21 fragmentation. And that was a threshold value taken  
22 from the literature. It's not a predicted value from  
23 the project. Thank you.

24 THE FACILITATOR EHRLICH: Thank you.

25 And, Henry Zoe from the Tlicho



1 Government, do you have other questions on the subject?

2 MR. HENRY ZOE: Okay. Yeah, because  
3 just on that last explanation that they've given me,  
4 but, you know, right through the whole EIS binders  
5 they've given us and even in the slide, there's always  
6 reference made to this 40 percent habitat loss. That's  
7 the reason I raised that, because it's confusing.

8 Anyway, my other question on the  
9 wildlife effects monitoring program, I wanted to ask a  
10 question pertaining to that. Are there any lessons  
11 learned that De Beers can share from the studies that  
12 might be applied for the wildlife effects monitoring  
13 program?

14 I guess -- for example, I guess if the  
15 broad goals of the -- of your wildlife effects  
16 monitoring programs are to, one (1), test impacts  
17 prediction that have been developed in the EIS for  
18 caribou, and secondly, adaptively manage -- manage the  
19 project to protect wildlife and habitat, will De Beers  
20 design, coordinate a resources monitoring program with  
21 an emphasis on insuring sufficient and successful power  
22 to detect the magnitude of impact it predicts? Thank  
23 you.

24

25 (BRIEF PAUSE)

1 MS. VERONICA CHISHOLM: Veronica  
2 Chisholm from De Beers. First of all, Henry, we  
3 appreciate your comment and apologize for the confusion  
4 over the 40 percent.

5 Sometimes we don't always put ourself as  
6 the reader, and so those comments are very helpful. So  
7 I'd like to thank you for that.

8 Second the -- secondly I'd like to say  
9 that De Beers will be monitoring -- will be developing  
10 monitoring programs to evaluate the predictions in the  
11 EIS. So I think, yes, I'm answer from your -- I think  
12 yes is the answer to your second question. I hope I --  
13 I hope I've addressed that, but, yes, that is our plan.

14 And we also plan to consult with the  
15 communities on the monitoring program, and the  
16 development of the monitoring programs. Thank you.

17 THE FACILITATOR HUBERT: Chuck Hubert,  
18 Review Board. Was there a -- a lessons learned  
19 question in there, as well?

20

21 (BRIEF PAUSE)

22

23 THE FACILITATOR HUBERT: Chuck Hu --  
24 oh.

25 MR. JOHN VIRGL: John Virgl, Golder.

1 Yes, Henry, we will definitely be taking lessons  
2 learned from the other mine sites. Part of -- a lot,  
3 actually, of what's in our conceptual monitoring and  
4 mitigation right now is from lessons learned at the  
5 other operating mine sites, including Snap Lake, and  
6 Diavik, and Ekati.

7 THE FACILITATOR EHRLICH: Are there any  
8 other questions from the Tlicho Government? I see that  
9 Madelaine Pasquayak has a question.

10 MS. MADELAINE PASQUAYAK: Madelaine  
11 Pasquayak. I was just looking at your slides, and I --  
12 I -- one (1) question that ran through my mind was your  
13 -- your terms of reference.

14 It just, you know, occurred to me just -  
15 - just looking at your key line of inquiry, I was just  
16 kind of curious as to whether you got any assistance  
17 from the Dene groups in -- in forming these line of  
18 inquiry.

19 THE FACILITATOR EHRLICH: It's Alan  
20 Ehrlich. I can certainly answer that question,  
21 although most of the question period here really should  
22 be directed to De Beers, but I -- I think it's a --  
23 it's a valuable question.

24 The terms of reference that the panel  
25 released considers the results of scoping done by the

1 Review Board, which I was in -- involved in.

2                   The Review Board went to a number of  
3 different communities, and spent a while with each  
4 community finding out what issues the communities want  
5 looked at, and how the community would prioritize those  
6 things, if they were the panel, or -- or in that case  
7 the Board. This was before it was referred.

8                   So there was -- there was quite a bit of  
9 community input into -- into this particular model. Of  
10 course, the Review Board, and then later the panel,  
11 also used it's own experiences, which come from  
12 numerous hearings. And other -- other opportunities to  
13 hear from community members, Elders, and leadership to  
14 reflect on what it has heard is also important to  
15 communities.

16                   And -- and so all of that resulted in  
17 what went into the -- the terms of reference, in  
18 addition to comments from other groups like government  
19 expert agencies, and the -- the Board and panel's own -  
20 - own consultants that have been hired for this.

21                   Does that help?

22                   MS. MADELAINE PASQUAYAK: Thank you  
23 very much. Yes, it does help. And another quest --  
24 another slide that I want to bring your attention to is  
25 where it says "Conceptual Energy Model."

1                   There's a lot of information out on --  
2 on calving -- calving of -- of calves, and -- and their  
3 -- and their migratory routes. There's a lot of  
4 information there.

5                   I was just kind of curious, the -- the  
6 one (1) I know the -- the Elders are always concerned  
7 about the health of caribou. The -- the one (1) thing  
8 that they always stress is that -- that whatever  
9 project is out there, anytime that anybody works with  
10 caribou, or around caribou, the one (1) thing that they  
11 should seriously consider is the health of the caribou.

12

13                   And I recall years ago when I was --  
14 maybe forty (40) years ago I remember, when I was quite  
15 young, my dad and other men in the community would go  
16 hunting into the barren lands. And the one (1) thing  
17 that I noticed was that every time they brought caribou  
18 home, when they go to the barren lands by boat and come  
19 back by same, they always brought back big slabs of  
20 fat, you know, indicating that -- that the caribou were  
21 healthy back then.

22                   As of late, I've noticed that whenever  
23 our men from the community go hunting, there's always  
24 so very little fat, and I wondered if that's something  
25 that -- that shouldn't be considered in the study to --

1 to determine why, you know, there's so little fat on  
2 the caribou.

3 Is it something that's -- that's  
4 affecting the health of the caribou that there's little  
5 fat on -- on the bodies?

6 THE FACILITATOR EHRLICH: To De Beers.

7 MR. CAMERON STEVENS: Hi. Cam Stevens,  
8 Golder Associates. I -- I think I could answer part of  
9 your question. That loss that -- in our energy model  
10 we actually took into consideration loss of both muscle  
11 and fat, so that's -- at the bottom there I -- we have  
12 a bullet showing -- or stating that zero point --  
13 there's a zero point four seven (0.047) cost, kilogram  
14 cost, associated with -- with one (1) entry  
15 disturbance.

16 That cost, that weight takes into  
17 consideration fat and -- and muscle. And the same  
18 thing for that second bullet. So we've -- we've -- you  
19 know, in -- in the models and -- we've tried out best  
20 to take into consideration a loss both to muscle and --  
21 and fat.

22 THE FACILITATOR EHRLICH: Thank you.

23 MR. CAMERON STEVENS: Did I -- did I  
24 get -- did I answer your question?

25 MS. MADELAINE PASQUAYAK: I -- I

1 recognize that there's some weight loss at the --  
2 during the time of calving, but I'm talking about a  
3 time of all time when the calf, after ha -- after being  
4 born, they're -- they're able to walk after the -- the  
5 mother calf -- cow, pardon me.

6 By this time, they're -- they're strong  
7 enough that they're able to -- to wander on their own,  
8 but come fall time when the men go hunting, that's --  
9 that's when I noticed that the ca -- the cow has  
10 fattened up. And I wondered that how come back then  
11 they were fat, but now there -- there seems to be so  
12 little fat on them.

13 MS. VERONICA CHISHOLM: Veronica  
14 Chisholm, from De Beers. Thank you, Madelaine.  
15 Appreciate those observations. I think that the GNWT  
16 has been monitoring caribou health, and they -- the  
17 literature from the GNWT may have a better answer. And  
18 I'll try and find those references for you to see  
19 whether they can help address those questions. Thank  
20 you.

21 THE FACILITATOR EHRLICH: Thanks for  
22 that. So I've heard a bit of homework that you're  
23 going to try and come up with a reference. If you can  
24 please try and do that over the -- can -- do you think  
25 you can do it tomorrow?

1 MS. VERONICA CHISHOLM: We may actually  
2 be able to do it today. So we might have that  
3 reference that we can provide. I -- we just may not  
4 have a copy of it to give to Madelaine, but we might be  
5 able to get that to her tomorrow.

6 THE FACILITATOR EHRLICH: Okay. That  
7 would help. Thank you.

8 Fred Sangris of the Yellowknives Dene  
9 First Nation, has a question.

10 MR. FRED SANGRIS: Yeah, Fred Sangris,  
11 Yellowknives Dene. I want to go back to -- I think  
12 it's slide 21 on use plants. I want to ask De Beers,  
13 since they did some studies or -- with communities, I  
14 wanted to ask them, since the Yellowknives Dene are  
15 people who rely big on plant, traditional medicine and  
16 plants, especially in the Arctic tundra, we are  
17 probably -- Yellowknives are very traditional people.  
18 Even to this day we collect plants in the surrounding  
19 outside of the city.

20 I know of rare plants in the -- in the  
21 tundra; many of the Elders do. I just want to ask them  
22 if they did any TK study on plants with the YKDFN.

23 THE FACILITATOR EHRLICH: So the  
24 question to De Beers then is: Have you done any  
25 traditional knowledge studies with the Yellowknives



1 dealing with plants and plant use?

2

3 (BRIEF PAUSE)

4

5 MS. CATHIE BOLSTAD: Hi. It's Cathie  
6 Bolstad, from De Beers. Yesterday I was asked about  
7 traditional knowledge studies with the Yellowknives  
8 Dene First Nation. And De Beers has made an offer to  
9 the Yellowknives Dene First Nation to undertake  
10 traditional knowledge studies. That offer has been  
11 accepted in 2011.

12 De Beers has outlined to the  
13 Yellowknives Dene First Nation what it would like to  
14 see in a traditional knowledge study. And -- and  
15 usually what we would like to see is information  
16 collected in a way that meets the terms of reference  
17 for -- for the particular regulatory process that we're  
18 in in this particular case.

19 And, at this point in time, the answer  
20 would be no, Fred, because we have not moved forward  
21 and we're still waiting for the Yellowknives Dene First  
22 Nation to move forward on a traditional knowledge  
23 study.

24 MR. FRED SANGRIS: Thank you. I have  
25 another question here. Just on the -- the plans on

1 traditional knowledge, I -- I believe that needs to  
2 happen. There are many traditional plants users in the  
3 community that could identify different plants from  
4 other communities.

5                   It's not too late. I remember the  
6 Minister of Indian Affairs, many, many years ago when  
7 De Beers -- or BHP was going through the same thing,  
8 they told us the tra -- it's too late, the train left.  
9 But the Akaitcho chiefs came to the Minister and said,  
10 Yeah, but where are the tracks? So I don't think it's  
11 too late. I think that work still needs to be done.

12                   My other question is -- is: What --  
13 what is De Beers' claim block area? There seems to be  
14 a -- a lot of discussion within just that small printed  
15 area, but exactly what is De Beers' claim block area?

16

17                   (BRIEF PAUSE)

18

19                   MR. ANDREW WILLIAMS: Andrew Williams  
20 from De Beers. The -- the claim block area is fairly  
21 small. It's now reduced to an area of approximately 5  
22 by 10 kilometres, 5 kilometres north/south, 10  
23 kilometres east/west.

24                   It's more or less centred east/west on  
25 the actual proposed mine, but the mine itself sits

1 along the southern boundary of the claim blocks. Those  
2 are the only ones held by the joint venture.

3 Other parties have claims around us, but  
4 we only have four (4) left.

5 MR. FRED SANGRIS: Thank you.

6 THE FACILITATOR EHRLICH: We have --  
7 I'm sorry, Mr. Sangris, do you have a -- an additional  
8 question?

9 MR. FRED SANGRIS: I have a -- a few  
10 more. I don't know how much time I have. Okay. I'll  
11 -- I'll probably --

12 THE FACILITATOR EHRLICH: Well, with --  
13 with -- with wildlife ones maybe we can take a couple  
14 more now, and then we've got some vegetation questions  
15 to come back to after, as well.

16 So are -- are you okay with asking maybe  
17 two (2) wildlife -- two (2) questions now and then  
18 we'll -- we'll -- we'll try to catch the other ones --

19 MR. FRED SANGRIS: Sure.

20 THE FACILITATOR EHRLICH: -- before  
21 long? Thank you.

22 MR. FRED SANGRIS: Thank you. This  
23 one's in relation to wildlife. It's called harvesting,  
24 presentation slide 47. As De Beers or the consultants  
25 indicated that there was no evidence of harvesting. We

1 just did our harvesting this last winter -- last  
2 spring, same with Lutsel K'ue, and we did harvesting  
3 this -- this fall, as well.

4 We have footprints out there, we have --  
5 I -- I've been hunting in that area, as well, the same  
6 area, off the winter road to Kennady Lake, so there are  
7 people that go in the same area.

8 You're not going to find evidence, ENR  
9 or anywhere. You have to go to a First Nations first,  
10 because we do have land use information and where  
11 hunters going to -- to harvest. So that's not a  
12 question, but that's just a comment.

13 But my last question is: I'm not sure  
14 what slide it was, but there was a discussion on Ahiak,  
15 Bathurst, and Beverley on the -- I bel -- is it  
16 Tibbitt-to-Contwoyto?

17 Tibbitt-to-Contwoyto. That information  
18 came from -- Ahiak, and Bathurst, Beverley, that came  
19 from GNWT data?

20

21 (BRIEF PAUSE)

22

23 MR. FRED SANGRIS: You mentioned the  
24 collared data that was -- you used and that Tibbitt-to-  
25 Contwoyto winter road you only spoke on Ahiak,

1 Bathurst, and Beverley, and not the Bluenose herd.

2                   As you know with GNWT only a very small,  
3 small amount of collared caribou is used. Say, for  
4 example, there are two hundred and fifty thousand  
5 (250,000) caribou herds, either Ahiak or Bluenose, and  
6 only ten (10) of them are collared, and the ten (10)  
7 ones that are collared could stay away and the other  
8 two hundred and forty nine thousand (249,000) or so  
9 could be within the vicinity. I come from a group of  
10 hunters with the Yellowknives Dene and we always  
11 harvest Bluenose north of here.

12                   I never relied too heavily on GWNT  
13 database, because that -- it doesn't tell you  
14 everything. You need to, again, work with the  
15 communities who have that information, as well, too.

16                   So I know that the Tibbitt-to-Contwoyto  
17 has three (3) different herds. Well, the new one in  
18 1996 is Ahiak, this new herd that was just done by Anne  
19 Gunn, but the Beverley -- Bluenose does come in north  
20 of Yellowknife and we do harvest it. So, I read other  
21 reports that they don't come in the area, but we know  
22 they do.

23                   In your discussion, you never brought up  
24 the presentation of the impact of winter road from  
25 Tibbitt to Contwoyto, which in that -- because last

1 year, every four (4) minutes there was haul trucks  
2 going up to the mines. And with Kennady project going  
3 on board, there will be -- the shorter minutes will  
4 come into play and there'll be more traffic.

5 And there was no mention of the -- the  
6 impact on that winter road. Because the herds and the  
7 people who make their living out there, especially my  
8 family who live at Gordon Lake (phonetic), there's  
9 going to be an increase in traffic and it could have an  
10 effect on our -- our harvesting lifestyle over there.  
11 Thank you.

12 THE FACILITATOR EHRLICH: Would De  
13 Beers like to comment?

14 MS. CATHIE BOLSTAD: Cathie Bolstad  
15 with De Beers. I -- I would like to just respond to  
16 one (1) of the pieces of information from Fred.

17 THE FACILITATOR EHRLICH: Cathie, can  
18 you just step back from the -- take one (1) step back  
19 from the microphone. Thank you.

20 MS. CATHIE BOLSTAD: Back up again.  
21 Fred, you've indicated that the community, the  
22 Yellowknives Dene First Nation, has valuable  
23 information in terms of the harvest of caribou. And  
24 certainly every opportunity De Beers has when we meet  
25 with the Yellowknives Dene First Nation, when we're --

1 whether we're discussing a specific traditional  
2 knowledge study or how to engage with the community on  
3 this project, our request is always if there is  
4 information that helps make better our assessment, that  
5 you can provide, that it -- that it be made available.

6 And we're always willing to discuss how  
7 to work to have that available. And so, my request  
8 would be of the Yellowknives Dene First Nation. If  
9 there's a willingness and you think it will add value  
10 to a better assessment that -- that information be made  
11 available in a conversation with De Beers to advance  
12 that and move that forward would be great.

13 And I think John -- John, are you going  
14 to address a couple of the other points or -- John  
15 Virgl will -- will address some of the other points.

16 MR. JOHN VIRGL: Thank you, Fred. John  
17 Virgl here of Golder. Yes, we did not in the  
18 presentation here today include the increase in traffic  
19 rates or -- or volumes from the Kennady Lake project  
20 along the Tibbitt-to-Contwoyto winter road. It is  
21 addressed in the EIS, in Section 11.8, and we will get  
22 you those numbers here by tomorrow.

23 THE FACILITATOR EHRLICH: Okay. So I -  
24 - I heard what sounds to -- to my ear like some  
25 homework that's going to be coming up in the very near

1 future. We certainly appreciate the efforts De Beers  
2 will put in, too.

3                   Before the break, I would like to ask  
4 three (3) questions that have come from the consultants  
5 to the Environmental Impact Review Panel, who are  
6 participating remotely. One (1) of them is in BC. The  
7 other is in Calgary. I'll start with BC, and that's  
8 Dr. Anne Gunn, the same one (1) that Fred Sangris  
9 mentions. She's -- she's listening on Vancouver  
10 Island, I think it is.

11                   I'm going to paraphrase her questions.  
12 I'm not looking for responses before the break. These  
13 might take some time to think about, and this way you  
14 have the break to discuss them and figure it out.

15                   So Dr. Gunn asked whether or not the  
16 cumulative effect of climate change has been  
17 sufficiently estimated. She notes that Section  
18 11.13.5, the residual effects summary of the  
19 environmental impact statement, states that:

20                   "All of the pathways for climate  
21 change were determined to have no  
22 linkage, or minor (secondary) changes  
23 to the classification of effects from  
24 the project on the biophysical  
25 environment."



1 She writes:

2 "That appears to indicate there were  
3 no primary effects of climate change,  
4 only three (3) secondary pathways.  
5 These being water flow, processed  
6 kimberlite storage, and the winter  
7 road season. Given the ten (10) year  
8 period of construction and operation,  
9 and predictions of further climate  
10 change..."

11 Dr. Gunn's interested in:

12 "The proponent's confidence that a  
13 warming climate will not cause  
14 measurable changes with residual  
15 effects on a value component relative  
16 to baseline."

17 She notes that there was no discussion  
18 in the EIS of:

19 "The current rate of warming relative  
20 to non-linear and unpredictable  
21 effects and increase in annual and  
22 seasonable variability."

23 She gives an example, which has to do  
24 with caribou, which is why I'm raising this in the  
25 caribou stuff. Well, the obvious reason is if it comes

1 from Anne Gunn, for us, it's going to be about caribou.

2 And her specific example with caribou is in the key

3 line of inquiry for caribou:

4 "For example, population modelling  
5 indicates a large effect on caribou  
6 abundance from changes in the level  
7 of insect harassment, to which any  
8 effects of the mine would be  
9 additive."

10 It's not exactly a comparison, it's an  
11 addition, but an addition to a fluctuating natural  
12 background condition.

13 "Insect harassment is temperature  
14 dependent and is predicted to be more  
15 severe under a warmer climate. In  
16 that case, effects of the mine  
17 additive to the effects of a warmer  
18 climate would have residual effects."

19 So, that's one (1) thing that she will -  
20 - that we'd -- we'd like De Beers to comment on. Dr.  
21 Gunn's next point is that:

22 "It's unclear how De Beers has  
23 consistently and thoroughly drawn on  
24 the experiences at other mines in the  
25 Nunavut -- in the Northwest

1 Territories, which is one (1) of the  
2 requirements of the terms of  
3 reference."

4 She gives a -- a number of examples.  
5 I'll say them now so they're caught in the transcript,  
6 because it makes it easier for you guys to follow up.  
7 She says:

8 "There's no clear description, such  
9 as a summary table or map, that shows  
10 the relative and comparative  
11 footprints of existing and  
12 operational open pit mines and  
13 transportation corridors for Ekati,  
14 Diavik, and Meadowbank. There's no  
15 summary under the subjects of note or  
16 key line of inquiry, of predicted  
17 impacts and the actual measured  
18 impacts for the other mines. Some  
19 experiences, such as fuel spills, are  
20 listed, but not other spills,  
21 including processed kimberlite, or  
22 leakage through dikes. The  
23 experience at the Meadowbank Mine,  
24 which included a 110- kilometre road,  
25 are not listed, although, for

1 example, the effects of the road on  
2 access for caribou harvesting are  
3 monitored and reported."

4 So, that's -- that's her -- her second  
5 point. Now, the next and last point I'll -- I'll --  
6 question I'll raise before the break comes from Petr  
7 Comers, who is our other wildlife consultant, and I  
8 need to switch seats with Chuck so that I can read his  
9 preamble from Nicole Spencer's computer, and she's  
10 sitting over here.

11

12 (BRIEF PAUSE)

13

14 THE FACILITATOR EHRLICH: Okay. Petr  
15 Comers' preamble talks a bit about a point that I got  
16 at a bit before regarding the difference between a  
17 significance determination and -- and the persistence  
18 of species.

19 He's pointing out that things like  
20 abundance, distribution, and catch per unit effort,  
21 even in the interim before everything persists, you  
22 know, while these impacts are going on, can still be  
23 quite important to, for example, First Nations, who --  
24 and other Aboriginal groups who -- who use the  
25 resource.

1 I -- I'm just going to try and -- and  
2 cut through some of the -- the background ones. But he  
3 points out that where your mitigating environmental  
4 impacts with certain management actions, it doesn't  
5 necessarily matter how much -- no, from -- from -- it's  
6 strictly -- from strictly a per -- persistence point of  
7 view, it wouldn't matter how much a population would be  
8 reduced as long as it's still viable so that strictly  
9 speaking the resource will be there for future  
10 generations.

11 So that approach suggests that you'll  
12 have the opportunity to re -- use the resource later.  
13 If the resource is reduced but is still there, then  
14 future generations will have the opportunity to manage  
15 the resource to meet their needs.

16 You -- Petr goes on to say:

17 "The definition of significance to  
18 animal populations is the fundamental  
19 problem."

20 Steve from the Treaty 8 Tribal Corp.  
21 argued that:

22 "Any reduction of the population may  
23 be deemed significant from the  
24 viewpoint of the communities."

25 Petr Comers agrees and has asked about

1 determination of significance by communities. He would  
2 like De Beers to, here comes the question:

3 "Please clarify how the communities  
4 were or will be involved in  
5 determining the significance of  
6 potential impacts to wildlife."

7 And this is shadowing for a possible IR:

8 "Please provide tables of impact  
9 ratings that reflect the values of  
10 communities. While impact ratings  
11 have been provided for the wildlife  
12 subjects of note, from the viewpoint  
13 of conventional scientific  
14 specialists, analogous tables should  
15 be provided from the re -- from the  
16 viewpoint of the people that depend  
17 on the land and its resources."

18 So anyway I wanted to get both of Dr.  
19 Gunn's comments and Petr Comers' comment out there  
20 before the break. You've got some time to ponder that.  
21 We're going to reassemble in fifteen (15) minutes. No,  
22 let's make it ten (10) just because we're a little bit  
23 behind and we've still got a fair bit of ground to  
24 cover today. Why don't we meet at ten (10) minutes  
25 past 3:00. Thank you.

1 MS. VERONICA CHISHOLM: Alan, it's  
2 Veronica Chisholm from De Beers. I'm wondering if we  
3 can get a copy of those in writing, even in advance of  
4 the transcript. Would that be possible?

5 THE FACILITATOR EHRLICH: The wording  
6 of these is specifically intended for internal use of  
7 the parties, so it would require some paraphrasing,  
8 which obviously I can't do while I'm sitting here co-  
9 chairing this. But we'd certainly be happy to help.

10 Tomorrow morning, what I've just said  
11 will be on the Tscript.com website, and so you can --  
12 you can get the verbatim version then. But I'll try to  
13 help you during the break where I can. Thanks.

14

15 --- Upon recessing at 2:58 p.m.

16 --- Upon resuming at 3:13 p.m.

17

18 THE FACILITATOR EHRLICH: Okay, we'll  
19 start with De Beers I said looking at a mostly empty  
20 table of chairs because nothing gets people back in  
21 their chairs faster than finding out that, you know, a  
22 national webcast is ready for their response.

23 Would De Beers like to respond -- sorry,  
24 international webcast. Would De Beers care to respond  
25 to the -- or how would De Beers like to respond to the

1 two (2) points raised by Dr. Gunn and the point also  
2 raised by Petr Comers?

3 MS. VERONICA CHISHOLM: Veronica  
4 Chisholm, from De Beers. We pre -- we appreciate both  
5 those comments and we would like the opportunity to  
6 spend the evening to review them and develop a response  
7 for tomorrow. I'm not going -- I'm not saying we're  
8 going to respond to all of the questions, but we'll  
9 develop a response tomorrow. Thank you.

10 THE FACILITATOR EHRLICH: Okay, on  
11 that, then we'll try to take those matters first thing  
12 tomorrow morning just after -- I guess after the  
13 opening comments, which means Dr. Gunn, if you're  
14 listening, please tune in tomorrow morning because  
15 there will be some caribou goodness going on in the  
16 morning.

17 Do you wish to respond to the question  
18 by Petr Comers as well tomorrow, or do you have  
19 anything on that now?

20 MS. VERONICA CHISHOLM: Veronica  
21 Chisholm, from De Beers. Yes, we'll respond to both  
22 Anne and Petr tomorrow. Thank you.

23 THE FACILITATOR EHRLICH: Thanks. I  
24 understand that Todd Slack of the Yellowknives Dene  
25 First Nation -- Todd, are you here? There he is. Todd



1 has a few questions on caribou he'd like to ask.

2 MR. TODD SLACK: Thanks, Alan. Todd  
3 Slack, Yellowknives Dene First Nation. I have two (2)  
4 lines of inquiry and two (2) separate questions. And I  
5 don't know, you want the easy or the hard ones first?

6 MS. VERONICA CHISHOLM: Veronica  
7 Chisholm, from De Beers. One (1) question at a time  
8 would be great.

9 MR. TODD SLACK: Okay, I'll -- fine.  
10 Easy. In Cam's presentation he noted the -- the zone  
11 of influence and he -- he used the word, that we are  
12 using a 15 kilometre zone of influence to be  
13 conservative. And while, yes, that's true in that it's  
14 larger than the zone of influence that has been  
15 observed at the other mines, in terms of its  
16 application, and the -- the exact term is going to  
17 elude me, but you -- you separate it into these  
18 categories from zero to 1, 1 to 5, 5 to 15 in which  
19 this zone of influence has different levels of  
20 effectiveness, essentially what I'll call the decay  
21 curve of impact.

22 Now, the work that's been done at the  
23 other mines shows quite a clear decay curve which is  
24 much different than what you guys are proposing. Now,  
25 in terms of informa -- and this being the information

1 gap session, I'd consider that to be a pretty  
2 significant gap, not because of the -- you know, the  
3 potential differences in -- in terms of what the -- the  
4 outputs will be, which -- and there will be  
5 differences, but rather here we have clear northern  
6 evidence on the -- the effects of the mines and it's  
7 not being utilized in this case.

8 I'm just looking for the mine -- or the  
9 Company, sorry, to provide some feedback on why they  
10 think that their method of zone influence is a better  
11 way to go.

12

13 (BRIEF PAUSE)

14

15 MR. CAMERON STEVENS: Hi, Todd, good  
16 question. My name is Cam Stevens, Golder Associates.  
17 So I'll -- I'm -- I'm going to try to -- I'm going to  
18 start this answer. I think John's probably going to  
19 step in at some point, my feeling, and my feeling is  
20 that he's going to jump in.

21 So first of all, the zones of influence  
22 that we use in this assessment are the largest recorded  
23 distance in the peer review literature, right. So when  
24 we started the study and we -- and we want to use  
25 something that's -- that's eco -- ecologically

1 relevant, we're going to -- we're -- we're honestly --  
2 we consider local information cert -- very valuable in  
3 -- in -- in -- in a -- in our assessment in  
4 understanding effects.

5                   But just let's be clear that some of  
6 this local work is far -- to my knowledge, has not been  
7 accepted in the peer review literature and there's some  
8 debate onto the -- the actual extent of -- of avoidance  
9 around mines in general. And part of this -- and part  
10 of the -- the discussion and part of -- part of the  
11 debate is what is -- what is the underlying mechanism  
12 for avoidance. And there are a couple of competing  
13 hypotheses.

14                   Today we've talked about sensory  
15 disturbances, noise attenuating at 3.5 kilometres.  
16 We've talked about the spatial extents of dust and  
17 potential effects on vegetation, no greater than 2  
18 kilometres from the site.

19                   So the question is, what -- what -- why  
20 are caribou avoiding mines at a distance of 15  
21 kilometres, or why is the probability of occurrence  
22 lower within the zone than it is outside the zone.

23                   And I think -- so I guess where I'm --  
24 where I'm going with this is that -- well, first --  
25 first of all, the other competing hypothesis is this

1 risk disturbance idea where there's a perception of  
2 risk, right. Animals are -- the caribou are perceiving  
3 human infrastructure -- infrastructure, human activity.  
4 They're associating that activity, these -- these  
5 buildings with areas where there -- there could be  
6 hunters, where they might get shot.

7                   And so this is why we're seeing this  
8 avoidance. And perception probably is -- is variable  
9 from one (1) animal to the next, one (1) herd to the  
10 next, from one (1) year to the next. And some of our  
11 work with the Diavik And Ekati mines have -- have  
12 clearly shown that during some years there's actually  
13 attraction to the mine site and in other years there's  
14 avoidance. There's a 15-kilometre zone -- clearly a  
15 15-kilometre zone of influence.

16                   And in some years potentially a 30-  
17 kilometre zone of influence. There's a lot of  
18 variability associated with this zone. And, you know,  
19 in the majority of the research on rangifer, on caribou  
20 in the literature, and mam -- mammals in general, in  
21 fact, show that these animals avoid human activity  
22 infra -- infrastructure up to distances of 5  
23 kilometres.

24                   So take -- taking all this information  
25 together, at the end of the day it seems like that

1 approach was -- was conservative. And keep in mind,  
2 we've assigned a zone of influence for mineral  
3 exploration sites of 5 kilometres, and we assume that  
4 that zone of influence was active for the entire  
5 duration of -- of those permits. And this has the  
6 biggest in -- influence on -- on our assessment more  
7 than anything else. Mineral exploration sites are  
8 numerically the most dominant feature on the landscape.

9

10 (BRIEF PAUSE)

11

12 MR. JOHN VIRGL: John Virgl of Golder  
13 Associates. I'll just add a few things to what Cam was  
14 saying, Todd, and it is a good question, thank you.  
15 First of all, there is no significant gap in -- in the  
16 EIS. As Cam mentioned the -- and there's -- and all --  
17 and the work in the EIS, there's -- there's many  
18 references to the work that's been going on Ekati, and  
19 Diavik, and Snap, and also the hei -- the -- the zones  
20 of influence are based on that work, okay?

21 The disturbance coefficients that we  
22 used in the zones of influence, come from Johnson's  
23 (phonetic) paper. Where he gave hypothetical zones --  
24 or disturbance coefficients for zones of influence.  
25 The -- the -- the decay curve that you talk about is in

1 the -- is in that manuscript by John Belanger  
2 (phonetic). And it combines the preconstruction, or  
3 the construction period, and then the operational  
4 period.

5                   And in the construction period, it -- it  
6 was -- it was weak, it could not find any -- they could  
7 not -- the authors could not find anything. But during  
8 the operational period, by pooling the information,  
9 they did find the 14-kilometre zone of influence and a  
10 -- that probability of -- of -- of occupancy within  
11 that zone of influence. The decay curve that you're  
12 res -- that you're referring to.

13                   Other work looking at that information,  
14 has looked at it by year. And as Cam mentioned, you  
15 look at it by year because year interactions are  
16 important. There are years when it's almost impossible  
17 to detect a zone of influence. In fact, you can't.  
18 And there are years when you can. But it's also  
19 related to the lake around Diavik and the lakes in the  
20 entire Lac de Gras region. And in some years, as Cam  
21 mentioned, caribou have -- females with cal -- with  
22 calves, were more likely to be found near the mine site  
23 than they were further away.

24                   So we used the zone of influence from  
25 the literature, not only from the -- from literature

1 outside of Canada but also inside Canada, and in other  
2 arct -- in other Arctic herds and from the local  
3 studies around -- in the NWT here regionally. And the  
4 Lac de Gras area particularly. And disturbance  
5 coefficients that came from a published paper on --  
6 that was built on the satellite collared information  
7 from the Bathurst caribou herd.

8 THE FACILITATOR EHRLICH: Thanks, John.  
9 Todd, with the -- the remaining questions and answers,  
10 just to be mindful of the time I'm going to ask  
11 everyone who's speaking to do their best to keep it  
12 concise and please go ahead, Todd Slack of the  
13 Yellowknives Dene First Nation.

14 MR. TODD SLACK: Excuse me. Thanks,  
15 Alan. Well, I thought I -- I asked a very short  
16 question. But perhaps not.

17 With that, here is a -- a sort of multi-  
18 part line of inquiry. And it builds on what Henry was  
19 talking about in terms of this 40 percent number. And  
20 I understand that the Company has tried to clarify  
21 where this is coming from. But I need to seek a little  
22 more information.

23 This number comes out of Swift and  
24 Hannon, which you referenced on one (1) of those slides  
25 there. When they amalgamated their information, or

1 they brought together all of their studies, how many of  
2 those studies that they used involved caribou? How  
3 many of the studies that they examined to derive this  
4 40 percent number, involved caribou?

5 MR. CAMERON STEVENS: Cam Stevens,  
6 Golder Associates. Good question, Todd. I can't tell  
7 you the number of studies that she referenced that  
8 included caribou. But, you know, it's a synthesis of -  
9 - of hundreds of studies and a variety of species. And  
10 just so you know, the threshold that she rep --  
11 reported is actually 40 to 60 percent. So we're --  
12 we're -- in the EIS, we -- this forty (40) -- this  
13 number forty (40) comes up, but in -- in her paper,  
14 it's -- she gives a range of 40 to 60 percent.

15 And Tricia (phonetic) -- also, Tricia  
16 Swift, who was co-author of -- of that paper, the lead  
17 author of that paper, kind of described it first as --  
18 this cheat sheet -- she gets this 40 percent number  
19 from something called percolation theory.

20 Imagine you have a -- you have a  
21 rectangular box. And you have bal -- it's all filled  
22 with balls going across like this, and the 40 percent  
23 is the point at which you rem -- you remove these  
24 balls, where the largest group does not go across the  
25 entire length -- the width of that box.



1                   So, it -- it -- there's -- there's some  
2 theory, or some -- some additional concepts behind that  
3 40 percent number than just a summary of -- of the  
4 literature.

5                   MR. TODD SLACK:   Todd Slack, YKDFN.  
6 And I'm happy, if you guys want to take this away and  
7 provide it as an undertaking. I'm happy to -- to wait.  
8 But the point of this being -- and if it doesn't  
9 involve caribou, or ungulates, or large bodied mammals  
10 along these lines, yet we're using this as an  
11 assessment endpoint, then I have to wonder what the  
12 actual validity of this as an analysis -- an  
13 environmental analysis tool.

14                   Now, we heard a lot about conservatives  
15 -- conservatism built into the system along the way  
16 based on the data, but if the actual metrics -- sorry,  
17 John, I know that's not the word you -- if the  
18 threshold that we're going to use to evaluate whether  
19 this is a primary pathway, or is a pathway of concern,  
20 shall we say, if that is invalid then the actual EA  
21 process that you're undertaking isn't valid. So, it's  
22 swift in hand, and -- and, you know, like I'll -- I'll  
23 leave this up to you guys, and you guys can argue it  
24 out with my guys once the undertaking's in, or whatnot.  
25 Then I'm concerned that it's not an applicable value to

1 be used within this system.

2 And in terms of information gaps, as --  
3 as Henry mentioned, you know, and we've talked about  
4 this before, there's a great deal of concern about  
5 this.

6 THE FACILITATOR EHRLICH: Before we  
7 assume that De Beers would prefer to do this as an  
8 undertaking then as it -- something that can be  
9 resolved tomorrow, would you be open to taking a stab  
10 at this tomorrow morning?

11 MR. JOHN VIRGL: John Virgl here from  
12 Golder Associates. I'd like to take a stab at it right  
13 now.

14 THE FACILITATOR EHRLICH: Stab away,  
15 please.

16 MR. JOHN VIRGL: As I mentioned to you  
17 previously, Todd, it's a -- it's a value -- it's --  
18 it's got a range of values, okay? It's -- it's looking  
19 at an abrupt change in a number of different kinds of  
20 population responses, everything from population size  
21 to dispersal, to survival, to recruitment, across a  
22 number of different taxa. And that abrupt change  
23 occurs over a very small change -- abrupt decline terms  
24 occurs over a very small change in habitat. And that -  
25 - that point where it happens is somewhere between 40

1 and 60 to 70 percent for different taxa.

2                   It's a value from different taxa that  
3 we're not saying we're applying to caribou directly.  
4 We're not saying this is a threshold for caribou. We  
5 have a number of different measurement points, some  
6 include habitat -- direct habitat change and  
7 fragmentation; other's include changes to habitat  
8 quality. Those are measurement endpoints. The  
9 assessment endpoint is how those changes in measurement  
10 endpoints may ultimately affect caribou population.  
11 Abundance and distribution, and ult -- ultimately  
12 persistence.

13                   In that context, we took our mea -- our  
14 impact classifications from less than 1 percent,  
15 meaning negligible, 1 to 10 percent, meaning low, 10 to  
16 20 percent, meaning moderate, and above 20 percent as  
17 being high. And we get to a high, that means we're on  
18 that -- that's where significance might start to occur.  
19 That's the potential for significance.

20                   We're not close to 20 percent. We're at  
21 7 percent. We're 20 percent below those ecological  
22 threshold values that you're referring to that Swift  
23 and Hannon have presented for a number of different  
24 taxa. That's the best information we have available.

25                   That is how we applied it in the EIS.

1 And that provides us with confident impact predictions.

2 Thank you.

3 THE FACILITATOR EHRLICH: Todd, do you  
4 have any further questions on the subject?

5 MR. TODD SLACK: I have one (1) more --  
6 or just one (1) last point, and if the -- the proponent  
7 wanted to respond, I -- I -- sure. But when I read  
8 that paper -- now, listen, I am not a man with a great  
9 deal of letters behind my -- my name here, so there are  
10 a certain number of things that I, you know, did not  
11 understand. But when I looked at the -- that variety  
12 of taxa that you talked about, I grow very concerned  
13 when I see the mushrooms, when I see insects, when I  
14 see tropical birds being used as an analogy for, you  
15 know, the keystone species in the North, a species  
16 that's already under considerable pressure. And the  
17 First Nations har -- constitutionally protected  
18 harvesting rate already is at zero, essentially.

19 So, while I take your point that it's  
20 the best shot -- well, maybe I'm paraphrasing  
21 incorrectly, you know, there's a great deal of concern  
22 about this. And if we have to pursue it through IRs,  
23 then that's fine too.

24 MR. JOHN VIRGL: John Virgl, of Golder.  
25 Todd, I appreciate your concern. I appreciate

1 everyone's concern about caribou. And just to correct,  
2 it's about the best information available. And  
3 ecological systems can be applied to other ecological  
4 systems, not specifically, but just because there are  
5 no threshold known for caribou right now doesn't mean  
6 we can't use a threshold from other species.

7 THE FACILITATOR EHRLICH: Okay. I'm  
8 going to jump in because I don't think we're getting  
9 much productive benefit of belabouring this one any  
10 further. The -- I think that De Beers has clearly  
11 heard the Yellowknives' concern over this approach, and  
12 I know that the Yellowknives have heard De Beers'  
13 response on this. The environmental impact review is  
14 still at an early stage, and then there are other  
15 opportunities for pursuing questions if necessary.

16 Todd, you -- you're holding up your pen  
17 and I don't know if it's just because you're holding it  
18 or because you have another question, but where are you  
19 at?

20 MR. TODD SLACK: I have two (2) more  
21 questions, but in the interest of time I could  
22 sacrifice one (1) of them, because it was just a  
23 confirmation.

24 But its -- it falls on that -- that 7  
25 percent that -- that John ju -- was just talking about.

1 And again, this is not new. Golder has seen this in  
2 the -- the NICO process. But the cumulative effects  
3 analysis that Golder submitted with this is again  
4 lacking in thoroughness. It does not include a single  
5 project in Nunavut, which we all know that there's  
6 going to be projects in Nunavut.

7                   Using that same list that was presented  
8 in the -- in the Fortune (phonetic) case, I -- I spoke  
9 to Elgin Mining at Geoscience who own Lupin and Ulu,  
10 and they state that their -- their project is a re --  
11 reasonably foreseeable project as it's defined.

12                   Xstrata spent \$50 million on Hackett  
13 River. And I'm not an international mining executive,  
14 but I'm sure folks would agree that no international  
15 miner spends that kind of money unless there's a real  
16 project there.

17                   Jericho's on the process of be -- being  
18 reopened. Bathurst's Porten Road has been in  
19 environmental assessment for a few years. And Sabina's  
20 deposit at Back Lake is very promising, as well.

21                   So, this cumulative effects is done at 7  
22 percent when I think that in reality that is not a  
23 conservative approach, because of the number of  
24 developments that are going to occur in much high --  
25 much more important caribou habitat in Nunavut.

1 Relatively important. So, I would like to see the  
2 company redo this cumulative effects analysis that  
3 better reflects the upcoming future.

4 MS. VERONICA CHISHOLM: Veronica  
5 Chisholm, from De Beers. Todd, we appreciate your comm  
6 -- comments, but it is our opinion that the cumulative  
7 effects assessment in the EIS is a thorough -- and a  
8 document that we can very easily defend. And so it  
9 looks like we're just of varying opinions on this one.  
10 Thank you.

11

12 (BRIEF PAUSE)

13

14 THE FACILITATOR EHRLICH: It's a  
15 question for De Beers. We're just trying to figure out  
16 if this is good undertaking fodder, or IR fodder.  
17 Undertakings are the kinds of things that can probably  
18 be produced in a couple of weeks. And it sounds like,  
19 you know, there's an interest on the Yellowknives part  
20 to find out how your cumulative effects model would be  
21 changed, and how your predictions would be changed,  
22 with the inclusion of the projects that they've  
23 specified.

24 Is that something you think you can do  
25 within a couple of weeks?

1 (BRIEF PAUSE)

2

3 MS. VERONICA CHISHOLM: Veronica  
4 Chisholm, from De Beers. The short answer is no. It's  
5 not something we could undertake in a couple of weeks.

6 But, I think, more importantly, what we  
7 presented in the EIS for the cumulative assessment is  
8 what we believe is a -- reasonable foreseeable projects  
9 in the region. And we think we've adequately addressed  
10 this, and we feel that we're in a position to defend  
11 what we've already established in the EIS. Thanks.

12 THE FACILITATOR EHRLICH: I don't want  
13 to request an undertaking that can't be done in the  
14 time period that's suitable for undertakings. Would De  
15 Beers be willing to do an undertaking describing why it  
16 feels that the project's specified by the YKDFN are not  
17 reasonably foreseeable in that case? Because you said  
18 you've included those that are reasonably foreseeable.  
19 If the Yellowknives have said, There's other stuff you  
20 haven't, I'm assuming if you disagree, it's because you  
21 disagree about whether they're reasonably foreseeable.

22 I -- I think this would be a -- and I --  
23 I -- I -- I don't want to leave the Yellowknives the  
24 only avenue here of putting this out in an Information  
25 Request, when there -- there may be a -- a more common



1 ground than we see before us right now.

2 I propose this as an undertaking. We'll  
3 call it Undertaking Number 1, which is for De Beers to  
4 at least reconcile its cumulative effects assessment,  
5 with respect to reasonably foreseeable future  
6 developments with those that have just been described  
7 from the Yellowknives Dene, specifically pointing out  
8 where if you -- if you disagree with some of the  
9 assumptions that you've just heard, why.

10 That's not the same -- deliberately not  
11 the same as asking for a -- a full second cumulative  
12 effects assessment. Like I said, the process is -- is  
13 early rath -- at the moment we're at an early point in  
14 the process, and it's possible with that undertaking  
15 maybe it won't need to be pursued further. Are you  
16 able to do that by December 16th, which is a Friday?  
17 It happens to be two (2) weeks after the last day of  
18 this session.

19 MS. VERONICA CHISHOLM: Veronica  
20 Chisholm from De Beers. Thank you, Alan. Yes,  
21 absolutely, we could meet that timeline and we could  
22 provide that response by that date. Thank you.

23

24 --- UNDERTAKING NO. 1: De Beers to reconcile its  
25 cumulative effects

1 assessment, with respect to  
2 reasonably foreseeable  
3 future developments with  
4 those that have just been  
5 described from the  
6 Yellowknives Dene,  
7 specifically pointing out  
8 if De Beers disagree with  
9 some of the assumptions  
10 they just heard, and why  
11 (Provide by December 16,  
12 2011)

13

14 THE FACILITATOR EHRLICH: I'm also  
15 happy to take yes, absolutely as an answer.

16 Now, we've got -- we've got -- and Todd  
17 of the Yellowknives, would that help you -- help  
18 clarify perhaps where some of the divergences are  
19 between the Yellowknives and the developer?

20 MR. TODD SLACK: Todd Slack, YKDFN.  
21 Well, it remains to be seen what's written, but  
22 certainly it's not going to hurt. And if the company  
23 wanted to focus on those projects that are already in  
24 environmental assessment in Nunavut that are before the  
25 NIRB, that would be a recommendation I would make.

1 THE FACILITATOR EHRLICH: Well, just  
2 for the -- for the -- I mean, I -- I see the company  
3 has heard what you've just said, but you've also  
4 mentioned other things that the Yellowknives perceive -  
5 - see as being reasonably foreseeable, and I don't want  
6 to exclude those. I think it's -- you know, you've --  
7 you've asked a question and the company deserves a  
8 chance to explain the -- the route it has taken.

9 That's our first real undertaking for  
10 this session, which is kind of remarkable, considering  
11 we're on day -- day 2 -- day 3 of the session. I would  
12 strongly suggest -- when you see the transcript, you'll  
13 see the undertakings listed up at the very front, don't  
14 just look at the undertaking listed at the very front.  
15 Search the undertaking in the document, try to look at  
16 the context of the discussion that came up around this,  
17 because if you want to resolve the stuff meaningfully,  
18 then it really helps to remember what -- you know, what  
19 kind of issues were being looked at and the discussion  
20 will keep you on track, and hopefully make sure that  
21 your efforts are efficient and -- and -- and pointed  
22 towards the -- the question at hand.

23 So, I say that with respect to all  
24 undertakings, but now we have an Undertaking number 1  
25 then. It'll be on the tscript.com site tomorrow.

1                   Now I'd like to ask the GNWT if you have  
2 -- they've indicated during the break they have one (1)  
3 or two (2) questions regarding caribou. Who's going to  
4 be asking those for the GNWT?

5                   MS. LORETTA RANSOM:     Good afternoon.  
6 It's Loretta Ransom with the Government of the  
7 Northwest Territories. I just have two (2), or one (1)  
8 question, really.

9                   Today you guys confirmed that you'd be  
10 willing to work with Environment and Natural Resources  
11 towards monitoring harvesting activities along the  
12 winter road.

13                   We would just like to confirm, or  
14 continue our discussions on that and we would like to  
15 work towards a commitment from De Beers to provide a  
16 base of operations for community monitors, officers and  
17 biologists to mon -- during the monitoring of the  
18 harvesting, such as a check station or access to  
19 project buildings for overnight stays and what not.

20                   And I just wanted to bring that up,  
21 through -- from Bruno (phonetic). And just to raise it  
22 as -- for future discussions.

23                   THE FACILITATOR EHRLICH:     Is this  
24 something that De Beers requires further -- future  
25 discussion on, or are you willing and able to commit to

1 something like that now?

2

3 (BRIEF PAUSE)

4

5 MS. VERONICA CHISHOLM: Veronica  
6 Chisholm, from De Beers. I was just consulting because  
7 I -- I'm relatively new to De Beers so I wasn't sure  
8 what the conversations were had.

9 We would like to continue that  
10 conversation. I don't think we're in a position today  
11 to make a full commitment but we -- definitely are in a  
12 commitment to keep the conversation going on this.  
13 Thank you.

14 THE FACILITATOR EHRLICH: Thanks. And  
15 I'll remind everyone of what I said yesterday regarding  
16 sidebar meetings. Parties are entirely free to hold  
17 them amongst themselves to sort out stuff. We have a  
18 form that you can report the results on if you want to  
19 be sure that they get on to the public record. And  
20 we'd encourage you to -- to use that format. Stephen  
21 Lines of De Beers has a copy of the form, I think.

22 Any other questions from the GNWT?

23 MS. LORETTA RANSOM: It's Loretta  
24 Ransom, GNWT. Thank you very much, and that's what we  
25 were hoping to hear is -- you know, continued

1 discussions.

2                   We also just wanted to acknowledge that  
3 a lot of work and effort has been put into modelling  
4 the model. And that we look forward to receiving the  
5 addendum and to further discussions after we receive  
6 that and have had time to review it. That's it.

7                   THE FACILITATOR EHRLICH: De Beers,  
8 care to comment?

9                   MS. VERONICA CHISHOLM: Veronica  
10 Chisholm, from De Beers. No, no further comment. But  
11 yes, absolutely. We'll be submitting that addendum and  
12 conversations will be continued and -- and MVEIRB will  
13 get a copy of any conversations that we have with --  
14 with Loretta et al.

15                   THE FACILITATOR EHRLICH: Smashing.  
16 Thank you. I have a question from Terry Antoniuk of  
17 Salmo Consulting, who's out of Calgary, who's  
18 consultant for the Board on cumulative effects.

19                   It touches vaguely on -- well, not that  
20 vaguely on -- on the question that the Yellowknives  
21 asked a moment ago. He's participating as a remote  
22 participant.

23                   He -- Terry says, quote:

24                   "You've indicated that mineral  
25 exploration sites have been the

1 largest footprint on the landscape.

2 Did you consider future exploration  
3 sites in your analysis? And if not,  
4 why not?"

5

6 (BRIEF PAUSE)

7

8 MR. CAMERON STEVENS: Hi, Cam Stevens.

9 Golder Associates. Terry, in the -- good question,  
10 Terry. In the EIS there is actually a figure -- I wish  
11 I could tell you that -- the exact figure number. But,  
12 it's a figure showing trends in development on the  
13 annual home range for caribou, and the number of camps  
14 on -- on the landscape and -- and the footprint on the  
15 landscape has actually declined since 2006.

16 The other point I want to make is that  
17 we have -- sorry, that's sever -- that's figure 7.5-3.  
18 So the number of camps on the -- on the landscape  
19 peaked in 2006 at around ninety-five (95) camps, and  
20 currently there are probably around fifty (50) to sixty  
21 (60) camps on the landscape.

22 So the other point I want to make is  
23 that for camps that have -- that are active, or camps  
24 that were active were -- were footprints with a permit  
25 for a five (5) year period, and we called those

1 footprints active that entire five (5) year permit  
2 period, all year round, each year for five (5) years,  
3 when the reality is that companies are only on those  
4 locations for a couple months a year, maybe one (1)  
5 year out of five (5), but rarely for five (5) years,  
6 and rarely for the entire year.

7                   So that -- that was one (1) way with --  
8 in which we dealt with uncertainty, by making this very  
9 conservative assumption that the zone of influence of a  
10 mineral exploration permit was active for a five (5) --  
11 was active for a five (5) year permit in our -- in our  
12 assessment.

13                   THE FACILITATOR EHRLICH:   Cam, can I  
14 just clarify. The question wasn't how have you been  
15 conservative in your dealings with past and present  
16 exploration developments. His question was, and I  
17 quote: Did you consider future exploration sites in  
18 your analysis, and if not, why not?

19                   So the question is: Did you consider  
20 future sites in your analysis, and if not, why not?

21                   MR. CAMERON STEVENS:   Well, it's  
22 difficult to predict, first of all. The trend is -- is  
23 -- there's been a declining trend in the number of  
24 sites. And -- and because it's difficult to predict we  
25 -- we decided to make our assessment conservative in --



1 in other parts of that assessment to deal with that  
2 uncertainty.

3 THE FACILITATOR EHRLICH: So is -- is  
4 it fair to say then that you didn't include future  
5 stuff, but you made your consideration of present and  
6 past stuff conservative enough so you figured you got  
7 the net impact?

8 MR. CAMERON STEVENS: Cam Stevens,  
9 Golder Associates. The answer to that is yes.

10 THE FACILITATOR EHRLICH: Okay. Do we  
11 have any other questions on caribou? I see that Steve  
12 Ellis from Akaitcho Treaty 8 Tribal Corp has one (1).

13 Now I know that we're getting a little  
14 bit behind with the cari -- with the carnivore and  
15 species at risk and bird stuff, but caribou is a really  
16 important subject. There's a key line of inquiry. I  
17 want to give it the time that it -- it needs to be  
18 adequately dealt with in this session. If we have to  
19 go a little bit late with the carnivore stuff, we will.  
20 But this -- this seems to me like a place where people  
21 really need to get their -- their questions out.

22 Steve, if you're asking a question on  
23 behalf of Akaitcho Treaty 8 Tribal Corp, please make  
24 that clear. If you're asking on behalf of remote  
25 participants, because I know that you are actually many

1 people here today, please make it clear who you're make  
2 -- asking the question for. Thank you.

3 MR. STEVE ELLIS: Yeah, it's Steve  
4 Ellis with the Treaty 8 Tribal Corporation. All these  
5 questions are on behalf of the Treaty 8 Tribal  
6 Corporation.

7 So I'm glad we're -- we're back to this  
8 concept of uncertainty, and conservative modelling  
9 because that's really where my question lies. It sort  
10 of follows up on where Alan started, this -- this  
11 questioning with regards to the caribou.

12 Can we go to slide 43? Yeah, you know,  
13 I guess a couple of hours ago at this point when Alan  
14 was asking some questions with regards to the rationale  
15 for conservative modelling, I think, you know, John,  
16 you gave a fairly good answer, saying that, Well, you  
17 know, we want to capture an uncertainty that we can't  
18 predict for, we can't define, so we are on the side of  
19 -- well, you know, it's just -- this is just simple  
20 common sense, right.

21 You make conservative estimates to  
22 capture that uncertainty. So I guess what I don't  
23 understand from this graph here, and what -- what I see  
24 in the -- the minus twelve point two (12.2) is from the  
25 EIS, and the -- the use of your -- correct me if I'm

1 wrong -- your key assumption, 1 kilogram loss reduces  
2 parturition by zero point zero six (0.06) units,  
3 correct, and that's how you reached that twelve point  
4 two (12.2) number?

5 I'm seeing nodding over there, so I'll  
6 just proceed.

7 THE FACILITATOR EHRLICH: Hold -- hold  
8 on a second there, Steve.

9 MR. CAMERON STEVENS: Okay.

10 THE FACILITATOR EHRLICH: The sounds  
11 they're making don't sound like nodding.

12 MR. CAMERON STEVENS: Okay.

13 THE FACILITATOR EHRLICH: They sound  
14 the other, the opposite of nodding.

15 MR. CAMERON STEVENS: Well, would it --  
16 would it -- sorry, Steve. Would it help if I went  
17 through this just quickly? No. So -- okay.

18 THE FACILITATOR EHRLICH: Please go  
19 ahead.

20 MR. CAMERON STEVENS: Okay.

21 THE FACILITATOR EHRLICH: That sounded  
22 like a "no." Steve, could --

23 MR. CAMERON STEVENS: All right.

24 THE FACILITATOR EHRLICH: Could you  
25 perhaps rephrase your question. I'm not --

1 MR. CAMERON STEVENS: It's -- it's --

2 THE FACILITATOR EHRLICH: I'm not sure  
3 they're quite ready to go. Or Cam, are you ready to  
4 respond?

5 MR. CAMERON STEVENS: Sorry. I guess  
6 the point -- the point I just want to make -- sorry.  
7 It's just an opportu --

8 THE FACILITATOR EHRLICH: Please state  
9 your name at the beginning of speaking.

10 MR. CAMERON STEVENS: Sorry. It's Cam  
11 Stevens.

12 THE FACILITATOR EHRLICH: Thank you.

13 MR. CAMERON STEVENS: Thank you, Alan.  
14 The -- the point is -- is it's just not parturition.  
15 We've -- in the model we've -- we've take into  
16 consideration habitat loss, but with some follow-up  
17 work, you're right, if we use a different relationship  
18 describing mass and parturition rate, if we use a  
19 relationship being used by some regional biologists the  
20 -- the effect size is much lower.

21 MR. STEVE ELLIS: I guess the question  
22 is then in making the transition from minus twelve  
23 point two (12.2) to the new number, minus three point  
24 se -- seven (3.7), what was the variable that was  
25 adjusted there? Is it -- is -- is the variable that

1 was adjusted the habitat loss? I don't think so. I  
2 think the variable that was adjusted was something  
3 else. So what is that adjustment?

4 MR. CAMERON STEVENS: Cam Stevens,  
5 Golder Associates. That's a good question. What we  
6 did was -- so we know -- so we know -- we know what  
7 parturition rate is under -- under a good -- under, you  
8 know, perfect conditions. And then when we add 'X'  
9 number of developments onto the landscape and we  
10 calculate the number times caribou encounter those del  
11 -- those -- those zones of influence, we can -- we can  
12 model and -- and predict what the -- the possible --  
13 the weigh -- weight loss will be.

14 And then from -- from that we -- we  
15 estimate what that partur -- drop in parturition rate  
16 is going to be. So we have a -- we have a parturition  
17 -- a fecundity rate. Essentially, it's -- it's a  
18 probability of a calf producing -- of a cow producing a  
19 calf the following spring, and we know that -- what --  
20 what that value is.

21 Let's say it's one (1) under perfect  
22 conditions. So the probability of -- of a cow in a  
23 perfect world producing a calf is one (1), and it's  
24 reduced a certain number. And then we run that  
25 simulation. And then we -- and then we modify that

1 vital -- and we call it a vital rate, and that vital  
2 rate is an input in a stage -- it's in the matrix.  
3 They call it the matrix in the population viability  
4 analysis.

5                   So you -- you multi -- you -- you reduce  
6 that -- that fecundity rate. And then you rerun your  
7 simulation. And then that's the -- and then that's the  
8 effect. The difference between -- the difference  
9 between the outcomes from those two (2) models is your  
10 effect.

11                   We've also reduced not only parturition  
12 rate, but habitat loss, as well. But in this case  
13 here, hab -- habitat loss is the same in both of those  
14 -- in both of those comparisons. It's -- it's the --  
15 it's the reduction parturition rate that's -- that's  
16 being changed. And what this exercise tell -- tells us  
17 is that parturition rate -- a solid change in  
18 parturition rate has an effect on the outcome.

19                   Does -- does that help? Does that  
20 answer your question? Thank you.

21                   MR. STEVEN ELLIS: So just -- Steve  
22 Ellis here, Treaty 8 Tribal Corporation. So the minus  
23 twelve point two (12.2) actually has a higher  
24 parturition rate than the -- than the other one (1),  
25 than the three point seven (3.7)? Is that what we're

1 saying?

2 MR. CAMERON STEVENS: The -- the  
3 difference is higher, so the par -- the change in  
4 parturition rate in the -- in the future model is -- is  
5 dif -- is more different than -- than the reference  
6 model. In the -- in the rerun the difference in  
7 parturition rate is less, and that's because of -- of  
8 the relationship described by -- by Daniel.

9 MR. STEVE ELLIS: Okay. Thanks.  
10 That's all I'll ask on this. I'm quickly going to get  
11 ov -- in over my head if I keep on going down this  
12 road, but this gives me enough information to direct  
13 our people who should know this sort of thing in the  
14 right way, so.

15 That's -- that's the first question.  
16 The second does have to do with zone of influence and  
17 how you've described it. So if you'd go to slide 39.  
18 Can we go there?

19 Just a clarification here. So at the  
20 very bottom it says the assumption is that -- or I  
21 guess based on some peer reviewed journal articles the  
22 understanding is that we can expect for every day of  
23 insect harassment we have a .15 kilogram decrease in  
24 weight.

25 And then above that it says for every

1 disturbance we can expect a .047 kilogram decrease in  
2 weight for a cow. What is a disturbance? Is that an  
3 incident where a caribou or an animal trespasses  
4 through a zone of influence, or encounters one, or  
5 please define that a little better?

6 MR. CAMERON STEVENS: Exactly. That's  
7 when a -- oh, Cam Stevens, Golder Associates. But  
8 that's exactly right. It's when a -- one (1) of those  
9 paths intersects the zone of influence and -- and then  
10 we -- we're assuming a very strong response.

11 So no matter where that path intersects,  
12 it might be right on the edge, we're still counting  
13 that as a -- as -- as a disturbance. And it's a strong  
14 repo -- response. The cow is very excited, excited for  
15 twelve (12) hours.

16 There's -- which has meta -- demands,  
17 and -- and the caribou runs for -- for -- for 2  
18 kilometres. And so that was one (1) way we described -  
19 - or -- or quantified the number of disturbances.

20 The other way was -- was to quantify the  
21 days within the zone of influence, or the percentage of  
22 the animal's time inside the zone of influence. And so  
23 we assumed, correct me if I'm wrong, John, that -- that  
24 -- that for each day in the zone of influence that the  
25 animal was exposed to one (1) strong response to -- to



1 a -- something that was going on around the mine site,  
2 or around the -- the community, or around the mineral  
3 exploration camp, or around the winter road.

4 MR. STEVE ELLIS: I guess just a --  
5 just a -- Steve Ellis with the Treaty 8 Tribal  
6 Corporation. Just to clarify for my own mind here, so  
7 just looking at the little graphic there, so we've got  
8 the green 'X' where caribou enters in and the purple  
9 'X' where they -- where they exit.

10 So if a car -- say let's get -- say  
11 caribou A walks in there and spends thirty (30) days in  
12 there, in close proximity to the actual project works  
13 and then exits, and yet caribou B comes in and -- and  
14 moves through that zone of influence within twelve (12)  
15 hours to the extremity, are they both counted at the  
16 same disturbance, one (1) disturbance?

17 MR. CAMERON STEVENS: Cam Stevens here,  
18 Golder Associates. The short answer is yes. It's --  
19 if -- if -- if it -- time -- the amount of time the  
20 animal spends inside the zone, put that inform -- put  
21 that information aside.

22 We've done it two (2) ways. So we've  
23 counted the number of times the path intersects, no  
24 matter how slow or fast the animal is going, or where -  
25 - where it intersects. An intersection is an

1 intersection and that's -- and that's -- and we -- we  
2 call that an encounter, or a potential encounter.

3                   And then we -- and we just -- just --  
4 you know, we just measured another -- another  
5 parameter, you know, to see -- just to make sure -- you  
6 know, we're -- we're understanding what's going on.

7                   We wanted to quantify the number of days  
8 on average that the animal spent close to zones of  
9 influence. That number actually turns out to be, I  
10 think, six (6) -- six point nine (6.9) days. Six (6)  
11 poi -- so on average female cows as they mar -- as they  
12 move from the calving to the wintering areas spent six  
13 point nine (6.9) days in close proximity to -- to human  
14 developments.

15                   THE FACILITATOR EHRLICH: Cam, I'm  
16 going to just jump in here, and, Steve. We're getting  
17 to a level of detail that I would say certainly exceeds  
18 the sort of broad outlook that we're striving for with  
19 the EIS analysis session.

20                   I mean, I hope that the discussion on  
21 that has -- has got to a point where it's -- it's  
22 useful. Stuff like that in our technical sessions or -  
23 - or during IRs can be time well spent, but I -- I  
24 don't want to dig into too much more depth than that.

25                   Steve, do you have other questions, or -

1 - or anything that you want to respond to the stuff  
2 you've just heard without -- without continuing further  
3 down the rabbit hole?

4 MR. STEVE ELLIS: Yeah. No. No,  
5 thanks a lot, Allan. I understand your concern, but I  
6 think the -- the concern from our end -- Steve Ellis  
7 here with the Tribal -- Tribal Corporation -- is that  
8 we have very limited funds. We can't hire consultants  
9 to read the entire caribou section here. We have to  
10 focus their efforts.

11 So my job here this week is to hone in  
12 on where they should be focussing their time. So it's  
13 -- it's important from my perspective that we were able  
14 to ask these questions so that I can spend ten thousand  
15 dollars (\$10,000) on someone as opposed to forty (40).

16 THE FACILITATOR EHRLICH: Sure, and the  
17 panel is all about using resources efficiently for the  
18 -- the sake of this. If you have a couple of more  
19 detailed questions you can always give them to De Beers  
20 as some overnight homework.

21 They might be able to provide you with,  
22 you know, more substantive answers in -- in the morning  
23 if -- if you feel that the time we have available is  
24 one (1) of the limiting factors. Just let us know  
25 before the end of the session today if that's the case,

1 so that De Beers has a chance to understand what  
2 information would be helpful.

3 MS. VERONICA CHISHOLM: Veronica  
4 Chisholm, from De Beers. I just wanted to make the  
5 offer that certainly De Beers would be delighted to sit  
6 down with you, Steven, and -- and whoever your experts  
7 are, and go through the caribou and/or any parts of the  
8 wildlife section, if you would find that helpful.

9 MR. STEVE ELLIS: Yeah. Maybe what --  
10 some way we can save time is essentially we can meet on  
11 the side. I think it's important to get things on the  
12 record, but we can save a lot of this dialogue here by  
13 having it on the side then tomorrow, enter it in, into  
14 the record, and we know what the response is already,  
15 but just to know that it's there.

16 But, yeah, I don't want to bore  
17 everybody. I'm boring myself, frankly, but -- and  
18 that's pretty hard to do. But, yeah. So maybe my next  
19 question, which is again a somewhat technical one, I'll  
20 just talk to you guys on the side on this one. Sound  
21 good?

22 THE FACILITATOR EHRLICH: And I mean, I  
23 think your point of -- of getting it captured on -- the  
24 outcome of those discussions on the record is -- is a  
25 valuable one. Please remember that when you do have

1 those discussions, even if you just give us a verbal  
2 response tomorrow, that -- that'll do the job. I mean,  
3 it's extremely likely there will be some wildlife stuff  
4 going on tomorrow, looking at what we have left to do  
5 and what time it is.

6 De Beers, are you able to have your  
7 wildlife people around tomorrow so that if some of the  
8 carnivore stuff needs to be picked up in the morning  
9 and some more of this caribou stuff is going on, you've  
10 -- you've got the people here who can do it or do you  
11 want to go later today?

12 MS. VERONICA CHISHOLM: Veronica  
13 Chisholm, from De Beers. Just allow me some time to  
14 consult with my consultants.

15 THE FACILITATOR EHRLICH: You bet. I'm  
16 -- meanwhile, I'm going to ask any of the other parties  
17 who are here, do you have any more caribou questions,  
18 or are you good to go on to the carnivores, species at  
19 risk and birds?

20 I don't see any hands going up about  
21 caribou. So that's -- that's probably it for the  
22 caribou questions we've got now. It's 4:00. We've got  
23 another hour. We have a good shot of getting through  
24 much of it, but there might be a few questions left.  
25 I'd like to try to do it today.

1                   In the eventuality, as I mentioned, that  
2 we run out of time, what's De Beers' preferred take on  
3 it?

4                   MS. VERONICA CHISHOLM:    Veronica  
5 Chisholm, from De Beers. We'd like to carry on and see  
6 if we can sort of plow through it this evening. Thank  
7 you.

8                   THE FACILITATOR EHRLICH:   Okay. And it  
9 might not take that much plowing. We are ready to move  
10 on to the next presentation. So for our remote  
11 listeners, we are on a file, which is on the Review  
12 Board website, described as day 3, air quality and  
13 terrestrial.

14                   And I believe it's slide number 51.  
15 Let's see if the numbering is the same here. Can you  
16 go back one (1) slide, please? It's right after the --  
17 the cover slide with the pretty picture of the fire  
18 weed that is labelled Gahcho Kue Project Subject --  
19 SON, subject of note, Carnivore Mortality, Section  
20 11.10. That's -- that's exactly where we're at.

21                   And who's going to be presenting on  
22 behalf of De Beers?

23                   MR. CAMERON STEVENS:    That would be --  
24 Cam Stevens, Golder Associates. That would be me,  
25 Alan.

1 THE FACILITATOR EHRLICH: Okay. Please  
2 go ahead and please keep doing an excellent job of  
3 reminding people where you're at.

4

5 PRESENTATION BY DE BEERS RE CARNIVORES, OTHER  
6 UNGULATES, SPECIES AT RISK:

7 MR. CAMERON STEVENS: Okay. So this --  
8 this section included the valued components: grizzly  
9 bear, wolverine and wolf.

10 And as before, I'm going to go over some  
11 of the terms or directions that were provided in the  
12 terms of reference. This sort of -- this sets --  
13 essentially sets the stage for the assessment and --  
14 and why we did things the way we did.

15 In Section 5.2.3 of the terms of  
16 reference, it is stated that:

17 "The EIS must assess the experiences  
18 with carnivore mortal -- mortality  
19 and related mitigation measures at  
20 existing mines; provide improvements  
21 over the mitigation measures applied  
22 at existing mines; assess the  
23 differences in impact predictions  
24 resulting from the pro -- proposed  
25 development's proximity to the tree

1 line. In the cumulative effects  
2 context, for species with large home  
3 ranges, the EIS must evaluate impacts  
4 in consideration of the full range  
5 used by each species."

6 And we addressed this by using the Slave  
7 Geological Province, with -- as -- as discussed earlier  
8 in today's presentation.

9 The next slide, slide 52. Specific  
10 information needs that were identified include  
11 potential attraction of carnivores to attract -- to  
12 attractants such as garbage and the creation of habitat  
13 in the camp.

14 Development components that may cause a  
15 sensory disturbance and affects the movements. This  
16 was captured by applying zones of influence as  
17 discussed earlier.

18 Effects of hunting access from linear  
19 development -- development components, such as the ice  
20 road. We just had a similar discussion on this topic  
21 at the end of the caribou presentation.

22 Effect of habitat loss. Here we define  
23 effective habitat as preferred habitat as defined by a  
24 resource selection function.

25 And then measures that may be taken to



1 avoid or ruse -- reduce these impacts. Some of these  
2 were discussed earlier during, I think it was, the  
3 third or fourth slide of -- of the -- the presentation  
4 for -- for the terrestrial environment. There's more  
5 information in appendix 7.1, and there's more  
6 information in the section for carnivore mortality.

7                   The next few slides I'm going to -- I'm  
8 going to quickly go over some of the baseline surveys  
9 and data that have been collected over the number of  
10 years.

11                   The grizzly bear study design was -- was  
12 similar to methods used at other diamond mines, first  
13 of all. For example, there have been a number of  
14 searches, or -- or surveys for grizzly bear sign at --  
15 at locations in preferred habitat types across the RSA.

16                   And this figure in the top right-hand  
17 corner of the slide illustrates some of the locations  
18 where bear sign has been looked for. Eskers have been  
19 surveyed during multiple years, going back as far as  
20 1998 through to 2007. We know of four (4) active  
21 grizzly bear dens in the area, the nearest one being  
22 about 8 kilometres west of the camp. There's been no  
23 record of black bears in -- in the -- in the year -- in  
24 the RSA.

25                   Golder and De Beers are currently in --

1 in -- are currently involved in a unique novel pilot  
2 program, a hair snagging program that was initiated in  
3 2010, and we're -- we're currently testing to see  
4 whether or not this is a viable method for -- for  
5 monitoring grizzly bears in the RSA.

6                   And this program has benefited greatly  
7 by local knowledge, and traditional knowledge, of -- of  
8 -- and guidance from -- from Pete Enzoe, from the  
9 community of Lutsel K'e. But it's -- this is a picture  
10 of myself and Pete this past summer.

11                   Here we have -- this is an example of  
12 one (1) of our posts, and below these posts we have --  
13 we have scent lure, and the scent attracts grizzly  
14 bears to these locations, and leave hair behind here  
15 that we used it to identify individuals from DNA  
16 analysis. We have forty (40) of these locations  
17 scattered across the RSA.

18                   There were two (2) separate types of  
19 surveys or two (2) programs for wolverine. There's  
20 been snow tracking and hair snagging.

21                   Hair snagging was initiated in 2005 and  
22 2006, and for that program we had a hundred and  
23 seventy-five (175) posts distributed across an area of  
24 sixteen (16) -- 1,600 kilometres squared, and that  
25 worked identified seventeen (17) individual animals in

1 2005 and 2006.

2 In 2010 and 2011 we -- we've done snow  
3 track surveys over multiple years: 2004, 2005, 2010,  
4 2011. The current study design for snow tracking  
5 includes forty (40) equal-length 1-kilometre transects  
6 randomly stratified across the RSA. And these surveys  
7 are completed by two (2) people on snowmobile  
8 positioned -- running parallel about ten (10) -- ten  
9 (10) or so metres apart from one another moving at very  
10 slow speeds, looking for tracks. And the picture on  
11 the right is -- is your -- is your -- is a picture of a  
12 wolverine track.

13 Since 1999 there have been four (4) dens  
14 located in the RSA, and the nearest one is about 16  
15 kilometres from camp.

16

17 (BRIEF PAUSE)

18

19 MR. CAMERON STEVENS: Pete Enzoe again  
20 has been -- he -- he's been an integral part of the  
21 snow tracking program. And I'm not too sure if this is  
22 -- is a photograph of Pete in the bottom right-hand  
23 corner, but it might be.

24 The assessment. So for -- for grizzly  
25 bear and wolverine the key issue has been mine-related

1 mortality and not necessarily habitat as both species  
2 connect with habitat generalists on the landscape.

3                   In an -- so in -- and further, an  
4 examination of long-term data for multiple mines in the  
5 re -- region, fifty-four (54) mine years, in fact,  
6 revealed that previous mining activities have led to  
7 mortalities at -- at mines in the region. There have  
8 been four (4) historical grizzly bear deaths we -- that  
9 we -- that we know of from this period, 1996 to 2009.  
10 In other words, the risk of mortality for the project  
11 may be point zero seven (.07) bears per year. The risk  
12 for wolves is even lower. There have been only three  
13 (3) reported mortalities in the region.

14                   The risk of mortality for wolverine is  
15 slightly higher. There have been eleven (11)  
16 historical wolverine deaths from this period, 1996  
17 through 2009, which translates to a mortality rate for  
18 the project of approximately zero point two (0.2)  
19 wolverine per year.

20                   However, we -- we contend that these  
21 predictions are -- are conservative. Mortality rates  
22 in the future should be lower given that the project,  
23 the Gahcho Kue project mine, will adopt and use proven  
24 waste management practices similar to that being used  
25 at the Snap Lake mine where there is a good record for

1 minimizing and -- and reducing mine-related incidents  
2 and mortalities.

3 Another important point to make is that  
4 the -- the Gahcho Kue project mine is at the -- it's  
5 just outside the core area for grizzly bear  
6 populations. So there are not a lot -- there are not -  
7 - there isn't -- there isn't a high density of -- of  
8 grizzly bears in the region compared to regions further  
9 to the north.

10 So preferred habitats for grizzly bear,  
11 wolverine, and wolf were assessed the same way as done  
12 for caribou. This is slide number 56, sorry. We began  
13 first by mapping habitat, and we used -- we mapped  
14 habitat using Chris Johnson's resource selection  
15 function. We assigned ranks and scores to areas on the  
16 map. And then we overlay the footprints in the zover -  
17 - zones of influence, and then summarize cells per  
18 scenario.

19 And again, we -- we looked -- in -- in  
20 this table here we -- we had a 2010 baseline scenario.  
21 We had a 2010 baseline, plus a project, the application  
22 scenario, and we had a future scenario. And we also  
23 had a reference scenario. So here there were four (4)  
24 scenarios. Again, preferred habitat equals good and  
25 habitat -- good and high quality habitat combined. And

1 this table is -- is very similar to the one (1) you'd  
2 see in the EIS.

3                   So the first point is that incremental  
4 decreases from indirect and direct changes to preferred  
5 habitat will be very small. They'll be neg --  
6 negligible, less than 1 percent. And that cumulative  
7 decreases to preferred habitat will be moderate in  
8 magnitude, approximately 12.4 percent. And that 12.4  
9 percent is the sum of these two (2) numbers in the far  
10 right column, minus seven point three one (7.31) and  
11 minus five point zero nine (5.09). Again, as for  
12 caribou, the majority of losses on the landscape, al --  
13 although not illustrated in this table, occurred prior  
14 to 2006.

15                   Important pa -- another point I want to  
16 make for grizzly bear habitat is that this assessment  
17 was done for multiple seasons and the effect was  
18 largest for spring habitat. The effects were smaller  
19 for -- for summer habitats and fall habitats.

20                   This is -- it's an observation of a  
21 grizzly bear on -- near Kennady Lake. This photo was  
22 taken in 2008. There have been much fewer observations  
23 such as this since 2008.

24                   Wolverine habitat. Conclusions for the  
25 wolverine assessment -- this is slide 58. Conclusions

1 for the wolverine assessment include incremental  
2 decreases from indirect and direct changes to preferred  
3 habitat will be low, 1.5 percent. Cumulative decreases  
4 to preferred habitat will be moderate in magnitude.  
5 Largest changes were observed for the winter season, an  
6 18.8 percent change, and this was largely from the  
7 Tibbit-Contwoyto winter road. About 10 percent of that  
8 18.8 percent change was driven by the -- the zone of  
9 influence associated with the Tibbit-to-Contwoyto road.

10 So effect sizes for wolverine are much  
11 smaller during the summer and for most of the winter,  
12 right, because the Tibbit-Contwoyto road is only open  
13 for about two (2) months of -- of -- of the season.

14 So this number, 1.5 percent is taken  
15 from the -- the grey column, the minus -- it's the  
16 addition of minus point three eight (.38) and minus one  
17 point zero eight (1.08). Similarly the 18.8 percent  
18 change re -- reported for cumulative decreases is taken  
19 from the -- the brown or orange column in the sum of  
20 minus ten point four two (10.42) and minus eight point  
21 three nine (8.39). A very similar table is -- can be  
22 found in -- in the -- in the -- the EIS.

23 For wolf, changes to population  
24 persistence was primarily measured as -- as changes to  
25 preferred habitat. And part of the reason was that

1 there have been very few incidents -- wolf incidents at  
2 -- at mines over the past decade or so. The  
3 conclusions for the wolf assessment include incremental  
4 decreases from indirect and direct changes to preferred  
5 habitat will be negligible, less than 1 percent.

6                   That number again is taken from the  
7 table, the sum of these two (2) numbers, high and good  
8 -- high and good habitat quality combined. And the  
9 cumulative decreases to preferred habitat will be  
10 moderate in magnitude, approximately 10.4 percent. The  
11 sum of minus five point five nine (5.59) and -- and  
12 minus five point four seven (5.47) in the orange brown  
13 coloured column in the table.

14                   That summarizes all I want to say for --  
15 all we want to say for carnivore mortality today. We  
16 can take some questions, or John can -- I think John  
17 would like to take over and maybe talk about moose and  
18 musk ox.

19                   THE FACILITATOR EHRLICH: If it's all  
20 right with De Beers, I'd like to keep on going with the  
21 presentation and we'll save the questions until later  
22 on. Thank you.

23                   MR. JOHN VIRGL: John Virgl here. I'm  
24 going to present the information on other ungulates,  
25 which includes moose and muskox and species at risk in



1 birds, which includes species at risk and upland birds,  
2 waterfowl, and raptors.

3                   For other ungulates -- oops, sorry, 61 -  
4 - slide 61. For other ungulates the terms of reference  
5 stated that the EIS must assess the frequency of moose  
6 and musk ox in using the study area, project components  
7 that might cause sensory disturbances, effects from  
8 potential changes to predator-prey relationships, and  
9 include measures to reduce impacts. Baseline  
10 information for moose and musk ox was primarily  
11 collected from caribou surveys and other ground field  
12 observations and -- and -- and baseline surveys in the  
13 -- in the regional study area from 1995 to 2005, and  
14 also in 2007, and more recently in 2010 and 2011.

15                   For example, caribou surveys in  
16 2004/2005 recorded fifteen (15) groups of musk ox.  
17 These groups consisted of one (1) to ninety-two (92)  
18 individuals per group. In contrast, there has been  
19 relatively few moose recorded in the study area. For  
20 example, fourteen (14) from 19 -- fourteen (14) moose  
21 were -- were recorded from 1995 to 2005. This is  
22 likely associated with the -- the low quality of moose  
23 habitat in the regional study area. There is very  
24 little tall shrub and birch seed habitat types.

25                   Slide 63, the -- the slide starts off

1 with our -- our -- our conclusions from the analysis,  
2 and that the incremental and cumulative losses of good  
3 and high quality habitats for moose and musk ox and --  
4 were low in magnitude.

5                   Changes in sensory disturbance are  
6 predicted to be within 5 kilometres of the project  
7 footprint. This comes from our -- the noise modelling  
8 that predicts that during continuous operations, noise  
9 will reach background levels within 3.5 kilometres and  
10 of -- of the mine site, and that noise will reach  
11 background levels within 3 kilometres of -- of the  
12 winter road.

13                   The -- the EIS focussed on changes in  
14 habitat for moose and musk oxen. The approach is  
15 similar for other wildlife value components, in that we  
16 applied habitat suitability indices that were derived  
17 from the scientific literature and included specific  
18 zones of influence for moose and musk ox.

19                   For moose, the model was based on the  
20 summer. And this is largely due -- because during the  
21 winter -- winter, moose move into the forest to find  
22 food and shelter. But for musk oxen, we developed a  
23 winter model and this was intended to capture the --  
24 the effects of the winter access road along with the  
25 other developments in the regional study area. And

1 this provided the most conservative approach by  
2 maximizing the -- the effects that -- that would be  
3 assessed.

4                   This slide here shows -- you've already  
5 seen this. This is what Cam showed earlier and we  
6 spent a lot of time on this. So I don't want to spend  
7 any more time on this. I just want to highlight that  
8 the incremental change from the project was about a 1  
9 per -- 1 percent change in -- in high quality habitat  
10 for -- for -- for musk oxen. And that cumulatively,  
11 from past, previous, and reasonably foreseeable  
12 developments, including the project year, there was a  
13 7.9 decrease in high quality habitat for musk oxen.

14                   Oh, I should say, in contrast for moose,  
15 the -- the changes were much less than 1 percent for  
16 the project and about 2.9 percent for the cumulative  
17 losses of habitat.

18                   Species at risk in birds. The terms of  
19 reference state that the analysis must be of sufficient  
20 detail to allow the panel to discharge its  
21 responsibilities under the Species at Risk Act. And  
22 species at risk include all species under the  
23 scheduling of the Species at Risk Act, those species  
24 listed by COSEWIC, and those species listed by the GNWT  
25 as may be at risk, at risk or sensitive.

1                   It also asks that all potential  
2 disturbances during nesting, rearing, molting, staging,  
3 and migration be described. The potential for  
4 increased predation facilitated by development,  
5 identification of all contaminant exposure routes and  
6 possible changes in contaminant levels. And I should  
7 mention this is -- this is in the actual -- this is  
8 where the ecological risk assessment did its job. So  
9 this information was -- that's where the assessment was  
10 done for that particular pathway. And finally,  
11 identification of all potential alterations to bird  
12 habitat.

13                   Six (6) species at risk have been  
14 observed in the regional study area. And they include:  
15 the grizzly bear, wolverine, peregrine falcon, short-  
16 eared owl, rusty blackbird, and horned grebe. All  
17 these species are listed by COSEWIC as special concern  
18 and the short-eared owl is a Schedule 3 under SARA and  
19 rusty blackbird is a Schedule 1 under the Species at  
20 Risk Act. For the NWT status, all species except for  
21 rusty blackbird are either sensitive or secure.

22                   Baseline studies for -- for birds was  
23 completed using separate, different surveys. Oh, slide  
24 number. Sorry -- 69. The -- for upland birds, the --  
25 the surveys were done using 25-hectare plots surveyed

1 in 2004 and 2005, and the entire plot is surveyed here.  
2 And this provide estimates of species richness, or the  
3 number of unique species in the regional study area,  
4 and also the abundance of individual species, or the  
5 densities.

6                   Twenty-eight (28) species of songbird,  
7 shore bird, and ptarmigan were detected. For  
8 waterfowl, or water birds, in -- in the spring, summer,  
9 and fall of 2004, surveys were completed along the lake  
10 perimeters from helicopter in the local study area.  
11 And in 2010 and 2011, surveys have been completed  
12 around the perimeter of Kennady Lake, and a control  
13 lake, called Lake X-6, in -- in the spring of 2010 and  
14 2011. And altogether, twenty-two (22) species have  
15 been observed in the -- in the local study area.

16                   For raptors, nests in highly subitat --  
17 suitable habitat were -- or highly suitable nesting  
18 habitat were identified and surveyed opportunistically  
19 for nesting activity from 1998 to 2005. Surveys  
20 focussed on potential nest sites in the local study  
21 area.

22                   In 2004, intensive surveys of suitable  
23 nesting habitat were completed in the regional study  
24 area in June, and nests were checked for occupancy eggs  
25 and young. From these surveys, four (4) gyrfalcon,

1 eleven (11) peregrine falcon nests were identified in  
2 the regional study area. And additional species  
3 observed included short-eared owl, northern harrier,  
4 rough-legged hawk, golden eagle, and bald eagle.

5 In 2010 and 2011, thirty (30) known nest  
6 sites were surveyed for occupancy and success, using  
7 the same protocols as at the Snap Lake, Diavik, and  
8 Ekati diamond mines. Slide 70 is a picture of a raptor  
9 nesting near -- or sorry, a peregrine falcon nesting  
10 near Margaret Lake in the regional study area.

11 So the analysis focussed on -- on  
12 habitat assessment as in other wildlife value  
13 components, and relative to the 2010 baseline direct  
14 and indirect changes from the project are expected to  
15 reduce the amount of suitable habitat for birds in the  
16 RSA by less than 1 percent. Cumulative changes from all  
17 past, previous, from all previous existing, and  
18 reasonably foreseeable developments, including the  
19 project, amount to less than 2.6 percent decrease from  
20 reference conditions.

21 Habitat modelling was -- was used for  
22 all three (3) of these bird groups. And for upland  
23 birds, the analysis in changes in habitat quality was  
24 directly related to changes in abundance. And  
25 abundance for reference conditions was based on the

1 area of upland and vegetation communities, and the  
2 baseline density assess -- estimates taken during the  
3 baseline studies.

4                   The -- the results basically showed that  
5 the incremental effects from the project were about 0.5  
6 percent loss of -- of suitable habitat for upland  
7 birds, and there was a 2.6 percent loss from the  
8 cumulative changes. That's -- those numbers aren't on  
9 the slides. I -- the -- those are the numbers.

10                   In addition, we developed a resource  
11 selection func -- or sorry, the -- the habitat -- there  
12 was a habitat suitability index model developed for  
13 water birds, and I'll go into that in the next slide,  
14 and also a reasonable -- or resource selection function  
15 for raptor nesting habitat, also using existing  
16 baseline data. Again, we've applied disturbance  
17 coefficients in zones of influences to the active  
18 developments to assess the changes in habitat quality.

19                   Slide 72. So for water birds, the --  
20 the habitat model was based on the presence of open  
21 water and the quality of nesting habitat within 100  
22 metres of water bodies.

23 In all habitats within 1 kilometre of a zone of  
24 influence were reduced to low quality. The incremental  
25 changes from the project were less than 1 percent, and

1 the cumulative changes from all existing and pre -- and  
2 previous existing and -- and future developments,  
3 including the project, was 1.4 percent relative to  
4 reference conditions. This included the combined  
5 amounts of high and good quality habitat.

6 For raptors, the reason the -- the  
7 resource selection function was based on twenty-five  
8 (25) known nest sites in -- in 2010, and then two  
9 hundred and fifty (250) available sites distributed  
10 randomly within the regional study area. And the --  
11 the RSF basically said that areas of high slope and  
12 elevation, such as cliffs, were uncommon in the RSA.

13 Incremental changes from the -- the  
14 analysis showed that the -- the project is expected to  
15 disturb less than 1 percent of the -- of the high and  
16 good quality habitat, and that all projects in the  
17 cumulative case are expected to disturb about 1.6  
18 percent of the high and good quality habitats.

19 This is just a slide, slide 74, showing  
20 the -- the resource selection function for the  
21 application case. So this includes the project and the  
22 previous and existing developments in the regional  
23 study area. Best habitats, as I mentioned, were  
24 cliffs. And these -- these -- as you can see, the  
25 green area is really the -- the high -- high quality



1 areas and -- and all of these areas are really west of  
2 the -- of the project.

3                   This just shows all of the current nest  
4 sites that we have until 2010 in the regional study  
5 area. And you can see, if you remember back to the  
6 previous slide, 74 here, where the green is, and slide  
7 75, where the nests are, they're very highly  
8 correlated. The -- one (1) of the key points here so -  
9 - is that the -- all the nests are greater than 18  
10 kilometres from the -- from the Gahcho Kue project.

11                   So to summarize the terrestrial  
12 assessment -- oh, slide, there's no number on that  
13 slide, 76. Thank you. The EIS used multiple approaches  
14 and spatial scales to analyze the incremental and  
15 cumulative effects on vegetation, caribou, carnivores,  
16 other ungulates, upland birds, water birds, and  
17 raptors.

18                   The assessment approach and methods were  
19 appropriate for meeting the terms of reference and  
20 provided confident and ecologically relevant impact  
21 predictions. The weight of evidence from all the  
22 analyses indicates that the incremental and cumulative  
23 effects from the project and other developments will  
24 not have a significant adverse influence on the  
25 abundance, distribution, and persistence of caribou,

1 other ungulates, carnivores, and bird species.

2 And this should not have a significant  
3 influence on the continued opportunities for  
4 nontraditional and traditional land users to use those  
5 resources. Thank you.

6

7 QUESTION PERIOD:

8 THE FACILITATOR EHRLICH: Thanks for  
9 that, John. And thank you for that, Cam. Does anyone  
10 have any questions for De Beers on the other ungulate  
11 material that they've presented on the species at risk  
12 material or on the bird material that they've just  
13 presented? Please start with your name and  
14 organization. And then go ahead with your question.

15 MR. JAMES HODSON: It's James Hodson,  
16 with the Canadian Wildlife Service of Environment  
17 Canada. I just thought about a question about the  
18 ecological risk assessment for birds. I'm just  
19 wondering if you can point me to where that information  
20 is provided. Because I know in the -- in the section  
21 on birds it refers to it, but there's actually no  
22 details provided in that section, and there's no  
23 reference to where it can be found.

24

25 (BRIEF PAUSE)

1 MS. VERONICA CHISHOLM: Veronica  
2 Chisholm from De Beers. I appreciate your patience. I  
3 was just trying to get some background information. So  
4 we have compiled -- we are -- we collected some  
5 additional information and we're compiling that  
6 information and we expect to submit the ecological risk  
7 assessment in 2012.

8

9 (BRIEF PAUSE)

10

11 MR. JAMES HODSON: James Hodson with  
12 Canadian Wildlife Service. Will that be before the  
13 first round of Information Requests, or after? How  
14 does that fit in there?

15 MS. VERONICA CHISHOLM: I might have to  
16 get back to you on that one. I'm not sure of the exact  
17 timeline, but I do promise to provide you with a  
18 response.

19 THE FACILITATOR EHRLICH: It's Alan for  
20 the panel here. Can you do that tomorrow morning?

21 MS. VERONICA CHISHOLM: Veronica  
22 Chisholm from De Beers. Absolutely I can provide that  
23 tomorrow morning.

24 THE FACILITATOR EHRLICH: Thank you.  
25 Jamie, do you have -- do you have another question?

1 MR. JAMES HODSON: Yeah. It's James  
2 with the Canadian Wildlife Service again. Just about  
3 the content of the risk assessment, it wasn't clear to  
4 me whether it was looking at the use of the water  
5 management ponds and collection ponds during the  
6 operation phase in a closure -- or construction and  
7 operations. The way it's written it seems to be  
8 focussed on limiting discharges to downstream, but it  
9 doesn't discuss very much use of the water bodies  
10 within the mine and water control area during the  
11 project.

12 MS. VERONICA CHISHOLM: Veronica  
13 Chisholm from De Beers. It's my understanding that it  
14 will include those water bodies during operations. And  
15 that will be included, so.

16 THE FACILITATOR EHRLICH: Okay. James  
17 is indicating that that's -- that's all for his  
18 questions on these -- do any -- any other parties have  
19 questions on the subject matter that's just been  
20 presented?

21

22 (BRIEF PAUSE)

23

24 THE FACILITATOR EHRLICH: I see that  
25 the GNWT has a -- two (2) questions. We'll recognize

1 Gavin More.

2 MR. GAVIN MORE: Gavin More, GNWT.

3 It's probably more of a comment. Whenever I see your  
4 slide that says habitat loss, I keep thinking that's --  
5 that's almost a misrepresentation of what you're trying  
6 to get across.

7 If I turn something into a road, that's  
8 habitat loss. Reduction of use of an area is -- I  
9 always used the word "habitat effectiveness." And I  
10 think it takes people back, because I think they see  
11 the habitat no longer being there. And what you're  
12 getting across, I think, is that there's just not as  
13 much use of it necessarily.

14 And so I wonder if -- if -- if you could  
15 think of another word to better represent what you're  
16 trying to get across other than loss. It just does not  
17 seem to be the right word. Thank you.

18 MR. JOHN VIRGL: Thank you, Gavin. I  
19 appreciate that. In the past in -- as an EA  
20 practitioner we've used things that don't talk about  
21 loss and got in trouble for it there, so it's kind of -  
22 - but thank you for that.

23 THE FACILITATOR EHRLICH: Now I've got  
24 some questions from the Board's consultants who have  
25 been participating remotely. The first one that I will

1 give is from Dr. Petr Comers, who's participating out  
2 of Calgary.

3 He points out that he doesn't see how  
4 the impact of access roads have been adequately  
5 considered, and he's wondering what is the evidence  
6 that access roads during winter do not present any  
7 impact on wildlife?

8

9 (BRIEF PAUSE)

10

11 MR. CAMERON STEVENS: Cam Stevens,  
12 Golder Associates. Hi, Peter. Good question. Some of  
13 this material was discussed on slide 46 and 47. And  
14 yes, again this pass -- this pathway was considered  
15 minor for caribou and minor for grizzly bears and  
16 wolverine because of these considerations.

17 First of all, access to the winter road  
18 is -- -- is gen -- is limited to only eight (8) to  
19 twelve (12) weeks per year. The harvest is regulated.  
20 De Beers' staff will be prohibited from hunting while  
21 on site.

22 Some additional considerations and --  
23 and there is -- there is minimal harve -- minimal  
24 evidence of -- of -- of harvest. On slide 47, we have  
25 stated there's no evidence of harvest along Snap Lake -

1 - along the Snap Lake winter road, but -- but today we  
2 -- we've learned that there is some -- there is some  
3 harvest from -- from Peter.

4 THE FACILITATOR EHRLICH: Sorry. By  
5 Peter, I think you mean Fred Sangris.

6 MR. CAMERON STEVENS: Was it Fred?

7 THE FACILITATOR EHRLICH: Of the  
8 Yellowknives Dene First Nations who -- who referred  
9 to...

10 MR. CAMERON STEVENS: Okay, sorry. My  
11 apologies. Pet -- Petr -- seemed like a long time ago.

12 THE FACILITATOR EHRLICH: Yeah. Petr  
13 Comers is the -- is the consultant to the Panel who --

14 MR. CAMERON STEVENS: Oh, right. Okay.

15 THE FACILITATOR EHRLICH: -- I'm -- I'm  
16 raising questions on behalf of right now.

17 MR. CAMERON STEVENS: Thank you, Alan.  
18 So the winter access road project is at kilometre 271,  
19 and it's 43 kilometres further than the winter road to  
20 Snap Lake. And so based on that logic, we would expect  
21 very -- very -- very minimal -- minimal harvest along  
22 the -- -- the Ga -- the Gahcho Kue winter access road.

23 And we addressed -- we further addressed  
24 this issue in -- in our addendum too, that has been  
25 submitted to GNWT and ENR. And that will be made

1 public soon -- very soon, I believe.

2 THE FACILITATOR EHRLICH: Veronica, you  
3 look like you have something to add. Am I misreading  
4 you?

5 MS. VERONICA CHISHOLM: Veronica  
6 Chisholm, from De Beers. Yes, you're misreading me.

7 THE FACILITATOR EHRLICH: Hopefully I  
8 won't be doing that again. The next question that we  
9 have from Dr. Comers is:

10 "What is the evidence that access  
11 roads during winter do not change  
12 predator movement and predation  
13 success?"

14

15 (BRIEF PAUSE)

16

17 MR. DAMIAN PANAYI: It's Damian Panayi  
18 with Golder Associates and I'll take an attempt at  
19 answering that question.

20 We don't have any real information on  
21 how carnivores interact with winter roads when they're  
22 going about what carnivores do. But we can say that a  
23 winter road in a bor -- in a tundra environment, as we  
24 have at Gahcho Kue, is very different from a winter  
25 road in a boreal environment.



1                   And there is clear evidence that wolves  
2 will use winter roads or cut lines in boreal  
3 environments and are able to move faster down those  
4 features. But in this tundra environment, a winter  
5 road is just an area where the snow has been kind of  
6 levelled down and -- and hardened and -- and there's a  
7 bit of a snow berm on the side of that.

8                   So it -- it really doesn't create the  
9 same effect on the landscape that a -- a winter road in  
10 a boreal environment does. So it's -- it's not  
11 something which -- which was considered in much -- in  
12 much detail in this -- in this document.

13                   THE FACILITATOR EHRLICH: Okay. Thanks  
14 for that Damian. Petr, if you have any follow up  
15 questions, I'd advise you to email them now because our  
16 session won't be lasting for all that much longer.

17                   I have a question from Terry Antoniuk of  
18 Salmo, who is participating from Calgary. Terry has  
19 asked:

20                   "Did you look at carnivore mortality  
21 at exploration sites? If so, how did  
22 it compare to mine sites?"

23

24                   (BRIEF PAUSE)

25

1 MR. DAMIAN PANAYI: This is Damian  
2 Panayi. I'll re -- take another resp -- shot at  
3 responding to these questions.

4 And the question was, if I understood,  
5 it's what information is available on -- on how  
6 carnivore mortalities at exploration camps has been  
7 incorporated into the environmental effects assessment.

8 And unfortunately, that information is  
9 collected by the Government of the Northwest  
10 Territories, and it's generally not made available to  
11 us in any real detail as to what -- you know, when  
12 grizzly bears or wolverine are -- are put down at  
13 exploration camps.

14 Usually the location and the date and  
15 that sort of information is not -- is not generally  
16 available. So we -- we weren't able to include it at  
17 that level. However, all of our modelling does include  
18 what information we know on the general harvest and  
19 mortality rates of those -- of those two (2) species.

20 THE FACILITATOR EHRLICH: Okay. Thanks  
21 for that, Damian. Another question that I have is:  
22 When you were describing on slide 68 where various  
23 species are listed, I was wondering when -- when  
24 species were categorized on this slide.

25 In other words, what year was that

1 information put together? In other words, when you  
2 were defining the COSEWIC status, and the SARA status,  
3 for each of these species, was this a couple of years  
4 ago, or -- or this year?

5 MR. JOHN VIRGL: John -- John Virgl,  
6 Golder Associates. That would have been for 2010 when  
7 the EIS was -- just before it was submitted.

8 THE FACILITATOR EHRLICH: I can't  
9 remember exactly when the horned grebe status was  
10 changed in SARA, but I believe it has happened since  
11 the time that this terms of reference was issued and  
12 the current date happened -- this turned out to be  
13 something relevant in a different environmental  
14 assessment we were working on.

15 And I -- does that have any bearing for  
16 your predications on it? Probably not. Does it have  
17 any bearing for the Panel's responsibilities with  
18 respect to the species? Entirely possibly.

19 So it -- it's -- could you please have a  
20 -- a look at the status of the horned grebe with  
21 respect to SARA, and tomorrow morning clarify if you  
22 still believe that it is not on any SARA schedule?

23

24 (BRIEF PAUSE)

25

1 MS. VERONICA CHISHOLM: Veronica  
2 Chisholm from De Beers. Yes, we will -- we will check  
3 on that, and provide a response tomorrow.

4 THE FACILITATOR EHRLICH: Thank you for  
5 that.

6 (BRIEF PAUSE)

7  
8 THE FACILITATOR EHRLICH: Okay. And --  
9 and Petr thanks you for your earlier response to his  
10 questions. He's still got some other outstanding  
11 questions, but he's prepared to wait for the addendum  
12 before he -- he pursues them any further. So it looks  
13 like there's something to this remote participation  
14 thing.

15

16 (BRIEF PAUSE)

17

18 THE FACILITATOR EHRLICH: I have one  
19 (1) more question from -- from Petr, but I -- I have a  
20 question of my own I'd like to ask first. Can you go  
21 back to slide 64, please?

22

23 (BRIEF PAUSE)

24

25 THE FACILITATOR EHRLICH: Thanks.

1 You're talking about incremental loss and cumulative  
2 loss as a percentage. It looks to me like it's a  
3 percentage of the regional study area. I was trying to  
4 ask earlier on in Cam's presentation before lunch  
5 whether or not that was about the percentage of the  
6 range of the caribou or of the regional study area.

7                   The regional study area is something  
8 that the developer has been able to define, so the  
9 percentage that a -- a given loss has is partly an  
10 artifact of the size of the regional study area that  
11 was selected.

12                   Now I appreciate you don't want to make  
13 your regional study area too small because you're going  
14 to miss stuff that matters. I get it.

15                   But it makes it hard to interpret the  
16 one point one (1.1) and the seven point nine (7.9) when  
17 they're artifacts of your regional study area being  
18 5,000 and change square kilometres. In other words, if  
19 you halved your study area you'd double those numbers.  
20 If you qual -- if you divided that in half again, you  
21 quadruple those numbers.

22                   So for -- for stuff like this, absolute  
23 values can be more useful because they -- they don't  
24 change depending on the size of something that is  
25 entirely within the developer's control. In other

1 words, there's an objective aspect to them that can be  
2 quite helpful to parties.

3 For the stuff that was important enough  
4 for you to put into these presentations, sure would  
5 appreciate it if you could give us something in writing  
6 that looks at the actual amount of space affected.

7 And, you know, this -- I don't know if  
8 this -- I wouldn't say this has to happen during the --  
9 this session. If you're ambitious and you want to get  
10 it on there, fine. I would certainly be very  
11 comfortable calling it Undertaking number 2 if you're  
12 okay with that and -- and getting it by December 16th.

13 I mean, your general ideas I think have  
14 been conveyed effectively to everyone on the room. So  
15 people understand roughly where you're going with your  
16 predictions I think this will help parties throughout  
17 the remainder of the environmental impact review.

18 How does De Beers prefer to deal with  
19 that?

20 MS. VERONICA CHISHOLM: Veronica  
21 Chisholm, from De Beers. Alan, I'm just trying to  
22 understand the request. So are you asking if De Beers  
23 can provide you with the hectares area, square  
24 kilometres, for just the figures presented here today?

25 THE FACILITATOR EHRLICH: Yeah, I'm not

1 suggesting you go through the whole EIS and -- and do  
2 it again. I figure the most important stuff you've  
3 probably put in your presentations, and so I just don't  
4 want to burden you with stuff that isn't as likely to  
5 be important to parties. But if you put it in your  
6 conclusions that you've presented here today I think it  
7 matters enough so that you figured parties would want  
8 to understand it, and I think this will help parties  
9 understand.

10 MS. VERONICA CHISHOLM: Veronica  
11 Chisholm, from De Beers. Yeah, all of the numbers that  
12 are presented in this presentation in terms of the  
13 aerial extent, hectares, square kilometres are  
14 presented in the EIS. And I believe that we will be  
15 able to provide those numbers probably not by tomorrow,  
16 but maybe it would be best as an undertaking.

17 THE FACILITATOR EHRLICH: Hold -- not  
18 so fast there, De Beers. I'm just taking a second talk  
19 with our colleagues because I don't want to propose an  
20 undertaking that wouldn't wind up adding actual value.  
21 I don't want to just make extra work for you if it's  
22 not going to help anyone.

23 What I've just heard you say is the  
24 actual numbers for each of these are inside the EIS  
25 anyway, and you've referred in each presentation to

1 which part of the EIS this stuff can be found in.

2 And so let me just talk to my colleagues  
3 here for a second and try to think this through.

4 Thanks.

5

6 (BRIEF PAUSE)

7

8 THE FACILITATOR EHRLICH: Here's a  
9 question for De Beers: Is it easy to find in the EIS?  
10 The fact that the De Beers team that wrote the EIS is  
11 looking for it right now and has been for a little  
12 while makes me think that it's not -- I know it's a  
13 large document. It was written a while ago, but --  
14 I'll ask De Beers to comment.

15 MS. VERONICA CHISHOLM: Veronica  
16 Chisholm, from De Beers. We would be happy to provide  
17 you with the references for the tables tomorrow if that  
18 would satisfy the MVEIRB.

19 THE FACILITATOR EHRLICH: I think that  
20 probably would help parties understand in more absolute  
21 terms the information you've been getting across in the  
22 presentations. So I'm not -- I don't want to call it  
23 an undertaking because it's just a little bit of  
24 homework. This isn't something coming up at the  
25 undertaking date.



1 I certainly appreciate that, you know,  
2 this information is spread over quite a number of  
3 different documents. If you can do that it would help.

4 Does anyone else have any other  
5 questions on carnivores, other ungulates, species at  
6 risk or birds? I see Fred Sangris, of the Yellowknives  
7 Dene First Nation, has one.

8 MR. FRED SANGRIS: Thank you. Can you  
9 take us to slide 68. Yes. Now as I read this there --  
10 most -- all of them have a special concern and these  
11 are six (6) species at risk that have been observed in  
12 NWT. I wanted to know where the information come from  
13 on particularly grizzly bear and wolverine. Thank you.

14 MS. VERONICA CHISHOLM: Veronica  
15 Chisholm, from De Beers. Fred, just so I'm  
16 understanding you, you're wondering where -- how that  
17 categorization comes from in terms of the COSEWIC, SARA  
18 and NWT status?

19 MR. FRED SANGRIS: Yes.

20 MS. VERONICA CHISHOLM: COSEWIC is a  
21 federal program that provides a -- a listening for  
22 wildlife species, as well as the species at risk, the  
23 SARA status. And the NWT is a local government one.  
24 So I'm not sure if I answered your question.

25 MR. FRED SANGRIS: Yes, you did. I

1 just wanted to know where the information come from,  
2 because I know who SARA's group is.

3                   The Yellowknives Dene have a camp up in  
4 -- in MacKay Lake. We have two (2) camps, on the north  
5 and south, which is our hunting and harvesting camp.

6                   Within the last three (3) years I've --  
7 I've been going up there every fall. Last year I  
8 observed many grizzly bears in our camp, up to six (6)  
9 grizzly bears. This fall I went back with young people  
10 and observed three (3) grizzly bears by our camp, as  
11 well as wolverines.

12                   I spend close to maybe twenty-five (25)  
13 years back and forth to MacKay Lake, first with sled  
14 dogs, and then with a skidoo and now with a truck and  
15 then planes. But wolverines and -- for sure are not a  
16 specie at risk.

17                   Tonight I might get attacked by  
18 wolverines just going home, because last week just  
19 downtown on Latham Island near my home there was a -- a  
20 wolverine that was observed there by children and we  
21 watched it leave across the lake there at night.

22                   But wolverine for sure, they're all over  
23 the place, and they -- and they're very impossible to -  
24 - to get rid of. They're -- they're a very tough  
25 animal and they -- they are carnivores. They --

1 they're like ravens, they eat anything and they can go  
2 anywhere. They're one (1) animal that can never be  
3 gone. I don't believe they're -- they're a specie at  
4 risk.

5                   If you talk to the trappers and hunters  
6 with the Yellowknives Dene and Lutsel K'e they -- they  
7 will probably tell you the same, including Wekweti,  
8 that there within the tree line there are so many  
9 wolverines, and that as hunters when we go to our camps  
10 we always have trouble with them. They seem to be  
11 around all the time.

12                   I -- I want to know where I can get the  
13 information or COSEWIC is it? Where can I get that  
14 information so I can read up on it? Thank you.

15

16                   (BRIEF PAUSE)

17

18                   MR. DAMIAN PANAYI: Hello, Fred, it's  
19 Damian. I'll try and answer your question there. You  
20 picked up on a point which does make it difficult to  
21 write these environmental assessments, which is that  
22 the COSEWIC and the SARA status refers to a national  
23 listing.

24                   So that's a -- a national assessment of  
25 the status of those species across Canada. And

1 certainly species such as grizzly bear and wolverine,  
2 although we might consider them to be in healthy shape  
3 here in the Northwest Territories, we're very  
4 fortunate, whereas in other places such as Alberta or  
5 Ontario where there's a lot more development in -- in  
6 those areas, those species are not doing quite as well,  
7 which is why they show up on those federal listings and  
8 we legally have to include them in our environmental  
9 assessment.

10 But if you'd like some more information  
11 I'd refer you to a website, and I hope I'm getting this  
12 right, but it should be [www.sararegistry](http://www.sararegistry.gc.ca), that's S-A-R-  
13 A registry dot gc dot ca. And that's where we get --  
14 that's where we got this information.

15 MR. FRED SANGRIS: Thank you.

16 THE FACILITATOR EHRLICH: Thank you.  
17 Does anyone else have any other questions? I see  
18 Madelaine Pasquayak has -- Pasquayak has a -- a  
19 question from the Tlicho Government.

20 MS. MADELAINE PASQUAYAK: Thank you.  
21 Madelaine -- Madelaine Pasquayak. I was just looking  
22 at slide number 69 and I couldn't help but wonder that  
23 there's a lot of birds that are -- that will be at risk  
24 and we also have a picture of a nest here of a  
25 peregrine bird.

1                   And I was just wondering like if there's  
2 -- if -- if the regional and local study area is full  
3 of nests during the summer, I was just wondering what  
4 time of the season would the project be moving in to --  
5 to -- to clear some of the land that will be needed for  
6 the project.

7

8                   (BRIEF PAUSE)

9

10                   MS. VERONICA CHISHOLM:    Veronica  
11 Chisholm, from De Beers. Thank you, Madelaine for that  
12 -- that comment and question. We've been surveying the  
13 area over a number of years and the closest nest we've  
14 found to date, just to be clear, was 18 kilometres  
15 away.

16                   But I think De Beers will be undertaking  
17 nest sweeps in advance of construction to ensure that  
18 there's no nesting birds within the project area.

19                   THE FACILITATOR EHRLICH:   Okay. Does  
20 anyone have any other questions for the developer on  
21 the subjects we're discussing here?

22                   If not, I'm going to throw back -- I  
23 know it's getting late. I'm going to throw one (1)  
24 more question out, which came from Dr. Comers earlier  
25 on regarding vegetation. We just didn't want to -- not

1 -- pinch the time for caribou. So I -- I shelved it,  
2 but since it's only just 5:00 and it seems like a  
3 fairly short question to me, I'm going to throw it out  
4 there to see -- see if you'd like to respond.

5 Slide 21, of your presentation talks  
6 about different kinds of reclamation species and -- and  
7 plants. I'll give you some time to scroll backward.  
8 There we go. Slide 21.

9 Dr. Comers says he didn't get from the  
10 presentation:

11 "If you intend to..."

12 See, at the bottom there you talk about  
13 value as reclamation species? It was unclear to Dr.  
14 Comers if you're planning to identify which of the  
15 species are good reclamation species within your area:

16 "Do you -- if you are intending to  
17 identify them, are you planning to  
18 collect the seeds and use them for  
19 reclamation? Do you plan to use only  
20 those species and not others? If so,  
21 then reclaimed areas will not be  
22 restored to what they were at  
23 baseline. In other words, are you  
24 reclaiming them to the same kind of  
25 species composition as was there in

1 advance? This would also affect your  
2 impact predictions, if you rely on  
3 natural re-vegetation/succession."

4 And Petr Comers wanted some clarity on  
5 that. Thank you.

6 MS. VERONICA CHISHOLM: Veronica  
7 Chisholm, from De Beers. De Beers is planning to  
8 undertake reclamation trials throughout the project  
9 timeline, and we will be developing a more detailed  
10 reclamation plan for the project that will include a  
11 plan for re-vegetation. And a plan for either the  
12 collection of reclamation seeds or some other practices  
13 that -- and we will also liaise with the other mines in  
14 order to receive key learnings on reclamation and re-  
15 vegetation success. Thanks.

16 THE FACILITATOR EHRLICH: Sounds good.  
17 Thank you very much. I'll keep closing comments quite  
18 short. The -- I will point out that there are a few  
19 different homework items that were going on.

20 I remember that De Beers was going to  
21 meet with the Gahcho Kue Treaty 8 Tribal Corp. to go  
22 over some of your caribou stuff.

23 I was in and out for today. So are  
24 there any other homework items, besides the actual  
25 undertaking that you guys have recorded that you're

1 going to be bringing in tomorrow morning?

2 MS. VERONICA CHISHOLM: Veronica  
3 Chisholm, from De Beers. One (1) that I -- that I had  
4 committed to -- to Madelaine in terms of the caribou  
5 and the GNWT health study. I'm going to give the  
6 reference into the record. I'm actually going to ask  
7 Cam to read the reference into -- into the record. And  
8 I'm going to try and locate the report for tomorrow to  
9 provide her a copy with it.

10 MR. CAMERON STEVENS: Cam Stevens,  
11 Golder Associates. The reference is a report -- a tech  
12 -- published by Yawn (phonetic), Adam Zusky (phonetic),  
13 John Balanger, Bruno Croft, Dean Cluff and -- and --  
14 and other authors. Published in 2009, titled "The  
15 Decline in the Bathurst Caribou Herd 2006 to 2009," a  
16 technical evaluation of field data and modelling. This  
17 report is a draft technical report that was made  
18 available in December 2009.

19 THE FACILITATOR EHRLICH: Thanks, Cam.  
20 De Beers, any other homework items that you recall over  
21 the course of the day?

22 MS. VERONICA CHISHOLM: Veronica  
23 Chisholm, from De Beers. Yeah, we were going to check  
24 on the status of the Horned Grebe, and if there's been  
25 any changes to that according to SARA classifications.



1 THE FACILITATOR EHRLICH: I -- I  
2 definitely recall that. Any others?

3 MS. VERONICA CHISHOLM: Veronica  
4 Chisholm, for De Beers. I can answer that last  
5 question.

6 We just checked, and the Horned Grebe  
7 does not have a status under SARA, so I think we've  
8 answered that. We just looked it up.

9 THE FACILITATOR EHRLICH: Maybe they've  
10 reassessed it. Thank you for doing that. It wasn't  
11 even homework. You solved it on the spot.

12 We also have an undertaking, and I'm  
13 going to ask my Co-Chair Chuck Hubert, panel manager,  
14 to paraphrase what the undertaking was.

15 THE FACILITATOR HUBERT: The following  
16 is roughly what will be found in the transcripts. Some  
17 of the words may be different, but I think the intent  
18 is -- is as follows.

19 De Beers to provide rationale for  
20 reasonably foreseeable developments that were selected  
21 during the cumulative assessment, and why projects  
22 described by YKDFN, Todd Slack, were not selected.

23 I think that pretty much captures it.

24 THE FACILITATOR EHRLICH: Thanks. With  
25 that, we're -- we're going to wrap it up here. We

1 actually are only like seven (7) minutes late, which is  
2 not bad considering where we were after the last break,  
3 and some of the important subjects that have been  
4 covered here today -- today.

5 I'd like to thank De Beers and the  
6 presenters for the obvious effort they put into  
7 preparation of presentations, as well as the -- the  
8 answers they were able to provide, and their  
9 willingness to try and do homework here to keep the  
10 undertakings down while providing parties with the  
11 information they need. It's -- I mean, I'm seeing a --  
12 you know, quite an honest effort from where I'm  
13 sitting, and it really does help keep parties informed,  
14 and keep the process moving efficiently, so that's a  
15 good thing.

16 We are starting tomorrow morning at  
17 9:00, and we will see you then. Thank you.

18

19 --- Upon adjourning at 5:10 p.m.

20

21 Certified correct,

22

23 \_\_\_\_\_

24 Wendy Warnock, Ms.

25

<u>\$</u>	49:12,14	160:6,8	<b>1.1</b> 237:16	72:1
<b>\$10,000</b>	50:2	162:19	<b>1.4</b>	212:15
203:15	51:25	163:1	114:19,2	222:1
<b>\$50</b> 182:12	74:14,16	169:7,18	3 224:3	<b>11.10</b>
<u>0</u>	,17,23	172:9,10	<b>1.5</b>	61:11
0 79:2	75:4,25	175:24	215:3,14	206:20
<b>0.047</b>	77:18,19	179:14,1	<b>1.6</b> 224:17	<b>11.11</b>
150:13	78:7	5	<b>1:00</b> 92:1	61:11
<b>0.06</b> 195:2	79:2,5	180:5,6	<b>1:15</b> 92:5	<b>11.12</b>
<b>0.063</b>	80:22	181:22	<b>10</b> 22:5,16	61:11
119:4	83:12	185:3,24	28:15	<b>11.13.5</b>
<b>0.2</b> 212:18	84:2,4,1	187:24	30:18	160:18
<b>0.5</b> 124:6	3	188:2,7	32:8,17	<b>11.4</b> 14:5
223:5	85:7,15	192:4,7	52:8	50:21
<b>02</b> 119:18	87:25	193:12	87:11	59:16
<b>047</b>	88:2	195:1	88:22	<b>11.4.2</b>
122:14,1	102:2	197:21,2	91:11	50:21
7 123:22	103:3	3 198:24	154:22	59:16
200:1	104:14	200:8,18	157:6	<b>11.4-15</b>
<b>063</b> 119:17	111:12	,25	161:7	102:16
<b>07</b> 212:11	116:17,2	201:16	166:22,2	<b>11.7</b> 61:9
<u>1</u>	0	203:24	4 179:15	95:20
<b>1</b> 7:3	119:2,22	206:16	211:8,9	<b>11.8</b>
12:14	121:14,1	210:12	215:7	159:21
14:12	8,23	214:1,6	<b>10.4</b>	<b>11:47</b> 92:4
17:17	122:9,13	216:5	216:10	<b>110</b> 163:24
21:9	124:10,1	217:17	<b>10.42</b>	<b>12</b> 31:2,17
23:4,25	2,15	219:8,9,	215:20	73:11
24:1,6	125:18	15	<b>10:30</b>	122:20
26:3,16,	126:2	220:19	52:6,12	127:9
17,25	127:4	222:16	<b>10:48</b>	139:19
27:6	128:6,7	223:23,2	52:13	140:2
29:8	130:18	5 224:15	<b>100</b>	200:15
36:6	134:23	225:8	30:13,14	201:14
37:12	139:9	236:19	79:3	230:19
42:9	140:24	243:2	121:19	<b>12.2</b>
44:4,23	141:3,18	245:23	223:21	126:10
47:8	142:17	248:3	<b>104</b> 6:16	127:10
48:7	145:16	<b>1,000</b>	<b>11</b> 6:8	194:24
	147:12	66:11	23:1	195:4
	149:6,7,	<b>1,600</b>		
	10,16	210:24		
	150:14	<b>1.08</b>		
	158:16,1	215:17		
	8			

196:23 198:23 <b>12.4</b> 214:8 <b>120</b> 69:24 <b>128</b> 101:20 <b>13</b> 33:10,21 75:6 <b>133</b> 6:17 <b>138</b> 121:2,20 <b>14</b> 34:21 36:7 76:10 84:23 85:2,10 92:17,18 217:20 <b>140</b> 63:20 <b>14-</b> <b>kilometr</b> <b>e</b> 174:9 <b>14x14</b> 97:14 <b>15</b> 12:8 32:2 35:16 47:11 63:9,14 77:23 78:7 89:9 95:16 112:21 113:3 133:15 134:10 166:21 169:12,1 8 171:20 199:23	217:16 <b>15-</b> <b>kilometr</b> <b>e</b> 172:14,1 5 <b>16</b> 7:12 36:19 37:1 73:17 95:14 186:11 210:24 211:14 <b>160</b> 31:14,21 <b>169</b> 66:15 <b>16th</b> 185:16 238:12 <b>17</b> 37:2 210:25 <b>170</b> 103:22 <b>175</b> 210:23 <b>176</b> 101:25 <b>18</b> 37:19 225:9 245:14 <b>18.8</b> 215:6,8, 17 <b>185</b> 7:12 <b>19</b> 12:5 39:2 96:8 123:19,2 1 217:20 <b>194</b> 120:22 <b>1974</b> 88:17	<b>1975</b> 89:9 <b>1988</b> 122:11 <b>1990s</b> 138:18 <b>1995</b> 97:1 217:13,2 1 <b>1996</b> 157:18 212:9,16 <b>1998</b> 15:6 209:20 221:19 <b>1999</b> 109:10 211:13 <b>1-</b> <b>kilometr</b> <b>e</b> 211:5 <hr/> 2 <b>2</b> 9:9 12:12,20 14:6 22:20 26:2,8,9 ,19 30:22 37:8,18 55:23 57:3 61:4 75:17 79:12 82:23 84:5,11 87:24 89:24 90:23 93:13 97:17,20	98:1 99:7 100:11,1 2,25 101:18 103:3 104:3,14 111:5,6 114:17,2 0,22,25 116:2 121:3,12 122:21 129:9 131:8 134:15 139:7 155:17 168:1 169:3,4 171:17 181:20 185:17 187:11 188:3,7 198:9 200:17 201:22 210:18,1 9 211:7 214:9 215:13 216:7 228:25 234:19 238:11 242:4 <b>2.5</b> 22:3 32:8,17 36:22 53:13 104:6 <b>2.6</b> 222:19 223:7	<b>2.9</b> 219:16 <b>2:58</b> 167:15 <b>20</b> 16:1 30:4 63:3,10, 15 70:5 95:16 97:12 143:14,1 8 179:16,2 0,21 <b>200</b> 16:1 69:15 70:22,25 71:2,18 97:13 <b>200,000</b> 71:3,18 <b>2000-2005</b> 78:3 <b>2004</b> 15:12 96:20 211:3 221:1,9, 22 <b>2004/2005</b> 217:16 <b>2005</b> 15:6,13 96:20 210:21 211:1,3 217:13,2 1 221:1,19 <b>2006</b> 43:11 112:7 114:2 115:7,11 ,13
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

131:25	<b>2012</b> 227:7	<b>2x2</b> 102:18	125:17	136:9,15
191:15,1	<b>2015</b> 43:8		126:13,1	,17,18
9 210:22		<hr/>	4,24	140:3
211:1	<b>207</b> 6:20	3	128:10,2	155:4
214:14	<b>21</b> 97:4	<b>3</b> 1:24	4	158:1
248:15	98:23	8:18 9:2	129:3,8	209:20
<b>2007</b>	152:12	10:24,25	130:13	211:13
209:20	246:5,8	13:4,9	136:19	212:8
217:14	<b>22</b> 98:24	17:4	139:19	213:23
<b>2008</b>	221:14	36:15	172:16	221:25
214:22,2	<b>226</b> 6:21	81:21,22	201:11	<b>4.4</b> 127:20
3	<b>24</b> 101:17	82:24	222:5	128:12
<b>2009</b>	<b>249,000</b>	101:2	<b>30th</b> 1:23	<b>4:00</b>
212:9,17	157:8	104:15	<b>31</b> 108:16	205:22
248:14,1	<b>25</b>	105:10	<b>32</b> 53:12	<b>40</b> 6:9
5,18	15:10,16	113:12	109:5	39:4
<b>2010</b> 43:13	79:5	114:24	<b>34</b> 96:9	139:9
76:17	102:3	119:20	<b>35</b>	141:20,2
109:20	224:8	124:8	114:13,1	3
112:6,8	242:12	157:17	4	143:8,9
114:2,3,	<b>250</b> 6:24	160:4	<b>36</b> 116:3	144:3,9,
18,21	224:9	161:4	<b>37</b> 117:14	11,19
115:14	<b>250,000</b>	187:11	<b>38</b> 120:6	145:6
126:3	157:5	206:12	215:16	146:4
132:1	<b>25-hectare</b>	212:13	<b>39</b> 120:13	149:14
170:3	220:25	218:11	199:17	175:19
211:2,3	<b>27</b> 127:21	220:18	<b>393</b> 99:2	176:4,11
213:20,2	128:5,11	222:22	<b>3-year-old</b>	,12,13,1
1 217:14	129:17,1	242:6,10	110:13	4,18,22
221:11,1	8	<b>3.1</b> 120:18		177:3
3	<b>271</b> 131:17	<b>3.5</b> 113:2		178:25
222:5,13	231:18	171:15		203:15
224:8	<b>28</b>	218:9		210:16
225:4	105:6,9,	<b>3.7</b> 114:24	<hr/>	211:5
235:6	11,13	127:13	4	<b>41</b> 124:17
<b>2011</b> 1:23	221:6	196:24	<b>4</b> 9:15	133:18
7:12	<b>280</b> 63:20	198:25	12:13	139:3,8
153:11	<b>29</b>	<b>3:00</b>	13:10,22	<b>43</b> 131:18
186:12	106:19,2	166:25	,23	136:23
211:2,4	0	<b>3:13</b>	17:16	194:12
217:14		167:16	48:25	231:19
221:11,1		<b>30</b> 30:4	101:4	<b>44</b> 123:11
4 222:5		63:15	105:22	<b>45</b> 12:7
		107:16	121:16	
			127:19	

15:10	95:23	143:21	115:2,3	<b>8.39</b>
63:10	<b>5.2.3</b>	202:10	<b>7.3</b> 143:25	215:21
129:23	207:15	220:13	<b>7.31</b>	<b>8.7</b> 101:11
<b>46</b> 130:17	<b>5.4</b> 61:14	241:11	214:10	<b>80</b> 20:11
230:13	109:7	242:8	<b>7.5-3</b>	31:14,21
<b>47</b> 155:24	<b>5.47</b>	<b>6.6</b> 123:13	191:17	58:23
230:13,2	216:12	<b>6.9</b>	<b>7.9</b> 219:13	<b>80s</b> 89:6
4	<b>5.5</b> 62:24	202:10,1	237:16	<b>84</b> 63:21
<b>47.4</b>	<b>5.59</b>	3	<b>70</b> 179:1	<hr/>
101:11	216:11	<b>60</b> 6:12	222:8	9
<b>48</b> 132:10	<b>5.7</b> 129:11	176:11,1	<b>70s</b> 89:6	<hr/>
141:20	<b>5:00</b> 246:2	4 179:1	<b>72</b> 223:19	<b>9</b> 20:16
<b>49</b> 132:24	<b>5:10</b>	191:21	<b>74</b> 224:19	69:8
<hr/>	250:19	<b>61</b> 217:3,4	225:6	<b>9.2</b> 80:19
5	<b>50</b> 87:4,5	<b>63</b> 217:25	<b>75</b> 79:3	<b>9.3</b> 80:21
<b>5</b> 1:24	94:7,15,	<b>64</b> 131:9	225:7	<b>9:00</b>
9:15	18,22	236:21	<b>76</b> 225:13	250:17
19:4	128:4	<b>67</b> 53:14	<b>79</b> 6:13	<b>9:14</b> 8:1
26:4,18	191:20	<b>68</b> 234:22	74:9	<b>92</b> 217:17
27:1,6	<b>500</b> 66:10	241:9	<hr/>	<b>95</b> 191:19
60:17	74:8	<b>69</b> 220:24	8	<hr/>
61:14	<b>500,000</b>	244:22	<hr/>	A
66:12	136:14	<hr/>	<b>8</b> 3:15 6:5	<hr/>
74:18	<b>51</b> 206:14	7	19:2	<b>a.m</b> 8:1
79:5,9	<b>52</b> 208:9	<b>7</b> 6:3	25:2	52:12,13
87:8	<b>54</b> 212:5	16:22	27:7	92:4
123:23	<b>55</b> 128:3	61:8	55:2	<b>AANDC</b> 3:2
154:21,2	<b>56</b> 213:12	64:17	64:17	80:17
2 169:18	<b>58</b> 214:25	101:22	77:14	<b>ability</b>
172:22	<b>59</b> 37:12	105:5	85:2,4,5	86:16
173:3	<hr/>	113:12	,12,13	<b>able</b> 21:10
191:25	6	114:15	86:4	43:3
192:1,2,	<b>6</b> 15:2	116:7	165:20	50:4
5,10,11	33:6	179:21	193:12,2	56:2
218:6	63:19	181:24	3	58:12
<b>5,000</b>	65:21	182:21	194:4,5	80:25
237:18	66:12	250:1	198:22	87:6,10
<b>5,700</b> 70:3	114:7	<b>7.1</b> 62:11	201:5	109:25
<b>5.09</b>		108:21	209:22	121:24
214:11		209:5	230:18	123:8,15
<b>5.2.12</b>		<b>7.2</b> 11:5	247:21	140:17,1
				8 144:14

151:4,7	5 225:25	58:1	13:6	143:13,1
152:2,5	<b>abundances</b>	<b>acid</b>	37:20	6 154:25
185:16	125:17	32:17,18	108:18	163:17
188:25	<b>abundant</b>	103:20	165:4	171:8
203:13,2	75:1	<b>acidificat</b>	<b>active</b>	177:12,1
1 205:6	101:22	<b>ion</b>	74:15,16	6,20
233:3	<b>academic</b>	32:19	,17,19,2	201:12
234:16	81:7	<b>acknowledg</b>	1	220:7
237:8	<b>accepted</b>	<b>e</b> 127:1	78:1,2,4	238:6
239:15	142:13	190:2	,7	239:20,2
250:8	153:11	<b>acronym</b>	79:9,13	4 247:24
<b>abo</b> 36:13	171:7	56:16	115:15	<b>actually</b>
<b>Aboriginal</b>	<b>access</b>	<b>across</b>	173:4	18:19
10:3	20:6,7	26:14	191:23,2	19:20
164:24	66:2	63:8	4	20:11
<b>abreast</b>	69:24,25	64:1	192:1,10	23:20
105:12	73:22	73:8	,11	24:18
<b>abrupt</b>	86:16	75:11	209:20	38:20
178:19,2	106:11	77:16	223:17	43:9
2,23	109:9	81:13	<b>activities</b>	44:21
<b>absence</b>	130:19	113:11	19:15,17	47:16,17
87:16	131:1,5,	114:7	23:15,22	50:1
<b>absolute</b>	16,17,23	128:24	35:9	61:6
101:8	132:7	129:7	108:12	68:11
107:4	164:2	132:20	188:11	74:5,12
237:22	188:18	176:22,2	212:6	79:14
240:20	208:18	4 178:21	<b>activity</b>	111:8
<b>absolutely</b>	218:24	209:15	19:19,24	113:1
185:21	230:4,6,	210:17,2	25:6,12	114:23
186:15	17	3 211:6	34:12	115:7,13
190:11	231:18,2	229:6,12	49:4,7	127:13
227:22	2 232:10	,16	172:3,4,	129:18
<b>abundance</b>	<b>accessible</b>	240:21	21	131:23
94:16,22	138:16	242:21	221:19	147:3
116:13	<b>accommodat</b>	243:25	<b>actual</b>	150:10
129:12	<b>e</b> 105:19	<b>act</b> 44:19	14:4	152:1
136:18	<b>according</b>	108:12	18:21	172:12
162:6	75:21	219:21,2	27:1	176:11
164:20	89:18	3 220:20	30:12,18	191:10,1
179:11	248:25	<b>action</b>	47:21,22	5 193:25
221:4	<b>accounted</b>	38:13,15	59:17	198:23
222:24,2		<b>actions</b>	66:13	202:9
			74:2,3,1	226:21
			3	248:6
				250:1

<b>Adam</b>	162:9,17	<b>adopted</b>	101:19	4 154:6
248:12	<b>address</b>	43:1	106:8,9	190:21
<b>adapted</b>	13:12,21	<b>adult</b>	107:7	194:13
31:9	44:2	125:9	108:11	231:11
<b>adaptive</b>	52:3	<b>advance</b>	238:6	235:4
108:25	107:20	159:11	<b>affecting</b>	240:13
<b>adaptively</b>	108:13	167:3	68:23	<b>agreed</b>
145:18	133:25	245:17	150:4	142:13
<b>add</b> 75:2	134:6	247:1	<b>affects</b>	<b>ahead</b> 53:2
77:6	151:19	<b>adverse</b>	208:15	54:25
103:25	159:14,1	14:15	<b>aft</b> 52:7	175:12
115:9	5	39:7	<b>afternoon</b>	195:19
143:3	<b>addressed</b>	81:25	60:2	207:2
159:9	28:8	82:7	85:20	226:14
173:13	61:1	86:15,22	93:20	<b>Ahiak</b>
197:8	64:24	,25	94:9	72:4,24
232:3	96:4	87:11	188:5	106:25
<b>addendum</b>	146:13	132:18	<b>against</b>	111:13
190:5,11	159:21	225:24	17:11	156:14,1
231:24	184:9	<b>adversely</b>	<b>agencies</b>	8,25
236:11	208:6	96:2	10:9	157:5,18
<b>adding</b>	231:23	<b>advise</b>	148:19	<b>aimed</b>
13:13	<b>addressing</b>	233:15	<b>agency</b>	27:13
239:20	14:9	<b>aerial</b>	15:20	<b>air</b> 6:8
<b>addition</b>	87:25	239:13	17:2,14	8:19
121:22	<b>adequately</b>	<b>Affairs</b>	21:17	10:23
137:1	184:9	10:3	29:15	11:1,2,9
148:18	193:18	154:6	31:10	,24
162:11	230:4	<b>affect</b>	67:7	12:2,4,1
215:16	<b>adjourning</b>	88:4	<b>agenda</b>	6,17,18,
223:10	250:19	96:2	11:2	23
<b>additional</b>	<b>adjusted</b>	104:7	63:3	13:1,11,
66:13,15	196:25	108:3	<b>aggregated</b>	14,20,24
96:12	197:1,2	118:14	41:24	,25
131:14	<b>adjustment</b>	135:17,2	<b>agitate</b>	14:1,4,7
155:7	197:3	1 144:7	118:7	,11,15,1
177:2	<b>admit</b>	179:10	<b>agitation</b>	7,18
222:2	132:2	247:1	118:4	15:3,18,
227:5	<b>adopt</b>	<b>affected</b>	<b>ago</b> 9:16	19
230:22	140:8	24:5,24	88:20	16:5,7,1
<b>additive</b>	212:23	85:6	149:13,1	4,23,25
		98:4		17:5,6,8
				,12,13



18:18	190:14	<b>Alliance</b>	23:19	124:20
21:25	214:12	4:21	27:16	132:21
23:19	<b>Alan</b> 1:13	10:2	33:12,17	225:22
26:7	2:2	<b>allow</b>	34:1,9,2	<b>analysis</b>
27:15,16	8:11,14	205:13	4	1:6
,23	9:10	219:20	35:2,17	45:11,19
31:12,19	58:11	<b>allows</b>	36:24	49:5,9
,23	59:18,21	43:2	47:15	61:24
32:1,4	60:3	<b>alo</b> 39:3	<b>ambitious</b>	67:1,17
33:12,17	65:3	<b>already</b>	238:9	68:25
,23	70:24	113:17	<b>amended</b>	80:13
34:1,7,9	71:4	180:16,1	42:17	81:11
,24	80:14	8 184:11	43:7	106:21
35:2,17	83:11	186:23	<b>amendments</b>	107:3,17
36:15,24	84:18,22	204:14	41:19	111:16
37:7,22	85:1,14,	219:4	<b>amongst</b>	116:18
38:14	21 86:6	<b>alteration</b>	189:17	121:4
39:5,7,8	87:3	<b>s</b> 110:23	<b>amount</b>	127:18
,11,16	94:5,12,	220:11	17:20	128:3
40:5	13,25	<b>altered</b>	18:21	130:24
42:7	105:7,21	93:7	24:14	133:24
44:2	137:5	98:10	44:7	134:6
47:15	138:13	101:2,4,	54:2,5	135:21
49:16	140:12	6,12,18,	107:4	137:24
52:23	141:2	21,22	144:6	177:12,1
53:23	143:6	102:1	157:3	3 182:3
56:7	147:19	<b>altogether</b>	201:19	183:2
57:4,5	167:1	221:14	222:15,1	191:3
60:6	169:2	<b>am</b> 8:9	9 238:6	192:18,2
66:4,9,1	175:15	16:25	<b>amounts</b>	0 198:4
6 100:5	185:20	180:8	224:5	202:19
102:7	194:10,1	232:3	<b>Amy</b> 2:15	210:16
105:10	3 196:13	<b>amalgamate</b>	3:3	218:1
113:5	206:25	<b>d</b> 175:25	<b>analogous</b>	219:19
206:12	227:19	<b>ambient</b>	166:14	222:11,2
<b>Akaitcho</b>	231:17	13:1	<b>analogy</b>	3 224:14
10:5	238:21	15:18	180:14	<b>analyze</b>
86:22	<b>Alan's</b>	16:14,23	<b>analyses</b>	225:14
87:8	94:6	,25	72:16	<b>analyzed</b>
154:9	<b>Alberta</b>	17:1,4,8	77:17	66:21
193:12,2	244:4	,12	79:7	<b>and/or</b>
3	<b>Allan</b>			32:14
<b>al</b> 2:22	203:5			98:21
100:20				
119:13				

204:7	<b>Annex</b> 14:3	249:8	<b>anytime</b>	33:12,17
<b>Andrea</b>	<b>annual</b>	<b>answering</b>	149:9	34:1
3:10	59:6	44:1	<b>anyway</b>	47:15
<b>Andrew</b>	75:4	45:24	141:20	79:19
2:10	161:21	48:15	145:8	177:25
94:3	191:13	232:19	166:18	<b>applicatio</b>
154:19	<b>answer</b>	<b>answers</b>	239:25	<b>n</b> 26:11
<b>angle</b>	12:9	52:6	<b>anywhere</b>	27:2
119:19	30:2	175:9	30:3	62:17
<b>animal</b>	41:15	203:22	36:6	76:16,18
120:2,21	42:22	250:8	37:11	77:16
121:13,1	48:21	<b>anticipate</b>	156:9	112:8
4,15,16,	50:15,22	54:3	243:2	114:4,5,
24	59:5,24	95:16	<b>ap</b> 76:17	19,21
165:18	60:2	<b>anticipate</b>	<b>apart</b>	126:4
172:9	65:20	<b>d</b> 100:6	211:9	169:16
200:3,25	68:22	<b>Antoniuk</b>	<b>apologies</b>	213:21
201:20,2	80:19	5:19	231:11	224:21
4 202:8	82:9	67:6	<b>apologize</b>	<b>applicatio</b>
242:25	83:24	190:16	41:7	<b>ns</b>
243:2	91:7	233:17	94:23	102:11
<b>animals</b>	123:8,15	<b>anybody</b>	146:3	<b>applied</b>
71:7	134:20,2	8:6	<b>APPEARANCE</b>	27:24
72:14	3 135:8	149:9	<b>S</b> 2:1	100:22
78:14	136:19	<b>anymore</b>	3:1 4:1	137:13
88:3,4	140:23	8:7	5:1	138:24
121:16	146:11,1	<b>anyone</b>	<b>appears</b>	145:12
122:17,1	2 147:20	226:9	161:2	179:25
9 136:14	150:8,24	239:22	<b>appendix</b>	181:3
142:12	151:17	241:4	11:4	207:21
172:21	153:19	244:17	48:24,25	218:16
210:25	170:18	245:20	50:19,21	223:16
<b>animal's</b>	184:4	<b>anything</b>	59:15,20	<b>applies</b>
200:22	186:15	8:7	62:11	136:10
<b>Animals</b>	193:9	43:20	108:21	<b>apply</b> 9:24
172:2	194:16	143:4	209:5	10:12
<b>Anne</b> 4:6	198:20	168:19	<b>applica</b>	63:6
5:21	201:18	173:7	27:1	102:12
157:18	243:19	174:7	<b>applicable</b>	111:24
160:8	249:4	203:1	13:1	<b>applying</b>
162:1	<b>answered</b>	243:1	16:13	48:9
168:22	8:23			179:3
	54:16			208:16
	241:24			

<b>appreciate</b>	219:1	<b>area</b>	22	21 74:1
28:2	225:18	24:4,23	106:22	75:2
40:21	<b>approaches</b>	25:15,18	109:8,10	81:14
84:3	43:23	,22	,16	118:8,16
95:1,2	62:2	26:15	110:9,18	141:6
105:20	225:13	27:4	111:10	172:5
135:5	<b>approachin</b>	31:12,13	119:24,2	202:12
146:3	<b>g</b> 27:11	,20,22	5 122:3	213:15
151:15	75:24,25	32:1,2,3	134:3	224:11
160:1	<b>appropriat</b>	33:18,22	143:20	225:1
168:4	<b>e</b> 83:9	34:3,5,9	154:13,1	244:6
180:25	225:19	,13	5,20,21	246:21
183:5	<b>approximat</b>	35:1,3,2	156:5,6,	<b>aren't</b>
227:2	<b>ely</b>	0	7 157:21	144:14
229:19	12:6,8	36:4,10,	175:4	223:8
237:12	16:1	16,25	209:21	<b>argue</b>
238:5	20:11	37:9,10,	210:23	177:23
241:1	69:15	11	213:5	<b>argued</b>
<b>approach</b>	74:9	39:14,17	217:6,13	165:21
13:5	97:13	42:2	,19,23	<b>argument</b>
27:24	101:2,11	46:24	218:25	86:9
28:23	,25	47:3,9,1	220:14	<b>arises</b>
29:14	102:18	2,21,24	221:3,10	65:8
30:6	103:3	56:1	,15,21,2	<b>arm</b> 88:24
31:3	104:5	68:17	4	<b>aromatic</b>
44:16,18	115:2	69:10,14	222:2,10	22:10
63:5	124:10	,21,22	223:1	<b>arrow</b>
64:22	154:21	70:2,12,	224:10,2	98:12
71:16	212:18	17,23	3,25	<b>articles</b>
79:18	214:8	71:6,9,1	225:5	199:21
81:5	216:10	4,18,20,	228:10	<b>artifact</b>
96:17	<b>ar</b> 63:24	24 73:24	229:8	237:10
113:18	<b>ArcMap</b>	74:8	233:5	<b>artifacts</b>
124:14	80:19	75:9	237:3,6,	237:17
130:15	<b>arct</b> 175:2	76:6,13	7,10,13,	<b>Artillery</b>
137:15,2	<b>Arctic</b>	85:6,16	17,19	89:1
4 139:18	77:21	88:16,22	238:23	<b>aside</b>
140:6,9,	99:16,18	89:9,11,	245:2,13	201:21
14,16,23	116:22,2	15,22	,18	<b>asker</b>
142:19	3 138:6	90:8,17	246:15	57:16
165:11	152:16	94:23	<b>areas</b>	
173:1	175:2	97:13,14	34:14	
181:11		98:9,10,	69:8,12	
182:23		21	72:3	
218:14		103:2,4,	73:8,19,	

<b>as-needed</b>	26:11,13	9,20	78:24	193:9
9:7	,20	159:4,10	173:2	197:5
<b>aspect</b>	27:2,23	170:22	213:15	200:7
83:13	30:20,21	171:3	<b>assist</b>	201:18
238:1	31:4,13	173:6	9:12	206:24
<b>aspects</b>	33:2,3,9	177:11	<b>assistance</b>	230:12
48:6	,23 35:8	179:9	97:6	232:18
<b>assess</b>	37:25	182:19	147:16	235:6
21:25	38:1,3,1	183:7	<b>associate</b>	248:11
23:12,25	2,17,19	184:7	22:9	<b>associatin</b>
24:9	39:5	185:4,12	44:1	<b>g</b> 172:4
32:6,22	41:22	186:1,24	<b>associated</b>	<b>assume</b>
49:7	42:23	192:12,2	22:7,21,	28:24
88:3	44:24	5 193:1	23 73:16	29:16,22
95:24	47:13,25	207:13	77:7	30:14
96:1	50:20	211:24	118:4	42:19
207:17,2	62:1,6	214:16,2	122:16	44:18
2 217:5	63:4	5 215:1	129:15	79:12
223:2,18	64:22	216:3	140:19	126:21
<b>assessed</b>	65:2,11,	220:8,9	150:14	173:3
27:25	19	222:12	172:18	178:7
67:20	67:1,3,1	225:12,1	215:9	<b>assumed</b>
75:8	0,16,21	8 226:18	217:22	30:7
99:8	68:10,20	227:7	<b>Associates</b>	102:10
103:7	69:7,9	228:3	12:3	122:17
213:11	78:22	234:7	41:15	128:21
219:3	79:15,18	235:14	56:18	200:23
<b>assessing</b>	,22 83:4	243:24	60:15	<b>assumes</b>
23:4	85:3	244:9	64:19	123:25
27:18	87:20,21	249:21	84:18	126:21
70:14	91:1	<b>assessment</b>	85:9	<b>assuming</b>
103:7	98:18,25	<b>s</b> 29:14	92:16	39:23
<b>assessment</b>	100:10,2	37:22	94:2	184:20
7:4 11:6	5 104:7	42:7	95:14	200:10
12:19	106:18	81:6	137:5	<b>assumption</b>
13:3,5,1	108:4	91:5	138:12	22:23
9,20,21	114:8,9	243:21	141:25	30:11
14:4,8,2	130:5,10	<b>assign</b>	150:8	48:17
0 16:24	,11	29:19	170:16	51:13,23
17:6,9	132:23	76:23	173:13	77:16,20
20:13,18	137:15	<b>assigned</b>	176:6	79:7
22:22	138:2,3,	74:1,4,8	178:12	102:8
24:15	13	75:16	191:9	116:21
	140:16	76:21		
	142:16,1			

122:22	<b>August</b>	128:11	246:7	62:9
192:9	15:17	131:8	<b>bad</b> 250:2	72:13
195:1	<b>author</b>	202:8,11	<b>Bain</b> 3:22	73:15
199:20	176:17	<b>avoid</b> 8:24	<b>bal</b> 176:21	76:22
<b>assumption</b>	<b>authors</b>	78:15	<b>balance</b>	96:8,11
<b>s</b> 7:10	174:7	93:9	20:20	100:19
14:21,23	248:14	172:21	21:14	113:4
28:17	<b>autumn</b>	209:1	107:18	123:20
38:6	113:16	<b>avoidance</b>	<b>Balanger</b>	125:11,1
39:21	114:11	78:19	248:13	9 127:3
116:17	116:5	171:8,12	<b>bald</b> 222:4	129:4
122:16	117:21	172:8,14	<b>ballpark</b>	130:3
185:9	118:1	<b>avoiding</b>	45:20	131:24
186:9	143:23	171:20	<b>balls</b>	132:20
<b>atmos</b>	<b>auxiliary</b>	<b>aware</b>	176:22,2	138:17
32:11	19:8	11:22	4	142:2
<b>atmosphere</b>	<b>availabili</b>	57:12	<b>barren</b>	173:20
32:12	<b>ty</b> 86:14	<b>away</b> 35:24	88:20	177:16
<b>attacked</b>	88:3,4	37:5	149:16,1	199:21
242:17	93:16	41:25	8	218:19
<b>attempt</b>	<b>available</b>	86:2	<b>Barsi</b> 2:19	222:25
232:18	13:17	144:15	<b>base</b>	223:20
<b>attended</b>	42:18	157:7	188:16	224:7
52:21	43:12	174:23	<b>based</b>	231:20
<b>attention</b>	86:20	177:6	14:20	<b>baseline</b>
61:13	88:19	178:14	16:11	13:25
148:24	101:11	245:15	18:19	55:23
<b>attenuatin</b>	159:5,7,	<b>axis</b>	20:21,25	57:11,13
<b>g</b> 171:15	11	118:18,1	21:18	,17 58:4
<b>attract</b>	179:24	9	25:1	61:15
208:11	181:2	126:1,12	26:3,4,1	64:8
<b>attractant</b>	203:23	<hr/>	6 27:3	76:17
<b>s</b> 208:12	224:9	<b>ba</b> 142:2	28:25	96:8
<b>attraction</b>	234:5,10	<b>background</b>	36:17	97:9
172:13	,16	112:25	37:6,13	98:16
208:11	248:18	113:1,2	39:20,22	100:6
<b>attracts</b>	<b>avenue</b>	162:12	44:5,11	109:5,23
210:13	184:24	165:2	46:2,3	112:6,9
<b>audiences</b>	<b>average</b>	218:9,11	48:13	114:2,3,
105:19	15:15	227:3	55:13	19,21
	123:17	<b>backward</b>	61:23	126:3
	127:21			161:16

217:9,12	64:9,13	5,19	4	1,22
220:22	70:18	7:3,9	153:6,8,	239:11,1
222:13	71:7,22	8:19	12	8
223:2,3,	88:23	10:16,18	154:7,13	240:9,10
16	91:3	,21	,15,20	,14,16
246:23	130:22	11:24	155:24	241:15
<b>basically</b>	207:9	16:10	158:13,1	245:11,1
19:4	209:11,1	20:10	5,24	6
53:18	4,18,21	37:20,21	159:11	247:7,20
65:1	211:25	,23	160:1	248:3,20
105:23	212:8	38:14,15	162:20,2	,23
143:11,2	213:5,10	,23	2 166:2	249:4,19
4 223:4	214:16,2	41:16	167:2,19	250:5
224:11	1 220:15	42:8	,23,24,2	<b>bef</b> 132:11
<b>basis</b> 9:7	241:13	50:25	5	<b>begin</b>
62:22	244:1	54:13	168:4,21	11:18
86:13	<b>bearing</b>	57:18,24	169:7	60:22
<b>Bathurst</b>	94:17	58:5	178:7	61:16
72:4,21,	235:15,1	59:23	181:10,1	95:20
23 73:1	7	60:1,7,1	2	113:7
75:4	<b>bears</b>	2 61:2	183:5,15	120:13
84:14	68:14	62:13	184:4,15	142:9
87:9	209:23	82:2	185:3,20	<b>beginning</b>
106:24	210:5,14	91:17,19	,24	80:20
107:2	212:11	92:11	186:8	196:9
111:13	213:8	95:1,7,1	188:15,2	<b>behalf</b>
113:13	230:15	1 99:22	4	193:23,2
125:5	234:12	100:16	189:6,7,	4 194:5
131:22	242:8,9,	104:23	21	206:22
133:15,2	10	109:3	190:7,10	231:16
1,23	<b>became</b>	131:11	203:19	<b>behaviour</b>
134:4,9	43:12	132:6,25	204:1,4,	122:24
135:10	115:21	134:13	5	<b>behavioura</b>
136:3	<b>bed</b> 19:22	135:2,5	205:6,13	<b>l</b> 106:16
143:21	20:2	137:14,1	206:2,5,	<b>behind</b>
156:15,1	43:18	5 140:12	22 207:5	140:4
8 157:1	44:4,8,1	141:22	209:25	141:22
175:7	5,19,22,	144:18	216:20	166:23
248:15	25 45:1	145:11,1	226:10	177:2
<b>Bathurst's</b>	66:6	9	227:2,22	180:9
182:18	<b>beds</b> 43:21	146:2,9	228:13	193:14
<b>BC</b> 160:6,7	<b>Beers</b> 2:8	147:22	230:20	210:14
<b>bear</b> 61:22	6:7,11,1	150:6	232:6	
		151:14	236:2	
		152:12,2	238:18,2	

<b>bel</b> 156:15	<b>best</b> 13:17	36:15	220:22,2	34:25
<b>belabourin</b>	55:13	37:8	4 221:8	35:19
<b>g</b> 181:9	58:6	67:23	222:15,2	47:12
<b>Belanger</b>	70:23	70:16	3	70:20
174:1	71:19	<b>BHP</b> 154:7	223:7,13	209:23
<b>believe</b>	91:18	<b>biassed</b>	,19	<b>blackbird</b>
10:17	124:25	129:25	225:16	220:16,1
42:24	134:19	<b>biggest</b>	226:18,2	9,21
43:7,12	141:10	173:6	1 241:6	<b>blasting</b>
46:5	150:19	<b>binders</b>	244:23	19:18
48:23	175:11	145:4	245:18	62:18
52:23	179:24	<b>biologist</b>	<b>birth</b>	118:5
54:24	180:20	60:15	107:19	<b>block</b>
60:24	181:2	<b>biologists</b>	<b>bit</b> 21:20	154:13,1
80:19	224:23	119:12	36:4	5,20
122:12	239:16	188:17	43:13	<b>blocks</b>
141:17	<b>bet</b> 80:18	196:19	45:16	155:1
154:1	205:15	<b>biology</b>	50:10	<b>blue</b> 34:4
184:8	<b>better</b>	83:7	55:2	98:8
206:14	16:5	<b>biophysica</b>	61:25	<b>Bluenose</b>
232:1	24:4	1 160:24	63:2	157:1,5,
235:10,2	26:6	<b>biotic</b>	65:6	11,19
2 239:14	30:15	86:11	69:23	<b>board</b>
243:3	37:23	<b>birch</b>	71:6	1:3,12
<b>benchmark</b>	38:5	97:22,23	83:24	8:4,10,1
143:11	45:18	101:20,2	84:3	5 9:11
<b>benchmarks</b>	65:5	4 217:24	86:3	11:18,19
103:24	90:10	<b>bird</b>	103:21	28:2,9
<b>beneficial</b>	140:9,21	193:15	117:14	40:11
8:25	151:17	220:11	124:18	49:11
<b>benefit</b>	159:4,10	221:7	130:18	52:5
59:22	170:10	222:22	138:20	53:22
181:9	183:3	226:1,12	142:2	60:5
<b>benefited</b>	200:5	244:25	148:8	68:5
210:6	229:15	<b>birds</b>	151:22	73:13
<b>berm</b> 233:7	<b>Beverley</b>	61:12	164:15,1	80:1
<b>berries</b>	72:24	64:9	6	81:18,24
98:19	156:15,1	180:14	166:22,2	88:8
<b>besides</b>	8	205:19	3	91:22
144:8	157:1,19	217:1	193:14,1	92:8
247:24	<b>Beverly</b>	219:18	9 233:7	104:14
	106:25		240:23	105:9
	<b>beyond</b>		<b>black</b>	146:18
			33:22	

148:1,2, 7,10,19 158:3 190:18 206:12 <b>Board's</b> 67:6 229:24 <b>boat</b> 149:18 <b>bodied</b> 177:9 <b>bodies</b> 150:5 223:22 228:9,14 <b>body</b> 118:19 <b>boiler</b> 19:9 <b>boilers</b> 18:11,13 <b>Bolstad</b> 2:13 153:5,6 158:14,2 0 <b>book</b> 96:25 <b>bor</b> 232:23 <b>bore</b> 204:16 <b>boreal</b> 63:24 64:5 232:25 233:2,10 <b>boring</b> 204:17 <b>born</b> 151:4 <b>bottom</b>	85:2 98:2 150:11 199:20 211:22 246:12 <b>boulder</b> 111:11,2 3 <b>boun</b> 24:4 <b>boundary</b> 34:16 35:11,13 ,25 36:11,17 47:21 48:2 76:14 103:2,4, 23 155:1 <b>box</b> 71:23 176:21,2 5 <b>Bradshaw</b> 122:11 <b>breadth</b> 8:21 <b>break</b> 46:7 52:7 62:25 91:15,19 ,20,22 133:1,6, 7,8 160:3,12 ,14 164:6 166:20 167:13 188:2 250:2 <b>breakfast</b>	45:16 <b>breaking</b> 91:25 <b>brief</b> 11:15 14:25 16:19 18:24 22:13 30:24 34:18 37:16 45:6 50:12 51:9 52:23 53:4 54:21 58:9 73:3 80:5 82:15 84:25 88:10 92:20 95:4 104:18 115:24 121:8 128:14 134:25 139:5,12 145:25 146:21 153:3 154:17 156:21 164:12 170:13 173:10 183:12 184:1 189:3 191:6 211:17	226:25 227:9 228:22 230:9 232:15 233:24 235:24 236:6,16 ,23 240:6 243:16 245:8 <b>briefly</b> 12:18 14:19 15:2 16:22 19:2 20:17 31:2 75:7 97:2 111:18 <b>bring</b> 148:24 188:20 <b>bringing</b> 248:1 <b>broad</b> 49:14 98:20 100:17 145:15 202:18 <b>broader</b> 64:15 <b>brought</b> 88:16 149:17,1 9 157:23 176:1 <b>brown</b> 77:1 115:1	116:9 117:3 215:19 216:12 <b>brown/</b> <b>green</b> 115:9 <b>Bruno</b> 188:21 248:13 <b>bud</b> 117:15 <b>budgets</b> 117:15,1 7 <b>buildings</b> 172:5 188:19 <b>builds</b> 175:18 <b>built</b> 175:6 177:15 <b>bulldozers</b> 18:2 19:13 <b>bulldozing</b> 19:18 <b>bullet</b> 21:23 30:18 150:12,1 8 <b>burden</b> 239:4 <b>Bye</b> 92:2 <b>byproducts</b> 53:17 <hr/> <b>C</b> <hr/> <b>C1F1</b>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------



128:19	174:22	,19	230:11	51:3
129:16	<b>calving</b>	<b>Cameron</b>	231:6,10	53:8
<b>ca</b> 151:9	109:15	2:21	,14,17	54:13
244:13	118:1	11:12	248:10	59:6
<b>cal</b> 125:9	119:24	60:13	<b>camp</b>	60:1
174:21	120:25	68:8	97:15,16	73:13
<b>calculate</b>	122:3	71:2,5	99:17	111:21
113:25	143:24	73:5	201:3	175:1
121:24	149:2	80:18	208:13	226:17
197:10	151:2	81:3	209:22	243:25
<b>calculated</b>	202:12	82:9,13,	211:15	<b>Canada-</b>
76:4,8	<b>Cam</b> 60:14	17 84:17	242:3,5,	<b>wide</b>
121:11	64:19,25	85:8,18	8,10	17:7
123:1	81:4	90:3,7	<b>camps</b>	18:16
<b>calculatin</b>	84:7,17	91:9,13	79:13	<b>Canadian</b>
<b>g</b> 121:25	85:9	93:25	191:13,1	18:9
<b>calculatio</b>	92:18,22	95:13	8,19,21,	103:11
<b>n</b> 21:3	94:2	104:24	23	122:11
<b>calculatio</b>	95:9,14	105:21	234:6,13	226:16
<b>ns</b> 104:1	105:11	116:1	242:4	227:12
<b>calf</b>	133:9	121:10	243:9	228:2
117:23	135:14,2	128:16	<b>Cam's</b>	<b>capacity</b>
118:22	3 137:5	135:15	143:4,7	130:9
119:3	141:24	136:5	169:10	<b>capture</b>
120:4	143:19	137:4	237:4	31:22
124:5	150:7	138:11	<b>Canada</b> 2:8	70:6
128:23	170:16	141:24	4:6	84:20
129:7	173:13,1	150:7,23	6:7,11,1	140:18
130:8	6	170:15	5,19	194:17,2
151:3,5	174:14,2	176:5	10:1,2,4	2 218:23
197:18,1	0 176:5	191:8	15:25	<b>captured</b>
9,23	191:8	192:21	18:5	66:25
<b>Calgary</b>	192:13	193:8	27:10	69:6
160:7	193:8	195:9,12	28:7	96:5
190:17	196:3,10	,15,20,2	31:10	99:8
230:2	197:4	3	40:18	106:17
233:18	200:7	196:1,5,	41:24	204:23
<b>CALPUFF</b>	201:17	10,13	42:12	208:16
31:5	202:15	197:4	43:7	<b>captures</b>
<b>calves</b>	206:24	199:2	45:9	249:23
149:2	219:5	200:6	46:14,23	<b>capturing</b>
	226:9	201:17	48:5	86:24
	230:11	206:23	49:14	
	248:7,10	207:7	50:25	
		211:19		

124:23	114:10	188:3	<b>carried</b>	19:6,10,
<b>car</b> 106:21	116:4	191:13	65:10	14,19,21
201:10	117:15,2	193:11,1	67:9,15	,23
<b>carbon</b>	2	5 194:11	<b>carry</b>	20:5,24
22:2	118:2,22	197:10	206:5	22:4
33:11	119:7	200:3,17	<b>carrying</b>	65:9
58:13,15	120:9	201:8,11	130:9	76:21
,18	121:23	,13	<b>cars</b> 58:21	<b>Cathie</b>
<b>care</b>	122:5	203:9	<b>case</b> 13:16	2:13
167:24	123:5,9,	204:7	26:13,21	153:5
190:8	10,16	205:9,17	27:2	158:14,1
<b>cari</b>	130:21	,21,22	39:22	7,20
131:22	131:22	208:21	58:4	<b>caucus</b>
193:14	132:18	213:12	79:10	134:19
<b>caribou</b>	136:3	214:12	91:22	<b>caught</b>
6:16	138:5	217:11,1	111:20	163:5
11:4	139:20	5	113:19	<b>cause</b>
61:9,21	141:23	225:15,2	128:21	19:20
62:18,20	143:8,9	5 230:15	129:6,10	161:13
63:6,11,	144:10	237:6	148:6	208:14
12,13	145:18	246:1	153:18	217:7
64:8,12	149:7,10	247:22	162:16	<b>caution</b>
68:13,23	,11,17,2	248:4,15	170:7	74:4
72:2,5	0	<b>carnivore</b>	182:8	<b>caveat</b>
75:5	150:2,4	61:10	184:17	41:5
84:14	151:16	63:7,14	198:12	<b>CCME</b> 18:10
86:18	157:3,5	193:14,1	203:25	103:11,1
89:13	158:23	9 205:8	224:17,2	3
91:4	161:24,2	206:19	1	<b>CEA</b> 67:7
95:18	5	207:18	<b>catch</b>	<b>cell</b>
104:11,2	162:1,2,	209:6	155:18	75:15,18
1,23	3,5	216:15	164:20	76:21
105:1,2,	164:2	233:20	<b>categories</b>	<b>cells</b>
4	168:15	234:6	19:4	75:14,17
106:6,16	169:1	<b>carnivores</b>	169:18	,20
,21,22	171:20	6:20	<b>categoriza</b>	76:20,24
107:12,1	172:2,19	205:18	<b>tion</b>	77:8
8,25	174:21	207:5	241:17	79:1,3,5
108:11	175:7	208:11	<b>categorize</b>	89:22
109:2,3,	176:2,4,	225:15	<b>d</b> 73:17	90:19
4,6,15,1	8 177:9	226:1	234:24	213:17
7,21	179:3,4,	232:21,2	<b>category</b>	
110:5,9	10	2 241:5		
	181:1,5	242:25		
	182:25			

<b>Celsius</b> 15:10	<b>Certified</b> 250:21	42:5,21 43:25	215:6,8, 18	161:14 162:6
<b>central</b> 83:6	<b>cetera</b> 18:2 27:20	45:23 47:7 48:14	219:8,9 232:11 237:18,2 4	179:7,9 214:4 215:2,5, 23,24
<b>centre</b> 23:16 25:6 97:14	<b>chairing</b> 167:9	50:14,15 51:11,12 53:6,7	<b>changed</b> 9:17 86:15	216:4 217:8 218:5,13
<b>centred</b> 32:3 154:24	<b>chairs</b> 167:20,2 1	56:17,22 57:12 59:4 102:4	183:21 198:16 235:10	219:15 220:6 222:14,1 6,23,24
<b>cert</b> 171:2	<b>chall</b> 23:25 137:22	<b>change</b> 57:19 66:15	<b>changes</b> 14:17 23:5,10	223:8,18 ,25
<b>certain</b> 8:23 21:10,11 32:13 65:8 165:4 180:10 197:24	<b>challenge</b> 24:12	75:8,9 77:14	39:8 41:20 65:17,22 ,25	224:1,13 248:25
	<b>challenged</b> 60:21,24	85:3,5,1 2 88:4	66:1,3,7 ,9	<b>changing</b> 124:17 130:17
	<b>challenges</b> 23:4 24:1 137:22	93:3,4,1 2 94:7,15 102:1 104:4,5	68:16,18 76:3,7,8 77:7 94:16	<b>Chang's</b> 100:8
<b>certainly</b> 60:24 80:2 83:25 86:22,25 87:13 90:9 94:20 106:2 118:11 147:20 158:24 160:1 167:9 186:22 202:17 204:5 238:10 241:1 244:1	<b>challengin</b> g 107:20 127:2	107:5 113:14 116:19 126:10,1 3,24	100:4,23 ,24 101:8,9 103:8,9 104:2 106:16 108:2	<b>character</b> 15:7
	<b>chance</b> 134:22 187:8 204:1	127:9 129:3,11 130:6 136:9,18 139:19 140:3	112:15,1 6,17,20 125:4,6, 9	<b>characteri</b> s 64:4
	<b>Chang</b> 2:20 11:1,10, 25 12:2 15:1 16:21 19:1 22:15 27:14 28:14 31:1 34:20 37:18 41:14	143:14,1 9,22,25 160:16,2 1 161:3,10 178:19,2 2,23,24 179:6 198:17 199:3	110:18,1 9,20,21, 22 112:15,1 6,17,20 126:18,2 3 127:5 129:14 130:25 133:19 160:22	<b>characteri</b> zed 15:8
<b>Certificat</b> e 6:24				<b>cheat</b> 176:18
				<b>check</b> 188:18 236:2 248:23
				<b>checked</b> 221:24 249:6
				<b>chemicals</b> 55:22 57:18
				<b>chiefs</b>

154:9	1	146:17,2	<b>clarity</b>	172:12,1
<b>children</b>	239:10,1	3 164:8	94:19	4 181:10
242:20	1	249:13	247:4	<b>cliffs</b>
<b>Chisholm</b>	240:15,1	<b>circle</b>	<b>class</b> 5:14	224:12,2
2:8	6	79:1	98:4	4
10:20,21	241:14,1	122:1	<b>classes</b>	<b>climate</b>
50:24,25	5,20	<b>circulate</b>	97:18,21	160:16,2
54:12,13	245:10,1	143:1	,25	0
57:23,24	1	<b>circumstan</b>	98:14	161:3,9,
59:25	247:6,7	<b>ce</b>	<b>classifica</b>	13
60:1	248:2,3,	137:17	<b>tion</b>	162:15,1
91:16,17	22,23	<b>city</b>	100:14,1	8
94:25	249:3,4	152:19	7,19	<b>climatic</b>
95:1,6,7	<b>chose</b>	<b>cla</b> 97:18	111:21	99:18
134:15	43:14	<b>claim</b>	143:13	<b>close</b> 46:5
135:4,5,	47:4,5	154:13,1	160:23	60:6
13	70:22	5,20	<b>classifica</b>	78:18
140:11,1	93:8	155:1	<b>tions</b>	179:20
2	<b>Chris</b>	<b>claims</b>	179:14	201:12
144:17,1	117:12	155:3	248:25	202:8,13
8	213:14	<b>clarificat</b>	<b>classified</b>	242:12
146:1,2	<b>Chuck</b> 1:14	<b>ion</b>	66:21	<b>closely</b>
151:13,1	2:3	64:21	74:14	47:22
4 152:1	8:4,9	65:6	103:17	<b>closest</b>
167:1,2	9:10	93:23	<b>cleaning</b>	20:15
168:3,4,	10:23	94:1,5	99:23	245:13
20,21	11:17	95:2	<b>clear</b>	<b>closing</b>
169:6,7	28:1,12	136:22	29:13	247:17
183:4,5	40:10	199:19	144:13,1	<b>closure</b>
184:3,4	49:10	<b>clarify</b>	9 163:8	56:5
185:19,2	52:4	84:4	169:23	67:4
0	53:21	105:8	170:5	228:6
189:5,6	60:4	137:19	171:5	<b>cloudber</b>
190:9,10	68:4	166:3	193:24	101:20
204:3,4	79:25	175:20	194:1	<b>cloudberry</b>
205:12,1	88:7,12	186:18	228:3	97:23
3	91:10,18	192:14	233:1	101:20
206:4,5	,21	201:6	245:5,14	<b>Cluff</b>
227:1,2,	92:7,14,	235:21	<b>clearing</b>	248:13
15,21,22	15	<b>clarifying</b>	68:6	<b>clumsy</b>
228:12,1	93:21,22	84:2,9	<b>clearly</b>	
3	104:13		140:4	
232:5,6				
236:1,2				
238:20,2				

81:11	16:4	31:24	176:13	190:8,10
<b>co</b> 22:2	55:23	65:17	201:13	229:3
27:17	57:11,17	66:12,23	218:7	240:14
32:8	72:14	108:11	241:17	245:12
39:10,20	96:13	134:7	<b>comfort</b>	<b>comments</b>
110:24	153:16	<b>combinatio</b>	139:24	10:17
167:8	209:9	<b>ns</b>	<b>comfortabl</b>	60:23
<b>coal</b> 134:2	217:11	129:17,1	<b>e</b> 80:1	61:1
<b>coats</b> 8:7	227:4	8	238:11	87:19
<b>co-author</b>	234:9	<b>combined</b>	<b>coming</b>	92:17
176:16	<b>collection</b>	112:20	8:16	94:5
<b>Co-Chair</b>	228:5	213:25	10:22	127:3
249:13	247:12	216:8	17:15	146:6
<b>coefficient</b>	<b>collects</b>	224:4	19:12	148:18
<b>ts</b>	16:2	<b>combines</b>	20:7,9,1	166:19
173:21,2	<b>colleted</b>	174:2	4	168:5,13
4 175:5	16:11	<b>combustion</b>	21:5,8,1	183:6
223:17	<b>colour</b>	19:11	1 27:8	247:17
<b>collar</b>	36:4	45:12,17	31:25	<b>commit</b>
72:13	72:9,10	,22	39:22	188:25
109:23	77:8	46:10,21	44:3,8,1	<b>commitment</b>
110:9,16	79:4,6	51:14	5,21	188:15
117:10	93:3,6,7	53:10,13	45:1	189:11,1
120:20	,12 98:8	,18	46:11	2
131:25	<b>coloured</b>	<b>Comers</b>	49:3,7	<b>committed</b>
<b>collared</b>	76:23	5:20	51:17,21	38:24
156:24	216:13	164:7,15	52:17	62:13
157:3,6,	<b>colours</b>	165:25	53:13,15	99:23
7 175:6	76:24,25	166:19	58:24	109:4
<b>colleagues</b>	77:1	168:2,18	159:25	132:6
239:19	116:8,10	230:1	175:21	248:4
240:2	<b>column</b>	231:13	240:24	<b>common</b>
<b>collect</b>	98:12	232:9	<b>comm</b> 183:5	29:13
15:22	114:21,2	245:24	<b>commencing</b>	69:10
28:4	2 115:1	246:9,14	8:1	97:24
152:18	214:10	247:4	<b>comment</b>	98:13,14
246:18	215:15,1	<b>comes</b> 10:8	94:7	,15
<b>collected</b>	9 216:13	28:17	133:11	101:15
12:24	<b>columns</b>	90:13	146:3	184:25
14:2	115:9	161:25	156:12	194:20
15:5,11	<b>combinatio</b>	164:6	158:13	<b>communitie</b>
	<b>n</b> 27:3	166:2	162:20	<b>s</b> 15:22
		175:23	166:19	64:12

73:19	126:8,20	221:9,11	90:18	<b>concept</b>
74:11	129:9	,23	<b>computer</b>	27:10
78:11,17	233:22	<b>completely</b>	75:14	68:15
100:4	<b>compared</b>	55:5	90:20	77:24
146:15	23:20	78:14	164:9	194:8
148:3,4,	71:25	<b>completing</b>	<b>con</b> 36:1	<b>concepts</b>
15	96:22	49:23	62:5	63:4
152:13	126:3,18	<b>component</b>	83:7	79:18
154:4	213:8	64:14	128:22	82:18
157:15	<b>compares</b>	68:24	131:3	83:7
165:24	127:22	86:18	<b>concentra</b>	177:2
166:1,3,	<b>comparison</b>	161:15	37:6	<b>conceptual</b>
10 223:1	47:14	<b>components</b>	<b>concentrat</b>	147:3
<b>community</b>	123:1	61:20	<b>e</b> 33:14	148:25
61:21	125:12	64:11	<b>Concentrat</b>	<b>concern</b>
64:16	162:10	70:12	<b>ed</b> 89:8	17:5
148:4,5,	<b>comparison</b>	75:11	<b>concentrat</b>	57:20
9,13	<b>s</b> 90:22	79:16	<b>ion</b> 16:3	86:7
149:15,2	126:1	82:1,5	17:1,10	177:19
3 154:3	198:14	108:12	18:19	178:4
158:21	<b>compensate</b>	207:8	24:22	180:21,2
159:2	139:21	208:14,1	26:23	5
188:16	<b>compensato</b>	9 217:6	30:19	181:1,11
201:2	<b>ry</b>	218:15	33:4,16	203:5,6
210:9	122:24	222:13	34:15,23	220:17
<b>companies</b>	<b>competing</b>	<b>compositio</b>	36:14,23	241:10
18:4	171:12,2	<b>n</b> 99:12	37:7	<b>concerned</b>
192:3	5	246:25	39:10	149:6
<b>company</b>	<b>compiled</b>	<b>compound</b>	<b>concentrat</b>	177:25
55:23	96:12	32:15	<b>ions</b>	180:12
170:9	227:4	<b>compounds</b>	15:23	<b>concerns</b>
175:20	<b>compiling</b>	21:24	16:13,16	137:22
183:2	227:5	22:10	32:11	<b>concise</b>
186:22	<b>complete</b>	27:24	33:11,13	175:12
187:2,7	62:12	32:7,11,	,15,25	<b>conclude</b>
<b>Company's</b>	<b>completed</b>	13 48:16	34:6,22	40:4
56:6	49:19,25	<b>comprehens</b>	36:13,21	<b>concluding</b>
57:11	67:3	<b>ive</b> 59:7	39:12,15	61:17
<b>comparativ</b>	96:15	<b>comprised</b>	55:20	<b>conclusion</b>
<b>e</b> 163:10	211:7	75:14	98:17	61:23
<b>compare</b>	220:23	76:20	103:10,1	120:14
17:11			1	
125:13				

123:25	180:1	46:4	, 25	<b>ions</b>
<b>conclusion</b>	225:20	51:21	193:6	131:5,14
<b>s</b> 60:25	<b>confined</b>	52:2	194:8,15	,22
114:9	103:1	53:19	,21	230:16,2
125:3,24	<b>confirm</b>	62:6	212:21	2
130:5	188:13	137:13	219:1	<b>considered</b>
214:24,2	<b>confirmati</b>	143:18	<b>conservati</b>	47:24
5 216:3	<b>on</b>	177:15	<b>ves</b>	62:5
218:1	181:23	<b>conservati</b>	177:14	67:16
239:6	<b>confirmed</b>	<b>sms</b>	<b>conservati</b>	83:18,21
<b>condition</b>	188:9	102:6	<b>visms</b>	86:21
77:19	<b>confused</b>	124:13	138:1	87:12
116:6,16	136:24	132:21	<b>conserve</b>	93:2
,20,25	<b>confusing</b>	<b>conservati</b>	51:21	96:22
128:22	145:7	<b>ve</b>	83:8	98:18
142:15	<b>confusion</b>	14:21,23	<b>consider</b>	102:6
162:12	65:7	24:17,20	13:2	103:7
<b>conditions</b>	146:3	27:22	16:24	112:10
76:17	<b>connect</b>	30:5,11	20:13	119:11
99:18	212:2	35:7	99:21	131:4
100:7	<b>connecting</b>	36:17,22	115:18	132:22
102:11	110:10	37:13	117:16	149:25
107:19	<b>consensus</b>	38:4	118:12	230:5,14
114:7	91:24	39:21	149:11	233:11
129:2	<b>conser</b>	43:14	170:1	<b>considerin</b>
197:8,22	36:22	44:18	171:2	<b>g</b> 187:10
222:20,2	<b>conservat</b>	51:13	191:2	250:2
5 224:4	102:6	71:15	192:17,1	<b>considers</b>
<b>conduct</b>	<b>conservati</b>	83:9	9 244:2	147:25
13:20	<b>on</b> 82:18	113:4	<b>considerab</b>	<b>consisted</b>
17:8	83:7	119:6,21	<b>le</b>	217:17
20:12	<b>conservati</b>	122:15	180:16	<b>consistent</b>
69:23	<b>sm</b>	124:14	<b>considerat</b>	48:11
<b>conducted</b>	22:17,20	135:19	<b>ion</b> 69:1	96:17
31:4	<b>conservati</b>	137:14	109:6	100:14
48:7	<b>sm</b>	138:21,2	113:11	127:19
142:4	23:2	4 139:21	150:10,1	142:21
<b>confidence</b>	27:8	140:6,14	7,20	<b>consistent</b>
132:19	28:16	,16,22	193:5	<b>ly</b>
161:12	30:22	141:11	196:16	132:20
<b>confident</b>	38:3	169:13	208:4	162:23
71:20	39:21	173:1	<b>considerat</b>	<b>const</b>
130:15		182:23		
		192:9,15		

53:13	<b>consumptio</b>	37:23	166:13	<b>n</b> 55:2
<b>constant</b>	<b>n</b> 20:22	203:2	<b>conversati</b>	86:4
77:18	98:22	<b>continuity</b>	<b>on</b> 87:15	194:4,6
128:24	<b>contain</b>	40:15	159:11	198:22
129:7	28:3	<b>continuous</b>	189:10,1	201:6
<b>constantly</b>	<b>contains</b>	218:8	2	203:7
29:2	12:5,13	<b>contour</b>	<b>conversati</b>	<b>correct</b>
<b>constituti</b>	46:4	26:23	<b>ons</b>	45:24
<b>onally</b>	<b>contaminan</b>	35:21	189:8	50:16
180:17	<b>t</b>	36:1	190:12,1	51:4
<b>constructe</b>	220:5,6	<b>contrast</b>	3	84:16,18
<b>d</b> 120:20	<b>cont'd</b> 3:1	217:18	<b>convey</b>	135:11
<b>constructi</b>	4:1 5:1	219:14	137:8	136:5
<b>on</b> 13:15	<b>contend</b>	<b>contribute</b>	<b>conveyed</b>	181:1
67:4	212:20	38:4	238:14	194:25
161:8	<b>content</b>	108:24	<b>coordinate</b>	195:3
174:3,5	228:3	<b>contribute</b>	69:23	200:23
228:6	<b>CONTENTS</b>	<b>d</b> 32:5	145:20	250:21
245:17	6:1	51:15	<b>coordinate</b>	<b>correction</b>
<b>consult</b>	<b>context</b>	<b>contributi</b>	<b>d</b> 109:14	70:25
146:14	55:6	<b>ng</b> 73:25	<b>copy</b> 152:4	<b>correctly</b>
205:14	58:16	<b>contributi</b>	167:3	114:7
<b>consultant</b>	65:14	<b>on</b> 58:14	189:21	138:10
67:6	136:1	59:2,12	190:13	139:17
164:7	179:13	<b>contributi</b>	248:9	<b>correlated</b>
190:18	187:16	<b>ons</b>	<b>core</b>	225:8
231:13	208:2	59:15	131:24,2	<b>corridors</b>
<b>consultant</b>	<b>continue</b>	<b>control</b>	5 132:4	163:13
<b>s</b> 5:18	68:7	21:10	213:5	<b>Corso</b> 2:12
148:20	92:11	221:12	<b>Corey</b>	<b>COSEWIC</b>
155:24	95:7	228:10	122:11	97:1
160:4	143:6	237:25	<b>corner</b>	219:24
203:8	188:14	<b>controllin</b>	98:2	220:17
205:14	189:9	<b>g</b> 21:8	209:17	235:2
229:24	<b>continued</b>	<b>Contwoyto</b>	211:23	241:17,2
<b>consultati</b>	87:21,22	106:24	<b>Corp</b>	0
<b>on</b>	95:11	156:25	165:20	243:13,2
51:2,6	189:25	157:25	193:12,2	2
<b>consulting</b>	190:12	<b>convention</b>	3 247:21	<b>cost</b>
189:6	226:3	<b>al</b> 28:23	<b>Corporatio</b>	118:14
190:17	<b>continuing</b>			122:8,25
				123:2,5



150:13,1 4,16	<b>course</b> 24:7 41:21 61:2 148:10 248:21	<b>creation</b> 76:2 120:21 208:12	67:6,10, 15 68:3 70:14,17 72:1 73:8 77:14 85:2,7 108:8 111:3,10 113:8 115:3 120:15 125:5 126:17 127:12 129:11 136:1,7, 16,25 137:2,6, 20 139:20 160:16 182:2,21 183:2,6, 20 184:7 185:4,11 ,25 190:18 208:1 214:6 215:3,18 216:9 218:2 219:16 222:16 223:8 224:1,17 225:15,2 2 237:1 249:21	43:17 45:10,18 46:23 47:5 48:5,9 50:1,7 81:23 147:16 149:5
<b>costs</b> 118:2,3 122:7 124:24	<b>cover</b> 75:2 101:3,5 111:6,7, 21 166:24 206:17	<b>criteria</b> 13:1,2 16:14,23 ,24,25 17:5,10, 12,13,17 ,21 18:8,15, 18 23:20 27:16 33:12,17 34:1,7,1 0	<b>curr</b> 59:13	
<b>cotton- grass</b> 98:7 101:10	<b>covered</b> 44:25 57:1 66:3 108:18 250:4	<b>critical</b> 62:4	<b>current</b> 43:11 59:13 108:8 131:24 161:19 211:4 225:3 235:12	
<b>could't</b> 244:22	<b>covers</b> 27:4	<b>Croft</b> 5:7 248:13	<b>currently</b> 37:20,22 40:1 42:15,18 46:16 191:20 209:25 210:1,3	
<b>Council</b> 18:9 103:12	<b>cow</b> 118:7 119:23 123:13 125:9 151:5,9 197:18,2 2 200:2,14	<b>Crookedhan d</b> 5:4		
<b>counted</b> 201:15,2 3	<b>cows</b> 117:22 119:23 202:11	<b>crowd</b> 91:23		
<b>counting</b> 200:12	<b>crayon</b> 110:14	<b>crushed</b> 29:3		<b>curve</b> 169:21,2 3 173:25 174:11
<b>couple</b> 22:16 48:6 64:23 80:2,12 83:12 85:22 115:5 116:24 125:25 128:17 130:18 141:20 155:13 159:14 171:12 183:18,2 5 184:5 192:4 194:13 203:18 235:3	<b>created</b> 111:19 233:8	<b>crusher</b> 19:9 21:12		<b>curves</b> 129:14
	<b>crazy</b> 123:4,5	<b>crushers</b> 21:9		<b>cut</b> 165:2 233:2
		<b>crushing</b> 19:18		
		<b>cumulative</b> 7:3 31:22 58:16,18 64:24 65:11,18 66:24	<b>cumulative ly</b> 219:10	<hr/> D <hr/>
			<b>curious</b> 27:12	<b>da</b> 62:19
				<b>dad</b> 149:15
				<b>daily</b> 15:15
				<b>damage</b>

66:2	117:10	42:22	,23	2 166:2
<b>Damian</b>	120:12,2	44:1	41:16	167:2,19
2:23	0 123:8	45:24	42:8	,23,24,2
232:17	131:25	48:15	50:25	5
233:14	138:4	<b>day</b> 1:24	54:13	168:4,21
234:1,21	156:19,2	8:18	57:18,24	169:7
243:18,1	4 177:16	9:2,9	58:5	174:20
9	209:9	10:24	59:23	175:4
<b>danger</b>	212:4	68:12	60:1,7,1	178:7
62:19	223:16	105:10	2 61:2	181:10,1
<b>Daniel</b>	248:16	121:20	62:13	2
119:13	<b>database</b>	123:2,3	82:2	183:5,15
127:11	73:7	130:14	91:17,19	184:4,14
138:9	111:24	152:18	92:11	185:3,20
139:25	157:13	172:25	95:1,7,1	,24
199:8	<b>databases</b>	185:17	1 99:22	186:8
<b>Daniels</b>	100:11	187:11	100:16	188:15,2
138:9	111:25	199:22	104:23	4
<b>Daring</b>	<b>date</b> 97:10	200:24	109:3	189:6,7,
15:25	99:17	206:12	131:11	21
16:12	185:22	248:21	132:6,25	190:7,10
<b>dark</b> 34:3	234:14	<b>days</b> 36:7	134:13	203:19
35:3	235:12	37:12	135:2,5	204:1,4,
36:25	240:25	57:3	137:14,1	5
76:22,24	245:14	121:2	5 140:12	205:6,13
,25 93:6	<b>Dave</b> 3:12	123:9,11	141:21,2	206:2,5,
97:20	5:22	131:9	2 144:18	22 207:5
98:8	11:20	200:21	145:11,1	209:25
102:21	27:9	201:11	9	216:20
116:8	28:6	202:7,10	146:2,9	226:10
<b>data</b> 12:23	40:17	,13	147:22	227:2,22
13:25	41:23	<b>de</b> 2:8	150:6	228:13
14:1,8	42:11,24	6:7,11,1	151:14	230:20
15:5,11,	43:6	5,19	152:12,2	232:6
13	45:8,24	7:3,9	4	236:2
16:3,11	46:22	8:19	153:6,8,	238:18,2
24:14	48:4	10:16,18	12	1,22
33:5	49:13	,21	154:7,13	239:11,1
73:12	50:14	11:24	,15,20	8
81:14,15	52:24,25	16:10	155:24	240:9,10
100:11	53:7	20:10	158:12,1	,14,16
109:24	<b>Dave's</b>	37:20,21	5,24	241:15
110:16	41:15	,22	159:11	245:11,1
		38:13,15	160:1	6
			162:20,2	247:7,20

248:3,20 ,23 249:4,19 250:5 <b>deal</b> 138:3 141:10 178:4 180:9,21 193:1 238:18 <b>dealing</b> 153:1 <b>dealings</b> 192:15 <b>dealt</b> 141:8 192:8 193:18 <b>Dean</b> 248:13 <b>deaths</b> 212:8,16 <b>Deb</b> 3:22 <b>debate</b> 171:8,11 <b>decade</b> 72:14 216:2 <b>decay</b> 169:20,2 3 173:25 174:11 <b>December</b> 7:12 185:16 186:11 238:12 248:18 <b>decide</b> 91:18	<b>decided</b> 129:6 192:25 <b>decisions</b> 134:3 <b>decline</b> 178:23 248:15 <b>declined</b> 191:15 <b>declines</b> 113:8 <b>declining</b> 192:23 <b>decrease</b> 37:4 87:8 114:10,1 8 115:3 119:16,1 7 120:16 124:7 199:23 200:1 219:13 222:19 <b>decreased</b> 35:24 <b>decreases</b> 124:10 214:4,7 215:2,3, 18 216:4,9 <b>decreasing</b> 136:13 <b>deemed</b> 74:19 165:23 <b>def</b> 118:21 <b>defend</b>	183:8 184:10 <b>defer</b> 48:23 <b>define</b> 123:2 194:18 200:5 208:22 237:8 <b>defined</b> 31:13,20 32:2 45:18 46:24 96:24 117:9 118:21 182:11 208:23 <b>defining</b> 235:2 <b>definitely</b> 56:11 147:1 189:11 249:2 <b>definition</b> 165:17 <b>degradatio</b> <b>n</b> 107:5 <b>degree</b> 15:10 <b>degrees</b> 15:10 <b>del</b> 197:10 <b>deliberate</b> <b>ly</b> 185:10 <b>delighted</b>	204:5 <b>delineated</b> 72:3 <b>delineatio</b> <b>n</b> 47:1 <b>demands</b> 200:16 <b>demonstrat</b> <b>e</b> 67:19 <b>Dene</b> 4:23 7:8 10:1,3 55:8 86:22 87:8 88:15,17 89:17 97:6 147:17 152:8,11 ,14 153:8,9, 13,21 157:10 158:22,2 5 159:8 168:24 169:3 175:13 185:7 186:6 231:8 241:7 242:3 243:6 <b>Denis</b> 3:21 <b>Dennis</b> 2:20 10:25 11:10,13 ,25 12:2 15:1 16:21	19:1 22:15 27:14 28:14 31:1 34:20 37:18 41:14 42:5,11, 21 43:25 45:23 47:7 48:14 50:14 51:11 52:23 53:2,6,7 56:17,22 57:12 59:4 100:8 102:4,9 103:19 <b>dens</b> 209:21 211:13 <b>densities</b> 221:5 <b>density</b> 213:7 223:2 <b>dep</b> 102:23 <b>depend</b> 83:22 166:16 <b>dependent</b> 162:14 <b>depending</b> 23:6 74:10 133:8 237:24
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

<b>depends</b> 142:10,1 1	75:12,17 ,18 76:16 90:21 100:12 102:9 103:19 105:10 109:7 110:16 113:19 127:12 176:17 185:6 186:5 199:8,17 200:18 206:12 220:3 249:22	13:21 21:10 <b>Desjarlais</b> 4:18 <b>despite</b> 116:14 <b>detail</b> 91:6 106:6 108:15,2 0 113:17 128:1 202:17 219:20 233:12 234:11 <b>detailed</b> 41:6 65:13 67:1 96:9,12 203:19 247:9 <b>details</b> 14:22 33:8 49:18,25 50:4 51:4 98:25 102:5 108:6 109:3 124:19 226:22 <b>detect</b> 145:22 174:17 <b>detected</b> 97:7,9 221:7 <b>determinat</b>	<b>ion</b> 164:17 166:1 <b>determine</b> 31:7 58:6 66:22 73:24 150:1 <b>determined</b> 14:13 39:6 65:9,22 67:14 72:3,13 103:15 122:12 160:21 <b>determinin</b> <b>g</b> 166:5 <b>deve</b> 76:4 <b>devel</b> 71:11 <b>develop</b> 22:22 24:16 25:9 38:14 43:4 58:4 168:6,9 <b>developed</b> 17:14,18 21:16,18 31:6 40:6 46:12 100:17 117:10 145:17 218:22 223:10,1	2 <b>developer</b> 186:19 237:8 245:20 <b>developer'</b> <b>s</b> 237:25 <b>developing</b> 29:15 51:1 58:5 146:9 247:9 <b>developmen</b> <b>t</b> 10:4 25:10 26:4,5 33:18,22 34:16 35:1,11, 20 36:10,16 37:9 39:14,17 46:23 47:9,12, 21 48:2 74:11,16 76:4,5 77:6 78:3 93:9 103:2,22 106:23 107:9,14 ,17 108:13 111:8,24 ,25 112:5,11 120:17 122:19 129:24 130:25
<b>deplete</b> 118:13 <b>deposit</b> 48:19 182:20 <b>deposition</b> 30:19 32:13,25 48:8,15 55:20 56:23 66:4,9 102:9,15 ,19,20,2 2,24 103:1,15 112:20 <b>deposition</b> <b>s</b> 32:16 100:5 <b>depth</b> 8:22 202:24 <b>Derek</b> 3:20 <b>derive</b> 176:3 <b>derived</b> 218:16 <b>des</b> 103:1 <b>describe</b> 19:2 31:2 48:25 50:19 75:20 96:10 110:1,2 <b>described</b> 7:7	<b>describing</b> 12:14 78:19 84:21 90:16 184:15 196:18 234:22 <b>descriptio</b> <b>n</b> 7:2 137:7 163:8 <b>deserves</b> 187:7 <b>design</b> 21:2 38:16 43:3 99:22 145:20 209:11 211:4 <b>designed</b>			

134:8	66:4	<b>different</b>	163:22	<b>directly</b>
146:16	<b>DFO</b> 4:10	26:2	<b>dioxide</b>	94:17
191:12	<b>di</b> 57:13	36:4	15:23	110:23
208:14,1	<b>dialogue</b>	43:23	22:1	179:3
9 220:4	61:2	48:10	33:4	222:24
244:5	204:12	63:2	<b>dioxin</b>	<b>disagree</b>
<b>developmen</b>	<b>diameter</b>	71:1	18:20,22	7:9
<b>ts</b> 7:6	22:3,5	72:9,10	<b>dioxins</b>	184:20,2
69:3	<b>diamond</b>	73:18	18:16	1 185:8
71:12,14	1:7 44:6	82:8,23,	22:11	186:8
72:23	58:15,24	24	32:8	<b>discharge</b>
73:8,14,	106:14	100:12	49:22	219:20
18,25	209:12	107:18	55:24	<b>discharges</b>
74:1,6,1	222:8	121:4,12	57:11,13	228:8
5 77:8	<b>Diavik</b>	140:8	,19 58:1	<b>discipline</b>
78:1,7	110:7	148:3	<b>direct</b>	24:3
92:25	117:7	154:3	66:18	27:22
93:2	147:6	157:17	69:17	<b>discipline</b>
108:9	163:14	169:19,2	70:7	<b>s</b> 14:8
110:24	172:11	4	76:3	32:24
112:1	173:19	178:19,2	84:10,15	<b>discreet</b>
116:15,2	174:19	2	,19 96:6	41:11,17
5 125:6	222:7	179:1,2,	110:19,2	<b>discuss</b>
132:17	<b>diesel</b>	5,23	2	8:21
136:6,17	17:17,20	196:17	111:3,10	12:18
182:24	,22,24	199:5	113:9,19	15:2
185:6	19:7	220:23	179:6	55:19
186:3	21:4	232:24	199:12	57:5
192:16	51:22	235:13	214:4	84:8
197:9	<b>dif</b> 199:5	241:3	215:2	130:19
202:14	<b>diff</b> 24:13	246:6	216:4	134:13
218:25	<b>difference</b>	247:19	222:13	159:6
219:12	84:11	249:17	<b>directed</b>	160:14
222:18	129:10	<b>difficult</b>	147:22	228:9
223:18	164:16	40:14	<b>direction</b>	<b>discussed</b>
224:2,22	198:8	192:22,2	64:3	108:5
225:23	199:3,6	4 243:20	130:1	208:7,17
249:20	<b>difference</b>	<b>difficulty</b>	<b>directions</b>	209:2
<b>developmen</b>	<b>s</b> 45:11	29:8,21	95:21	230:13
<b>t's</b>	170:3,5	<b>dig</b> 202:24	96:4	<b>discussing</b>
207:25	207:23	<b>digitized</b>	105:24	12:20,22
<b>develops</b>		74:13	207:11	33:8
62:16		<b>dikes</b>		
<b>dewatering</b>				

159:1	<b>d</b> 210:23	<b>disturbed</b>	137:9	44:10
245:21	224:9	45:3	147:25	45:4
<b>discussion</b>	<b>distributi</b>	47:24	152:24	<b>dramatical</b>
8:24	<b>on</b>	<b>divergence</b>	154:11	<b>ly</b> 35:24
55:9	101:15	<b>s</b> 186:18	157:18	37:5
65:3	164:20	<b>divided</b>	169:22	<b>draw</b> 61:13
144:16	179:11	237:20	182:21	90:22
154:14	225:25	<b>division</b>	184:13	<b>drawn</b>
156:14	<b>disturb</b>	80:17	201:22	49:17
157:23	118:7	<b>DNA</b> 210:15	211:2	162:23
161:17	224:15,1	<b>document</b>	213:11	<b>drive</b>
171:10	7	183:8	214:17	88:21
187:16,1	<b>disturbanc</b>	187:15	220:10,2	135:16
9 188:25	<b>e</b> 66:14	233:12	5	<b>driven</b>
202:20	78:10,24	240:13	<b>dot</b> 244:13	215:8
208:20	111:10	<b>documents</b>	<b>dots</b>	<b>drives</b>
<b>discussion</b>	118:4	88:19	110:11	123:4
<b>s</b> 92:12	119:25	241:3	<b>double</b>	<b>drop</b> 134:3
137:21	121:11	<b>dogs</b> 88:21	237:19	197:15
188:14,2	122:9,23	242:14	<b>Doug</b> 5:23	<b>Drygeese</b>
2	123:22	<b>dog's</b>	11:21	5:2
190:1,5	150:15	45:16	<b>downstream</b>	<b>due</b> 93:9
204:24	172:1	<b>dollars</b>	228:8	100:4
205:1	173:21,2	203:15	<b>downtown</b>	218:20
<b>dispersal</b>	4 175:4	<b>dominant</b>	242:19	<b>duration</b>
178:21	200:1,2,	97:17,21	<b>dozens</b>	122:2
<b>dispersion</b>	13	100:13	72:14	173:5
31:3,4,5	201:16	173:8	<b>Dr</b>	<b>during</b>
,6,9	208:15	<b>done</b>	160:8,15	10:14
32:10	218:5	27:12,14	161:11	15:16
<b>disposal</b>	223:16	38:9	162:20	22:24
25:15,18	<b>disturbanc</b>	45:11	166:18	24:7,10
,21	<b>es</b> 70:10	62:2	168:1,13	25:3,5
34:13	78:10	67:22	230:1	28:18,20
<b>disposed</b>	111:3	73:9	232:9	,24
25:14,21	112:21	109:10,1	245:24	29:4,6,1
<b>distance</b>	118:5	8,20	246:9,13	0,20,25
170:23	123:16,1	126:25	<b>draft</b>	30:8
171:20	9,21	127:3	248:17	44:24
<b>distances</b>	171:15	130:2	<b>drained</b>	46:21
172:22	200:19	136:11	20:3	52:1
<b>distribute</b>	217:7			
	220:2			

56:4	43:19	208:7,17	170:25	43:8
64:22	44:3,7,1	209:2	<b>ecological</b>	66:17
74:18	5,21	219:5	62:6	68:13
78:4	46:3,18	236:9	84:10	70:8
94:9	62:17	237:4	107:15	73:8
96:13	66:3,4,9	245:24	132:12	77:9,10,
97:9	,16 96:2	<b>early</b>	142:7	11 79:15
109:14,2	100:1,5	49:21	179:21	93:16
1 115:22	102:9	60:23	181:3	104:2
116:4	103:15,2	89:6	220:8	107:5,19
118:7	1 112:20	92:1	226:18	117:2,6
121:19	171:16	131:9	227:6	123:24
122:6	<b>duties</b>	138:18	<b>ecological</b>	127:18
123:2,12	8:11	181:14	<b>ly</b> 71:21	128:22
,17	<b>dutifully</b>	185:13	130:15	129:19
143:23	52:18	<b>easier</b>	170:25	132:18,2
151:2	<b>dynamics</b>	28:8	225:20	0
167:13	108:2	47:25	<b>economy</b>	136:2,7,
172:12		52:20	115:15	14
174:7		81:12	<b>ecosystem</b>	142:19
188:2,17	<hr/> E <hr/>	163:6	64:15	158:10
202:23	<b>EA</b> 9:17	<b>easily</b>	97:18,21	160:16
209:2,19	177:20	58:13	,24	162:5
215:11	229:19	138:16	98:3,14	196:20
218:8,20	<b>eagerness</b>	183:8	99:12	198:8,10
220:2	28:2	<b>east</b> 20:11	100:13,1	,18
223:2	<b>eagle</b>	63:21	7,23	208:22
228:5,10	222:4	88:24	101:14,1	214:17
,14	<b>ear</b> 159:24	89:4,11,	8	215:10
230:6	<b>eared</b>	14 90:11	<b>ecosystems</b>	233:9
232:11	220:16	97:16	66:19,25	<b>effective</b>
238:8	<b>earlier</b>	<b>east/west</b>	96:7	208:23
245:3	18:18	31:14,21	99:5	<b>effectivel</b>
249:21	28:17	154:23,2	101:3	<b>y</b> 238:14
<b>dust</b> 16:9	32:6	4	142:5	<b>effectiven</b>
19:16,20	38:2	<b>east-west</b>	<b>edge</b> 25:19	<b>ess</b>
,25	52:25	64:3	200:12	169:20
21:8,11	53:8	<b>easy</b>	<b>Edmonton</b>	229:9
22:8,24	94:5	169:5,10	60:15	<b>effects</b>
28:18,19	102:4	240:9	<b>ef</b> 100:1	7:4
,21	108:19	<b>eat</b> 243:1	<b>effect</b>	14:9,15
29:6,9,1	110:2	<b>eco</b> 63:23	12:4	26:6
2,18	124:22			27:19
30:8,9				29:18
39:24				

31:23	6,20	203:10	181:7	<b>EIA</b> 41:19
32:4,19,	138:25	<b>eggs</b>	183:14	<b>eight</b>
22 39:7	142:9	221:24	184:12	215:16,1
44:3	144:5	<b>Ehrlich</b>	186:14	7,20
54:18	145:9,12	1:13 2:2	187:1	230:18
56:2,24	,15	58:11	188:23	<b>EIS</b> 1:5
57:5	160:18,2	59:21	189:14	11:5
64:24	3	60:3	190:7,15	12:17
65:9,11,	161:3,15	65:4	192:13	13:12,13
19,23	,21	70:24	193:3,10	,16,18,2
66:13,20	162:8,16	71:4	195:7,10	5 14:3,7
,24	,17,18	80:14	,13,18,2	21:25
67:3,6,8	164:1	83:11	1,24	22:18
,10,14,1	170:6	84:22	196:2,8,	41:6
5,20,23	171:4,17	85:1,14,	12	44:16
68:3	182:2,21	21	202:15	60:23
69:18,21	183:2,7,	94:12,13	203:16	62:1,5
70:8,9,1	20	105:7	204:22	64:24
1,14,17	185:4,12	133:5	205:15	67:18
72:1	,25	134:12,1	206:8	71:19
73:1	190:18	7	207:1	72:25
76:9	208:1,18	135:1,22	216:19	75:8
77:25	214:18	136:21	226:8	82:22
93:18,19	217:7	137:11	227:19,2	83:10
103:16	218:24	138:7	4	93:15
106:6,18	219:2	139:2,7,	228:16,2	95:20,24
107:2,12	223:5	14	4 229:23	99:13
108:8	225:15,2	141:14	231:4,7,	102:17
109:1	3 234:7	142:22	12,15	105:5
113:10,1	<b>efficient</b>	144:1,24	232:2,7	106:5,13
9 119:7	187:21	147:7,19	233:13	107:1,16
120:7	<b>efficientl</b>	,20	234:20	114:16
124:6,23	<b>y</b> 203:17	150:6,22	235:8	118:18,2
126:3,6,	250:14	151:21	18,25	5 119:16
17	<b>effort</b>	152:6,23	238:25	124:9
127:6,12	45:17	155:6,12	239:17	125:23
129:23	84:3	,20	240:8,19	126:2
130:19	164:20	158:12,1	244:16	131:3
132:12	190:3	7 159:23	245:19	137:9
134:1	250:6,12	164:14	247:16	138:8
135:10,2	<b>efforts</b>	167:5,18	248:19	139:17
0	160:1	168:10,2	249:1,9,	141:4,5
136:16,2	187:21	3 175:8	24	143:14
5		178:6,14	<b>EI</b> 107:16	145:4,17
137:2,3,		180:3		146:11



159:21	152:21	<b>email</b>	59:7,14,	58:4,14,
161:18	<b>elegant</b>	233:15	17	15,17,19
173:16,1	124:23	<b>emailed</b>	<b>emissions</b>	,22
7 176:12	<b>elegantly</b>	55:5	13:12,13	59:10,12
179:25	108:14	<b>embraced</b>	14:13	66:4,10,
183:7	<b>elemental</b>	62:1	16:9	16 100:5
184:7,11	103:10	<b>emission</b>	17:15,24	<b>emitted</b>
191:10	<b>elements</b>	13:2	19:15,17	17:24
194:25	57:17	14:21	20:1,14,	57:21
202:19	<b>elevation</b>	16:23	20	<b>emphasis</b>
207:17	224:12	17:13,16	22:21,24	145:21
208:3	<b>eleven</b>	,21,22	23:3,5,9	<b>emphasizes</b>
214:2	212:15	18:6,8,1	,13	72:25
215:22	222:1	0,15,18	24:5,24	<b>empty</b>
217:5	<b>Elgin</b>	19:3,4,2	25:1,4,2	167:19
218:13	182:9	3	4	<b>en</b> 16:12
225:13	<b>eliminate</b>	20:5,8,1	26:2,16	<b>encompasse</b>
235:7	138:23	5,17,25	27:7	<b>s</b> 71:18
239:1,14	<b>Ellis</b> 3:15	21:5,16,	28:18,20	<b>encounter</b>
,24	54:24	18,21,22	,24	118:2
240:1,9,	55:1	22:18	29:16,18	119:24
10	56:20	23:7,8,2	,22	121:18,2
<b>either</b>	57:8,15	1 24:16	30:7,12,	3 122:18
21:14	81:20	26:1,18	14,16	123:17
75:19	82:11	27:6	31:24	197:10
157:5	86:1,3	28:16	34:13	202:2
220:21	193:12	29:9,12,	36:12,23	<b>encounters</b>
247:11	194:3,4	20,24	37:24	120:1
<b>Ekati</b>	196:21	31:25	38:9,25	121:3,11
110:8	198:21,2	35:7	39:6,22	122:5
117:5,7	2 199:9	36:18	40:6	124:2
147:6	201:4,5	37:13	41:2,16,	200:4
163:13	203:4,6	40:2	18,20,24	
172:11	204:9	41:12,17	42:13	
173:18	<b>else</b> 84:21	42:1,14,	45:12	
222:8	173:7	19,20,23	46:1,6,9	<b>encourage</b>
<b>elaborate</b>	197:3	,25	,11,19	9:24
82:19	241:4	43:5,21	48:10,23	52:19
102:5	244:17	45:1	51:14,16	59:18
<b>Elders</b>	<b>elude</b>	46:3,17	,18	189:20
89:19,20	169:17	50:17,18	53:9,13,	<b>endogenous</b>
148:13		,19	15,18,20	120:3
149:6		51:19,21	55:16	<b>endpoint</b>
		53:15	56:7	75:10
			57:25	

83:4	60:22	<b>t</b> 4:6	160:5,19	<b>eskers</b>
87:20	61:2	10:2	165:3	64:2
110:17	72:15	15:25	177:13	111:23
133:23	127:2	18:10	181:13	209:18
177:11	130:3	27:9,19	182:19	<b>especially</b>
179:9	132:7	28:6	186:24	48:15
<b>endpoints</b>	137:21	32:20	234:7	56:9
62:2	156:8	39:1	235:13	88:24
65:2,19	231:25	40:18	238:17	152:16
112:16	<b>ensure</b>	41:23	243:21	158:7
179:8,10	51:4	42:12	244:8	<b>essentiall</b>
<b>energetic</b>	245:17	43:6	<b>environmen</b>	<b>y</b> 34:14
118:2,14	<b>enter</b>	45:9	<b>tally</b>	68:9
122:7,8	204:13	46:22	71:15	78:19
123:5	<b>entering</b>	48:4	<b>environmen</b>	99:9
124:24	87:14	49:13	<b>ts</b> 57:7	110:10
<b>energetics</b>	<b>enters</b>	51:3	77:21	112:8,23
117:15	122:1	53:7	99:20	114:20
119:7,20	201:8	55:25	123:6	115:10
127:6,10	<b>entire</b>	56:24	233:3	118:21,2
<b>energy</b>	79:9,13,	59:5	<b>Enzoe</b>	5
107:18	14 86:24	61:6,17	210:8	119:2,14
117:15,1	121:19,2	62:11	211:19	124:21
6,17,21	0 122:2	63:1	<b>EPA</b> 21:18	128:8
120:1	173:4	65:17,23	<b>equal-</b>	169:20
123:1	174:20	69:2	<b>length</b>	180:18
148:25	176:25	79:20	211:5	197:17
150:9	192:1,6	103:12	<b>equals</b>	204:10
<b>enforcing</b>	203:9	116:22	213:24	207:13
62:18	221:1	160:25	<b>equipment</b>	<b>establish</b>
<b>engage</b>	<b>entirely</b>	188:10	19:11,13	73:6
159:2	86:23	209:4	21:1,2,1	106:15
<b>engine</b>	189:16	226:16	5,19	<b>establishe</b>
17:22	235:18	232:23,2	99:23	<b>d</b> 184:11
<b>engineerin</b>	237:25	5	<b>erosion</b>	<b>establishi</b>
<b>g</b> 20:25	<b>entry</b>	<b>environmen</b>	20:1	<b>ng</b> 66:5
21:15	150:14	<b>tal</b>	<b>erred</b> 74:4	<b>estimate</b>
<b>engines</b>	<b>envelope</b>	1:2,5	<b>erring</b>	20:17
17:25	107:22	12:21	143:17	29:9
43:4	<b>envi</b> 99:19	15:3	<b>esker</b>	36:18
<b>ENR</b> 3:9	<b>environmen</b>	21:17	75:19	53:12
		99:22		107:3,9
		128:9		139:18
		140:15		

197:15	146:10	61:24	20:21	10:19
<b>estimated</b>	177:18	131:15	21:3,7	207:2
20:21	208:3	155:25	43:10	<b>except</b>
38:9	<b>evaluated</b>	156:8	49:2	103:20
43:19	67:24	170:6	65:20	132:15
129:22	82:4	225:21	70:10	220:20
160:17	129:19	230:5,24	74:7	<b>exception</b>
<b>estimates</b>	<b>evaluation</b>	,25	76:12	47:23
42:19	248:16	232:10	79:1	66:9
43:21	<b>Evans</b> 5:12	233:1	85:16	<b>excited</b>
194:21	<b>evening</b>	<b>EWS</b> 5:7	90:24	60:20
221:2	168:6	<b>ex</b> 78:16	95:23	122:19
223:2	206:6	90:8	98:1,19	200:14
<b>estimating</b>	<b>event</b>	<b>exact</b>	104:3	<b>exclude</b>
21:5	122:23	85:20	124:16	187:6
22:24	<b>eventualit</b>	169:16	125:12	<b>excuse</b>
28:17	<b>y</b> 206:1	191:11	131:1	78:9
45:25	<b>eventually</b>	227:16	134:2	80:7
51:14	43:4	<b>exactly</b>	145:14	90:3
53:20	132:5	29:13	157:4	99:19
<b>estimation</b>	<b>everybody</b>	30:12	161:23	175:14
20:18,25	8:4,16,1	86:7	162:2,4	<b>executing</b>
21:22	7 11:25	120:11	164:1,23	130:12
22:18	12:1	125:22	209:13	<b>executive</b>
28:16	204:17	141:25	210:11	182:13
35:7	<b>everyone</b>	154:15	217:15,2	<b>exercise</b>
37:14	10:21	162:10	0	73:12,23
40:2	105:12	200:6,8	<b>examples</b>	74:24
46:3	143:1	206:20	163:4	90:14
51:19	175:11	235:9	<b>exceedance</b>	198:16
<b>estimation</b>	189:15	<b>exaggerate</b>	35:4,22,	<b>exhaust</b>
<b>s</b> 21:1	238:14	94:18	23	18:20
<b>et</b> 18:2	<b>everyone's</b>	<b>exam</b> 49:3	36:6,9	19:12
27:20	91:14	<b>examinatio</b>	37:3,4,1	20:6
100:19	134:19	<b>n</b> 212:4	2	<b>exist</b> 74:5
119:13	181:1	<b>examine</b>	<b>exceedance</b>	<b>existing</b>
190:14	<b>everything</b>	112:16	<b>s</b> 55:16	16:5
<b>ev</b> 61:23	157:14	<b>examined</b>	56:9	31:23
<b>evaluate</b>	164:21	120:23	<b>exceeded</b>	44:6
56:2	178:20	176:3	35:18	58:15
67:22	<b>evidence</b>	<b>example</b>	202:17	69:2,3
144:20			<b>excellent</b>	

73:7	222:14	115:16	239:13	93:22
101:1	224:14,1	173:3,7	<b>extents</b>	104:13,2
106:14	7	190:25	171:16	0 133:5
107:9	<b>expended</b>	191:2	<b>extra</b>	134:12,1
131:25	120:1	192:10,1	239:21	7
134:7	<b>experience</b>	6,17	<b>extracted</b>	135:1,22
137:1	163:23	201:3	25:16	136:21
142:16	<b>experience</b>	233:21	<b>extreme</b>	137:11
163:11	<b>s</b> 148:11	234:6,13	87:4	138:7
207:20,2	162:24	<b>exposed</b>	<b>extremely</b>	139:2,7,14
2 222:17	163:19	19:21,22	205:3	141:14
223:15	207:17	20:2,3	<b>extremity</b>	142:22
224:1,2,22	<b>expert</b>	43:18	201:15	144:1,24
<b>exit</b> 201:9	148:19	44:3,8,1		146:17,23
<b>exits</b>	<b>experts</b>	5,19,22	<hr/>	147:7,19
201:13	204:6	123:9	<b>face</b>	150:6,22
<b>exotic</b>	<b>expira</b>	200:25	123:10	151:21
97:8,10	77:9	<b>exposure</b>	<b>facilitate</b>	152:6,23
<b>expand</b>	<b>expired</b>	121:1,20	62:20	155:6,12,20
100:7	115:20	220:5	<b>facilitate</b>	158:12,1
132:4	<b>explain</b>	<b>extend</b>	<b>d</b> 220:4	7 159:23
140:24	22:17	48:1	<b>Facilitato</b>	164:14
<b>expect</b>	23:2	66:10	<b>r</b>	167:5,18
35:17	33:20	67:23	1:13,14	168:10,2
37:11	35:15	70:16	8:3	3 175:8
43:13	36:20	78:6	11:17	178:6,14
49:18,24	46:25	103:2	28:1,12	180:3
53:17	141:22	<b>extending</b>	40:10	181:7
80:11	187:8	69:25	49:10	183:14
132:4	<b>explaining</b>	<b>extends</b>	52:4,15	184:12
199:22	128:18	131:23	53:21	186:14
200:1	<b>explanatio</b>	<b>extensive</b>	54:23	187:1
227:6	<b>n</b> 108:22	63:13	56:14	188:23
231:20	143:7	97:3	60:4	189:14
<b>expected</b>	145:3	105:2	68:4	190:7,15
30:20	<b>exploratio</b>	<b>extent</b>	79:25	192:13
34:6	<b>n</b> 73:19	31:13,14	80:7	193:3,10
35:12	74:7,24	,20,21	81:17	195:7,10
44:25	77:10	70:7	88:7,12	,13,18,2
55:17	78:13,16	103:20	91:10,21	1,24
59:2	79:8	107:19	92:7	196:2,8,12
107:11		171:8		

202:15	<b>factors</b>	167:21	<b>feels</b>	37:12
203:16	21:16,18	233:3	184:16	<b>figure</b>
204:22	,21 93:9	<b>fat</b>	<b>female</b>	33:20,21
205:15	118:11	149:20,2	118:14	34:3,21,
206:8	126:19	4	123:13	25 35:16
207:1	203:24	150:1,5,	124:2	36:2,25
216:19	<b>fair</b> 28:13	11,17,21	202:11	37:3,11
226:8	77:20	151:11,1	<b>females</b>	69:17
227:19,2	116:21	2	174:21	70:4,19
4	166:23	<b>fattened</b>	<b>fen</b> 98:7	72:8,17
228:16,2	193:4	151:10	101:11	77:12
4 229:23	<b>fairly</b>	<b>feature</b>	<b>fence</b>	85:10
231:4,7,	24:16	74:20	47:1,17	92:17,23
12,15	43:22	75:1	<b>fewer</b>	97:19
232:2,7	44:18	173:8	71:13	102:14,1
233:13	51:13	<b>features</b>	115:15	6,17
234:20	58:13	99:22	214:22	110:4
235:8	154:20	233:4	<b>FI</b> 62:25	118:17,1
236:4,8,	194:16	<b>February</b>	<b>field</b> 31:7	8 127:12
18,25	246:3	131:9	69:23	160:14
238:25	<b>Faithful</b>	<b>fecundity</b>	217:11	183:15
239:17	2:11	120:16	248:16	191:10,1
240:8,19	92:14,15	197:17	<b>fifteen</b>	1,12,17
244:16	,22	198:6	12:8	209:16
245:19	<b>falcon</b>	<b>federal</b>	63:9,14	239:2
247:16	220:15	17:19,23	89:9	<b>figured</b>
248:19	222:1,9	18:3,12	95:16	193:6
249:1,9,	<b>fall</b> 19:19	241:21	133:15	239:7
15,24	151:8	244:7	134:10	<b>figures</b>
<b>facilities</b>	156:3	<b>feed</b> 54:10	166:21	93:13
46:25	214:19	68:9	217:16	116:2
<b>fact</b> 35:8	221:9	<b>feedback</b>	<b>fifty</b>	238:24
39:9	242:7,9	60:23	128:4	<b>file</b> 105:9
40:1,5	<b>falls</b>	130:3	157:4	206:11
51:25	67:10	170:9	191:20	<b>filled</b>
77:20	181:24	<b>feel</b> 29:17	224:9	176:21
93:9	<b>family</b>	137:16	<b>fifty-five</b>	<b>final</b>
111:15	158:8	184:10	128:3	129:11
172:21	<b>fast</b>	203:23	<b>fifty-four</b>	136:18
174:17	201:24	<b>feeling</b>	212:5	<b>finally</b>
212:5	239:18	170:19	<b>fifty-nine</b>	50:1
240:10	<b>faster</b>			220:10
<b>factor</b>				
48:9				

<b>finding</b>	111:1,19	9:25	218:13	5 67:23
39:5	112:18	<b>fit</b> 61:7	221:20	73:24
148:4	114:18	227:14	222:11	74:1,2,3
167:21	115:6	<b>fits</b> 64:25	228:8	,8,10,13
<b>findings</b>	117:16,1	<b>five</b> 9:15	<b>focussing</b>	75:2
12:18	7	19:4	86:23	76:4
13:6	120:13,1	60:17	203:12	78:24
14:11	9 126:2	66:12	<b>fodder</b>	79:2
33:9	128:19	74:18	183:16	84:8,10,
85:15	131:5,15	79:9	<b>folks</b>	15,19
<b>fine</b>	134:11,2	136:14	142:23	99:2
22:2,4	3	191:25	182:14	100:22
45:9	135:9,14	192:1,2,	<b>followup</b>	103:5
46:20	146:2	5,10,11	10:17	104:1
169:9	152:9	214:11	37:20	110:20,2
180:23	153:8,9,	216:11,1	86:3	1 111:8
238:10	13,21	2	127:3	112:22
<b>finer</b>	156:9	<b>fleet</b>	<b>follow-up</b>	113:3
46:20	158:22,2	51:20	13:6	115:17,1
<b>finger</b>	5 159:8	<b>flooding</b>	38:13	8,19
69:16	164:23	98:11	41:19	132:15
<b>fir</b> 25:11	168:11,2	101:12	52:23,24	191:1,14
<b>fire</b>	5	<b>floor</b>	56:11	218:7
16:8,17	169:3,5	40:16	57:9	<b>footprints</b>
86:2	170:21	<b>flow</b> 40:15	60:25	75:3
206:17	171:24,2	161:5	126:25	76:5,7
<b>first</b>	5 173:15	<b>fluctuatin</b>	130:2	90:15
10:3,4	175:13	<b>g</b> 162:11	136:11	110:24
17:17	176:17	<b>focus</b> 32:4	137:8	112:2
19:6	180:17	61:8	196:16	113:21
20:20	187:9	71:6	<b>food</b> 62:21	156:4
22:20	192:22	86:8	89:13	163:11
23:2	199:15	105:1	218:22	191:24
25:11	209:12	107:1	<b>footprint</b>	192:1
49:17	213:13	133:22	23:17,19	213:16
73:6	214:3	186:23	24:23	<b>foraging</b>
75:18	227:13	203:10	25:7,13,	118:9
80:9	229:25	<b>focussed</b>	19,23	122:24
87:1,13	230:17	13:5	26:24	<b>forces</b>
88:13	231:8	26:23	27:1	31:24
97:7	236:20	89:10	34:8	<b>foreign</b>
99:9,15	241:7		47:19,23	95:25
110:19	242:13		66:2,8,1	<b>foreseeabl</b>
	<b>fish</b> 54:10			
	<b>Fisheries</b>			

<b>e</b> 7:5	211:5	96:6	<b>front</b> 46:1	203:8
73:7	<b>forty-five</b>	107:10	59:17	<b>furans</b>
108:9	12:6	132:12	80:8	18:17,20
182:11	63:10	142:4,9	187:13,1	,22
184:8,17	<b>forward</b>	144:5,8,	4	22:11
,18,21	60:10	21 179:7	<b>front-end</b>	32:9
185:5	65:11	<b>Francis</b>	18:2	49:22
186:2	67:9,15	3:6	<b>fuel</b> 20:22	55:24
187:5	91:14	<b>frankly</b>	21:4	57:11,13
219:11	101:17	204:17	73:19	,19 58:1
222:18	137:23	<b>franticall</b>	163:19	<b>future</b> 7:5
249:20	138:16	<b>y</b> 8:7	<b>fugitive</b>	100:1,2
<b>forest</b>	153:20,2	<b>Fred</b> 4:23	19:16,20	108:9
16:8,17	2 159:12	88:14	,25 21:8	109:2,4
63:24	190:4	90:6	37:24	112:10
64:5,6	<b>four-seven</b>	91:8	45:13,15	114:5
75:19	122:17	152:8,10	,21,25	115:1,3
218:21	<b>fourteen</b>	153:20,2	46:11,18	116:5,15
<b>form</b> 26:20	36:7	4	53:10,15	,25
44:13	217:20	155:5,9,	,20	125:14
189:18,2	<b>fourth</b>	19,22	62:17	126:9,10
1	19:21	156:23	<b>full</b> 10:14	127:24
<b>format</b>	98:12	158:16,2	185:11	132:8
189:20	209:3	1 159:16	189:11	134:8
<b>formed</b>	<b>fowl</b> 70:13	160:8	208:4	160:1
46:21	<b>fox</b> 3:12	231:5,6	245:2	165:9,14
<b>forming</b>	27:9	241:6,8,	<b>fun</b> 107:22	183:3
147:17	28:6	15,19,25	<b>func</b>	185:5
<b>forth</b>	40:17	243:18	223:11	186:3
242:13	41:23	244:15	<b>function</b>	188:22,2
<b>fortunate</b>	42:11,12	<b>free</b>	83:5	4 191:2
244:4	43:6	189:16	117:9	192:17,2
<b>Fortune</b>	45:8,9	<b>frequency</b>	208:24	0 193:4
182:8	46:22	35:23	213:15	199:4
<b>forty</b> 39:4	48:4	36:8	223:14	212:22
123:10	49:13	37:3,4	224:7,20	213:22
139:9	52:25	40:22	<b>functions</b>	224:2
149:14	53:7	217:5	75:23	<b>FYI</b> 62:25
157:8	89:5	<b>frequent</b>	<b>fundamenta</b>	<hr/> G <hr/>
176:12,1	<b>fragmentat</b>	62:21	<b>l</b> 165:18	<b>Ga</b> 231:22
3 203:15	<b>ion</b>	<b>Friday</b>	<b>funds</b>	<b>Gahcho</b> 1:7
210:16	66:19	185:16		13:12

15:6	18	51:22,24	57:4	125:15
19:5	<b>gc</b> 244:13	<b>gentlemen</b>	77:20	<b>goals</b>
72:19,20	<b>ge</b> 72:16	52:16	103:14	145:15
94:21	<b>gears</b>	<b>geographic</b>	111:16	<b>golden</b>
117:1,5	117:13	81:13	116:21	222:4
131:16	124:17	<b>geographic</b>	145:3,5	<b>Golder</b>
206:18	130:17	<b>al</b> 106:7	161:7	12:3
212:23	<b>gen</b> 51:22	<b>geological</b>	212:22	40:20
213:4	230:18	70:19,20	237:9	41:15
225:10	<b>general</b>	,21	<b>gives</b>	42:22
231:22	36:13	71:16,17	161:23	44:1
232:24	96:24	208:7	163:4	47:8
247:21	171:9	<b>Geoscience</b>	176:14	50:15
<b>Gahchoe</b>	172:20	182:9	199:12	53:7
110:6	234:18	<b>gets</b>	<b>glad</b> 194:7	56:18
<b>gain</b>	238:13	167:20	<b>Glans</b> 5:11	59:5
115:13	<b>generalist</b>	176:18	<b>Glen</b> 3:23	60:15,17
<b>Gameti</b>	<b>s</b> 212:2	<b>getting</b>	<b>Glenn</b> 3:5	61:2
4:15	<b>generally</b>	50:8	<b>GNW's</b>	64:19
<b>gap</b> 21:20	20:19	136:2	120:20	81:4
170:1,2	22:19	142:23	<b>GNWT</b>	82:21
173:15	234:10,1	181:8	3:17,20	84:18
<b>gaps</b> 178:2	5	193:13	15:21	85:9
<b>garbage</b>	<b>generate</b>	202:16	109:23	87:20
208:12	19:16,25	204:23	110:16	92:15
<b>Garner</b>	<b>generated</b>	205:23	117:10	94:2
4:12	29:6	229:12	120:10	95:14
<b>gas</b> 18:20	30:9	238:12	131:24	137:5,19
19:12	72:17	240:21	151:15,1	138:12
20:6	96:10	244:11	7 156:19	141:2,25
59:6,7,1	125:13	245:23	157:2	143:6
0,12,13,	<b>generation</b>	<b>GIS</b> 74:13	188:1,4	146:25
15,17	19:8	75:13	189:22,2	150:8
<b>gather</b>	42:3	78:23	4 219:24	159:17
44:12	56:3	80:12	228:25	170:16
<b>gauge</b>	<b>generation</b>	90:20	229:2	173:12
142:15	<b>s</b>	96:21	231:25	176:6
<b>gauges</b>	165:10,1	111:20	248:5	178:12
142:17	4	121:4	<b>GNWT's</b>	180:24
<b>Gavin</b> 3:11	<b>generators</b>	123:15	57:20	182:1,3
229:1,2,	21:5	<b>given</b> 41:6	96:24	191:9
		54:5	<b>goal</b> 24:15	193:9
				197:5
				200:7



201:18	<b>graphic</b>	15,17	<b>group</b>	39:13
206:24	201:7	<b>grey</b>	64:15	<b>guidelines</b>
209:25	<b>graphicall</b>	114:21	157:9	18:10
230:12	<b>y</b> 125:24	119:10	176:24	55:12
232:18	<b>Gras</b>	215:15	217:18	103:12,1
235:6	174:20	<b>grids</b> 70:4	242:2	3
248:11	175:4	102:17	<b>grouped</b>	<b>Gunn</b> 5:21
<b>gone</b> 43:15	<b>great</b>	<b>Grieve</b>	42:8	157:19
89:20	8:8,13,1	4:20	<b>groups</b>	160:8,15
105:18	6 88:23	<b>grizzly</b>	147:17	162:1
140:2	105:12	61:22	148:18	168:1,13
243:3	159:12	64:9,12	164:24	<b>Gunn's</b>
<b>goodness</b>	169:8	68:14	217:16,1	161:11
168:15	178:4	70:18	7 222:22	162:21
<b>Gordon</b>	180:8,21	71:7,22	<b>grow</b>	166:19
2:18	<b>greater</b>	91:3	180:12	<b>guys</b> 43:24
158:8	171:17	130:22	<b>growing</b>	47:3
<b>gove</b> 38:18	225:9	207:8	99:20	133:2
<b>government</b>	<b>greatly</b>	209:11,1	<b>grows</b>	163:6
4:12,16	210:6	4,21	132:3	169:24
10:5,8,9	<b>grebe</b>	210:5,13	<b>guess</b> 17:1	177:6,23
15:20	220:16	211:24	44:13	,24
17:2,14,	235:9,20	212:8	57:9,15,	188:9
19,23	248:24	213:5,8,	24 83:21	204:20
18:3,12	249:6	10	85:11	247:25
29:15	<b>gree</b> 76:25	214:16,2	86:9	<b>GWNT</b>
31:10	<b>green</b> 3:2	1 220:15	87:2	157:12
133:11	59:14	230:15	106:3	<b>gyrfalcon</b>
145:1	76:22,24	234:12	133:13	221:25
147:8	,25	241:13	140:23	
148:18	79:4,6	242:8,9,	145:14	<hr/>
188:6	93:6	10 244:1	168:12	<b>H</b>
234:9	97:19,20	<b>ground</b>	171:23	<b>ha</b> 136:8
241:23	116:8	24:18,22	194:13,2	151:3
244:19	119:1	32:10,14	2	<b>hab</b> 93:17
<b>Goyatiko</b>	201:8	47:14	196:5,21	198:13
5:2	224:25	96:13	199:21	<b>habit</b>
<b>grab</b>	225:6	166:23	201:4	75:24
142:25	<b>greenhouse</b>	185:1	<b>guidance</b>	143:22
<b>graph</b>	59:6,7,1	217:11	210:8	<b>habitat</b>
26:13	0,11,13,	<b>ground-</b>	<b>guide</b> 67:8	68:16,17
194:23		<b>level</b>	<b>guideline</b>	,18
		17:9		75:8,9,1

0,12,19, 21,23,25 76:1,2,3 ,6,11,12 77:2,4,1 5 78:23 85:12 88:15,18 ,25 89:12,17 ,18,25 90:16 92:25 93:2,4,5 ,6,8,10, 11 96:20,22 107:4,5, 9 110:18 111:4,11 ,19,22,2 5 112:18 113:8,15 ,20,24 114:9,11 115:13,2 2 116:7 117:2,6 124:24 141:21,2 3 143:9,23 144:4,5, 6,7,10,1 1,20 145:6,19 178:24 179:6,7 182:25 196:16 197:1 198:12,1 3 208:12,2 2,23	209:15 212:1,2 213:13,1 4,24,25 214:5,7, 16,18,24 215:3,4, 25 216:5,8, 9 217:23,2 4 218:14,1 6 219:9,13 ,17 220:12 221:17,1 8,23 222:12,1 5,21,23 223:6,11 ,12,15,1 8,20,21 224:5,16 229:4,8, 9,11 <b>habitats</b> 77:1 90:9,10 91:5 107:6,7 113:9 116:4,9, 11,14 117:8 213:10 214:19 218:3 223:23 224:18,2 3 <b>Hackett</b> 182:12	<b>hair</b> 210:2,14 ,20,21 <b>half</b> 46:5 83:17 237:20 <b>halved</b> 237:19 <b>hand</b> 8:23 177:22 187:22 <b>handle</b> 143:9 <b>handling</b> 19:15 <b>hands</b> 205:20 <b>hang</b> 136:8 <b>Hannon</b> 175:24 179:23 <b>happen</b> 94:8 154:2 238:8 <b>happened</b> 235:10,1 2 <b>happens</b> 178:25 185:17 <b>happy</b> 43:14 91:14,19 104:11 132:24,2 5 167:9 177:6,7 186:15 240:16	<b>har</b> 180:17 <b>harassment</b> 118:12,1 3 123:2,9 126:21,2 2 129:2,5 162:7,13 199:23 <b>hard</b> 44:13 111:15 169:5 204:18 237:15 <b>hardened</b> 233:6 <b>Harman</b> 2:22 <b>harrier</b> 222:3 <b>harsh</b> 77:21 99:18 <b>harve</b> 230:23 <b>harvest</b> 86:20 125:10 131:1,10 ,15 132:7 156:11 157:11,2 0 158:23 230:19,2 4,25 231:3,21 234:18 <b>harvesting</b> 86:14 89:11	155:23,2 5 156:1,2 158:10 164:2 180:18 188:11,1 8 242:5 <b>hat</b> 136:8 <b>haul</b> 18:1 19:13 28:21 29:2 102:9,24 ,25 158:1 <b>haven't</b> 184:20 <b>having</b> 26:22 84:5 204:13 <b>hawk</b> 222:4 <b>hazardous</b> 84:8 <b>head</b> 199:11 <b>headed</b> 85:24 136:4 <b>health</b> 13:19 14:10 17:3 27:18 32:23 52:7 149:7,11 150:4 151:16 248:5
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

<b>healthy</b>	103:22	133:10,1	<b>he's</b> 8:13	34:14
149:21	238:23	2 135:12	55:6	35:6,12
244:2	239:13	141:19	56:12	36:8
<b>hear</b> 11:25	<b>he'd</b> 169:1	144:25	164:19	76:23
121:10	<b>hei</b> 173:19	145:2	170:20	198:23
148:13	<b>held</b> 1:20	146:2	190:21	199:3
189:25	155:2	147:1	211:20	212:15
<b>heard</b> 7:11	<b>helicopter</b>	175:18	230:5	<b>highest</b>
83:24	221:10	178:3	236:10,1	23:14
135:23	<b>Hello</b>	<b>herd</b> 68:14	1	25:4,8
144:3	243:18	72:19,21	<b>Hey</b> 86:1	26:19
148:14	<b>help</b> 16:4	,23,24	<b>Hi</b> 40:17	102:21,2
151:22	23:2	73:1	138:11	3
159:24	30:15	84:14	141:24	<b>highlight</b>
177:14	148:21,2	87:9	150:7	39:18
181:11,1	3 151:19	106:9,25	153:5	53:19
2 185:9	152:7	107:2,8,	170:15	98:1
186:10	167:9,13	12	191:8	116:24
187:3	186:17	108:11	230:12	219:7
203:2	195:16	111:13	<b>high</b> 30:8	<b>highlighte</b>
239:23	198:19	113:13	46:4	<b>d</b> 34:3
<b>hearing</b>	238:16	125:5	50:8	39:9
10:14	239:8,22	132:3	71:11	<b>highlighti</b>
<b>hearings</b>	240:20	133:15,2	76:1	<b>ng</b> 98:9
148:12	241:3	1,23	77:1,4,1	<b>highly</b>
<b>heaters</b>	244:22	134:1,4,	5 85:12	46:14
18:11,13	250:13	9 135:10	107:6	221:16,1
<b>heath</b>	<b>helpful</b>	136:3	113:9	7 225:7
75:20	59:23	138:19	115:8	<b>highways</b>
111:11,2	146:6	143:21	123:11	73:21
2	204:2,8	157:1,18	126:22	<b>hire</b> 203:8
<b>heating</b>	238:2	172:9	143:13,1	<b>hired</b>
58:21	<b>helps</b>	175:7	8 179:17	148:20
<b>heavily</b>	40:14	248:15	182:24	<b>historical</b>
157:12	84:22	<b>herds</b> 72:5	213:7,25	109:19
<b>hectares</b>	140:9	106:22,2	216:7,8	116:3
66:16	159:4	4,25	218:3	212:8,16
74:9	187:18	108:3,25	219:9,13	<b>Hodson</b> 4:8
99:3	<b>hence</b>	157:5,17	224:5,11	226:15
101:11,1	140:22	158:6	,15,18,2	227:11
2,19,21,	<b>Henry</b> 4:13	175:2	5	228:1
25		<b>Here's</b>	<b>higher</b>	
		117:1	16:15	
		240:8	23:8	

<b>hold</b>	<b>hope</b> 92:8	79:25	132:7	64:20
105:15	146:12,1	80:7	<b>hunters</b>	70:24
134:21	3 202:20	81:17	89:8	85:22
189:16	244:11	88:7,12,	93:17	104:11
195:7	<b>hopefully</b>	13	156:11	132:24
239:17	24:21	91:10,21	157:10	136:21
<b>holding</b>	28:3	92:7	172:6	142:23
40:13	56:13	93:22	243:5,9	146:7,8
62:22	59:19	104:13,2	<b>hunting</b>	170:1
181:16,1	187:20	0	131:12	178:12
7	232:7	146:17,2	134:4	188:1
<b>hole</b> 203:3	<b>hoping</b>	3	149:16,2	205:25
<b>home</b> 70:15	189:25	249:13,1	3 151:8	216:20
72:4,6,1	<b>horned</b>	5	156:5	233:15
1,12	220:16	<b>human</b>	208:18	236:20
75:4	235:9,20	13:19	230:20	244:11
84:13	248:24	14:10	242:5	250:5
110:1,25	249:6	27:18	<b>Hurley</b>	<b>idea</b> 56:12
111:2,5,	<b>hour</b>	32:23	2:16	62:7
6,12	122:20	87:16	<b>hurt</b>	172:1
118:10	205:23	88:5	186:22	<b>ideally</b>
135:16	<b>hours</b>	98:21	<b>hydrocarbo</b>	24:9
149:18	194:13	118:6	<b>ns</b> 22:10	28:7
191:13	200:15	129:24	<b>hypotheses</b>	<b>ideas</b>
208:2	201:15	172:3,21	171:13	238:13
242:18,1	<b>house</b>	202:13	<b>hypothesis</b>	<b>identifica</b>
9	58:21	<b>hundred</b>	171:25	<b>tion</b>
<b>homework</b>	<b>Hu</b> 146:23	30:13	<b>hypothetic</b>	107:24
151:22	<b>Hubert</b>	70:25	<b>al</b>	108:1,7
159:25	1:14 2:3	71:2	173:23	220:5,11
203:20	8:3,4,9	102:25	<hr/>	<b>identified</b>
240:24	9:10	120:22	<b>ice</b> 28:22	70:2,20
247:19,2	11:17	121:1,19	29:2	73:14
4 248:20	28:1,12	,20	44:25	76:22
249:11	40:10	125:21	208:19	97:5,6
250:9	49:10	136:14	<b>I'd</b>	208:10
<b>hone</b>	52:4,15	157:4,8	9:14,18,	210:25
203:11	53:21	210:22	24 10:15	221:18
<b>honest</b>	54:23	224:9	52:22	222:1
250:12	56:14	<b>hundreds</b>	57:24	<b>identify</b>
<b>honestly</b>	60:4	116:14		13:16
171:1	68:4	176:9		154:3
		<b>hunter</b>		210:15
		88:20		

246:14,1 7 <b>identifyin</b> <b>g</b> 141:5 <b>II</b> 42:16,23 43:12,15 51:19 <b>I'll</b> 9:22 12:14,20 ,22 28:10 40:25 49:2 63:9 74:22 90:24 91:22,23 97:2 100:7 105:2 107:25 108:15 109:2 111:18 114:16 119:22 121:4,5 139:14,1 5 140:24 151:18 155:10,1 1 160:7 163:5 164:5,6 167:12 169:9,20 170:17 173:13 177:22 189:15 195:5 199:10 204:19	223:13 232:18 234:2 240:14 243:19 246:7 247:17 <b>illustrate</b> 76:11 136:10,1 2 <b>illustrate</b> <b>d</b> 118:18 214:13 <b>illustrate</b> <b>s</b> 72:9 102:14 124:12 209:17 <b>illustrati</b> <b>on</b> 85:4 110:5 <b>I'm</b> 8:10 12:2 13:9,23 15:1 16:21 19:1 20:16 22:15 26:12 27:11 28:14 31:1,2 33:7,10, 19 34:20 35:15 36:19,20 37:19 39:2 41:4 42:18 43:13,23	45:10,14 ,18 46:23 47:5,11 48:5 55:5,6 57:12 60:14 61:16 62:24 63:3,5 77:23 80:11,16 81:23 85:9 91:6 92:16 95:21 98:1,8,2 5 101:7 105:22 106:3 110:12,1 8 112:17 117:4,13 120:13 121:5 124:17,1 8 127:25 128:16 135:13,2 3 136:1 141:25 146:11 151:2 155:7 156:13 160:11,1 2 161:24 165:1 167:2,8 168:7 170:8,17 171:23,2 4 175:10	177:6,7, 25 180:20 181:7 182:13,1 4 184:20 186:14 189:7 194:7,25 195:5,25 196:2 199:10 200:23 202:15 204:17 205:15,1 6 207:10 209:7 211:21 216:23 226:18 227:16 231:15 238:21,2 5 239:18 240:22 241:15,2 4 244:11 245:22,2 3 246:3 248:5,6, 8 249:12 250:11,1 2 <b>IMA</b> 10:5 <b>imagine</b> 75:13 76:19 176:20 <b>imme</b> 39:13 <b>immediate</b> 69:18 <b>immediatel</b>	<b>y</b> 28:9 33:17 39:13,17 112:1 <b>impact</b> 1:3,5 54:8 71:21 81:6 83:21 86:12,15 ,22,25 87:11 130:16 140:21,2 2 145:22 157:24 158:6 160:5,19 166:8,10 169:21 179:14 180:1 181:13 193:7 207:23 225:20 230:4,7 238:17 247:2 <b>impacted</b> 24:5 <b>impacts</b> 54:15 61:18 62:7 67:25 82:1,7 99:4 108:18 111:14 132:14 139:20 140:17,1
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

9 141:11	250:3	62:21	11:6	<b>incorrectl</b>
145:16	<b>importantl</b>	<b>incinerato</b>	41:4,11	<b>y 180:21</b>
163:17,1	<b>y 97:8</b>	<b>r 18:21</b>	57:25	<b>increase</b>
8 164:22	184:6	19:8	65:25	107:11
165:4	<b>importer</b>	57:22	98:16	115:22
166:6	18:4	58:2	106:20	117:22
208:3	43:2	<b>incinerato</b>	112:10	158:9
209:1	<b>importing</b>	<b>rs 18:22</b>	114:10	159:18
217:9	18:5	<b>include</b>	163:24	161:21
<b>implement</b>	<b>impossible</b>	13:19	176:8	<b>increased</b>
38:16	174:16	15:21	184:18	107:25
<b>Implementa</b>	242:23	19:7	207:8	139:25
<b>tion</b>	<b>impression</b>	20:2	218:17	220:4
10:5	94:24	22:1	222:3	<b>increases</b>
<b>implemente</b>	144:15	32:7,16	224:4	131:1
<b>d 43:10</b>	<b>improvemen</b>	39:21	228:15	<b>increasing</b>
55:14	<b>ts</b>	41:17	<b>includes</b>	136:13
<b>implicatio</b>	207:20	44:24	69:24	<b>incredibly</b>
<b>ns 124:4</b>	<b>ina 127:16</b>	48:20	211:5	75:3
127:7	<b>INAC 73:13</b>	56:8	216:25	77:22
<b>important</b>	<b>inaccurate</b>	61:20	217:1	111:4
27:21	127:16	62:14	224:21	126:6
34:2	129:20	68:2	<b>including</b>	135:19
67:2	130:8	70:9	13:15	<b>Increment</b>
96:3	<b>inactive</b>	100:25	29:14	133:19
101:13	74:15,19	106:8,13	31:10	<b>incrementa</b>
106:2	78:5	,22	32:14	<b>l 114:18</b>
111:9	115:21	107:3,16	59:7	125:4
112:24	<b>inc 130:25</b>	130:24	68:2	126:2,6
114:17	<b>incidence</b>	159:18	106:9	135:17
117:20	99:15	179:6,7	108:23	214:3
148:14	<b>incident</b>	182:4	118:3	215:1
164:23	200:3	193:4	147:5	216:3
174:16	<b>incidents</b>	208:10	163:21	218:2
182:25	213:1	215:1	219:12	219:8
183:1	216:1	216:3	222:18	223:5,24
193:16	<b>incinerati</b>	217:9	224:3	224:13
203:13	<b>on 18:17</b>	219:22	243:7	225:14,2
204:11	49:21,23	220:14	<b>inclusion</b>	2 237:1
213:3		228:14	183:22	<b>index</b>
214:15		234:16,1	<b>incorporat</b>	223:12
238:3		7 244:8	<b>ed 40:24</b>	<b>Indian</b>
239:2,5		247:10	234:7	
		<b>included</b>		

154:6	217:18	7	44:5,12,	6,13
<b>indicate</b>	<b>industrial</b>	173:2,4,	17 53:11	232:20
36:5	3:17	6,20,22,	58:3,4	234:5,8,
93:4	18:11	24	59:19	15,18
161:2	20:15	174:9,11	68:21	235:1
<b>indicated</b>	58:22	,17,24	73:15	240:21
98:7	<b>industry</b>	192:9	74:12	241:2,12
141:17	58:25	197:11	75:15	242:1
155:25	<b>influence</b>	199:16	80:24,25	243:13,1
158:21	61:19	200:4,9,	81:2,12	4
188:2	74:22	21,22,24	96:12,13	244:10,1
190:24	76:9	201:14	106:20,2	4 250:11
<b>indicates</b>	77:7,24,	202:9	1	<b>informativ</b>
162:5	25	208:16	109:5,24	<b>e</b> 40:19
225:22	78:6,12,	213:17	,25	<b>informed</b>
<b>indicating</b>	21,25	215:9	110:15	250:13
149:20	82:4	218:18	132:1	<b>infra</b>
228:17	84:20	223:24	138:4,17	<b>infrastructure</b>
<b>indication</b>	86:6	225:24	149:1,4	172:22
45:19	90:15	226:3	153:15	<b>infrastructure</b>
<b>indices</b>	92:24	<b>influenced</b>	156:10,1	172:3,22
218:16	93:2,8	16:8	7 157:15	<b>inherently</b>
<b>indirect</b>	99:12	<b>influences</b>	158:16,2	45:15
69:18	106:18	79:15	3	67:16
70:7,8,9	107:17	116:15	159:4,10	<b>initiated</b>
76:7,8	110:22	123:16	169:25	210:2,21
77:25	112:19,2	223:17	171:2	<b>Initiative</b>
106:18	3	<b>inform</b>	172:24	<b>s</b> 3:18
110:21	113:11,2	201:20	174:8,13	<b>input</b> 21:4
113:10	2	<b>informa</b>	175:6,22	32:18
214:4	121:13,1	169:25	,25	81:2
215:2	7,24	<b>informatio</b>	178:2	103:20
216:4	122:6,13	<b>n</b> 8:25	179:24	148:9
222:14	,18	10:13	181:2	198:2
<b>individual</b>	125:4	12:17	184:24	<b>inputs</b>
42:1,6	128:9	13:24	199:12	127:14
108:11	130:7	21:14,15	201:21	129:20
120:22	133:20	,21 24:2	204:2	130:4,8
210:25	143:20	25:25	208:10	<b>inquiry</b>
221:4	169:11,1	31:16	209:5,6	11:5
<b>individual</b>	2,14,19	34:2	216:24	61:9
<b>s</b> 210:15	170:10,2	39:3	217:10	
	1	41:7	220:9	
	172:15,1		226:19	
			227:3,5,	

63:18	<b>integral</b>	127:4	<b>invalid</b>	<b>issued</b>
104:25	211:20	<b>interests</b>	177:20	59:6
147:15,1	<b>intend</b>	17:2	<b>invasive</b>	235:11
8 162:3	57:18	<b>interim</b>	66:6	<b>issues</b>
163:16	246:11	164:21	95:25	148:4
169:4	<b>intended</b>	<b>internal</b>	97:8,10	187:19
175:18	167:6	167:6	99:11,16	<b>item</b>
193:16	218:23	<b>internatio</b>	<b>inventory</b>	38:15,23
<b>insect</b>	<b>intending</b>	<b>nal</b>	29:16	<b>items</b>
118:12	246:16	167:24	58:1	38:13
123:2,9	<b>intensive</b>	182:13,1	59:8,14	57:18
126:21,2	221:22	4	<b>invite</b>	247:19,2
2	<b>intent</b>	<b>interpret</b>	11:13	4 248:20
129:2,5	249:17	133:24	<b>involve</b>	<b>ITI</b> 3:17
162:7,13	<b>intention</b>	237:15	177:9	<b>it'll</b>
199:23	70:6	<b>interrupt</b>	<b>involved</b>	11:10
<b>insects</b>	144:9	64:20	148:1	82:25
123:11,2	<b>inter</b>	<b>intersect</b>	166:4	187:25
4 180:13	72:18	72:18	176:2,4	<b>it's</b>
<b>insensitiv</b>	124:3	121:13	210:1	8:4,16
<b>e</b> 129:20	<b>interact</b>	123:17	<b>IR</b> 166:7	10:23
<b>inside</b>	72:19,20	<b>intersecti</b>	183:16	27:10
175:1	109:17	<b>on</b>	<b>IRs</b> 84:1	29:22,23
200:22	124:3	122:13	180:22	,24
201:20	232:21	201:25	202:23	30:3,10
239:24	<b>interactio</b>	202:1	<b>Island</b>	31:16
<b>insignific</b>	<b>ns</b> 65:13	<b>intersects</b>	160:10	34:4
<b>ant</b>	87:17	200:9,11	242:19	40:14,24
67:14	174:15	201:23,2	<b>isn't</b>	48:7
<b>inspection</b>	<b>interest</b>	5	42:17	49:15
<b>s</b> 96:14	181:21	<b>interviews</b>	79:10	50:21
<b>instead</b>	183:19	89:19	177:21	52:6
26:22	<b>interested</b>	<b>introduce</b>	213:7	57:25
80:23	161:11	10:18	239:4	58:11,13
104:3	<b>interestin</b>	<b>introduc</b>	240:24	60:20
138:8	<b>g</b> 27:10	<b>g</b> 95:25	<b>isolation</b>	67:2
<b>insuring</b>	74:23	<b>introducti</b>	135:25	69:22
145:21	88:15	<b>on</b> 12:14	<b>issue</b>	71:15
<b>intact</b>	109:18	66:6	13:12	74:17
132:10,1	115:5,12	99:11,24	211:25	75:3,25
1	123:14		231:24	76:16,18
				78:7,10,
				14,18



81:5,9,1	169:13	227:19	228:1,16	6 180:24
0,12,22	170:6	228:1,7,	<b>Jamie</b>	181:25
82:21,25	174:16,1	13	227:25	194:15
83:5,6,8	8	229:3,21	<b>Jeannie</b>	200:23
,9,11,25	176:8,14	231:19	5:3	216:16,2
84:8	,21	232:17	<b>Jericho's</b>	3 226:9
85:11,12	177:21,2	233:10	182:17	229:18
90:16,18	5	234:5,10	<b>Jessica</b>	235:5
,19 96:3	178:17,1	235:19	2:5	248:13
97:13	8 179:2	237:2	<b>Joan</b> 5:5	<b>John's</b>
99:13	180:19	239:21	<b>job</b> 105:12	85:19
101:12,2	181:2,17	240:12,2	203:11	170:18
1 102:2	182:11	3 243:18	205:2	<b>Johnson</b>
104:6	183:14	245:23	207:2	117:12
105:9	184:4,20	250:11	220:8	<b>Johnson's</b>
110:7	185:14	<b>IV</b>	<b>John</b>	173:22
112:24	186:22	42:17,25	2:11,14	213:14
115:10	187:6	43:5	11:12	<b>joint</b>
117:1,10	188:6	<b>I've</b> 28:7	60:19	155:2
,20	189:23	41:5	61:25	<b>journal</b>
118:20	191:12	43:20	64:11,18	122:11
119:10,1	192:21,2	60:16	68:8,10	199:21
1,12,13	4	83:12,24	69:5	<b>ju</b> 181:25
121:19	194:3,19	84:5	82:19,20	<b>Juanti</b>
124:14	196:1,7,	85:21	87:18,19	3:17
135:4	10,14	126:2	92:14,15	<b>Julian</b> 3:4
137:6	197:17,2	135:23	,22	65:16
141:8	1,23	144:3	127:1	<b>jump</b> 28:11
142:6,7,	198:2,14	146:13	132:25	79:22
12,13,16	,15	149:22	137:9,18	170:20
143:10	200:8,13	151:22	140:24	181:8
144:22	201:18	156:5	141:1	202:16
145:7	202:21	167:10	142:18,2	<b>jumping</b>
147:19,2	203:12,1	229:23	3	86:7
2,23	3	239:23	143:3,5	<b>jumps</b>
148:11	204:11,1	242:6,7	146:25	28:13
152:12	5		159:13,1	<b>June</b>
153:5	205:3,22		4,16	221:24
154:5,8,	206:14,1		173:12	
10,21,24	6 210:9	<b>Jackson</b>	174:1	
155:23	213:4	3:6	175:8	
162:1,10	214:20	<b>James</b> 4:8	177:17	
,22	215:15	226:15	178:11,1	
165:5,8	216:19	227:11		
167:1	226:15			

<b>Kanigan</b>	163:16	97:13,14	159:2	52:16
3:4	193:16	102:18	171:6	<b>Lafferty</b>
65:16	195:1	103:3	210:7	5:5
<b>Kate</b> 4:3	211:25	112:22	<b>known</b>	<b>lag</b> 43:13
<b>K'e</b> 4:18	225:8	113:2,3	101:3	<b>lake</b> 15:25
10:4	247:14	122:21	117:11	16:10,12
97:6	<b>keystone</b>	131:18	181:5	19:22
210:9	180:15	154:22,2	222:5	20:2,3,1
243:6	<b>kil</b> 71:3	3	224:8	0 31:24
<b>Kennady</b>	<b>kilogram</b>	171:15,1	<b>Kue</b> 13:13	41:3,10,
19:21	119:3	8,21	15:6	16,19
20:2	150:13	172:23	19:5	42:8
44:3	195:1	173:3	72:19,20	43:18,21
63:19	199:23	200:18	94:21	44:3,8,1
66:5	200:1	209:22	110:6	0,14,15,
89:23	<b>kilograms</b>	210:24	117:1,5	19,22,25
97:16	118:19	211:15	131:16	45:1,3
156:6	122:14	218:6,9,	206:18	63:19,22
158:2	123:13,2	11	212:23	66:5,6
159:19	2,23	225:10	213:4	70:1
214:21	124:7	231:19	225:10	88:23
221:12	<b>kilometre</b>	237:18	231:22	89:1,23
<b>Kerri</b> 4:12	69:25	238:24	232:24	97:11,16
<b>key</b> 11:4	131:17	239:13	247:21	99:17
12:15	163:24	245:14	<b>K'ue</b> 63:20	106:11
13:10	169:12	<b>kimberlite</b>	156:2	110:7
39:5,19	172:17	20:4,23	<b>KUE</b> 1:7	131:16,2
44:4	223:23	44:20	<b>Kuelode</b>	0 147:5
61:8	231:18	49:8,9	89:2,4	156:6
63:4,18	<b>kilometres</b>	161:6		158:8
66:18	16:1	163:21		159:19
67:12	20:11	<b>kinds</b>	<hr/> L <hr/>	174:19
75:10	31:14,15	89:15	<b>labelled</b>	182:20
79:7,18	,21 32:2	178:19	206:18	212:25
102:8	36:16	183:17	<b>Labrador</b>	214:21
104:24	37:8	246:6	97:22	221:9,12
110:17	63:20,21	<b>KLOI</b> 63:18	101:25	,13
113:6	69:15	<b>knowledge</b>	<b>Lac</b> 174:20	222:7,10
120:14	70:3,5,2	109:6	175:4	230:25
125:2	2	138:5	<b>lacking</b>	231:1,20
126:16	71:3,18	152:25	182:4	242:4,13
147:15	78:7	153:7,10	<b>ladies</b>	,21
162:2	79:2,5	,14,22		<b>lakes</b>
		154:1		32:14

47:24	,19	162:5	242:6,7,	146:18
48:2	116:14	177:9	18 249:4	147:2,4
63:25	117:22	208:2	250:2	231:2
77:2	118:3	240:13	<b>lasting</b>	<b>learnings</b>
174:19	119:23	<b>largely</b>	233:16	247:14
<b>Lake's</b>	120:9	103:1	<b>late</b>	<b>least</b>
41:20	123:18	215:6	117:21,2	51:25
<b>lan</b> 103:3	124:3	218:20	5 118:1	92:9
<b>land</b> 8:19	125:14,1	<b>larger</b>	149:22	144:2
10:23	5	22:6	154:5,8,	185:4
54:7	126:9,19	46:19	11	<b>leave</b> 12:8
73:16	127:22,2	58:22	193:19	91:17
87:23	3,24	70:17	245:23	177:23
88:5,20	132:9,11	74:4	250:1	184:23
89:17	136:7,17	78:11	<b>later</b>	210:14
97:4	142:11,1	169:14	14:21	242:21
100:24	6 143:20	<b>largest</b>	25:20	<b>leaves</b>
103:4	173:8	23:13	46:7	122:1
111:21	191:1,14	24:23	59:24	<b>leaving</b>
156:10	,15,18,2	101:9	91:1,2	119:24
166:17	1 197:9	113:14	93:19	<b>led</b> 34:14
226:4	212:2	114:10	108:15	212:6
245:5	214:12	170:22	148:10	<b>legally</b>
<b>lands</b>	233:9	176:24	165:12	244:8
149:16,1	<b>landscapes</b>	191:1	205:11	<b>Lena</b> 5:2
8	90:23	214:18	216:21	<b>length</b>
<b>landscape</b>	<b>Langhorne</b>	215:5	<b>Latham</b>	176:25
64:1	2:15	<b>last</b>	242:19	<b>less</b>
69:4	<b>language</b>	13:6,18	<b>launching</b>	22:3,5
71:10,13	5:2 82:2	18:15	92:12	39:10
73:25	86:5	20:5	<b>layer</b> 77:6	75:3
74:20	89:3	21:23	<b>layers</b>	84:13
75:1	<b>lar</b> 64:2	30:18	81:14	97:24
76:15,16	<b>large</b>	38:23	<b>lead</b> 23:13	98:15
,18	24:14	39:2,4	176:16	101:15
77:15,16	31:22	49:14	<b>leadership</b>	102:2
78:13	63:25	100:3	148:13	104:9
107:10	64:2	108:7,16	<b>leakage</b>	111:5,12
111:22	70:15	145:3	163:22	120:18
112:5,9	75:19	156:1,13	<b>learned</b>	139:24
114:2,3,	126:23	157:25	145:11	154:24
5	142:3	164:5		
115:7,16	143:17	180:6		
		185:17		

179:14	234:17	70:9	7 162:3	<b>listen</b>
199:7	<b>levelled</b>	<b>likelihood</b>	163:16	180:8
214:6	233:6	106:7	175:18	<b>listeners</b>
216:5	<b>levels</b>	117:23	193:16	144:14
219:15	17:14	133:13	208:1	206:11
222:16,1	39:13	134:8	243:8	<b>listening</b>
9 223:25	107:14	135:10	<b>linear</b>	11:20
224:15	113:2	<b>likely</b>	208:18	55:4
<b>lessons</b>	131:1	35:4,22	<b>lines</b> 2:9	160:9
145:10	169:19	36:9	47:12	168:14
146:18	218:9,11	38:8	67:11	241:21
147:1,4	220:6	68:1	73:21	<b>listing</b>
<b>let's</b> 9:5	<b>li</b> 51:15	72:18,20	110:13	243:23
86:18	<b>liaise</b>	109:17	169:4	<b>listings</b>
91:22	247:13	174:22	177:10	97:1
104:20	<b>lichens</b>	205:3	189:21	244:7
129:2	98:20	217:22	233:2	<b>literature</b>
166:22	<b>lied</b> 50:2	239:4	<b>linkage</b>	81:8
171:5	<b>lies</b> 194:9	<b>limit</b>	160:22	82:19
197:21	<b>life</b> 23:10	49:11	<b>linking</b>	119:10
201:10	24:7,10	62:17	122:7	125:22
206:15	25:3	99:24	<b>Lisa</b> 2:16	138:15
<b>letters</b>	107:8,12	<b>limited</b>	4:7	142:14
180:9	134:10	36:9	<b>list</b> 6:3	143:10,1
<b>level</b>	<b>lifespan</b>	203:8	7:1	6 144:22
24:22	133:16	230:18	9:22,24,	151:17
29:6,9	<b>lifestyle</b>	<b>limiting</b>	25 10:11	170:23
30:12	158:10	203:24	21:24	171:7
32:10	<b>light</b>	228:8	28:7	172:20
36:2	30:16	<b>limits</b>	62:12	174:25
37:24	35:21	17:1	96:11	177:4
38:20	36:3	18:3	182:7	218:17
39:25	37:10	62:18	<b>listed</b>	<b>little</b>
40:2	42:24	<b>line</b> 11:4	13:11	36:4
44:9	58:13	33:22,24	96:23	61:25
46:4	97:19	34:4,25	99:5	63:2
47:14	<b>lighter</b>	35:19	163:20,2	65:6
51:16	79:6	47:1,14,	5	75:14
59:9	102:20	17 61:9	187:13,1	76:20
96:14	<b>lights</b>	63:18	4 219:24	81:11
124:23		104:25	220:17	90:19
134:3		119:1	234:23	91:25
162:6		147:15,1		103:21
202:17				

117:14	245:2	<b>longer</b>	196:16	99:15
123:3	<b>local-</b>	74:21	197:1,13	107:14
124:18	<b>scale</b>	81:1	198:12,1	111:4
130:18	67:13	229:11	3 208:22	113:12
136:22	<b>locate</b>	233:16	223:6,7	120:18
138:20	248:8	<b>long-range</b>	229:4,8,	126:21
149:24	<b>located</b>	31:8	16,21	132:20
150:1,4	20:10	<b>long-term</b>	237:1,2,	179:15
151:12	25:18	55:10	9	215:3
166:22	63:19	123:7	<b>losses</b>	217:22
175:21	95:20	212:4	90:15	218:4
193:13,1	211:14	<b>Loretta</b>	110:23	223:24
9 200:5	<b>location</b>	3:9	115:6,11	<b>lower</b>
201:7	12:16	188:5,6	214:12	23:8,20,
217:24	26:3	189:23	218:2	22 27:6
240:11,2	234:14	190:14	219:17	29:11
3	<b>locations</b>	<b>lose</b>	<b>lot</b> 21:1	30:20
<b>live</b> 158:8	14:6	123:13	23:22	38:10,11
<b>living</b>	26:17	<b>loses</b>	35:8	78:20
88:22	39:23	120:2	38:3	102:20
158:7	72:13	<b>loss</b> 66:18	40:20	171:22
<b>Lizotte</b>	90:12	68:17	45:21	196:20
3:3	110:10	93:4	46:16	212:12,2
<b>loaders</b>	192:4	96:6	77:4	2
18:2	209:15,1	107:4,5,	89:7	<b>lowest</b>
<b>loading/</b>	7	6 116:7	101:8	36:1
<b>unloadin</b>	210:14,1	119:3	106:2	<b>Lowman</b> 4:7
<b>g</b> 19:18	6	120:2,3	110:13	<b>LSA</b>
<b>loads</b>	<b>lodge</b>	122:14,2	147:2	69:14,17
103:23	78:12	3	149:1,3	76:14
<b>local</b>	<b>lodges</b>	123:12,2	154:14	96:10,16
32:1,3	73:20	3	172:17	97:12,18
55:25	<b>logic</b>	124:6,24	177:14	,25
69:9,14,	231:20	138:25	190:3	98:15,18
21 94:22	<b>logistical</b>	141:21,2	203:5	100:13
97:12	<b>ly</b> 24:12	3 143:9	204:12	101:2,13
107:11	<b>long</b> 50:7	144:4,7,	213:6	,23
171:2,6	64:2	10,11,20	219:6	104:4
175:2	155:21	145:6	244:5,23	109:9
210:7	165:8	150:9,10	<b>low</b> 17:17	<b>lunch</b> 46:8
221:10,1	231:11	,20	29:6,11,	91:12
5,20		151:1	13 36:1	92:9
241:23		195:1	51:16	237:4
			62:19	

<b>Lupin</b>	8 145:22	<b>manage</b>	111:20	2 230:13
182:9	214:8	145:18	116:4,25	<b>mathematic</b>
<b>lure</b>	215:4	165:14	163:9	<b>al</b> 90:14
210:13	216:10	<b>management</b>	213:16	<b>matrix</b>
<b>Lutsel</b>	218:4	13:17	<b>mapped</b>	198:2,3
4:18	<b>main</b> 24:1	38:14,24	96:20	<b>matter</b>
10:4	71:17	40:6	100:22	16:3,15
63:20	120:14	49:15,17	213:13	19:17
97:6	129:19	,23	<b>mapping</b>	22:3,5
156:2	<b>mainly</b>	50:23	76:11	27:13
210:9	13:5	51:1	96:15	30:19
243:6	27:13	56:7	109:19	45:16
	30:21	58:5	113:20	46:20
	51:15,17	81:15	213:13	48:18,20
<hr/> M <hr/>	57:5	83:8	<b>maps</b> 75:12	49:3
<b>ma</b> 63:11	<b>maintain</b>	108:20	76:2,6	80:24
<b>MacKay</b>	29:4	109:1	<b>mar</b> 202:11	111:2
3:23	<b>maintained</b>	134:2	<b>Margaret</b>	136:12
70:1	130:12	165:4	222:10	144:6
89:1	<b>maintainin</b>	212:24	<b>margin</b>	165:5,7
106:11	<b>g</b>	228:5	143:17	200:11
242:4,13	83:6,15	<b>manager</b>	<b>marginally</b>	201:24
<b>Mackenzie</b>	<b>maintains</b>	8:11	33:16	228:19
1:2,12	86:19	249:13	<b>Martin</b> 5:3	<b>matters</b>
8:10	<b>maintenanc</b>	142:9	<b>Mary</b> 5:5	46:19
<b>Madelaine</b>	<b>e</b> 52:1	<b>manmade</b>	<b>mass</b> 20:20	48:16
4:15	<b>majority</b>	16:9	21:14	168:11
52:25	63:12	<b>manner</b>	118:19	237:14
53:23,25	73:14	81:1	119:3	239:7
54:1,13	104:25	<b>manufactur</b>	120:4	<b>Matthew</b>
147:9,10	115:6	<b>e</b> 18:13	123:13,2	5:12
148:22	172:19	<b>manufactur</b>	4 196:18	100:19
150:25	214:12	<b>er</b> 18:4	<b>massive</b>	<b>max</b> 27:5
151:14	<b>mam</b> 172:20	43:2	81:13	<b>maximizing</b>
152:4	<b>mammals</b>	<b>manuscript</b>	126:22	219:2
244:18,2	172:20	174:1	<b>material</b>	17:19
0,21	177:9	<b>map</b>	19:15	18:21
245:11	<b>man</b> 180:8	75:13,19	35:10	20:22
248:4	<b>manag</b>	76:19	91:7	21:4
<b>magnitude</b>	117:11	78:23	102:4	24:21
113:7		110:12	226:11,1	26:1,16,
120:15				
125:7				
143:13,1				

18 70:7	<b>McJannet</b>	205:16	124:21,2	178:3,16
140:17	97:1	<b>measurable</b>	5 158:24	187:4
143:20,2	<b>mea</b> 179:13	161:14	165:15	206:1
2	<b>Meadowbank</b>	<b>measure</b>	166:24	224:23
<b>may</b> 23:13	163:14,2	69:17	185:21	<b>mentioning</b>
62:23	3	111:16	204:10	87:3
70:9	<b>mean</b> 54:10	<b>measured</b>	247:21	<b>mentions</b>
74:5	56:18	121:3	<b>meeting</b>	160:9
79:11	58:20	163:17	9:7	<b>Menzies</b>
93:3,5,8	64:19	202:4	225:19	2:6
94:17	82:6,8	215:24	<b>meetings</b>	<b>message</b>
101:5	85:3	<b>measuremen</b>	189:16	77:3
106:9	87:8	<b>t</b> 65:2	<b>meets</b>	116:12
107:17,1	94:20	68:20	153:16	126:5,16
9 108:3	107:21	75:10	<b>members</b>	<b>met</b> 35:3
115:17	123:12	110:17	148:13	70:23
118:2	140:13	112:16	<b>men</b>	117:21
121:23	181:5	179:5,8,	149:15,2	<b>meta</b>
123:10,1	187:2	9	3 151:8	200:16
3	202:20	<b>measuremen</b>	<b>mention</b>	<b>metal</b>
124:2,3	204:22	<b>ts</b> 68:16	12:16	32:25
134:5	205:2	98:16	13:24	49:5,9
151:17	231:5	<b>measures</b>	14:19	98:17
152:1,3	238:13	32:19	17:16	<b>metals</b>
165:22	250:11	62:10,13	18:9,16	22:11
179:10	<b>meaning</b>	77:25	40:5	32:8,17
184:25	179:15,1	108:18,2	158:5	48:11,17
208:14,2	6	3	220:7	,20,22
5 212:11	<b>meaningful</b>	207:19,2	<b>mentioned</b>	49:3,7
219:25	<b>ly</b>	1 208:25	10:23	<b>meteorolog</b>
249:17	187:17	217:9	18:18	<b>ical</b>
<b>maybe</b> 46:7	<b>means</b>	<b>mechanism</b>	28:16	12:23
82:19,23	82:21	171:11	32:6	14:1
84:1	88:2	<b>medicine</b>	39:19	15:5,7
149:14	120:7	152:15	41:3,10	123:7
155:13,1	123:12	<b>meet</b>	42:12	<b>method</b>
6 180:20	137:25	18:6,14	49:16,21	20:25
185:15	168:13	23:19	67:12	71:19
192:4	179:17	33:25	137:12	76:11
204:9,18	<b>meant</b>	43:4	156:23	170:10
216:17	137:7	62:3	173:16	210:4
239:16	<b>meanwhile</b>	83:9	174:14,2	
242:12			1	
249:9				

<b>methodolog</b>	201:6	233:22	247:13	99:11
<b>ies</b>	<b>mindful</b>	<b>miner</b>	<b>mine's</b>	100:6
46:12	175:10	182:15	133:15	103:9
<b>methods</b>	<b>mine</b> 16:11	<b>mineral</b>	<b>minimal</b>	123:25
20:18,19	20:4,10,	73:18	230:23	124:6
63:5	22	74:7,24	231:21	130:10
209:12	23:6,16,	77:9,10	<b>minimize</b>	131:4
225:18	23	78:13,16	17:15	160:22
<b>Metis</b> 4:20	25:2,9,1	79:8	38:25	230:15
10:1,2	3,14,15,	115:15	44:14	<b>minus</b>
<b>metre</b> 74:8	16,19,20	173:2,7	108:18	15:10
<b>metres</b>	,21,22	190:24	<b>minimized</b>	114:23
66:11	26:3,5	192:10	47:20	126:10
102:25	29:3	201:2	<b>minimizing</b>	127:10,1
211:9	34:13	<b>minerals</b>	213:1	3,20
223:22	41:16	80:17	<b>minimum</b>	128:12
<b>metrics</b>	42:8	<b>mine-</b>	15:13	129:10
177:16	44:20	<b>related</b>	<b>mining</b>	194:24
<b>microns</b>	47:23	211:25	18:1	196:22,2
22:5	49:5,6	213:1	19:12,14	3 198:22
<b>microphone</b>	51:20	<b>mines</b> 44:6	,17 22:9	214:10,1
80:9	56:4	55:15	23:5,15	1
158:19	62:16	58:15,24	25:6,12	215:15,1
<b>mid-April</b>	78:15,18	69:11,13	34:12	6,20
131:9	102:16	74:12	35:8	216:11,1
<b>middle</b>	106:10,1	78:11	43:3	2
76:14	6	96:18	49:4	<b>minute</b>
<b>migration</b>	117:3,4,	100:15	79:11	134:14,2
72:7	5,7	106:14	112:24	3
109:22	121:25	110:8	113:1	<b>minutes</b>
220:3	132:16	158:2	182:9,13	12:7,8
<b>migratory</b>	134:10	162:24	212:6	39:4
149:3	147:2,5	163:12,1	<b>Minister</b>	52:8
<b>millimetre</b>	154:25	8	154:6,9	63:3,10,
15:16	162:8,16	169:15,2	<b>Ministers</b>	14,15
<b>million</b>	163:23	3 170:6	18:9	91:11
182:12	170:8	171:9,20	<b>Ministry</b>	95:16
<b>mind</b> 10:8	172:13	172:11	103:12	128:17
147:12	201:1	207:20,2	<b>minor</b>	158:1,3
173:1	212:5,23	2 209:12	65:22	166:21,2
	,25	212:4,7	83:12	4 250:1
	213:4	216:2		<b>misreading</b>
	218:10	222:8		232:3,6
	228:10			



<b>misreprese</b>	190:4	<b>moderate</b>	51:5	1 219:14
<b>ntation</b>	196:15	125:7	57:13	<b>mor</b> 63:14
229:5	197:12	179:16	58:6,7	<b>morning</b>
<b>miss</b>	199:4,6	214:7	99:25	8:3
237:14	218:19,2	215:4	100:1	10:20
<b>mitigated</b>	3	216:10	109:1,4	12:1,4
28:20	223:12,2	<b>modified</b>	132:6	52:15
29:12	0	127:17	145:9,12	57:5
<b>mitigating</b>	<b>modelled</b>	<b>modify</b>	,16,20	91:1
165:3	26:9	127:10	146:9,10	100:9
<b>mitigation</b>	41:17	197:25	,15,16	103:19
39:24,25	42:5,6	<b>moisture</b>	147:3	111:18
40:3	126:17	44:9,13	151:16	167:10
62:10,13	<b>modelling</b>	<b>molting</b>	188:11,1	168:12,1
108:20,2	13:14	220:2	7 210:5	4,16
3 147:4	24:13	<b>moment</b>	<b>monitors</b>	178:10
207:19,2	31:3,4	11:20	188:16	203:22
1	32:10,22	46:2	<b>Monographs</b>	205:8
<b>mobile</b>	37:6	52:18	117:12	227:20,2
19:10	48:6	105:4	<b>monoxide</b>	3 235:21
<b>model</b>	55:13,21	185:13	22:2	248:1
24:10	102:7	190:21	33:11	250:16
31:5,6,9	103:9	<b>mon</b> 188:17	<b>month</b>	<b>mortal</b>
32:12	108:15	<b>Monday</b>	79:11	207:18
113:20	162:4	10:17	<b>months</b>	<b>mortalitie</b>
119:9,10	190:3	61:25	51:3	<b>s</b>
,11,13,2	194:8,15	64:11,21	109:15	212:7,13
0 122:10	218:7	65:4	131:8	213:2
124:8	222:21	68:11	192:4	234:6
125:12	234:17	141:3	215:13	<b>mortality</b>
126:3,4,	248:16	<b>money</b>	<b>mood</b> 91:23	61:11
9,10,20,	<b>models</b>	182:15	<b>moose</b>	63:7,14
21	75:22,23	<b>monitor</b>	61:21	107:25
127:6,11	102:7	57:18	64:9,13	206:19
129:20	125:20	<b>monitored</b>	70:12	207:18
130:13	126:13,1	164:3	130:21	209:6
137:13	5 127:16	<b>monitoring</b>	216:17,2	212:1,10
138:8,9	129:9,21	15:19	5	,14,17,2
139:18,2	,22,23	16:11	217:5,10	1 216:15
5	132:22	38:16,22	,19,20,2	233:20
148:9,25	133:25	50:3,5	2	234:19
150:9	135:16,1		218:3,14	<b>mosaic</b>
183:20	8 150:19		,18,19,2	63:25
	198:9			

<b>mostly</b>	208:15	64:9	17:7	79:10
15:8,22	<b>moves</b>	89:14	87:13	165:5
16:8	77:22	90:17	88:17	212:1
25:13	119:25	91:2	97:7	229:13
26:23	120:9	216:18	152:9	<b>necessary</b>
34:11	201:14	217:6,10	153:8,9,	9:6
35:5,6	<b>moving</b>	,16	13,22	181:15
46:10	36:19	218:3,14	158:22,2	<b>neg</b> 111:14
167:19	101:17	,18,22	5 159:8	214:5
<b>mother</b>	109:15	219:10,1	168:25	<b>negative</b>
151:5	118:5,15	3	169:3	61:19
<b>Mountain</b>	211:9	<b>muskox</b>	175:13	82:3
5:11	245:4	64:13	241:7	86:6,12
<b>mouth</b>	250:14	70:13	<b>national</b>	<b>negligible</b>
140:1	<b>mu</b> 13:14	76:13	167:22	28:24
<b>mouthful</b>	<b>Mulders</b>	77:4	243:22,2	29:16
108:13	3:13	130:21	4	65:23
<b>move</b> 37:5	<b>multi</b>	216:25	<b>Nations</b>	66:17
60:6	175:17	<b>mustard</b>	87:1	67:14
71:12	198:5	79:4	156:9	103:15
117:14	<b>multi-part</b>	116:10	164:23	111:14
121:5	49:14	<b>MVEIRB</b> 2:2	180:17	179:15
142:12	<b>multiple</b>	5:18	231:8	214:6
153:22	27:17	190:12	<b>Nation's</b>	216:5
159:12	62:1	240:18	89:17	<b>nest</b>
202:12	69:8	<b>myself</b>	<b>natural</b>	221:20
206:9	72:3	89:6	39:23,25	222:5
218:21	81:14	204:17	40:2	224:8
233:3	119:24	210:10	62:15	225:3
<b>moved</b>	129:16	<hr/>	69:2	244:24
35:24	209:19	N	73:13	245:13,1
153:20	211:3	<b>nagoon</b>	127:17	7
<b>movement</b>	212:4	98:3	128:9	<b>nesting</b>
110:2,8	214:17	<b>name's</b>	130:4	220:2
123:18	225:13	60:14	162:11	221:17,1
232:12	<b>muscle</b>	137:5	247:3	9,23
<b>movements</b>	150:10,1	<b>narrow-</b>	<b>nearest</b>	222:9
62:20	7,20	<b>leaved</b>	209:21	223:15,2
109:21	<b>mushrooms</b>	98:7	211:14	1 245:18
110:5	180:13	101:10	<b>necessaril</b>	<b>nest</b>
118:3,8	<b>musk</b> 61:21	<b>nation</b>	y 23:13	221:16,2
122:2,6		10:1,3,4	31:16	4 222:1
				225:7,9

245:3	,14	31:13,20	112:24	173:8
<b>net</b> 132:3	<b>noise</b>	154:22	115:6	<b>numerous</b>
193:7	11:2,3,8	<b>northeast</b>	163:15	73:12
<b>nice</b> 40:24	70:9	15:9	166:12	148:12
<b>NICO</b> 182:2	112:20,2	63:20,21	206:19	<b>Nunavut</b>
<b>Nicole</b> 2:4	5	<b>northern</b>	<b>noted</b> 38:2	162:25
164:9	113:1,4	10:4	56:10	182:5,6,
<b>night</b>	118:5	72:7	103:19	25
242:21	171:15	109:22	169:10	186:24
<b>nine</b> 157:8	218:7,8,	170:5	<b>notes</b>	<b>NWT</b> 10:1
202:10,1	10	222:3	160:17	58:18,19
3 214:11	<b>none</b> 99:16	<b>northwest</b>	161:17	,24
215:21	<b>non-linear</b>	10:6	<b>nothing</b>	175:3
216:11	161:20	17:6	167:20	220:20
237:16	<b>non-</b>	31:11	<b>notice</b>	241:12,1
<b>nineteen</b>	<b>natives</b>	36:14	52:18	8,23
12:5	99:25	37:7	<b>noticed</b>	<hr/>
123:19,2	<b>nonresiden</b>	39:10,16	25:10	O
1	<b>ts</b>	59:8,10	80:23	<b>02</b> 27:17
<b>ninety-</b>	131:10	70:1	149:17,2	<b>objective</b>
<b>five</b>	<b>non-road</b>	97:16	2 151:9	67:18
191:19	17:22,24	117:5	<b>novel</b> 73:9	238:1
<b>ninety-</b>	<b>nontraditi</b>	162:25	123:14	<b>objectives</b>
<b>four</b>	<b>onal</b>	188:7	210:1	17:8
120:22	87:23	234:9	<b>November</b>	<b>observatio</b>
<b>ninety-two</b>	88:6	244:3	1:23	<b>n</b> 115:12
217:17	226:4	<b>notable</b>	<b>NOx</b>	214:20
<b>NIRB</b>	<b>nor</b> 39:16	10:7	51:15,18	<b>observatio</b>
186:25	<b>Nora</b> 5:4	<b>note</b>	,21	<b>ns</b>
<b>nitrogen</b>	<b>north</b> 4:20	9:1,14	<b>np</b> 2:12,18	106:13
15:23	10:2	10:12	3:2,4,6	151:15
22:1	15:8	11:3,18	4:3,4,6,	214:22
33:4	16:1	14:5	7,10,12,	217:12
<b>NO2</b> 16:13	64:2,3	31:15	18,20,25	<b>obvious</b>
22:1	88:23	61:10	<b>NPMO</b> 4:3	102:13
32:7	157:11,1	63:17,18	<b>NS</b> 5:9	161:25
33:4,14	9 180:15	65:21	<b>NT</b> 1:22	250:6
39:12	213:9	95:19	<b>nu</b> 64:1	<b>obviously</b>
<b>nodding</b>	242:4	96:3	<b>numericall</b>	51:2,13
195:5,11	<b>north/</b>	97:10	<b>y</b> 74:25	78:11
	<b>south</b>	99:2		167:8
		101:13		
		104:10		

<b>occ</b> 35:10	<b>odours</b>	104:20	<b>one's</b> 84:6	<b>l</b> 13:15
<b>occasion</b>	62:22	121:11	97:21,22	163:12
78:17	<b>offended</b>	124:17	108:13	174:3,8
<b>occasional</b>	41:8	129:1	155:23	<b>operations</b>
60:8	<b>offer</b>	130:17	<b>ongoing</b>	54:4
<b>occasional</b>	153:8,10	134:17	30:14	56:4
<b>ly</b> 16:15	204:5	135:1	37:23	79:11
<b>occupancy</b>	<b>office</b>	143:15	38:5	112:25
174:10	10:5	145:2	40:1	113:1
221:24	60:16	152:6	61:3	188:16
222:6	<b>officers</b>	155:10,1	<b>online</b>	218:8
<b>occur</b> 35:4	188:16	6 159:23	85:10	228:7,14
62:23	<b>officially</b>	164:14	<b>Ontario</b>	<b>opinion</b>
65:13	10:10	167:18	244:5	183:6
66:8	<b>offline</b>	168:10	<b>onto</b> 32:13	<b>opinions</b>
68:1	52:1	169:9	48:19	183:9
78:15	<b>offsite</b>	173:20	171:8	<b>opportu</b>
132:13	26:6	178:18	197:9	196:7
179:18	<b>oh</b> 9:5	181:7	<b>oops</b> 217:3	<b>opportunis</b>
182:24	52:7	193:10	<b>op</b> 29:1	<b>tically</b>
<b>occurred</b>	54:24	195:9,12	<b>open</b> 91:17	221:18
35:22	80:16	,17,20	131:7	<b>opportunit</b>
115:7,11	81:4	199:9	163:12	<b>ies</b>
147:14	92:14	206:8	178:9	87:22
214:13	146:24	207:1,7	215:12	148:12
<b>occurrence</b>	200:7	228:16	223:20	181:15
78:20	219:14	231:10,1	<b>opening</b>	226:3
98:20	220:23	4 233:13	168:13	<b>opportunit</b>
171:21	225:12	234:20	<b>operated</b>	<b>y</b> 9:18
<b>occurring</b>	231:14	236:8	15:19,21	158:24
15:14,17	<b>okay</b>	238:12	,24	165:12,1
23:16	12:1,11	245:19	<b>operating</b>	4 168:5
<b>occurs</b>	49:12	<b>Olivier</b>	51:24	<b>opposed</b>
178:23,2	53:6	4:10	78:11	45:13
4	56:22	<b>omission</b>	147:5	203:15
<b>Oceans</b>	60:13	29:15	<b>operation</b>	<b>opposite</b>
10:1	82:12,22	<b>ones</b> 61:7	29:1	195:14
<b>October</b>	85:11,18	106:2	98:11	<b>option</b> 9:5
143:24	,21 86:2	128:12	161:8	<b>orange</b>
<b>odd</b> 55:3	90:5	155:2,13	228:6	69:16
	91:14,15	,18	<b>operationa</b>	215:19
	,25	157:7		
		165:2		
		169:5		

216:12	<b>outlined</b>	129:22	<b>p.m</b> 92:5	203:17
<b>order</b>	31:16	<b>overestima</b>	167:15,1	219:20
29:17	34:4	<b>te</b>	6 250:19	227:20
51:3	153:12	135:20	<b>pa</b> 99:7	231:13
247:14	<b>outlines</b>	<b>overestima</b>	116:22	249:13
<b>organic</b>	35:20	<b>ted</b> 74:2	214:15	<b>panel's</b>
22:9	<b>outlook</b>	129:23	<b>pace</b>	148:19
55:10	202:18	<b>overlap</b>	116:22,2	235:17
56:20	<b>output</b>	132:5	3	<b>paper</b>
<b>organizati</b>	126:9	<b>overlay</b>	<b>package</b>	75:13
<b>on</b> 9:23	127:23	76:5	90:20	117:11
226:14	128:2	78:23,24	125:20	173:23
<b>organizati</b>	<b>outputs</b>	213:16	<b>page</b> 6:2	175:5
<b>ons</b> 9:19	170:4	<b>overlying</b>	7:2	176:13,1
10:7	<b>outside</b>	113:21	92:18	6,17
<b>oth</b> 69:10	23:18	<b>overly</b>	105:6,13	180:8
<b>others</b>	24:22	139:21	,16,17	<b>papers</b>
78:10	33:18,24	<b>overnight</b>	106:20	125:21
246:20	39:13,17	188:19	107:16	<b>par</b> 38:21
249:2	66:13	203:20	108:16	199:3
<b>other's</b>	78:21	<b>overtop</b>	132:10	<b>parallel</b>
179:7	90:12	111:24	<b>PAH</b>	211:8
<b>ourself</b>	103:22	<b>owl</b>	48:16,17	<b>parameter</b>
146:5	131:24	220:16,1	,20,22	32:18
<b>outcome</b>	152:19	8 222:3	<b>PAHs</b> 22:10	202:5
14:18	171:22	<b>ox</b> 61:21	32:8,17	<b>paraphrase</b>
104:7	175:1	64:9	<b>PAI</b> 32:25	144:2
125:13,1	213:5	89:14	33:4	160:11
4 198:18	<b>outstandin</b>	90:17	50:7	249:14
204:24	<b>g</b> 236:10	91:3	51:14	<b>paraphrasi</b>
<b>outcomes</b>	<b>ov</b> 199:11	216:18	103:20,2	<b>ng</b> 167:7
125:12	<b>overall</b>	217:6,10	1,23	180:20
198:9	12:18	,16	<b>Panayi</b>	<b>pardon</b>
<b>outfitters</b>	13:7	218:3,18	2:23	151:5
73:20	14:11	<b>oxen</b>	232:17	<b>partially</b>
<b>outline</b>	15:7	218:14,2	234:1,2	38:22
12:12,25	16:11	2	243:18	<b>participan</b>
56:15	23:21	219:10,1	<b>panel</b> 8:11	<b>t</b> 10:14
108:17,2	24:8	3	91:18	190:22
5	25:4	<hr/>	147:24	<b>participan</b>
	34:23	<hr/>	148:6,10	<b>ts</b> 5:16
	<b>overest</b>	<hr/>	160:5	

9:19	45:9	4:15	103:17	51:9
11:19	<b>parties</b>	53:25	108:3,6	53:4
105:8	10:11	54:1	131:3	54:21
193:25	56:1	147:9,10	177:19	58:9
<b>participat</b>	59:22	,11	220:10	73:3
<b>e</b> 10:13	80:3	148:22	230:14	80:5
<b>participat</b>	155:3	150:25	<b>pathways</b>	82:15
<b>ing</b>	167:7	244:18,2	61:24	84:25
160:6	189:16	0,21	65:1,10,	88:10
190:21	205:16	<b>pass</b>	12,14,18	92:20
229:25	228:18	230:14	,21	95:4
230:1	238:2,16	<b>past</b> 21:19	66:8,12,	104:18
233:18	239:5,7,	108:8	24	115:24
<b>participat</b>	8 240:20	166:25	67:13,17	121:8
<b>ion</b>	250:10,1	192:15	,21 68:9	128:14
236:13	3	193:6	69:5,7,2	134:25
<b>particular</b>	<b>partly</b>	210:10	0 96:5	139:5,12
16:2	59:22	216:2	99:8	145:25
19:16,24	237:9	219:11	160:20	146:21
23:15	<b>partur</b>	222:17	161:4	153:3
27:13	197:15	229:19	<b>patience</b>	154:17
31:8	<b>parturitio</b>	<b>patches</b>	135:5	156:21
148:9	<b>n</b> 118:19	64:6	227:2	164:12
153:17,1	119:3	<b>Patenaude</b>	<b>Patrick</b>	170:13
8 220:10	120:16	3:10	5:11	173:10
<b>particular</b>	124:7,10	<b>path</b>	<b>Patrick's</b>	183:12
<b>ly</b>	128:23	121:14,1	5:14	184:1
144:13	129:4,5	5,19	<b>patterns</b>	189:3
175:4	139:1	200:11	110:2,8,	191:6
241:13	195:2	201:23	15	211:17
<b>particulat</b>	196:14,1	<b>pathetic</b>	<b>Paul</b> 3:2	226:25
<b>e</b> 16:15	8	120:8	5:18	227:9
22:3,4	197:7,15	<b>paths</b>	<b>PAUSE</b>	228:22
30:18	,16	110:11	11:15	230:9
46:19,20	198:11,1	120:20,2	14:25	232:15
48:5,16,	5,17,18,	2 200:9	16:19	233:24
18,19	24	<b>pathway</b>	18:24	235:24
49:3	199:4,7	66:20,21	22:13	236:6,16
102:15	<b>party</b>	67:2	30:24	,23
<b>particulat</b>	9:15,16,	68:10	34:18	240:6
<b>es</b>	20,25	96:6	37:16	243:16
22:6,7	10:12	99:13,14	45:6	245:8
	<b>Pasquayak</b>		50:12	<b>PDF</b> 9:3
				<b>peaked</b>

191:19	9 213:17	141:21,2	222:1,9	5,8
<b>peer</b>	217:18	3	244:25	184:14
125:21	219:9	143:8,9,	<b>perfect</b>	191:25
138:15	230:19	14,19,21	197:8,21	192:2
142:13	<b>perceive</b>	,25	,23	212:9,16
170:23	187:4	144:3,10	<b>perfectly</b>	226:7
171:7	<b>perceiving</b>	,11,20	144:19	<b>permafrost</b>
199:21	172:2	145:6	<b>perhaps</b>	66:1
<b>pen</b> 181:16	<b>percent</b>	146:4	10:9	<b>permanent</b>
<b>people</b> 9:1	21:10	175:19	59:24	74:20
22:8	30:4,14	176:4,11	104:15	122:23
52:17	53:12,14	,14,18,2	175:16	<b>permit</b>
78:8	58:23	2 177:3	186:18	74:17,18
85:10	75:4	179:1,14	195:25	78:2,3
86:12,20	77:14	,15,16,2	<b>perimeter</b>	79:9,13
91:20	79:4,6	0,21	23:23	115:19,2
93:15	84:13	181:25	35:11	0 191:24
133:8	85:2,4,6	182:22	36:10	192:1,10
152:15,1	,12,13	214:6,8,	47:18	,11
7 156:7	87:4,5,8	9	221:12	<b>permits</b>
158:7	94:7,15,	215:3,6,	<b>perimeters</b>	73:16
166:16	18,22	7,8,14,1	221:10	173:5
167:20	101:1,2,	7	<b>period</b>	<b>persi</b> 87:6
193:20	3,5,22	216:5,10	6:9,13,1	<b>persist</b>
194:1	102:2	219:9,15	7,21	87:6
199:13	104:3,6	,16	40:9	<b>persistence</b>
205:7,10	111:6,12	222:16,1	43:2	<b>e</b> 61:19
207:3	113:13	9	78:4	68:13,23
211:7	114:19,2	223:6,7,	79:10,13	72:2
229:10	3,24	25	,24	82:4
238:15	115:2,4	224:3,15	113:16	83:4
242:9	116:7	,18	118:1	86:6
<b>people's</b>	120:18	<b>percentage</b>	120:25	88:1
86:16	124:8,11	21:11	121:1,21	94:17
<b>per</b> 62:2	126:10,1	53:9	122:20	99:4
107:12	1,12,23	200:21	128:10,2	125:5,8
111:12	127:10,1	237:2,3,	5	132:18
120:20	3,19,20	5,9	129:3,8	133:21,2
123:22	128:12	<b>perception</b>	130:14	3 164:17
130:13	129:11	172:1,8	133:4	165:6
164:20	136:9,15	<b>percolatio</b>	147:21	179:12
165:6	,18	<b>n</b> 176:19	161:8	215:24
212:11,1	139:19	<b>peregrine</b>	174:3,4,	
	140:3	220:15		

225:25	13:15	158:16	7 247:7	88:13
<b>persistent</b>	<b>philosophy</b>	<b>piles</b>	<b>plans</b>	92:1,13,
55:10,22	142:21	132:16	49:15	18 102:3
56:3,20	<b>phone</b> 55:4	<b>pilot</b>	50:23	104:21
83:19	<b>phonetic</b>	210:1	51:1	105:14
86:18	89:2	<b>pinch</b>	108:23	135:2
<b>persists</b>	158:8	246:1	109:1	136:23
164:21	173:23	<b>pink</b>	153:25	142:25
<b>perspectiv</b>	174:2	102:18	<b>plant</b>	151:24
<b>e</b> 27:16	176:15	<b>pit</b> 25:17	66:25	166:3,8
81:15	182:8	163:12	96:11,23	168:14
85:7	188:21	<b>pits</b> 42:2	97:7	175:12
87:7,13,	248:12	73:20	98:19	178:15
15	<b>photo</b>	<b>placed</b>	99:5	193:23
203:13	214:21	26:14	152:15	194:1
<b>pertaining</b>	<b>photograph</b>	29:3	153:1	195:18
145:10	64:7	<b>places</b>	<b>plants</b>	196:8
<b>Pet</b> 231:11	211:22	124:15	66:2,19	200:5
<b>Pete</b>	<b>pHs</b> 48:11	244:4	73:20	204:25
210:8,10	<b>physical</b>	<b>plan</b> 25:10	96:19	206:16
211:19,2	47:17	26:4,5	97:5	207:1,2
2	65:25	38:14	98:17	226:13
<b>Peter</b>	66:1,2,8	40:6	99:6,20	235:19
230:12	,14	49:17,23	100:24	236:21
231:3,5	67:23	,25 50:3	101:4,6	<b>plot</b> 221:1
<b>Petr</b> 5:20	<b>pick</b> 26:19	56:7	152:12,1	<b>plots</b>
164:6,14	<b>picked</b>	58:5	6,18,20,	40:23
165:16,2	47:22	108:20	22 153:1	96:9
5 166:19	205:8	146:13,1	154:2,3	220:25
168:2,18	243:20	4 246:19	246:7	<b>plotted</b>
,22	<b>picking</b>	247:10,1	<b>play</b> 158:4	110:9
230:1	23:24	1	<b>ple</b> 109:12	<b>plow</b> 206:6
231:11,1	<b>picture</b>	<b>planes</b>	<b>please</b>	<b>plowing</b>
2 233:14	24:8	242:15	9:11	206:9
236:9,19	206:17	<b>planned</b>	49:12	<b>plus</b> 15:10
247:4	210:9	11:2	52:19	76:17
<b>pH</b> 48:6	211:10,1	109:11	53:24	110:21
56:19	1 222:8	<b>planning</b>	56:16	112:9
<b>phase</b> 9:17	244:24	49:22	60:7	114:3,4
228:6	<b>pieces</b>	50:5	68:7	136:6
<b>phases</b>		246:14,1	80:8,9,1	213:21
			3,14	<b>PM</b> 16:3,13
			84:23	20:1



27:17	111:1	<b>pointer</b>	<b>ponder</b>	138:19
32:8,16,	119:17,1	33:19	166:20	<b>Porten</b>
17 36:21	8 122:16	<b>pointing</b>	<b>ponds</b>	182:18
37:24	125:18	7:9	228:5	<b>portion</b>
46:18	129:19	98:12	<b>pooling</b>	54:18
53:12	135:16	110:12	174:8	106:8
<b>PM-10</b> 22:4	136:12	164:19	<b>poor</b> 75:25	<b>position</b>
<b>PM-2</b> 34:22	142:8	185:7	77:2	184:10
<b>PM-2.5</b>	150:12,1	186:7	116:10	189:10
22:2	3 153:19	<b>points</b>	<b>POPs</b> 55:19	<b>positioned</b>
34:22,23	162:21	39:19	56:9,16,	211:8
35:15,17	164:5,15	68:21	18	<b>possibilit</b>
39:14	165:6	114:17	<b>population</b>	<b>y</b> 55:18
45:10,12	168:1	159:14,1	68:14,23	<b>possible</b>
,25	170:19	5 165:3	70:16	106:4
46:2,5,9	176:23	168:1	83:16,19	107:12,2
,10	177:8	179:5	86:10	4 133:24
53:9,14,	178:25	225:8	87:4	140:19
17,20	180:6,19	230:3	88:1,2	166:7
<b>po</b> 62:19	185:13	<b>poll</b> 54:6	108:14	167:4
<b>poi</b> 202:11	191:16,2	<b>pollutant</b>	120:8	185:14
<b>point</b> 8:20	2	31:8	124:20,2	197:12
14:7	194:13,2	<b>pollutants</b>	3	220:6
19:7	4	27:12,15	125:8,16	<b>possibly</b>
26:12	195:2,3	,17	131:2	84:21
30:12,17	196:6,14	54:2,6	134:4	235:18
32:21	,23	55:11	136:13	<b>post</b> 56:5
41:25	198:23,2	56:3,21,	162:4	67:4
42:3	5	23	165:7,22	117:25
48:24	202:10,1	<b>pollution</b>	178:20	143:24
57:15	3,21	39:22	179:10	<b>posted</b> 9:8
58:20	204:23	<b>polycyclic</b>	198:3	<b>posts</b>
66:18	212:11,1	22:10	215:23	210:12,2
67:12	8 213:3	<b>polygon</b>	<b>population</b>	3
71:17	214:3,10	70:20	s 66:25	<b>potential</b>
76:10	,11,15	<b>polygons</b>	72:2	19:25
80:20	215:16,1	72:9,10	83:6,16	29:18
85:11	7,20	97:19,20	87:16,17	32:17,18
92:23	216:11,1	98:8	119:8	,19
94:13,18	2 226:19	102:19,2	132:19	44:2,14
100:3,7	237:16	0	165:18	65:7
104:2	243:20		213:6	
105:17	247:18		<b>porcupine</b>	
	<b>pointed</b>			
	187:21			

67:22,25	62:15	235:16	38:11	218:8
68:2	<b>practitioner</b>	<b>predict</b>	93:19	<b>pre-existing</b>
96:1,21	<b>er</b>	33:15	132:19	13:13
99:10	229:20	55:21	145:17	100:19
103:19	<b>practitioner's</b>	140:17,2	<b>prediction</b>	<b>prefer</b>
108:2,17	<b>er's</b>	0	<b>s</b> 14:20	93:3,7
130:24	67:7	192:22,2	17:9	178:7
166:6	<b>pre</b> 168:4	4 194:18	23:18	238:18
170:3	224:1	197:12	25:8	<b>preferen</b>
171:17	<b>preamble</b>	<b>predictability</b>	26:16,19	93:10
179:19	164:9,15	130:10	,21	<b>preferred</b>
202:2	<b>preceding</b>	<b>predicted</b>	27:23	75:10,24
208:11	57:1	24:21	32:16	76:1
217:8	<b>precipitation</b>	30:19	34:9	93:11
220:1,3,11	15:11,15	32:10,16	35:5,6,1	107:6
221:20	,17	33:11,25	2,15	113:8,14
<b>potentiall</b>	<b>precipitations</b>	34:6,22,23	36:22	,20
<b>y</b> 84:11	15:14	36:5,15,20,23	38:17,19	114:11
87:10	<b>precision</b>	37:8	,20	116:4,13
106:8	130:11	39:9,12,14	39:15,20	143:23
107:7	<b>preconstruction</b>	62:8	47:15	206:2
108:10	174:2	66:10,16	48:8	208:23
120:7	<b>pred</b> 47:14	67:8	51:12	209:15
127:16	<b>predation</b>	103:9	55:12	213:10,24
129:20	220:4	112:21	62:4	214:4,7
130:8	232:12	113:12	68:1	215:2,4,25
172:16	<b>predator</b>	120:17	71:21	216:4,9
<b>power</b> 19:7	232:12	140:2	102:15,1	<b>preparation</b>
51:22	<b>predator-</b>	141:12	9 103:18	<b>n</b> 250:7
73:20	<b>prey</b>	144:22	113:4	<b>prepared</b>
145:21	108:2	162:14	125:16	236:11
<b>practical</b>	217:8	163:16	130:16	<b>presence</b>
47:2	<b>predicated</b>	218:6	146:10	118:6
<b>practice</b>	33:13,14	<b>predicting</b>	161:9	223:20
69:10	<b>predication</b>	140:22	180:1	<b>present</b>
<b>practices</b>	<b>ns</b>	144:19	183:21	192:15
13:17		<b>prediction</b>	207:23	193:5
38:24		23:14	212:21	216:24
55:14		32:12	225:21	230:6
212:24		36:5	238:16	
247:12			247:2	
<b>practising</b>			<b>predicts</b>	
			93:16	
			145:22	

<b>presentat</b> 10:25 <b>presentati</b> <b>on</b> 6:7,11,1 5,19 11:24 12:5,7,9 ,12,13 13:4,7,8 14:22 28:4 39:19 40:4,7,1 2,15,18 52:5 55:18 57:1,4 60:9,12 63:1 64:22 72:25 84:7 92:13 95:8,11, 15 104:23,2 5 107:1 133:10 138:10 141:2 143:19 155:24 157:24 159:18 169:10 206:10 207:5 208:8,21 209:3 216:21 237:4 239:12,2 5 246:5,10	<b>presentati</b> <b>ons</b> 11:7 54:16,19 238:4 239:3 240:22 250:7 <b>presented</b> 27:2 38:11 39:4 41:18 68:10 93:13 102:4 125:25 179:23 182:7 184:7 226:11,1 3 228:20 238:24 239:6,12 ,14 <b>presenter</b> 105:18 <b>presenters</b> 10:25 11:12 250:6 <b>presenting</b> 8:19 11:1,9 12:3 206:21 <b>pressure</b> 180:16 <b>presumably</b> 139:24 <b>presume</b> 83:18 <b>pretty</b>	79:17 123:14 170:1 204:18 206:17 249:23 <b>prevailing</b> 15:8 <b>previous</b> 42:7 50:17 69:3 73:7 123:22 127:8 134:7 212:6 219:11 222:17 224:2,22 225:6 <b>previously</b> 122:10 178:17 <b>primar</b> 16:8 <b>primarily</b> 86:8 215:24 217:10 <b>primary</b> 61:24 65:14 66:20 67:2,17, 21 68:10 69:7 96:6 108:3 161:3 177:19 <b>printed</b>	154:14 <b>prior</b> 9:12 92:12 99:23 115:7,11 214:13 <b>prioritize</b> 148:5 <b>pro</b> 32:9 207:24 <b>probabilit</b> <b>y</b> 78:19 95:24 118:20,2 2 171:21 174:10 197:18,2 2 <b>probably</b> 25:7 29:11,19 38:10 39:25 42:24 43:16 47:8 51:25 82:22 85:10 89:9 90:10 136:8 152:17 155:11 170:18 172:8 183:17 191:20 205:21 229:3 235:16 239:3,15 240:20	243:7 <b>problem</b> 165:19 <b>proceed</b> 91:12,19 92:13 93:23 104:11,2 1 135:3 195:6 <b>process</b> 46:21 51:1,6 56:8 153:17 177:21 182:2,17 185:12,1 4 250:14 <b>processed</b> 161:5 163:21 <b>Processing</b> 72:1 <b>produce</b> 80:25 <b>produced</b> 183:18 <b>producing</b> 66:13 117:23 118:22 197:18,2 3 <b>production</b> 20:23 21:17 25:2 119:4 120:4 124:5 128:23
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

<b>productive</b>	11	77:11	217:6	182:20
181:9	24:7,11,	78:20	218:6	<b>promoting</b>
<b>profile</b>	19,22	81:25	219:8,12	62:15
62:19	25:2,3,1	89:24	,16	<b>properties</b>
<b>profiles</b>	1	92:24	222:14,1	103:8
48:12,13	26:24,25	93:1	9	<b>proponent</b>
<b>profound</b>	29:1	94:21	223:5,25	180:6
79:14	31:25	97:15	224:3,14	<b>proponent'</b>
127:6	32:3,5	98:5,11	,21	<b>s</b> 161:12
<b>program</b>	33:18,22	99:3	225:2,10	<b>proportion</b>
38:16,22	34:8,15	100:22	,23	59:3
51:5	35:1,11,	103:4	228:11	<b>propose</b>
58:6	20,25	109:17	231:18	123:10
145:9,13	36:3,10,	110:6,7	245:4,6,	185:2
,20	16	112:9,11	18	239:19
146:15	37:5,9	,22	247:8,10	<b>proposed</b>
210:2,6,	38:10,15	114:4	<b>projected</b>	59:2
22	,21	117:1	30:21	106:23
211:21	39:6,14,	120:17	<b>projector</b>	108:12,2
241:21	17	125:4,6	36:3	2 154:25
<b>programs</b>	40:7,20	126:6	<b>projects</b>	207:24
145:16	46:6,23	130:24	22:9	<b>proposing</b>
146:10,1	47:9,12,	131:17	48:3	169:24
6 210:19	18,19	132:1,14	53:9	<b>protect</b>
<b>progressiv</b>	48:1	,16	182:6	38:25
<b>e</b> 62:16	49:24	133:14,1	183:22	62:11
108:23	51:17	9 134:9	184:8	145:19
<b>prohibited</b>	54:3,7	135:10,1	186:23	<b>protected</b>
131:11	57:14	8,21,24	224:16	180:17
230:20	58:14	136:6,16	249:21	<b>protecting</b>
<b>project</b>	59:2	140:19	<b>project's</b>	17:3
1:7 9:17	60:16	144:19,2	12:4	<b>protective</b>
12:21,24	61:18	3 145:19	24:5,24	38:25
13:13	63:19,23	149:9	53:12,14	<b>protocols</b>
14:2,13	64:2	158:2	59:11,14	222:7
15:4,6,7	65:19	159:3,19	137:1	<b>proven</b>
,16	66:8,11,	160:24	184:16	13:16
16:2,7,1	14,20	182:5,10	<b>project-</b>	38:24
0 19:3,5	67:24	,11,16	<b>specific</b>	212:23
20:9,12,	68:2,22	188:19	66:23	
14	69:1,19,	201:12	<b>promise</b>	
23:5,10,	25 70:8	206:18	227:17	
	72:18,20	212:10,1	<b>promising</b>	
	73:6	8,22,23		
	76:18	213:4,21		

<b>provide</b>	2	34:3	<b>qualit</b>	42:7
7:12	<b>provides</b>	35:3	15:18	44:2
13:7,14	21:24	36:25	<b>qualitativ</b>	47:15
17:9	61:14	70:3	<b>e</b> 108:5	49:16
24:8,21,	71:20	71:23	<b>qualitativ</b>	52:23
23	130:15	102:18,2	<b>ely</b>	53:24
32:10,12	143:11	1 201:8	108:5	56:7
50:4	180:1	<b>purpose</b>	<b>quality</b>	57:2,4,6
60:2	241:21	10:12	6:8	60:6
65:6	<b>providing</b>	31:7	11:24	66:3
68:21	24:2	47:13	12:2,4,1	68:18
94:1	250:10	116:6	6,17,18,	75:21,25
95:9	<b>province</b>	<b>purposes</b>	23	76:1
99:1	5:11	85:4	13:1,11,	77:1,2,4
106:1	70:19,20	<b>pursue</b>	14,20,24	,15 79:3
142:15	,21	180:22	,25	85:12
152:3	71:16,17	<b>pursued</b>	14:1,4,7	102:7
159:5	208:7	185:15	,10,11,1	105:10
166:8	<b>proximity</b>	<b>pursues</b>	5,17,18	107:6
170:9	201:12	236:12	15:3,19	112:18
177:7	202:13	<b>pursuing</b>	16:6,7,1	113:5,9,
185:22	207:25	181:15	4,23,25	23 115:9
186:11	<b>ptarmigan</b>	<b>pushed</b>	17:5,7,8	117:7,8
188:15	221:7	107:22	,12	143:22
203:21	<b>public</b> 9:9	<b>putting</b>	21:25	179:8
207:20	10:10	184:24	23:19	206:12
221:2	17:3	<b>PVA</b> 125:21	26:7	213:25
227:17,2	189:19	127:1,7,	27:15,16	216:8
2 236:3	232:1	21	,23	217:22
238:23	<b>published</b>	128:5,19	31:12,19	218:3
239:15	21:16	,20	,23	219:9,13
240:16	97:1	129:8	32:1,5,2	222:23
248:9	117:10,1	<b>P-value</b>	5	223:18,2
249:19	1	129:15	33:2,12,	1,24
250:8	122:10,1	<hr/>	17,23	224:5,16
<b>provided</b>	1 138:17	<b>Q</b>	34:1,7,1	,18,25
11:4	175:5	<b>quadruple</b>	0,24	<b>quantified</b>
14:8	248:12,1	237:21	35:2,18	90:21
33:1,5	4	<b>qual</b>	36:15,24	114:7
95:22	<b>purely</b>	237:20	37:7,22	200:19
166:11,1	87:15		38:14	<b>quantify</b>
5 207:11	<b>purple</b>		39:5,7,8	120:10,1
219:1			,11,16	1 200:20
225:20			40:5	202:7
226:20,2				

<b>quarry</b>	140:24	236:19,2	180:4	238:2
73:20	145:8,10	0 240:9	181:15,2	241:2
<b>quest</b>	146:12,1	241:24	1 188:3	244:6
132:25	9	243:19	189:22	247:17
148:23	147:9,12	244:19	193:11,2	250:12
<b>question</b>	,20,21,2	245:12,2	1	<b>quote</b>
6:9,13,1	3	4 246:3	194:5,14	190:23
7,21	150:9,24	249:5	202:25	192:17
40:9	152:9,24	<b>questionin</b>	203:14,1	<hr/>
42:22	153:25	<b>g</b> 194:11	9	R
44:1	154:12	<b>questionin</b>	205:17,2	<b>rabbit</b>
45:24	155:8	<b>gs</b> 49:11	2,24	89:14
48:15,21	156:12,1	<b>questions</b>	216:16,2	203:3
49:12,15	3 164:6	8:23	1 226:10	<b>radius</b>
,17,21	166:2	11:7	228:18,1	74:8
50:7,17,	168:17	12:9	9,25	<b>Rains</b> 3:20
23	169:7	28:3,7,8	229:24	<b>raise</b>
52:3,24	170:16	40:14,16	231:16	164:6
53:1,8	171:19	,25	233:15	188:21
54:1,14	173:14	41:5,15	234:3	<b>raised</b>
55:5,6	175:16	50:16	236:10,1	64:21
57:10,16	176:6	52:6	1 241:5	145:7
58:12	181:18	59:5	244:17	168:1,2
59:24	183:15	64:23	245:20	<b>raising</b>
64:21	187:7,22	79:21	<b>quick</b> 41:6	161:24
65:15	188:8	80:1,3,1	<b>quickly</b>	231:16
67:5,8	190:16,2	1 81:18	9:14	<b>RAMAS</b>
68:15,22	0 191:9	83:12	53:23	125:20
79:24	192:14,1	84:1,5	106:4	<b>Ramsey</b>
80:23	6,19	85:22	195:17	5:23
81:4,5,2	193:22	91:7	199:10	11:21
4 83:24	194:2,9	104:12,1	209:8	<b>ran</b> 122:21
85:8	195:25	5	<b>quite</b>	124:19
87:25	196:21	133:1,6,	41:25	126:13
88:9	197:5	7 141:17	63:13	128:3,20
105:16	198:20	145:1	69:23	135:18
123:8,15	199:15	147:8	71:6	147:12
133:4,11	204:19	151:19	142:2	<b>randomly</b>
,13	226:7,14	155:14,1	144:12	211:6
134:1,7,	,17	7	148:8	224:10
11,18,22	227:25	160:4,11	149:14	<b>range</b> 32:7
135:7,9,	230:12	168:8	164:23	
14	232:8,19	169:1,4	169:23	
136:20	233:17	175:9	196:3	
138:13	234:4,21			

72:8,11	189:23,2	30:19	165:12	40:22
75:4	4	102:21,2	166:15	47:2
84:13	<b>raptor</b>	4 107:20	182:10	60:19,21
98:18	222:8	125:10	207:5	83:5
106:9	223:15	127:15	212:5	90:13
107:10		128:10,2	215:18	107:22
108:10	<b>raptors</b>	3 139:1	234:2	113:23
111:2,12	64:10	159:19	247:14	124:13
114:12	70:13	212:21	<b>reach</b>	135:16,1
116:5	217:2	234:19	113:2	9 147:21
118:10	221:16	<b>rath</b>	218:9,10	187:18
130:4	224:6	185:13	<b>reached</b>	188:8
131:24,2	225:17	<b>rather</b>	195:3	193:15,2
5 132:4	<b>rare</b>	18:21	<b>reader</b>	1 194:9
176:14	96:19,20	55:17	146:6	224:25
178:18	,23 97:7	57:6	<b>reading</b>	225:1
191:13	101:6	81:2	65:4	233:8
208:4	152:20	85:23	<b>readings</b>	250:13
237:6	<b>rarely</b>	133:22	16:15	<b>rearing</b>
<b>ranges</b>	192:5,6	170:5	<b>ready</b> 41:6	220:2
15:9	<b>raster</b>	<b>ratings</b>	135:2	<b>reason</b>
70:15	75:12	21:4	167:22	30:5
72:4,6,1	80:23	166:9,10	196:3	50:9
2 106:22	<b>rate</b>	<b>ratio</b>	206:9	63:11
110:1,25	20:22,23	53:16,18	<b>real</b> 24:18	71:8,10
111:5,7	25:2	<b>rationale</b>	30:2	81:9
113:12	77:22	194:14	120:12	89:16
127:17	102:22	249:19	182:15	105:1
208:3	118:20	<b>ratios</b>	187:9	117:17
<b>rangifer</b>	124:7	45:20	232:20	137:14
172:19	129:7	<b>ravens</b>	234:11	140:15
<b>ranging</b>	134:1,9	243:1	<b>realistic</b>	145:7
73:18	136:3	<b>re</b>	43:16	161:25
113:12	161:19	6:8,12,1	<b>reality</b>	215:25
<b>rank</b> 76:21	180:18	6,20	27:5	224:6
<b>ranking</b>	196:18	11:24	182:22	<b>reasonable</b>
76:23	197:7,15	51:12	192:3	45:2
96:21	,17	60:12	<b>realize</b>	137:16
<b>ranks</b>	198:1,2,	95:11	45:15	184:8
96:25	6,12,15,	100:8	<b>really</b>	223:14
213:15	17,18,24	104:23	23:24	<b>reasonably</b>
<b>Ransom</b> 3:9	199:4,7	120:8		7:5
188:5,6	212:17			108:9
	<b>rates</b> 27:6			182:11

184:17,1	<b>receptors</b>	189:19	<b>reduced</b>	108:17
8,21	26:14	204:12,1	79:1,3,5	112:4,19
185:5	<b>recessing</b>	4,24	83:17	114:1
186:2	52:12	209:23	86:16	115:1,3
187:5	92:4	212:25	87:5	116:4
219:11	167:15	248:6,7	154:21	117:18,1
222:18	<b>reclaimed</b>	<b>recorded</b>	165:8,13	9 124:21
249:20	246:21	64:8	197:24	125:1,13
<b>reasoning</b>	<b>reclaiming</b>	97:11	198:11	126:9
140:4,5	246:24	99:17	223:24	127:22,2
<b>reasons</b>	<b>reclamatio</b>	170:22	<b>reduces</b>	3 130:23
67:11	<b>n</b> 62:16	217:16,1	119:3	145:6
99:14	98:22	9,21	195:1	147:13,2
102:13	108:24	247:25	<b>reducing</b>	4 148:17
138:1	246:6,13	<b>recover</b>	62:4	151:23
141:13	,15,19	87:10	113:23	152:3
<b>reassemble</b>	247:8,10	134:5	213:1	153:16
166:21	,12,14	<b>recovery</b>	<b>reduction</b>	163:3
<b>reassessed</b>	<b>recognize</b>	133:15	120:4	199:5
249:10	151:1	134:1,9	165:22	207:12,1
<b>recall</b>	228:25	136:3	198:15	6 213:23
58:23	<b>recollecti</b>	<b>recreation</b>	229:8	217:4
149:13	<b>on</b> 46:2	120:8	<b>refer</b>	219:19
248:20	<b>recommenda</b>	<b>recruitmen</b>	135:25	222:20,2
249:2	<b>tion</b>	<b>t</b> 178:21	144:4	5 224:4
<b>Recap</b> 6:5	186:25	<b>rectangle</b>	244:11	225:19
<b>receive</b>	<b>recommende</b>	69:16	<b>reference</b>	226:23
103:23	<b>d</b>	<b>rectangula</b>	12:15	235:11
190:5	103:23,2	<b>r</b> 47:3	13:10,18	248:6,7,
247:14	4	176:21	44:4	11
<b>receiving</b>	<b>reconaisa</b>	<b>redo</b> 104:1	59:9	<b>referenced</b>
32:20	<b>nce</b>	183:2	60:8	175:24
56:23	96:14	<b>reduce</b>	62:3	176:7
57:6	<b>reconcile</b>	37:25	63:13	<b>references</b>
190:4	7:3	62:22	67:7	151:18
<b>recently</b>	185:4,24	94:21	70:4,23	173:18
134:3	<b>reconvene</b>	138:23	71:19,23	240:17
142:24	92:1	198:5	76:15	<b>referred</b>
217:14	<b>record</b>	209:1	77:15	148:7
<b>receptor</b>	52:20	217:9	83:10	231:8
26:12,15		222:15	95:22	239:25
			105:2,3,	<b>referring</b>
			24 106:5	69:6
				90:4



174:12	44:6	86:13	155:23	39:23
179:22	69:11,13	<b>regulated</b>	<b>relationsh</b>	147:25
<b>refers</b>	71:8,12	131:10	<b>ip</b>	<b>relevant</b>
144:5	96:18	230:19	118:24	12:15
226:21	100:15	<b>regulation</b>	119:2,6,	13:11
243:22	110:3,5	17:18	14,16	61:5
<b>refine</b>	174:20	42:25	124:9	71:21
38:7	184:9	<b>regulation</b>	127:11	74:21
<b>reflect</b>	212:5,7,	<b>s</b> 17:18	129:4	130:15,2
148:14	13 213:8	42:13,15	138:14,2	0 171:1
166:9	<b>regional</b>	<b>regulators</b>	0,24	225:20
<b>reflected</b>	31:19	46:13	196:17,1	235:13
41:22	69:10	<b>regulatory</b>	9 199:8	<b>reliable</b>
<b>reflects</b>	70:2,16	153:17	<b>relationsh</b>	67:25
183:3	71:24	<b>reins</b> 8:12	<b>ips</b>	<b>relied</b>
<b>regard</b>	76:13	<b>reiter</b>	67:20	157:12
57:19	85:6,15	31:18	217:8	<b>relinquish</b>
<b>regarding</b>	90:8,17	<b>reiterate</b>	<b>relative</b>	<b>ing</b> 8:12
48:21	94:23	31:19	58:14	<b>reluctantl</b>
50:23	119:12	<b>rel</b> 102:1	90:16	<b>y</b> 8:12
53:8	196:19	<b>rela</b> 101:7	100:6,23	<b>rely</b>
54:2	217:13,2	<b>relate</b>	,24	152:15
56:22	3 218:25	122:6	101:8,9	247:2
58:13	220:14	<b>related</b>	102:1	<b>rem</b> 176:23
65:16	221:3,23	19:24	107:4	<b>remain</b>
164:16	222:2,10	23:3	112:15	103:11
188:3	224:10,2	35:9	123:24	104:3
189:15	2 225:4	46:19	161:15,1	132:9,11
245:25	237:3,6,	49:4,8	9 163:10	<b>remainder</b>
<b>regards</b>	7,10,13,	58:25	222:13	238:17
51:12	17 245:2	61:15	224:3	<b>remained</b>
100:10	<b>regionally</b>	128:22	<b>relatively</b>	77:18
136:6	175:3	130:25	126:18	<b>remaining</b>
137:23	<b>regions</b>	133:25	183:1	83:17
141:20	213:8	174:19	189:7	87:5
194:11,1	<b>registry</b>	207:19	217:19	175:9
4	9:9	222:24	<b>release</b>	<b>remains</b>
<b>region</b>	10:10	<b>relation</b>	26:17,18	44:9
12:22,25	244:13	119:5	<b>released</b>	86:11
14:2	<b>regs</b> 42:16	138:14	23:9	87:9
15:4,20	43:7,11		25:24	116:13
16:6,17	<b>regular</b>		26:2	
	62:21		36:12	

127:19	<b>removed</b>	102:17,1	188:24	83:7
186:21	29:2	9,20	<b>rerun</b>	86:13
<b>remarkable</b>	<b>removing</b>	229:15	198:6	117:9
187:10	8:7	<b>representa</b>	199:6	164:25
<b>remember</b>	<b>renewed</b>	<b>tion</b>	<b>res</b> 174:12	165:9,12
116:8	115:20	77:14	<b>resampling</b>	,13,15
141:3	<b>re-</b>	92:24	56:8	208:24
149:14	<b>occurrin</b>	<b>represente</b>	<b>research</b>	213:14
154:5	<b>g</b> 63:8	<b>d</b> 37:10	71:7	223:10,1
187:18	<b>reopened</b>	<b>represents</b>	89:17	4
204:25	182:18	35:1,21	142:3	224:7,20
225:5	<b>rep</b> 176:10	72:10	172:19	<b>resources</b>
235:9	<b>rephrase</b>	75:15	<b>researcher</b>	86:14,16
247:20	195:25	85:13	119:21	145:20
<b>remind</b>	<b>repo</b>	93:7	<b>reserves</b>	166:17
57:25	200:14	102:21	117:21	188:10
93:15	<b>report</b>	128:7,8	120:3	203:17
189:15	13:21	<b>reproducin</b>	<b>residents</b>	226:5
<b>reminder</b>	129:14	<b>g</b> 117:23	131:10	<b>resp</b> 234:2
52:17	189:18	<b>reproducti</b>	<b>residual</b>	<b>respect</b>
<b>reminding</b>	248:8,11	<b>on</b> 68:19	65:23	7:4 51:5
9:10	,17	124:5,8	132:15	65:15
207:3	<b>reported</b>	<b>request</b>	160:18	67:5
<b>remote</b>	58:17,19	159:3,7	161:14	86:5
5:16	,21	184:13,2	162:18	144:6
11:19	100:9	5 238:22	<b>resilience</b>	185:5
55:17	127:9	<b>requests</b>	86:8,19,	186:1
74:12	164:3	8:25	24 87:16	187:23
78:12	176:11	10:13	88:1	235:18,2
105:8,19	212:13	227:13	<b>resilient</b>	1
144:13	215:18	<b>require</b>	83:6	<b>respo</b>
190:21	<b>reports</b>	167:7	86:11,19	124:1
193:24	59:6	<b>requiremen</b>	87:9	<b>respond</b>
206:10	157:21	<b>t</b> 13:22	<b>resolve</b>	92:16
236:13	<b>represent</b>	<b>requiremen</b>	187:17	134:14
<b>remotely</b>	33:22	<b>ts</b> 12:15	<b>resolved</b>	135:7,14
160:6	34:21	13:10	178:9	158:15
229:25	36:25	44:5	<b>resource</b>	167:23,2
<b>remove</b>	46:5	96:22	73:13	4,25
76:6	65:12	163:2	75:23	168:8,17
111:25	77:1,2	<b>requires</b>		,21
176:23				180:7
				196:4

203:1	34:11	<b>vegetati</b>	199:21	241:6,11
246:4	35:6	<b>on</b> 62:15	<b>ri</b> 75:16	,22
<b>responding</b>	38:4	247:11	<b>rich</b>	242:16
234:3	65:18,22	<b>re-</b>	89:12,18	243:4
<b>response</b>	66:5	<b>vegetati</b>	<b>richness</b>	244:23
50:16	79:4,6	<b>on/</b>	221:2	<b>River</b>
56:15	93:12	<b>successi</b>	<b>rid</b> 242:24	182:13
88:8	99:3	<b>on</b> 247:3	<b>right-hand</b>	<b>road</b>
94:6	137:21	<b>reversible</b>	33:20	20:6,7
124:1	<b>resulted</b>	132:15	98:2	22:24
137:12	120:21	<b>review</b>	209:16	28:17,19
141:15	148:16	1:3,12	211:22	,23
143:4	<b>resulting</b>	8:4,10,1	<b>rigorous</b>	29:2,4,6
167:22	38:10	5 9:11	137:24	,9,12,18
168:6,9	107:8	11:18,19	<b>ring</b> 117:3	30:7,8,9
181:13	207:24	28:2	<b>riparian-</b>	39:24
185:22	<b>results</b>	40:2,11	<b>type</b>	46:3
200:10,1	16:16	49:11	98:3	66:2
4,25	26:10,11	52:5	<b>risk</b> 6:20	69:24,25
204:14	,18 27:2	53:22	13:19	77:11
205:2	32:22,25	60:5	27:18	106:11,1
227:18	37:25	68:5	61:12,22	2,24
236:3,9	50:8,9	80:1	63:16	109:9
<b>responses</b>	85:7	81:18,24	64:13	130:20
160:12	97:3	88:8	70:13	131:7,13
178:20	100:9,25	91:22	129:14	,16,17,1
<b>responsibi</b>	103:14	92:8	172:1,2	9,23
<b>lities</b>	122:13	104:14	193:15	132:8
219:21	123:23	105:9	205:19	156:6,25
235:17	129:10,2	125:21	207:6	157:24
<b>restart</b>	5 133:24	138:15	212:10,1	158:6
52:22	147:25	142:14	1,14	159:20
<b>restored</b>	189:18	146:18	216:25	161:7
246:22	223:4	148:1,2,	217:1	163:24
<b>restricted</b>	<b>resuming</b>	10 160:5	219:18,2	164:1
101:15	52:13	168:6	1,22,23,	182:18
106:10	92:5	170:23	25	188:12
131:6	167:16	171:7	220:8,13	199:12
<b>resu</b>	<b>return</b>	181:13	,20	201:3
129:24	52:8	190:6	226:11,1	208:20
<b>result</b>	<b>revealed</b>	206:11	8 227:6	215:7,9,
25:3,8	212:6	238:17	228:3	12
	<b>re-</b>	<b>reviewed</b>		218:12,2
				4 229:7
				230:17

231:1,18 ,19,22 232:23,2 5 233:5,9 <b>roads</b> 28:21 29:25 62:17,20 73:21,22 102:10,1 2,24,25 230:4,6 232:11,2 1 233:2 <b>Robert</b> 3:13 <b>Robinson</b> 3:17 <b>rock</b> 20:4,22 25:14,15 ,16,21 29:3 34:13 44:20 49:5,6 132:16 <b>rocks</b> 25:21 <b>Rodier</b> 2:17 <b>rolling</b> 63:24 64:4 <b>Ron</b> 2:19 4:18 <b>room</b> 52:17 54:24 55:3 144:15 238:14	<b>rough-</b> <b>legged</b> 222:4 <b>roughly</b> 238:15 249:16 <b>round</b> 51:24 192:2 227:13 <b>route</b> 43:14 187:8 <b>routes</b> 149:3 220:5 <b>row</b> 98:12 128:6,19 <b>RSA</b> 70:6,11 71:25 77:5 90:12 96:10,11 ,16 100:18 101:16,2 2 109:9,20 110:6,7 132:5 209:15,2 4 210:5,17 211:6,14 222:16 224:12 <b>RSF</b> 224:11 <b>run</b> 24:13 89:13 127:17 128:4	129:8,9 133:25 197:24 206:2 <b>running</b> 64:3 211:8 <b>runs</b> 200:17 <b>ruse</b> 209:1 <b>rusty</b> 220:16,1 9,21 <b>rut</b> 72:7 113:16 114:12 116:5 <b>Ryan</b> 2:17 <hr/> <b>S</b> <hr/> <b>Sabina's</b> 182:19 <b>sacrifice</b> 181:22 <b>safety</b> 143:17 <b>sake</b> 94:19 203:18 <b>Salmo</b> 190:17 233:18 <b>sanctuary</b> 89:3 <b>Sangris</b> 4:23 88:14 90:6 91:8 152:8,10 153:24	155:5,7, 9,19,22 156:23 160:8 231:5 241:6,8, 19,25 244:15 <b>S-A-R</b> 244:12 <b>SARA</b> 220:18 235:2,10 ,21,22 241:17,2 3 243:22 248:25 249:7 <b>Sarah</b> 4:10 5:9 <b>SARA's</b> 242:2 <b>satellite</b> 175:6 <b>satisfy</b> 240:18 <b>save</b> 204:10,1 2 216:21 <b>scale</b> 43:16 65:13 67:23 71:24 101:14,1 6,23 104:4 107:11 111:2,16 <b>scales</b> 225:14	<b>scattered</b> 210:17 <b>scenario</b> 22:21 23:3 24:16,20 26:1 38:8 77:19 87:4 112:4,6, 7,8,10,1 4 114:6 213:18,2 0,22,23 <b>scenarios</b> 13:16 26:8 27:4 112:4,12 213:24 <b>scent</b> 210:13 <b>schedule</b> 220:18,1 9 235:22 <b>scheduling</b> 219:23 <b>School</b> 5:14 <b>scientific</b> 118:20 166:13 218:17 <b>scientist</b> 12:2 107:21 <b>scope</b> 86:24 106:7 <b>scoping</b>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

147:25	107:10,1	134:16	195:5	194:20
<b>score</b>	8	<b>section</b>	250:11	<b>sensing</b>
76:21	110:1,24	11:5	<b>seek</b>	74:12
<b>scores</b>	111:2,5,	14:5	175:21	<b>sensitive</b>
213:15	6,12	21:25	<b>seem</b>	78:9
<b>screen</b>	113:11	48:24	229:17	125:8
90:20	118:9	50:21	243:10	219:25
<b>screened</b>	<b>seasons</b>	59:16	<b>seemed</b>	220:21
65:8	214:17	61:8,9,1	231:11	<b>sensitivit</b>
<b>scroll</b>	<b>seats</b> 8:5	3,14	<b>seems</b>	<b>y</b> 127:18
246:7	164:8	91:15	44:12	130:4
<b>scrub</b>	<b>second</b>	95:20,21	151:11	<b>sensory</b>
97:22,23	19:10	,23 99:2	154:13	70:9
101:20,2	20:24	104:10	172:25	78:9
4	22:22	105:3,4	193:20	112:21
<b>scrubber</b>	28:15	109:7	228:7	118:4
21:8,9	49:20	114:15	246:2	119:24
<b>SDR</b> 5:9	94:11,13	124:13	<b>seen</b> 38:18	171:14
<b>se</b> 61:12	134:22	159:21	43:21	208:15
196:24	146:8,12	160:17	55:15	217:7
<b>Search</b>	150:18	203:9	182:1	218:5
187:15	164:4	206:19	186:21	<b>sentence</b>
<b>searches</b>	185:11	207:8,15	219:5	14:12
209:14	195:8	209:6	<b>selected</b>	83:2
<b>season</b>	199:16	226:20,2	237:11	<b>separate</b>
15:12,14	239:18	2	249:20,2	133:25
22:25	240:3	<b>sections</b>	2	169:4,17
28:18,20	<b>secondary</b>	61:5,6	<b>selection</b>	210:18
29:12	65:10,12	63:8	75:23	220:23
73:21	,18,21	79:19	117:9	<b>separately</b>
143:23	66:7,24	91:1	208:24	26:9
161:7	67:13,21	<b>secure</b>	213:14	<b>September</b>
215:5,13	68:9	220:21	223:11,1	15:18
245:4	69:5,19	<b>sedge</b> 98:6	4	<b>seriously</b>
<b>seasonable</b>	96:4	101:10	224:7,20	149:11
161:22	99:7,13	<b>seed</b>	<b>selective</b>	<b>serv</b>
<b>seasonal</b>	103:17	217:24	98:17	113:15
20:7	160:22	<b>seeds</b>	<b>send</b> 10:10	<b>Service</b>
72:4,6,1	161:4	246:18	<b>sense</b> 41:1	226:16
1,12	<b>secondly</b>	247:12	91:23	227:12
	145:18	<b>seeing</b>	109:25	228:2
	146:8	172:7		
	<b>seconds</b>			

<b>session</b>	71:6,25	222:3	<b>signi</b>	29:24
8:20	<b>shadowing</b>	<b>shorter</b>	14:14	36:21
170:1	166:7	158:3	<b>significan</b>	37:3
185:18	<b>shape</b>	<b>short-term</b>	<b>ce</b> 66:22	51:6
187:10,1	244:2	87:10,11	106:7	69:12
1 193:18	<b>share</b>	<b>shot</b> 172:6	164:17	81:6
202:19	60:20	180:20	165:17	103:18
203:25	145:11	205:23	166:1,5	113:18
233:16	<b>shed</b> 30:16	234:2	179:18,1	114:15
238:9	42:24	<b>showed</b>	9	117:6
<b>sessions</b>	58:13	120:11	<b>significan</b>	208:20
1:6	<b>sheet</b>	143:19	<b>t</b> 14:14	209:12
202:22	142:24,2	219:5	39:7	212:24
<b>sets</b> 17:4	5 176:18	223:4	43:22	214:1
18:19	<b>shelter</b>	224:14	44:7	215:21
26:9	218:22	<b>showing</b>	61:19	218:15
207:12,1	<b>shelved</b>	150:12	67:9	<b>Similarly</b>
3	246:1	191:12	81:25	101:24
<b>setting</b>	<b>Sheryl</b>	224:19	82:3,7	215:17
12:21	4:20	<b>shown</b> 36:2	83:21	<b>simple</b>
15:3,4	<b>she's</b>	123:22	86:5,12,	194:19
142:11	118:8	172:12	15,21,25	<b>simpler</b>
<b>seven</b>	160:9	<b>shows</b>	87:11	47:25
150:13	164:9	35:3,16	99:4	<b>Simpson</b>
196:24	<b>Shirley</b>	37:3	125:7	2:5
198:25	4:25	47:9,12	132:17	<b>simulation</b>
212:11	<b>shore</b>	93:1	165:23	126:4,5,
214:10	221:7	163:9	170:2	8 197:25
216:12	<b>short</b>	169:23	173:15	198:7
237:16	18:10	219:4	225:24	<b>simulation</b>
250:1	65:20	225:3	226:2	<b>s</b> 125:19
<b>seventeen</b>	175:15	<b>shrub</b> 98:3	<b>sign-in</b>	126:14,1
210:25	184:4	217:24	142:25	5 128:5
<b>seventy-</b>	201:18	<b>sic</b> 57:1	<b>signing</b>	130:12
<b>five</b>	220:15	<b>sidebar</b>	52:18	<b>single</b>
210:23	246:3	189:16	<b>signs</b>	24:10
<b>sever</b>	247:18	<b>sign</b> 52:19	143:1	25:1
191:17	<b>short-</b>	105:16	<b>sign-up</b>	26:12,15
<b>severe</b>	<b>eared</b>	134:18	142:24	41:25
162:15	220:18	209:14,1	<b>sim</b> 130:13	42:9
<b>SGP</b> 70:21		8	<b>similar</b>	49:20
			21:19	182:4

<b>sit</b> 204:5	2	215:10	9 39:2	136:23
<b>site</b>	<b>sits</b>	<b>skidoo</b>	47:11	139:3,8,
12:21,24	154:25	242:14	60:8	16
14:2	<b>sitting</b>	<b>slabs</b>	61:4,7	141:20
15:4,6,1	87:1	149:19	63:19	145:5
2,16	164:10	<b>Slack</b> 4:24	64:17	148:24
16:2,7	167:8	168:24	68:11	152:12
23:7,10,	250:13	169:2,3,	69:8	155:24
14,23	<b>situation</b>	9	72:1	156:14
25:8	55:3	175:12,1	73:11	194:12
57:14	<b>six</b> 33:6	4 177:5	75:6	199:17
62:23	65:21	180:5	76:10	206:14,1
77:10	66:12	181:20	77:13,23	6,17
78:13,16	114:7	186:20	81:21,22	208:9
100:22	195:2	249:22	84:12,23	209:3,17
102:16	202:10,1	<b>Slave</b> 4:20	85:2,20	213:12
106:10,1	2 220:13	10:2	90:4	214:25
6 117:3	241:11	70:18,19	92:18	217:4,25
121:25	242:8	,21	95:14	219:4
131:12	<b>sixteen</b>	71:16,17	96:8	220:23
171:18	73:17	88:23	97:12,15	222:8
172:13	210:24	208:6	98:23,24	223:13,1
174:22	<b>sixty</b>	<b>sled</b> 88:21	99:10	9 224:19
187:25	131:8	242:13	101:17	225:6,12
201:1	191:20	<b>slide</b>	102:3	,13
218:10	<b>size</b> 69:12	12:11	105:6,8,	229:4
230:21	71:25	13:9,23	11	230:13,2
<b>sites</b> 58:7	104:2	14:19	106:19	4
73:19	127:19	15:1	108:16,1	234:22,2
74:7,25	129:19	16:21	7	4 236:21
79:8	132:3	19:1	109:3,5	241:9
89:24	136:15	20:16	110:14	244:22
115:16,2	141:11	21:23	114:13,1	246:5,8
1	178:20	22:15	4	<b>slides</b>
147:2,5	196:20	23:1	116:3,6	12:6
173:3,7	237:10,2	28:15	117:14	22:16
190:25	4	30:18	120:6,13	33:6,7
191:3	<b>sizes</b>	31:1,17	123:23	37:19
192:17,2	74:10	33:10,21	124:17	47:9
0,24	79:15	34:20	127:8	74:22
221:20	132:20	35:14,15	128:1,18	75:7
222:6	142:20	36:19	129:23	94:10
224:8,9		37:1,2,1	130:17	100:8
225:4			132:10,2	105:4,22
233:21,2			4 133:17	108:1

110:20	67:22	211:7	178:25	175:17
125:25	102:20	<b>SO2</b> 15:23	<b>SON</b> 48:24	189:17
130:19,2	103:21	16:12	50:21	194:9
0 139:8	214:18	22:1	59:16	199:13
141:3	215:11	27:17	63:17,18	202:18
147:11	<b>smaller-</b>	32:7	206:19	206:6
175:24	<b>scale</b>	33:13	<b>songbird</b>	207:12
209:7	67:19	39:9	221:6	234:15
223:9	<b>Smashing</b>	<b>Society</b>	<b>Sorensen</b>	<b>sound</b>
<b>slide's</b>	190:15	5:3	3:5	144:9
28:9	<b>snagging</b>	<b>software</b>	<b>sorry</b> 50:6	195:11,1
<b>slightly</b>	210:2,20	80:12	52:7	3 204:20
23:21	,21	90:20	54:25	<b>sounded</b>
212:15	<b>Snap</b> 16:10	125:20	64:19	195:21
<b>slope</b>	20:10	<b>soil</b> 60:12	80:11,17	<b>sounds</b>
224:11	31:24	66:1,3	92:15	135:2
<b>slow</b> 77:22	41:3,10,	96:10	94:14	159:24
99:19,20	16,19,20	98:17	105:6	183:18
133:14	42:8	103:8,10	114:14	195:10
134:9	63:22	<b>soils</b> 6:12	120:6,16	247:16
201:24	97:11	52:8	132:10	<b>source</b>
211:10	99:17	60:7	137:4	16:9
<b>slowdown</b>	110:7	69:22	155:7	20:8
115:14	131:16,2	95:11	167:23	41:12,13
<b>small</b> 34:8	0 147:5	96:15	170:9	,25
58:20	173:19	<b>solely</b>	177:16	42:10
63:25	212:25	32:5	191:17	43:22
66:15	222:7	<b>solid</b>	195:16	48:13
75:3,24	230:25	198:17	196:5,6,	49:1
78:12	231:1,20	<b>solved</b>	10	<b>sources</b>
102:2	<b>snapshot</b>	249:11	213:12	17:15
104:3,6	24:6	<b>someone</b>	217:3	19:3,4,7
111:14,1	106:1	55:4	220:24	,11,23
5	<b>snow</b> 29:1	56:13	222:9	20:5,15
126:7,18	44:25	203:15	223:11	21:6
154:14,2	210:20	<b>sometime</b>	231:4,10	22:20
1	211:2,4,	59:24	<b>sort</b> 24:14	30:22
157:2,3	21	<b>somewhat</b>	28:15	41:17
178:23,2	233:5,7	204:19	29:19	42:1,2,3
4 214:5	<b>snowfall</b>	<b>somewhere</b>	41:1	,6,9
237:13	28:22	41:8	82:18	45:12,13
<b>smaller</b>	<b>snowmobile</b>		87:3	,15
65:12			106:17	46:10,11



48:10,12 ,23 50:18 53:10,14 ,16 58:18,20 ,22 73:12 107:25 <b>south</b> 25:14,17 34:12 46:25 63:25 64:5 242:5 <b>southern</b> 25:13,18 26:24 34:8 155:1 <b>SOx</b> 51:15,16 <b>space</b> 238:6 <b>spacial</b> 70:7 <b>spatial</b> 73:15 100:11 103:20 171:16 225:14 <b>speak</b> 80:8 93:18 112:17 142:18 <b>speaking</b> 9:12 83:14 165:9 175:11	196:9 <b>special</b> 43:20 220:17 241:10 <b>specialist</b> <b>s</b> 166:14 <b>speciation</b> 48:9,12, 22 49:6 50:17,19 <b>speciation</b> <b>s</b> 49:1 <b>specie</b> 242:16 243:3 <b>species</b> 6:20 61:12,22 62:2 63:16 64:13,14 66:6 70:13,15 75:22 78:8,9 79:8 94:8,22 96:1,11, 20,23,24 ,25 97:7,8,1 1 98:19,20 ,23 99:5,11, 16 131:4 142:10 164:18 176:9 180:15 181:6 193:15	205:18 207:6 208:2,5 212:1 216:25 217:1 219:18,2 1,22,23, 24 220:13,1 7,19,20 221:2,3, 4,6,14 222:2 226:1,11 234:19,2 3,24 235:3,18 241:5,11 ,22 243:25 244:1,6 246:6,13 ,15,20,2 5 <b>specif</b> 23:24 <b>specific</b> 23:25 65:19 75:22 78:8,10 90:4 93:11 125:16 159:1 162:2 208:9 218:17 <b>specific</b> <b>ly</b> 7:8 61:14 93:18 96:19	133:20 167:6 181:4 185:7 186:7 <b>specificat</b> <b>ions</b> 21:2 58:2 <b>specified</b> 183:23 184:16 <b>specs</b> 21:2,15 <b>speed</b> 62:18 <b>speeds</b> 211:10 <b>Spence</b> 4:4 <b>Spencer</b> 2:4 <b>Spencer's</b> 164:9 <b>spend</b> 63:3,9 85:24 91:2,3,4 124:18 128:17 168:6 203:14 219:6 242:12 <b>spending</b> 63:11 <b>spends</b> 121:25 182:15 201:11,2 0 <b>spent</b>	88:22 89:6 148:3 182:12 202:8,12 ,23 219:6 <b>spills</b> 163:19,2 0 <b>spoke</b> 156:25 182:8 <b>spot</b> 249:11 <b>spread</b> 241:2 <b>spring</b> 15:12,14 117:24 118:23 120:5 124:6 128:22,2 4 156:2 197:19 214:18 221:8,13 <b>spruce</b> 64:6 <b>square</b> 69:16 70:3 237:18 238:23 239:13 <b>squared</b> 69:15 70:3,22 71:3,19 97:13 210:24
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

<b>St</b> 5:14	81:5	<b>state</b> 9:11	15:21,22	54:24
<b>sta</b> 107:8	<b>standards</b>	60:8	16:4	55:1
<b>stab</b>	17:7,22,	80:9	<b>statistic</b>	56:20
178:9,12	23	88:13	129:15	57:8,15
,14	18:7,12,	182:10	<b>statistica</b>	81:20
<b>stabilize</b>	14,16	196:8	<b>l</b> 112:13	82:11,21
134:5	35:2,17,	219:19	114:1	86:1,3
<b>stable</b>	18 36:15	<b>stated</b>	<b>statistica</b>	87:18
136:13	37:8	82:23	<b>lly</b>	165:20
<b>Stacey</b>	39:11,16	95:23	125:7	193:11,2
8:15	42:14,23	207:16	<b>statistics</b>	2 194:3
<b>stack</b>	43:5,11	217:5	124:19	195:8,16
19:8,9	47:16	230:25	129:13	,22
<b>stacks</b>	51:20	<b>statement</b>	<b>status</b>	196:21
19:8	<b>start</b>	1:5	9:15,16,	198:21
57:22	12:11	61:17	20,21,25	199:9
<b>Stacy</b> 2:6	80:15	62:9	10:13	201:4,5
<b>staff</b> 1:12	94:6	82:17	96:24	202:16,2
60:22	95:21	99:9	220:20	5
131:11	144:5	100:3	235:2,9,	203:4,6
230:20	160:7	111:9	20	204:9
<b>stage</b> 8:24	167:19	112:18	241:18,2	<b>Steven</b>
43:8	170:18	113:6	3	198:21
77:18	179:18	160:19	243:22,2	204:6
107:12	226:13	<b>statements</b>	5 248:24	<b>Stevenberg</b>
116:18	<b>started</b>	99:1	249:7	3:7
181:14	8:5,8	125:2,11	<b>stay</b> 157:7	80:10,16
198:2	52:16	,19	<b>stays</b>	,17,22
207:13	60:17	<b>states</b>	188:19	<b>Stevens</b>
<b>stages</b>	80:10	21:17	<b>steeper</b>	2:21
107:8	92:10	160:19	119:1	11:12
116:19	121:1	<b>static</b>	<b>step</b>	60:13,14
<b>staging</b>	170:24	116:19	140:13	68:8
73:20	194:10	<b>stating</b>	158:18	71:2,5
220:2	<b>starting</b>	150:12	170:19	73:5
<b>standard</b>	41:1	<b>station</b>	<b>Stephen</b>	80:18
18:19	127:14	15:19,24	2:9	81:3,4
34:24	250:16	16:2	189:20	82:9,13,
36:24	<b>starts</b>	188:18	<b>steps</b>	17 84:17
42:20,25	24:19	<b>stationary</b>	132:23	85:8,9,1
	38:21	19:7	<b>Steve</b> 3:15	8 90:3,7
	105:14	<b>stations</b>		91:9,13
	217:25			93:25
				94:2

95:9,13, 14	<b>strategies</b> 109:1	<b>stuff</b> 57:21	250:3	<b>suggest</b> 94:20
104:24	<b>stratified</b> 211:6	161:25	<b>submit</b> 227:6	134:21
105:21	<b>stress</b> 149:8	184:19	<b>submitted</b> 137:10	144:9
116:1	<b>strictly</b> 165:6,8	187:17	182:3	187:12
121:10	<b>string</b> 40:25	189:17	231:25	<b>suggesting</b> 141:22
128:16	<b>striving</b> 202:18	193:5,6, 15,19	235:7	143:7
135:15	<b>strong</b> 124:1	202:22	<b>submitting</b> 190:11	239:1
136:5	<b>stronger</b> 60:25	203:1	<b>sub-</b> <b>question</b> 50:2	<b>suggestion</b> 94:14
137:4,5	<b>strongly</b> 187:12	205:3,8, 9	<b>subsequent</b> 94:10	<b>suggests</b> 115:10
138:11,1	<b>structure</b> 62:25	237:14,2	<b>substantiv</b> <b>e</b> 203:22	165:11
2 141:24	<b>stu</b> 31:19	2 238:3	<b>subtle</b> 127:5	<b>suitabilit</b> <b>y</b> 75:21
150:7,23	<b>studies</b> 81:7	239:2,4	<b>success</b> 222:6	218:16
170:15,1	138:18	240:1	232:13	223:12
6 176:5	142:4	247:22	247:15	<b>suitable</b> 184:14
191:8	145:11	<b>stuff's</b> 58:21	<b>successful</b> 92:8	221:17,2
192:21	152:13,2	<b>sub</b> 94:9	145:21	2 222:15
193:8	5	<b>sub-bullet</b> 50:6	<b>succession</b> 77:22	223:6
195:9,12	153:7,10	<b>subitat</b> 221:16	116:23	<b>suite</b> 62:5
,15,20,2	175:3	<b>subject</b> 11:3	<b>succession</b> al 77:18	132:21
3	176:1,2, 3,7,9	14:5	116:18,1	<b>sulfur</b> 15:23
196:1,5, 10,11,13	220:22	61:9,10	9	<b>sulphur</b> 17:17,20
197:4	223:3	63:6,17, 18 65:21	<b>sufficient</b> 117:20	22:1
199:2	<b>study's</b> 88:18	94:23	145:21	<b>sum</b> 99:9
200:6,7		95:17,19	219:19	122:2
201:17		99:1	<b>sufficient</b> <b>ly</b> 160:17	214:9
206:23,2		104:10		215:19
4 207:7		145:1		216:7,11
211:19		180:4		<b>summaries</b> 61:15
230:11		193:16		112:14
231:6,10		206:18,1		114:1
,14,17		9 228:19		<b>summarize</b> 39:3
248:10		<b>subjects</b> 163:15		
<b>Steve's</b> 94:5		166:12		
<b>stockpile</b> 44:20		245:21		
<b>stockpiles</b> 20:4				
<b>storage</b> 73:19				
161:6				

81:12	101:4,5	<b>surprised</b>	<b>suspected</b>	163:9
105:23	<b>supports</b>	50:9	46:15	167:20
213:17	99:19	<b>surrounded</b>	<b>suspended</b>	213:20
225:11	<b>supposed</b>	63:24	22:6	214:1,13
<b>summarized</b>	36:2	<b>surroundin</b>	102:15	215:21
14:3,12	43:8	<b>g</b> 55:25	<b>suspending</b>	216:7,13
59:15	<b>suppress</b>	152:18	62:18	<b>tables</b>
109:23	28:21	<b>surveyed</b>	<b>sustain</b>	166:8,14
<b>summarizes</b>	<b>sure</b> 18:6	209:19	141:23	240:17
216:14	43:9	220:25	144:11	<b>take-home</b>
<b>summary</b>	67:24	221:1,18	<b>sustainabi</b>	77:3
13:7	85:23	222:6	<b>lity</b>	116:12
61:15	134:19	<b>surveying</b>	108:25	126:5
62:14	135:6,24	245:12	<b>sweeps</b>	<b>taking</b>
99:1,3,9	140:1	<b>surveys</b>	245:17	8:10
100:3	141:25	64:8	<b>swift</b>	23:22
112:13	143:1	96:14,18	175:23	25:6,12
114:20,2	155:19	97:9	176:16	34:12
5 132:9	156:13	109:8,11	177:22	91:19
160:18	180:7	,12,13,2	179:22	137:23
163:9,15	182:14	1	<b>switch</b>	147:1
177:3	187:20	209:8,14	117:13	172:24
<b>summer</b>	189:7,19	210:19	164:8	178:9
15:12,16	196:2	211:3,6	<b>synthesis</b>	239:18
28:20	202:5	217:11,1	142:3	<b>talk</b> 64:25
29:12,25	203:16	2,15	176:8	69:6
30:9	211:21	220:23,2	<b>system</b>	90:18
72:7	227:16	5	96:21	94:8
102:10	238:4	221:9,11	139:22	101:7
109:15,1	241:24	,19,22,2	177:15	117:14
9 118:9	242:15,2	5	178:1	137:2
123:12	2	<b>survival</b>	<b>systems</b>	173:25
210:10	<b>surface</b>	68:19	101:5	204:20
214:19	28:23	125:9	181:3,4	216:17
215:11	29:3,4	129:7	<b>table</b> 6:1	229:20
218:20	44:10,13	130:9	<hr/>	239:18
221:8	,14,19	178:21	<b>T</b>	240:2
245:3	48:19	<b>suspa</b>	<hr/>	243:5
<b>sums</b> 79:17	<b>surfaces</b>	108:24	<b>table</b> 6:1	246:12
104:9	19:22	<b>suspect</b>	80:8	<b>talked</b>
115:2	20:4	46:15	87:1	84:7
<b>support</b>	32:13	48:7	114:13,1	141:4
96:23	45:2		4 142:25	171:14,1

6 178:3	248:16,1	59:3	20 63:1	130:4
180:12	7	62:3	79:20	137:20
<b>talking</b>	<b>technologi</b>	63:12	82:4	<b>Tetrathec</b>
56:12	<b>es</b> 13:17	70:23	105:11	11:21
83:15	<b>teenagers</b>	71:19	111:4,7	<b>thank</b> 9:9
84:9,14	89:13	83:9	206:13	40:18
85:19	<b>temperatur</b>	84:3	209:4	51:7
89:21	<b>e</b> 15:9	95:22	225:11	53:25
137:1	162:13	96:4	<b>territoria</b>	54:11,13
151:2	<b>temperatur</b>	101:19	<b>l</b> 59:13	,19 58:7
175:19	<b>es</b> 123:4	105:1,3,	<b>Territorie</b>	59:3
181:25	<b>temporal</b>	24,25	<b>s</b> 10:6	60:2,3,1
237:1	73:15	106:2,5	17:6	3,22
<b>talks</b>	<b>temporary</b>	108:17	31:11	68:3,5
136:25	14:16	117:18,1	59:8,10	71:4,5
164:15	39:8	9	163:1	73:11
246:5	<b>ten</b> 52:8	124:21,2	188:7	87:18
<b>tall</b>	87:11	5 130:23	234:10	90:1
217:24	88:22	139:19	244:3	91:8
<b>Taltson</b>	91:11	147:13,2	<b>Territory</b>	93:21
112:11	157:6	4 148:17	36:15	133:9,12
<b>tasty</b> 92:9	161:7	153:16	37:7	134:11,1
<b>taxa</b>	166:22,2	158:23	39:11	2 138:7
178:22	4 203:14	163:2	<b>Terry</b> 5:19	140:10,1
179:1,2,	211:8	169:15,2	190:16,2	2 143:2
24	215:20	5 170:3	3	144:23,2
180:12	<b>term</b> 12:15	175:19	191:9,10	4 145:22
<b>taxonomic</b>	13:18	178:2,23	233:17,1	146:7,16
64:15	44:4	207:11,1	8	148:22
<b>te</b> 127:7	118:21	2,15	<b>test</b>	150:22
<b>tea</b> 97:22	140:14	217:4	127:7,22	151:14,1
101:25	169:16	219:18	128:6,7,	9 152:7
<b>team</b> 10:19	<b>terminolog</b>	225:19	8,19,20	153:24
135:2	<b>y</b> 83:13	235:11	129:9	155:5,21
240:10	84:6	239:12	137:6	,22
<b>tech</b>	<b>terms</b>	240:21	145:16	158:11,1
248:11	13:10	241:17	<b>testing</b>	9 159:16
<b>technical</b>	45:25	248:4	210:3	166:25
48:25	46:11	<b>terrain</b>	<b>tests</b>	168:9,22
202:22	51:6	96:15	21:19	173:14
204:19	55:11	<b>terrestria</b>	124:20	180:2
		<b>l</b> 27:19	127:1,21	183:10
		33:3	128:5,11	185:20,2
		57:2		2
		61:5,17,		189:13,2

4 190:16	105:21	103:16	198:7,15	109:11,1
194:2	139:2	105:8,9	199:7,10	2 158:4
196:12,1	143:6	110:11	,15	<b>there's</b>
3 198:20	151:21	111:25	200:6,8	15:13
206:6	167:13	112:15	202:1	21:20
216:22	168:23	114:15,2	203:25	29:23
225:13	169:2	3 115:21	204:18	30:2
226:5,9	175:8,14	118:21	205:21	33:21
227:24	184:11	119:11	206:20	34:8
229:17,1	189:14	124:8,9	220:9	38:5
8,22	199:9	134:11	223:8	43:23
231:17	203:5	136:1,5	228:17,1	46:16
236:4	226:8	137:7,8,	9	50:9
241:8,13	233:13	24	229:4,5,	51:15,16
243:14	234:20	138:8,12	7 243:24	61:12
244:15,1	236:9,25	139:8,9	244:12,1	63:7
6,20	240:4	140:23	3,14	77:4
245:11	247:15	141:13,2	250:14	87:24
247:5,17	248:19	5 142:13	<b>Thelon</b>	90:9,10
249:10	249:24	143:10,1	89:4	99:16
250:5,17	<b>that'll</b>	5 145:6	<b>themes</b>	109:20
<b>thanks</b>	205:2	149:24	63:8	110:13
8:16	<b>that's</b>	150:3,11	<b>themselves</b>	112:5
10:19,21	8:13,25	151:8,9	19:20	114:17
11:22	11:8	156:11,1	189:17	119:9
28:5,13	24:16	2 159:25	<b>theoretica</b>	120:2,4,
40:11,13	25:23	160:7	<b>l</b> 142:8	7 123:5
,23	27:7	162:19	<b>theoretica</b>	131:14,1
42:11	34:3	164:4	<b>lly</b> 29:5	5,21
52:5,10,	35:1	169:13,2	94:16	138:22
21 53:22	40:7	2 170:25	<b>theory</b>	142:24
54:23	45:2	173:18	176:19	145:5
56:14	47:1	177:17	177:2	149:1,3,
59:21	59:8	179:18,1	<b>thePAI</b>	23
60:5,10,	61:13	9,24	51:12,17	150:1,4,
14 84:22	68:6	180:16,2	<b>there'd</b>	13 151:1
85:25	72:19	3 184:14	103:9	158:8
86:6	77:20	185:10	<b>therefore</b>	159:9
88:8	81:3	187:9	83:8	163:8,14
91:11	85:13,15	189:24	<b>there'll</b>	171:7
92:14,15	86:7,11	190:6	51:2	172:1,12
,22	88:16	191:17		,13,14,1
93:23	89:16	194:9		7
94:2,25	98:23	195:3		173:16,1
95:13	101:3	197:5		7 177:1

178:4	<b>they've</b>	<b>thousand</b>	<b>o</b> 106:11	10:8
180:21	14:3	90:19	131:7	133:10
182:5,15	106:14,1	130:12	<b>Tibbit-to-</b>	144:25
183:19	5 134:22	136:14	<b>Contwoyt</b>	147:8
184:19	145:3,5	157:4,8	<b>o</b> 215:9	244:19
192:23	183:22	203:14	<b>Tibbitt-to</b>	<b>today</b>
193:16	188:2	<b>thousands</b>	106:23	8:14,20
200:16	226:11,1	72:13	156:24	9:8
209:4,5,	2 249:9	75:14	<b>Tibbitt-</b>	10:22,25
22	<b>thick</b>	76:20	<b>to-</b>	11:7,9
210:19	33:21	90:18	<b>Contwoyt</b>	54:17
225:12	47:11	<b>threshold</b>	<b>o</b>	59:24
226:21,2	<b>third</b>	82:1	156:16,1	61:8
2 229:12	19:14,23	99:2	7 157:16	91:2
230:25	56:6	101:1	159:20	108:6
233:6	98:11	107:15	<b>tier</b>	152:2
236:13	209:3	132:12	42:16,17	159:18
238:1	<b>thirty</b>	142:6,8	,20,23,2	166:24
244:5,23	63:15	143:8,16	5	171:14
245:1,18	125:17	144:21	43:5,12,	188:9
248:24	126:13,1	176:10	15 51:19	189:10
<b>They'll</b>	4,24	177:18	<b>till</b> 28:3	194:1
214:5	128:10,2	179:4,22	143:24	203:25
<b>they're</b>	4	181:5,6	<b>timeline</b>	205:11,2
43:9	129:3,8	<b>throughout</b>	185:21	5 216:15
48:13	130:13	23:10	227:17	231:1
52:18	136:19	62:6	247:9	238:24
67:16	139:19	138:2	<b>timely</b>	239:6
111:14,1	201:11	238:16	80:25	247:23
5 126:15	222:5	247:8	<b>tiny</b> 75:14	250:4
141:6	<b>thirty-</b>	<b>throw</b>	76:20	<b>today's</b>
151:4,6,	<b>eight</b>	245:22,2	<b>title</b>	63:1
7 163:5	121:2,20	3 246:3	105:11	208:8
172:4	<b>thirty-</b>	<b>thus</b> 81:18	117:1	<b>Todd</b> 4:24
184:21	<b>four</b>	<b>Tibbit-</b>	<b>titled</b>	168:24,2
195:11	96:9	<b>Contwoyt</b>	248:14	5
196:3	<b>thorough</b>	<b>o</b>	<b>TK</b> 61:15	169:2,9
225:7	183:7	215:7,12	152:22	170:15
232:21	<b>thoroughly</b>	<b>Tibbitt</b>	<b>Tlicho</b>	173:14
237:17	162:23	157:25	4:12	175:9,12
242:22,2	<b>thoroughne</b>	<b>Tibbitt-</b>		,14
3,24	<b>ss</b> 182:4	<b>Contwoyt</b>		176:6
243:1,2,				177:5
3				178:17

180:3,5, 25 181:16,2 0 183:5 186:16,2 0 249:22	74:22 75:7 81:18 208:20	100:24 101:4 109:6 152:15,1 7,25 153:7,10 ,14,22 154:1,2 159:1 210:7 226:4	212:17  <b>translatio</b> <b>n</b> 9:6  <b>transmissi</b> <b>on</b> 73:21  <b>transparen</b> <b>t</b> 67:19  <b>transport</b>  31:8 35:9  <b>transporta</b> <b>tion</b>  49:4,8 99:24 163:13  <b>trapper</b>  88:21  <b>trappers</b>  89:5,6,9 243:5  <b>Treaty</b>  3:15 55:2 86:4 165:20 193:12,2 3 194:4,5 198:22 201:5 203:7 247:21	<b>trends</b> 191:12  <b>trespasses</b> 200:3  <b>Trial</b> 165:20  <b>trials</b> 247:8  <b>Tribal</b>  55:2 86:4 193:12,2 3 194:4,5 198:22 201:5 203:7 247:21  <b>Tricia</b>  176:15  <b>tried</b>  106:1 150:19 175:20  <b>tropical</b>  180:14  <b>trouble</b>  229:21 243:10  <b>truck</b>  42:12 242:14  <b>trucks</b>  18:1 19:13 42:14,16 ,20 43:12,15 158:1  <b>true</b> 5:9 169:13
<b>togay</b> 250:4  <b>tomorrow</b> 54:17 151:25 152:5 159:22 167:10 168:7,9, 12,14,18 ,22 178:9,10 187:25 204:13 205:2,4, 7 227:20,2 3 235:21 236:3 239:15 240:17 248:1,8 250:16  <b>Tonight</b> 242:17  <b>tool</b> 177:13  <b>tools</b> 108:15  <b>top</b> 76:5 99:10 114:22,2 5 115:8 209:16  <b>topic</b> 8:18 52:9 60:6	<b>topics</b> 8:21  <b>tot</b> 53:12  <b>total</b> 22:6 53:9,12, 14 58:24 102:15 144:4  <b>touch</b> 75:7  <b>touches</b> 190:19  <b>tough</b> 242:24  <b>towards</b> 187:22 188:11,1 5  <b>tra</b> 154:8  <b>track</b> 9:3 187:20 211:3,12  <b>tracking</b> 210:20 211:4,21  <b>tracks</b> 154:10 211:10  <b>traction</b> 29:4  <b>Tracy</b> 3:21  <b>traditiona</b> <b>l</b> 87:23 88:5 96:19 97:4 99:6	  <b>traffic</b> 20:6,7 158:4,9 159:18  <b>trails</b> 109:19  <b>train</b> 154:8  <b>trans</b> 49:4  <b>transcribe</b> <b>d</b> 9:8  <b>transcript</b> 6:24 65:4 163:5 167:4 187:12  <b>transcript</b> <b>ion</b> 9:13  <b>transcript</b> <b>s</b> 249:16  <b>transects</b> 211:5  <b>transferre</b> <b>d</b> 25:17  <b>transition</b> 63:23 196:22  <b>translates</b>	                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 <	



<b>try</b> 21:21	<b>TSP</b> 22:6	5 95:16	98:14,15	194:8,17
28:10	32:8,17,	<b>Twenty-</b>	111:22,2	,22
35:14	25	<b>eight</b>	3 118:6	<b>unclear</b>
36:20	36:20,24	221:6	209:15	162:22
38:5	39:15	<b>twenty-</b>	210:18	246:13
40:25	48:8	<b>five</b>	217:24	<b>uncommon</b>
59:23	<b>Ttitso</b>	224:7	<b>typically</b>	101:13
60:1	4:15	242:12	16:16	224:12
84:4	<b>tundra</b>	<b>twenty-one</b>	19:16	<b>underlying</b>
117:4	63:24	97:4	44:8,11	67:20
120:10	64:5	<b>twenty-</b>	46:9,18,	171:11
122:7	75:20	<b>seven</b>	20	<b>underneath</b>
139:14,1	111:11,2	127:21	53:16,17	76:6
5	2	128:5,11	<b>Tyson</b> 5:22	112:1
151:18,2	152:16,2	129:17,1	11:21	113:24
3,24	1 232:23	8	<hr/>	116:25
155:18	233:4	<b>twenty-two</b>	U	<b>understand</b>
165:1	<b>tune</b>	221:14	<b>ult</b> 179:11	10:16
167:12	168:14	<b>twice</b>	<b>ultimately</b>	24:2
168:11	<b>turn</b> 10:15	104:15	179:10,1	29:17
170:17	37:2	143:15	1	30:15
187:15	229:7	<b>type</b> 18:1	<b>Ulu</b> 182:9	37:23
205:25	<b>turned</b>	19:2,12,	<b>un</b> 100:23	38:5
240:3	235:12	15 20:19	<b>unaware</b>	48:1
243:19	<b>turnoff</b>	21:6,19	55:5	57:20
248:8	131:19	47:1	<b>uncertain</b>	59:9
250:9	<b>turns</b>	48:22	45:16	67:2
<b>trying</b>	202:9	49:1	<b>uncertaint</b>	83:23
17:11	<b>twelve</b>	50:4,18	<b>ies</b>	85:23
27:18	122:19,2	74:11	138:3	90:14
29:8	0 127:9	75:15	141:9	92:11
94:15	194:24	110:18	<b>uncertaint</b>	100:23
136:10	195:3	111:11	<b>y</b> 37:25	119:6
142:1	196:22	<b>types</b>	45:25	122:7
183:15	198:23	68:16,17	62:4	135:7,23
227:3	200:15	73:18	138:22,2	138:10
229:5,16	201:14	75:9	3	139:16
237:3	230:19	81:7	141:4,5,	140:2,4,
238:21	<b>twenty</b>	90:23	6,7,10	5,10
<b>tscript.co</b>	16:1	96:10	192:8	141:15
<b>m</b> 167:11	63:3,9,1	97:17,21	193:2	168:24
187:25		,25		175:20
<b>Tsetta</b>				180:11
4:25				

194:23	247:25	164:20	92:4,5	109:25
203:5	249:12,1	<b>United</b>	167:15,1	147:23
204:1	4	21:17	6 250:19	158:22
238:15,2	<b>undertakin</b>	<b>units</b>	<b>useful</b>	171:2
2	<b>gs</b>	70:16	40:23	204:25
239:8,9	184:14	100:23	68:6	<b>value</b>
240:20	187:13,2	101:18	202:22	64:11,14
<b>understand</b>	4 250:10	119:4,17	237:23	68:24
<b>ing</b> 16:5	<b>undertakin</b>	,18	<b>USEPA</b> 31:7	70:12
24:4	<b>g's</b>	195:2	<b>users</b>	75:24,25
26:6	177:24	<b>unknowns</b>	87:23	76:22
28:25	<b>Undertakin</b>	139:22,2	88:5	79:16
46:17	<b>gs</b> 6:3	4	154:2	82:1
65:5	7:1	<b>unless</b>	226:4	89:25
122:8	183:17	182:15	<b>usually</b>	98:22
138:25	<b>unfortunat</b>	<b>unlike</b>	22:7	123:20,2
171:4	<b>ely</b>	18:17	153:15	1
199:22	234:8	19:22,23	234:14	127:9,20
202:6	<b>ungulate</b>	<b>unmitigate</b>	<b>utilized</b>	143:10
228:13	226:10	<b>d</b> 30:10	170:7	144:21,2
241:16	<b>ungulates</b>	<b>unpredicta</b>	<hr/>	2 159:9
<b>understood</b>	6:20	<b>ble</b>	<hr/> V <hr/>	161:15
234:4	61:11	161:20	<b>va</b> 109:24	177:25
<b>undertake</b>	63:7,16	<b>upcoming</b>	<b>vaguely</b>	178:17
153:9	85:19	183:3	190:19,2	179:2
184:5	177:9	<b>update</b>	0	197:20
247:8	207:6	9:19	<b>valid</b>	218:15
<b>undertakin</b>	216:24	11:1	98:21	222:12
<b>g</b> 37:21	217:3,4	<b>upgraded</b>	177:21	239:20
73:6,10	225:16	80:21	<b>validate</b>	246:13
177:7,21	226:1	<b>upland</b>	37:24	<b>valued</b>
178:8	241:5	64:9	38:6,16	61:20
183:16	<b>unique</b>	217:1	<b>validated</b>	75:11
184:13,1	128:9	220:24	38:22	86:17
5	210:1	222:22	<b>validity</b>	207:8
185:2,3,	221:3	223:1,6	177:12	<b>values</b>
14,24	<b>unit</b>	225:16	<b>Valley</b>	74:5
187:9,14	97:22,23	<b>upon</b> 8:1	1:2,12	166:9
,15,24	98:7	52:12,13	8:10	178:18
238:11	100:17	76:2	<b>valuable</b>	179:22
239:16,2	101:11,1	82:1		237:23
0	4,20,25			<b>Vancouver</b>
240:23,2				160:9
5 245:16				

<b>variabilit</b>	14:9	<b>ver</b> 123:24	0 245:10	216:23
<b>y</b> 161:22	52:9	<b>verbal</b>	247:6	229:18
172:18	54:9,11,	205:1	248:2,22	235:5
<b>variable</b>	15 56:25	<b>verbatim</b>	249:3	<b>visual</b>
172:8	60:7,12	167:12	<b>version</b>	77:13
196:24,2	61:10,21	<b>verify</b>	167:12	92:23
5 197:2	63:6,10	46:6	<b>versus</b>	<b>visuals</b>
<b>variety</b>	64:12	<b>Veronica</b>	53:10	85:17
62:5	65:20,24	2:8	<b>viability</b>	<b>vital</b>
176:9	66:5,17,	10:20,21	124:20	127:15
180:11	19,25	50:22,24	125:16	128:10
<b>various</b>	67:3	54:12	198:3	198:1
15:19	69:22	57:23	<b>viable</b>	<b>VOC</b> 22:9
17:2,14,	79:22	59:25	83:16,18	32:8
15 18:1	91:15	91:16	87:6	<b>volatile</b>
19:12	95:9,12,	94:25	165:8	22:9
31:9	17,19	95:1,6,1	210:4	<b>volumes</b>
32:13	96:2,7,1	3 134:15	<b>vicinity</b>	159:19
42:4,13	5	135:4,13	106:10	
46:13	97:18,25	140:11	157:9	<hr/> W <hr/>
48:22	98:14,15	144:17	<b>view</b> 91:24	<b>wait</b> 85:23
50:18	99:5,12	146:1	165:7	177:7
111:22	100:1,4,	151:13	<b>viewed</b>	236:11
112:12	12,21	152:1	139:20	<b>waiting</b>
132:22	101:1	167:1,2	<b>viewpoint</b>	153:21
135:20	103:16	168:3,20	165:24	<b>walk</b>
142:5	104:4,10	169:6	166:12,1	144:15
234:22	155:14	183:4	6	151:4
<b>vary</b> 74:10	171:17	184:3	<b>Virgl</b> 2:14	<b>walking</b>
<b>varying</b>	223:1	185:19	11:12	118:6
183:9	225:15	189:5	64:18	<b>walks</b>
<b>vast</b> 84:11	245:25	190:9	82:20	201:11
<b>vector</b>	247:15	204:3	87:18,19	<b>wander</b>
80:24	<b>vehicle</b>	205:12	137:18	151:7
81:2	118:6	206:4	141:1	<b>warm</b> 123:3
<b>vectors</b>	<b>vehicles</b>	227:1,15	143:3,5	<b>warmer</b>
81:10	18:1,5,6	,21	146:25	162:15,1
<b>veg</b> 104:4	43:3	228:12	159:15,1	7
<b>vegetation</b>	<b>Velma</b> 3:7	232:2,5	6,17	<b>warming</b>
6:12	80:10,16	236:1	173:12	161:13,1
11:11	,17,22	238:20	178:11,1	
	<b>venture</b>	239:10	6 180:24	
	155:2	240:15		
		241:14,2		

9	221:8	<b>weigh</b>	<b>we're</b>	193:13
<b>Warnock</b>	<b>watering</b>	197:13	20:12	194:7
250:24	28:21	<b>weight</b>	21:20	198:25
<b>wasn't</b>	<b>Watt</b> 4:4	61:23	24:2	200:10,1
55:3	<b>Wayne</b> 2:12	120:2,4	43:9	2
94:14	<b>ways</b> 41:25	122:23	50:25	202:6,16
115:20	75:17	123:12	54:16	,18
189:7	82:23,24	138:25	61:8	206:20
192:14	100:13	150:16	63:11	210:3
228:3	107:17	151:1	76:12	227:5
249:10	121:4,12	197:13	87:13	244:3
<b>waste</b>	144:8	199:24	90:16	245:21
18:17,20	201:22	200:2	91:2,25	249:25
19:8	<b>weak</b> 174:6	225:21	93:17	<b>west</b> 20:12
62:21	<b>webcast</b>	<b>Wekweti</b>	95:7	25:21,22
212:24	9:2	243:7	110:10	47:23
<b>watched</b>	167:22,2	<b>welcome</b>	111:7	48:2
242:21	4	8:16	113:20,2	209:22
<b>water</b>	<b>website</b>	<b>we'll</b> 9:6	114:14	225:1
10:24	9:3	13:2	115:17	<b>western</b>
14:9	105:10	16:24	116:3	26:25
32:24	167:11	21:1	117:14	<b>west-</b>
33:1	206:12	26:5,15,	120:6	<b>northwes</b>
54:8,9,1	244:11	19 49:5	133:5	<b>t</b> 132:1
5 57:2	<b>we'd</b>	52:8,25	136:8	<b>wet</b> 21:8,9
62:17	112:13	54:18	142:1	<b>we've</b>
64:9	129:9	60:1,6	153:17,2	55:15
70:13	162:20	83:25	1 158:25	106:16
98:6	167:9	91:3,4	159:1,6	109:18
101:9,10	189:20	92:10	166:21,2	124:14
102:11,1	206:5	112:4,6	2 168:7	126:25
2 161:5	<b>weed</b>	119:12	171:1	127:3,16
221:8	206:18	134:23	172:7	128:4
223:13,1	<b>week</b>	155:18	176:11,1	130:2
9,21,22	203:11	167:18	2	136:7,11
225:16	242:18	168:8,11	8	150:18,1
228:4,9,	<b>weeks</b>	,21	179:3,4,	9 155:14
10,14	183:18,2	185:2	17,20,21	166:23
<b>watered</b>	5 184:5	190:11	181:8	171:14,1
30:1	185:17	216:21	183:9,15	6 173:2
<b>waterfowl</b>	230:19	228:25	184:10	178:3
64:10		<b>Wendy</b> 9:12	185:13	184:9,11
217:2		250:24	187:11	186:16
			189:10	

196:15	145:4	,15,19	22:24	202:12
198:11	239:1	155:13,1	28:18,22	<b>wish</b>
201:7,22	<b>who's</b>	7,23	,24	168:17
205:22	105:18	164:7	29:5,7,1	191:10
211:2	175:11	166:6,11	0,18,20	<b>Witherly</b>
223:16	188:3	204:8	30:8,16	4:3
229:20	190:17	205:3,7	39:24	<b>wolf</b>
231:2	206:21	218:15	44:24	64:9,13
245:12,1	230:1	222:12	66:1	207:9
3 249:7	<b>width</b>	226:16	69:24,25	213:11
<b>whatever</b>	176:25	227:12	72:8	215:23
86:10	<b>wild</b> 96:25	228:2	73:22	216:1,3
133:1	117:11	230:7	76:12	<b>wolverine</b>
149:8	<b>wildlife</b>	241:22	102:10,1	61:22
<b>whatnot</b>	5:14	<b>Wilkinson</b>	2,13	64:12
177:24	8:19	5:18	121:1	70:18
<b>whatsoever</b>	10:24	<b>Williams</b>	130:19	71:7,22
78:15	11:6,11	2:10	131:16,1	130:22
<b>whenever</b>	14:9	154:19	7,19,23,	207:9
149:22	27:19	<b>willing</b>	24,25	210:19
229:3	32:23	159:6	132:4,7	211:12,2
<b>whereas</b>	54:10,16	184:15	156:1,6,	5
244:4	56:25	188:10,2	25	212:14,1
<b>whether</b>	57:2	5	157:24	6,19
48:11	70:12	<b>willingnes</b>	158:6	213:11
65:10,16	75:11	<b>s</b> 159:9	159:20	214:24,2
67:8	86:10	250:9	161:6	5
68:22	87:21,22	<b>willow</b>	188:12	215:1,10
83:20	88:16,18	98:2	201:3	220:15
147:16	,25	<b>willows</b>	215:5,7,	230:16
151:19	89:12,15	98:19	11	234:12
159:1	92:25	<b>Wilson</b> 4:6	218:12,2	241:13
160:15	93:3,5,7	<b>wind</b> 15:8	1,23,24	242:20,2
177:18	,8,11,17	20:1	230:6,17	2 244:1
184:21	,18,19	123:3	231:1,18	<b>wolverines</b>
210:4	98:21	239:20	,19,22	242:11,1
228:4	108:20	<b>windblown</b>	232:11,2	5,18
237:5	117:12	16:9	1,23,24	243:9
<b>white</b> 89:5	131:4	44:15,21	233:2,4,	<b>wolves</b>
<b>whoever</b>	132:13	<b>winter</b>	9	212:12
204:6	138:5	20:6,7	<b>wintering</b>	233:1
<b>whole</b> 32:7	143:14		109:16	<b>wonder</b>
	144:7		118:8,15	134:6
	145:9,12		119:25	
			122:3	

177:11	169:22	167:3	152:8,11	242:9
229:14	171:6	238:5	,14,17,2	<b>you've</b>
244:22	172:11	<b>written</b>	5	42:2,3
<b>wondered</b>	173:17,1	55:6	153:7,9,	134:17
149:24	8,20	186:21	13,21	137:11
151:10	174:13	228:7	157:10	140:2,5,
<b>wondering</b>	188:10,1	240:13	158:22,2	6 158:21
42:18	5 190:3	<b>wrong</b>	5 159:8	166:20
43:23	196:17	144:15	168:24	184:18
54:5,8	239:21	195:1	169:3	185:9
59:1	<b>worked</b>	200:23	175:13	187:3,6,
94:1	210:25	<b>wrote</b>	181:11,1	7 190:24
167:2	<b>working</b>	240:10	2 183:19	199:17
226:19	60:16,17	<b>WSR</b> 5:7	184:19,2	203:2
230:5	81:10,13	<b>www.sarare</b>	3 185:7	205:9,10
234:23	89:10	<b>gistry</b>	186:6,17	219:4
241:16	235:14	244:12	,19	239:2,6,
245:1,3	<b>works</b>		187:4	25
<b>wording</b>	149:9		190:20	240:21
167:5	201:12	<hr/> X <hr/>	231:8	<hr/> Z <hr/>
<b>work</b> 37:23	<b>workshop</b>	<b>X-6</b> 221:13	241:6	<b>zero</b> 29:22
38:5,8	72:25	<b>Xstrata</b>	242:3	30:13
40:1	<b>world</b>	182:12	243:6	75:24
60:20,25	142:5	<hr/> Y <hr/>	<b>Yep</b> 135:12	122:16
69:23	197:23	<b>Yawn</b>	153:6	150:12,1
78:22	<b>worse</b> 62:8	248:12	189:15	3 169:18
85:17	129:3	<b>yellow</b>	<b>yet</b> 42:18	180:18
97:3	141:12	35:21	177:10	195:2
98:16	<b>worst</b>	36:3	201:13	212:11,1
103:9	13:15	37:10	<b>YKDFN</b>	8 214:11
105:14	39:22,23	<b>Yellowknif</b>	152:22	215:17
109:14	<b>wrap</b>	<b>e</b> 1:22	177:5	<b>zero-six-</b>
120:15	249:25	15:21	184:16	<b>three</b>
123:15	<b>write</b>	16:12	186:20	119:17
125:3	243:21	63:21	249:22	<b>zero-two</b>
126:25	<b>writers</b>	157:20	<b>you'll</b>	119:18
127:2	83:1	<b>Yellowkniv</b>	89:14,15	<b>Zhang</b> 2:18
130:3	<b>writes</b>	<b>es</b> 4:23	165:11	<b>zo</b> 77:24
136:11	161:1	7:8 10:3	187:12	<b>Zoe</b> 4:13
137:9	<b>writing</b>	55:8	<b>young</b>	133:10,1
138:18	83:1	88:15	149:15	2 135:12
154:11			221:25	141:16,1
157:14				
159:7				

9 144:25	170:21			
145:2	173:19,2			
<b>zone</b> 62:19	2,23,24			
63:24	197:11			
74:21	202:8			
76:9	208:16			
77:24,25	213:17			
78:6,12,	218:18			
21,25	223:17			
79:2	<b>Zoology</b>			
93:8	122:12			
110:21	<b>zover</b>			
112:19,2	213:16			
3	<b>Zusky</b>			
113:22,2	248:12			
4				
121:13,1				
7				
122:5,13				
,18				
169:10,1				
2,14,19				
170:10				
171:22				
172:14,1				
5,17,18				
173:2,4				
174:9,11				
,17,24				
192:9				
199:16				
200:4,9,				
21,22,24				
201:14,2				
0 215:8				
223:23				
<b>zones</b> 77:7				
84:20				
90:15				
106:17				
113:11,2				
2 116:15				
121:23				
123:16				
143:20				