

Commission of Inquiry into the Decline of
Sockeye Salmon in the Fraser River



Commission d'enquête sur le déclin des
populations de saumon rouge du fleuve Fraser

Public Hearings

Audience publique

Commissioner

L'Honorable juge /
The Honourable Justice
Bruce Cohen

Commissaire

Held at:

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Federal Courthouse
701 West Georgia Street
Vancouver, B.C.

Monday, June 6, 2011

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Salle 801
Cour fédérale
701, rue West Georgia
Vancouver (C.-B.)

le lundi 6 juin 2011

APPEARANCES / COMPARUTIONS

Wendy Baker, Q.C. Maia Tsurumi	Associate Commission Counsel Junior Commission Counsel
Mark East Charles Fugère	Government of Canada ("CAN")
Clifton Prowse, Q.C.	Province of British Columbia ("BCPROV")
No appearance	Pacific Salmon Commission ("PSC")
No appearance	B.C. Public Service Alliance of Canada Union of Environment Workers B.C. ("BCPSAC")
No appearance	Rio Tinto Alcan Inc. ("RTAI")
Shane Hopkins-Utter	B.C. Salmon Farmers Association ("BCSFA")
No appearance	Seafood Producers Association of B.C. ("SPABC")
No appearance	Aquaculture Coalition: Alexandra Morton; Raincoast Research Society; Pacific Coast Wild Salmon Society ("AQUA")
Judah Harrison	Conservation Coalition: Coastal Alliance for Aquaculture Reform Fraser Riverkeeper Society; Georgia Strait Alliance; Raincoast Conservation Foundation; Watershed Watch Salmon Society; Mr. Otto Langer; David Suzuki Foundation ("CONSERV")
No appearance	Area D Salmon Gillnet Association; Area B Harvest Committee (Seine) ("GILLFSC")

APPEARANCES / COMPARUTIONS, cont'd.

No appearance	Southern Area E Gillnetters Assn. B.C. Fisheries Survival Coalition ("SGAHC")
No appearance	West Coast Trollers Area G Association; United Fishermen and Allied Workers' Union ("TWCTUFA")
No appearance	B.C. Wildlife Federation; B.C. Federation of Drift Fishers ("WFFDF")
No appearance	Maa-nulth Treaty Society; Tsawwassen First Nation; Musqueam First Nation ("MTM")
No appearance	Western Central Coast Salish First Nations: Cowichan Tribes and Chemainus First Nation Hwlitsum First Nation and Penelakut Tribe Te'mexw Treaty Association ("WCCSFN")
Brenda Gaertner Crystal Reeves	First Nations Coalition: First Nations Fisheries Council; Aboriginal Caucus of the Fraser River; Aboriginal Fisheries Secretariat; Fraser Valley Aboriginal Fisheries Society; Northern Shuswap Tribal Council; Chehalis Indian Band; Secwepemc Fisheries Commission of the Shuswap Nation Tribal Council; Upper Fraser Fisheries Conservation Alliance; Other Douglas Treaty First Nations who applied together (the Snuneymuxw, Tsartlip and Tsawout); Adams Lake Indian Band; Carrier Sekani Tribal Council; Council of Haida Nation ("FNC")
No appearance	Métis Nation British Columbia ("MNBC")

APPEARANCES / COMPARUTIONS, cont'd.

No appearance	Sto:lo Tribal Council Cheam Indian Band ("STCCIB")
No appearance	Laich-kwil-tach Treaty Society Chief Harold Sewid, Aboriginal Aquaculture Association ("LJHAH")
No appearance	Musgamagw Tsawataineuk Tribal Council ("MTTC")
No appearance	Heiltsuk Tribal Council ("HTC")

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Vancouver, B.C./Vancouver
(C.-B.)
June 6, 2011/le 6 juin 2011

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5 THE REGISTRAR: The hearing is now resumed.

6 MS. BAKER: Thank you, Mr. Commissioner. It's Wendy
7 Baker for the Commission. With me is Maia
8 Tsurumi.

9 Today, tomorrow and Wednesday, we'll be
10 dealing with the topic of freshwater urbanization,
11 and we have broken this up into three different
12 groups of witnesses. The first group today is
13 Robie Macdonald - I'll get his pronunciation right
14 - and André Talbot. Dr. Macdonald is from
15 Fisheries and Oceans and Dr. Talbot is from
16 Environment Canada. Tomorrow we will have Sylvain
17 Paradis, Lisa Walls and John Carey. Again Dr.
18 Paradis is from Fisheries and Oceans, and the
19 other two witnesses are from Environment Canada.
20 And with those witnesses we'll be talking about
21 non-point source contaminants in the freshwater
22 environment, and toxics research, et cetera. The
23 last panel will involve two people from Fisheries
24 and Oceans, Michael Crowe and Corino Salmi, from
25 Habitat Management, and Stacey Wilkerson from the
26 Province and we'll be dealing with physical
27 impacts on freshwater environment and primarily
28 focusing on riparian impacts.

29 So today I'm hoping to finish with this panel
30 before the end of the day and start the second
31 panel before the end of the day is my plan,
32 because we have a lot to cover in these three
33 days.

34 Before we start I do need to mark the PPR for
35 this topic. It was circulated to all parties on
36 May 11, 2011, and it's called "Policy and Practice
37 Report: Overview of Freshwater Urbanization
38 Impacts and Management".

39 THE REGISTRAR: That will be marked as PPR number 14.

40
41 PPR14: Freshwater Urbanization Impacts and
42 Management, May 11, 2011
43

44 MS. BAKER: Thank you. We'll begin, then, with the
45 swearing in of the two witnesses, please.

46 THE REGISTRAR: Please turn on your microphone, please.
47 Good morning.

1 things.

2 Q Okay, thank you. And, Dr. Macdonald -- Dr.
3 Macdonald's biography is under number 2 of our
4 list of documents. Dr. Macdonald, you're
5 presently the Section Head of the Marine
6 Environmental Quality Section at Fisheries and
7 Oceans Institute of Ocean Sciences in B.C.?

8 DR. MACDONALD: That is correct.

9 Q And this is your biography you see on the screen
10 in front of you?

11 DR. MACDONALD: Yes.

12 MS. BAKER: Have that marked, please.

13 THE REGISTRAR: Exhibit 974.

14
15 EXHIBIT 974: *Curriculum vitae* of R.W.
16 Macdonald
17

18 MS. BAKER: Thank you.

19 Q And you have done extensive research over the 35
20 years, which is all set out in your biography, but
21 your focus has been on, as you identify, three
22 major subjects: the cycling of organic carbon in
23 the ocean, the cycling of freshwater in the Arctic
24 Ocean, and contaminant pathways in temperate and
25 polar aquatic systems.

26 DR. MACDONALD: That's correct.

27 Q Thank you. And how long have you been the Section
28 Head of the Marine Environmental Quality Section?

29 DR. MACDONALD: I think it's approximately eight or
30 nine years. I was an Acting Head for a fair
31 period of that time.

32 Q During the eight to nine years you were an acting,
33 or before that you were acting?

34 DR. MACDONALD: No, I was during the past two years, I
35 think, I actually formally was sworn in.

36 Q Okay. Now, so I want to just ask a little bit
37 about your research focus on dates and transport
38 of contaminants. Can you explain what that is?

39 DR. MACDONALD: Well, as the *c.v.* says, I specialize in
40 pathways, and when we release contaminants to the
41 environment, they enter naturally cycling systems.
42 Some of them are volatile, some of them tend to
43 stick on particles, some of them like to go to
44 organic systems. And so to understand the pathway
45 part of this and the transport, you have to
46 understand how the various systems move these
47 around. The two great cycling fluids, water, the

1 oceans basically, and the hydrological cycle, and
2 the atmosphere get into that and they will move
3 contaminants long distances. And then within
4 local sites they'll start to move through
5 particular pathways, including food webs, which is
6 really what puts them at risk to ecosystems.

7 Q All right. So this work that you do, it looks at
8 large scale transport processes that can
9 concentrate contaminants and maybe put ecosystems
10 at risk; is that right?

11 DR. MACDONALD: It looks at large scale but also small
12 scale. There are many ways that contaminants get
13 concentrated and I'm interested in all of those.

14 Q Can you tell us what phenomenon, physical
15 phenomena, like biomagnification or migration, how
16 do those -- what are those concepts and how do
17 they relate, or are they relevant to Pacific
18 salmon.

19 DR. MACDONALD: They are very relevant to Pacific
20 salmon. For many of the contaminants we put out
21 into the circulating systems, like PCBs, their
22 concentrations are very low in water and
23 atmosphere. So it requires some kind of process
24 to concentrate them to make them a risk. And
25 animals themselves can be part of this process.
26 And, for example, the concentration of a PCB in
27 the water, compared to what it might be in a top
28 predator, can be a factor of a million or more
29 higher, right, in the predator.

30 So what happens is when animals feed in
31 trophic systems, they are basically transferring
32 fat from lower levels to higher levels. And with
33 the fat they tend to transfer fat soluble
34 contaminants like PCBs and PBDEs. So they get
35 concentrated as you go up the food web. They get
36 concentrated initially because they like to
37 transfer out of the water into the bottom end of
38 the food web, like phytoplankton, and then when
39 zooplankton eat the phytoplankton they metabolize
40 some of the fat, but they maintain the organo fat
41 soluble contaminants. And this goes on up into
42 the zooplankton, into fish, and then into those
43 things that eat fish. And salmon are seated about
44 trophic level 3 in the middle, so they're not the
45 worst exposed, but they're certainly accumulating
46 these contaminants as they feed in the ocean to
47 levels that are easily detectible.

1 Now, the other part you've talked about in
2 transport, salmon have this particular property of
3 congregating in the same place. So what happens
4 is these salmon all go out to sea and feed and
5 accumulate their body mass, and they accumulate
6 contaminants, and then they come back to a
7 particular lake or natal stream. And so there
8 might be a million fish that come into a
9 particular lake, and there could be 40,000 of
10 these per hectare. They spawn, they die. So the
11 contaminants they bring back that way can
12 sometimes exceed the contaminants that deposit in
13 the system to start with from the atmosphere.

14 Q Thank you. We understand that there was a Toxic
15 Chemicals program or mandate in the early part of
16 the 2000s and prior, within DFO. Was that changed
17 in 2004/2005?

18 DR. MACDONALD: Yes. We went through a couple of
19 program reviews, 2005 and 2006 was a program
20 review, and at that time the toxics program that
21 we had was clearly headed for a change. And we
22 were tasked at a meeting in Ottawa to prepare for
23 white papers on what the next Toxic Chemicals
24 program would or could look like, and four papers
25 were produced in the end of the day, I believe.
26 And these would suggest a new focus on toxicity to
27 fish, but really lose the pathway work.

28 We had a funding, an ESSRF fund at that time,
29 or before that time, that was proposal money that
30 annually we put proposals in and we did reviews of
31 work we had in progress, and those funds
32 disappeared at that time.

33 Q Right. So that ESSRF, that's the Environmental
34 Science Strategic Research Fund?

35 DR. MACDONALD: That's correct.

36 Q And that funded research within DFO on the types
37 of things that you're talking about?

38 DR. MACDONALD: That's correct. It was distributed
39 across DFO and it basically supported a toxic
40 chemicals perspective and we would all put
41 proposals in, and in Ottawa there was a vetting
42 process that tried to make sure the funds were
43 distributed on high priority proposals, and with
44 some equality across regions.

45 Q And so was contaminant work relevant to the Fraser
46 system funded through that fund?

47 DR. MACDONALD: Yes, there was some work that was

1 funded through that. In fact, I think the salmon
2 transport work I mentioned, we got funds to do
3 part of that.

4 Q Okay. When that fund was eliminated in -- what
5 year was that, 2005?

6 DR. MACDONALD: I believe it was 2005, yes.

7 Q What funding came in to replace that?

8 DR. MACDONALD: Within DFO, none, really. We depended
9 on other external funds. There were pesticide
10 funds that came in a different pot, and myself, I
11 depended on things like Northern Contaminants
12 program, which is Arctic funds.

13 Q Okay. As part of the changes to the Toxic
14 Chemicals program, were labs of expertise created
15 within DFO?

16 DR. MACDONALD: They were created in a sense. We
17 already had the labs, really, but the perspective
18 was to develop these labs into -- into particular
19 labs that would be used across Canada. So prior
20 to that we had regional labs and we did our
21 regional work, and the notion here was to render
22 it down to having labs that would cover all of the
23 toxic chemicals that we had an interest in, and
24 have these distributed in different places for the
25 sake of efficiency. So one was held at the
26 Institute of Ocean Sciences, and that was an
27 organic lab.

28 Q That's your lab?

29 DR. MACDONALD: That's our lab. Another one was held
30 in Quebec. It was a combination of an organic
31 lab, but they had lower resolution in the organo
32 context, and they also did the metals work. In
33 addition to that, we had a pesticide lab at
34 Winnipeg. And we had what was called COOGER,
35 which was a hydrocarbon lab at BIO, and we also
36 had a radionuclide lab at BIO. Those were
37 longstanding labs that were -- I don't believe
38 they were part of LEACA.

39 Q I'm sorry, what's BIO?

40 DR. MACDONALD: Bedford Institute of Oceanography. So
41 in fact within the Department of Fisheries and
42 Oceans we had lab expertise to do pretty well all
43 the contaminants.

44 Q And how did that changing of the labs fit in with
45 the new mandate for toxic research?

46 DR. MACDONALD: Well, it gave us certainly a lab
47 facility to do the analyses, and we got high

- 1 quality analyses in that way, and that was clearly
2 available. And certainly if we had -- if we could
3 attract funding to do toxic chemical research on
4 toxicity to fish, with a broad definition to fish,
5 then we could use these labs to send our samples
6 to, and there was some savings in the cost in
7 those labs because we were charged only operating
8 expenses to do analyses, which made them fairly
9 cheaper inside DFO than it would have been to go
10 to a contract lab.
- 11 Q All right. In your view has access to lab
12 facilities improved for DFO, given this change in
13 the structure?
- 14 DR. MACDONALD: I would say yes. I think that the lab
15 system did improve. Certainly the access to it
16 across Canada was better, and it was much more
17 transparent, so I think it was an improvement.
- 18 Q Okay. So before we were talking about the labs,
19 we were talking about funding, and you identified
20 that there was no new fund created to replace
21 ESSRF. So where do contaminant researchers within
22 DFO get their funds now?
- 23 DR. MACDONALD: Well, they get them by putting
24 proposals into other programs that come along.
25 IPY would be an example, although IPY really
26 didn't do contaminants --
- 27 Q What does that stand for?
- 28 DR. MACDONALD: The International Polar Year, they put
29 a lot of money in, starting in 2007, to do Arctic
30 and Antarctic work. Contaminants were not a big
31 part of that, but that would be one source. There
32 was a pesticide fund, so that was also a
33 possibility. You could do collaborative work with
34 industry, so we get some funds in that way, as
35 well. So basically it was looking for places you
36 could put a proposal in, or partner with other
37 organizations, or through universities. There
38 have been networks are created in Canada to do
39 research. These are cutting-edge networks. One
40 of them is ArcticNet, and again you can do work
41 through that. So basically it was finding funds
42 outside of DFO.
- 43 Q Okay. And so does it mean that the DFO
44 contaminant researchers are now essentially
45 supporting other research priorities within the
46 Department at large, or within other Departments
47 in government?

1 DR. MACDONALD: That's certainly a risk. I think most
2 of the scientists try to find a win/win position,
3 but for sure when you do get money from another
4 pot somewhere, it usually has some mandated
5 mission, and that might not align exactly with
6 DFO's mission.

7 Q So have there been changes then in how -- what
8 research is done in the Fraser system since the
9 changes were made to the toxics program in 2005?

10 DR. MACDONALD: Yes, I would say so. As I mentioned
11 earlier, the pathways work has been dropped
12 officially from the system. So you can't really
13 do that within DFO. Toxic chemical work you can
14 do, but again, you have to find the funds somehow.
15 And there have been various places that have come
16 and gone to do that.

17 Q The phenomena that you were describing earlier,
18 which is the transport of salmon back to their
19 natal lakes and contaminant accumulation that
20 results, is that part of a pathways research
21 that's no longer -- that you would no longer have
22 any funding to do research on that aspect?

23 DR. MACDONALD: Strictly speaking, by itself, yes. It
24 would be -- it's a pathways piece of research, we
25 did not connect that to the toxicity, to the fish.

26 Q Okay. What funding is available for non-point
27 source contaminants research? How do you do that?

28 DR. MACDONALD: You mean specifically like long-range
29 transport?

30 Q Anything like that, yes.

31 DR. MACDONALD: Again, most of the work that I've been
32 involved with has been Arctic work, because we've
33 had a Northern Contaminants program that has been
34 mandated to look at contaminants in the polar
35 ecosystem and health effects on humans. So they
36 have been initially very interested in pathways
37 and latterly more interested in human health.
38 That in the Arctic, local contaminants and point
39 sources are much less an issue, so they really are
40 focused on long-range transport. So that's where
41 we've gotten a lot of our funding.

42 Those ecosystems are really set up no
43 differently than ecosystems in the Strait of
44 Georgia. So that what we've learned up there
45 doesn't hurt us in understanding the Strait of
46 Georgia, except that you might anticipate that
47 being close to industrial and temperate

1 agricultural sources, the Strait of Georgia is
2 probably even more impacted by these kind of
3 contaminants.

4 Q And that non-point source research in the Lower
5 Fraser area is not being worked on right now by
6 DFO?

7 DR. MACDONALD: Not really, no.

8 Q If I can ask you to turn to a couple of emails
9 that are in the materials. Start with Tab 4.
10 This should come up on your screen in a minute.
11 It's in the binder at Tab 4, if you want to follow
12 it there. So this is an email from Robin Brown.
13 Now, who is Robin Brown?

14 DR. MACDONALD: Robin Brown is presently my boss, and
15 he's the Division Chief for Ocean Sciences, the
16 Ocean Sciences Division in the Institute of Ocean
17 Sciences.

18 Q Okay. And he's writing this email to Laura
19 Richards and others, and you are copied with this
20 email, so you've seen it before?

21 DR. MACDONALD: Yes.

22 Q Okay. And the "re" line is "Effect of Pesticide
23 Spraying on Pacific Salmon", and if you look at
24 paragraphs 1 and 2, this identifies -- well, if we
25 look at paragraph 2:

26
27 This is an area of complex jurisdiction.
28 Health Canada/PMRA...

29
30 That's the Pesticide Management Agency; is that
31 right?

32 DR. MACDONALD: That's correct.

33 Q
34 ...regulates the use of pesticides.
35 [Environment Canada] focuses on "point
36 source" deposition of deleterious substances
37 under the **Fisheries Act**. DFO worries about
38 more subtle ecosystem impacts of (primarily)
39 non-point sources (like surface run-off) and
40 complex mixtures of contaminants that are
41 poorly addressed with [Environment Canada's]
42 primary emphasis on point sources. This is
43 exactly the kind of problem that is likely to
44 slip through the research and regulatory
45 "cracks".

46
47 And is it fair to say then that this pesticide

1 spraying, the effects of pesticide spraying on
2 Pacific salmon is that kind of non-point source
3 contaminant impact that's not presently being
4 researched by DFO?

5 DR. MACDONALD: We have some research on it, because
6 Peter Ross is working on this issue from a fish
7 toxicity perspective, but we certainly don't have
8 a large program on it.

9 MS. BAKER: I'd like that to mark, please, as the next
10 exhibit.

11 THE REGISTRAR: Exhibit 975.

12
13 EXHIBIT 975: Email thread between R. Brown
14 and L. Richards et al, re Issues Management -
15 Effect of Pesticide Spraying on Pacific
16 Salmon, ending November 19, 2008
17

18 MS. BAKER:

19 Q And the next tab, Tab 5, is an email again from
20 Robin Brown to Kate Ladell. I think you were --
21 you're aware of this email, you've seen it before?

22 DR. MACDONALD: I think I've been shown this in our
23 discussions, but it was not copied to me.

24 Q All right. It says, the first paragraph that
25 Robin Brown, first full paragraph, says:

26
27 This is an area of "tension" --
28

29 Oh, sorry, the "re" line is "Impacts of copper on
30 salmon", and it says:

31
32 This is an area of "tension" between
33 [Environment Canada] and DFO. DFO has
34 largely withdrawn from the 'contaminants
35 research' field (at least on paper - there
36 are still internally subversive elements at
37 work and I leave it up to your imagination to
38 decide where those elements might be
39 located).
40

41 The first part of that sentence, that there's a
42 tension between DFO and Environment Canada and
43 that DFO has withdrawn from contaminants research
44 in this area, is that consistent with your
45 understanding?

46 DR. MACDONALD: Yes. I would agree that the tension
47 was that DFO had withdrawn from certain components

1 of looking at contaminants, pathways being one of
2 them, with the notion that Environment Canada was
3 going to pick these up. But I think Environment
4 Canada wasn't on the same page there, because they
5 were not necessarily given resources to pick
6 things up, and some things they were doing but
7 some things they weren't doing, and I don't think
8 they picked those up. So there was an inter-
9 departmental disagreement, I think, on what was
10 being given over and what was being taken over.

11 Q And then the third paragraph, third full
12 paragraph, the very last line says:

13
14 There is a pretty large gaps (sic) between
15 what [Environment Canada] is prepared to do
16 and what DFO is prepared to do, and this gap
17 is largest in the marine environment.
18

19 And you agree with that?

20 DR. MACDONALD: I would agree with that, yes.

21 MS. BAKER: Could I have this marked, please, as the
22 next exhibit.

23 THE REGISTRAR: Exhibit 976.
24

25 EXHIBIT 976: Email thread between R. Brown
26 and K. Ladell et al, re Questions re Impacts
27 of Copper on Salmon, ending June 10, 2010
28

29 MS. BAKER:

30 Q Is there a coordinated approach within DFO as to
31 what contaminants work will be done across the
32 country?

33 DR. MACDONALD: Not really, not since we stopped our
34 ESSRF proposal meetings in Ottawa annually, and
35 having proposal reviews. I think DFO has drifted
36 apart since that time. We have a notion of what
37 we do in region, and if scientists work together,
38 as we did on a polybrominated diphenyl ether paper
39 that we wrote, other than that we tend to work in
40 our own selected regions of interest and not so
41 much with the others.

42 Q So could you explain again how the ESSRF fund
43 worked to coordinate research interests across the
44 country?

45 DR. MACDONALD: Well, there was a requirement -- there
46 is a funding pot that you could put proposals in
47 annually, and you would do this with certain

1 rules. There was some gate-keeping on it that
2 said what kind of proposals would be looked at,
3 and the division of kind of emphasis on targeted
4 items, for example, toxicity versus pathways, and
5 these proposals will be collected together and
6 we'd have a meeting in Ottawa to go over them and
7 vet these proposals to rank them and come up with
8 some view on how the next year's money would be
9 split between regions and what they'd work on.

10 We'd also have from time to time meetings in
11 Ottawa that were program reviews, where we would
12 get up and we would present our findings. So with
13 those two kinds of processes, we had a
14 communication that was Canada-wide and within DFO,
15 so we had a pretty good notion about what other
16 people were doing and proposing. And indeed there
17 was some encouragement, I think, too, where
18 appropriate, for regions to work with one another
19 on a problem. For example, the St. Lawrence is
20 part Maritime, part Quebec, and so there's an
21 interest for both parties to collaborate.

22 Q And that, as I think you've just described, that
23 process is no longer available to you with the
24 dissolution of the ESSRF?

25 DR. MACDONALD: That's correct.

26 Q Okay. Is any environmental monitoring being done
27 as part of the contaminants research that is still
28 being done by DFO?

29 DR. MACDONALD: It depends on how you define
30 "monitoring". In my definition, the answer is no.
31 We make measurements on things as part of proposal
32 work. Sometimes you have funding for one to three
33 years and you might collect a set of time series
34 data by doing this, but it can't be called
35 organized monitoring.

36 Q Okay. Was baseline monitoring done by DFO in the
37 past in the Pacific region?

38 DR. MACDONALD: For toxic chemicals, not really. There
39 was some -- there were ad hoc things done for some
40 chemicals, and one can hind-cast the time series
41 by using archived samples. But I don't recall any
42 deliberate strategy to collect time series data
43 for contaminants and fish, for example, or seals.

44 Q Is it your view that monitoring is important --
45 monitoring for contaminants in the Fraser River
46 system is important from a science or research
47 perspective?

1 DR. MACDONALD: Yes, absolutely. Monitoring has from
2 time to time had a bad connotation in science,
3 that some people think it's not science and don't
4 like it. But I think monitoring is one of the
5 ways that you can actually see what's happening in
6 the environment. And you have to be frugal with
7 your funds, and so you target things. But I think
8 it's crucial to maintain a watch on your resources
9 and monitoring is one way you do that.

10 They've recognized this as a central element
11 in the Arctic and the Arctic Monitoring and
12 Assessment program and the Canadian Northern
13 Contaminants program have both had long-term
14 vested interests in monitoring. That monitoring
15 is connected to the research that's done, and
16 those two together help very much to assess what
17 trends are, why things happen, when they happen,
18 and who does it.

19 Q Does it also help to evaluate the success of a
20 regulatory regime?

21 DR. MACDONALD: Yes. Very clearly it's a way of
22 looking at what the performance is. Sometimes
23 surprises come out of that, because if your
24 regulation is not appropriate to the contaminant
25 source, nothing happens, or there are other
26 components in the environment that cause things to
27 go away. So you have to have a fair amount of
28 environmental understanding to understand exactly
29 what means your monitoring results. But having
30 said all that, very often monitoring is really the
31 key tool to tell you whether your regulation has
32 had some effect that you wanted to make.

33 Q And you had mentioned earlier sediment sampling
34 and can you explain how that works, and what its
35 usefulness is?

36 DR. MACDONALD: Well, you talk to the heart of one of
37 the things I like to do. If you don't have
38 monitoring in place, and often we don't, because
39 sometimes we wouldn't be aware of what to monitor
40 for, and sometimes early in our chemistry we might
41 not have tools adequate to monitor, in other
42 words, we didn't have detection limits or
43 sensitivity. But there are archives out in the
44 environment that naturally assemble records.
45 Sediments are one of those archives.

46 So if you think about how sediments
47 accumulate, each year a certain amount of new

1 sediment is dropped on top of old sediment, and
2 many contaminants are very sticky. They like to
3 go to particles. PCBs are one such. PDBEs, the
4 flame retardants, are also like that. And so what
5 happens is these sediments, while they're
6 accumulating, are accumulating a record of their
7 exposure to contaminants. So if you measure, if
8 you collect a sediment core, and you date it with
9 radiometric dating tools, and then you analyze the
10 sediments for a suite of contaminants, you can
11 very often hind-cast what's been going on in the
12 contaminant exposure.

13 We did exactly that with the dioxin and furan
14 business that we had in the early '90s. We had
15 this sudden emergent chemical nobody knew what had
16 been happening with it. We collected several
17 sediment cores, dated them out, and then we could
18 say very clearly these things started coming in
19 when chlorination in pulp mills started, and we
20 could see the rise of them, we could even see the
21 effect of the first year in the decline. We saw
22 the whole story with those. So sediments provide
23 a monitoring tool.

24 Q And is that sediment sampling that you've just
25 described, something that there's expertise for
26 within DFO in the Pacific region?

27 DR. MACDONALD: Yes. There's expertise for that in all
28 DFO regions.

29 Q Okay. And is there a difference in how that's
30 done in a marine environment versus a freshwater
31 environment?

32 DR. MACDONALD: There can be very much. Freshwater
33 environments, and people generally target lakes
34 and lake sediments. Lakes are oligotrophic, they
35 tend to be to be -- they tend to be not very
36 productive, so they don't have a very large carbon
37 cycle compared to the marine systems. What that
38 means is that sediments accumulating in lakes
39 often don't get mixed. They accumulate very
40 nicely and they form very stable records, so you
41 can set years of sediments against the
42 contaminants. And so you get a very clear record.
43 And in some lakes you get varved sediments. That
44 is, there's actual annual layers and you can go
45 down to annual.

46 In the marine systems, frequently there's
47 enough organic carbon and benthic activity that

1 the sediments get mixed on the surface. So that
2 kind of smears your record. You can recapture
3 that record by modeling it. But the tools to
4 model it and the understanding of marine cores is
5 quite different than freshwater cores, just for
6 that context alone. The other context is that
7 there's a lot of salt in marine systems and you
8 have to worry about that in the analytical part of
9 it, but I think we understand that one pretty
10 well.

11 Q Do you know what environmental water quality
12 monitoring is currently being done by Environment
13 Canada in the Fraser?

14 DR. MACDONALD: I was shown the -- they have a report
15 there, and I was shown a particular document that
16 paged out what they were monitoring, yes.

17 Q Okay. I'm going to take you that. That's Tab 8,
18 then, this is an email that summarizes what
19 contaminants are being monitored in the Fraser
20 system. That's an email, it was actually produced
21 by Environment Canada as an assembly of
22 information for the Cohen Commission. And you'll
23 see at the bottom it says "Core monitoring
24 parameters" and that actually goes over to the
25 next page, as well. All right. Is that what
26 you're referring to, or you're remembering?

27 DR. MACDONALD: This one partly, and also there was a
28 table with a list of things that they measured in
29 rivers, in freshwater going across Canada, in
30 fact --

31 Q Okay.

32 DR. MACDONALD: -- by province.

33 Q Is that in the freshwater quality indicator
34 document?

35 DR. MACDONALD: I believe it was.

36 Q Tab 24. And then if you turn to page 15 of that
37 document, it sets out parameters used across the
38 country. That's probably not going to be 15 on
39 Ringtail. Yeah, it's two pages further. There.

40 DR. MACDONALD: Yes, that's the table there.

41 MS. BAKER: Okay. So if I can just go back to Tab 8,
42 which is the email that has the summary of what's
43 relevant for the Fraser system. Reviewing this
44 email, are any of these --

45 MR. LUNN: Do you want the --

46 MS. BAKER: Yes, all the parameters there. Stop there.
47 Yes.

1 Q Are those parameters useful for the work that your
2 group would do in contaminants research relevant
3 to Pacific salmon?

4 DR. MACDONALD: You might describe them as necessary
5 but not sufficient. These are what you'd call the
6 pulse and blood pressure of rivers, most of these.
7 In other words, they tell you about the general
8 functioning. There's a certain amount of nutrient
9 work being done there, nitrogen and phosphorus,
10 and that tells you whether you've got a
11 eutrication problem, or, you know, in other
12 words, is this river behaving normally. It's got
13 temperature, and these are things you'd like to
14 know.

15 But like blood pressure and pulse, these
16 don't tell you really anything at all about the
17 contaminants we're talking about, the
18 biomagnifying accumulating contaminants, for
19 example, PCBs. You would get no information on
20 those exposures. You would get no information on
21 pesticide exposure. You wouldn't know anything
22 here about mercury uptake, for example. So none
23 of those kind of contaminants that really concern
24 us, and pharmaceuticals, et cetera.

25 MS. BAKER: Could I have that email marked, please, as
26 the next exhibit.

27 THE REGISTRAR: Are you referring to Tab 8?

28 MS. BAKER: Yes, Tab 8.

29 THE REGISTRAR: Yes, that's 977.

30
31 EXHIBIT 977: Email thread between B.
32 McNaughten and J. Carey et al, re Urgent -
33 Sockeye Inquiry and databases, ending March
34 16, 2010
35

36 MS. BAKER: Thank you.

37 Q Are you aware of any work being done by
38 Environment Canada in B.C. and in the Fraser
39 system on contaminants?

40 DR. MACDONALD: We have some collaborations with people
41 in Environment Canada to do contaminant work, and
42 they provided us with data. So I know they have
43 made measurements on water, PCB, for example,
44 partly at our request that they do so. We've
45 partnered these things up. I know they've had a
46 large program, they've measured a lot of things
47 like PAH's, polyaromatic hydrocarbons. So there

1 is some work being done in freshwater environment.
2 Q Are you aware of a buoy that's monitoring water
3 quality in the Fraser estuary?
4 DR. MACDONALD: Yes.
5 Q And do you know what that is, what it's
6 monitoring?
7 DR. MACDONALD: I don't remember the exact shopping
8 list.
9 Q This is something that your group has used in
10 their work?
11 DR. MACDONALD: We might use it, again as background
12 information, the same as we'd use this, but it
13 wouldn't really help us with the contaminant
14 business. It's not a way that you can do PCBs or
15 pesticides or other contaminants of interest.
16 Q Is there any agreements right now between
17 Environment Canada and DFO on monitoring in the
18 Fraser system that you're aware of?
19 DR. MACDONALD: None that I'm aware of.
20 Q I'm just going back to the toxics program and the
21 refocusing of that program in 2005. Toxicology
22 remained with DFO, toxicology of contaminants on
23 fish; is that right?
24 DR. MACDONALD: That's correct.
25 Q Okay. And is that toxicology work sufficient to
26 provide advice for regulators on contaminants?
27 DR. MACDONALD: No. You could provide some advice.
28 For example, if you found certain contaminants
29 passing toxic thresholds, you might red flag those
30 and write a briefing note to your management and
31 say "We've got a concern with PCBs." You would
32 really be not able to say why you had that.
33 Q What about this -- we've heard before in these
34 hearings about L50 tests, lethality tests. Are
35 those appropriate for migratory fish?
36 DR. MACDONALD: Well, it depends on the context of the
37 question. The L50 tests, or these toxicity tests
38 are what I -- I'm not a toxicologist, and I should
39 be very clear about that, but I call them a belly-
40 upness kind of test: does this kill the fish.
41 The contaminants that we're talking about, and the
42 stresses on fish themselves in their lifecycles,
43 isn't really about belly-upness. I mean, I think
44 we know very well when we have a spill of
45 something and we kill a lot of fish. We've seen
46 that and that was certainly something we saw a lot
47 more of in the 1950s and '60s, and we understand

1 that pretty well.

2 What we're talking about here is sub-lethal
3 effects, things that affect endocrine development,
4 that affect immediate immune function, affect
5 olfaction, for fish, and these are very subtle.
6 They fly under the death radar. You're not going
7 to see them show up in an L50. And yet they may
8 be every bit as risky for the fish and their
9 lifecycle as these things that kill them on the
10 spot. What happens, and we have one case from New
11 Brunswick, well, some research done by Wayne
12 Fairchild, that showed exposure to nonylphenol in
13 the river didn't kill the fish outright. They
14 went out to sea. They just did not come back.

15 Q And was that research that you're referring to,
16 did that have a regulatory impact ultimately?

17 DR. MACDONALD: Yes, I think it did. I mean, the -- it
18 was a very nice piece of science work, and I think
19 they learned a lot out of that. And of course
20 they realized that the nonylphenol, which was
21 actually not the pesticide, it just carried the
22 pesticide, was something that they would not want
23 to be spraying in the drainage basins at sensitive
24 times in salmon habitat.

25 Q Does the toxicology work that is now being done by
26 Fisheries and Oceans address the cumulative
27 effects of contaminants or non-lethal, sub-lethal
28 effects of contaminants?

29 DR. MACDONALD: Could you clarify what you mean by
30 "cumulative"?

31 Q Does it address the effect of multiple
32 contaminants being received by fish or
33 contaminants being received over various stages of
34 the lifecycle of the fish?

35 DR. MACDONALD: No, it does not do that. And these are
36 very difficult topics, but -- and are really the
37 topics at the heart of whether or not these
38 contaminants have an effect. But, no, we don't.

39 Q Dr. Talbot, you've been sitting there without a
40 question to answer, so I'm going to throw a
41 question your way now. Do toxic chemical and
42 contaminant scientists or managers within
43 Environment Canada sit down with their Fisheries
44 and Oceans counterparts to discuss what work
45 Environment Canada is going to be doing on
46 contaminants, and what work Fisheries and Oceans
47 is going to be doing?

1 DR. TALBOT: Yeah, not to my knowledge. The
2 communication on work planning is more ad hoc,
3 where either managers that have an issue in
4 common, or scientists have an issue in common will
5 come together and will discuss how to work on a
6 specific issue, how to collaborate. But to my
7 knowledge there's no formal process to do that
8 between DFO and EC.

9 Q And, Dr. Macdonald, do you have any different
10 perspective on that?

11 DR. MACDONALD: My perspective would be more at the
12 scientific level, and again the word "ad hoc"
13 would come up.

14 Q And, Dr. Macdonald, is there a coordinated
15 approach within Environment Canada as to work
16 being done that's relevant to fish health in the
17 Pacific, just to bring it closer to home here.

18 DR. MACDONALD: Not that I'm aware of. We collaborate
19 with them, as I said, on an ad hoc basis, and some
20 work we've done together with people, with
21 scientists in Environment Canada, based on
22 programs, the Fraser River Action Plan was one
23 such, but it's not an organized thing.

24 Q Now, your section, Marine Environmental Quality
25 Section in B.C. does provide some science advice
26 on contaminants that affect Pacific salmon still;
27 is that right?

28 DR. MACDONALD: That is correct.

29 Q And if that work stopped being done by your
30 section, is there another branch within Canada or
31 Department within Canada that would pick up that
32 work?

33 DR. MACDONALD: None that I know of.

34 Q Dr. Talbot, is it work that you think would be
35 picked up by Environment Canada?

36 DR. TALBOT: Could you repeat the whole question just
37 so to be clear.

38 Q Sure. I was asking Dr. Macdonald if his section,
39 the Marine Environmental Quality Section stopped
40 doing the science advice on contaminants work
41 relevant to Pacific salmon that it's presently
42 doing, if that worked stopped being done by the
43 Department of Fisheries and Oceans here in B.C.,
44 would it be picked up by your Department anywhere
45 in Canada?

46 DR. TALBOT: Likely not. The work that we do tends to
47 focus more on contaminants and their potential

1 risks to the environment. We don't really focus
2 on a species, such as a salmon, and particularly
3 not if they're in the ocean. It's not strictly
4 part of our mandate. So for us to pick up this
5 kind of work, we would really have to go back, up
6 to a policy level discussion and determine if that
7 becomes an issue for Environment Canada to get
8 involved in. At this point it's considered to be
9 a DFO mandate issue within Environment Canada.

10 Q Thank you. Dr. Macdonald, at Tab 11 of the
11 materials, there's an email from Peter Ross to
12 Jocelyne Hellou. Who is that, Jocelyne Hellou?

13 DR. MACDONALD: Jocelyne Hellou is a research scientist
14 at the Bedford Institute of Oceanography. She
15 works very much on toxicity and metabolic pathways
16 of organic compounds, polyaromatic hydrocarbons is
17 one such, but she also works with organochlorines.

18 Q Okay. If you move to the second page of this
19 email, this is a correspondence between her and
20 Peter Ross, and it's outlining some of the
21 difficulties in understanding which Department is
22 doing what research. And if you see, almost at
23 the bottom of the page that you see on your screen
24 there - stop moving the screen - okay. Let me
25 count off again, four bullets up or so, there it
26 says:

27
28 - there has been no clarification between DFO
29 and [Environment Canada] as to which agency
30 is responsible for conducting
31 contaminant/effects work in aquatic/marine
32 environments, such that no agency presently
33 admits responsibility for this activity.

34
35 And that, I take it, you would agree with that?

36 DR. MACDONALD: Yeah, I would agree with that view.

37 Q And, Dr. Talbot, is that also something you would
38 agree with?

39 DR. TALBOT: I think there's a lot of subtlety here.
40 It's difficult. It depends what they mean by
41 "this activity". I'm not familiar with the email.
42 I would have to look at it fairly carefully. But
43 we do have a prioritization process for our work,
44 and that prioritization process might include some
45 of the work, you know, that would concern sockeye
46 in the Fraser River in a broad sense.
47 Particularly with respect to contaminants of

1 interest for the discussion, or conditions under
2 which those contaminants are found in the
3 environment and their sources.

4 Q What about in the marine environment?

5 DR. TALBOT: The marine environment we would -- again
6 we do some work, it's of limited jurisdiction, or
7 it's limited capacity right now, simply because of
8 availability of funding to do that.

9 MS. BAKER: Could I have that marked, please, as the
10 next exhibit.

11 THE REGISTRAR: Exhibit 978.

12
13 EXHIBIT 978: Email thread between J. Hellou
14 and P. Ross et al, re Cohesion, ending
15 November 7, 2008
16

17 MS. BAKER:

18 Q If I could ask you to turn to Tab 13, it's another
19 email with Jocelyne Hellou. It's from you, Dr.
20 Macdonald, to her. And you'll see the embedded
21 email which is from her to Robin Brown and you're
22 copied on it, and she says here in the second
23 paragraph:

24
25 Government research should also be
26 preventive, discover potential problems
27 before they arise. This is what the handful
28 of "toxic chemicals" researcher should be
29 funded to do. I will let you decide if we
30 should have an exchange about that. Robie
31 was going to but seems to have changed his
32 mind it seems.
33

34 And then you respond and you identify that you're:

35
36 ...still a strong supporter of a healthy
37 contaminants program within DFO both in terms
38 of analytical skill and ability to focus on
39 leading issues of importance to fish.
40

41 Can you explain what that dialogue is referencing?

42 DR. MACDONALD: Well, I think at this time, this is
43 written in 2009 here, we had had this toxic
44 chemicals review and we had been tasked to produce
45 white papers, and we had produced those and they
46 had gone up the system. The money had disappeared
47 from DFO and the contaminant people working in the

1 system here felt abandoned, I mean, they did. And
2 emails like this came to me to say, you know,
3 what's happening here, what are we supposed to do?
4 And basically the mandate was it's toxic
5 chemicals, go find its toxic effects and find your
6 own money.

7 So there was a bit of a groundswell to say
8 it's not unlike the mice that were looking around
9 for somebody to tie a bell on the cat. And what
10 they felt was that somebody should go to a high
11 level in Ottawa and raise this issue. In other
12 words, Wendy Watson-Wright, you know, the ADM, or
13 at that level, and say, "We have a contaminant
14 community. They've got a history of expertise.
15 We've asked them to turn a corner, and they're
16 floundering a bit because they need some
17 direction, and maybe we, you know, is money going
18 to come back as was not promised, but at least
19 that was a conclusion that was possible, but there
20 was a lack of communication downward on it, to the
21 various players."

22 And so as the person that would perhaps face
23 this problem, I got selected for a number of
24 reasons, one of which is I'm a senior, another of
25 which is which I'm so senior that I'm retireable,
26 so that if I got in trouble it wouldn't matter,
27 and I was perfectly happy to do that. But as I
28 noted here, I think timing was important, and we
29 were going through a new budget right at that
30 time, and I said, "You know, this -- management's
31 got a lot more on its plate than this. And we
32 want to come out with a well-phrased, well-
33 formulated question to them." I also didn't want
34 to just give my opinion on this. I had
35 communications with people when I was at meetings
36 and that, and said that this is a community thing
37 and I expect everybody would contribute to this
38 conversation, and I would be willing to take our
39 community view in a respectful conversation with
40 management and see where got with it.

41 Q And what ultimately happened?

42 DR. MACDONALD: Wendy took a job over in France, I
43 think. Nothing happened on it.

44 Q Yes.

45 DR. TALBOT: Yeah, if I can jut add very briefly to
46 that. We have to be fairly careful with these
47 kinds of emails. Scientists, when there are

1 changes to priorities and as programs are
2 maturing, sometimes their sources of funding or
3 their directions will change, and there's always a
4 natural reaction of pushing back and saying,
5 "Well, my work is extremely important." And a lot
6 of these emails occur when there's a transitions
7 phase, you know, as programs mature. And some of
8 these are questions to management. While the
9 prioritization, and I think we're probably talking
10 -- I'll be talking about that maybe a little bit
11 later on, prioritization is both a top-down and a
12 bottom-up approach, where we have -- where
13 management will determine what the priorities are
14 for programs and direct its scientists to focus on
15 those.

16 Q Thank you. So I have just a few more questions
17 for Dr. Macdonald, and then I am going to be
18 moving on to Dr. Talbot -- or, sorry, yes. I
19 should mark that as the next exhibit.

20 THE REGISTRAR: Exhibit 979.

21
22 EXHIBIT 979: Email thread between R.
23 Macdonald and J. Hellou et al, re Environment
24 Canada ban on DecaPBDE - NOAA Concerns,
25 ending April 2, 2009
26

27 MS. BAKER: Thank you.

28 Q Dr. Macdonald, is measurement of contaminants a
29 useful thing in supporting ecosystem-based
30 management?

31 DR. MACDONALD: I think it's certainly a necessary
32 tool, yes.

33 Q Why?

34 DR. MACDONALD: Contaminants have been shown to cause
35 ecosystem health problems. So if you're not
36 measuring them, you're missing a piece of your
37 ecosystem health.

38 Q And in your view, does Environment Canada have the
39 capacity to do contaminant fates and transport and
40 pathways work in relation to Pacific salmon?

41 DR. MACDONALD: They haven't had the interest and I
42 don't think they have exactly the expertise to do
43 it. The expertise to do the marine side toxic
44 chemical work really resided in DFO, in my view.
45 So I think it was a DFO specialty.

46 Q And, Dr. Talbot, what's your view on that? Does
47 Environment Canada have the capacity to do

1 contaminant fates and transport, pathways work in
2 relation to Pacific salmon?
3 DR. TALBOT: Environment Canada does have a substantial
4 capacity to do fate and transport research on
5 contaminants, and we do, it's part of a central
6 mandate of my division under Water Science and
7 Technology. We would be particularly capable of
8 doing that type of work on freshwater fishes. As
9 the work concerns marine species, we don't have
10 the exact expertise, and we would have to develop
11 some expertise in this area where we would need to
12 understand mode of action of contaminants in
13 saltwater fishes. And that really hasn't been our
14 mandate or our interest in the past.
15 Q And I guess I'll ask both of you, as well,
16 starting with you, Dr. Macdonald, does Environment
17 Canada have the capacity to do toxicology work on
18 Pacific salmon, in your view?
19 DR. MACDONALD: They have capacity to do toxicology
20 work because they do it, they have labs in
21 Burlington, and they've done such work. They have
22 not been doing it with Pacific salmon, and I
23 think, given the expertise on genetics and other
24 things on fish lives, on marine fish lives, which
25 resides in DFO, if they did do it, they would be
26 better served to do it in collaboration with DFO
27 scientists.
28 Q Including the scientists in your department?
29 DR. MACDONALD: Yes.
30 Q Such as Peter Ross?
31 DR. MACDONALD: Such as Peter Ross.
32 Q And, Dr. Talbot, do you have views on that? Does
33 Environment Canada -- or do you want to add to
34 what Robie Macdonald just said?
35 DR. TALBOT: Yeah, Environment Canada, and especially
36 Water Science and Technology, does have the
37 expertise and a substantial amount of expertise on
38 toxicology work for many living organisms, all the
39 way from salmonids to very primitive forms of
40 life. Again the work is -- the type of work that
41 we would be doing on Pacific salmon would be
42 somewhat outside of our mandate or interests at
43 present, because of the responsibility for
44 anadromous fish relying on DFO, and this is the
45 way Environment Canada has interpreted the
46 mandate.
47 We would be capable of doing toxicological

- 1 work on many salmonids, particularly in freshwater
2 phases. It would be more difficult for us in our
3 -- given our expertise and our facilities to do
4 work on saltwater phases or saltwater fishes.
- 5 Q And what about -- we might have touched on this
6 already, but maybe I'll just ask it to both of
7 you. Does Environment Canada have the capacity to
8 do research on non-point source contaminants in
9 marine systems. Dr. Talbot, I'll ask you.
- 10 DR. TALBOT: We make in terms of our mandate, we do not
11 distinguish between contaminants that are from
12 point sources or non-point sources. We focus on
13 the fate, transport and presence and effects of
14 contaminants of point and non-point sources in my
15 division on aquatic ecosystems. And we also work
16 on the toxicity of the substances that might
17 originate from non-point sources. So we have the
18 capacity and we have the mandate to do so. The
19 question is more what's the context for the work
20 in particular, because as we deal with non-point
21 sources, the work on the sources of the
22 contaminants, or how the contaminants are managed
23 is of a mixed jurisdiction at this point.
- 24 Q What about in the marine area. Does the answer
25 that you just gave apply to marine systems, as
26 well?
- 27 DR. TALBOT: It would also apply to the marine
28 environment. We would do work, for example, on --
29 we could potentially do work on the presence of
30 contaminants in marine systems and the transport.
31 For example, we do work on appearance of
32 contaminants in the Arctic as they are transported
33 through the atmosphere, or the ocean currents.
34 But that is very limited amount of work, and it's
35 on the -- it's directed to the prioritization that
36 we would have in our specific programs, and our
37 interests in those programs and to the level at
38 which we would want to be involved. Some of that
39 work is funded from external sources, such as the
40 Arctic work is funded by Indian and --
- 41 Q Northern Affairs?
- 42 DR. TALBOT: Yes, thank you.
- 43 Q And how much of that kind of work is being done in
44 the Pacific Region by Environment Canada in the
45 marine environment?
- 46 DR. TALBOT: To my knowledge there is no work of this
47 nature.

1 Q You had mentioned earlier priority setting, and
2 I'd like to ask you now how is priority setting
3 done for Environment Canada research programs, Dr.
4 Talbot?

5 DR. TALBOT: Well, the prioritization of research, it
6 involves many steps. First is we obviously rise
7 to the mandate where our mandates originate from.
8 And a substantial component of our mandate comes
9 from the **Canadian Environmental Protection Act**,
10 Part 3 of the **Act**, which directs us to look at the
11 effects of contaminants on ecosystems and how
12 ecosystems alter the contaminants and their
13 persistence, bioavailability, and effects on
14 living organisms. And we also do work on --
15 through Part 5 of the **CEPA**, the **Canadian**
16 **Environmental Protection Act**, which directs us to
17 look at the toxicity of specific substances, as
18 identified by the risk assessment process which is
19 a confidential government program under the
20 Chemical Management Plan, to provide the types of
21 information that risk assessments and regulators
22 need to determine if a substance should be managed
23 as a toxic substance in the environment.

24 There's other **Acts**, as well, such as **Canada**
25 **Water Act**, which gives us broad responsibilities
26 under the Action Plan for Clean Water, and other
27 types of policies of that nature, specific
28 ecosystem programs to work on specific hot spots
29 ecosystems, such as Lake Winnipeg or Lake Simcoe,
30 or the Great Lakes, St. Lawrence ecosystem, for
31 example. And in those programs, we are to look at
32 what are the factors that are causing ecosystems
33 to be in decline and altered by contaminants or
34 multiple sources of pressures, in fact, not just
35 contaminants, but all stressors to the
36 environment. And to develop an understanding of
37 how those ecosystems are affected, and eventually
38 provide information for compliance or regulatory
39 activities.

40 Q And the ecosystems that you're referring to that
41 are prioritized right now, do any of those include
42 the Pacific region, where we would have sockeye
43 salmon moving through?

44 DR. TALBOT: We don't have a Fraser River or Pacific
45 Coast ecosystem program right now that allows us
46 to prioritize the work on Pacific salmon rivers
47 and streams.

1 Q Thank you. And Robie -- Dr. Macdonald, sorry, you
2 had something you wanted to add.

3 DR. MACDONALD: That's fine. You suggested I would
4 comment on the earlier question about transport.

5 Q Oh, I'm sorry, yes, I moved along.

6 DR. MACDONALD: Would you like to repeat the question?

7 Q I think what I had asked was whether the
8 Environment Canada has the capacity to do research
9 on non-point source contaminants in the marine
10 system.

11 DR. MACDONALD: Right. My viewpoint is a bit
12 different. Environment Canada, in my association
13 with them, has been a very strong partner in
14 atmospheric transport, and that has been
15 definitely a huge focus for them. Any time I've
16 wanted advice or written a review paper on
17 transport systems, I've gotten Environment Canada
18 scientists to help me with the atmosphere.

19 In the marine system, they are much weaker,
20 and basically when it comes to reviews and
21 whatever, it's the other way around, and I have
22 been asked numerous times on assessments to
23 provide the marine transport context. That's both
24 in the Arctic and the Pacific. Virtually all of
25 the marine transport knowledge we have that comes
26 out of the Arctic Ocean is DFO on the NCP side of
27 things. It's either work that I've done, or John
28 Smith at Bedford Institute.

29 MS. BAKER: Mr. Commissioner, we could take the morning
30 break now. I've only got a few, maybe 15 minutes
31 left of this panel.

32 THE COMMISSIONER: Thank you.

33 THE REGISTRAR: The hearing will now recess for 15
34 minutes.

35
36 (PROCEEDINGS ADJOURNED FOR MORNING RECESS)
37 (PROCEEDINGS RECONVENED)
38

39 THE REGISTRAR: Order. The hearing is now resumed.

40 MS. BAKER: Thank you.

41

42 EXAMINATION IN CHIEF BY MS. BAKER:

43

44 Q Dr. Talbot, how much funding does your group have
45 nationally to do research on contaminants? How
46 big is that budget or pot of money available to
47 your group?

1 DR. TALBOT: Ballpark number would be about three
2 million dollars for research on contaminants. And
3 if we add monitoring to that, it probably goes to
4 six million. But strictly speaking, it would be
5 three million dollars for research throughout
6 Canada.

7 Q Okay. Dr. Macdonald, in your view, who should
8 have responsibility for research and regulating
9 impacts of non-point source contaminants in the
10 marine and aquatic environment?

11 DR. MACDONALD: Well, this would be my view. I
12 definitely think that whoever does it needs to
13 have a good understanding of the marine resources
14 and their life habits. That's certainly a very
15 important component. You can't monitor a system
16 without understanding what it is you're
17 monitoring. That expertise resides with DFO so I
18 see DFO as being definitely implicated in running
19 it or being a full partner in it.

20 Q Move on to some pesticide questions, Dr.
21 Macdonald. Does the Department of Fisheries and
22 Oceans communicate science advice on pesticides to
23 the province to its Integrated Pest Management
24 Section?

25 DR. MACDONALD: I'm not aware of that.

26 Q Okay. And what about for both Dr. Macdonald and
27 Dr. Talbot, is there a formal mechanism for DFO
28 science to provide advice to Environment Canada
29 regulators? I'm going to start with you, Dr.
30 Macdonald.

31 DR. MACDONALD: None that I'm aware of. We certainly
32 have conversations that run below the formal level
33 and the best recent case I can think of is when
34 Environment Canada was looking at regulating the
35 flame retardants. And there, we felt that DFO had
36 a lot of expertise and a lot of interest in how
37 that regulation went. Environment Canada was a
38 lead agency and it was their responsibility to do
39 the regulation but they had called for
40 stakeholders to provide input before they made
41 their decision. And we felt it was very important
42 that DFO would make a statement of its position
43 was. That was a difficult process and certainly
44 that was not something that was clean and easy to
45 do.

46 Q And Dr. Talbot?

47 DR. TALBOT: Yeah, I have basically the same answer.

- 1 There's no formal process. However, there are
2 some specific conversations. Again, it depends on
3 the issue. It'll be between managers or between
4 scientists, as they develop the information
5 necessary to provide the best advice for risk
6 assessment or other such process.
- 7 Q And Dr. Macdonald, as I understand, the CSAS
8 process, the science advice process for DFO, which
9 we've heard about already in these hearings, is
10 available if a request is made through that
11 process for science advice to DFO Science; is that
12 right?
- 13 DR. MACDONALD: That is correct. I believe it can also
14 be operated in a bottom-up manner. It's not hard
15 to send a message up and say something is
16 important and then have a top-down command to do
17 it.
- 18 Q All right. But it does require that top-down
19 command, as you described it?
- 20 DR. MACDONALD: Yes.
- 21 Q And is that process adequate, in your view, for
22 getting science advice to Environment Canada or
23 regulators where it's needed?
- 24 DR. MACDONALD: No, I don't think it is. It wasn't
25 designed for that.
- 26 Q Okay. It's designed for answering questions
27 posed, not advising upwards?
- 28 DR. MACDONALD: It's designed for answering questions
29 posed and basically within DFO advice to bring
30 science advice to management within DFO. You can
31 Google CSAS and you can see the kinds of reports
32 and get a pretty good grasp of what it does.
- 33 Q Okay. Dr. Talbot, earlier, you had spoken about
34 the kinds of research that your Department engages
35 in. You talked about transport research and
36 toxicology and I just want to confirm, is any of
37 that work being done for Pacific salmon right now?
- 38 DR. TALBOT: No, there's no work under our mandate
39 right now that we're doing specifically for
40 Pacific salmon.
- 41 Q And that includes ecosystem research on the
42 Fraser; is that right? You're not doing ecosystem
43 research on the Fraser?
- 44 DR. TALBOT: That's correct. No ecosystem research on
45 the Fraser at present.
- 46 Q All right. Environment Canada does do research on
47 pesticides, though. And how does that take place?

1 DR. TALBOT: Well, there's basically a number of ways
2 that we can do research on pesticides. The most
3 important one is through an agreement with PMRA,
4 the Pesticide Management Regulatory Agency. They
5 have funded over the years a pesticide science
6 fund that Environment Canada uses to look at fate
7 and transport and effects of pesticides to non-
8 target organisms, as the pesticides are
9 distributed in ecosystems. And that process, over
10 the years, has been anywhere between \$300,000 to a
11 million dollars over the last five years at least
12 that I am aware of in my position as director.
13 There is also some work that we do on pesticides
14 because they're related to specific ecosystem
15 issues.

16 For example, if we're doing contaminants in
17 an area of concern, and we'd like to understand
18 what's happening in specific areas of concern, we
19 will try to attempt to understand the priority
20 contaminants in those areas of concern either in
21 the water or in the sediments. And in that kind
22 of process, we'll look at pesticides or we'll look
23 for pesticides and report on them. And there's
24 also some additional work on pesticides, as we try
25 to advance our work on providing relevant
26 information for enforcement and compliance. So
27 over the years, we have done some work on
28 pesticides in the context of what kind of buffer
29 zones do we need between application areas and
30 water bodies to ensure that pesticides don't run
31 off into rivers and streams.

32 Q You referenced the funding agreement you had with
33 PMRA. Is that agreement still in place? Are you
34 still receiving funding from PMRA to do pesticide
35 research?

36 DR. TALBOT: The agreement that's still in place and I
37 believe it's a continuous agreement. I don't
38 think there is a termination date on the
39 agreement. In terms of the funding, I think this
40 year the levels of funding currently continue to
41 be discussed at a higher level. I'm not aware
42 exactly what the envelope could be or would be
43 this year.

44 Q Last year, was there funding for pesticide
45 research?

46 DR. TALBOT: Last year, we had about \$300,000 for
47 pesticide research and about another 300,000 for

1 monitoring of pesticides.

2 Q Okay. Has the funding under that agreement
3 decreased over the years?

4 DR. TALBOT: It has decreased in the five years that
5 I'm aware of. Since I've been Environment Canada,
6 it's gone from a million dollars to about that
7 amount that I just stated.

8 Q Okay. And if there is no funding providing in the
9 funding envelope for this year, is there another
10 agency that would do the kind of work on
11 pesticides that is being done right now by
12 Environment Canada?

13 DR. TALBOT: Not to my knowledge, no. The work that's
14 done on pesticides, fate and transport and effects
15 to non-target organisms is work that Environment
16 Canada alone has been doing in recent years.

17 Q You talked about some different research that's
18 done by your group on pesticides outside of the
19 PMRA-funded work. What proportion of your budget
20 is spent on that pesticide work that's not
21 associated with PMRA?

22 DR. TALBOT: It would be a very small amount, perhaps 5
23 percent of our research budget.

24 Q Okay. Pesticide work, is it considered part of
25 Environment Canada's mandate?

26 DR. TALBOT: Pesticide research in terms of an
27 environment contaminant is part of our mandate.
28 However, there's a fine line here and perhaps some
29 level of discussion exactly what the
30 responsibilities are. PMRA asked us to look at
31 the non-target effects and environmental fate of
32 pesticides, as it develops the approval process
33 and regulations for use of those pesticides in a
34 Canadian environment. Work on effectiveness of
35 pesticides and best practices for use of
36 pesticides belongs more in Agriculture Canada, to
37 my understanding. So our mandate is strictly
38 restricted to pesticides as a potential
39 environmental contaminant under **CEPA**.

40 Q And are pesticides on the domestic substances
41 list?

42 DR. TALBOT: Not to my knowledge, no. Environment
43 Canada right now is going down the list of
44 contaminants that have been identified through a
45 lengthy process as substances in commerce through
46 the Chemical Management Plan. And that list is
47 developed by another group, risk assessment

1 people. And they need information from our
2 scientists to determine if those substances should
3 be managed as toxic substances. And pesticides
4 are not a priority in the Chemical Management
5 Plan. And supporting the Chemical Management Plan
6 is our priority right now.

7 MS. BAKER: Thank you. Thank you very much. Those are
8 my questions for these two witnesses. Canada will
9 be the next questioner.

10 MR. EAST: Mr. Commissioner, Mark East for the
11 Department of Justice. I'm with my colleague,
12 Charles Fugère. And I have about 25 minutes. I
13 hope to be done before that time.
14

15 CROSS-EXAMINATION BY MR. EAST:
16

17 Q Dr. Macdonald and Dr. Talbot, I have a few
18 questions. I just wanted to step back a bit and
19 talk a little bit about the terminology and
20 discuss the respective mandates of the two
21 departments. And maybe my first question is for
22 Dr. Macdonald. Your unit, I understand, is the
23 Marine Environmental Quality Section of the
24 Institute of Ocean Sciences. And I just wanted to
25 ask you, does that mean that your unit only does
26 toxic chemicals research within the marine
27 environment? Marine being ocean/saltwater
28 environment.

29 DR. MACDONALD: No, not entirely. We do research on
30 contaminants, as they affect fisheries resources,
31 and that certainly has included freshwater
32 resources at times.

33 Q And would that be particularly the case with
34 respect to anadromous species like salmon?

35 DR. MACDONALD: I think probably yes is the simple
36 answer. And partly because they are marine fish,
37 they come back and are reared and breed in lakes.
38 But certainly, we have had an interest in them
39 because they're an iconic species as well.

40 Q Okay. I also want to talk a little bit about, we
41 hear the term point source contaminants versus
42 non-point source contaminants and the respective
43 mandates of the departments. And I just want to
44 clarify something.

45 MR. EAST: Maybe we can go to Tab 4, Exhibit 975.

46 Q And this is a question for Dr. Talbot. And this
47 is the email from Robin Brown of DFO. And I just

1 want to get your opinion, Dr. Talbot, on the
2 paragraph that starts number 2, and maybe I'll
3 just read it again.
4

5 This is an area of complex jurisdiction.
6 Health Canada PMRA regulates the use of
7 pesticides. EC focuses on 'point source'
8 deposition of deleterious substances under
9 the **Fisheries Act**. DFO worries about more
10 subtle ecosystem impacts of (primarily) non-
11 point sources (like surface run-off) and
12 complex mixtures of contaminants that are
13 poorly address with EC's primary emphasis on
14 point sources. This is exactly the kind of
15 problem that is likely to slip through the
16 research and regulatory 'cracks'.
17

18 I guess my first question for Dr. Talbot is, would
19 you agree with this characterization of
20 Environment Canada's mandate with respect to
21 regulation of non-point source contaminants?

22 DR. TALBOT: If you're asking just the specific
23 question about the regulatory process, I think
24 there might be some better people to answer that
25 than I. But I can tell you from a research
26 perspective that we make no real distinction
27 between point and non-point sources. We have
28 research activities that concern contaminants
29 whether they're dispersed from a point source like
30 effluents or whether they're dispersed through the
31 air and transported through the air like
32 pesticides and other volatile substances. Our
33 research is focused really on contaminants as a
34 concern for ecosystem health and also a concern
35 for the water quality standards that we are
36 committed to provide information on through **CEPA**,
37 for example. So from the research perspective, I
38 don't think this point 2 is really accurate from a
39 research perspective.

40 Q Okay. Thank you. And maybe just to follow up on
41 this email with Dr. Macdonald, I just want to get
42 a sense of to the extent to which your unit does
43 research into non-source point contaminant work, I
44 note, for example, on this email, if you scroll
45 down a bit, there are some references to Peter
46 Ross and some papers and I know his name is Peter
47 Lott. And is there a distinction made in your

1 unit between work done on point sources and non-
2 point sources as far as a distinction that you're
3 supposed to be drawing within DFO or within your
4 unit?

5 DR. MACDONALD: No, there's not a particular
6 distinction that we're instructed to consider
7 here. I think it's as Dr. Talbot has said, in a
8 way, the problem is different depending on whether
9 you're talking about regulatory or you're talking
10 about effects in the environment. For regulatory
11 people, it makes a very big difference about point
12 sources and distributed sources because you have
13 to tackle those very differently.

14 In terms of an analyst living in the
15 environment that's receiving some of this and some
16 of that, it's more about what it has to deal with
17 and where it comes from that becomes important in
18 which case we try to understand the receptor in
19 DFO. Our research perspective has been the
20 receptor and whether or not harm is being done.
21 And then trying to understand which agents it is
22 that are causing that harm. That then would feed
23 into policy to the regulatory side.

24 Q Okay. Thank you for that clarification. I want
25 to talk a little bit about the context or I guess
26 the funding environment that your units have been
27 in the last five to ten years.

28 MR. EAST: And maybe to help out with that I'd like to
29 go to Commission's documents, Tab 14.

30 Q And these are really questions for Dr. Macdonald,
31 as they relate to DFO. Now, this is CAN394637.
32 And it's a paper entitled "Strategic Review of
33 Toxic Chemicals Research in the Environmental
34 Science Program and the Arctic Science Program,
35 Science Sector, Fisheries and Oceans Canada",
36 dated June 9th, 2003. Dr. Macdonald, are you
37 familiar with this document?

38 DR. MACDONALD: I've seen it, yes.

39 Q And is this strategic review, is that what led to
40 the changes that you testified about earlier in
41 your testimony?

42 DR. MACDONALD: I think this was one step along the
43 way. I'm not sure that this was the initial step.
44 We had earlier meetings and we had been going
45 along this road for quite a while, I think, in
46 DFO. Certainly, this would have been a prelude,
47 though, looking at how we emphasize our research

1 with limited funds.

2 Q Okay. And if we could go to page 3 of this
3 document, ringtail page 3, because it provides
4 maybe a little bit of context for some of these
5 discussions. Maybe starting with the executive
6 summary and I just want to ask you some questions
7 about what was going on at the time. In the
8 second paragraph, there's a reference to:

9
10 As a follow-up to the Science Assessment, the
11 National Science Directors Committee --

12
13 And I'll just stop there. Do you know what that
14 is?

15 DR. MACDONALD: Yes.

16 Q Can you explain what that committee is?

17 DR. MACDONALD: Basically, there are a set of
18 directors, high-level executives in Ottawa, and
19 they meet at times to work out DFO priorities and
20 match things like budgets to responsibilities.

21 Q Thank you. And so continuing on in that sentence:

22
23 -- directed that a review of the toxic
24 chemicals research within DFO be undertaken
25 for the period 1997/1998 to 2001/2002. The
26 goal of the review was to conduct an
27 assessment of the relevance, success and
28 effectiveness of DFO's past effort on toxics
29 research and to provide options on the future
30 direction of the Department's research on
31 toxic chemicals. The review was conducted
32 within the context that the Departmental
33 *status quo* remains non-viable and was based
34 on information received from regional
35 Environmental Science managers, clients and
36 the Science Project Inventory.

37 Can we stop there? What does that mean that the
38 *status quo* remains non-viable?

39 DR. MACDONALD: Well, in my view, and I didn't write
40 this text but I read into it that the non-
41 viability has to do with the amount of funding,
42 resources available within the Department to carry
43 out its mandate and the amount of funding required
44 to do all of the kinds of research that were
45 proposed. So what I read here is that there is
46 not enough funding to continue to put into this
47 kind of research.

1 Q And I'm going to let you take a drink of water,
2 Dr. Macdonald, and then I'll ask the next question
3 of Dr. Talbot.

4 DR. MACDONALD: Certainly.

5 Q And maybe just to follow, Dr. Talbot. Is it your
6 sense in the period of time that we're talking
7 about, I'm going to say the last five to ten
8 years, has this been generally a period of fiscal
9 restraint in the area of toxic chemicals and
10 research and science research generally in your
11 Department?

12 DR. TALBOT: In my experience, the question depends a
13 little bit on the context on the priorities within
14 Water Science and Technology or Science and
15 Technology Branch in general. In some years, we
16 found that the water contaminant research agenda
17 was extremely high-priority activity. For
18 example, in the last two or three years, oil sands
19 impact has been a very high priority within my
20 Division. And we've been funded at the level that
21 we needed to investigate oil sands as a hotspot,
22 as an ecosystem issue. And in other years,
23 though, funding is allocated elsewhere. I would
24 say in general our funding levels for water
25 contaminant research has declined somewhat or has
26 remained stable while the costs of doing business
27 has increased somewhat over the last five years
28 that I've been as a director. The allocation of
29 resources is more of a variable among priorities
30 than the Department's overall budget, I would say.

31 MR. EAST: Okay, thank you. And I'll maybe follow-up
32 on this theme. What I'd like to do now, perhaps I
33 should mark this document as an exhibit. I think
34 we'll probably hear more about it in the next
35 panel. If I can mark this paper, "Strategic
36 Review of Toxic Chemicals Research".

37 THE REGISTRAR: Exhibit 980.

38
39 EXHIBIT 980: Strategic Review of Toxic
40 Chemicals Research in the Environmental
41 Science Program and the Arctic Science
42 Program, Science Sector, Fisheries and Oceans
43 Canada dated June 9, 2003
44

45 THE COMMISSIONER: Mr. East, which tab? This is the
46 one at Tab 14, is it?

47 MR. EAST: Tab 14 of the Commission's list of

1 documents.

2 THE COMMISSIONER: Right. Thank you.

3 MR. EAST: Thank you. On the same thing, I'd like now
4 to turn to Tab 1 of Canada's list of documents.

5 Q And Dr. Macdonald, I don't know if you've seen
6 this particular document. It's a deck obviously
7 with the same title, "Strategic Review of Toxic
8 Chemicals Research Presentation to NSDC June 17th,
9 2003". Have you seen this before or do you know
10 anything about this document?

11 DR. MACDONALD: I had not seen it until this
12 proceedings here.

13 Q Okay. What I thought I would do is perhaps just
14 take you to some slides and just ask you some
15 questions and use this as a foundation for some
16 questions I'd like to ask you about what was
17 happening at this time.

18 MR. EAST: Maybe go to page 5 of the document.

19 Q And the first bullet:

20
21 Toxic chemicals research is relevant to DFO's
22 mandate and to addressing client needs.
23

24 The second bullet is interesting. I just want to
25 ask you something about this.
26

27 Toxics research effort was allocated --
28

29 And this is in 2003 or the five-year time period
30 prior to that. Biological affects 51 percent of
31 the projects. And I think this is national. And
32 chemical fate and transport, 42 percent of
33 projects. Can I stop right there and ask, we've
34 heard some testimony about fate and transport.
35 Can you maybe just discuss a little bit what the
36 different is between work that's focused on
37 biological effects versus work that's focused on
38 chemical fate and transport?

39 DR. MACDONALD: Right. Biological effects has to do
40 with when an aquatic resource, a fish in a broad
41 context, is exposed to some chemical or chemicals,
42 whether or not that triggers a harmful effect,
43 which, in scientific jargon, we'd say turns it
44 from a contaminant into a pollutant. We see
45 something happen. For example, you could impair
46 reproduction. And so that's the kind of thing
47 you're looking for. Specifically, you're trying

1 to match exposures to something that happens to
2 the fish.

3 The chemical fate and transport has to do
4 with a system science of understanding why the
5 fish has that chemical in it anyway? Where is it
6 getting it from? Who is putting it into the
7 system? Is it long-range transport? Is it local
8 industry? Where does it come from? And if you do
9 the science right, you could also answer the
10 question that if you withdrew resources or
11 withdrew sources, you turned off the tap for some
12 of these, you could project how long and how much
13 the contaminant would turn down and whether it
14 would come down below levels of toxic concern.

15 MR. EAST: Okay. Thank you. And then I want to go to
16 Tab 9 to follow on this discussion about
17 biological effects. I'm sorry, page 9, not Tab 9.
18 I apologize. And I'm jumping around in this
19 document. I'm going to go back to some earlier
20 slides but I just wanted to continue this theme.
21 In this deck, it talks about new directions. In
22 the first bullet:

23
24 Maintain adequate in-house expertise for
25 toxic chemicals research.
26

27 Q In your view, has this objective been maintained?

28 DR. MACDONALD: Over the past few years, I think we've
29 been losing this expertise. We certainly have
30 been losing the expertise on pathways because we
31 haven't supported that. We still have a lot of
32 remainder expertise on it but we're not developing
33 new expertise in that direction.

34 Q Okay. And the second bullet, in particular:

35
36 Allocate higher priority to studies on
37 biological effects on toxic chemicals on
38 fishery resources and habitat and lower
39 priority to stand-alone studies on fate or
40 residues not linked to effects.
41

42 Is this your understanding of where DFO was going
43 after this?

44 DR. MACDONALD: Yes.

45 Q Okay. And so that number we saw earlier of 51
46 percent versus 42 percent, they wanted to change
47 that ratio to make it even wider, I suppose.

1 DR. MACDONALD: They wanted to remove the 41 percent, I
2 think, really.

3 Q Has that 41 percent disappeared entirely in the
4 last five years?

5 DR. MACDONALD: Yes.

6 MR. EAST: Maybe I'll go back to the previous slide,
7 slide 8. I believe this chart actually is in the
8 Policy and Practice Report. I may be wrong about
9 that but I've seen it. I think I saw it there.

10 Q But this is a chart that talks about ESSRF
11 allocations - that's the fund that you talked
12 about earlier - for the time period 1997 to 2003.
13 And if you look on the left, it says:

14
15 Total toxic chemical funding reduced from
16 11.6 million to 7 million to address other
17 pressures.
18

19 And there was a bump up, I think, in 2001/2002 to
20 address concerns on new chemicals. Is that a
21 trend that you saw that you've seen over time, a
22 decline in funding for toxic chemical research?

23 DR. MACDONALD: Yes. Within DFO.

24 Q Within DFO.

25 DR. MACDONALD: Yes.

26 Q And maybe go down to the last line. It says:

27
28 ESSRF funding decreased due to realignment to
29 other priority areas.
30

31 Maybe just put it this way. Why do you think that
32 toxic chemical research funding as a stand-alone
33 function has been declining? Well, I'll just
34 leave it at that. Why do you think that has been
35 the case?

36 DR. MACDONALD: Well, you're asking for my opinion?

37 Q Yes.

38 DR. MACDONALD: And I've not been party to NSDC
39 meetings and other things but I think really that
40 DFO, as all Departments, have a lot of priorities,
41 a lot of mandate to do. And I think they were
42 strapped for funding and they looked over their
43 mandate and asked some hard questions about what
44 it is they had to cut. Generally, in my view, you
45 have two kinds of cuts you can make. We offer up
46 efficiency cuts and trimming of fat and all that.
47 But there comes a point when that doesn't work

1 anymore and you have to do some kind of
2 amputation. And in the 2005 meeting, I think the
3 decision had come to the point of whether or not
4 DFO would excise the contaminant's work entirely.

5 I mean I think that was really on the table
6 from what I heard and what I saw. They came back
7 to a position of saying, well, let's maintain an
8 expertise but we have to limit it. And it will be
9 limited to this. We will maintain our
10 laboratories. I think that was a wise decision.
11 And we will make those more efficient. I think
12 that was a wise decision. And we will limit our
13 research to toxic effects on fish with a broad
14 context fish and that way we will save this amount
15 of dollars and they will go to other priorities
16 that are above this priority.

17 Q And we'd agree that's kind of reflected, at least
18 for this five-year time period, by this chart
19 that's in front of you on page 8 where the yellow
20 bar is coming down, "Toxic Chemical Research",
21 some of the other ones, "Oil and Gas" is a good
22 example, are becoming greater priorities for the
23 funds that are available. Is toxic chemicals
24 research a sub-component of some of these other
25 areas?

26 DR. MACDONALD: It could be. You could cast a research
27 proposal for habitat with some contaminants in it
28 and you could do likewise with hydro-electric
29 development. And certainly, if oil and gas comes
30 into the picture, yes. Pesticides are clearly
31 toxic chemicals. So they are a little bit
32 embedded into other proposals quite often, yes.

33 MR. EAST: And maybe if we can go back just to page 9.

34 Q If you look on the third bullet:

35
36 The focus on solving practical problems that
37 are essential to DFO's mandate obligations
38 and needs and clients.
39

40 Is this a reference to focusing the work more on
41 responding to priorities identified by DFO in
42 other areas? Like supporting other areas of DFO
43 Science?

44 DR. MACDONALD: I'm not sure exactly what's meant here.
45 I can read into it what I think is meant but I'm
46 not sure what is meant.

47 Q Okay. Well, we'll leave it at that. And then

1 just over onto page 10, maybe just to close this
2 off just with some of the other and asking about
3 these.

4
5 New directions continued. Develop
6 alternative delivery for Science functions
7 that can be done outside of DFO.

8
9 Do you know what that's referring to? Do you have
10 a sense?

11 DR. MACDONALD: Again, I'd have to guess.

12 Q Okay. Well, maybe the next bullet, I'm curious if
13 this has occurred.

14
15 Investigate strengthening relationship
16 between DFO, Environment Canada and
17 universities through virtual centres,
18 especially in freshwater toxicology.

19
20 DR. MACDONALD: That sounds like a good idea but I have
21 no recollection that any such was done.

22 Q Okay. And third bullet:

23
24 Clarify Science roles and responsibilities of
25 DFO and Environment Canada and strengthen
26 cooperation.

27
28 I think we've heard some discussion.

29 DR. MACDONALD: Again, it sounds like a good thing to
30 do but I'm certainly not clear that something was
31 done.

32 Q Okay.

33
34 And enhanced partnering with universities,
35 OGDs and industry.

36
37 Is that something that's happened in the last five
38 years?

39 DR. MACDONALD: In my experience, that has happened and
40 it's been driven largely by the scientists
41 themselves because when they can't get the funding
42 from DFO, of course, they are going to look for
43 partnering and other funds. Myself, I work in
44 what's called ArcticNet. It's a large network;
45 it's a university network. And I become an
46 adjunct professor somewhere to do that. I also
47 collaborate with industry when I see there's

1 something that we can do that makes sense and will
2 serve understanding of contaminants. So that has
3 been done not, I don't think, with direct guidance
4 but because it's a product of removing other
5 sources of funding.

6 MR. EAST: Thank you. I'd like to mark as an exhibit
7 Canada's Tab Number 1. "Strategic Review --

8 THE REGISTRAR: Exhibit 981.

9

10 EXHIBIT 981: Strategic Review of Toxic
11 Chemicals Research, Presentation to NSDC,
12 June 17, 2003
13

14 MR. EAST: Thank you.

15 THE COMMISSIONER: I'm sorry. What exhibit is that?

16 What was the exhibit number? I'm sorry.

17 THE REGISTRAR: 981.

18 THE COMMISSIONER: 981.

19 MR. EAST: I'll just finish up with one more question.

20 I'm interested in Tab 5.

21 THE COMMISSIONER: Sorry. Mr. Registrar, just go back

22 to the exhibit numbers. I guess I've lost my

23 count here of exhibits. Can we just go back and

24 see, what was 980? What was 980?

25 MR. LUNN: This document on the screen.

26 THE COMMISSIONER: I see, okay. Thank you very much.

27 Thank you.

28 MR. EAST: So if we can go to Tab 5, Exhibit 976. This

29 is one of my favourite references in the first

30 line. It talks about the area of "tension"

31 between Environment Canada and DFO.
32

33

34 DFO has largely withdrawn from the
35 'contaminants research' field (at least on
36 paper - there are still internally subversive
37 elements at work and I leave it up to your
38 imagination to decide where those elements
39 might be located).

40

41 Is that actually a reference to you, Dr.

42 Macdonald, and your team?

43 DR. MACDONALD: Well, quite likely I'm implicated but I

44 don't think I'm alone. We do maintain some things

45 and in some ways it's doing two jobs instead of

46 one job but yeah, I'd be one of those subversive

47 elements.

Q And maybe if I could paraphrase. This is an

1 example of where you and your unit have been doing
2 work in this area but have had a constant struggle
3 to find funding to do it?

4 DR. MACDONALD: Yes, if I could add?

5 Q Please do.

6 DR. MACDONALD: And this is something that I think is
7 really an important question to ask. What is the
8 role of a government scientist? And I think the
9 number one thing is to provide sound advice to the
10 government of the day. And to do that, I think in
11 science, you want your scientists working at the
12 edge. And whether or not they're exactly on the
13 topic that's crucial of the day is not as much to
14 the question of whether or not their science is
15 relevant, can guide policy and is informative
16 about things coming at us. In other words, I feel
17 like we have let the system down if management
18 tell us about an emerging problem and not the
19 other way around. So my perspective is that
20 there's things we should be doing that sometimes
21 are not necessarily on the exact mandate but are
22 coming at us.

23 MR. EAST: Well, actually I think that's probably a
24 pretty good place to leave my questions and I'll
25 thank the witnesses and I'll turn it back over to
26 Wendy.

27 MR. PROWSE: So my name is Cliff Prowse. I'm the
28 lawyer for the provincial government and I should
29 preface my questions by saying that funding
30 shortages are not confined to the federal
31 government, in my experience, and so that leaves,
32 I think, the province in a similar position that
33 the federal government is demonstrating in these
34 emails that we've just discussed. As a
35 participant in this Inquiry, I'm struck by the
36 fact that we've had 12 or so Science reports,
37 almost all of which recommend further research be
38 done with respect to each of the different
39 subjects within there. And I guess the one that
40 maybe is most relevant to this panel is the
41 contaminant report, which put the whole question
42 of chemicals and endocrine disruptors in a
43 somewhat alarming context. And I think the
44 implication of that is that a lot of money should
45 be spent somewhere by somebody doing a lot of
46 research on that.

47

1 CROSS-EXAMINATION BY MR. PROWSE:
2

3 Q So my question is, within the two exhibits that
4 we've just seen, where would that decision be made
5 within government? And how would that decision be
6 made? And what discussions have there been about
7 that? You, Dr. Macdonald, seem to be the lucky
8 near retiree who gets to answer these questions.

9 DR. MACDONALD: Normally, within DFO those decisions
10 are made top-down. We do not make decisions on
11 government priorities or Departmental priorities
12 at the bench level. Having said that, we do have
13 mechanisms, briefing notes and discussions to
14 inform our management about what we see as urgent
15 issues. And when we had an ESSRF program, we had
16 review and the ADM would go to those and listen to
17 what we had to say and sometimes we have these
18 toxic chemical reviews and perspectives will be
19 developed and then we would get a mandate that
20 would come down. The orders, if you'd like to put
21 it that way, or the directions that were set were
22 set from the top down, both in terms of text about
23 what our priorities should be and in terms of the
24 allotments of money really, the second being
25 probably the most relevant part because that tells
26 you how much something's important. That's how
27 the process works.

28 Q Can you comment from an Environment Canada
29 perspective?

30 DR. TALBOT: Yeah, Environment Canada has got perhaps
31 several ways of determining how funding is
32 prioritized. We do have programs that become
33 high-level priorities within Environment Canada
34 and, for example, I come back again to the
35 Chemical Management Plan. Canada has to go
36 through a very long list, several thousands of
37 substances, and determine if those substances
38 should be managed as toxic substances. And that
39 mandate is urgent. We have very little time to go
40 through. There is international agreements to do
41 that. So we have to put a lot of our resources
42 towards that and that uses quite a bit of our
43 resources in that way.

44 And the issue of whether we should be
45 continuing to work on an issue that's been a
46 priority in the past and falls not only in the
47 context of these urgent requests, as the one

1 example I've just given you, but it also, as a
2 report is produced, the question that is asked by
3 management, is it sufficient information to
4 address the deliverables that we had agreed upon
5 or is it sufficient to develop information
6 necessary for a risk assessment or compliance of
7 some nature?

8 And even though it might be of great value to
9 society to continue and do additional work,
10 because resources are so short and because we
11 always have many, many more priorities and
12 requests than we can fund, then we have to
13 determine whether it's necessary or desirable to
14 do additional work in this area or move on to
15 something else even though we may not have
16 complete information.

17 Q These seem like very difficult choices and again
18 at some perhaps likely over-simplified level,
19 difficulties in forecasting are something that
20 we're familiar with. I think there were
21 difficulties in our context of forecasting the
22 2009 salmon run, which turned out to be very low.
23 And once the Commission got started, I don't think
24 anybody anticipated that in 2010 there would be a
25 record run. So that's not relevant, I don't
26 think, to your exact fields. But the question I
27 have is, isn't there a danger in setting
28 priorities according to perhaps the political need
29 of the moment that some basic research that needs
30 to be maintained over time will be lost in the
31 shuffle.

32 DR. MACDONALD: Of course. You're absolutely right.
33 There is a risk in doing it this way and in
34 putting all of your energy on brush first and
35 emergencies. Sometimes it works out very well. I
36 can tell you that the early contaminants program
37 was well-funded over the first five-year period
38 and it got that funding because of a front-page
39 article in the Globe & Mail that said mother's
40 milk on Broughton Island is unfit to drink; it had
41 PCBs in it. So some of the ways that things get
42 currency is that they get exposure in the media
43 and the media comes back to the political agenda
44 and the political agenda comes down. It can work
45 for good and it can work for bad. I think this is
46 one of those cases where you have to be careful
47 what you wish for when you do these things because

1 you may get it. And in the case of the NCP, I can
2 only say good things about it and about the
3 collaboration that was done by government and
4 universities to produce that work so in that case
5 it worked very well.

6 In the case of contaminants or other issues
7 that come along occasionally and reach a fairly
8 high profile in the mind of the political system
9 or the media, there is risk in pulling away funds
10 from long-term considered research and placing it
11 under short-term brush fires. I really think that
12 that is a risk and it requires a certain amount of
13 body of inertia, if you like, of research that's
14 fore-thinking and looking forward on these. And
15 we've discussed monitoring before. Monitoring is
16 part of that.

17 Q Do you have a comment on contaminants in
18 particular or generally do you have a comment?

19 DR. TALBOT: Perhaps to add to that. I disagree with
20 Dr. Macdonald's comments. I agree with his
21 comments in general. The only thing that I would
22 add is that in our risk management when we
23 prioritize our project, we do an informal risk
24 analysis of what our program ought to look like
25 and what we need to get into. So I would not
26 agree with your statement that we're dealing with
27 just short-term issues. There is consideration
28 for long-term monitoring or long-term assessments
29 or projects that need to be carried over very long
30 periods of time. And we do consider those in our
31 appropriation of funds or distribution of funds in
32 the different programs. For example, our mercury
33 fate and transport program has been ongoing for
34 many years and while some other projects need to
35 be resolved within one to three years and once we
36 have that answer, the project is simply terminated
37 and we move to something else.

38 DR. MACDONALD: If I could, I just would like to
39 comment. I didn't mean to imply that Environment
40 Canada was driven by short-term problems. All I
41 meant to say is that there's risk in driving a
42 system that way. I think Environment Canada does
43 not do that actually.

44 MR. PROWSE: Thank you very much.

45 MS. BAKER: Thank you. Mr. Hopkins-Utter, are you
46 going to be asking questions?

47 MR. HOPKINS-UTTER: Good morning, Mr. Commissioner,

47

PANEL NO. 40

Cross-exam by Mr. Prowse (BCPROV)

Cross-exam by Mr. Hopkins-Utter (BCSFA)

1 panel members, my name is Shane Hopkins-Utter,
2 appearing for the B.C. Salmon Farmers Association.
3 I just have a few quick questions for Dr.
4 Macdonald. Mr. Lunn, could you please bring up
5 Commission Tab 13? This is an email from Dr.
6 Macdonald, April 2nd, 2009.

7

8

CROSS-EXAMINATION BY MR. HOPKINS-UTTER:

9

10 Q Do you recognize this email?

11 DR. MACDONALD: Yes, I do.

12 MR. HOPKINS-UTTER: Thank you. Mr. Lunn, could you
13 please turn to page 4? In the middle of the page,
14 there is an abstract which says:

15

16

The abstract is a nice summery of the advice
provided by this team.

17

18

19

20

At the top of that page, Dr. Macdonald, are you
identified as one of the authors of this paper?

21

DR. MACDONALD: I am.

22

23 Q Looking at the lower part of that abstract, the
24 last five or six lines starting with the sentence,
25 "The ready breakdown", I'm just going to read a
26 short part. You noted that the BDE-209 is
27 insidious and is found to biomagnifying in aquatic
28 food webs. You also note, this is where I'm
29 quoting:

30

31

32

33

34

The ready breakdown of BDE-209 and to more
bioaccumulative and toxic lighter PBDE forms
in the environment presents perhaps the most
insidious threat to aquatic biota.

35

36

And you also go on to note:

37

38

39

These PBDEs have endocrine-disrupting
potential.

40

41

42

43

Now, the endocrine disruptors, you mentioned a
couple of effects that these can have on fish
health, did you not just this morning?

44

DR. MACDONALD: I did.

45

46 Q And those were sub-lethal effects. Can you tell
47 me what they were again?

48

DR. MACDONALD: The ones that we worry about most are
effects on reproduction and effects on immune

June 6, 2011

1 function.

2 Q And there are other effects, though, are there
3 not, just referring to PPR-14, Policy and Practice
4 Report that we received.

5 MR. HOPKINS-UTTER: At paragraph 117, Mr. Lunn, if you
6 wish to bring it up, it lists a number of other
7 effects.

8 Q And you can confirm whether or not these are, in
9 fact, some of the other considerations. Does it
10 not also affect migration through effects on
11 neurotoxicity or olfactory effects?

12 DR. MACDONALD: As I stated earlier, I'm not a
13 toxicologist and I don't count that my expertise.
14 That question would be better put to Peter Ross.

15 Q Peter Ross?

16 DR. MACDONALD: Yes.

17 Q Okay. You are aware of these concerns, though?

18 DR. MACDONALD: I am.

19 Q Have you ever heard of endocrine disruptors
20 affecting maturation rates?

21 DR. MACDONALD: I have.

22 Q And obviously that's something we should put to
23 Peter Ross as well, as to those potential effects?

24 DR. MACDONALD: That is correct.

25 Q And are you aware that in the Commission technical
26 report, this is Exhibit 826, Tab 26 of the
27 Commission binder, at page 143 under
28 "Sufficiency", it actually talks about near the
29 top of that page:

30
31 However, exposure to certain endocrine
32 disrupting compounds, such as PBDEs and PBBs,
33 has likely increased exponentially over the
34 past two decades.

35
36 Do you agree that it does, in fact, appear to be
37 an exponential increase in the concentration?

38 DR. MACDONALD: Exponential increase is a particular
39 form of increase, like a percentage increase,
40 where it curves upward. We have several different
41 records of time series that have been created and
42 they all are not linear. They all increase
43 upwards. So yes.

44 Q And this has been over the last few decades?

45 DR. MACDONALD: I'm not sure exactly the timeframe but
46 I'd say the past two decades about, yeah.

47 Q So given all the concerns of the endocrine

1 disruptors and the potential effects on fish
2 health, do you not think that it's of utmost and
3 critical importance to study these chemicals and
4 these contaminants further and to understand how
5 they're getting into the environment so that we
6 can limit those?

7 DR. MACDONALD: Yes, I think that's very true. I think
8 even more important and urgent and the reason we
9 went to a CSAS document and tried to provide
10 advice to Environment Canada was we felt that
11 continuing to produce and use the 209 would be
12 loading the environment with this chemical when we
13 were really very uncertain about what its
14 downstream effects would be. So we were more
15 interested in providing a DFO Science opinion on
16 the regulatory process to Environment Canada.

17 Q How long was 209 in use?

18 DR. MACDONALD: I don't recall exactly when its use
19 started but two decades probably anyway.

20 MR. HOPKINS-UTTER: Just turning to Tab 8, this is
21 Exhibit 977, Tab 8. I got the nod from the
22 Registrar.

23 Q Just looking at that list, I didn't get everything
24 that you said there. Did you say that it doesn't
25 capture pharmaceuticals? What else is not
26 captured by this list?

27 DR. MACDONALD: Well, if you look, the only new age
28 modern chemical bio-magnifier that you might worry
29 about is AOX, organo-halides. That's a
30 measurement that was usually applied to pulp
31 mills, especially ones using chlorine to make
32 their products. So they're producing chlorinated
33 products. And AOX means, the X is a chlorine and
34 the AO part says that we actually don't know quite
35 what it's stuck on because there are a lot of
36 complicated compounds but it's chlorinated.
37 What's missing from this? Well, if you look at a
38 top predator in any system, you'd expect to see
39 things like endosulfan, chlordane, PCBs, PBDEs,
40 DDT, it's still cycling, and there are others.
41 None of those are in there.

42 Q And those are also, I believe, endocrine
43 disruptors?

44 DR. MACDONALD: In various forms, endocrine disruptors.
45 They also affect immune function, yeah.

46 MR. HOPKINS-UTTER: Okay. Thank you very much, Mr.
47 Commissioner. Those are my questions.

1 MS. BAKER: Looks like it's time for the break.
2 THE REGISTRAR: The hearing is now adjourned till 2:00
3 p.m.

4
5 (PROCEEDINGS ADJOURNED FOR NOON RECESS)
6 (PROCEEDINGS RECONVENED)
7

8 THE REGISTRAR: Order. The hearing is now resumed.

9 MR. HARRISON: Good afternoon, Mr. Commissioner and
10 panel. My name is Judah Harrison, and I'm with
11 the Conservation Coalition, which is a group of
12 six non-governmental organizations and one
13 individual.

14 Mr. Lunn, can you bring up Exhibit 976,
15 please?

16 MR. LUNN: Certainly.
17

18 CROSS-EXAMINATION BY MR. HARRISON:
19

20 Q Dr. Macdonald, this morning we were speaking, or
21 you were speaking about this email to various
22 counsel. I wanted to specifically focus on the
23 last line of the third paragraph where it reads,
24 "There is a pretty large gaps" -- well:
25

26 There [are] pretty large gaps between what
27 [Environment Canada] is prepared to do and
28 what DFO is prepared to do and this gap is
29 largest in the marine environment.
30

31 I take it that you did not write this email but
32 you are familiar with it; is that correct?

33 DR. MACDONALD: I did not write it. I am familiar with
34 it by virtue of this process.

35 Q Thank you. Now, could you, as in succinct a
36 manner as possible, explain what those gaps are?
37 Give us specific gaps that are not being regulated
38 by either Environment Canada or DFO.

39 DR. MACDONALD: Well, I think it's along the lines of
40 what we've been discussing so far; that is, DFO
41 did not -- is not doing any more toxic pathway
42 source-sync work in the marine environment, nor
43 really monitoring marine environment, and
44 Environment Canada is not doing that, either.

45 Q Okay. Is there any other regulatory gaps that you
46 can think of where neither ministry is effectively
47 regulating contaminants?

1 DR. MACDONALD: I'm not thinking of something in
2 particular. As I understand how the system works
3 with transfers, Environment Canada was really
4 strongly the regulator in this system and DFO was
5 a partner in that, but under **CEPA**, certainly
6 Environment Canada had the lead on providing
7 regulations.

8 Q Okay, thank you. In the same document, this
9 morning we heard that you were listed as among the
10 subversive elements that work here; is that
11 correct?

12 DR. MACDONALD: Well, I don't know. I didn't write
13 that memo and it was referred to very vaguely, but
14 I would consider myself to be working on some of
15 these issues to complete them, if nothing else,
16 when they were not a departmental priority
17 anymore.

18 Q So just to be clear, in your understanding, you
19 were called subversive for completing research,
20 even though Departmental priorities had moved on?

21 DR. MACDONALD: Yeah, that's my take on it. I was
22 continuing to do research or finish research on
23 the pathways when the Department said, "We've
24 moved on."

25 Q Thank you. Mr. Lunn, do you mind bringing up
26 document 9 from Commission Counsel's list, please?
27 I just spoke with counsel for Canada who informs
28 me that this may already be an exhibit, Exhibit
29 742. But I'll stick with you, Dr. Macdonald.
30 This is an email from Dr. Peter Ross, who -- with
31 respect to PBDEs, and I actually don't know what
32 that acronym stands for, but I heard you say it
33 this morning, so -- and there's three types of
34 PBDEs, one of which was not banned, that being
35 Deca. And then, after a series of letters and
36 pressure from scientists the Deca was actually
37 banned. Is my understanding correct?

38 DR. MACDONALD: Firstly, PDBEs are polybrominated
39 diphenyl ethers. There are 209 of them. They're
40 basically brominated ring compounds. Our
41 Environment Canada was deciding on how to regulate
42 these, what to ban, and at the time it appeared
43 that they were going to ban most of the PDBEs, but
44 they were going to leave 209 off until -- and 209
45 is the heaviest one and it was used, I believe,
46 still in the computer industry as a fire-proofer.
47 Our research, and most of this research goes

1 back for a number of years, it came from a basis
2 of research that we'd been doing over all those
3 years, so we felt within DFO we had the science
4 understanding of the risks from these, and we
5 wanted to -- we wanted for DFO to pass the message
6 to Environment Canada in a formal note of what
7 their take was on this, and at that time it looked
8 like Environment Canada was going to leave Deca as
9 still in use, and we felt that was ill-advised
10 from the science point of view and we wanted to
11 get that message across, so we did that.

12 At the end of the day, Environment Canada
13 also came down on 209 and banned it. They may
14 have done it because of what we did, but there's
15 not a connected line there.

16 Q Just for my own ignorance, 209 and Deca, are they
17 the same thing, or each is a different type of the
18 209 PDBEs?

19 DR. MACDONALD: They're the same thing.

20 Q They're the same thing. Thank you. And taking a
21 bit of a step back, we hear often, including at
22 this Commission, that the precautionary principle
23 guides decision-making at DFO, Environment Canada,
24 and Canada in general. Now, in my view, if you
25 read this, the way that these chemicals were
26 banned, it would not be in a precautionary manner,
27 it would actually be the opposite. It would be
28 that not until proof is brought do we actually say
29 that certain chemicals are not allowed to be used.
30 And my question to you, first, Dr. Macdonald, is
31 can you please explain how the precautionary
32 principle guides your work, today?

33 DR. MACDONALD: I should clarify a little bit that
34 there's two components of this. There's the
35 precautionary principle, which throws the onus
36 entirely on the proposed user of something to
37 demonstrate no harm, and then there's another
38 thing called the precautionary approach, which I
39 think is quite a bit softer than that. If you
40 follow the precautionary principle you probably
41 would do nothing, you know, you could justify
42 doing nothing.

43 So it's a position that is attractive but
44 probably not doable. So what we've tended to do
45 is not necessarily use that principle directly
46 but, rather, try to look at what we felt were the
47 bigger risks in the system and find a way of

1 taking those ones out. Unfortunately, there are
2 25,000 or more chemicals that we've got out in
3 circulation and we can't do something on every one
4 of them. Money forbids it. On the other hand, a
5 lot of these chemicals have uses in society that
6 have another function. For example,
7 pharmaceuticals. So to just say, "We stopped
8 using them," is also not on the table. So it kind
9 of leaves us in a bit of a difficulty in that we
10 can't actually execute the precautionary
11 principle, even though we might like to.

12 So what we've tried to do is to use that
13 approach, if you like, to identify the ones that
14 we think have latent risks, and PDBEs are one of
15 those, and get those curtailed. We know something
16 about PDBEs and the risks they present us, because
17 we've been through a long experience with PCBs,
18 and we know exactly what happened there and how
19 long it's taking for them to turn down.

20 Q Now, following up on that, is there currently a
21 suite of chemicals that would be defined as toxic
22 within the **Canadian Environmental Protection Act**
23 that are nonetheless permissible to use in Canada
24 today?

25 DR. MACDONALD: I'm sure there are.

26 Q And Dr. Macdonald, you also, this morning, you
27 were talking about sub-lethal impacts of
28 chemicals, and then you alluded to the fact that
29 cumulative or bioaccumulation of non-lethal
30 chemical contamination would be just as dangerous
31 as, you know, a single source lethal
32 contamination. Well, maybe not just as dangerous,
33 because the lethal source would kill the fish.
34 But my question to you is: Is there specific
35 toxics right now in the Fraser environment that
36 you think or suspect are harming Fraser sockeye
37 and, if so -- and are nonetheless permissible for
38 use?

39 DR. MACDONALD: I worry about some, but I haven't got
40 evidence to show what the harm is. Paracelsus,
41 many, many years ago, said, "With toxicity it's
42 all in the dose." Everything is toxic if you have
43 enough dose. Water's toxic with enough dose. So
44 our task, here, is to do several things. One, is
45 to identify those compounds that have a definite
46 toxicity and we understand it, and then to look at
47 the environment and ask the question of whether

1 thresholds of toxicity are being passed. And we
2 certainly don't have the science together for
3 many, many compounds in that context.

4 Q You said something very interesting, and you said
5 their are some that you suspect are harmful, but
6 you have no evidence of what harm there is. Now,
7 from where I stand, the precautionary principle
8 demands that in such a case you do not allow these
9 chemicals to be used until it's proven to not be
10 harmful. But in my view, we consistently --
11 Canada consistently regulates in the opposite
12 direction and until independent science has proved
13 harm, it's allowable. Is that fair, in your view?

14 DR. MACDONALD: I think it needs more context than
15 that. I think you have to weigh risks and
16 benefits of things. I think there are substances
17 and things that we are doing in Canada that would
18 qualify under that, one of which would be putting
19 CO2 in the atmosphere. We continue to do it
20 because the choice of not doing it might have more
21 severe consequences than the choice of continuing
22 it. These decisions -- scientists try to put
23 together a component of the system. They try to
24 advise on what the risks are and who is at risk
25 and why, in the case of all these chemicals.

26 That information gets fed into a policy
27 somewhere, and that policy is produced by people,
28 not scientists, who consider many other aspects.
29 So I don't think it's surprising that sometimes
30 the advice that we would give, or the desire we
31 would have to have all these chemicals disappear
32 from aquatic systems isn't followed.

33 Q And I agree with you, but, I mean, my point was
34 that we say the precautionary -- we say we're
35 guided by a precautionary approach, but in action
36 we never are. And so my next question is: In
37 your 25 years experience, can you think of any
38 chemicals that have been banned precautionarily,
39 without proof of harm? And feel free to give an
40 answer as well.

41 DR. MACDONALD: Yeah, nothing is coming to mind, in
42 particular. I can't think of things that were
43 screened out. Certainly we have screened things
44 out when we found out that they caused harm. And
45 generally, the ones we worry about are what we
46 call persistent bioaccumulative toxic chemicals
47 that -- and of those three words, the one that

1 rings a bell the most is "persistent". And I
2 would like to give one example to illustrate how
3 difficult this sometimes is. One of the chemicals
4 that's been made in society, a very useful one,
5 are the refrigerants, the freons, CFCs we all
6 them. These have been shown to be among the least
7 toxic chemicals ever made. You can breath them
8 in, you can drink them. They will not harm you.
9 And yet, they were delivered to us as being
10 basically inert. Well, inert sounds very good,
11 but when you turn that inert over, it actually
12 says it's persistent, and persistent brings up an
13 alarm bell. Ultimately, through the science, we
14 discovered that CFCs went up into the stratosphere
15 and they damaged the chemistry up there, damaged
16 the ozone production, and that causes UV
17 penetration.

18 Well, so those chemicals clearly would not
19 have been put out under a precautionary principle
20 had we known what their mode of action was. But
21 we don't have all that knowledge. So sometimes
22 things are used in the context that they appear
23 very safe, and everything we know about them is
24 okay.

25 Q And I guess what I'm suggesting is sometimes we
26 know that there's harms or we suspect highly that
27 there's harms, yet we still approve them, anyways,
28 and I would say that that's a much more common
29 occurrence than what you just discussed; is that
30 fair?

31 DR. MACDONALD: That's probably true. I don't keep up
32 with all of the ins and outs of that.

33 Q Okay. This morning you also talked about the role
34 of government scientists, and from what I took
35 from what you said, you said, the role of a
36 government scientist is to provide sound advice
37 and then to let the government decision-maker
38 decide -- to use that basis to then make the
39 political decision; is that fair?

40 DR. MACDONALD: I think it is.

41 Q And my question is: Has there been, in your
42 experience, has there been a shift in your 25
43 years at the Department where, early on, including
44 where the Fisheries Research Board existed, that
45 this was a known -- scientists would only provide
46 advice or sound science, and is it your experience
47 in the last number of years there's been a new

1 role that's been requested of science, or do you
2 still see as the primary role, actual role, being
3 played as providing objective sound advice?
4 DR. MACDONALD: I still see that as our primary role.
5 Q Okay, thank you. And my last line of questioning
6 is just about some specific chemicals, and these
7 are chemicals used in the aquaculture industry.
8 I'd like to know if either of you have any
9 familiarity about the chemical SLICE, in
10 particular?
11 DR. MACDONALD: Should I answer that?
12 Q Sure.
13 DR. MACDONALD: I have some familiarity with it.
14 MR. HOPKINS-UTTER: I'm sorry, I -- Shane Hopkins-
15 Utter, for the B.C. Salmon Farmers Association. I
16 was just wondering if this is a panel on
17 freshwater urbanization and if this chemical that
18 you're now asking about was, in fact, in the
19 witness panel summaries? I don't believe that
20 we've had any notice of this, and we have concerns
21 about discussing the aquaculture industry in a
22 panel on freshwater.
23 MR. HARRISON: And in my view, this is a panel on
24 pesticides. I'm asking about a specific
25 pesticide. Clearly relevant to the terms of this
26 panel. I will not get into very much specifics, I
27 just want to talk from a regulatory place. Mr.
28 Commissioner?
29 THE COMMISSIONER: I think in fairness, Mr. Harrison,
30 I'm not sure where you're going with this, so it's
31 difficult for me to assess --
32 MR. HARRISON: Sure.
33 THE COMMISSIONER: -- the objection. I don't know if
34 it's necessarily an objection; it's really a
35 question of whether or not the parties have had
36 notice that you're going to pursue this specific
37 line of questioning and, if not, if they did they
38 might have had questions, themselves, pertaining
39 to this. So I'm not exactly sure where you're
40 going with it.
41 MR. HARRISON: In response, I'd say two things. First
42 of all, nobody gives anybody notice of lines of
43 questioning that they're going to give --
44 THE COMMISSIONER: I didn't meant --
45 MR. HARRISON: -- except we do have documents.
46 THE COMMISSIONER: Yes.
47 MR. HARRISON: And I apologize if that... What I was

1 going to -- is about the regulatory approval of
2 specific pesticides that are used widely in B.C.
3 and have impact on Fraser sockeye. So the
4 approval process is all I'm sticking to.
5 THE COMMISSIONER: All right, well, I think if you want
6 to go with the approval process, that's fine. It
7 may or may not include this particular chemical
8 that you've just spoken about, but if that's where
9 you're going, I think, in a general sense, that
10 would be appropriate.
11 MR. HARRISON: Okay, thank you. I'll keep it very
12 general.
13 MR. HOPKINS-UTTER: Mr. Commissioner, just for the
14 record, I will object if he asks about SLICE,
15 which is not used in freshwater. Thank you.
16 MS. GAERTNER: Mr. Commissioner, if I may, it's Brenda
17 Gaertner for the First Nation Coalition. We've
18 heard quite a bit from this panel about the marine
19 environment and not very much information about
20 the marine environment. If he has some
21 information about the marine environment, as
22 general as it may be, I think it might be useful
23 for us to hear it.
24 THE COMMISSIONER: I don't disagree, Ms. Gaertner, I
25 just don't know where this line of questioning is
26 going to go and whether these witnesses were
27 prepared to answer such questions and whether all
28 of the participants have had notice that it may be
29 going in that particular direction. So I leave it
30 with Ms. Baker, because this evidence has now been
31 introduced, and in terms of the scope of the
32 evidence, I think it should fall within the
33 parameters of the documents we have before us for
34 these witnesses and the range of question should
35 stick to those documents.
36 So I'm not sure where Mr. Harrison's going or
37 whether Ms. Baker has any concern about that.
38 MS. BAKER: Well, no, you've made your ruling that he
39 can ask general questions, and so I'm content for
40 that to continue. I mean, it depends how far he
41 gets into it, I suppose.
42 MR. HARRISON: Okay, I will proceed very carefully and
43 I will look up and stay general.
44 Q This question's for you, Dr. Talbot. It's my
45 understanding that Environment Canada regulates
46 toxics generally; is that correct?
47 DR. TALBOT: Yeah, generally, through the *Canadian*

1 **Environmental Protection Act.**

2 Q And does Environment Canada regulate chemicals,
3 including pesticides, that are used on marine
4 finfish farms?

5 DR. TALBOT: No, we don't regulate pesticides. We
6 don't have the authority over pesticides. So it
7 would be the Pesticides Management Regulatory
8 Agency.

9 Q Thank you. And does Environment Canada regulate
10 any chemicals that are used on marine fish farms?

11 DR. TALBOT: It's difficult to answer that
12 specifically, because it's an open-ended question.
13 It would depend on which chemicals might be used
14 under circumstances. You know, it could be as
15 benign as salt, you know, or as complex as some
16 other products that might be used that would be
17 covered under the **CEPA**. So the potential is
18 there, if it's a substance that's declared toxic
19 under **CEPA**, but to my knowledge there are none at
20 this point.

21 Q Is there any part of Environment Canada that sees
22 oversight of the aquaculture industry and
23 chemicals they use that specifically sees that as
24 their mandate?

25 DR. TALBOT: No, there is not.

26 Q And Dr. Macdonald, do you know if there's any in
27 DFO that sees that as their mandate?

28 DR. MACDONALD: No, I don't.

29 MR. HARRISON: Okay. Those are my questions. Thank
30 you very much.

31 MS. REEVES: Good afternoon, Commissioner, Crystal
32 Reeves for the First Nations Coalition, and with
33 me, Brenda Gaertner. The First Nations Coalition,
34 for the witnesses, is a group of First Nations,
35 including the First Nations Fisheries Council,
36 tribes up and down the Fraser River up to Prince
37 George, as well as some Douglas Treaty Nations,
38 and as well as the Haida Nation.

39

40 CROSS-EXAMINATION BY MS. REEVES:

41

42 Q So my first set of questions is for -- directed
43 towards you, Dr. Macdonald. And this morning you
44 talked about the loss and rollback of funding that
45 was part of the ESSRF program; is that right?

46 DR. MACDONALD: That's correct.

47 Q And then you said that under the new regime

1 scientists were expected to go out and find
2 funding from other sources as part of going into
3 toxic research?

4 DR. MACDONALD: That's correct.

5 Q And so since that time, then, how successful would
6 you say, in your opinion, have DFO scientists been
7 in finding those other funds in other programs?

8 DR. MACDONALD: Not too bad. We have found people
9 interested in the question of toxic chemicals,
10 from collaborations with Korea to the **SARA**, so
11 there have been funds that we've gotten.

12 Q And would some of those funds have been directed
13 towards Fraser River sockeye, or would they have
14 been more general?

15 DR. MACDONALD: They would have been more general.

16 Q Right. And in terms of comparison, I'm not sure
17 if you'll know this, but what would you say,
18 generally, would be the amount of funding you had
19 under the old regime versus what people are
20 gathering through various funding sources now,
21 comparatively, in terms of amounts?

22 DR. MACDONALD: I don't really have a figure for that
23 to give you. I could find such out, but I don't
24 have it here.

25 Q Okay, perhaps we could have Commission Counsel
26 find something like that.

27 Okay, moving on, I'd like to take you to
28 Commission Tab 16. And this was a presentation
29 done in 2005, and it was a DFO Toxic Chemical
30 Review Follow-Up. Are you aware of this workshop
31 review that was done?

32 DR. MACDONALD: Yes, I am.

33 Q Okay. And I'd like to take you to page 19, now,
34 of the document. And on page 19 it just talks
35 about the state of knowledge, and this was one of
36 the core areas that needed to be worked on going
37 forward, after 2005, according to the earlier
38 parts of the review documents, which I won't take
39 you into, and it outlines a number of areas, I
40 guess, of studies that were either currently being
41 done or needed to be done, impacts of classes of
42 toxics on fisheries resources, trace elements,
43 pesticides, impacts of mixtures on fisheries
44 resources, sentinel species for impact studies,
45 and the like.

46 Since 2005, what studies have been done on
47 these various areas, to your knowledge?

- 1 DR. MACDONALD: There have been some. Most of the
2 studies that have been done are listed under
3 publications by Peter Ross and colleagues. I'm
4 involved in some of those. He is our main
5 toxicological scientist in my section.
- 6 Q And are any of the studies related to Fraser River
7 sockeye specifically?
- 8 DR. MACDONALD: I have been involved in looking at the
9 sockeye as a transport pathway, bringing
10 contaminants into lakes. That was more looking at
11 how they focused these contaminants into their
12 life cycle and not on the toxicity itself.
- 13 Q And what year was that research done, or is this
14 an ongoing --
- 15 DR. MACDONALD: It started in about 1999 or 2000 and
16 continued on for a few years, partly under ESSRF
17 funds and partly under university-sequestered
18 funds and students
- 19 Q Right. Okay, but since then you haven't done
20 anything further since the rollback of the
21 funding?
- 22 DR. MACDONALD: Personally, I have done nothing. I'm
23 not a toxicologist, so I don't do that kind of
24 work. But Peter Ross has done some work related
25 to toxic chemicals. Some of it to do with killer
26 whales, and not so much on sockeye, though, I
27 don't think. He's got some sockeye papers.
- 28 Q Okay. Thank you. According to the PPR, and I
29 won't take you there, just sort of in the
30 interests of time, but of course it talks about
31 that DFO was responsible for providing various
32 forms of technical advice to Environment Canada,
33 such as providing fisheries, resource and fish
34 habitat experience, recommending and receiving
35 water quality criteria, the effects of toxicology
36 and the effects of pollutants on specific
37 biological process.
- 38 So I guess if the science program related to
39 toxic chemicals has been cut back from 2004 and
40 there's, other than Peter Ross, not much research
41 being done, and there's even a question of whether
42 he's been doing research on Fraser River sockeye,
43 I guess my question is: What is the level of
44 advice that DFO science can give to Environment
45 Canada if there's been such cutbacks and no such
46 science is being done?
- 47 DR. MACDONALD: Well, it would be minimal. It would be

1 based on our opinion on these fish and on where we
2 know them to be and what the risks are. There was
3 a paper written, and I believe it's been entered
4 in here somewhere, between Peter Ross and myself,
5 talking about contaminants and fish specifically,
6 but a lot of it is based on analogy, really, and
7 not on direct research on the fish.

8 Q So if Environment Canada is getting advice from
9 DFO, then the advice they're getting is analogous
10 advice, and that's what they're depending on to
11 move forward with their processes on regulation
12 and such?

13 DR. MACDONALD: I think that would be true.

14 Q Okay. Dr. Talbot, do you have anything that you
15 wanted to add to that question of DFO science
16 advice going to Environment Canada and how that
17 lack of science, I guess, in a term, impacts on
18 your decision-making?

19 DR. TALBOT: Perhaps the only thing to add is that we,
20 Environment Canada, the risk assessors generally
21 look at the body of knowledge comprehensively and
22 worldwide on substances that it's studying for
23 determination as toxic under **CEPA** and it will look
24 at all the information available and it doesn't
25 necessarily exclude or include information that
26 would be generated on a specific fish, such as
27 Pacific salmon. So the information that's
28 generated that's in a broad context on
29 contaminants is used by Environment Canada.

30 Q Right. But not specific to Fraser River sockeye?

31 DR. TALBOT: No. It does not have to be, no.

32 Q Back to you, Dr. Macdonald. You've been talking
33 about research that's done on pathways and then
34 research on toxicity to fish, and those sort of
35 being the two different, I guess, envelopes of
36 study or ways of study. And would you agree with
37 that, that's the two sort of envelopes of study,
38 or --

39 DR. MACDONALD: You could categorize it that way.

40 Q Okay. And we've heard that DFO is taking an
41 ecosystem-based approach to the management of
42 Fraser River sockeye; would you agree with that?

43 DR. MACDONALD: It's partly true, maybe partly not
44 true.

45 Q I guess my question is: If DFO is going to take
46 ecosystem-based management seriously, and we've
47 sort of heard at the Commission here, prior to

1 this, that they moving in that direction, or
2 wanting to move in that direction, I guess my
3 question is, wouldn't science advice, if you're
4 going to take an ecosystem-based approach, want to
5 include all variables within the ecosystem,
6 including pathways and including toxicity to fish?

7 DR. MACDONALD: I would agree with that.

8 Q And so then, perhaps, pathway research needs to be
9 included, going forward, if we're going to
10 understand sustainability of Fraser River sockeye
11 in the long term?

12 DR. MACDONALD: I would agree with that.

13 MS. REEVES: I guess I need to mark Tab 16 as the next
14 exhibit.

15 THE REGISTRAR: Exhibit 982.

16
17 EXHIBIT 982: DFO Toxic Chemical Review
18 Follow-Up, March 2005, Ottawa
19

20 MS. REEVES: Thank you.

21 Q This morning, Canada took you to a document, and
22 that's now Exhibit 981, and if we could just pull
23 that up, Registrar. And I'd like to go to page 10
24 of that document. Can you just scroll down, or
25 perhaps it's just the next page there. Sorry,
26 page 9. Sorry. Yes, sorry, it's page 9. And the
27 third bullet down, it says:

28
29 New Directions
30 Focus on solving practical problems that are
31 essential to DFO's mandate/obligations and
32 the needs of clients.
33

34 Dr. Macdonald, in your opinion, who are DFO's
35 clients as it relates to toxicity research of
36 Fraser River sockeye, in particular?

37 DR. MACDONALD: Well, historically, we, DFO, has had a
38 history, or at least I've been in the system where
39 I've asked that question, myself. And the answer
40 I've gotten is, it's people like fishing industry,
41 it's special interest groups, I suppose, would be
42 a client, of anybody who needs this advice. One
43 of our clients would be the science community.

44 One client that appeared not to be our
45 client, and I asked this question very pointedly
46 for the reason, was the fish, themselves. Now,
47 anybody who gave us funding, in other words, if we

1 got funding from some group or some other group,
2 they *de facto* became a client as well, because, of
3 course, they funded us to do some research and we
4 did that research.

5 Q Right. And would you consider First Nations,
6 then, a client of DFO in terms of toxicity
7 research?

8 DR. MACDONALD: I would consider them a client, yes.

9 Q And why would you consider them a client?

10 DR. MACDONALD: Because amongst the peoples of Canada,
11 First Nations have the highest exposure,
12 generally, to aquatic resources. They have
13 traditionally come, coastal peoples, from eating a
14 lot of fish - and I use "fish" generically; clams;
15 fish, seals in the Arctic; beluga - so they tend
16 to be very high in their diet in aquatic items.
17 By virtue of where they eat in the food web they
18 place themselves at a fairly high trophic level;
19 that is, they're not unlike bears, if you think
20 about their diet, because they're eating fish and
21 they're eating whales and seals.

22 So when we worry about bioaccumulating,
23 biomagnified contaminants, through the food web is
24 the major path of exposure, and that means native
25 peoples would be the target of that exposure.
26 Furthermore, they're always interested in
27 maintaining an ecosystem that allows them to
28 continue their traditional hunting and gathering,
29 and if these chemicals are harming those systems,
30 then they can't do that.

31 Q Okay, thank you. Perhaps I'd like to pull up
32 Exhibit 836 of our -- which is a document that's
33 been entered previously in the Commission by us,
34 and this is known as the Siska Society Report,
35 Siska Salmon and Indigenous People's Life Work.
36 Are you familiar with this document, Dr.
37 Macdonald?

38 DR. MACDONALD: No, I'm not.

39 Q Okay. Well, just for a brief overview, the Siska
40 Society worked with a variety of First Nations to
41 look at contaminants in the Fraser River and the
42 Thompson River in Fraser River sockeye. And
43 perhaps we can just go to page 47 of this
44 document, and if you just want to blow up the --
45 yes, the top part there.

46 And this part here, they discuss an increase
47 in the application of creosote in the Fraser River

1 and Thompson River Watersheds. And are you aware
2 of any current or, say, studies in the past five
3 or six years that have been done either by DFO or
4 Environment Canada on creosote?
5 DR. MACDONALD: In the past five or six years, not
6 specifically, not.
7 Q And Dr. Talbot, are you aware of any?
8 DR. TALBOT: No, I'm not. Only through general
9 reading, but not through our mandate.
10 Q Right. And then if we could go to page 53 of this
11 document and just blow up the top part again. And
12 here they are talking about the use of Release TM
13 in the Fraser Basin, which, from the report, they
14 talk about how it's used in the forest industry to
15 kill broadleaf trees, and are either of you aware
16 of studies done on the impacts or levels of
17 Release TM either by Environment Canada or DFO?
18 DR. MACDONALD: Could you clarify what "TM" is?
19 Q Release TM. If you just want to blow that up a
20 little bit more.
21 MR. LUNN: Which portion?
22 MS. REEVES: Just the top there.
23 Q Okay, well, apparently, that's the like
24 commercialized name of the chemical that they talk
25 about in the report and they don't have the
26 listing, so that's all I know it by.
27 But anyways, regardless of which, I guess you
28 don't know what "Release TM" refers to?
29 DR. MACDONALD: I don't.
30 Q Do you, Dr. Talbot?
31 DR. TALBOT: No, I don't. Are you talking about a
32 defoliant? Is that the --
33 Q Yeah, from my understanding, is it removes the
34 leaves off broadleaf trees, which I guess is sort
35 of considered a tree that impacts upon the growth
36 of the forest. That's my understanding from the
37 report.
38 DR. TALBOT: Yeah, I don't know it's my purpose to ask
39 questions, but --
40 Q Okay. Well, I'll just -- yeah.
41 DR. TALBOT: -- there's 2,4-D that was used.
42 Q Right. I guess what I'm trying to get at is
43 throughout this report they go through a variety
44 of chemicals that are of concern to them as First
45 Nations, and given what you've said, Dr.
46 Macdonald, about, I guess, the bioaccumulative
47 effects for First Nations in eating a lot of

1 Fraser River sockeye and other forms of salmon, I
2 guess the point of this is that in terms of
3 science isn't just a -- you'd agree that science
4 isn't just an abstract but we're talking about
5 human health and impacts on systems and
6 communities?

7 DR. MACDONALD: Yes, I would like it not to be an
8 abstract study. It would be -- it would have an
9 effect of informing us and allowing us to make
10 decisions.

11 Q And I guess if First Nations are identifying
12 particular chemicals or particular toxic chemicals
13 that they view or that they're seeing, in
14 particular, the study where they did testing
15 appearing in their environment and appearing in
16 the fish, then if they're a client of DFO, should
17 that generate some movement in the science that's
18 generated?

19 DR. MACDONALD: Yes, I think it would, or should. I
20 should add that an issue like that, we have
21 governmental mandates, and DFO has a mandate for
22 the fish, but it's not the same mandate as Health
23 Canada, so it's not our mandate to worry about the
24 human health aspects, although we might partner
25 with Health Canada people.

26 Q Right. And is such partnering done right now?

27 DR. MACDONALD: It is.

28 Q Okay. Thank you. Again to you, Dr. Macdonald,
29 according to your CV, you conducted core sampling
30 of Shuswap Lake in 2002; is that correct?

31 DR. MACDONALD: That's correct.

32 Q And can you just briefly describe what you found
33 in those core samples?

34 DR. MACDONALD: Well, you're going back a ways and I've
35 collected a lot of core samples. What we look --

36 Q Just generally.

37 DR. MACDONALD: What we look for in those are records
38 of contaminants, and certainly we found them, as
39 we find in almost all inventories in the
40 environment these days, and there are modern
41 components in there. As I recall, we saw PCBs in
42 those lakes, specifically, and we probably saw DDT
43 as well, and we would have seen that as a peak
44 around the early 1960s, when we were using it as
45 an aerial forest spray.

46 Q Right. And did your core sampling look at some of
47 the new and emerging chemicals, I guess, that

1 we've been talking about here at the Commission,
2 the PBDEs and the like?

3 DR. MACDONALD: No, we did not look at PBDEs, because
4 they hadn't really emerged with great excitement.
5 There are some other new age chemicals that we are
6 trying to look at, now. We didn't look at them
7 then for a couple of reasons. One, is that we
8 didn't have the techniques to do it, and the other
9 is that some of these chemicals don't leave much
10 of a trace or don't leave a records in sediments.

11 Q And do you know if this research has been, you
12 know, made widely available to others that you did
13 in the Shuswap Lake?

14 DR. MACDONALD: We've published this work in two or
15 three journal articles, peer-reviewed journal
16 articles. Certainly my manager, Robin Brown, asks
17 to have these papers and I give them to him, so
18 they have gotten into management in one way, shape
19 or form.

20 Q Okay, thank you. I guess the reason I'm asking
21 that question is that at Commission's Tab 25, and
22 maybe we can just briefly go there, and at page
23 48, and if you just go to the third paragraph from
24 the bottom. And this paper was done for the
25 Fraser Basin Council and it was the -- well, done
26 by consultants and it's looking a the water
27 quality in the Shuswap Lakes, and it's a
28 monitoring plan. And in this paragraph there it
29 says:
30

31 The degree to which emerging contaminants are
32 present, Shuswap Lake and Mara Lake is
33 unknown due to limited monitoring budgets and
34 the traditional scope of regional water
35 quality monitoring programs. Based on
36 surveys from other large lakes in Western
37 Europe...it is likely that some emerging
38 contaminants are already present in Shuswap
39 and Mara Lakes, although the concentrations
40 are quite low and ecological implications
41 uncertain.
42

43 And I was just was wondering whether your study
44 that you would have done would have addressed any
45 of -- perhaps some of the issues they're talking
46 about here, at all?

47 DR. MACDONALD: It would have, I think, set a

1 comparative record for some contaminants, like
2 PCBs and DDTs, because we've done those in quite a
3 few lakes, including the B.C. Fraser Basin and
4 including Alaska. So we would be able to do a
5 comparison and say whether Shuswap was worse or
6 better. But as asked in the previous question, we
7 certainly haven't done all the contaminants, and I
8 don't think we could say a thing about PBDEs.

9 I could give you an example. In one of our
10 lakes, Nicola Lake, we found a very large hit of
11 DDT coming in, in the 1980s, well after DDT had
12 been banned for use in Canada. It also, following
13 that study, Environment Canada had a look at the
14 fish and they found high DDT in them as well. And
15 we discovered an illicit use of DDT in that lake
16 at that time. So the sediment cores often tell us
17 if something's array.

18 I don't recall Shuswap Lake being
19 particularly different from other lakes in that
20 context.

21 MS. REEVES: All right. Okay, maybe we'll move on. I
22 guess I'd like to mark that paper, Tab 25, as the
23 next exhibit.

24 THE REGISTRAR: Exhibit 983.

25
26 EXHIBIT 983: Integrated Water Quality
27 Monitoring Plan for the Shuswap Lake, BC,
28 Final Report, November 7, 2010, Prepared for
29 the Fraser Basin Council, Kamloops, BC
30

31 MS. REEVES: Thank you.

32 Q Moving onto Commission Tab 20, and this was a memo
33 to Claire Dansereau, and what it is, is it's
34 outlining enforcement and administration of
35 pollution prevention provisions under the
36 **Fisheries Act**, and its opinion. And if you just
37 go to the next page of the document, and within
38 the summary there, the second bullet point. And
39 it's talking, I guess, about the pollution
40 prevention provisions have historically been
41 administered and enforced by Environment Canada
42 and it's talking about this whole lack of, I
43 guess, there's gaps and the lack of understanding.
44 And one of the options, at bullet point two, it
45 says:

46
47 A number of emerging s. 36 issues have

1 highlighted the need to address this
2 situation, including a report from the
3 Commissioner of Environment and Sustainable
4 Development...

5
6 And then, on bullet point three:

7
8 Options have been examined and it is
9 recommended that the Department -

10
11 -- here they're talking about DFO --

12
13 - pursue a position of having [Environment
14 Canada] fully administering and accountable
15 for s. 36 of the **Fisheries Act**, including new
16 regulations related to aquaculture, aquatic
17 invasive species (AIS) and other emerging
18 issues.

19
20 MR. EAST: Mr. Commissioner, it's Mark East, from
21 Government of Canada. I would suggest, perhaps,
22 that counsel ask Dr. Macdonald if he has any
23 familiarity with this briefing note and the
24 material within it.

25 MS. REEVES: Actually, my questions were actually
26 towards Dr. Talbot.

27 Q Are you aware of this change -- proposed change?

28 MR. EAST: And I think the objection would still apply
29 if it was a question directed to Dr. Talbot.

30 MS. REEVES: Sure.

31 Q Are you familiar?

32 DR. TALBOT: I'm not familiar with the memo,
33 specifically, no.

34 Q But are you familiar with the proposal?

35 DR. TALBOT: If I may, the issue with the **Fisheries Act**
36 is Environment Canada is responsible for
37 enforcement in **Freshwater Fisheries Act** of the
38 deposition of deleterious substances in fish-
39 bearing water. But we're not responsible to do
40 research to investigate if there are potential
41 deleterious substances. We support enforcement
42 and the compliance in this area if there is an
43 issue. So if there is an investigation in
44 relation to the **Fisheries Act**, then we would
45 participate in the investigation.

46 Q Right. But I guess my question is: Are you aware
47 of this proposal by DFO of putting EC for "fully

1 administering and accountable for s. 36 of the
2 **Fisheries Act,**" are you aware of that?
3 DR. TALBOT: I'm aware in the broad lines that there's
4 discussions between DFO and EC, but I'm not part
5 of the discussions at all.
6 Q Okay. Well, I guess my follow-up question to you
7 would be, I guess from a science perspective, do
8 you think Environment Canada, if this were to
9 occur, has the capacity, science-wise, to take on
10 s. 36 issues, I guess particularly with respect to
11 science research, if this did go ahead?
12 DR. TALBOT: Yeah, Environment Canada does have the
13 capacity to do water quality research in support
14 of the **Fisheries Act,** should there be an
15 enforcement issue.
16 Q Right. But I guess I'm asking if they have the
17 capacity, if this proposal went ahead, for a
18 scientific standpoint?
19 DR. TALBOT: Yeah, I'm sorry, I'm not familiar with the
20 specifics of the proposal.
21 MS. REEVES: Okay. If we could have that marked as an
22 exhibit, however.
23 MR. EAST: Mr. Commissioner --
24 THE REGISTRAR: Exhibit 984.
25 MR. EAST: I was just going to file another objection.
26 As I understand it, neither of the witnesses are
27 familiar with this document. The lines of
28 questions are valid; however, not being familiar
29 with the document, and I believe it's a document
30 directed toward a briefing note for Deputy
31 Minister Claire Dansereau, who is going to be a
32 witness later on in these hearings, I would
33 suggest that, perhaps, the document, and putting
34 the document into evidence would be better served
35 at that time, as neither of these witnesses are
36 familiar with the document.
37 MS. REEVES: Perhaps we could have it marked for
38 identification purposes? I mean, it was put in by
39 the Commission as a listed document.
40 THE COMMISSIONER: The next letter exhibit, please?
41 THE REGISTRAR: Letter?
42 THE COMMISSIONER: Yes, please.
43 THE REGISTRAR: It will be marked for identification
44 double B, BB.
45
46
47

1 MARKED BB FOR IDENTIFICATION: Memorandum
2 from Mitch Bloom to Claire Dansereau, dated
3 December 23, 2010, Object: Administration
4 and Enforcement of the Pollution Prevention
5 Provisions of the **Fisheries Act** (Section 36)
6

7 MS. REEVES:

8 Q Okay, perhaps moving on, within the PPR, and we're
9 specifically going to pages 56 and 57, and
10 starting at paragraph 128, and this is referring
11 to DFO's 1986 habitat policy. It says:
12

13 a number of water quality roles and
14 responsibilities are assigned to DFO:
15

- 16 a. Cooperate with [Environment Canada] in
17 the establishment of federal priorities
18 for the protection of fish and their
19 habitats...;
20 b. Cooperate with [Environment Canada] in
21 the use of powers to control the release
22 of deleterious substances into fish
23 habitats...;
24

25 The next page over, on page 57, says:
26

- 27 d. Collaborate with [Environment Canada] and
28 others to provide advice and specific
29 requirements to control adverse effects;
30

31 And there's a number of other listings there to
32 work closely with Environment Canada and
33 collaborate with them. My question is for you,
34 Dr. Talbot. As someone working within Environment
35 Canada, how effective would you say that DFO has
36 been in meeting these, I guess, priorities or
37 policies in working with Environment Canada in the
38 last 10 years?

39 DR. TALBOT: I don't think it's a question that I can
40 really answer in terms of DFO's effectiveness. We
41 do not have a formal process with DFO to work in
42 these areas.

43 Q So the policy on collaboration you would say is a
44 more informal thing, then?

45 DR. TALBOT: Yes, as I mentioned earlier, there's more
46 informal collaboration at manager to manager level
47 or scientist to scientist level, and it depends on

1 the issue.

2 Q Right. And so would you say that given this
3 policy that's been in existence since 1986, that
4 perhaps a collaboration and a cooperation on a
5 science to science or manager to manager level
6 could be improved between Environment Canada and
7 DFO?

8 DR. TALBOT: I guess I would have to say that there's
9 always room for improvement, yeah.

10 Q And do you have any specific improvements that you
11 would suggest to the Commissioner?

12 DR. TALBOT: No, I would not.

13 Q I think I'll move onto my last set of questions.
14 This goes to you, Dr. Macdonald. This morning you
15 spoke about multiple and contaminants and communal
16 -- cumulative, sorry, impacts as being very
17 difficult and being at the heart of the impacts on
18 Fraser River sockeye; is that correct?

19 DR. MACDONALD: I don't think I specifically said
20 "Fraser River sockeye", but it's at the heart of
21 working out how these effects occur for these
22 contaminants to expose populations and aquatic
23 systems, which include sockeye salmon.

24 Q Okay. Thank you. And you also spoke, and it's
25 been mentioned again since you first said it, that
26 you also spoke about the sub-lethal impacts on
27 endocrine, immune and olfactory systems from
28 contaminants, and you spoke of them as being every
29 bit as risky as when contaminants cause, I guess,
30 belly-upness was the term you used?

31 DR. MACDONALD: Yes.

32 Q Okay. And do you agree that contaminant research,
33 perhaps along with genetic research, could provide
34 cutting edge information about causes of decline
35 of Fraser River sockeye?

36 DR. MACDONALD: I think the answer is absolutely, yes.
37 The role of contaminants is not at all clear, and
38 as you've put it, genetic research together with
39 contaminant exposure research would put us a long
40 way towards that.

41 Q And so would that be perhaps a recommendation that
42 you would make, is that more funding or a program
43 that would combine those two would be useful for
44 understanding the long term sustainability of
45 Fraser River sockeye?

46 DR. MACDONALD: Definitely so.

47 Q Okay. And would you agree that without such

1 research our understanding of the causes of
2 decline of Fraser River sockeye and their long
3 term sustainability will, in fact, be limited?

4 DR. MACDONALD: We will be missing something.

5 MS. REEVES: Okay. Thank you. That's all my
6 questions.

7 MS. BAKER: Mr. Commissioner, I think Mr. Hopkins-Utter
8 has something he wants to raise with me over the
9 break, otherwise we would have been able to say
10 goodbye to these witnesses, so if I could talk to
11 him over the break and come back and either finish
12 with these people or we'll move to a new panel?

13 THE COMMISSIONER: Thank you.

14 MS. BAKER: If we could come back at, what, five after
15 3:00?

16 THE REGISTRAR: The hearing will now recess for 10
17 minutes.

18

19 (PROCEEDINGS ADJOURNED FOR AFTERNOON RECESS)

20 (PROCEEDINGS RECONVENED)

21

22 THE REGISTRAR: The hearing is now resumed.

23 MS. BAKER: Thank you, Mr. Commissioner. Mr. Hopkins-
24 Utter indicated that he wanted to ask a re-
25 examination question of these witnesses. There is
26 no right of re-examination for Mr. Hopkins-Utter,
27 given that these are not his witnesses. He's
28 talked to me about what the question is, and I am
29 not agreeing that he should be asking this
30 question in re-examination. It's not appropriate,
31 in my view. So I have told him that he needs to
32 make a submission to you on that point.

33 THE COMMISSIONER: Yes.

34 MR. HOPKINS-UTTER: Mr. Commissioner, this afternoon on
35 questions from the Conservation Coalition, I
36 objected to a questioning on specifically SLICE,
37 as it was used in the aquaculture industry and the
38 marine environment. You allowed some questions on
39 regulation of the aquaculture industry, and the
40 witnesses answered that they did not in fact know
41 of whether or not pesticide use in the aquaculture
42 industry was regulated by Environment Canada or
43 DFO, and I just seek to clarify that, that answer.

44 THE COMMISSIONER: Can you tell me what your question
45 is.

46 MR. HOPKINS-UTTER: The question is are they unaware of
47 the fact that Health Canada in fact regulates

1 pesticide use in the aquaculture industry, or are
2 they just generally unaware of that regulation.
3 MS. BAKER: My position on this is that the re-
4 examination is available to clear up something
5 that's been left unclear. The questions were
6 clear, they were posed with respect to DFO and
7 Environment Canada. There was no answer given
8 that Health Canada did or did not, it was just not
9 asked at all. It just is not appropriate re-
10 examination. This client group will have two
11 weeks this summer to get into all the issues they
12 want to get into on aquaculture and, in my
13 submission, it's not appropriate to get into that
14 today.
15 MR. HOPKINS-UTTER: With all due respect, Mr.
16 Commissioner, we did not in fact seek to raise
17 this issue today at all.
18 THE COMMISSIONER: I will allow you that one question,
19 Mr. Hopkins-Utter.
20 MR. HOPKINS-UTTER: Thank you, Mr. Commissioner.
21 THE COMMISSIONER: Could you pose it again for these
22 two witnesses, please.
23 MR. HOPKINS-UTTER: Absolutely.
24
25 CROSS-EXAMINATION BY MR. HOPKINS-UTTER, continuing:
26
27 Q Our question is: Are you also in fact unaware of
28 the regulation of pesticide use by the aquaculture
29 industry by Health Canada, or are you generally
30 unaware of those regulations?
31 DR. TALBOT: If I understand your question correctly, I
32 believe I had stated that pesticide use in
33 aquaculture was regulated by the PMRA, the
34 Pesticide Management Regulatory Agency, which is
35 an agency associated with Health Canada.
36 MR. HOPKINS-UTTER: Thank you very much. I apologize
37 if I missed your answer. And thank you very much,
38 Mr. Commissioner, for your discretion.
39 MS. BAKER: Mr. Commissioner, unless you have anything
40 to ask these witnesses, I am finished asking my
41 questions of them.
42 THE COMMISSIONER: I have just one -- I am sorry, Ms.
43 Baker, I have just one quick question.
44
45 QUESTIONS BY THE COMMISSIONER:
46
47 Q I just wanted to ask Dr. Macdonald and Dr. Talbot,

74

PANEL NO. 40

Questions by the Commissioner

PANEL NO. 41

In chief by Ms. Baker

1 you have mentioned throughout your testimony
2 obviously Environment Canada and DFO, and at times
3 Health Canada. Is there any overarching body that
4 you're aware of within Ottawa, in any Ministry
5 that we've just spoken about here today, that has
6 an oversight or has some role to play in the
7 collaborative nature of some of the topics that
8 you discussed today?

9 DR. TALBOT: Not that I am aware of, Mr. Commissioner.

10 DR. MACDONALD: And I'm not aware of it, either.

11 THE COMMISSIONER: Thank you very much. I want to
12 thank you both for appearing here today and for
13 giving your answers to the questions asked by
14 counsel, and for taking the time to bring your
15 knowledge and information to the Commission.
16 Thank you very much.

17 MS. BAKER: Thank you very much. And our next panel
18 will now come to the witness stand.

19 Thank you. Mr. Commissioner, our three
20 witnesses we have this afternoon are Dr. Carey,
21 closest to you, Ms. Walls in the centre, and Dr.
22 Paradis on the end closest to counsel's table. If
23 they could be sworn in, please.

24
25 SYLVAIN PARADIS, affirmed.

26
27 LISA WALLS, affirmed.

28
29 JOHN CAREY, affirmed.

30
31 THE REGISTRAR: State your name, please.

32 DR. CAREY: My name is John Carey.

33 MS. WALLS: My name is Lisa Walls.

34 THE REGISTRAR: Thank you.

35 DR. PARADIS: Sylvain Paradis.

36 THE REGISTRAR: Thank you. Counsel.

37 MS. BAKER: Thank you.

38
39 EXAMINATION IN CHIEF BY MS. BAKER:

40
41 Q I will start with Dr. Paradis, closest to me. If
42 we could put his biography on the screen, it's Tab
43 1, it's your c.v. If you can just identify that
44 as your c.v.

45 DR. PARADIS: Yes.

46 MS. BAKER: Can I have that marked, please, as the next
47 exhibit.

June 6, 2011

1 THE REGISTRAR: Exhibit 984.

2
3 EXHIBIT 984: *Curriculum vitae* of Sylvain
4 Paradis
5

6 MS. BAKER:

7 Q Dr. Paradis, you are currently with Health Canada,
8 but from March 2006 to December 2010 you were the
9 Director General of DFO Science Sector's Ecosystem
10 Science Directorate?

11 DR. PARADIS: Yes.

12 Q And from May 2003 until you took that position,
13 you were the Director of DFO Sector's Environment
14 and Biodiversity Directorate?

15 DR. PARADIS: Yes.

16 Q And as your c.v. indicates, you have a Ph.D. in
17 Sociology.

18 DR. PARADIS: Yes.

19 Q You have worked in Environment Canada or Health
20 Canada since 1992 in various positions?

21 DR. PARADIS: Yes.

22 Q And we'll get into quite a bit of what you did in
23 your time at Fisheries and Oceans when we go
24 through your evidence, so I'll leave that for
25 there.

26 If I could then move to Lisa Walls. Her c.v.
27 is at Tab 18. Ms. Walls, you're presently with
28 Canadian Environmental Assessment Agency, but
29 prior to that you were the Associate Regional
30 Director of -- I'm sorry, you were the Acting
31 Director of Environmental Protection Operations
32 and you were Manager of Sector Support Section in
33 Environment Canada, Pacific and Yukon Region; is
34 that right?

35 MS. WALLS: That's correct.

36 Q And you were there from -- either as Acting
37 Director or, I take it within a similar section,
38 going back to the beginning of your career with
39 Environment Canada, which began in 1991, you were
40 the Acting Director of Environmental Protection
41 from November '08 to March '09?

42 MS. WALLS: That's correct.

43 Q And prior to that you were in various departments
44 within Environment Canada, going back to 1991?

45 MS. WALLS: That's correct.

46 Q Okay.

47 MS. WALLS: Actually going back to 1986.

1 Q Oh, 1986, thank you. And while you were with
2 Environment Canada, towards the end you were
3 involved in interactions with Department of
4 Fisheries and Oceans on various water quality
5 issues?

6 MS. WALLS: Yes, through the 1990s and towards the end
7 I was involved with DFO on various water quality
8 issues.

9 MS. BAKER: Thank you. And Dr. Carey -- oh, sorry,
10 could I have that marked, please, as the next
11 exhibit.

12 THE REGISTRAR: Exhibit 985.

13
14 EXHIBIT 985: *Curriculum vitae* of Lisa Walls
15

16 MS. BAKER:

17 Q Thank you. Dr. Carey's biography is in Tab 17.
18 And, Dr. Carey, you have a Ph.D. in inorganic
19 Phytochemistry?

20 DR. CAREY: Photochemistry, yes.

21 Q Photochemistry, sorry. You were a Special Advisor
22 to the Assistant Deputy Minister of Science and
23 Technology Branch from January to July 2010,
24 right?

25 DR. CAREY: That's correct.

26 Q And prior to that you were the Director General,
27 Water Science and Technology Directorate, in fact,
28 going back to 2005, with a brief hiatus when you
29 were Acting ADM; is that right?

30 DR. CAREY: Yes. I became Director General of NWRI in
31 2003.

32 MS. BAKER: 2003, thank you. All right. Could I have
33 that marked, please as the next exhibit.
34

35 EXHIBIT 986: *Curriculum vitae* of John Hugh
36 Carey
37

38 MS. BAKER:

39 Q I'm going to begin my questions with you, Ms.
40 Walls. We've heard a bit today about Environment
41 Canada's responsibility and it's been often
42 described as end of the pipe. We've also heard
43 people talk about point and non-point source
44 pollution. Can you tell us what the "end of the
45 pipe" term refers to within the world of
46 Environment Canada, as you understand it?

47 MS. WALLS: Sure. "End of pipe" is sort of a

1 colloquial term that's used to describe the last
2 point of control over a pollutant. So it's really
3 could be the end of the pipe, the end of the
4 ditch, the end of the culvert, the end of the
5 leachate, but it's the last point of control
6 before it enters the receiving environment. And
7 so in terms of Environment Canada and DFO's
8 mandate, with respect to s. 36 of the **Fisheries**
9 **Act**, Environment Canada would focus our efforts on
10 the pollutant discharge, controlling the pollutant
11 discharger, instruments to control the pollutant
12 or prevent the deposit of the pollutant up until
13 the last point of control, or the end of the pipe
14 where it entered the receiving environment. And
15 then DFO's responsibility was generally to look at
16 the effect of the pollutant on the fish. That's
17 very much in a **Fisheries Act** context.

18 If you look at the **Canadian Environmental**
19 **Protection Act**, it provides for a lifecycle
20 approach to toxic chemicals mandate, which
21 includes both the controlling of the pollutant at
22 the source, as well as development of
23 environmental quality in the receiving
24 environment, but on a toxic chemical-specific
25 basis.

26 Q Right. Is it fair to say that the primary focus
27 for Environment Canada has been point source type
28 discharges, like mining and pulp, and also
29 specific toxics regulated under **CEPA**, as you've
30 just described?

31 MS. WALLS: Well, all my response is within the context
32 of my responsibilities in a regional office for
33 compliance promotion related to the **Fisheries Act**,
34 s. 36 responsibilities, and in that context I'd
35 say that the focus was on regulated sectors, both
36 under regulation pursuant to the **Fisheries Act**, as
37 well as **Canadian Environmental Protection Act**, and
38 those tended to be point sources of pollution,
39 such as mining, pulp and paper, and associated
40 environmental effects monitoring programs for
41 those regulated sectors.

42 Work related to non-point sources was more in
43 where there were specific programs such as the
44 Georgia Basin Action Plan, which had an area of
45 work related to non-point source pollution,
46 specifically agricultural runoff and urban runoff.

47 And the other area of focus for Environment

1 Canada has and continues to be contaminated sites,
2 and more specifically federal contaminated sites.

3 Q Thank you. You mentioned that you had done work
4 on compliance and promotion in your time with
5 Environment Canada; is that right?

6 MS. WALLS: Yes.

7 Q If you could put up Exhibit 693, this is a
8 Compliance and Enforcement Policy for Habitat
9 Protection. This document is dated November 2001.
10 At page 3 of this document, there's a description.
11 I wonder if this is of assistance in understanding
12 what is meant when you describe compliance
13 promotion, and I'm looking the third paragraph,
14 which has four numbered bullets. Can you use that
15 to explain what you were talking about when you
16 talk about the compliance and promotion work that
17 was done by Environment Canada.

18 MS. WALLS: Yes, I think that accurately describes in
19 very broad terms the types of activities that are
20 included in compliance promotion. The other area
21 would be, I guess, you know, as part of related to
22 technical assistance and public education, as
23 well, the development of guidance materials and
24 codes of practice, and providing input, both by
25 Environment Canada or by other parties, such as
26 the provincial government, and compliance
27 promotion activities would include providing
28 advice and input to those guidance materials. So
29 it's the development of the guidance materials, as
30 well as communicating and promoting them in a
31 public education sense.

32 Q And was there a focus as to where that work was
33 targeted, for example, was this compliance
34 promotion also focused on the point source and
35 regulated sectors, or did it have a different
36 focus?

37 MS. WALLS: Mm-hmm. It was, I mean, we had compliance
38 promotion related to all of the programs that we
39 administered that we were responsible for
40 administering in the region, and enforcing, and we
41 like to refer to, you know, the compliance
42 promotion, the compliance and enforcement
43 continuum. So compliance promotion is the
44 frontend work to try to encourage, promote, advise
45 potential polluters to avoid the creation or
46 deposit of a waste in the first place. And so for
47 any programs that the region administered, and

1 specifically the ones I described earlier,
2 compliance promotion was an important piece of to
3 avoid the deposit of the pollution in the first
4 place. And then you would move to compliance
5 verification, which is doing inspections to audit
6 and assess whether or not those controls are
7 effective. And then finally investigation and
8 enforcement, where there's a suspected violation
9 of an applicable regulation.

10 And I think it would be worth pointing out
11 that with respect to s. 36 of the **Fisheries Act**,
12 compliance promotion is a very important activity
13 because of the fact that that is a general
14 prohibition. There are not specific -- it's not
15 like a specific regulation. **CEPA** is an enabling
16 legislation, and so any regulatory instruments
17 have to be introduced through regulations. There
18 is no general prohibition component to it.

19 The **Fisheries Act** has s. 36, which is a
20 general prohibition against the deposit of a
21 deleterious substance, unless authorized by
22 regulation. So in the absence of a regulation, it
23 just says you can't deposit something that's
24 deleterious to fish. So that requires a
25 considerable amount of compliance promotion to
26 enable understanding of what a deposit of a
27 deleterious substance is and how to avoid it,
28 unlike where there's a specific regulation will
29 say, you know, this substance must be controlled
30 in this way to this level, and you must report it
31 in a certain way. It's very prescriptive
32 typically. Whereas 36, because s. 36, because
33 it's a general prohibition, there is a fair bit of
34 education and interpretation that's involved in
35 enabling the public or industries or whomever to
36 ensure that they comply.

37 Q So it is broader than simply the regulated sectors
38 that would be the -- compliance promotion would be
39 much more broadly based than that, is that what
40 you're saying?

41 MS. WALLS: It was so to answer your specific question,
42 the compliance promotion efforts dealt with both
43 the regulated sectors, as well as under -- general
44 compliance promotion related to activities that
45 could fall under the general rubric of s. 36 of
46 the **Fisheries Act**.

47 Q So a much broader spectrum. You weren't just

1 looking at pulp mills, for example, you were
2 looking at anybody who could be a polluter into
3 the environment?

4 MS. WALLS: Well, it depends what point in time you're
5 talking about. As, you know, through, you know,
6 from around 2004 through to, you know, until I
7 left the Department actually, the efforts became
8 much more targeted on the regulated sectors --

9 Q All right.

10 MS. WALLS: -- and point source discharges. But
11 earlier on we had programs that dealt with non-
12 point source pollution.

13 Q Okay. That's what I'm asking, is prior to 2004 it
14 was a broad-base program?

15 MS. WALLS: Yes.

16 Q Okay. And doing that work, beginning before 2004,
17 did Environment Canada work with DFO in the
18 Pacific Region to do the compliance and promotion
19 work?

20 MS. WALLS: Yes, we collaborated and, I guess, worked
21 in a coordinated fashion as set out in the
22 principles of the 1985 MOU, and the 1987 Regional
23 Working Agreement.

24 Q All right. Did you work with the Department of
25 Fisheries and Oceans Water Quality Unit?

26 MS. WALLS: Yes, I did, my group did.

27 Q And was that work with the Water Quality Unit in
28 relation to compliance and promotion?

29 MS. WALLS: Yes, it was. Yes. Yes, we worked
30 together, and so our Environment Canada's role was
31 basically to look at controlling the pollutant at
32 source, recommending and advising on ways to
33 control pollution at the source up until the point
34 of deposit into the receiving environment. And
35 then we would seek advice from DFO on appropriate
36 or safe water quality -- or the Water Quality Unit
37 on presence and absence of fish species and type
38 of fish species, as well as they would provide us
39 advice on safe water quality thresholds for fish
40 in a relevant sector or site-specific application.

41 Q Okay, thank you, and that's very helpful. How
42 would you describe the Water Quality Unit within
43 DFO in the Pacific Region in terms of working
44 relationship with Environment Canada? Was it an
45 important unit, and how was it used?

46 MS. WALLS: Well, it was a small unit, but it was a
47 very effective means for us to coordinate, and it

1 really served as a window into -- it had a number
2 of purposes. It served as a window into DFO for
3 Environment Canada's environmental protection
4 programs. So where we were dealing with
5 compliance promotion on a site-specific or a
6 sector-specific basis, we would work in
7 collaboration with DFO through that group to get
8 their advice and input on receiving water quality
9 elements, and aspects of whatever compliance
10 promotion we were trying to do.

11 And we would also have -- generally we would
12 have annual work planning meetings where we would
13 share work plans, and we would identify priorities
14 and issues that we were respectively planning to
15 work on, and that was a further opportunity to
16 align and coordinate our activities so that we
17 could support each other.

18 And I guess the third area would be, you
19 know, the **Fisheries Act**, s. 35 deals with harmful
20 alteration, disruption, and destruction of fish
21 habitat, and s. 36 deals with the deposit of
22 deleterious substances, or water quality. Quite
23 often if you're dealing with a site-specific
24 development proposal, a contaminated site, or some
25 kind of industrial sector, it has impacts in both
26 areas. So we would work together to make sure
27 that the advice we were providing was consistent,
28 it made sense in a practical -- from a practical
29 implementation point of view that you're
30 protecting both water quality, as well as habitat
31 for fish. And so they were -- the Water Quality
32 Unit helped to provide that advice on the habitat
33 impacts that was supportive with the work that we
34 were doing on controlling pollution at the source.

35 Q Did you work with DFO -- did Environment and DFO
36 work together addressing pollution limits,
37 advising on pollution limits or establishing best
38 practices? Were those collaborative activities,
39 as well?

40 MS. WALLS: I would say they were coordinated
41 activities. We're speaking very generally here.
42 There was a number of different activities at the
43 time. We were receiving a lot of referrals from
44 the Province of B.C. on development of limits and
45 conditions for provincial permits. So we would
46 work together on our responses and provide
47 recommendations on appropriate effluent discharge

1 limits, operating conditions, and then DFO through
2 the Water Quality Unit would provide
3 recommendations on safe water quality thresholds
4 for fish or monitoring requirements, and dealing
5 with the receiving environment.

6 If we were providing developing things like
7 codes of practice or best management practice,
8 then we would collaborate with the Water Quality
9 Unit and they would provide advice on the fish
10 habitat and water quality, and we would develop
11 the aspect dealing with controlling the pollution
12 at the source. So we worked in a coordinated
13 fashion.

14 Q Do you know, was the DFO Water Quality Unit and
15 its relationship to Environment Canada unique to
16 the Pacific Region?

17 MS. WALLS: I wasn't aware of a Water Quality Unit
18 existing in another region of DFO. But I can't
19 say -- just I wasn't aware of it, but I can't say
20 for sure that it was unique.

21 Q And I think you've already touched on this, but is
22 the DFO Water Quality Unit still in existence?

23 MS. WALLS: No, it's not.

24 Q And it was in 2004 it was disbanded?

25 MS. WALLS: Yes.

26 Q Was Environment Canada, to your knowledge,
27 consulted before the DFO Water Quality Unit was
28 disbanded?

29 MS. WALLS: No, I would not -- I would say we were not
30 consulted. We had a bit of a heads-up and we kind
31 of heard that it might happen, but we were not
32 consulted.

33 Q If I could ask you to look at Tab 15, if that
34 could be put up. This is a letter from Paul
35 Macgillivray to Don Fast, Paul Macgillivray being
36 with DFO and Don Fast being the Regional Director
37 General for Environment Canada. This letter is
38 dated July 9, 2004. Do you remember seeing this
39 letter?

40 MS. WALLS: Yes, I do.

41 Q And this is the letter where Paul Macgillivray
42 advises Environment Canada that the Water Quality
43 Unit is being disbanded, and that responsibility
44 for various s. 36 activities will be done by
45 Environment Canada in the future. What was -- was
46 that your, a very brief summary, your
47 understanding of this letter?

1 MS. WALLS: Yes. I mean, it was basically informing us
2 that -- well, I won't read the letter, but, yeah.
3 I mean, the letter is basically saying that they
4 were curtailing their activity in this area, and
5 that they wanted to meet with us and talk about
6 how we could continue, you know, to fulfil, I
7 guess, the overall objectives of 36 without the
8 existence of that unit.

9 Q Were you involved in preparing a response to that
10 letter?

11 MS. WALLS: Yes, I was.

12 MS. BAKER: Oh, I should mark that first letter as an
13 exhibit, this is July 9.

14 THE REGISTRAR: Exhibit 987.

15
16 EXHIBIT 987: Letter from P. Macgillivray to
17 D. Fast re Habitat Management's Role in s. 36
18 of the **Fisheries Act**, July 9, 2004
19

20 MS. BAKER:

21 Q Right. And is that response that you prepared
22 found at Tab 12, it's a letter August 3, 2004,
23 back to Paul Macgillivray from Don Fast.

24 MS. WALLS: Yes, I was involved in drafting this
25 letter.

26 Q Okay. Well, just generally before we get to the
27 letter in any detail, what was the response within
28 Environment Canada regional to the news, or to the
29 letter from Paul Macgillivray?

30 MS. WALLS: We were surprised and we, you know,
31 immediately started thinking about all the
32 implications of this, and wondering how we were
33 going to adapt, and kind of surprised that they
34 would do this, given that we did have a
35 longstanding history of working together
36 effectively through the Water Quality Unit. And
37 we also saw it as, you know, something that DFO
38 had a responsibility under the Regional Working
39 Agreement and the MOU of 1985 to continue to
40 fulfil this role.

41 So our response was we actually got together
42 and internally and brainstormed a list of issues
43 where we thought this could impact our work, and
44 that led to this list of EC-DFO s. 36 issues that
45 you see on page 2 of the letter.

46 Q Mm-hmm.

47 MS. WALLS: And it was really, you can see it's kind of

- 1 an assortment of high level and very specific
2 things, and it really was just us sitting together
3 and brainstorming all of the areas that we worked
4 together, and what we would need to talk about in
5 response to this letter with DFO, and then a
6 meeting was organized to talk about it.
- 7 Q At that time was Environment Canada relying on the
8 Fisheries and Oceans Water Quality Unit to provide
9 it with science advice that it needed to do its
10 work?
- 11 MS. WALLS: It was very much a coordinating unit, so
12 they were, like I said, it was a small unit. I
13 don't know, maybe six or -- five or six or eight
14 people. And so they weren't doing the science
15 research themselves, but like I said, they were a
16 window into the Department, and they knew where to
17 get the science. So if we had a specific
18 question, and we had, you know, regular things
19 that we worked together on, such as contaminated
20 sites, permit referrals, comments on development
21 of code of practice and, you know, various
22 inquiries that we would get related to general
23 **Fisheries Act** 36 activities that could be in
24 potential non-compliance with s. 36 of the
25 **Fisheries Act**, we would work together on those
26 things. And so, sorry, what was the question?
- 27 Q Whether Environment Canada relied on science
28 advice from DFO --
- 29 MS. WALLS: Yes. Yes.
- 30 Q -- to address some of the issues that it was...
- 31 MS. WALLS: Yes. So we worked with that group on the
32 things that we received comment, questions about
33 all the time we had, that unit themselves would
34 provide the information. But they also, like I
35 said, were a coordinating function and a window
36 into DFO so that they would know where to get the
37 expertise and direct that to help respond, to
38 enable Environment Canada to respond in a fully,
39 in a comprehensive manner to a s. 36 question.
- 40 Q And then bullet number 13 has a number of
41 different files set out.
- 42 MS. WALLS: Mm-hmm.
- 43 Q Contaminated sites, aquaculture, municipal
44 wastewater, et cetera. Did Environment Canada at
45 that time have the capacity in the region to take
46 on the science advice previously provided by DFO
47 to support those areas?

1 MS. WALLS: At the time, not the science advice that
2 DFO provided. Like I said, previously Environment
3 Canada's focus was on the regulated sectors and we
4 did have expertise in those sectors, pulp and
5 paper, metal mining, both the effluent control, as
6 well as the receiving environment impacts. So we
7 were able to pick up in those areas. But in these
8 other areas at the time, we did rely on DFO to
9 provide the water quality advice.

10 Q Okay. And was Environment Canada funded to do
11 research and science work in water quality and
12 receiving environments in those areas that are set
13 out under bullet 13?

14 MS. WALLS: No.

15 Q All right. After the letter from Don Fast was
16 written and delivered to the Department of
17 Fisheries and Oceans, was there a meeting between
18 the two agencies to discuss those issues and what
19 the implications were of the decision by DFO?

20 MS. WALLS: Yes, there was.

21 MS. BAKER: And you've provided me with some minutes of
22 some meetings. If I could ask you to turn to Tab
23 21. The first of these actually chronologically
24 is Tab 23, which is an email.

25 Oh, sorry, yes, I do want to mark it. Yes,
26 sorry, the letter from Don Fast should be marked
27 as the next exhibit.

28 THE REGISTRAR: That will be 988.

29
30 EXHIBIT 988: Letter from D. Fast to P.
31 Macgillivray, August 3, 2004, response to
32 letter of July 9, 2004
33

34 MS. BAKER: Thank you.

35 Q Back to Tab 23, which is an email from you to a
36 variety of people. Do you have that?

37 MS. WALLS: Sorry, which tab?

38 Q It's no the screen there.

39 MS. WALLS: Oh, okay.

40 Q It's from you to various people.

41 MS. WALLS: Tab 23?

42 Q Yes. All right. So this outlines action points
43 from a February meeting.

44 MS. WALLS: Mm-hmm.

45 Q Was that, was February the first meeting that you
46 had with Environment Canada and DFO together?

47 MS. WALLS: The February 16th meeting was the first

1 meeting that we had to discuss this matter, yes.
2 Q Sorry, these are a bit out of order. If we turn
3 to Tab 28, that has the agenda from that meeting.

4 MS. WALLS: Yes.

5 Q Maybe I'll just start with that agenda, then.

6 MS. WALLS: Mm-hmm.

7 Q All right. And who was at this meeting?

8 MS. WALLS: The directors of the responsible units in
9 Environment Canada and DFO, which is Mike
10 Nassichuk, who was the Regional Director for
11 Environmental Protection Operations, and Sue
12 Farlinger, who was the Director of the Habitat
13 Division, I don't have the correct title, but
14 Director of Habitat at DFO in the Region. As well
15 as their managers that were responsible for this
16 area of work, which was myself, Lisa Walls, and
17 Bonnie Antcliffe, and some key staff, as well.

18 Q All right. And what was discussed at that
19 meeting? What was the plan?

20 MS. WALLS: Well, really, it was our first opportunity
21 to talk about this change in DFO. So it was an
22 initial sharing of information on changes that
23 were going on in our respective Departments that
24 were affecting how we were organized to deliver
25 our responsibilities with respect to s. 36 of the
26 **Fisheries Act**. DFO explained the changes that
27 they were undergoing with respect to their
28 Environmental Process Modernization Initiative,
29 which were part of the drivers for their decision
30 to wind down the Water Quality Unit. Environment
31 Canada talked about some of the governance changes
32 that we were embarking on through something called
33 the Transformation Initiative, and a CESF,
34 Competitiveness and Environmental Sustainability
35 Framework.

36 So it was an initial meeting to kind of
37 explain, update each other on the changes that
38 were going on in our Departments, and so, you
39 know, for DFO it was an explanation of why they
40 were winding down this unit, and for Environment
41 Canada it was saying, well, you know, we've got
42 some changes going on that are affecting our
43 ability to continue to work in the same way in our
44 Department.

45 And from there we identified again some of
46 the implications that would fall out of this. And
47 there was an agreement to set up a group, a

1 working group, or a steering committee to have
2 further discussion on the specific areas that we
3 were impacted and that we would need to find new
4 ways of working together.
5 Q All right. And this meeting was in February, but
6 the letter from Fisheries and Oceans was the
7 previous July, so --

8 MS. WALLS: Mm-hmm.

9 Q -- what happened in that long period of time
10 between when you got the notice from DFO and when
11 the first meeting happened?

12 MS. WALLS: Well, I think, you know, they -- it wasn't
13 like they completely just stopped immediately.
14 The people were still there, they were winding
15 down. There was a smaller group that we could
16 continue to work with. So in that interim period
17 we did continue to work similar to what we had
18 previously, because they had a Water Quality
19 Coordinator that continued on for about a year, I
20 think, after that letter was issued. And some of
21 the people were still there. So in that interim
22 period we sort of carried on.

23 MS. BAKER: Okay. Could I have that agenda marked,
24 please, as the next exhibit.

25 THE REGISTRAR: Exhibit 989.

26
27 EXHIBIT 989: Agenda, DFO Habitat Management-
28 EC meeting, February 16, 2005
29

30 MS. BAKER:

31 Q And then going back to Tab 21, I think this is the
32 next set of minutes, this is April 14, 2005.

33 MS. WALLS: Mm-hmm.

34 Q This was the follow-up meeting to the February
35 one?

36 MS. WALLS: Mm-hmm

37 Q Is that right?

38 MS. WALLS: Yes.

39 Q And what was the outcome of that meeting?

40 MS. WALLS: Well, one of the outcomes was that
41 Environment Canada regionally set up something
42 called the **Fisheries Act** Working Group, and the
43 purpose of that was to better plan, coordinate and
44 identify priorities for our s. 36 **Fisheries Act**
45 compliance promotion activities within Environment
46 Canada. And we agreed that we would, you know,
47 share information of activities of that group with

1 DFO and try to get their input.

2 There was an agreement that we would continue
3 to track information that came in -- we received,
4 we both received, a lot of inquiries and requests
5 for advice and information related to activities
6 that might affect fish. And so we both agreed to
7 track that work and to share information, to try
8 and get a sense on sort of what was the problem,
9 what was -- there was a fear that with DFO closing
10 down the Water Quality Unit that people that had
11 previously gone to that group - besides
12 Environment Canada - for advice, would then all of
13 a sudden start coming to Environment Canada and we
14 wouldn't have the capacity to respond. So we
15 started tracking those inquiries and tried to get
16 a better handle on exactly the nature, the type,
17 the number of inquiries and how they were coming
18 in.

19 And there was also an agreement to have some
20 follow-up discussions with respect to contaminated
21 sediment issues related to contaminated sites, and
22 what Environment Canada and DFO's respective roles
23 and responsibilities would be with regard to that
24 issue.

25 Q And if we look at page --

26 MS. WALLS: Yeah, I mean, the action items are tracked.
27 I'm just -- I'm going through them.

28 Q Yes.

29 MS. WALLS: But, I mean, those were the key ones. The
30 other one was to develop a two-page document that
31 would describe in general terms what **Fisheries Act**
32 36(3) obligations are, so that we could use that
33 document in kind of just a generic template way to
34 respond to requests for advice and information.
35 So we agreed to develop that, Environment Canada
36 agreed to develop that and to get DFO's input on
37 that sheet.

38 Q Right. And if you see the heading "Action Items",
39 if you move two paragraphs ahead of that, higher
40 up the page.

41 MS. WALLS: Yes.

42 Q It says:

43
44 DFO will continue to do contaminant science
45 as it affects fish, but will move away from
46 human health aspects. [Environment Canada]
47 request for research priorities should be

1 directed to the Water Quality Manager...

2

3 That's a person within the Water Quality Unit, is
4 that right?

5 MS. WALLS: No, it was -- yeah, it was a person within
6 the Water Quality Unit, although the Water Quality
7 Unit was being wound down. So there was a Water
8 Quality Manager position that continued on a
9 short-term basis. And so that person was
10 identified as the point of contact.

11 Q All right. But this describes, this paragraph
12 that I was reading describes the process that was
13 set up to keep lines of communication going on --

14 MS. WALLS: Yes.

15 Q -- science, yes. The lines of communication
16 between Environment Canada and DFO on science
17 requests was going to be handled in the manner set
18 out in that paragraph. Requests would go from
19 Environment Canada to the Water Quality Manager?

20 MS. WALLS: Yeah, and this is very much in a regional
21 context.

22 Q Right.

23 MS. WALLS: So this, this is in Pacific and Yukon
24 Region.

25 Q Right.

26 MS. WALLS: And as I said, the Water Quality Unit
27 served as our - "our" being Environment Canada -
28 Environmental Protection in Pacific and Yukon
29 Region, that was our window into DFO to get, to
30 share information on emerging issues, priorities,
31 research requests, and water quality advice. So
32 what this was saying is that there was one
33 individual, that the unit was wound down, but
34 there was one individual identified to be the
35 Water Quality Manger, and they would continue to
36 be our contact for this type of information. So
37 it was shrinking from a unit to a person, and that
38 person only existed for another six months or so.
39 It was funding that disappeared and that person
40 was reassigned to other activities. So that was
41 the plan, but it didn't last for very long.

42 MS. BAKER: Thank you. Could I have those minutes
43 marked as the next exhibit.

44 THE REGISTRAR: Exhibit 990.

45

46 EXHIBIT 990: DFO-EC Meeting Minutes, April
47 14, 2005

1 MS. BAKER:

2 Q And the last set of minutes are dated in October
3 and they're at Tab 22. Is this the last -- well,
4 first of all, was DFO at this meeting?

5 MS. WALLS: Yes.

6 Q Okay. And was this the last meeting that was held
7 between Environment Canada and DFO to try and work
8 through these issues?

9 MS. WALLS: Yes. It was the last, I guess. last of the
10 steering committee meetings.

11 Q Mm-hmm. And was the outcome from this the
12 development of a new relationship between, and an
13 understanding of who had responsibility for what
14 aspects in the Pacific Region?

15 MS. WALLS: Well, in a number of these areas I would
16 say that the working relationship shifted from
17 being coordinated through the Water Quality Unit
18 to program-specific context, contact. So for
19 instance, the contaminated site issue, there was a
20 Federal Contaminated Site Action Plan that started
21 up, and Environment Canada and DFO and Health
22 Canada continued to work cooperatively under the
23 Fisheries -- or, sorry, under the FCSAP, or
24 Federal Contaminated Sites Action Program. Dioxin
25 monitoring, there were, you know, people working
26 in that area continued to work together. Permit
27 referrals, that actually the frequency of permit
28 referrals actually wound down because the province
29 moved away from permitting individual discharges.
30 There was work that continued on enforcement, so
31 the enforcement people spoke to each other, and
32 the **Fisheries Act** 36(3) fact sheet was developed.
33 And the **Fisheries Act** Working Group continued
34 until about 2006, and then that sort of -- that
35 activity ended. So I would say that for the most
36 part that work continued, but not -- it was more
37 program-to-program, scientist-to-scientist kind of
38 contact.

39 Q Were there any of the gaps that were identified in
40 the letter which has now been marked - I don't
41 have the exhibit reference now - 988, the gaps
42 that were identified in that exhibit, have they
43 been -- or are all of those gaps now addressed, or
44 are there some that remain unresolved?

45 MS. WALLS: Can you refer me to the Tab number again,
46 please?

47 Q 12.

1 MS. WALLS: 12.

2 Q 12.

3 MS. WALLS: I would say that -- and this is at the
4 time, so 2005/2006, some of the items in bullet
5 number 13, there was a bit of a gap in receiving
6 water quality advice as well as on Environment
7 Canada's part. We were lacking a lead on
8 **Fisheries Act** s. 36 issues, so that contributed to
9 kind of a lack of focus on a number of these items
10 listed in bullet number 1, with some exceptions.
11 For instance, municipal wastewater continued to be
12 a high level of activity, both on the science side
13 as well as the compliance promotion, and
14 regulatory development side led by Environment
15 Canada. Environmental assessment, to the extent
16 that the development proposals related to areas
17 that Environment Canada had expertise, such as
18 mining, that work, I think, continued effectively,
19 because there was another program, contaminated
20 sites, like I said, Federal Contaminated Site
21 Action Program. And I'd say emergency response
22 and investigations continued to be dealt with.
23 The one that I would -- the couple that I think
24 where there was a gap at the time was on the
25 aquaculture file, on what I would call
26 miscellaneous industries, or what's referred to
27 here as miscellaneous industries. I think that
28 that's the unregulated sectors, or they tended to
29 be the small and medium-size industries, SMEs.
30 Fish processing was another area that there was
31 reduced attention to and reduced coordination.

32 Q And what about coastal dioxin monitoring?

33 MS. WALLS: That was a very small program, and that was
34 one where the DFO and Environment Canada
35 scientists that were involved in the program
36 continued to work one-on-one. And that program
37 was actually in the process of winding down
38 because this was looking at monitoring dioxins and
39 furans in shellfish, and to monitor the response
40 to the implementation of the dioxin/furan
41 regulations and the levels were coming down
42 considerably as a result of changes in the pulp
43 and paper industry. And they eventually, that
44 eliminated the need for that program to continue
45 because the levels came down to safe levels.

46 Q For an environmental assessment, you touched on
47 this a little bit, but would you say that the

- 1 expertise for water quality and fish habitat is
2 now properly coordinated between DFO and
3 Environment Canada, or is that still a bit of a
4 grey area?
- 5 MS. WALLS: Well, there's good coordination now because
6 of changes under the **Canadian Environmental**
7 **Assessment Act**, so it's clarified the
8 coordination. Where there can be a bit of a gap
9 is with respect to water quality advice. So DFO
10 is very involved in environmental assessments,
11 providing advice on fish habitat matters and fish
12 species and populations presence and what's
13 required for protection of fish habitat. And
14 Environment Canada provides advice on water
15 quality, and again that depends on having an
16 expert that has experience and works with the
17 relevant sector that the development pertains to,
18 and again, you know, mining is an example where we
19 have an environment -- where Environment Canada
20 has an Environmental Effects Monitoring Program,
21 so they have expertise to provide. If it's a
22 sector that Environment Canada doesn't have a
23 program in, then it can be harder to find the
24 water quality expertise.
- 25 Q And the programs that Environment Canada does have
26 in those different sectors would include, what,
27 pulp, mining, and anything else?
- 28 MS. WALLS: Pulp, mining, contaminated sites, shellfish
29 under the Canadian Shellfish Protection Program -
30 I'm not sure if I have the right terminology -
31 Canadian Shellfish Sanitation Program, and
32 environmental emergencies, Environment Canada has
33 expertise. So Environment Canada has with the
34 Environmental Protection Program has become much
35 more focused on certain program areas.
- 36 Q Okay.
- 37 MS. WALLS: The oil and gas sector, as well, is another
38 one.
- 39 Q And any sectors that where there's not a specific
40 Environment Canada program, who's dealing with
41 water quality, which agency?
- 42 MS. WALLS: It would depend on, you know, exactly what
43 the development proposal is, and basically people
44 would look and try and find somebody that had the
45 expertise.
- 46 Q Which agency?
- 47 MS. WALLS: So it could be the provincial government,

1 for instance.

2 Q What about pesticides? Who has responsibility for
3 water quality impacts on pesticides?

4 MS. WALLS: That's the PMRA.

5 MS. BAKER: We were looking at the October minutes and
6 I haven't marked them yet as an exhibit, which I
7 should do, Tab 22.

8 THE REGISTRAR: Tab 22, did you say?

9 MS. BAKER: Yes. That's right.

10 THE REGISTRAR: Yes. Exhibit 991.

11

12 EXHIBIT 991: DFO-EC s. 36 Steering Committee
13 Meeting, Draft Agenda and Minutes, Meeting
14 Minutes and Queries Tracking Charts, October
15 27, 2005
16

17

17 MS. BAKER:

18 Q At the end of this meeting in October, the issues
19 that you have identified here, that we were just
20 talking about, about the gaps.

21 MS. WALLS: Mm-hmm.

22 Q Was a plan put in place to identify those gaps, or
23 do those gaps still remain?

24 MS. WALLS: Well, Environment Canada's response was to
25 set up the **Fisheries Act** Working Group, and the
26 working group set up basically a risk management
27 framework using a set of criteria to evaluate all
28 potential **Fisheries Act** s. 36 compliance issues
29 that we dealt with in the region, and to
30 prioritize them according to risk, and to try and
31 focus our limited resources and expertise on the
32 highest priority activities. So that was our
33 effort to deal with those gaps. And then we tried
34 to secure funding to address the highest priority
35 issues.

36 Q So the gaps that we have been talking about that
37 you just identified, have they been resolved now,
38 or are they still -- are those gaps still there?

39 MS. WALLS: Okay. So I have been -- I haven't been
40 with Environment Canada since March 2009, so I
41 can't --

42 Q As of that time.

43 MS. WALLS: But as of that time, I would say that -- we
44 haven't gotten into it here, but that because of
45 organizational changes in Environment Canada,
46 there was a lack of -- there was no departmental
47 lead on **Fisheries Act** s. 36 compliance promotion

1 specifically. So there was enforcement activity
2 that under -- there was a program for enforcement
3 and investigations relating to **Fisheries Act** s.
4 36, but there was no departmental lead or
5 accountability or coordination on s. 36 of the
6 **Fisheries Act** compliance promotion efforts, and as
7 a result there was still a bit of a -- I would
8 say, you know, it wasn't a gap in that people
9 weren't aware of the issues and people are sort of
10 keeping a file on some of these issues, but there
11 wasn't a concerted strategic effort to advance
12 them. So some of the files are moving extremely
13 slowly. And there was a lack of resourcing in the
14 region for **Fisheries Act** s. 36 compliance
15 promotion because of the organizational and
16 governance changes.

17 THE COMMISSIONER: Ms. Baker, we'll take the break.

18 Thank you.

19 MS. BAKER: Thank you.

20 THE REGISTRAR: The hearing is now adjourned for the
21 day and will resume at ten o'clock tomorrow
22 morning.

23
24 (PROCEEDINGS ADJOURNED TO JUNE 7, 2011 AT
25 10:00 A.M.)
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I HEREBY CERTIFY the foregoing to be a true and accurate transcript of the evidence recorded on a sound recording apparatus, transcribed to the best of my skill and ability, and in accordance with applicable standards.

Pat Neumann

I HEREBY CERTIFY the foregoing to be a true and accurate transcript of the evidence recorded on a sound recording apparatus, transcribed to the best of my skill and ability, and in accordance with applicable standards.

Karen Acaster

I HEREBY CERTIFY the foregoing to be a true and accurate transcript of the evidence recorded on a sound recording apparatus, transcribed to the best of my skill and ability, and in accordance with applicable standards.

Karen Hefferland