



Suncor Energy Inc.

Application for Expansion of an Oil Sands Mine
(North Steepbank Mine Extension) and a Bitumen
Upgrading Facility (Voyageur Upgrader) in the
Fort McMurray Area

November 14, 2006

ALBERTA ENERGY AND UTILITIES BOARD

Decision 2006-112: Suncor Energy Inc., Application for Expansion of an Oil Sands Mine (North Steepbank Mine Extension) and a Bitumen Upgrading Facility (Voyageur Upgrader) in the Fort McMurray Area

November 14, 2006

Published by

Alberta Energy and Utilities Board
640 – 5 Avenue SW
Calgary, Alberta
T2P 3G4

Telephone: (403) 297-8311
Fax: (403) 297-7040
E-mail: eub.info_services@eub.gov.ab.ca
Web site: www.eub.ca

CONTENTS

1	Decision	1
2	Introduction.....	1
	2.1 Application No. 1391211	1
	2.2 Application No. 1391212	1
	2.3 Agreements.....	2
	2.4 Interventions.....	2
	2.5 Procedural Matter	4
	2.6 Hearing	4
3	Issues.....	4
4	Project Need.....	5
	4.1 Views of Suncor	5
	4.2 Views of the Board.....	5
5	Social and Economic Effects	5
	5.1 Project Benefits	5
	5.1.1 Views of Suncor	5
	5.1.2 Views of MCFN	6
	5.1.3 Views of OSEC	6
	5.1.4 Views of the RMWB	6
	5.1.5 Views of the Board.....	6
	5.2 Public Infrastructure and Services.....	7
	5.2.1 View of Suncor.....	7
	5.2.2 Views of ACFN.....	8
	5.2.3 Views of MCFN	8
	5.2.4 Views of OSEC	8
	5.2.5 Views of WBMLA	8
	5.2.6 Views of the NLHR.....	8
	5.2.7 Views of the RMWB	9
	5.2.8 Views of Alberta.....	10
	5.2.9 Views of the Board.....	10
	5.3 Availability of Housing and Affordable Housing	14
	5.3.1 Views of Suncor	14
	5.3.2 Views of MCFN	15
	5.3.3 Views of WBMLA	15
	5.3.4 Views of the NLHR.....	15
	5.3.5 Views of the RMWB	15
	5.3.6 Views of Alberta.....	16
	5.3.7 Views of the Board.....	16
6	Public Consultation.....	16
	6.1 Views of Suncor	16
	6.2 Views of ACFN and OSEC.....	17
	6.3 Views of MCFN	18
	6.4 Views of WBMLA	18
	6.5 Views of the Board.....	19
7	Resource Recovery	20
	7.1 Mine Plan.....	20
	7.1.1 Views of Suncor	20

7.1.2	Views of the Board.....	21
7.2	Diluent Losses	21
7.2.1	Views of Suncor	21
7.2.2	Views of the Board.....	22
7.3	Upgrading.....	23
7.3.1	Views of Suncor	23
7.3.2	Views of the Board.....	23
7.4	Upgrader Location.....	23
7.4.1	Views of Suncor	23
7.4.2	Views of the Board.....	24
7.5	Sulphur Recovery	24
7.5.1	Views of Suncor	24
7.5.2	Views of Alberta.....	25
7.5.3	Views of the Board.....	26
7.6	Coke Gasifier.....	26
7.6.1	Views of Suncor	26
7.6.2	Views of the Board.....	26
7.7	By-product Storage and Use.....	26
7.7.1	Views of Suncor	26
7.7.2	Views of Alberta.....	27
7.7.3	Views of the Board.....	28
8	Tailings Management.....	29
8.1	Consolidated Tailings Performance	29
8.1.1	Views of Suncor	29
8.1.2	Views of MCFN	30
8.1.3	Views of the Board.....	30
8.2	Alternative Tailings Technologies	31
8.2.1	Views of Suncor	31
8.2.2	Views of MCFN	32
8.2.3	Views of the Board.....	32
8.3	Tailings Storage and Timing	33
8.3.1	Views of Suncor	33
8.3.2	Views of MCFN	34
8.3.3	Views of the Board.....	34
8.4	End Pit Lakes.....	35
8.4.1	Views of Suncor	35
8.4.2	Views of Alberta.....	35
8.4.3	Views of MCFN	35
8.4.4	Views of the Board.....	36
9	Air	36
9.1	Air Quality Monitoring and Modelling	36
9.1.1	Views of Suncor	36
9.1.2	Views of OSEC	37
9.1.3	Views of Alberta.....	37
9.1.4	Views of the Board.....	38
9.2	Acidifying Emissions	39
9.2.1	Views of Suncor	39
9.2.2	Views of OSEC	39

9.2.3	Views of Alberta.....	40
9.2.4	Views of the Board.....	41
9.3	Greenhouse Gases and Climate Change.....	41
9.3.1	Views of Suncor.....	41
9.3.2	Views of OSEC.....	42
9.3.3	Views of MCFN.....	42
9.3.4	Views of Alberta.....	42
9.3.5	Views of the Board.....	43
10	Terrestrial Resources.....	43
10.1	Steepbank River Crossing and Escarpment.....	43
10.1.1	Views of Suncor.....	43
10.1.2	Views of Alberta.....	44
10.1.3	Views of the Board.....	45
10.2	Cross Boundary Reclamation.....	46
10.2.1	Views of Suncor.....	46
10.2.2	Views of Alberta.....	46
10.2.3	Views of the Board.....	46
10.3	Reclamation Progress and Certainty.....	47
10.3.1	Views of Suncor.....	47
10.3.2	Views of MCFN.....	47
10.3.3	Views of ACFN, WBMLA, and OSEC.....	48
10.3.4	Views of Alberta.....	48
10.3.5	Views of the Board.....	49
11	Groundwater.....	49
11.1	Views of Suncor.....	49
11.2	Views of MCFN.....	51
11.3	Views of Alberta.....	52
11.4	Views of the Board.....	53
12	Surface Water.....	54
12.1	In-stream Flow Needs.....	54
12.1.1	Views of Suncor.....	54
12.1.2	Views of ACFN.....	54
12.1.3	Views of MCFN.....	55
12.1.4	Views of Alberta.....	55
12.1.5	Views of the Board.....	56
12.2	Modelling.....	56
12.2.1	Views of Suncor.....	56
12.2.2	Views of MCFN.....	57
12.2.3	Views of Alberta.....	57
12.2.4	Views of the Board.....	58
12.3	Water Quality.....	59
12.3.1	Views of Suncor.....	59
12.3.2	Views of MCFN.....	59
12.3.3	Views of Alberta.....	59
12.3.4	Views of the Board.....	60
13	Health Effects.....	61
13.1	Arsenic Risks.....	61
13.1.1	Views of Suncor.....	61

13.1.2	Views of ACFN	61
13.1.3	Views of MCFN	62
13.1.4	Views of Alberta.....	62
13.1.5	Views of the Board.....	62
13.2	Fort Chipewyan Health Study	62
13.2.1	Views of Suncor	62
13.2.2	Views of ACFN	62
13.2.3	Views of MCFN	63
13.2.4	Views of WBMLA	63
13.2.5	Views of Alberta.....	63
13.2.6	Views of the Board.....	64
14	Traditional Land Use and Environmental/Ecological Knowledge	64
14.1	Views of Suncor	64
14.2	Views of MCFN	64
14.3	Views of ACFN.....	65
14.4	Views of WBMLA	65
14.5	Views of the Board.....	65
15	Regional Environmental Initiatives	66
15.1	Views of Suncor	66
15.2	Views of MCFN	66
15.3	Views of OSEC	67
15.4	Views of Alberta.....	67
15.5	Views of the Board.....	68
16	Best Available Technology Economically Achievable or Best Available Demonstrated Technology	68
16.1	Views of Suncor	68
16.2	Views of OSEC	69
16.3	Views of Alberta.....	69
16.4	Views of the Board.....	69
17	Liability Management.....	70
17.1	Views of Suncor	70
17.2	Views of MCFN	70
17.3	Views of Alberta.....	71
17.4	Views of the Board.....	71
18	Conclusion	71
Appendices		
1	Hearing Participants.....	74
2	Summary of Conditions	77
Figure 1 Suncor Oil Sands Site Plan		79

ALBERTA ENERGY AND UTILITIES BOARD

Calgary Alberta

**SUNCOR ENERGY INC.
APPLICATION FOR EXPANSION OF
AN OIL SANDS MINE (NORTH STEEPBANK EXTENSION)
AND A BITUMEN UPGRADING FACILITY
(VOYAGEUR UPGRADER)
FORT MCMURRAY AREA**

**Decision 2006-112
Applications No. 1391211 and 1391212**

1 DECISION

Having carefully considered all of the evidence, the Alberta Energy and Utilities Board (EUB/Board) hereby approves Applications No. 1391211 and 1391212 subject to the conditions set out in this report (see Appendix 2) and subject to the approval of the Lieutenant Governor in Council.

2 INTRODUCTION

Suncor Energy Inc. (Suncor) filed two applications with the EUB for expansion of its oil sands mining and upgrading facilities (the Voyageur Project). The applications share a common environmental impact assessment (EIA) report. Suncor submitted the EIA in support of its proposal to the Director, Environmental Assessment, Northern Region, Alberta Environment (AENV), pursuant to the *Environmental Protection and Enhancement Act (EPEA)*. The EIA report also forms part of the applications to the EUB.

2.1 Application No. 1391211

Suncor applied pursuant to Sections 10 and 13 of the *Oil Sands Conservation Act (OSCA)* to amend Approval No. 8535 to construct, operate, and reclaim an oil sands surface mine (North Steepbank Mine Extension [NSME]) in the Fort McMurray area. The NSME project would be located north of the Steepbank River in Township 92, Range 9, West of the 4th Meridian, and the southern portion of Township 93, Range 9, West of the 4th Meridian (see Figure 1). The NSME would produce about 28 610 cubic metres of bitumen per day (m³/day) by the year 2010. Production from the NSME would account for about half of Suncor's total mined bitumen production. The NSME project would include an open pit, truck and shovel mine, earth structures, associated infrastructure, water and tailings management plans, the Steepbank River crossing structure, and integrated development and reclamation plans.

2.2 Application No. 1391212

Suncor applied pursuant to Sections 11 and 13 of the *OSCA* to amend Approval No. 8535 to construct, operate, and reclaim a bitumen upgrading facility (Voyageur Upgrader [VU]) in the Fort McMurray area. The VU would be located in Townships 91 and 92, Range 10, West of the 4th Meridian (see Figure 1). The VU would add about 30 200 m³/d of upgrading capacity, increasing Suncor's total capacity to a range of 79 500 to 87 500 m³/d of upgraded crude oil

products by the year 2012. The VU would be constructed in two phases, with the first phase producing about 20 200 m³/d of upgraded crude oil products by the year 2010. The VU project includes the upgrading facilities, a coke gasification unit, coke storage facilities, sulphur storage facilities, tank farm, and associated infrastructure.

2.3 Agreements

The Athabasca Chipewyan First Nation (ACFN) and Suncor advised the Board that they had entered into a mitigation agreement that addressed ACFN's concerns. ACFN stated that the agreement with Suncor was confidential but provided the key features of the agreement in general terms. ACFN indicated that the agreement included commitments regarding the Fort Chipewyan health study, reclamation of traditional lands, monitoring results, wildlife corridors, protection of fish in Richardson Lake and Old Fort River, and employment and business arrangements.

ACFN stated that it was relying on the Board and Alberta Environment (AENV) to ensure that the environment was protected and adverse effects were minimized. ACFN acknowledged that the Board could not ensure that Suncor met the commitments in its mitigation agreement because the terms of the agreement were confidential and the Board was not provided with a copy of the agreement.

Fort McKay First Nation (Fort McKay) and Suncor advised the Board that they had also entered into a mitigation agreement. Fort McKay stated that the agreement with Suncor was confidential and no details of the agreement were provided to the Board.

Suncor and the Mikisew Cree First Nation (MCFN) advised the Board that they had entered into a Traditional Environmental Knowledge (TEK) sharing agreement, the purpose of which was to clarify and formalize a framework for sharing TEK with Suncor. In the agreement the parties acknowledged the value of TEK to the MCFN as holder of the knowledge and to Suncor as the recipient and potential user of the knowledge. Suncor agreed to use TEK where applicable to assist it in its work and to respect the MCFN's interests in TEK, in particular the MCFN's traditional principles of sharing TEK.

MCFN and Her Majesty the Queen in Right of Alberta (Alberta) advised the Board that they had entered into a Non-assertion of Rights Agreement, in which MCFN agreed not to assert constitutional rights in this proceeding. Alberta agreed that it would not challenge MCFN's claims of traditional occupation of the project lands. The agreement allows Alberta or MCFN to raise those issues in other forums.

2.4 Interventions

In response to the Notice of Hearing, the EUB received fifteen submissions from parties wanting to participate in the hearing.

ACFN filed an intervention stating that it had concerns about traditional land use, surface water, air emissions, wildlife habitat, socioeconomic issues, and access to economic benefits. At the hearing, ACFN stated that it had an agreement with Suncor and did not object to the Voyageur Project.

Fort McKay filed an intervention stating that it was close to reaching an agreement with Suncor but reserved its right to participate in the hearing.

MCFN filed an intervention stating that it had concerns about consultation, cumulative effects, environmental monitoring, water usage, reclamation, health, socioeconomic issues, and the progress of the Cumulative Environmental Management Association (CEMA). MCFN stated that the Voyageur Project should be delayed until the deficiencies in Suncor's EIA were rectified.

The Oil Sands Environmental Coalition (OSEC) filed an intervention stating that it had concerns about greenhouse gases, EIA deficiencies, terrestrial disturbance, and air quality, and socioeconomic issues. OSEC requested that the applications be denied.

The Métis Nation of Alberta Local 1935 filed an intervention on behalf of the Fort McMurray Métis Local 1935, Fort McMurray Métis Local 2020, Conklin Métis Local 193, Fort McKay Métis Local 63, Chard Métis Local 214, Anzac Métis Local 780, Mr. William Loutitt, and Mr. Ronald Riel Quintal. The submission stated that the group could be referred to as the Wood Buffalo Métis Locals Association (WBMLA). WBMLA stated in its submission that it would be directly affected by the loss of traditional land use, air emissions, reduced Athabasca River flows, and loss of wildlife. WBMLA also stated that it had socioeconomic concerns and asked the Board to not approve the Voyageur Project until Suncor had addressed its concerns.

The Northern Lights Health Region (NLHR) filed an intervention stating that it took no position with respect to the applications but wanted to provide evidence to the Board regarding funding and delivery of health care services in the district. NLHR stated that the Voyageur Project would adversely affect the delivery of health services in the region and asked the Board to convene a broad-based inquiry to examine the socioeconomic impacts of oil sands development.

The Regional Municipality of Wood Buffalo (RMWB) filed an intervention stating that it would be directly and adversely affected by the Voyageur Project. RMWB stated that the high rate of oil sands development had resulted in unprecedented pressures on the municipality to maintain services. RMWB asked the Board to conduct a comprehensive inquiry into the socioeconomic issues of oil sands development. It further asked that the approval of the project be delayed until the results of the inquiry were available and needed infrastructure arrangements had been made.

The Clearwater River Paul Cree Band #175 (CRPCB), the Wood Buffalo First Nation (WBFN) and the Wood Buffalo First Nation Elders Society (WBFNES) filed interventions but later withdrew from the proceeding after the Board determined that it did not have jurisdiction to make a decision on questions of constitutional law raised by CRPCB, WBFN, WBFNES, and WBMLA. The Board ruled that the parties had not provided the notice required under Section 12 of the *Administrative Procedures and Jurisdiction Act*.

Alberta filed an intervention prepared by AENV, Alberta Sustainable Resource Development (SRD), and Alberta Health and Wellness (AHW). Alberta stated that its interest in the application was a consequence of its responsibility for the environment, fish, wildlife, forest resources, public lands, and human health. Alberta further stated that the intervention provided information that would assist the Board in making its determination as to whether the Voyageur Project was in the public interest.

Canadian Natural Resources Limited, Imperial Oil Resources Ventures Limited, Shell Canada Limited (Shell), Syncrude Canada Limited (Syncrude) and Synenco Energy Inc. also filed interventions. However, these parties took no position with respect to the application.

2.5 Procedural Matter

Toward the end of the hearing, the Board received correspondence from the Honourable G. Boutilier, MLA for Fort McMurray-Wood Buffalo, requesting that he be allowed to appear at the hearing to file a written statement in the proceeding and to attend the hearing to speak to the written statement. Having regard for the *Alberta Energy and Utilities Board Rules of Practice*, the Board asked the participants to advise the Board if any of them objected to Mr. Boutilier's request. As no party objected, the Board exercised its authority under Section 25 of the *Rules of Practice* to permit Mr. Boutilier's late submission and participation.

2.6 Hearing

The Board considered the applications and interventions at a public hearing in Fort McMurray, Alberta, the oral portion of which commenced on July 5 and concluded on July 20, 2006, before Board Members J. D. Dilay, P.Eng. (Presiding Member), J. R. Nichol, P.Eng., and T. M. McGee. At the conclusion of the evidentiary portion of the hearing, the Board provided the parties with a draft issues list and asked the parties to comment on the list by July 26, 2006. The Board then provided a final issues list and filing schedule for the provision of final arguments for each of the issues in writing to the Board. Suncor's reply argument was received by the Board on August 17, 2006, and therefore the Board considers the hearing to have been closed on that date. Those who appeared at the hearing are listed in [Appendix 1](#).

3 ISSUES

The Board considers the issues respecting the applications to be

- project need,
- social and economic effects,
- public consultation,
- resource recovery,
- tailings management,
- environmental effects (air, terrestrial resources, surface water, and groundwater),
- health effects,
- traditional land use and environmental/ecological knowledge,
- regional environmental initiatives,
- best available technology economically achievable (BATEA); best available demonstrated technology (BADT), and
- liability management

4 PROJECT NEED

4.1 Views of Suncor

Suncor indicated that the NSME was a continuation of mining northward across the Steepbank River from its existing operations. Suncor stated that the development would take maximum advantage of integration with existing operations, including production management and central control systems, Millennium Mine operations, existing extraction facilities, heat integration with existing upgraders, and manpower. Suncor noted that it selected the NSME over other alternatives because it provided significant increases in resource recovery, extended mining life, and provided favourable economic and socioeconomic benefits. Suncor believed that the future viability of the NSME resource would be jeopardized if not developed at this time, because it was a relatively small oil sands resource that was made economical by the use of existing facilities.

Suncor stated that the VU was part of the overall Voyageur Project growth plan. Suncor indicated that the VU would provide additional bitumen upgrading capacity, which would process bitumen from Suncor's in situ and mined oil sands operations and third-party sources. Suncor noted that without the VU, such bitumen production would become less viable due to the loss of integration opportunities, increased pipeline transportation costs, and marketing risks. Suncor stated that the results of its marketing studies gave it confidence that the volumes produced by the VU would be placed in existing and new markets in North America.

4.2 Views of the Board

The Board notes that no interveners argued against Suncor's stated need for either the NSME or the VU projects. The Board acknowledges that the NSME does have the advantage of using existing infrastructure and would expand Suncor's resource base, extending the life of its mining operations. The Board agrees that the VU is needed to upgrade the bitumen production from its in situ and mining operations and take advantage of integration with Suncor's current operations. The Board accepts Suncor's stated need for both the NSME and VU projects.

5 SOCIAL AND ECONOMIC EFFECTS

5.1 Project Benefits

5.1.1 Views of Suncor

Suncor submitted that the Voyageur Project represented a significant investment in the oil sands and was a responsible approach to development of the oil sands resources in response to the market demand for energy. With a projected capital cost of \$7 billion, including \$500 million spent in the region, Suncor estimated the Voyageur Project would generate significant economic stimulus, including

- 32 700 person years of employment (direct, indirect, and induced) during construction,
- 540 person years of direct employment (direct, indirect, and induced) annually during operations,

- \$7.1 billion in federal taxes paid over the life of the project,
- \$3.6 billion in provincial taxes and royalties paid over the life of the project, and
- \$23 million in municipal taxes paid annually for the operating life of the project.

Suncor indicated that it had reached agreements with stakeholders that contained commitments addressing socioeconomic and business concerns. Suncor stated that the Voyageur Project would generate significant opportunity for local and aboriginal businesses both during construction and on a sustained basis over the operating life of the project.

5.1.2 Views of MCFN

MCFN acknowledged that socioeconomic benefits would accrue to Albertans from the Voyageur Project and through the development of the oil sands in general, but questioned whether the social and environmental costs associated with development were too high at this time.

5.1.3 Views of OSEC

OSEC acknowledged that the Voyageur Project would have positive impacts in terms of royalties, taxes, and jobs. However, it suggested that these impacts were small in the provincial context and only a very small percentage of the taxes paid would accrue to the local municipality. It submitted that there was a shortage of labour in Alberta and that therefore the creation of employment in the province was not a benefit, but an added stress. It also stated that there was no evidence presented that Alberta needed more royalties or tax revenue, as the province already had a significant surplus. It suggested that no evidence of positive social impacts was presented by Suncor.

5.1.4 Views of the RMWB

The RMWB acknowledged that the Voyageur Project would result in certain benefits; however, it submitted that the negative impacts accompanying those benefits must also be considered. It indicated that from the perspective of the municipality and residents, the benefits would be outweighed by the cumulative costs associated with this project and other oil sands development.

The RMWB acknowledged that the Voyageur Project would eventually result in tax revenue for the municipality, but indicated that the RMWB must invest in infrastructure and services to accommodate the project long before any property tax revenue would begin to flow to the RMWB.

5.1.5 Views of the Board

The Board acknowledges the economic benefits associated with the Voyageur Project. While the taxes and royalties generated by the project will be somewhat offset by the need for governments to invest in new infrastructure and expanded public services, the Board believes that the net benefits derived from the project will be significant for the region, for Alberta, and for Canada.

The Board also acknowledges Suncor's efforts to address socioeconomic and business concerns in its agreements with stakeholders. The Board encourages companies to support initiatives aimed at ensuring that the economic benefits are made available to the broadest possible number of local residents and businesses wanting to participate in the economic opportunities created.

5.2 Public Infrastructure and Services

5.2.1 View of Suncor

Suncor stated that the applications were in the public interest, taking into account the anticipated effects on municipal infrastructure, health services, transportation, police services, and emergency services. Suncor argued that given the taxes it paid and the active role it took through the Athabasca Regional Issues Working Group (RIWG) in assisting the RMWB to plan for and manage regional growth pressures, its project would have negligible negative impacts.

Suncor indicated that the construction period for the Voyageur Project would commence in 2007, with the on-site workforce expected to peak at 3200 in the fourth quarter of 2009. Suncor indicated that it would operate workforce camps during construction and that this would mitigate the impact the construction workforce would otherwise have on municipal infrastructure and on traffic. Other mitigation efforts outlined by Suncor included building an overpass over Highway 63, bussing workers between the camps and Edmonton, enhanced on-site medical services, camp security, and providing on-site fire and ambulance service.

Suncor estimated that operations would add 300 direct new jobs, which would result in about 2000 people moving to the RMWB between 2009 and 2012. It was Suncor's view that given the integration of the project with existing operations, the small requirement for additional operations employees, and the timing of the impact over a four-year period, the project represented a manageable impact on infrastructure and services in the region.

Suncor acknowledged that development of the oil sands had been accompanied by socioeconomic concerns. However, Suncor argued that these concerns did not relate specifically to the Voyageur Project, but to the pace of oil sands development in the region generally. Suncor stated that it believed the Alberta Government had taken steps to address the infrastructure needs of the local community, but it also acknowledged more should be done. Suncor encouraged and supported timely investment in municipal infrastructure to address the needs of the community.

Suncor suggested that the Oil Sands Consultation Process (OSCP), which was supported by the Government of Alberta, was an established process designed to accomplish the very thing that interveners were seeking through a broad-based EUB inquiry into socioeconomic issues faced by the local community. It stated that the request for an inquiry should be denied, and it opposed the request that approval of the project be delayed until after an inquiry was held.

Suncor committed to continue working with industry peers, stakeholders, and all levels of government to identify ways to mitigate issues arising not only from the incremental impact of the Voyageur Project, but also the overall impact of all industry projects.

5.2.2 Views of ACFN

ACFN indicated that it was relying upon the resources, knowledge, and regulatory powers of the EUB and AENV to ensure that Suncor's approvals contained conditions appropriate to minimizing the impacts of project operations.

5.2.3 Views of MCFN

MCFN supported the positions of the RMWB and NLHR.

5.2.4 Views of OSEC

OSEC took the position that the intervention by the RMWB and its own evidence were effective in demonstrating that the community impacts, due to the scale and rapid pace of development, were not being effectively addressed.

5.2.5 Views of WBMLA

WBMLA did not specifically address public infrastructure and services, but indicated concerns with respect to traffic.

5.2.6 Views of the NLHR

The NLHR focused its attention on the impact to health services. It argued that current and planned oil sands development imposed unique challenges on the NLHR and affected the ability of the NLHR to achieve its health care mandate.

The NLHR provided evidence of the impacts, including physician and staff shortages, difficulty recruiting, additional cost to maintain rental units for staff, overburdened medical staff and facilities, a funding formula that underestimated funding needs, special funding increases that did not match increasing costs, and requests for land and capital projects that took too long to obtain. The NLHR indicated that given the current state of infrastructure and resources, it would be hard pressed to deal with a major industrial accident or epidemic. To support this claim, it pointed to an emergency department that was operating at capacity, a shortage of acute care beds, and a medivac system that was not robust enough to handle a situation that involved a large number of patients being transported to other hospitals.

The NLHR indicated that the problems with health services could not be solved with an infusion of additional funding alone. It said that additional issues such as affordable housing, staff shortages, recruitment challenges, and challenges in providing health care in rural and remote areas, would also have to be addressed.

The solution proposed by the NLHR was an integrated multistakeholder inquiry. It argued that any effective solution required a multidisciplinary approach, involving numerous provincial ministries. The NLHR submitted that the inquiry should not be done in isolation, but should include the RMWB, industry partners, Advanced Education, the NLHR, AHW, and any others who could bring their information and input to a round table discussion.

5.2.7 Views of the RMWB

The RMWB asserted that any new development that would exacerbate an already stressed situation was not in the public interest. It requested a delayed approval of the Voyageur Project until the Board conducted a comprehensive multistakeholder inquiry on the cumulative socioeconomic impacts in the region.

The RMWB argued that there was no evidence provided that workforce camps actually mitigated the impacts on the municipality. It indicated that construction workers still placed demands on resources in the region by using community infrastructure and services. It also argued that workforce camps did not respond to the long-term challenge of creating a complete, integrated, and sustainable community that would attract and keep employees and their families within the region. The RMWB submitted that when the cumulative impact was considered, the impact was amplified, and it noted that RIWG projected that the total camp population could exceed 20 000 by 2009.

The RMWB stated that there was already an infrastructure deficit, with much of the public infrastructure and services already stretched. Faced with this situation, the RMWB argued that the addition of another 2000 people due to the Voyageur Project would have a significant impact. It further argued that the situation would be made even more unmanageable if a sustained rate of growth did not allow it to catch up and the deficit was allowed to increase. The RWMB noted that for it to respond to the infrastructure deficit, it must first put in place planning frameworks (master plans), which required a significant amount of time and financial resources on its part.

The RMWB estimated that it would need to spend roughly \$804 million between 2007 and 2011 on capital projects that it had determined were necessary in order to meet existing and expected service requirements. The RMWB also projected that it would need to add a total of 225 new positions between 2006 and 2008, almost a 50 per cent increase in staff. It argued that by undertaking this level of spending and growth, it faced serious financial risk should non-residential assessment not come on stream as expected or the current trend in escalating construction costs continued. The RMWB pointed out that it would have the highest debt load relative to revenues of all cities in the province and it expected its debt limit would be reached or exceeded as it implemented its capital and operating plans. The RMWB submitted that raising municipal taxes was not the answer, as to do so would substantially reduce its tax competitiveness.

Possible solutions put forward by the RMWB included conditions in the Board's approval requiring

- a delay of the Voyageur Project that would permit the RMWB to build infrastructure, upgrade existing facilities, and reduce or eliminate the housing deficit, and
- Suncor to enter into an industrial agreement with the RMWB that would allow the municipality to recover an appropriate contribution toward development costs of new or expanded infrastructure and services needed as a result of the Voyageur Project.

The RMWB also requested that the Board recommend that

- the province provide special grant funding to allow the RMWB to bring its existing infrastructure and services to a standard similar to other Alberta municipalities, and
- the province release additional Crown lands to the RMWB at nominal or no charge, with sufficient funds to allow the RMWB to develop the lands in a timely manner.

5.2.8 Views of Alberta

Alberta submitted that the evidence could not be any clearer that the Government of Alberta is fully aware of the issues through the efforts of the RMWB, NLHR, and RIWG and that significant evidence was provided on the actions it had taken to date. Alberta provided evidence outlining the three-year (2006-2009) capital commitments the Government of Alberta had made in the region. The total, at \$578 million, represented all capital funding for health care facilities, school facilities, post-secondary facilities, provincial highways, municipal infrastructure support, government facilities, housing, and equipment. The most significant dollar commitment of the total was to Highway 63. Of the total, Alberta indicated that \$1.5 million was directed towards health services, \$40.0 million towards school and post-secondary facilities, and \$64 million toward municipal infrastructure and that \$28 million was the estimated cost of the four-year interest subsidy on a \$136 million loan intended to provide bridging assistance for the municipality to upgrade the waste water treatment plant.

Alberta indicated that it was responding with resources and funding and would continue to work with the RMWB and the NLHR to address the public infrastructure and public service delivery challenges.

Alberta indicated that efforts to respond to the public infrastructure and public service delivery pressures were being coordinated by the Northern Alberta Strategy Committee (NASC).¹ It stated that the committee played a coordinating role between ministries and had an important advocacy role. The committee would provide information to individual ministers, Treasury Board, and cabinet on how northern development issues were interrelated and on which issues were the highest priorities and which would have the most immediate positive impact if addressed first. Alberta indicated that the role of the committee did not include policy setting, nor did the committee have the authority to allocate money.

5.2.9 Views of the Board

The Board acknowledges the evidence provided by Suncor and other interveners that many public services and infrastructure in the Wood Buffalo region are struggling to keep pace with the rate of oil sands development and population growth. The Board has indicated in past decision reports, and emphasizes again, that without proper attention to these issues, the potential exists for public infrastructure and services to be severely impacted. The Board notes the

¹ There were two initiatives discussed during the hearing, the Oil Sands Consultation Process (OSCP) and the Northern Alberta Strategy Committee (NASC, which was later renamed the Oil Sands Ministerial Strategy Committee). In response to the *Oil Sands Consultation Group Final Report and Recommendation* report, the OSCP established a consultation process to be undertaken, which would conclude with a report to the Ministers of Sustainable Resource Development, Environment, and Energy by June 2007. The NASC is an internal government committee.

intervention by RMWB and NLHR that certain public infrastructure and services are already operating at or above capacity. The Board recognizes that the decision taken by RMWB and the NLHR to intervene in these proceedings was not taken lightly, and it acknowledges that their participation and requested disposition clearly speak to the seriousness of the situation they face.

The Board was provided with a great deal of evidence regarding the adequacy of existing funding mechanisms. The Board does not take a position on the adequacy of the funding mechanisms in place. It does believe, however, that government has the jurisdiction and the responsibility to ensure that the necessary public infrastructure is in place to accommodate growth. It also believes that the time to take action is now. This would minimize the impact on RMWB residents; further enhance the region as a place for business, workers, and their families to locate; and increase the competitiveness of the region to attract and sustain oil sands investment.

The Board considers that three key questions need to be addressed with respect to the evidence provided on socioeconomic impacts:

- What is the significance of socioeconomic impacts after taking into account efforts to mitigate the impacts?
- What is the appropriate mechanism for managing socioeconomic impacts?
- Who should bear the cost of addressing socioeconomic impacts?

To determine the significance of socioeconomic impacts, the Board looks to the evidence presented for indications that the impacts are being effectively managed. It is the Board's view that capacity constraints related to socioeconomic impacts can be avoided with proper planning and response by the appropriate government authorities. It believes that how well a community manages change will ultimately determine the capacity for public services and infrastructure to respond to increasing demands.

The Board was provided with evidence indicating that there are a number of cumulative socioeconomic impacts reaching a serious state. The RMWB submitted that new oil sands development will exacerbate an already stressed situation, having an immediate impact on the quality of life of the residents and on the RMWB's ability to service the level of sustained growth in the region. The NLHR expressed concern that the current and planned oil sands development will affect the ability of the NLHR to achieve its health care mandate.

However, these impacts must be viewed in light of the mitigation efforts proposed by Suncor, the efforts by the RMWB and NLHR to respond to the challenges they face, and the actions taken by the provincial and federal governments to help alleviate the impacts. The socioeconomic impact assessment for the Voyageur Project clearly identifies the impacts, and Suncor has outlined a number of mitigation steps that it will undertake to address the incremental impacts of its own growth projects. Notwithstanding, Suncor submitted that it cannot and should not attempt to take on the responsibility of governments and public service agencies to meet the service and infrastructure needs of the Wood Buffalo residents. Rather, it suggested that there are taxes and royalty mechanisms in place that provide revenue streams to various governments, all of whom have responsibilities with respect to the use of those monies. For its part, the RMWB indicated

that it will need to spend roughly \$804 million between 2007 and 2011 on capital projects it has determined are necessary to meet the existing and expected service requirements. Also, in order to keep pace with expected demand, the RMWB projected that it will need to add a total of 225 new positions between 2006 and 2008, almost a 50 per cent increase in staff. With respect to the NLHR, it acknowledged that it received the largest increase of all health regions to its global funding in 2005 and that it receives additional funding as an acknowledgement of the cost of doing business in remote and rural areas, representing an additional 14 per cent in increased funding. The Board also heard evidence from the Alberta panel outlining a number of actions and spending commitments made by the Government of Alberta within the RMWB totalling roughly \$578 million. Alberta indicated to the Board that the Government of Alberta is aware of the stresses, is engaged, is taking action, and will continue to work with stakeholders in the region to address the impacts. In light of these efforts, and given the timing and level of expected impact from the Voyageur Project, the Board believes that the impacts associated with the project can be reduced to a manageable level.

That being said, the Board believes two issues raised by interveners require immediate attention. First, both the RMWB and NLHR provided evidence that certain infrastructure has reached capacity limits. Second, and directly related to the first, is the apparent lack of a coordinated response among government departments and the various levels of government.

The evidence indicates that the capacity of the existing infrastructure, which in effect has facilitated the expansion of the oil sands industry to this point, has been depleted. Given the expected growth pressures the region will continue to experience, the interveners contended that the region may not have the critical mass it needs to carry it forward. In practice, infrastructure investments have long lead times and large, lumpy costs. However, the Board believes that a short window of opportunity remains open to make investments in infrastructure that will make a difference in the near term as well as for many years to come. The Board also believes that these investments can be made in parallel with continued oil sands development.

The Board notes the RMWB's evidence that the cost associated with these investments could be so large relative to the municipality's financial capability (at least in the short term) that cost, rather than need, could overly influence the investment decision or the timing of implementation. Recognizing the lead time for new infrastructure and the potential risk to the municipality associated with prebuilding infrastructure for new forecast populations, the Board believes that senior levels of government have a role in minimizing or accepting some of that risk. Notwithstanding, the Board is also of the view that infrastructure investment decisions must be based on strong market information and proactive planning.

The Board notes that the RMWB placed a heavy reliance on the work it completed with RIWG to produce the Wood Buffalo Business Case (WBBC). The RMWB questioned the Alberta panel about the provincial government's apparent ad hoc response to the recommendations outlined in the document. While evidence was provided by Alberta that actions taken by the government do, in part, respond to the WBBC recommendations, the Board was not provided with evidence of a coordinated response by government to the recommendations. In past decision reports, the Board emphasized the need for a reliable source of information on the social and economic challenges facing the region and acknowledged the role RIWG and other regional issues management

forums have played in advancing socioeconomic issues. The Board also suggested that a process is needed that takes this information and provides a coordinated and effective channel through which regional and cumulative socioeconomic impacts can be addressed in a meaningful and demonstrated way. A coordinated approach is still not evident. In the absence of this, interveners have suggested that the appropriate mechanism for addressing socioeconomic impacts is a multistakeholder inquiry that would identify a framework for responsible development of oil sands in the region. They argued that such a framework would allow both the provincial government and the RMWB to confidently plan for and provide infrastructure and services in a manner that is predictable, manageable, and appropriately resourced.

For this Board, the decision to convene an inquiry under its statutory authority is one that necessarily involves considerations that go beyond this proceeding. This division of the Board does not therefore consider that it has the mandate to grant the RMWB's and the NLHR's requests for an inquiry. This division of the Board will, however, raise their requests for an inquiry for consideration by the full Board. In addition, this division of the Board is not persuaded that it should delay its decision on the Voyageur Project until the full Board has made a decision on the request for an inquiry.

Suncor submitted that the OSCP supported by the Alberta Government is an established process designed to accomplish the very thing that parties are seeking to achieve through an inquiry. While the Board looks forward to reviewing the final report from this consultation initiative, the Board understands that this initiative is intended to provide a longer-term vision for oil sands development rather than address impacts related to development in the short term.

Alberta recognized that all parties need to work together to develop integrated strategies for the short, medium, and long terms. It submitted that the Government of Alberta's efforts to respond to the public infrastructure and public service delivery pressures are being coordinated by NASC, an internal government committee. The Board believes that NASC does hold promise for better coordination within government; however, because NASC is in its early stages, the Board was not clear on the actions it would take to work with stakeholders or the steps it would take to address socioeconomic issues.

Intervenors suggested that the Board's faith in the appropriate government authorities to find efficient and workable solutions to the socioeconomic issues has been misplaced. The Board wants to be clear on this point: the Board must rely on government bodies, including the RMWB and NLHR, to address public infrastructure and public service impacts in a meaningful and timely manner. The Board does not have the mandate to resolve these issues. That responsibility rests with the appropriate government bodies in a position to provide direct assistance in these matters.

In its requested disposition, the RMWB, submitted that should the Board choose to approve the Voyageur Project, it require Suncor to enter into an industrial agreement with the RMWB that allows the municipality to recover an appropriate contribution from Suncor toward development costs of new or expanded infrastructure and services required as a result of the population growth resulting from the project. The NLHR also suggested that Suncor, as well as all of the other

major players in oil sands development, must be part of the solution to the current problems facing the region.

Just as the Board believes it is the responsibility of government to address socioeconomic issues, the Board also believes that the determination of an appropriate funding mechanism (and possible contributors) rests with government. This is not to say that the Board believes that companies do not have a role in addressing public infrastructure and public service delivery pressures. Rather, it is the Board's view that companies should be engaged by government bodies in the search for solutions. A perfect example of this is contained in the evidence. Suncor has acknowledged that the construction workforce for the Voyageur Project will place increased demand on health services in Fort McMurray. In response, Suncor indicated that it is currently looking at enhancing the medical services it provides on site and that it will be working with the NLHR to better understand the issues and to identify ways that they can work together to resolve the issues. The Board encourages this type of direct discussion and negotiation between affected stakeholders and the company.

As highlighted by the RMWB and NLHR, the Board has expressed the importance of the socioeconomic impacts of oil sands development and has made suggestions for addressing these issues in successive decision reports. How the Board views the current situation was captured very well by Mr. McDougall, on behalf of the RMWB (see the RMWB final argument) in his statement:

The full brunt of the socio-economic impacts has not been felt here, but soon will be... we've got a very short period of time to do some serious long range planning, get the tools and mechanisms in place so that the Regional Municipality can do the job because next year, sir, if my numbers are correct, this place is going to start growing again exponentially. And it will be too late. So I think we have an opportunity right now, a small window of time, to perhaps do our homework and get ready for the next round of development.

The Board recommends that coordinated action be taken at all levels of government to ensure that the RMWB has the ability to service the anticipated level of sustained growth in the region. The Board believes that steps have been taken to respond to a number of the socioeconomic impacts, but it also believes that the RMWB must have the necessary planning in place and the financial strength to implement the capital projects it has determined are necessary to meet the existing and expected service requirements.

The Board also recommends that the Government of Alberta continue to work with the NLHR to address the lack of land, infrastructure, and resources that the NLHR is currently faced with in Fort McMurray.

5.3 Availability of Housing and Affordable Housing

5.3.1 Views of Suncor

Suncor submitted that operating a workforce camp during construction would reduce the pressure on the Fort McMurray housing market caused by the Voyageur Project. Furthermore, Suncor pointed out that it chaired the RIWG Housing Sub-committee, which worked to facilitate the development of necessary infrastructure for regional housing needs.

Suncor indicated that the government had released two blocks of land to developers for residential development, which would yield an estimated 4500 housing units (including commitments to provide affordable housing units). It suggested that a community the size of Fort McMurray should easily accommodate the addition of 500 to 550 new families in the course of the four-year window it expects these people would be moving into the community for the Voyageur Project.

Suncor argued that while there were pressures on the housing market in the RMWB, these pressures were similar to those existing in other municipalities. It suggested that the RMWB must now expedite its planning processes so that it could facilitate further housing development.

5.3.2 Views of MCFN

MCFN indicated that its members had expressed concern related to the housing market in Fort McMurray. It argued that due to the current housing boom, housing was very expensive for its members, especially those working in the various service industries in Fort McMurray.

5.3.3 Views of WBMLA

WBMLA indicated that many of its members had difficulty finding affordable housing in the area.

5.3.4 Views of the NLHR

The NLHR suggested that to solve the problems it was facing, the availability of housing, including affordable housing, must be addressed in the region.

5.3.5 Views of the RMWB

The RMWB indicated that the housing market in Fort McMurray was tight and presented a challenge for those with low incomes. It argued that the Voyageur Project would have an impact on the availability of housing and affordable housing in the region given that housing was already scarce and expensive. The RMWB indicated that there was currently a shortfall of 2840 units and that the typical time frame to turn a piece of raw land into residential housing was about three years. The RMWB acknowledged that land had been released for residential development; however, it noted that the 11 800 dwelling units expected to become available would only carry the municipality into the near future. RMWB estimated that there would be demand for up to 15 496 new dwelling units to 2010.

RMWB also submitted that the proposed release of lands that was expected to accommodate 6000 of the anticipated 11 800 dwelling units posed a problem for municipal servicing, since the land would be cut up by streams and muskeg and would have access issues, resulting in a high cost of servicing. It also indicated that new infrastructure systems or expansions of existing facilities would be required in order to bring basic services to these areas. The front-end cost to open up these new areas was estimated at as much as \$680 million (over and above the municipality's planned capital expenditures). The RMWB suggested that these costs would have to be incurred either by a willing developer or the RMWB, and it indicated that it was currently unable to "front-end" that type of cost.

5.3.6 Views of Alberta

Alberta provided evidence that two parcels of land (Parcel D and Parcel F) owned by the province had been sold to developers for residential development. It also indicated that servicing of Parcel D was currently under way and land development and servicing on Parcel F was expected to be completed by the end of 2008. Alberta stated the two parcels would provide for an estimated 5800 housing units, including 600 affordable housing units.

Alberta also provided evidence that two other parcels of land were currently being readied for sale by the province. The first, referred to as North Parsons Creek, is expected to yield up to 1800 dwelling units and the second, referred to as the Saline Creek Area, is expected to yield about 4200 dwelling units.

Alberta indicated that the four parcels, when fully developed, would yield over 11 800 dwelling units in total. It also stated that to facilitate urban growth beyond the development of these four areas and to ensure that land release occurred in a timely fashion, the Government of Alberta was developing a land release strategy in cooperation with the RMWB. Alberta indicated that it was also participating with the RMWB in the preparation of area structure plans and related feasibility studies for future urban expansion as part of its commitment to release all of the Crown land required to meet Fort McMurray's needs.

Alberta stated that it was further addressing the issue of affordable housing by providing close to \$16 million in funding for 392 affordable housing units in Fort McMurray under the Canada-Alberta Affordable Housing Program.

5.3.7 Views of the Board

The Board is encouraged by the steps taken and the commitments made by the Government of Alberta and the RMWB to address the availability of housing and affordable housing. However, the Board notes that new residential areas that are expected to come on stream may lag behind projected demand for housing. It also notes that planning requirements, cost of servicing, and land development timelines have the potential to delay when new lands will actually be made available for housing construction. The Board's view on this matter is captured in its recommendation related to Public Infrastructure and Services provided in Section 5.2.9. It believes that continued coordination and cooperation among governments is needed to ensure that the supply of land ready for residential development and the necessary planning are in place to meet the existing and expected housing demand in the region.

6 PUBLIC CONSULTATION

6.1 Views of Suncor

Suncor stated that it defined stakeholders as individuals or groups who could be impacted by its operations or who could, through their own actions, affect Suncor's business. It said that it was committed to a program of ongoing consultation and that it had developed a framework to integrate community input into the Voyageur Project design, the EIA process, and operational

and environmental programs. Suncor noted that through its public consultation process, it had developed a list of key issues, and that for specific stakeholders that expressed specific concerns, it had provided funding to facilitate their technical review of the applications. Suncor maintained that it consistently endeavoured to address stakeholder concerns in a proactive manner and to minimize the number of unresolved issues for the hearing.

Suncor indicated that its goal was both to build the capacity to consult and to consult with its aboriginal stakeholders in a way that was meaningful to them. Suncor noted that it had supported, and in most cases initiated, the development of community-based industrial relations corporations (IRCs) and had maintained good relationships with them. Suncor pointed out that its aboriginal engagement extended well beyond project-specific consultation. Suncor stated that it had a long history of working closely with the aboriginal communities in the region on an ongoing basis to create opportunities for aboriginal people through education, employment and training, community development programs, and contract work for aboriginal businesses. Suncor indicated that it supported the retention of aboriginal culture, while enhancing educational and training opportunities for aboriginal people.

Suncor stated that it led the development of the Métis Industry Consultation Agreement (MICA) for the Métis locals. Suncor added that although MICA was dissolved in late 2005, another process to replace MICA was presented to the regional Métis leadership in early 2006 by RIWG. Suncor noted that RIWG was currently waiting for a final response from the Métis Locals as to how they would like to proceed. Suncor submitted that it had used its best efforts to consult with the Métis Locals and would continue to work with them to address their issues.

Suncor stated that it also consulted on an ongoing basis with respect to specific issues through three multistakeholder groups, including RIWG, CEMA, and the Athabasca Tribal Council (ATC) - All Parties Core Agreement (APCA). Suncor noted that it was also involved in other collaborative stakeholder groups whose primary interests were environmental and social impact issues, including the Wood Buffalo Environmental Association (WBEA), the Regional Aquatics Monitoring Program (RAMP), and the Canadian Oil Sands Network for Research and Development (CONRAD).

Suncor stated that its commitment to addressing the issues raised by stakeholders was evidenced by the significant efforts it made to clearly define issues and identify mutually beneficial solutions, which ranged from comprehensive agreements to collaborative multistakeholder processes. Suncor noted that the agreements it achieved with Fort McKay and ACFN were evidence of its commitment.

6.2 Views of ACFN and OSEC

ACFN stated that it took no issue with Suncor's consultation efforts and expected its positive working relationship with Suncor to continue.

OSEC stated that it did not take issue with Suncor's consultation program and noted that Suncor testified that its consultation relationship with OSEC would continue after the hearing. OSEC indicated that it was committed to continuing to engage Suncor in voluntary progressive environmental management.

6.3 Views of MCFN

MCFN stated that Suncor did not consult in any substantial way with it. MCFN stated that Suncor did not listen to it and did not provide requested information. MCFN also found it frustrating that after decades of dealings with Suncor, Suncor expressed the view that its Voyageur Project was not on MCFN's traditional lands. MCFN indicated that it provided evidence about MCFN families and individuals who currently and in the past used the project areas for traditional uses. MCFN stated that this was a fundamental breakdown in communication and understanding by Suncor. MCFN also stated that Suncor failed to provide crucial information to it in a timely manner. MCFN further stated that this was illustrated in the hearing, where Suncor refused to provide information on a number of topics. MCFN recommended that until meaningful consultation had taken place, no further consideration be given to approving the Voyageur Project.

6.4 Views of WBMLA

WBMLA noted that Suncor's applications specifically named Métis Local Groups to be one of a short list of primary stakeholders that it actively sought out for consultation in the region. WBMLA stated that the Métis Local Groups it represented had never been consulted by Suncor with respect to the Voyageur Project. WBMLA indicated that the typical means of consultation with aboriginal groups was through IRCs, which were funded through APCA. WBMLA stated that it did not have such an agreement and was currently without any formal consultation process with Suncor. WBMLA noted that Suncor's applications claimed that the MICA process was a means to consult with the Métis Local Groups. WBMLA stated that that the Voyageur Project was not discussed at MICA and that MICA was disbanded within months of the submission of these applications. WBMLA indicated that its association was created to be the vehicle through which the Métis Local Groups would deal with industry. The WBMLA noted that members of RIWG worked with the Métis Local Groups to establish MICA, but that RIWG declined to support the WBMLA as its chosen vehicle of consultation and that Suncor was a member of the Aboriginal Affairs Committee of RIWG.

WBMLA stated that there currently were no specific public participation directives or guidelines for oil sands producers engaged in surface mining and bitumen processing. WBMLA noted that EUB *Directive 056: Energy Development Applications and Schedules* did not specifically apply to surface mining or associated processing facilities, although it did apply to most other oil and gas processing facilities in Alberta. WBMLA also noted that EUB *Directive 023: Guidelines Respecting an Application for a Commercial Crude Bitumen Recovery and Upgrading Project* provided the specific requirements for licensing applications for oil sands surface mining operations but did not define specific public consultation requirements.

WBMLA stated that it did not want the EUB to grant the requested approvals until the environmental and socioeconomic concerns of the WBMLA had been adequately addressed. However, if the Voyageur Project were approved, WBMLA requested that an approval of the applications be subject to the condition that Suncor be required to consult in a meaningful way with WBMLA in the same manner as with other First Nation stakeholder groups by developing a formal consultation approach, such as an APCA. WBMLA also requested the development and implementation of a consultative policy and working group involving the WBMLA, the Province

of Alberta, and Canada, in accordance with the Constitution of Canada, in order to pursue an intense examination of the cumulative effects of oil sands development on the Métis people in the area and an appropriate means for accommodation.

6.5 Views of the Board

The Board notes that *Directive 023* states:

Applicants are encouraged to plan and carry out a suitable program to make the public aware of the proposed development, to obtain and incorporate, where feasible, the reaction of interested or affected persons, and to provide documentation to the ERCB and Alberta Environment as to the nature and extent of the communication.

In addition, *Directive 023* cites another EUB document, *Informational Letter (IL) 89-4: Public Involvement in the Development of Energy Resources*, which was superseded by *Directive 056*. The Board notes that even though *Directive 056* is not directed to mineable oil sands applications, the Board considers the basic requirements for public consultation in *Directive 056* to be the minimum public participation standards that mineable oil sands applicants must meet.

The Board expects that applicants will develop a public consultation program that at a minimum includes parties that have a legally recognized interest that may be directly and adversely affected by the proposed project, including First Nations and Métis having such interests. The program should respond to questions and concerns, discuss options, alternatives, and mitigation measures, and seek confirmation of non-objection through cooperative efforts. The Board also encourages the public to participate in ongoing issue identification, problem solving, and planning with respect to the proposed developments. The Board notes that public involvement does not end with the issuance of an approval; it must continue throughout the life of the project.

The Board notes the agreements made between Suncor and Fort McKay and between Suncor and ACFN, and it commends the parties for achieving those agreements. The Board also notes OSEC's position that it had no concerns regarding Suncor's public consultation program even though it had concerns about the Voyageur Project. The Board believes that MCFN's participation in the hearing indicates it has a good understanding of the Voyageur Project and was provided with information specific to the applications. The Board notes that the evidence shows that there were meetings and an exchange of correspondence between MCFN and Suncor regarding the applications. With respect to WBMLA, the Board notes that MICA was the formal process to consult with the Métis Locals at the time the applications were filed. The Board also notes that MICA was disbanded a few months after the applications were filed, which left no formal process for Suncor to consult with the Métis Locals. The Board finds that Suncor consulted with Métis Local 1935 and responded to its concerns and that Métis Local 1935 represented the other intervening locals in its submission. The Board notes Suncor's commitment to continue working with the Métis Locals to address their concerns.

The Board finds that Suncor has developed an extensive consultation program that informs its stakeholders and makes the public aware of its projects. The Board believes that Suncor's program responded to concerns, made steps towards mitigating those concerns, and in some cases reached agreement for non-objection. Generally speaking, the Board hopes that stakeholder concerns can be mitigated through consultation but it recognizes that agreements cannot always

be reached. The Board concludes that the consultation requirements applicable to the applications before the Board have been met by Suncor and, therefore, the Board is not prepared to condition or delay issuing EUB approvals on the basis of inadequate consultation.

7 RESOURCE RECOVERY

7.1 Mine Plan

7.1.1 Views of Suncor

Suncor indicated that the objectives of the mine plan were to maximize economic oil sands recovery, minimize ore sterilization, and meet or exceed EUB *Interim Directive (ID) 2001-07: Operating Criteria—Resource Recovery Requirements for Oil Sands Mine and Processing Plant Sites*. Suncor noted that the identification of ore, interburden, overburden, and the ultimate pit crest for the NSME was determined based on the criteria outlined in *ID 2001-07*. Suncor noted that ultimate pit limits took into consideration safe pit slope angles, practical mining aspects such as minimum pit width, the proximity to the Steepbank River, and the configuration of the pit at the lease boundary to the north.

Suncor indicated that an external overburden disposal (EOD) area would be required to store overburden material throughout the 12-year life of the NSME, with the majority of the material being placed in the first 4 years. Suncor said that it believed that the EOD area was placed in an optimized location, considering current operational and economic design criteria. Suncor stated that the EOD area provided for a substantial offset from the pit crest, as well as very low-angle slopes adjacent to the pit. Suncor noted that any unfavourable geotechnical conditions were not likely to prevent Suncor from reaching the ultimate pit wall design. Suncor indicated that the EOD setback from the pit crest would not likely change, but that the slopes could be reduced in any poor conditions. Suncor stated that it would provide detailed designs of the EOD before construction.

Suncor indicated that as mining progressed in the NSME, it would use in-pit dikes to create in-pit tailings storage areas. Suncor noted that these included the Southeast Dike adjacent to the Steepbank boundary berm, the Central Dike, which would separate the Southeast Area from the Northwest Area, a dike liner along the far western pit wall, and the Lease 29 Boundary Dike. Suncor indicated that in-pit dikes would be constructed of suitable interburden and overburden material. Suncor stated that it would provide specific designs for in-pit dikes and waste areas for approval before construction, in accordance with AENV dam safety procedures.

Suncor stated that it appeared that a portion of the NSME ore body extends north onto the adjacent lease (Lease 29) held by Syncrude. Suncor believed that the available exploration data along and south of the Lease 29 boundary were sufficient to establish resource conditions along this boundary. However, Suncor noted that the ore body continuation on Lease 29 was not well defined, since the drill hole density was sparse and Suncor did not have any exploration data for that area that was not publicly available. Suncor stated that it had proposed to leave a pillar of oil sands of some 0.6 million (10^6) m³ of recoverable bitumen along the lease boundary. Suncor noted that the in situ ore pillar would serve as a toe buttress for a tailings dike to be constructed

along the lease boundary. Suncor believed that the proposed design of the boundary dike was the only option that minimized the impact on the operations on either side of the boundary and thus maximized bitumen resource recovery. Suncor noted that recovery of the in situ ore pillar after placement of the dike and buttress dumps would require prohibitively high stripping volumes along the dike area by the company that mined that area. Suncor noted that it had discussed the proposed plan with Syncrude and would resolve the ultimate boundary configuration at least five years before the mine advance reached the boundary.

7.1.2 Views of the Board

The Board notes that the operating criteria for bitumen recovery as outlined in *ID 2001-07* are based on four criteria that are not measured or enforced individually but are used collectively. The criteria include an in situ oil sands cutoff grade of 7 weight per cent bitumen, a minimum mining thickness of 3 m, a mining cutoff ratio of the total volume of material to the volume of bitumen in place (TV:BIP) of 12:1, and a processing plant recovery based on the average bitumen grade of the as-mined ore. The Board acknowledges Suncor's objective to meet or exceed the operating criteria for bitumen recovery as outlined in *ID 2001-07*. The Board believes that the NSME is designed appropriately based on the operating criteria. The Board notes that the operating criteria are the minimum requirements for bitumen recovery, and it encourages Suncor to explore options to maximize the recovery of the bitumen beyond the minimum requirements in all areas of its operation.

The Board finds that the location of the EOD area is appropriate, based on the currently available drilling information. However, the Board will condition the approval requiring Suncor to submit for EUB approval the detailed geotechnical designs for the EOD at least six months prior to field preparation in these areas.

With respect to mining at the lease boundary, the Board notes that Suncor is committed to finalizing the plan with Syncrude for the recovery of the oil sands at the common lease boundary. The Board encourages both parties to finalize a plan that would reduce the amount of oil sands that would be sterilized. The Board is concerned that without additional drilling on Lease 29, the potential for sterilization may be much greater than that stated in the application. The Board will therefore condition the approval requiring Suncor to submit for EUB approval a finalized plan for mining at the common lease boundary five years prior to mining at the common lease boundary. The Board will require that the plan address the lack of drilling information on Lease 29 and include a comprehensive evaluation of the lease boundary geology and reserves, geotechnical conditions, alternative mining scenarios and impacts, and associated costs, in accordance with Section 3.1 of *ID 2001-07*.

7.2 Diluent Losses

7.2.1 Views of Suncor

Suncor stated that with respect to diluent losses, it was currently required to

- recover on an annual basis not less than 99.5 per cent of the diluent used in its bitumen extraction process,

- not exceed annual diluent losses greater than 4.5 volumes of diluent per thousand volumes of bitumen, and
- not discharge untreated froth treatment tailings containing diluent to the tailings ponds.

Suncor requested that the Board remove the 99.5 per cent diluent recovery requirement because the diluent loss requirement was the relevant and appropriate measurement to manage diluent based on the technology used. In addition, Suncor also noted that operators could achieve overall diluent recovery of 99.5 per cent by increasing the amount of diluent used instead of optimizing its recovery.

Suncor's position was that the Board should maintain the existing diluent loss requirement of 4.5 volumes of diluent lost per thousand volumes of bitumen produced based on the proposed production levels. Suncor stated that if the diluent loss criterion remained the same, diluent losses could increase from 197 to 232 m³/d at the increased production rates. Suncor noted that it had achieved diluent losses of less than 4.0 in the past year. However, a reduction in the diluent loss criterion from 4.5 to 4.0 would likely result in Suncor incurring an additional expenditure of \$75 million to \$100 million.

Suncor stated that should the EUB and AENV choose to impose a regulatory limit of 4.0 volumes of diluent lost per thousand volumes of bitumen produced, Suncor would take the appropriate action to achieve the new regulatory limit. Suncor indicated that if the diluent loss criterion was changed to 4.0, it would be able to meet it at the commercial start-up of the VU in 2010.

7.2.2 Views of the Board

The Board acknowledges that the diluent recovery requirements currently specified in the Suncor approval are not applied to other oil sands operations in Alberta. The Board notes that the retention of the requirement for a diluent recovery loss of less than 4.5 would result in an increase of 18 per cent in losses, from 197 to 232 m³/d. The Board finds that the ongoing retention of the 4.5 limit is inappropriate given that most other oil sands operators must meet a limit of 4.0. Therefore, the Board finds that Suncor's requirement for diluent losses should be lowered to 4.0 volumes of diluent lost per thousand volumes of bitumen produced.

The Board notes that Suncor has indicated that it would be able to meet a diluent loss criteria of 4.0 at the start-up of the VU in 2010. However, the Board believes that diluent losses to the tailings ponds are more related to its mining operations, as apposed to its upgrading facilities. The Board notes that 2008 is the first year that Suncor plans to begin increasing its mined bitumen production to get to the levels proposed in the NSME application. The Board believes that an appropriate date to change the criteria would be in 2008. Therefore, the Board will remove the diluent recovery requirement and change the diluent loss requirement to 4.0, whereby both would be effective November 1, 2008.

7.3 Upgrading

7.3.1 Views of Suncor

Suncor stated that it had selected delayed coking technology (DCT) for the VU and that it would produce a value added and low sulphur base product. Suncor noted that it had several years of operating experience with this technology at its existing upgrading facilities.

Suncor stated that it might include a vacuum tower unit (VTU) as part of the VU and that it would make a decision on this at a later date. Suncor stated that the VTU would be an enhancement to the basic upgrader configuration, giving Suncor the flexibility to increase throughput and market various grade sour products if market conditions and economics were favourable.

Suncor stated that there would be essentially no impact on local sulphur recovery, because sulphur in the incremental throughput would remain in the product produced from the VTU and would be sent to the market. Suncor stated that the potential impacts of a VTU were encompassed in the assumptions used for air emission modelling, sulphur recovery and emissions, water usage in the upgrader, and the plot space within the upgrader. Suncor stated that it would provide details on the VTU to the regulatory authorities at least six months prior to commencement of construction.

7.3.2 Views of the Board

The Board acknowledges that Suncor has several years' operating experience with DCT. The Board agrees with Suncor that the bitumen upgrading technology proposed in the VU application offers a technically integrated operation with bitumen recovery from oil sands and upgrading bitumen into various grades of value-added marketable synthetic crude oil and petroleum products. The Board notes that Suncor may add a VTU as an enhancement to the basic upgrader configuration, which would give Suncor the flexibility to increase throughput and market sour products if market conditions and economics were favourable. .

7.4 Upgrader Location

7.4.1 Views of Suncor

Suncor stated that the VU would be located on the Suncor-owned Fee Lot 2 directly west of Highway 63 and its existing oil sands facilities. Suncor noted that it made a balanced decision influenced by the results of its life cycle value assessment (LCVA) to determine the location of the VU and the by-product storage area south of Fee Lot 2 on its Oil Sands Lease 23. Suncor noted that the LCVA was a disciplined methodology to ensure that the major environmental, economic, and social impacts of a project, purchasing decisions, design options, and process technology selection were fully considered across the entire life cycle of a product or production system. Suncor noted that it had evaluated three other site options for the VU, which included the Firebag Insitu Operation, the Steepbank Waste Area, and the Lease 86/17 Base Plant. Suncor stated that the rationale for the selection of Fee Lot 2 included the following:

- It presented more favourable logistics for construction, with its proximity to Highway 63, Fort McMurray, and existing construction camps.
- It offered significant synergy with the existing operations and at the same time avoided the operational and construction risks of the Lease 86/17 Base Plant location.
- The site would be considerably more attractive to operations staff than the more distant Firebag site.
- The site space was available to support future facility expansion, coke disposal, and sulphur storage without interfering with existing storage plans.
- The capital cost of the Fee Lot 2 site was lower than the other options.
- The environmental implications were similar for all options.

Suncor noted that when the original application for the VU was filed, the evaluation of potential bitumen resources within the Fee Lot 2 and Lease 23 areas underlying the VU footprint indicated limited mineable resources. Suncor stated that additional drilling had enhanced Suncor's understanding of the underlying bitumen resources and Suncor now recognized that there were mineable resources, based on the criteria set out in *ID 2001-07*, beneath the VU site and stockpile locations. Suncor indicated that there were about $5.0 \times 10^6 \text{ m}^3$ of recoverable bitumen within Fee Lot 2 underlying the VU. Suncor's position was that the bitumen underlying Fee Lot 2 was owned by Suncor and was not subject to surrender to the Crown pursuant to the *Oil Sands Lease Tenure Regulations*, which applied only to Crown-owned resources. Suncor stated that notwithstanding the identification of mineable bitumen underlying the VU footprint subsequent to filing of the application, the benefits of the proposed site, as compared to other possible locations, justified a decision to locate the facilities on Fee Lot 2 and Lease 23. Suncor stated that it would minimize the impacts on sterilization of ore by ensuring that all of the associated VU facilities located on Lease 23 were temporary or would be relocated and therefore would not result in sterilization of any ore within Lease 23.

7.4.2 Views of the Board

The Board notes the comprehensive evaluation that Suncor completed in determining the optimum location for the VU and associated facilities. The Board also notes Suncor's commitment to ensure that all facilities located on Lease 23 can be relocated if the oil sands on Lease 23 are considered for future recovery. The Board recognizes that oil sands may be sterilized due to valid environmental, technical, economic, and operational reasons, but it is the Board's objective to minimize sterilization. The Board believes that Suncor has located the VU in an area that would minimize sterilization of mineable oil sands resources and therefore finds that Suncor has justified the resource sterilization beneath the VU.

7.5 Sulphur Recovery

7.5.1 Views of Suncor

Suncor stated that the proposed sulphur recovery facilities would enable it to meet EUB *ID 2001-03: Sulphur Recovery Guidelines for the Province of Alberta* at the proposed Voyageur production rates and also meet the site-wide emission limits contained within the *EPEA*

Operating Approval. Suncor stated that there would be adequate redundancy and capacity in its proposal with the number of sulphur recovery units and the high on-stream factors of the amine units and the tail gas treatment units (TGTUs).

Suncor submitted that the proposed modification to the approved sulphur recovery technologies at the existing sulphur complexes would reduce energy usage, carbon dioxide (CO₂) emissions, capital cost, and operating costs when compared to the approved configuration. Suncor acknowledged that due to this modification, sulphur dioxide (SO₂) emissions were predicted to increase by 8.8 tonnes per calendar day (t/cd). However, Suncor noted that normal operation of the proposed project would not cause off-site exceedances of the Alberta Ambient Air Quality Objectives (AAAQO) for SO₂.

Suncor stated that the proposed combined sulphur complex design for Base Plant, Millennium, and Voyageur Upgraders would provide an appropriate level of excess capacity to ensure reliable operations on an ongoing basis and would strike the right balance between capital investment, environmental performance, and operational flexibility. Accordingly, Suncor submitted that if the Board approved the Voyageur Project, Suncor should be allowed to employ the sulphur recovery technologies and processes as put forward in these applications and not be required to proceed with the approved technology. This would be consistent with previous approvals where approval conditions specified that developers were required to meet certain operating performance criteria and environmental emission limits consistent with the project schemes described in the project applications. Suncor stated that there was no justification presented in the evidence before the Board for requiring specific sulphur recovery technology different from that proposed in the applications and that the proposed technology would not affect AENV's ability to set emission limits for sulphur emissions consistent with the operation of the approved configuration.

7.5.2 Views of Alberta

AENV stated that continuous improvement to reduce sulphur emissions from existing upgraders had been effective in reducing ambient levels of SO₂ in the region. AENV presented evidence that in anticipation of new sources of emissions from continuing oil sands development, it believed it was essential that existing operators practice ongoing continuous improvement. AENV was concerned that Suncor's current plans related to sulphur recovery would not conform to these continuous improvement expectations.

AENV submitted that the proposed changes to the approved configuration would result in an 8.8 t/cd increase in SO₂ emissions and reduce the redundancy of sulphur emission controls on short-term time frames. AENV stated that the Board should deny Suncor's proposed sulphur recovery scheme relating to the modifications to the current approved scheme. If the Voyageur Project were to be found by the Board to be in the public interest and the proposed sulphur recovery configuration were approved, AENV stated that it might require Suncor to meet emission limits for sulphur emissions consistent with the approved sulphur recovery configuration and maintain the same level of redundancy.

7.5.3 Views of the Board

Suncor is bound by the requirements of *ID 2001-03*. Currently, Suncor is required to maintain a site-wide calendar quarter-year average sulphur recovery of 98.5 per cent. With the production rates associated with the Voyageur Project, Suncor will be required to meet a site-wide calendar quarter-year average sulphur recovery of 99.5 per cent.

The Board believes that it is Suncor's responsibility to implement technology that will meet the sulphur recovery guidelines. The Board believes that Suncor's proposed technology on a site-wide basis is adequate to meet these guidelines and there is no evidence to the contrary. Therefore, the Board does not object to Suncor's proposed sulphur recovery configuration.

The Board notes that AENV has stated that it may require Suncor to meet SO₂ emission limits consistent with the approved sulphur recovery configuration and maintain the same level of redundancy and that Suncor has not objected to these suggestions. The Board supports AENV's position in this matter.

7.6 Coke Gasifier

7.6.1 Views of Suncor

Suncor stated that it planned to install a coke gasifier in Phase 2 of the VU project. Suncor submitted that it planned to gasify about 1170 t/cd of coke to produce syngas. Suncor noted that coke gasification would have a net effect of decreasing its natural gas consumption by 30 million standard cubic feet per day. Suncor also stated that coke gasification would maximize the value of bitumen by using the petroleum coke. Suncor stated that it would be prepared to submit to the Board a detailed analysis on the use of a coke gasifier in its operation.

7.6.2 Views of the Board

The Board believes that coke has value as an energy resource and that it can be used as an alternative fuel to natural gas. The Board commends Suncor and believes that the coke gasifier is a positive step toward the use of coke as an alternative fuel in oil sands operations. The Board would encourage Suncor to continue with its efforts to reduce natural gas consumption and to maximize the use of this alternate fuel source.

7.7 By-product Storage and Use

7.7.1 Views of Suncor

Suncor indicated that due to adverse market and transportation conditions, it planned to construct coke and sulphur storage facilities on the Lease 23 area of the VU site. Suncor noted that it had identified mineable bitumen resources beneath the VU coke and sulphur storage facilities and therefore considered the facilities to be temporary. Suncor indicated that the facilities would be relocated at such time as the underlying bitumen was mined or as part of the final reclamation of the site.

Suncor stated that the coke storage facility would accommodate 10 years of coke storage and that it would continue to evaluate additional options for coke storage or final management beyond the initial 10-year period. Suncor indicated that the sulphur from the VU would be stored as solid blocks in an aboveground facility. Suncor noted that it currently trucked all of its sulphur off site, but if market or transportation conditions made shipping sulphur not viable, it may need to store sulphur from its existing upgraders at the VU storage facility. Suncor stated that the storage capacity of the VU sulphur storage facility would be about 15 million tonnes, which would create between 15 and 30 years of storage, depending on future market conditions. Suncor believed that sulphur stored in an appropriately designed containment facility would have no overall negative impacts on the environment. Suncor noted that it would remelt the sulphur block and ship it off site at the end of operations as a part of final reclamation of the site.

Suncor stated that the coke storage facility would be constructed and operated based on EUB *Directive 055: Storage Requirements for the Upstream Petroleum Industry* requirements for a bulk storage pad. Suncor noted that it would complete additional geological investigations for the storage pad area, as well as construction specifications, prior to construction of the facility. Suncor stated that it would provide detailed geotechnical designs for both the coke and sulphur storage facilities that would assess seepage and stability prior to construction.

Suncor also stated that it was applying for all possible uses of coke in its operations. Suncor noted that it had identified several key non-energy uses for coke, including for drains in containment dikes, as road-building material, and as reclamation material to cap soft consolidated tailings (CT) deposits. Suncor estimated that it would use 1.6 to 2.5 million tonnes of coke per year for non-energy uses, about 20 to 25 per cent of Suncor's total coke production. Suncor stated that the proposed uses would make the coke unavailable for future use but were viable and equally valuable in these non-energy applications. Suncor noted that if the Voyageur Project were approved by the EUB, it should be allowed to use coke for any and all of the uses described in the applications, with a requirement to report the volumes and uses annually to the EUB.

7.7.2 Views of Alberta

Alberta stated that the VU would increase the rate and amount of excess coke by-products produced by Suncor. Alberta noted that Suncor proposed to store excess coke in a manner that would allow for its recovery. Alberta stated that it had experienced frustration in the past with a lack of timeliness in effective planning and actions by Suncor related to coke storage. Alberta noted that Suncor was requested to develop a comprehensive review and plan related to the storage of coke from its existing upgraders. Alberta stated that it did not object to coke being temporarily stored on the Suncor site in a manner that would allow for its recovery. However, if there were no uses, Alberta indicated that permanent disposal may be allowed if done in an environmentally acceptable manner. Alberta noted that Suncor would need to pay close attention to this matter in its mining and reclamation planning, due to the increased volume of coke that would be produced.

Alberta stated that the amount of sulphur produced from bitumen upgrading would increase as the amount of upgrading increased in the province. Alberta noted that the main market for sulphur was for export to other countries for manufacturing uses, such as fertilizer production,

and that the worldwide demand for sulphur in the past had gone through cycles of increased and reduced demand. Alberta noted that Suncor proposed an aboveground sulphur block to temporarily store sulphur at the site. Alberta also noted that Suncor proposed to eventually remelt and relocate the sulphur from the site, but that the timing of the relocation and final disposition was not certain at this time. Alberta indicated that aboveground sulphur block storage was an established practice that energy companies and regulators were familiar with in the province. Alberta stated that it did not object to the proposed aboveground temporary sulphur storage, provided that appropriate engineering and operating practices were used. However, Alberta believed that Suncor would need to consider final disposition of the sulphur on an ongoing basis. Alberta noted that disposal of large volumes of sulphur was not an area that energy companies and regulators in the province were familiar with, and this was a factor Suncor would need to consider in its ongoing management of sulphur.

7.7.3 Views of the Board

Pursuant to EUB *IL 96-07: EUB/AEP Memorandum of Understanding on the Regulation Of Oil Sands Development*, the EUB is responsible for ensuring that coke and sulphur by-products are stored so that future recovery is maximized, and AENV is responsible for ensuring that storage of coke and sulphur by-products does not result in significant environmental impacts. The memorandum also states that AENV will issue a single approval for a coke or sulphur by-product storage facility, provided that all EUB and AENV concerns are addressed.

As stated above, the Board believes that coke has value as an energy resource and should be conserved. The Board expects that oil sands operators will store coke in a manner that will maximize future recovery. The Board understands that the proposed coke storage facility is temporary and would accommodate 10 years of coke production. The Board notes that there are mineable oil sands located beneath the proposed coke storage area and acknowledges Suncor's commitment to relocate the stored coke in the event that the oil sands are considered for future recovery. The Board notes that Alberta does not object to the coke being temporarily stored at the Suncor site but that it expressed frustration in the past with Suncor's coke storage planning. The Board supports AENV's request to Suncor that Suncor provide a comprehensive plan related to the storage of coke and adds that this should include a long-term coke storage plan for the VU. The Board believes the plan should be designed to accommodate coke storage for the economic life of the VU.

The Board understands that Suncor's proposed sulphur storage facility would accommodate between 15 and 30 years of storage based on market conditions. The Board notes that the sulphur storage facility would also be relocated in the event that it is determined that the oil sands beneath the facility should be recovered. The Board expects that Suncor will move as much sulphur as possible off site to minimize the amount that would need to be dealt with at the end of operations. The Board notes that Alberta did not object to the aboveground sulphur storage proposed by Suncor. The Board also notes that Alberta indicated that aboveground sulphur block storage is an established practice in the province.

The Board understands that further investigations are required to finalize the detailed design for the coke and sulphur storage facilities. Therefore, the Board would support AENV requiring

Suncor to provide a detailed design of both the coke and sulphur storage facilities prior to construction.

With respect to non-energy coke use, the Board notes that Suncor is applying to use 1.6 to 2.5 million tonnes of coke per year for non-energy use. The Board also notes that these non-energy uses would make the coke unavailable for future use and the 1.6 to 2.5 million tonnes requested is more than what Suncor has used to date. The Board agrees that coke may have value in non-energy uses, but the evidence was not clear on what that value is or to what extent coke used in gasification in the oil sands industry may increase in the future. Therefore, the Board is not prepared to approve the requested non-energy coke use at this time. The Board notes that operators are required to apply to the EUB on a case-by-case basis for any non-energy coke uses and the Board has decided that it will continue this practice. If Suncor applies to the EUB for a non-energy use of coke, the application should provide specific detail as to how the coke would be used, the alternatives to using the coke, and how the value of the proposed non-energy use compares to the value of the coke as an energy resource.

8 TAILINGS MANAGEMENT

8.1 Consolidated Tailings Performance

8.1.1 Views of Suncor

Suncor stated that CT was the only tailings system that has the capability to consume a large percentage of the mature fine tailings (MFT) volume currently in inventory into a dry landscape. Suncor noted that although it had not achieved the level of performance it desired on a daily basis with respect to CT performance, it had undertaken extensive research on improving deposition and management of CT operations and it had a good understanding about commercial-scale implementation of CT. Suncor said that it currently provided the EUB with CT performance reports under two main approval clause requirements: Clause 13 from the Millennium Approval, and Clause 20(b) from the South Tailings Pond (STP) Approval.

Suncor stated that in early 2004 it had performed an analysis of CT performance to identify areas for improvement. Suncor noted that it had recently implemented additional systems to ensure consistent availability of key components to manufacture CT. Suncor stated that while it was committed to achieving a target performance in CT efficiency of 76 per cent, for conservative planning purposes it assumed a ramp-up period for the material balance calculation to 76 per cent by 2009. Suncor defined CT efficiency as the amount of CT that successfully meets three main criteria, including sand use, proper recipe, and proper deposition. The sand use percentage is the amount of sand that is made into CT from the sand allocated to CT, which excludes sand used for building dike and cell or used for infilling of Pond 1. The proper recipe is the percentage of that material which meets the target sand to fines ratio (SFR). The proper deposition is the percentage of that material that is deposited into the pond utilizing a tremie.

Suncor noted that it had performed annual pond assessments since 1997 that indicated that CT was behaving as predicted and would lead to the successful development of a reclaimed

landscape. Suncor was confident that it would create a reclaimable landscape in Pond 5, which would be the first commercial implementation of CT.

Suncor believed that its tailings management practices were currently being regulated adequately, as the EUB could take appropriate action based on annual and quarterly reporting requirements. Therefore, Suncor stated that it did not see the need for additional industry-wide regulations, especially with the variety of tailings management technologies across the industry. Suncor also stated that the Mine Liability Management Program (MLMP) was intended to address the end-of-mine life issues and ensure that disturbance created by the mining activity was appropriately reclaimed.

8.1.2 Views of MCFN

MCFN stated that it was concerned that if CT did not produce a trafficable surface, there was potential for environmental catastrophe. Under anaerobic conditions, MCFN believed that the fine tailings would segregate from the CT and that the entire mass would destabilize. MCFN noted that it would like Suncor to provide data disclosure for Pond 5 core. MCFN sought certainty for the return of the boreal forest and stated that CT did not provide that certainty. MCFN asked that until CT was proven successful, Suncor not be granted approval for expansions using CT technology.

8.1.3 Views of the Board

The Board remains concerned that Suncor has not met proposed targets in the management of its tailings as stated in its STP and Millennium applications. In the five quarterly tailings performance reports (Clause 20b of EUB Approval No. 8535) that the EUB received prior to the hearing, Suncor's CT production was 19 per cent of projected values as calculated from Table 20-1 of the March 2006 supplemental information. The Board acknowledges that Suncor continues to develop knowledge about the implementation of CT and has stated that it is dedicated to continuous improvement in the operations and deposition of CT on a commercial scale. However, the Board remains concerned that Suncor has not demonstrated in practice that CT can consume the majority of the MFT generated from the mine feed on a go-forward basis. The Board notes that since the Millennium application in 1999, predicted end of mine life MFT inventories continue to grow significantly despite the use of CT. The impact of this growth of MFT inventory on the performance of end pit lakes (EPLs) is still unknown.

The Board notes that various reporting formats in place from the Millennium and STP approvals show a decreasing quantity of sand available to CT, although the STP application stated that the construction of this pond did not significantly affect sand availability for CT. The Board further notes that the proposed increase in height of the STP, the delay of available in-pit tailings space in the Millennium Mine, increased fines in the tailings stream from lower grade ore stock in the NSME, and other operational setbacks could further negatively impact the amount of MFT that would be consumed by CT. Although the Board understands that the use of sand is important for other areas of the operation, if sand availability for CT continues to be limited, the Board is sceptical that CT performance can increase to the predicted levels.

The Board notes that Suncor is currently required to submit annual tailings management plans (Clause 20a of EUB Approval No. 8535) to the EUB for approval, as part of its annual mine plan submission. The Board further notes that Suncor is also required to submit quarterly tailings performance reports (Clause 20b of EUB Approval No. 8535) that indicate whether actual tailings performance complies with the most recently submitted tailings plan. The Board would like to clarify that it considers Table 20-1 of the March 2006 supplemental information as Suncor's most recent tailings plan and expects that tailings plans submitted in the future would adhere to this format. The Board expects that Suncor's quarterly tailings performance reports will provide comparisons of its actual tailings performance against the projections shown in Table 20-1. Suncor is to include reasons for any deviations from the material balance (Table 20-1), impacts on the reclamation plan resulting from deviations from this material balance, and a restorative plan to regain compliance with the material balance.

The Board notes that in the STP application Suncor had predicted a significant improvement in CT performance as a result of improvements planned from 2004 to 2006, involving considerable cost and effort to achieve the predicted performance improvements. The Board also notes that in the NSME application, the predicted performance level for CT increased above the rate predicted in the STP application, despite Suncor's unproven capability to meet the lower predictions. Suncor has not satisfied the Board that it is able to meet the predictions it made in past applications on a continuous basis. Therefore, the Board will condition the approval to require Suncor to meet its predicted 76 per cent CT efficiency on a quarterly basis no later than the first quarter of 2009, consistent with Suncor's own internal targets. Until these targets are met, Suncor shall not mine oil sands that meet the requirements under *ID 2001-07* from the NSME, as the Board believes that the addition of this feed will impact Suncor's ability to meet its CT performance predictions. The Board will direct EUB staff to continue to work with Suncor and to monitor Suncor's progress towards meeting these goals.

The Board will also require Suncor to include detailed information to support its claim that CT is on track to providing a trafficable surface for reclamation. This information can include annual pond surveys, sampling data, vane shear testing, and other information as specified by the Board.

The Board notes that it has raised concerns with respect to tailings management performance in previous oil sands decisions, including Suncor's STP decision. In the Shell Jackpine EUB *Decision 2004-009*, the Joint Review Panel directed EUB staff to work with the mineable oil sands industry, AENV, and SRD to develop performance criteria for tailings management. The Board continues to work on this initiative, although progress is slow. The Board expects EUB staff to have recommendations out for review by industry in March 2008. In addition to this initiative, the Board is aware of several industry and government initiatives that address tailings in various capacities and is hopeful that these initiatives will be successful.

8.2 Alternative Tailings Technologies

8.2.1 Views of Suncor

Suncor noted that there were a number of alternative tailings technologies to ensure an acceptable final reclaimed landscape with or without CT. Suncor stated that the EPLs in the Millennium Mine and NSME had adequate storage for additional MFT inventory. Suncor noted

that the end of mine life MFT inventory to be stored in these EPLs may be reduced by using tailings consolidation, tailings drying, or thickening technologies. Suncor stated that thickened tailings (TT) did not have sufficient clay to water ratio (C:W) to successfully make CT based on laboratory and field trials. Suncor noted that the Canada Centre for Mineral and Energy Technology (CANMET) research determined that this ratio was the best indicator for comparison of the effectiveness of oil sands material dewatering. Suncor submitted that based on this fact, TT technology was not warranted for its current operations, but that it would continue to monitor the potential of this technology. Suncor noted that it had also researched MFT drying and concluded that this was a complementary technology that could reduce the overall MFT inventory. Suncor noted that it was also investigating whole tailings deposition.

8.2.2 Views of MCFN

MCFN believed that dry, stackable tailings would provide more recycle water and a trafficable surface almost immediately, but noted that it did not fully understand the cost implications because Suncor refused to provide it with information. MCFN believed that CT should not be part of any approval until peer-reviewed research supported by large-scale demonstration tests were available. MCFN requested that the Board delay or deny approval until Suncor had fully demonstrated CT technology by providing sampling results to the EUB and MCFN from the various ponds and by allowing an independently peer-reviewed research proving consistent CT success. Alternatively, MCFN recommended that any approval be delayed or denied until Suncor adopted dry, stackable tailings technology as its treatment technology choice. MCFN also recommended that time-specific performance standards be set with respect to CT production and consolidation, including set monitoring and reporting standards. MCFN believed that Suncor's CT performance data should be available for stakeholder and third-party peer review. MCFN believed that a six-month timeframe for achievement of 90 per cent CT production and an 18-month timeframe to determine significant consolidation were adequate. If Suncor did not meet these targets, MCFN believed that the EUB should tell Suncor how to change its tailings management.

8.2.3 Views of the Board

The Board continues to be concerned about the lack of definitive performance data respecting the success of CT operations. Therefore, the Board expects Suncor, and other operators, to place greater emphasis on the development of tailings technology, including research and testing of alternative tailings technology. In addition, the Board expects that any improvements or a breakthrough in tailings technology would be immediately incorporated into Suncor's tailings management program. Suncor shall continue to submit annual progress reports by February 28 of each year regarding its research and development work on tailings, as required in the Millennium approval. This report shall also include an update on the level of integration of alternative technologies into the tailings management plan.

The Board recognizes that there have been advances with respect to fine tailings management and reclamation in collaborative industry efforts in the past, specifically the Fine Tailings Fundamentals Consortium. The Board believes similar efforts must continue to ensure that effective tailings management strategies will be developed to promote efficient operations and to

address uncertainties regarding long-term performance of the reclaimed landscape. The Board expects Suncor not only to participate in collaborative efforts on tailings fundamentals studies, investigations of commercial tailings properties, and tailings reclamation studies, but also to initiate new studies and provide technical leadership to these efforts.

8.3 Tailings Storage and Timing

8.3.1 Views of Suncor

Suncor indicated that its tailings plan in the NSME application provided a full scheme for tailings management and storage for the life of the project and the facilities that would be required to achieve that plan. Suncor stated that the tailings plan was closely related to the mine plan and that the mine plan defined the schedule of tailings to be stored and the availability of containment space. Suncor further stated that adding the NSME to its existing mine operations would have a material impact on Suncor's site-wide tailings plans. Suncor noted that until the NSME was available for in-pit storage, tailings from NSME would need to be accommodated within its existing operations. Suncor indicated that ultimately tailings would be placed in the NSME in-pit storage space; therefore an integrated tailings management plan approach was required. Suncor noted that one of its tailings plan objectives was to optimize in-pit storage use to minimize the area disturbed by creating external tailings ponds.

Suncor stated that about half of its mining production would shift to the NSME. It noted that the rate of the Millennium Mine face advancement would therefore decrease compared to the mine plan described in the STP application. Suncor stated that a consequence of the new mine plan would be that the construction rate for Dike 12 that closed off Pond 8 would be reduced, thereby delaying the availability of containment space in Pond 8. Suncor concluded that the net result was that the timing for Pond 8 tailings containment availability would not change significantly. However, Suncor stated that the initial amount of space available would be reduced in the first several years while Dike 12 was being constructed. Suncor noted that this could be offset by an increase in storage capacity in the STP. Suncor stated that it was required to apply for approval to increase the elevation of the STP above 380 m. Suncor believed the tailings plan as presented was technically feasible and would result in a viable integrated tailings plan. However, the increase in elevation would not be required until about 2010. Suncor believed that there would be opportunities to optimize the integrated tailings plan to reduce or eliminate the increase in the STP elevation. Suncor stated that it would apply for the increase in the STP elevation, if required, at a later date. Suncor stated that the delay in availability of in-pit storage space in the Millennium Mine delayed the opportunity for CT containment. Suncor noted that its material balance assumed that Pond 8 would be available for CT deposition by late 2013 and that CT production from the Millennium Extraction Plant would commence in 2014. Suncor stated that the first CT to be deposited into Pond 8 would originate from the Steepbank Extraction Plant in 2014, after Pond 7 was filled. Suncor noted that the delay of Pond 8 storage was reflected in the higher final volumes of MFT at the end of mine life. Suncor indicated that this impact could partially be mitigated by creating a final lift on the STP with high sand-to-fines ratio CT.

Suncor indicated that it had examined numerous scenarios for the deposition of CT from the Millennium Extraction Plant, including early deposition of CT into Pond 7. Suncor stated that the proposed scheme was the optimum scenario having regard to timing, availability of materials for

dike construction and CT, minimized pumping distances, capital and operating costs, technical feasibility, and other factors. Suncor noted that any scenarios that considered early use of Pond 7 for CT deposit adversely affected impacts a number of these factors.

Suncor stated that any delay in the start of the NSME would increase the mining rate in the Millennium Mine for an extended period that would initially create containment in Pond 8 sooner. However, Suncor noted that it would still require an increase in the capacity of the STP but at a later date. Suncor also noted that a delay in timing for mining of the NSME would adversely affect the integrated tailings plan and result in higher economic costs through increased materials handling and adverse equipment requirements by mining exclusively within the Millennium Mine for an extended period. Suncor stated at the hearing that if the NSME was delayed long enough, it could run the risk of losing the economics of the deposit entirely and it could become a stranded asset.

8.3.2 Views of MCFN

MCFN noted in its final argument that Suncor acknowledged at the hearing that its dike structures would be required to hold CT from now until perpetuity.

8.3.3 Views of the Board

The Board believes that Suncor's plan for tailings storage is acceptable based on currently available information. However, the Board is concerned that incorporation of the NSME into Suncor's operations in the year 2010 would affect the availability of containment space in Pond 8 of the Millennium Mine. The Board considers the development of Pond 8 to be a significant factor affecting Suncor's ability to incorporate CT production from the Millennium Extraction Plant. The Board notes that Suncor testified that Pond 8 storage was initially scheduled to be available in 2007 in the original Millennium application. However, in the NSME application Pond 8 is not available for tailings storage until the end of 2011 and would only be available in a limited capacity. The Board also notes that Pond 8 is not scheduled for CT deposition until 2013 and CT production from the Millennium Plant would not begin until 2014. The Board notes that initially the CT placed into Pond 8 would come from the Steepbank Extraction Plant once Pond 7 is full. The Board is concerned that if Pond 8 storage is delayed further, it could affect CT production from each of Suncor's extraction plants.

The Board has stated in previous oil sands decisions that it believes that the appropriate tailings management objectives for oil sands mines should include eliminating or reducing containment of MFT in external tailings ponds during operations, and minimizing and eventually eliminating the long-term storage of MFT. The Board believes that the evidence shows that MFT volumes on the Suncor site will not be reduced until CT production begins from the Millennium Extraction Plant. The Board finds that the tailings storage plan proposed in the NSME application is not consistent with the objectives that the Board considers appropriate for tailings management. Therefore, the Board will condition the approval that Suncor shall not mine oil sands that meet the requirements under *ID 2001-07* from the NSME until Pond 8 is available for the deposition of CT and commercial CT production commences from the Millennium Extraction Plant. The Board acknowledges that this condition could delay the start-up of the NSME and could also increase Suncor's mining costs. However, the Board believes that the additional costs would not

be excessive, as Suncor had planned to mine exclusively in the Millennium Mine from 2006 until 2010 and any delay would just be an extension of this plan. The Board also believes that any delay required to establish Pond 8 storage and CT production from the Millennium Extraction Plant would not be long enough to jeopardize the economics of the NSME. The Board notes that establishing Pond 8 storage earlier should remove the need to increase the size of the STP in the short term, and the Board will continue to require Suncor to apply to the EUB to increase the height of the STP above the 380 m elevation. The Board encourages Suncor to find alternatives to tailings storage that would not require an expansion of the STP in the long term.

8.4 End Pit Lakes

8.4.1 Views of Suncor

Suncor noted that it planned to integrate all waters on site into a drainage system at closure that would be routed to its EPLs. Suncor stated that the waters in these EPLs would be released to the external environment after an appropriate management period to ensure that the water would meet existing standards. Suncor indicated that chemicals from the MFT layer stored in the bottom of the EPLs would move into the water column, and that this process was included in its water quality modelling in the EIA. If the EPLs that contained MFT in the bottom proved to be unsuccessful, Suncor stated that it would work with regulators and other oil sands operators to develop alternatives that would result in an acceptable closure scenario. Suncor noted that it continued to participate actively in CEMA's EPL Subgroup and that it would incorporate recommendations into its EPL design and management.

8.4.2 Views of Alberta

Alberta stated that Suncor's impact assessment was based on modelling predictions and that uncertainty existed with respect to water yield and quality of the reclaimed landscape. Alberta noted in its submission that if the Voyageur Project were approved, it may include the following as potential *EPEA* approval conditions to address these uncertainties:

- a requirement for Suncor's continued participation in CEMA working groups on surface water quality related matters,
- a requirement for Suncor to provide a schedule for testing and updating water quality modelling predictions, and
- a requirement for Suncor to provide a research schedule that includes the testing of EPL predictions and design features with a physical test case in conjunction with other oil sands companies.

8.4.3 Views of MCFN

MCFN stated that it was concerned that there was no certainty that EPLs would transform into viable ecosystems using passive treatment. MCFN recommended that Suncor dry out and bury all tailings and treat the process-affected water.

8.4.4 Views of the Board

The Board continues to be concerned that the concept of EPLs has not been scientifically proven in the oil sands region due to the complex nature of these landforms and the lack of a test case to date. The Board notes that Suncor's closure and reclamation plan relies on the successful implementation of these EPLs to mitigate water quality and residual soft tailings storage issues, as well as to implement a desired end land use for stakeholders in the region. The Board believes that as the predicted final inventory of MFT that will be stored in the EPLs continues to grow and as uncertainty continues over whether EPLs will be successful, concern about the ability of the oil sands developers to appropriately deal with MFT inventories in the event that EPLs are not ultimately successful will persist. The Board notes that the water-capped fine tails concept was initially put forward to the Board in Syncrude's Continued Improvement and Development Project application and was originally approved in EUB *Decision 94-05* with the stipulation that it is to be proven successful by a full-scale demonstration on the Syncrude lease. The Board encourages Suncor to work with Syncrude and other oil sands industry members to develop this demonstration lake to ensure the viability of this reclamation concept.

The Board acknowledges Suncor's commitment to treat the fluid fine tails in the NSME EPL and Suncor's previous commitments for the Millennium EPL if the EPL concept does not prove to be a viable means to dispose of the final MFT inventory. However, the Board is concerned that Suncor's backup plan for excess MFT volumes relies heavily on the unproven technology of EPLs. The Board is also concerned that possible excess MFT volumes throughout the life of the mine would result in increased liability. The Board directs Suncor to undertake actions to reduce additional MFT inventories by means that are in addition to CT in order to enhance the probability of achieving successful closure scenarios. Therefore, the Board concludes that Suncor must manage its tailings operation to result in the smallest possible final inventory of MFT starting immediately. The Board will condition the approval requiring Suncor to provide detailed plans on the incorporation of supplementary tailings techniques to reduce Suncor's MFT inventory in its annual tailings plan beginning in 2007.

The Board notes that Suncor is required to report annually on its EPL research work (Clause 23 of EUB Approval No. 8535). The Board expects that Suncor will continue to participate in the CEMA EPLs subgroup. The Board also expects that Suncor will undertake additional research work to help resolve uncertainties over the implementation of oil sands EPLs.

9 AIR

9.1 Air Quality Monitoring and Modelling

9.1.1 Views of Suncor

Suncor stated that dispersion modelling of upset events predicted exceedances of the AAAQO for SO₂ and hydrogen sulphide (H₂S). However, the likelihood of an exceedance was only about 1 per cent of the time. Suncor further submitted that this did not consider the infrequent nature of upsets. Therefore, given the low likelihood of upset events occurring, Suncor concluded that there was minimal risk to human health associated with upsets at the VU. Suncor also submitted

that the regulatory framework for controlling emissions on a rolling average basis, as proposed in the applications, was an appropriate method of regulating ongoing operations.

Suncor acknowledged that the air modelling component of the EIA predicted exceedances of the AAAQO for benzene and H₂S and exceedances of the Canada-Wide Standard (CWS) for fine particulate matter (PM_{2.5}). In Suncor's view, the current monitoring in the area indicated that the modelling was conservative for those parameters and that the predicted exceedances were unlikely to occur. Suncor submitted that the likelihood of these exceedances was low and was not predicted in areas routinely visited or accessible to aboriginal people or the general public.

Suncor committed to regular maintenance of mine fleet vehicles to retain fuel efficiency and to design mine fleet haul roads to optimize operational efficiencies and minimize fuel consumption throughout the life of the Voyageur Project. Suncor also committed to use mine fleet vehicles that met applicable emission standards at the time of purchase and to use heart-cut diluent that would reduce benzene emissions. Suncor submitted that the heart-cut diluent was assumed to not be in use when estimating benzene emissions in the EIA.

9.1.2 Views of OSEC

OSEC said that there was a trend of decreasing air quality in the region, not just in peak or upset emissions, and that it was important that the air quality be monitored and modelled in a valid and reliable way. OSEC stated that predicted exceedances of the AAAQO and CWS within the so-called developed area and predicted concentrations outside the developed area were approaching these thresholds, as admitted by Suncor. OSEC submitted that the developed areas should not be excluded from compliance with the guidelines.

OSEC requested that the Board recommend to AENV that the EIA methodology be changed to include a description of current emission scenarios in order to make the assessment of projects more understandable. OSEC requested that the Board recommend to AENV that proponents be required to assess and monitor the impacts of secondary pollutants on health, vegetation, and visibility.

9.1.3 Views of Alberta

It was AENV's view that for large, complex facilities such as oil sands upgraders, it was not often possible to design a plant without predicted air quality exceedances. AENV stated that in such situations it would be important to consider the frequency of predicted exceedances and that in this application the modelling results for upset emissions were satisfactory. AENV submitted that it was important to minimize the frequency of upsets.

AENV acknowledged that modelling results showed predicted exceedances of the AAAQO for benzene and H₂S and of the CWS for PM_{2.5}. It was AENV's view that given the current monitoring results in the area for benzene and PM_{2.5}, the modelling results were conservative and exceedances were not likely to occur. AENV acknowledged that monitoring had shown exceedances of the AAAQO for H₂S close in to the facilities from fugitive sources, but believed that there were no potential health effects based on the modelling exceedances. AENV said that it might require Suncor to continuously monitor for benzene to confirm that the modelled results

were indeed conservative and would take measures to ensure that emissions of PM_{2.5} and H₂S did not result in adverse human health or environmental impacts.

AENV stated that the AAAQO were applicable to areas outside industrial developments, while the Occupational Health and Safety Guidelines were applicable within. AENV said that in the EIA it had asked Suncor to present its information on the effect on some of the developed areas, as well as the undeveloped areas, so that information was available for decision-makers. AENV acknowledged that some of the predicted exceedances occurred in areas that may never be developed. AENV stated that to prevent predicted modelled exceedances from actually occurring, it would ensure that the company was using appropriate technologies and other approaches to reduce emissions. AENV said it would consider the inclusion of an existing or current modelling scenario in future EIAs.

9.1.4 Views of the Board

The Board notes that although upset events have occurred at the Suncor Plant resulting in exceedances of the AAAQO at WBEA monitoring stations and odour complaints from the public, these events have been infrequent. The Board recognizes that upset emissions at VU have a low risk of causing exceedances of the AAAQO at sensitive receptors or communities. The Board expects Suncor to apply best practices to minimize the frequency and duration of emissions and reduce emissions associated with upsets. If the frequency of upsets increases, the Board would take corrective action to ensure that the risks to the public and the environment are minimized.

The Board agrees that the predicted air modelling exceedances for benzene, H₂S, and PM_{2.5} are most likely due to conservative assumptions in the modelling and occur in areas that should not cause health risks to people. Nevertheless, the Board supports AENV's suggestion to require Suncor to conduct continuous benzene monitoring to ensure that there are no significant risks to human and ecological health from benzene exposure. The Board also expects Suncor to meet its commitment to use heart-cut diluent, which would reduce benzene emissions.

The Board notes that exceedances of the CWS for PM_{2.5} are due to emissions from the mine fleet. The Board expects Suncor to meet its commitments on managing air emissions from its mine fleet.

The Board notes Suncor's approach to remove developed areas from EIA study areas when determining compliance with guidelines. Notwithstanding that, the Board is also aware that Suncor did include results for developed areas as well for consideration in the EIA. The Board believes that this is a suitable approach but notes OSEC's concerns about this approach and, as such, the Board supports Alberta providing guidance in EIA methodology on how to treat developed areas.

The Board notes that Suncor modelled the required emission scenarios in accordance with the EIA Terms of Reference (TOR). The Board also notes that an existing scenario is not a current requirement in most TORs. The Board agrees with OSEC that an existing modelling scenario could provide information beneficial to the review of EIAs and, as such, the Board would

support Alberta considering additional modelling scenarios (including current or existing) in future EIAs if those scenarios would provide additional useful information.

The Board is aware that secondary pollutants, such as fine particulate matter and ozone, can have adverse impacts on human health and vegetation and can affect visibility. The Board notes that Suncor has performed modelling that considered the formation of secondary particulate matter from SO₂ and oxides of nitrogen (NO_x) emissions but did not perform ozone modelling. The Board is satisfied that Suncor has fulfilled the EIA TOR in this regard. However, the Board believes that in setting the terms of reference for future EIAs parties should consider whether it would be appropriate to assess the effects of secondary pollutants on human health, vegetation, and visibility.

9.2 Acidifying Emissions

9.2.1 Views of Suncor

Suncor has modelled the potential effects of acidifying emissions (SO₂ and NO_x) from the Voyageur Project and other existing and approved developments. Suncor submitted that emissions from the Voyageur Project would not result in additional exceedances of the acid deposition critical loads and that emissions from the Voyageur Project were predicted to have a negligible impact on water quality and aquatic life in regional lakes. Suncor stated that the increase in regional NO_x emissions due to the Voyageur Project was not expected to result in an effect on episodic stream acidification.

It was Suncor's view that the predicted increase in soil critical load exceedances had a negligible environmental consequence due to the small increase in are attributed to the Voyageur Project. Suncor submitted that increases in the aerial extent of vegetation potentially affected by acidifying emissions by the Voyageur Project, with a less than 1 per cent net change to vegetation potentially affected in the study area, would have a low impact. Suncor affirmed that the predicted increases in SO₂ and NO_x emissions would have negligible environmental consequences on ecological receptors.

Suncor committed to implementation of the CEMA Acid Deposition Management Framework (ADMF), as well as ongoing participation in the annual monitoring programs under RAMP and the WBEA Terrestrial Environmental Effects Monitoring (TEEM) program. Suncor submitted that it was currently monitoring reclamation area soils as part of its routine conservation and reclamation monitoring program and that these requirements were established by AENV. Accordingly, Suncor said that the Board's decision in this case should not contain any recommendations or conditions in connection with the additional monitoring of soil.

9.2.2 Views of OSEC

It was OSEC's view that the Voyageur Project would contribute to increases in acidifying emissions and in the amount of land that would receive potential acid input (PAI) above the critical loads for soil. OSEC said that Suncor did not present its information in a manner that would lend comparison to the ADMF.

OSEC submitted that the ability to assess the potential impact of acidifying emissions was hampered by the limited information available from current monitoring methods. Monitoring has been delegated to a large extent to regional initiatives, which were not providing timely results and were making it difficult for the Board and AENV to obtain the required information from corporations like Suncor in order to hold them accountable to meeting environmental objectives.

OSEC stated that the current monitoring of soils was inadequate to detect changes caused by acidifying emissions and that Suncor should be required to conduct its own monitoring capable of detecting such changes. OSEC said that proponents should also be required to provide assessments of their projects against the regional frameworks.

9.2.3 Views of Alberta

AENV stated that monitoring through RAMP and TEEM and research undertaken through the CEMA NO_x-SO_x Management Working Group (NSMWG) were important to understanding whether there were potential acidification effects in the region. In addition, it would help to better understand the acidifying versus eutrophying effects of nitrogen deposition.

AENV acknowledged that the Acid Deposition Assessment Working Group (ADAG) was in the latter stages of completing an acid deposition management framework for Alberta that focused on a regional scale. The regional framework was anticipated to be more protective of localized areas predicted to receive increased PAI deposition or areas where monitoring had already shown an exceedance in any of the loads.

AENV maintained that a long-term goal for the region should be that of enhancing the monitoring program to include components of acid deposition (wet and dry deposition of sulphur, nitrogen and base cations). In the case of TEEM, increasing the number of monitoring sites was critical in order to maintain consistency and statistical power. AENV stated that some sites had already been lost to mining operations and expert statistical review had revealed that the program needed to add additional sites to maintain at least a number of similar sites over the long term.

It was AENV's position that operators that were sources of acidifying emissions were expected to contribute to the regional air quality monitoring and management system through compliance and stewardship. AENV recommended that

- NSMWG, TEEM, and possibly RAMP assess the eutrophication issue and determine whether there was a need for a eutrophication monitoring and management strategy for the region,
- vegetation monitoring studies be undertaken by TEEM as part of this assessment, and
- an enhanced lichen vigour study be undertaken by TEEM to determine if there was a link between emissions and deposition and health in lichens. AENV said that lichens were an effective and inexpensive "early warning" signal for effects of emissions and deposition on forest health.

AENV submitted that any *EPEA* approval that may be issued for the Voyageur Project may require Suncor to continue participating in regional acid deposition and eutrophication monitoring efforts.

9.2.4 Views of the Board

The Board notes that emissions of SO₂ and NO_x can contribute to the acidification of soils and water bodies and that as a result of the Voyageur Project, absolute site-wide NO_x and SO₂ emissions will increase. The Board is also aware that NO_x emissions can lead to the eutrophication of soils. The Board recognizes the predicted increase in PAI as a result of the Voyageur Project.

The Board acknowledges the regional monitoring initiatives through CEMA, RAMP, and TEEM that deal with acidification and eutrophication from emissions and is aware that Suncor participates directly in these initiatives. However, the Board notes the concerns of AENV and OSEC that there are deficiencies in the current monitoring of soils to assess acidification. As a result, the Board supports the three recommendations suggested by AENV in relation to acidifying emissions.

If AENV's recommendations are not adequate to assess changes due to acidifying emissions, the Board believes that it would be appropriate for Alberta to consider whether any *EPEA* approvals it may issue should include a condition requiring Suncor to develop and conduct a site-specific monitoring program of soils and water bodies that would augment existing regional monitoring programs. Further, the Board expects Suncor to continue to support and participate in regional initiatives to assess acidification and eutrophication and would support AENV if it decides to incorporate this type of monitoring program in Suncor's *EPEA* approval.

9.3 Greenhouse Gases and Climate Change

9.3.1 Views of Suncor

Suncor submitted that the Voyageur Project would cause a net increase in greenhouse gas (GHG) emissions and intensity. Suncor stated that the plan to manage GHG emissions associated with the Voyageur Project was in accordance with its corporate seven-point plan on GHG management and was the appropriate disposition with respect to the Voyageur Project. Suncor maintained that there was no precedent or regulatory authority to impose a "carbon neutral" condition with respect to the project.

Suncor felt that the Alberta *Climate Change and Emissions Management Act (CCEMA)*, which established the management of GHG emissions, was the responsibility of the Minister of Environment and the Lieutenant Governor in Council. Suncor submitted that it complied with this legislation. Suncor stated that the Lieutenant Governor in Council may make regulations establishing interim GHG emission targets for Alberta and establishing GHG emission targets and interim GHG emission targets for different sectors of the Alberta economy. Accordingly, there was legislation already in place that established a comprehensive scheme to manage GHG emissions, and Suncor submitted that the EUB's decision in this case should not contain any recommendations or conditions in connection with the management of GHG emissions.

9.3.2 Views of OSEC

OSEC noted that the Voyageur Project would increase Suncor's GHG intensity, which was contrary to Alberta's policy of reducing GHG emissions on an intensity basis. OSEC felt that Suncor had put the Board in a difficult position by not volunteering to reduce its GHG emissions for the Voyageur Project by the use of offsets or otherwise. OSEC asserted that Suncor did not demonstrate in any fashion how its GHG Management Strategy had been applied to the Voyageur Project and that it did not provide to the Board detailed information on the source, type, and distribution of GHG emissions resulting from the project or evidence that it was economically unable to reduce its GHG emissions.

OSEC submitted that the Voyageur Project could achieve a net-zero release of GHG emissions by the year 2020 at a reasonable cost through the application of carbon capture and sequestration and domestic or international offsets. OSEC believed this was in the public interest, given the scale of GHG emissions associated with the Voyageur Project and the global call for action to stabilize atmospheric emissions. OSEC felt that one of the purposes of the OSCA and the Board's jurisdiction over oil sands was to assist the government in controlling pollution. Therefore, OSEC submitted that the Board had jurisdiction to control GHG emissions, guided by government policy, which was to decrease emissions. OSEC stated that the Board should also consider making any approval of a coke gasifier conditional on the capture and storage of the resulting CO₂ emissions.

9.3.3 Views of MCFN

MCFN felt that an appropriate goal for Suncor was GHG neutrality. MCFN supported the submissions and recommendations of OSEC.

9.3.4 Views of Alberta

AENV emphasized that the *CCEMA*, together with a proposed specified gas emitters regulation, would be used to manage GHG emissions in Alberta. AENV felt that the provisions of the *CCEMA* gave broad regulation-making powers to the Lieutenant Governor in Council to make regulations imposing GHG emission intensity limits or absolute emission limits and that there was also a regulation-making power relative to the use of emission offsets. AENV had consulted with stakeholders on a GHG regulatory framework and said that until regulations were applied on a sector-wide basis, it intended to put emission intensity targets in each operator's approval.

AENV stated that the Legislature would have been aware that this Board would be entertaining oil sands applications for projects with GHG emissions when it passed the *CCEMA*. AENV noted that the Alberta Legislature was open to design a different regime and it could have given the Board the regulation-making power or it could have enacted provisions specifically authorizing the Board to regulate GHGs by way of approval conditions. Instead, AENV said that the Legislature chose to place the regulation making power with Cabinet and that choice ought to be respected. Therefore, AENV submitted that this Board should not impose GHG emission limits, but should leave actions on GHGs to the provincial action plan and regulatory developments in furtherance of that plan.

9.3.5 Views of the Board

The Board notes that Suncor's oil sands plant emits a large amount of GHGs and that the Voyageur Project will increase Suncor's GHG emissions as well as the emission intensity. The Board believes that AENV is the responsible regulatory authority for GHG emissions management through the CCEMA and expects AENV to follow through with its intention to put GHG emission intensity targets in Suncor's operating approval. Accordingly, the Board will not condition the approval to require capture and storage of CO₂ emissions from the coke gasifier.

10 TERRESTRIAL RESOURCES

10.1 Steepbank River Crossing and Escarpment

10.1.1 Views of Suncor

Suncor stated in its application that a crossing over the Steepbank River was required to access the NSME from its existing operations to the southwest. Suncor noted that this crossing was necessary to provide a material haulage route from the NSME to the ore processing facilities.

Suncor stated that its final design for the proposed crossing included two structures separated by about 6 m, which would create a 94 m wide footprint along the Steepbank River. Suncor indicated that one of the structures would be for heavy mine equipment, while the other would be for light vehicles. Suncor stated that each structure would be 15 m above the Steepbank River and would have a 27 m wide span at the base.

Suncor's position was that fencing would direct wildlife away from the active mining operations and down to the crossing structure, enabling the wildlife to move along the river valley during mining operations. Suncor stated that the structure design provided adequate natural light for wildlife movement underneath the structure on both sides of the watercourse. Suncor indicated that it was committed to removing the bridge and earthen abutments and recontouring the slope for stability as part of final reclamation.

Suncor stated that in order to maximize ore recovery, the proposed design for the NSME was to mine through the escarpment of the Steepbank River valley for a distance of about 5 kilometres. Suncor indicated that it planned to mine the entire escarpment in the early stages of mining to open up areas for dike footprint construction as soon as possible. Suncor stated that an in situ berm 25 m above the river elevation and 50 m wide at its crest would be left in place along the full extent of the river valley. Suncor noted that the in situ berm would act as a toe-berm for a dike and overburden disposal structure that would be constructed to the elevation of the original topography.

Suncor noted that it had evaluated a number of alternative pit designs using different setback options from the Steepbank River. Suncor stated that based on its evaluation, it concluded that the other setback options would effectively divide the NSME into two pits, resulting in increased ore sterilization, reduced mine and plant operability, and reduced mine life. Suncor noted that due to these factors, the economic viability of the resource would be at risk.

Suncor stated that varying the setback options did not change the significance of project impact on the movement of wildlife along the river valley. It stated that the entire length of the disturbed valley wall would be rebuilt to its original height by 2015 and revegetation of the valley wall would be completed in 2016, six years after the start of mining. Suncor's position was that reclaiming the escarpment would make the area immediately available for wildlife movement across the escarpment, with predisturbance wildlife patterns returning after the removal of the bridge and abutments in about 2039.

In response to Alberta's evidence that the escarpment should be mined in two segments, Suncor's position was that mining the escarpment in segments would be difficult to accomplish. Suncor indicated that the mine plan would have difficulty meeting the material balance requirements for the structures required to re-establish the escarpment. Suncor noted that one of the main drivers for establishing the structure was to accommodate its tailings plan.

Suncor indicated in its application that additional site investigations and the design schedule for the dike and overburden disposal structures that would be constructed along the Steepbank River escarpment would allow the mining schedule to optimize mining information available for the design process. Suncor noted that its schedule would target having designs for the first in-pit dump and dike for regulatory approval six months prior to construction.

10.1.2 Views of Alberta

Alberta indicated in its submission that the NSME would remove a portion of habitat formally designated by SRD as key moose area on the north side of the Steepbank River. Alberta stated that the Fort McMurray-Athabasca Integrated Resource Plan (IRP) identified the lower Steepbank River valley as critical wintering habitat for moose and indicated that special constraints might be applied to development proposals. Alberta noted that the IRP also stated that an objective was to maintain and enhance moose habitat. Alberta's position was that Suncor would likely need to enhance reclamation in the Steepbank River valley if the IRP objective of maintaining and encouraging moose habitat were to be met.

With respect to the crossing over the Steepbank River, Alberta recommended that Suncor be requested to commit to developing and implementing further design improvements to the bridge and wildlife crossing structures to create more opportunities for wildlife passage and implement mitigation measures that would enhance the effectiveness of the wildlife corridor along the Steepbank River. Alberta also recommended that Suncor be required to remove and reclaim the bridge areas as soon as possible, including removing earth fill used in the bridge approaches that could potentially restrict long-term corridor width.

With respect to the mining of the Steepbank River escarpment, Alberta made the following recommendations in support of the IRP objective:

- limit the amount of Steepbank River valley escarpment to be mined at any one time;
- minimize the time from initial disturbance until site reconstruction and revegetation, ideally five years;
- require reclamation of the valley to an appropriate width to ensure productive moose habitat;

- require revegetation appropriate to moose habitat; and
- require monitoring of success in re-establishment of moose habitat and use of adaptive management to enhance moose habitat if predictions of success are not met.

Alberta stated that it was open to discussing its recommendations and would work to achieve a solution. Alberta also indicated that the Board could provide support in terms of mine planning and materials handling, noting, however, that Alberta's objectives could be met within its own jurisdiction.

10.1.3 Views of the Board

The Board notes that a crossing over the Steepbank River would be required in order to access the NSME and to enable the ore to be transported to the ore preparation facilities. The Board understands that Suncor has made improvements to the crossing design over the course of the application process. Alberta recommended that further design improvements be made to the bridge to create more opportunities for wildlife passage and that Suncor be required to remove and reclaim the bridge as soon as possible. The Board recognizes that wildlife issues are regulated under *EPEA* and encourages Suncor to work with Alberta on design enhancements and an acceptable timeline for removal and reclamation of the crossing.

With respect to the Steepbank River escarpment, the Board notes that it is the mandate of the EUB to effect conservation and prevent waste of the oil sands resources. The Board also notes Suncor's position that any additional setback from the Steepbank River would result in ore sterilization that would affect the economic viability of the project. The Board acknowledges Alberta's recommendation to divide the mining of the escarpment into two segments and allow one segment to be reclaimed prior to disturbing the other. The Board recognizes Suncor's argument that mining the NSME in two segments would be difficult, effectively dividing the mine into two separate pits with the current bridge location. The Board notes Suncor's commitment to reconstruct the entire escarpment to its original height and revegetate by 2016, one year following Alberta's recommendation for partial reclamation.

The Board believes that the mine design is a good balance between resource recovery and timely reconstruction of the escarpment and accepts the current mine plan as the most reasonable development option. It is the Board's view that given the expected mine life of the Steepbank expansion, mining the escarpment in two segments is not a development plan that should be adopted.

The Board acknowledges Alberta's recommendations with respect to reclamation practices in the Steepbank River valley in support of the IRP objectives and recognizes that these practices can be regulated through the *EPEA*. The Board expects that any reclamation plans and timeline commitments made specific to the bridge and escarpment would be available for public review.

The Board understands that further investigations will be completed to finalize the detailed designs of the dike and overburden disposal structures along the Steepbank River escarpment. Therefore, the Board will condition the approval requiring Suncor to submit for EUB approval the detailed geotechnical design for the overburden disposal structure at least six months prior to

field preparation in these areas. The Board notes that the detailed design should include criteria that will be applied to the closure design of the landform prior to reclamation material placement, and best management practices for mitigation and monitoring of erosion. The Board understands that Suncor is required to submit a detailed design for the dike portion of the structure to AENV Dam Safety Branch to obtain a licence for the structure prior to impoundment of any fluid.

10.2 Cross Boundary Reclamation

10.2.1 Views of Suncor

Suncor stated that the proposed NSME and other areas of Lease 86/17 were located adjacent to Lease 29, held by Syncrude, and that final drainage plans for the Voyageur Project and portions of its Lease 86/17 relied on Syncrude's final drainage plans. Suncor stated that there were no immediate plans for Syncrude to mine the area adjacent to the NSME development area. It added that if the area north of the NSME were developed, it would work with the other operator to ensure the reclamation plans of the two operations worked together. Final drainage plans for both areas would consider existing natural drainage patterns.

10.2.2 Views of Alberta

Alberta's position was that coordinating reclamation with adjacent developments was necessary to ensure continuity and integration of landforms, drainage, and vegetation patterns for a natural-appearing landscape with less habitat fragmentation. Alberta also emphasized that coordination of reclamation could help to optimize the use of soil resources and more closely approximate natural forest ecosystems. Alberta indicated that getting oil sands operators to work on common time frames or a common regional framework had been challenging.

Alberta recommended that the Board encourage Suncor to discuss the use, sharing, and scheduling of surface reclamation material with adjacent oil sands operators while the soils still held the functional value and shelf life of individual components on the landscape. Alberta stated that it might include conditions in the *EPEA* approvals that would require Suncor to prepare an end-land-use plan integrating drainage and landform design, participate and cooperate in regional level end-land-use working groups, develop preliminary design elevations, demonstrate discussion with Syncrude regarding feasibility of sharing reclamation materials, and participate in a potential cooperative allowing adjacent leaseholders to share reclamation material.

10.2.3 Views of the Board

It is the Board's view that reclamation coordination between operators should begin in the exploration phase and continue throughout the planning, development, and reclamation phases in order to maximize resource conservation and achieve sustainable development. The Board recognizes that there are currently no plans for Syncrude to develop Lease 29 and that Suncor is committed to working with the other operators to ensure that their respective reclamation plans work together. The Board expects that operators will also coordinate mine planning, as the structures associated with the mining operation are the foundation for reclamation and closure. Therefore, the Board will condition the approval requiring Suncor to provide an annual update of its efforts to coordinate mine planning and closure with other operators in terms of landform

design, drainage, and material balances as part of its annual mine plan reporting. The Board supports Alberta requiring Suncor to participate in regional-level end-land-use working groups and discussions regarding the feasibility of sharing reclamation materials.

10.3 Reclamation Progress and Certainty

10.3.1 Views of Suncor

Suncor stated that the environmental footprint associated with its Voyageur Project would be mitigated appropriately. Its mitigation strategies included monitoring and reporting, ongoing investigations and research, active management of product, by-product, and emission streams, investment in technology, a commitment to adaptive management, open and transparent consultation and communication, and a fully developed final closure, conservation, and reclamation plan that targeted the return of the entire project footprint to a reclaimed landscape in a progressive manner of equivalent capability as that which existed prior to the disturbance.

Suncor's position was that its reclamation program was designed to allow Suncor to reclaim its development areas and to return certified lands back to the Crown in the future. Suncor noted that it would be accelerating the pace of reclamation, as developed areas were no longer required as part of the active operation. Specifically, Pond 1 would be in-filled with sand around 2009 or 2010, after which it would be capped with reclamation material and revegetated. Ponds 5 and 6 were planned for completion of sand capping between 2016 and 2019 in preparation for soil placement and revegetation. Suncor indicated that it had no immediate plans to apply for reclamation certification but committed to working in a multistakeholder function to define the process for application and certification of reclaimed areas.

Suncor emphasized its use of an adaptive management process as part of its reclamation program whereby modifications were made based on on-site monitoring and applicable information from regional research. Suncor committed to considering new information and reclamation technologies as they were developed and modifying plans where appropriate.

Suncor indicated that it would take input from aboriginal stakeholders, consider the requirements of regulators with respect to reclamation, and incorporate them into a plan to address everyone's concerns in an integrated reclamation plan.

Suncor described its plans to reconstruct soils using a one-lift soil placement technique involving the hauling and spreading of an organic soil amendment to an average depth of 20 centimetres on a prepared subsoil and direct placing as much reclamation material as it could. Certain vegetative species would be planted directly, with the expectation that other species would establish naturally. Suncor's position was that it met the targets for species composition as outlined in the revegetation manual developed through multistakeholder forums.

10.3.2 Views of MCFN

MCFN expressed its concerns about the uncertainty of reclamation success and its desire to know what the relevant unknowns were in order to determine certainty for itself. MCFN also indicated that the area of land reclaimed was not keeping up with the area of land disturbed.

MCFN was concerned about Suncor's approach to replace a peat and mineral soil mixture, kick-start the revegetation by transplanting trees and shrubs, and then letting nature take its course over 50 to 80 years. It provided evidence that Suncor's monitoring to date had not shown a strong correlation between reclaimed areas and natural areas in terms of species composition, but Suncor argued that reclaimed areas were not mature enough to compare to mature natural ecosystems.

MCFN expressed the need for Suncor to adopt an appropriate environmental management system. MCFN also expressed a need for an improved EIA, transparency and communication regarding monitoring, data, and reclamation assumptions, transparent, complete, and accountable environmental and social management plans, and an EIA commitment register, including EIA commitment audits and verification by third parties.

MCFN requested that Suncor be required to submit detailed reclamation plans with targets defined having regard for MCFN TEK, using the forest floor (Litter Fibric Humic [LFH]) layer appropriately, setting appropriate time and growth or development benchmarks, providing for development of seed and plant material banks and orchards, and using infilling techniques.

10.3.3 Views of ACFN, WBMLA, and OSEC

ACFN was concerned that Suncor would not be able to achieve the reclamation that it predicted and anticipated a requirement for Suncor to achieve specified benchmarks for reclamation. ACFN's view was that more effort was needed to protect the portions of its traditional areas outside of Suncor's mine and the mineable oil sands zone.

WBMLA expressed its concern about the lack of credible reclamation plans for the mine sites and indicated that no plans were currently in place to include the views, knowledge, and opinions of the WBMLA with respect to reclamation issues. WBMLA requested that it be involved in reclamation planning.

OSEC was concerned about Suncor's use of effective reclamation as its primary terrestrial mitigation strategy, given the number of years of oil sands production in comparison to the number of hectares of certified reclaimed land. OSEC stated that due to the significance in length of time between disturbance and reclamation and the uncertainty regarding Suncor's ability to reclaim the land to a functional boreal forest with all of its ecosystem components, other means of terrestrial mitigation should be considered, in particular conservation through boreal forest offsets.

10.3.4 Views of Alberta

Alberta indicated that there was a risk that current conservation and reclamation practices might not meet all end-land-use objectives. Alberta requested the Board's support for inclusion of the following improvements in future approvals:

- placing a priority on the salvage of mineral soils for reclamation rather than the current peat/mineral mixes,

- salvaging all mineral soils unless not feasible, placing priority on “good” over “fair” subsoils, and
- increasing the minimum and average depth of peat/mineral mixes to be used.

Alberta was considering a requirement for Suncor’s participation in a multistakeholder process to produce a best management practices for reclamation in oil sands areas and a standard framework for measuring and determining reclamation performance. Alberta stated that there currently were no timelines defined for development of specific reclamation performance targets outside of the existing silvicultural survey, vegetation manual, and approval standards.

10.3.5 Views of the Board

The Board understands that not having structures available for reclamation limits reclamation progression. The Board believes that to the extent allowed by current technology, the oil sands industry should minimize the total amount of land disturbed at any given time and operators should strive to reclaim disturbed lands as soon as possible. The Board notes Suncor’s commitment to have sand capping completed in Ponds 5 and 6 in the years 2016 to 2019 and further notes that there is currently a requirement for Suncor to have Ponds 5 and 6 reclaimed to a trafficable surface by 2019. The Board also acknowledges Suncor’s commitment to have Pond 1 infilled with sand by 2009, allowing for surface reclamation in 2010.

The Board acknowledges MCFN’s request for enhanced soil conservation to reduce the risk associated with reclamation. The Board also recognizes that Alberta may condition Suncor’s approval so as to improve Suncor’s soil management practices by requiring it to salvage mineral soils, use the upland litter layer, and increase the depth of other soils where used. The Board recognizes that Alberta’s proposed changes to soil management may affect material balances and material handling as they relate to mine planning. The Board accepts that the conditions proposed by Alberta are a positive step towards reducing reclamation uncertainty. The EUB will work with Alberta and Suncor to minimize resource sterilization during implementation.

In the absence of environmental thresholds or reclamation performance management objectives, the Board believes it is prudent to adopt a precautionary approach on the issue of reclamation. The Board supports Alberta considering a condition that Suncor participate in a multistakeholder process to produce best management practices for reclamation and a standard framework for measuring reclamation performance. The Board also supports Alberta setting and enforcing timelines for the development of the above-noted management practices and frameworks. The Board expects Suncor and other operators to fully participate in any initiative that may be established.

11 GROUNDWATER

11.1 Views of Suncor

Suncor stated that it had developed a full understanding of groundwater resources beneath the VU site. Suncor believed that there was minimal risk of contamination migrating off site. Suncor

planned to mitigate against any detected adverse groundwater quality resulting from operations. It maintained that impacts on groundwater receptors from coke and sulphur stockpiles would be mitigated by engineering measures and the temporary nature of these facilities. Suncor noted that the measures would include engineered liners, a leachate collection system, and a closed-circuit drainage ditch and retention pond.

Suncor proposed an internal monitoring network near potential contaminant sources and a compliance monitoring well system to be included between potential groundwater receptors and contaminant sources at the VU Local Study Area (LSA). The monitoring network would double as a pumping mitigation network if contamination occurred.

Suncor indicated that sufficient detailed investigation had been conducted for the VU site and that additional investigations would only be required for the coke stockpile facility.

Suncor provided a hydrogeologic assessment of the NSME LSA and indicated that the groundwater regimes impacted by the proposed dewatering were well understood and that appropriate mitigation was included in its plan.

Suncor considered the surficial sandy outwash sediments to be minor aquifers. It stated that dewatering of these deposits prior to overburden removal would be undertaken where necessary. Suncor added that dewatering of the NSME wetlands may also affect adjacent wetland areas for a distance of up to 200 m from the edge of the mine. Suncor also stated that the maximum lateral extent of the induced drawdown during mining was predicted to be 900 m from the mine edge in the thin sandy outwash sediments of the till. However, Suncor noted that the results of the assessment indicated a low environmental consequence associated with this.

Suncor stated that the basal water sand or basal aquifer (BA), which defines the base of the McMurray Formation, formed an extensive aquifer at the base of the McMurray Formation across most of the mine footprint. Suncor planned to dewater the BA for safe development and operation of the NSME.

Suncor indicated that its groundwater modelling, which used the MODFLOW multipurpose three-dimensional groundwater flow code, had predicted drawdown in the order of 90 m in the northern part of the mine. Suncor's EIA predicted that the effect of drawdown in the BA would stop the current flow from the BA to the Steepbank River and would in fact reverse. This effect would be short term and have negligible impact on the flow in the Steepbank River. Suncor predicted that the effect of the drawdown from the combined activity of existing and approved mines would be greater than 10 m over an area of 200 square kilometres extending north and east.

Suncor's groundwater modelling predicted that the far-future heads in the BA would be tens of metres higher than baseline levels due to groundwater mounding resulting from increased recharge in the reclaimed areas. Suncor noted that the reasonable worst-case predicted seepage of process-affected groundwater to the Steepbank River valley would have negligible potential affects on aquatic health in the Steepbank River.

Suncor planned to verify its groundwater modelling prediction by installing a series of monitoring wells between the Steepbank River valley and the mine area.

Suncor believed that the Devonian limestone in the area of the Voyageur Project was not a regionally significant aquifer. Locally, the limestone might have higher permeability in the area of sinkholes or fractures, but the basal water sand was the primary aquifer. Sinkholes had been encountered by Suncor during mining and were noted to have been backfilled. Suncor indicated that it had no evidence of sinkhole collapse in the Voyageur Project area.

Suncor said that groundwater sampling and modelling indicated that the limestone was not a significant seepage area because the water table and head in the BA appeared to be under pressure. The pumping test completed within the BA indicated a very slow recovery following pumping, which suggested that connectivity within the BA was slow.

Suncor stated that it would develop a comprehensive groundwater monitoring plan, in conjunction with Alberta, which would include the Devonian limestone. Suncor indicated that it was committed to working with regulators to finalize the groundwater monitoring program for the Voyageur Project and would provide information on the program to stakeholders for review.

Suncor also stated that it would support Alberta's initiative to develop a regional groundwater program to both monitor cumulative effects and develop long-term objectives for groundwater quality and uses in the area.

11.2 Views of MCFN

MCFN found Suncor's hydrogeological modelling to be lacking, stating that it did not account for the possibility that the limestone was permeable or for the karstic potential of the formation. MCFN had concerns about the modelling assumption that the groundwater would return to previous levels. It stated that if groundwater levels did not return to the surface, there would be drawdown from areas beyond the mine's borders. MCFN indicated that not only would reclamation of the mine site be affected, but the adjacent wetlands could potentially be affected as well.

MCFN stated that there was a lack of investigation by Suncor into the character of the Devonian limestone. It added that the connection of the limestone to the Athabasca River, coupled with the possibility that it was a highly permeable layer, could cause significant transmission of contaminants to the Athabasca River. Additionally, MCFN noted that the possible presence of karstic features could speed up the flow of contaminants to the Athabasca River. MCFN stated that without consideration of the role of the limestone layers, there could not be any reasonable consideration of cumulative effects within the groundwater flow systems.

MCFN generally found that the present monitoring was inadequate to allow the determination of changing groundwater flow directions or the associated migration of chemical contaminants.

With respect to groundwater, MCFN recommended that

- approval be denied or delayed until Suncor completed further extensive monitoring at the local and regional scale, redesigned its modelling to include observed flows in BA and limestone, and used appropriate parameters from published literature and field observations,
- approval be considered only after a thorough and transparent review of modelling results, and
- a regional Athabasca basin water management system plan be adopted as part of the provincial water strategy. To instill public confidence, monitoring data from such a system should be made available to MCFN and the public.

11.3 Views of Alberta

Alberta stated that conditions of the site of the proposed upgrader with respect to geology and hydrogeology had been adequately characterized by Suncor. However, Alberta added that additional investigation to the south (Lease 23) by Suncor may be required.

Alberta noted that the evidence of MCFN that the Devonian limestone was highly permeable and was the dominant aquifer in the region was not consistent with the data gathered to date. Alberta did not agree with MCFN's characterization of the geology or its assessment of the risks of groundwater contamination. Alberta stated that the limestone may exhibit higher permeability in local areas, but that this would not be prevalent across Suncor's LSA. Alberta noted that compared to other geologic media, such as the BA, the limestone would not exhibit substantial volumes of groundwater flow. Alberta stated that the limestone at the mining scale being considered would essentially behave as an aquitard.

Alberta acknowledged that it was not aware of a detailed study of the karstic system within the Devonian limestone in the oil sands region. However, Alberta did state that karst formation would have occurred primarily when the Devonian limestone was at the ground surface and that subsequently there had been multiple erosive events and deposition, or infilling, of various materials, such as the McMurray sands. Alberta did not expect these karsts to be a continuous system and did not see a strong need for such a study.

Alberta's opinion regarding the groundwater modelling conducted by Suncor was that it was appropriate for the intended purpose of predicting seepage flows to the Steepbank River.

In addition to project-specific concerns, Alberta acknowledged the need to address regional groundwater quality. It noted that information on regional groundwater quality in the oil sands region was somewhat limited and that there was no coordinated effort to integrate monitoring data across the region to understand potential regional impacts on groundwater. Alberta stated that a decision on whether the program would be managed through RAMP or some other forum had not been made, but discussions were in the initial stages. Alberta also indicated that the program would include monitoring of deeper formations, such as the Devonian limestone.

Alberta was interested in engaging and partnering with existing regional stakeholder groups to develop a regional groundwater program to both monitor cumulative effects and develop long-term objectives for groundwater quality and uses in the area.

Alberta stated that any *EPEA* approval that may be issued for the Voyageur Project may require Suncor to conduct groundwater monitoring and mitigation. Three specific requirements that may be included were

- completion of a detailed site investigation at the locations of the sulphur and coke storage facilities prior to construction— detailed site investigations determined that site conditions differed from those assumed in the EIA, additional engineering mitigative measures or alternative locations would be required;
- investigation of seeps adjacent to the Athabasca River to be included in the monitoring program; and
- development of a detailed groundwater monitoring and mitigation proposal for the Voyageur Project. The proposal would be consistent with the site-wide groundwater management plan Suncor was updating as part of its existing operations.

11.4 Views of the Board

The Board agrees with Alberta that Suncor has sufficiently characterized the hydrogeological conditions at the Upgrader site, or Fee Lot 2. However, in recognition of the apparent information gaps farther south (Lease 23), the Board supports a possible requirement by Alberta that Suncor complete a detailed site investigation at the locations of the sulphur and coke storage facilities prior to construction.

The Board notes Suncor's proposal of a monitoring network at the VU LSA that will double as a pumping mitigation network if contamination occurs. However, in recognition of the conceptual nature of this plan, the Board supports Alberta's requirement that Suncor develop a detailed groundwater monitoring and mitigation plan for the entire Voyageur Project. The Board expects Suncor to continue to provide monitoring results as required under *EPEA* for compliance. Responses to requests for additional monitoring data by stakeholders or other parties are within Suncor's discretion.

The Board is of the understanding that mine dewatering to drain the overburden and depressurize the BA is a necessary part of mining the bitumen resource. The Board accepts Suncor's assessment that the surficial aquifer at the mine area is minor in nature and could be drained prior to overburden removal. The Board accepts that there will be mine dewatering impacts on surface water resources, including wetlands, which Suncor stated would be limited to a predictable distance from the mine area and would have a low environmental consequence.

The Board also accepts that depressurization of the BA, although having a drawdown area, is essential for safe mining operations to occur. The Board acknowledges that Suncor's modelling of future effects are estimates, which are prone to uncertainty due to the complex nature of the geology. However, the Board understands that the modelling is based on industry- accepted practice, and the Board agrees that for the intended purpose, Suncor's modelling is acceptable.

The Board believes that the Devonian limestone at the NSME does not constitute a major aquifer system. Rather, the Board agrees with Suncor and Alberta that the BA is the primary aquifer.

However, the Board notes that Suncor did indicate that the groundwater monitoring plan will include the Devonian limestone formation.

The Board is not convinced that karsts or sinkholes that may exist are likely to form a continuous system for contaminant transport, as suggested by MCFN. The Board notes that Suncor stated that the sinkholes it had encountered were backfilled and that there was no evidence of sinkhole collapse in the Voyageur Project area. The Board also notes that MCFN did not have any related local evidence to support its theory. The Board further notes that Alberta did not see a strong need for a detailed study of the karst system based on its understanding of karst development.

The Board reiterates its support for Alberta's potential requirement that Suncor develop a detailed groundwater monitoring and mitigation plan for the entire Voyageur Project. The Board expects that Suncor will work closely with Alberta to finalize the details of such a plan.

The Board notes that Suncor indicated it will support Alberta's initiative to develop a regional groundwater program to both monitor cumulative effects and develop long-term objectives for groundwater quality and uses in the area. The Board fully supports such an initiative and supports Alberta developing a plan and timeline to conduct this work.

12 SURFACE WATER

12.1 In-stream Flow Needs

12.1.1 Views of Suncor

Suncor stated that due to efficiencies in its process, integration with existing operations, and enhanced water recycle initiatives, it would be able to increase its production to 87 500 m³/d of upgraded bitumen without the need for additional water withdrawals from the Athabasca River.

Suncor stated that it was in agreement with the evidence provided by AENV that the In-stream Flow Needs (IFN) and water management framework would allow water use for the Voyageur Project to take place with a high degree of environmental protection. With the IFN and water management framework in place and because the Voyageur Project would not increase withdrawals beyond Suncor's current water allocation, Suncor stated it was confident that there would be no impact on the Athabasca River from the Voyageur Project.

Suncor stated that once IFN requirements were in place, it would make the necessary changes to its operations to comply with applicable regulations.

12.1.2 Views of ACFN

ACFN stated that it had significant concerns about water withdrawal from the Athabasca River and with the draft AENV interim IFN and water management framework. ACFN noted that because Suncor was not applying for any additional water licence and because the AENV interim IFN and water management framework had yet to be finalized, that ACFN had no further comment on this topic.

12.1.3 Views of MCFN

MCFN stated that it was concerned about changes that had been made to the January 2006 draft of the AENV interim IFN and water management framework. MCFN stated that it believed that those changes that had been made, particularly the removal of a cutoff withdrawal limit, had resulted in a framework that would not be protective of the Athabasca River. MCFN requested that the Board recommend to AENV that it re-examine the provisions in the interim IFN with a view to ultimately protect the ecology in the Athabasca River basin. MCFN stated that it believed the end of 2008 was an appropriate time period for CEMA to produce recommendations with respect to an IFN on Reaches 1, 2, and 3 of the Athabasca River.

12.1.4 Views of Alberta

Alberta recognized that the Voyageur Project would not require additional water beyond Suncor's existing *Water Act* allocation, but it would result in an increased demand for water within that licence.

Alberta noted that significant work had been completed by CEMA towards producing an IFN and water management framework for the lower Athabasca River. The Alberta Government released a draft interim IFN and water management framework in January 2006 to backstop CEMA's efforts. AENV stated that it was finalizing its joint IFN and water management framework for water use from the lower Athabasca River with the Department of Fisheries and Oceans (DFO). AENV noted that the framework would include the reach of the river adjacent to the Voyageur Project. AENV stated that it intended to have the joint framework in place in time for any licences arising from the Voyageur Project and any subsequent applications.

AENV did not agree that recent drafts of the IFN framework were less protective than previous drafts. AENV identified that discussions around the IFN framework would continue and consideration would be given to issues such as a cutoff withdrawal limit, which would need to be predicated on a level of data that AENV and DFO currently did not have.

It was Alberta's position that water use for the Voyageur Project and for other future projects, if approved, could take place with a high degree of environmental protection using the joint IFN and water management framework. AENV noted that the framework was intended to provide a fair and reasonable balance between environmental protection and economic development.

AENV noted that the IFN and water management framework represented significant progress in recommendations addressing cumulative environmental effects in the region.

Alberta stated that with respect to timelines for specific work that CEMA was completing, given that CEMA was a consensus-based organization, Alberta felt that those were discussions that should occur at the CEMA table with the appropriate scientific, community, and industry representatives.

12.1.5 Views of the Board

The Board acknowledges the effort that CEMA, AENV, and DFO have made towards developing the IFN recommendations for the lower Athabasca River by the end of 2005. The Board agrees with AENV's statement that the pending AENV/DFO framework represents significant progress in recommendations addressing cumulative environmental effects in the region.

The Board acknowledges that Suncor is not requesting an increase in its water licence but that Suncor would have a larger withdrawal from the system because of the additional water needs of the Voyageur Project.

The Board is supportive of industry operators working together to meet the objectives in the pending framework. The Board believes that Suncor and other operators must work with AENV and DFO on developing integrated water management practices that would assist all operators in collectively meeting the targets in the finalized joint AENV/DFO IFN and water management framework. Given the evidence by AENV that the IFN and water management framework will consist of two phases, the Board expects Suncor to participate in the work required for the second phase.

The Board notes that a finalized backstop IFN and water management framework has not yet been released by AENV and DFO. The Board also notes that AENV indicated that a finalized framework would be released prior to licences being required for the Voyageur Project and any subsequent applications. The Board supports this timing.

The Board agrees with AENV that the timelines for the completion of specific CEMA work should be raised at the CEMA table with the appropriate stakeholders involved. The Board's views regarding CEMA can be found in Section 15.5 on the Regional Environmental Initiatives.

12.2 Modelling

12.2.1 Views of Suncor

Suncor stated that it was confident that the modelling applied in the Voyageur Project was conservative and that the conclusion of negligible residual impacts on the aquatic ecosystems was valid.

Suncor stated that with respect to the Hydrologic Simulation Program-Fortran (HSPF) model, the model manual provided basic parameters and ranges of parameters. Suncor noted that when calibrating the model, attention must be given to the specifics of the area to which the model was being applied. Suncor stated that all current and recent applications had some values outside of the manual notes, which was acceptable as long as they could be justified from where the model was being applied.

Suncor stated that the application of the HSPF model and the derivation of 7Q10 values for the Voyageur Project EIA were consistent with the direction given by AENV. Suncor noted that

AENV stated that the modelling used in the Voyageur Project was state of the art and likely the best given current knowledge.

Suncor stated that the aquatics study area selected in the EIA did not extend past the Embarras Portage because Suncor did not believe that there would be any measurable effects from the Voyageur Project past that point. Suncor noted that RAMP information collected to date had given no indication that there had been any effect from Suncor's operations on an ongoing regular operational basis past the Embarras Portage.

12.2.2 Views of MCFN

MCFN indicated that it had requested raw data from Suncor that was used in its EIA numerous times since the filing of its applications, and that Suncor had denied its requests. MCFN indicated that it did not believe that the Voyageur Project was in the public interest since Suncor had not fully disclosed how it would fulfill its commitments to manage the environmental impacts of its project.

MCFN stated that it did not believe that Suncor's modelling adequately addressed climate change. MCFN also stated that the aquatic study area may not be meaningful, the 7Q10 input was outdated, and there were problems with the calibration and selection of parameters for the HSPF model. MCFN stated that parameter selection and predictions must be checked to see if they complied with the science, literature, and accepted databases. MCFN stated that if parameters or results were outside of the expected ranges, they should be justified and explained.

MCFN noted that inaccurate hydrological predictions could result in the underestimation of floods, erosion, droughts, and soil moisture availability of reclaimed areas. MCFN stated that this could affect Suncor's ability to reclaim the area properly.

MCFN stated that oil spills in the area had happened from oil sands operations and that the probability was high that more would happen in the future. MCFN also stated that the risk of extreme events would increase due to climate change and the long life of these projects. MCFN therefore recommended that an oil spill dispersion analysis be conducted to better understand the paths, velocities, and maximum distances of contaminants related to Suncor's operation. MCFN stated that it believed that this study would be justified and could confirm modelling predictions that impacts past the Embarras Portage were unlikely.

MCFN recommended that Suncor's approval be denied or delayed until further extensive monitoring occurred, including an oil spill dispersion analysis. MCFN stated that Suncor's models should then be redesigned and expanded based on those results and based on appropriate parameters from published literature and field observations. MCFN stated that consideration for approval should only be given after a thorough and transparent review of the modelling results.

12.2.3 Views of Alberta

AENV stated that it disagreed with MCFN's contention that the hydrological conclusions in Suncor's EIA were highly questionable. It maintained that the values used by Suncor for the

HSPF model were within the suggested range of the most recent manual. AENV noted that the HSPF model represented the full range of flows adequately and had been conducted by Suncor as directed by AENV.

AENV stated that the HSPF model represented a conservative approach. It recognized that the Voyageur Project modelling was state of the art and likely the best that could be done given current knowledge. However, Alberta noted that there were uncertainties associated with modelling predictions. Alberta stated that it was therefore concerned about ensuring the ongoing validation of results and might include in any *EPEA* approvals issued a condition requiring Suncor to conduct additional monitoring. Alberta noted that stakeholders in the region might find it more valuable to work within a multistakeholder group such as CEMA, which could provide guidance review and ongoing refinement of current modelling methods for surface waters.

12.2.4 Views of the Board

The Board notes that during the hearing process it was disclosed that Suncor agreed to put all relevant hydrological and hydrogeological data in a centralized location for review by MCFN. The Board supports this approach, but it recommends that in the future such data exchanges occur with interested stakeholders prior to the hearing.

The Board notes MCFN's view that there are limitations associated with current EIA modelling practices. However, the Board agrees with AENV that the modelling used in Suncor's application is appropriate given current knowledge and technology. The Board also agrees with AENV that ongoing validation of modelling results is a key component of any management approach that uses modelling. The Board therefore would support Alberta requiring Suncor to undertake further hydrologic data collection and verification of model predictions. In addition, the Board believes that an ongoing review of EIA modelling practices could be completed by a multistakeholder group such as CEMA. The Board expects Suncor to implement any recommendations in modelling procedures that CEMA may produce. The Board also notes that where available and appropriate, peer-reviewed scientific literature should be considered in the EIA to support the modelling methods and predictions.

With respect to the MCFN's request that an oil spill dispersion analysis be conducted, the Board notes that individual operators have emergency spill response plans and there is a local area spill cooperative. The Board acknowledges that the aquatics study area is based on modelling predictions that do not presently predict impacts past the Embarras Portage to be likely. The Board also notes that RAMP results to date have not indicated that impacts past the Embarras Portage have occurred. The Board agrees that there is a risk of future spills as a result of oil sands operations, but it recognizes this as a regional issue and, not one that is specific to Suncor's applications or its operations. The Board notes that results from such an analysis could alleviate concerns about the boundaries of the aquatic study area used in EIAs and could also confirm that the existing spill response measures are adequate. The Board will therefore ask EUB and AENV staff to consider further the feasibility and validity of MCFN's request for an oil spill dispersion analysis.

12.3 Water Quality

12.3.1 Views of Suncor

Suncor stated that EPLs are a designed system based on recognized science. Suncor also stated that the results of research projects to date demonstrated that these systems were effective in treating tailings water. Suncor noted that after filling was initiated, water quality testing would occur throughout the filling period to allow the opportunity to measure the water quality change over time. Suncor indicated that it had not yet applied to release EPL waters, but predicted that it would take eight to ten years before waters within the EPLs would be acceptable for release. Suncor stated that it would also implement a groundwater monitoring plan to monitor for seepage. Suncor noted that if required, the monitoring wells could be used as interception wells. Suncor committed to treating the EPL to a level that would be acceptable for transfer or through disposal by other acceptable means should the deposition of tailings in EPLs not prove to be a viable option.

Suncor stated the water quality modelling conducted for the Voyageur Project was conservative. It noted that with the implementation of appropriate mitigation activities, such as those identified above and in the application, the activities associated with the Voyageur Project would have negligible environmental effects on the water quality of potentially affected surface water bodies. Suncor noted that the effect of water quality on fish health and fish tainting would also be negligible.

Suncor stated that it felt that its EIA adequately considered groundwater and surface water resources, but if regulators were to initiate a regional groundwater study or should CEMA initiate work to develop an oil sands industry-specific water quality index, as a developer in the region and a member of CEMA, Suncor would participate in that process and support whatever decisions resulted.

12.3.2 Views of MCFN

MCFN stated that its concerns regarding water quality were associated mainly with tailings and EPLs. MCFN recommended that the Voyageur Project be delayed or denied approval until Suncor had demonstrated the efficacy of CT technology or until Suncor adopted dry, stackable tailings. MCFN was concerned that under anaerobic conditions, CT would react differently and in fact begin to desegregate. MCFN stated that surface water and groundwater were linked and should not be examined in isolation. MCFN stated that it believed that the end of 2007 was an appropriate time period for CEMA to develop recommendations with respect to specific water quality objectives for the lower Athabasca River.

12.3.3 Views of Alberta

AENV stated that the surface water assessments, including the water quality predictions, were based on modelling that reflected conservatism and were currently state of the art.

AENV stated that given the uncertainty that existed with respect to water yield and the quality of the reclaimed landscape, AENV could include the following *EPEA* approval conditions:

- require Suncor's continued participation in CEMA working groups on surface water quality-related matters;
- require Suncor to provide a schedule for testing and updating water quality modelling predictions; and
- require Suncor to provide a research schedule that included the testing of EPL predictions and design features with a physical test case in conjunction with other oil sands companies.

Alberta stated that in regard to timelines for specific work that CEMA was completing, given that CEMA was a consensus-based organization, those were discussions that should occur at the CEMA table with the appropriate government, community, and industry representatives.

12.3.4 Views of the Board

The Board notes Alberta's evidence that the water quality predictions in the EIA were the result of conservative modelling and based on the best knowledge of today. However, the Board agrees with AENV and sees merit in the ongoing review of modelled practices. The Board therefore supports AENV's intentions in this regard. The Board would also support AENV including a condition in any approvals to be issued to Suncor that Suncor develop and implement, in consultation with Alberta and affected stakeholders, a comprehensive monitoring program that would augment the existing RAMP program. In addition, the Board believes that an ongoing review of EIA modelling practices, possibly to be undertaken by a multistakeholder group such as CEMA, would be useful. In any event, the Board would expect Suncor to implement any recommendations in modelling procedures that CEMA may produce.

The Board notes that CEMA is currently developing site-specific water quality objectives for the lower Athabasca River. The Board would support AENV if it chose to enforce the timelines for this work through the use of a regulatory back-stop, applicant responsibility, or other means acceptable to the applicant and stakeholders. The Board expects that Suncor will support CEMA in its efforts to develop water quality objectives for the lower Athabasca River by continuing to participate. The Board notes AENV's evidence that those parameters identified through the reach-specific water quality objectives work that are specific to this region could be used in a reformulation of what is currently in the Alberta River Water Quality Index. Given that the existing water quality guidelines are not necessarily specific to the watercourses and water bodies within the oil sands region, the Board supports CEMA completing that work.

Given the uncertainty that exists with respect to EPLs, water yield, and quality of the reclaimed landscape, the Board is in agreement with Alberta's suggested *EPEA* approval conditions. The Board's views on EPLs are in Section 8.4.4 on End Pit Lakes. The Board agrees with AENV that the timelines for the completion of specific CEMA work should be raised at the CEMA table with the appropriate stakeholders involved. The Board's views regarding CEMA are in Section 15.5 on Regional Environmental Initiatives.

13 HEALTH EFFECTS

13.1 Arsenic Risks

13.1.1 Views of Suncor

At the request of AHW, Suncor completed an extremely conservative analysis of potential arsenic exposures for background conditions associated with the Voyageur Project. It was Suncor's view that this analysis was consistent with conservative modelling assumptions commonly used and with health assessment protocols. The modelling assumed that half the detection limit for arsenic was present in moose meat samples, even though no traces of arsenic were detected in these samples, and that an individual living in the region would eat country foods of moose, fish, and cattail root every day of his or her entire life.

Suncor acknowledged that based on these extremely conservative assumptions, the analysis indicated that background risk of cancer from arsenic exposure was predicted to be 452 in 100 000. With the addition of the Voyageur Project, the predicted exposure number increased by one to 453. Despite the negligible impact of the Voyageur Project on the predicted exposure, Suncor, prior to the public hearing, volunteered to conduct a study of predicted increased cancer risk as a result of arsenic exposure in the region. Suncor submitted that this issue was now being addressed by AHW, was regional in nature, and was not related to the Voyageur Project. Suncor stated that AHW confirmed in its evidence that it would not require Suncor to conduct such a study as originally contemplated.

It was the view of Suncor that there were established mechanisms, including the issuance of public advisories, that were more effective at addressing this issue than a condition in an EUB approval for the Voyageur Project. Suncor submitted that there was no evidence establishing that the arsenic issue would be resolved or mitigated by denying approval of the Voyageur Project.

13.1.2 Views of ACFN

The issue raised by AHW was alarming for ACFN due to the size of the modelled cancer risk from arsenic in moose tissue and cattail root. ACFN noted that it was not contacted by AHW directly before or after the release of this information and was not involved in the development or the conduct of the recommended study, except to potentially provide moose samples. ACFN said that the approach by AHW was very disappointing and was also inconsistent with AHW's legal obligations to consult. ACFN submitted that Suncor's minimization of its contribution to the risk was typical of the corporate approach of most developers in the region and that the risk should be considered in context of Suncor's entire regional impact and be rejected at least as a justification for lack of corporate responsibility.

ACFN requested that the Board direct AHW to send it the results of its arsenic study and that ACFN should be given the opportunity to submit comments with respect to the study and its results. Should this occur after the Board rendered a decision, ACFN requested that any approval issued to Suncor be conditional upon a reconsideration of its terms based upon the results of the arsenic study at the request of ACFN or by the Board's own motion.

13.1.3 Views of MCFN

Along with other aboriginal people in the area, MCFN expressed concern about the apparent predicted arsenic levels in moose and cattail root and eagerly awaited the results of the proposed new studies.

13.1.4 Views of Alberta

It was AHW's view that there was a potential for health impacts as a result of exposure to arsenic in subsistence foods if the predictions from Suncor's analysis were confirmed. Therefore, AHW contracted a consultant to provide an independent review and assessment of the predicted risk. The final report was expected to be available by the middle of September 2006, pending the availability of moose meat tissue and cattail root samples. Given the regional implications of this issue and the predicted contribution from Suncor, albeit small, AHW requested that the Board consider the need to review any approval that may be issued for the Voyageur Project in light of the report's findings.

13.1.5 Views of the Board

The Board accepts that the conservative nature of the health risk assessment likely led to the high predicted health risks from arsenic exposure and that the actual risks may be much lower. The Board notes that AHW intends to follow up with an independent review of health risks from arsenic exposure, and the Board supports this intention. The evidence shows that the contribution of the Voyageur Project to the modelled risk is negligible; therefore, the Board will not condition the approval of this project based on the outcome of the arsenic study. However, if elevated risks to human health from arsenic exposure are confirmed, the Board would require Suncor and other operators in the area to take appropriate actions to address the problem.

13.2 Fort Chipewyan Health Study

13.2.1 Views of Suncor

It was Suncor's view that AHW and the Alberta Cancer Board (ACB) agreed to examine data related to cancer and other conditions of concern, as expressed by MCFN and others at EUB hearings held in the fall of 2003. Suncor understood that the results of this study were released to the public for the first time by AHW at this hearing. Taking into account the results of this study, Suncor submitted that should the EUB approve the Voyageur Project, the approval should not contain any conditions related to this issue.

Suncor submitted that to condition the approval to require Suncor to provide financial assistance to prepare a baseline health study was beyond the Board's jurisdiction. Suncor indicated that it was supportive of the current process under way to assess the need of a baseline health study.

13.2.2 Views of ACFN

ACFN submitted that the evidence tendered by AHW was an unreliable analysis, lacking validity, as demonstrated in evidence. ACFN felt that AHW was unable to explain how residency was determined and how the study accounted for Fort Chipewyan residents who may have

relocated to access treatment or for other reasons. It was ACFN's view that the results of the study did not address the concerns of ACFN and did not negate the commitment of Suncor to participate in the Fort Chipewyan baseline health study. ACFN reaffirmed its commitment to participate in this study and its importance and expected Suncor to fulfill its commitment to participate in this endeavour.

13.2.3 Views of MCFN

MCFN recognized that AHW chose to unveil at these hearings a statistical study of the incidence of certain diseases and mortalities in Fort Chipewyan and the Northern Lights Health district. MCFN felt that the study did not reassure the people of Fort Chipewyan about their health concerns and the study was so flawed that it had the opposite effect. MCFN suggested that the Board completely ignore Alberta's evidence in respect to this study. MCFN advocated for a baseline health study and felt that Suncor had conditionally agreed to support it. MCFN submitted that AHW would conduct a community health assessment for it and was in support of this.

MCFN asked the Board to condition any approval of these applications to require that Suncor provide financial and other assistance as required so that a proper baseline health study of MCFN's people could be completed.

13.2.4 Views of WBMLA

WBMLA provided evidence to the Board about its health concerns as result of Suncor's and other oil sands development in the Wood Buffalo area. WBMLA stated that its members lived and harvested up and down the Athabasca River and that they consumed country foods. WBMLA's view was that the evidence clearly established that the Métis as residents of Wood Buffalo practiced traditional harvesting and consumed traditional foods, yet the WBMLA and its organizations were not included in the parameters of the AHW statistical study.

WBMLA encouraged the Board in its decision to direct that a comprehensive health study in the region be commenced that would include the WBMLA. WBMLA stated that it wanted to be actively involved in setting up the parameters of any future studies and to work with health study administrators to address implementation and adaptation of any health study methodologies or techniques. WBMLA asked the Board to give it the opportunity to submit comments with respect to the study and its results. Should this occur after the Board rendered a decision, WBMLA stated that any approval issued to Suncor ought to be conditional upon a reconsideration of its terms based upon the results of health studies.

13.2.5 Views of Alberta

AHW presented a statistical study of data from the Alberta Health Care Insurance Plan, which included the membership of ACFN and MCFN, for the purposes of assessing the incidence of certain illnesses. AHW stated that the examination of cancer registry data shows that the rates of cholangiocarcinoma, leukemia, lymphoma, and other cancers were not elevated among residents of Fort Chipewyan. AHW further submitted that the prevalence of Graves' disease, rheumatoid arthritis, and congenital anomalies were not elevated among residents of Fort Chipewyan.

Alberta said that the treated incidence of asthma and chronic obstructive pulmonary disease (COPD) was lower among residents of Fort Chipewyan. AHW maintained that the proportion of the population being treated for lupus appeared to be elevated for both Fort Chipewyan and the Northern Lights Regional Health Authority compared to the rest of Alberta. However, AHW noted that there was no difference between the rates in 1995 and 2005 for lupus. Based on an examination of mortality records for the period 1983 to 2004, AHW submitted that the annual number of deaths was no different from what would be expected. AHW concluded that the residents of Fort Chipewyan had lower cancer mortality than Albertans in general.

AHW submitted that the results of the statistical study would be presented to the regional stakeholders more formally at a later date. Depending on the feedback from stakeholders, AHW stated that it would be prepared to work with aboriginal groups in the region to do a community health assessment.

13.2.6 Views of the Board

The Board notes the evidence presented by AHW on the incidence of certain illnesses and mortality in Fort Chipewyan. The Board understands that some interveners dispute the results of this statistical study and assert that further baseline health studies or community health assessments are needed.

The Board notes that AHW will assess the need for further health studies after meeting with stakeholders to discuss the results of the statistical study. The Board believes that this is the appropriate course of action to address the concerns of the interveners and, as such, will not condition the approval of the Voyageur Project so as to require Suncor to provide financial support to a baseline health study.

14 TRADITIONAL LAND USE AND ENVIRONMENTAL/ECOLOGICAL KNOWLEDGE

14.1 Views of Suncor

Suncor stated that the Voyageur Project would have an incremental impact on the traditional uses of the land impacted by the NSME and VU footprints. It was Suncor's position that the traditional land use (TLU) areas cited in the application were based on publicly available information. Suncor committed to compensate trappers, update TEK information for consideration in the final design of the Voyageur Project, and consult with aboriginal people regarding reclamation techniques for traditional and medicinal plants. Suncor's position was that its application was filed in accordance with the TOR as defined by Alberta.

14.2 Views of MCFN

MCFN stated that it freely shared TEK with companies that wished to incorporate it into projects by entering into sharing agreements. MCFN gave evidence that Suncor's effort to incorporate its TEK was less than desired. MCFN also gave evidence that the TLU area outlined in Suncor's applications was inaccurate and not based on the most recent information available.

MCFN indicated that sharing agreements were not intended to restrict the use of TEK, but were used as a standard protocol to ensure accuracy in the interpretation and incorporation of TEK. MCFN and Suncor did sign a sharing agreement two weeks before the hearing, and Suncor was able to start a process to collect TEK and incorporate it into the Voyageur Project. MCFN indicated that it would like Suncor to gather and properly incorporate MCFN TEK into Suncor's project design.

MCFN stated its position that consultation should also include the sharing of sufficient information with stakeholders in order for the stakeholders to understand the impacts of the Voyageur Project and the remediation measures proposed. MCFN requested that Suncor provide MCFN with the information requested during the hearing and an appropriate opportunity to review that information and share concerns with regulators.

14.3 Views of ACFN

ACFN expressed its concern that the EIA did not properly measure project impacts. ACFN stated that unless it had a good understanding of the impacts that had occurred to date and were projected to occur, it would be unable to assess the effectiveness of the proposed mitigation with a desirable level of confidence. ACFN gave evidence that the scale of oil sands mining and development on ACFN traditional lands continued to accelerate, and it was concerned about the potential impacts of development on not only the mined area, but also the surrounding area.

ACFN requested an assessment of the economic, environmental, and social (including cultural) impacts of the Voyageur Project on ACFN on an individual project and cumulative basis using a predevelopment baseline. ACFN presented an ultimate goal of developing a mitigation strategy for preserving traditional lands outside of the mineable zone. ACFN was concerned about the escalating population in Fort McMurray and how access to the Richardson Back Country area (adjacent to ACFN reserves) for recreational purposes would affect traditional activities and sensitive ecosystems in the area.

14.4 Views of WBMLA

WBMLA was concerned that the application contained no Métis-specific TLU data. WBMLA stated that it would like to be consulted regarding its traditional land use and knowledge in preparation of such projects.

14.5 Views of the Board

The Board acknowledges Suncor's incorporation of published TEK from aboriginal groups into its Voyageur Project. The Board recognizes that Suncor's efforts may have been viewed by some stakeholders as less than desired or inaccurate. The Board agrees that a better effort could have been made by Suncor to include WBMLA's and MCFN's TEK. The Board recognizes Suncor's commitments to update TEK information for consideration in its final design, consult with aboriginal people regarding traditional and medicinal plants, and compensate trappers. It is the Board's view that the inclusion of TEK into project development is a responsibility that continues throughout project planning, design, implementation, and closure. The Board expects

that Suncor will meet its commitment of updating TEK, including that of MCFN and WBMLA, and will consider TEK throughout all stages of its project design and development.

15 REGIONAL ENVIRONMENTAL INITIATIVES

15.1 Views of Suncor

Suncor stated that regional environmental initiatives were important for providing information and advice that supported its goals of responsible development. Suncor held the opinion that the multistakeholder processes were fulfilling their mandates and that the rate of threshold and framework development might be less than desired by some stakeholders due to the consensus-based forum in which decisions were made. Suncor stated that it was an active member in each of the regional environmental initiatives and continued to be a leader through input of financial backing and active representation and involvement in setting direction and ensuring that the initiatives achieved their goals.

Suncor did support Alberta's initiative to develop a regional groundwater program to both monitor cumulative effects and develop long-term objectives for groundwater quality and uses in the area. Suncor would participate in and support a regional decision to develop a water quality index intended to characterize oil sands-specific contaminants and streamline and simplify routine water quality analysis.

15.2 Views of MCFN

MCFN expressed frustration with CEMA's progress towards recommending thresholds and limits for mitigation of impacts from oil sands development. MCFN was concerned about Suncor's and other operators' dependence on CEMA for studying, understanding, and adjusting the cumulative impacts of a project on the surrounding environment.

MCFN stated that the CEMA process was flawed and imbalanced in terms of its consensus function and the representation on its committees. MCFN believed that CEMA was addressing important issues but had some concern regarding emerging issues, such as groundwater quality and quantity and wildlife.

MCFN supported implementation of government interim management strategies and deadlines being set by AENV for the delivery of the Regional Sustainable Development Strategy (RSDS) products by CEMA. MCFN was committed to participating in CEMA in areas where achievable targets had been set and for which the Alberta Government was prepared to backstop in the event of failure of measurable progress towards targets. MCFN emphasized key areas where it felt a regulatory backstop would be beneficial:

- IFN for Reaches 1, 2, and 3 of the Athabasca River,
- water quality objectives for reaches of the Athabasca River,
- completion of the Muskeg River Watershed Integrity Plan,
- completion of an Athabasca River Watershed Integrity Plan,
- air contaminant management framework,

- regional reclamation guidelines and management standards for EPLs, wetlands, and ecosystem diversity, and
- regional sustainable ecosystem management.

15.3 Views of OSEC

OSEC was concerned about CEMA's ability to deliver a management framework to protect terrestrial ecosystems through the Sustainable Ecosystems Working Group (SEWG). OSEC stated that background research, terms of reference clarity, unrealistic deliverables, and weak government involvement, particularly from SRD, all led to delays in CEMA's productivity.

OSEC also argued that the Ozone Management Framework and ADMF were not performing the function intended. OSEC stated that AENV and the Board should require proponents to present information in their EIAs to allow comparison to the frameworks. OSEC also stated that Alberta should either commit to implementing the frameworks or advise CEMA at the time frameworks were at the agreement stage that it did not intend to implement them or which parts it would not implement (despite adopting the framework). OSEC requested a regulatory backstop and the development of interim thresholds for wildlife habitat quality and landscape conditions in the event that SEWG did not produce results by the second quarter of 2008.

15.4 Views of Alberta

Alberta stated that RSDS was being implemented in partnership with CEMA. Alberta emphasized the importance of CEMA through a summary of CEMA deliverables, which included technical reports, environmental management tools for improving reclamation and reducing the impact on terrestrial resources, and frameworks to manage trace metals, acid deposition, and ground-level ozone. Alberta stated that stakeholder support for CEMA, WBEA, and RAMP was critical to the success of these groups.

Alberta did agree that a consensus-based process might take more time than other processes. Alberta recognized that the pace of development was extremely high and noted that all organizations were trying to manage workloads and resources in order to meet the pace of development. However, that same pace had also led to necessary resources being added to CEMA to move forward. Alberta stated that stakeholders had put time towards CEMA in an effort to establish a management framework to manage cumulative effects. Alberta also stated that CEMA was a voluntary organization that decided where it would allocate its resources, and that different stakeholders decided whether to put their own resources into the CEMA process or other processes. Alberta provided evidence of involvement in CEMA, but also expressed an ability to backstop CEMA as its process went forward.

Alberta's opinion was that the release of the interim IFN led to significant progress in recommendations addressing cumulative environmental effects on air quality, terrestrial resources, reclamation, and surface water in the region. Alberta was clear that it was not at the point of discussing an appropriate timeframe as a regulatory backstop for reclamation performance measurements. In response to MCFN's suggested timelines for framework development, Alberta did commit to taking the suggested dates under advisement and back to the CEMA table for consideration.

15.5 Views of the Board

The Board does not view the consensus decision-making process of CEMA as being imbalanced given the recognition of non-consensus when recommendations are put forward to regulators; however, the Board does recognize a resource imbalance within CEMA. The Board believes it would be appropriate for Alberta to initiate a review of CEMA's purpose, priorities, and timelines. The Board also encourages CEMA to define a mechanism for reporting progress against goals, work plans, and CEMA objectives. The Board does recognize stakeholder frustration with the pace of developing targets and timelines for IFN, water quality, watershed integrity, wildlife, reclamation performance, ozone management, and acid deposition. The Board's views regarding specific frameworks are in other sections of in this report.

The Board believes that CEMA's work is valuable and that the results may assist the EUB in meeting its regulatory mandate to ensure that energy developments are carried out in an orderly and efficient manner that protects the public interest. The Board also recognizes that CEMA is a voluntary organization affected by stakeholder resource allocation. Industry members may be conditioned by their *EPEA* approval to participate in CEMA activities, however, participation is not so defined for other stakeholders. The allocation of CEMA funding is determined by the CEMA membership itself.

The Board believes that all participants in regional initiatives, including CEMA, can assist the process by setting reasonable goals, timelines, sequencing, and priorities. In particular with respect to CEMA, the Board encourages CEMA members to outline their expectations and the resource allocation needed for such initiatives in order to determine whether the members' goals and timelines are practical and achievable. The Board supports Alberta enforcing the timelines set within the regional initiatives through the use of regulatory backstops, applicant responsibility, and other means acceptable to the applicant and stakeholders.

The Board recognizes the value of continual improvement and urges Alberta to review the RSDS and include any emerging issues. The Board would also support a review by Alberta of the outstanding issues arising from the RSDS with a view to determining whether financial and human resources are available in the timeframe required to address those issues within their set timelines.

16 BEST AVAILABLE TECHNOLOGY ECONOMICALLY ACHIEVABLE OR BEST AVAILABLE DEMONSTRATED TECHNOLOGY

16.1 Views of Suncor

Suncor stated that a best available demonstrated technology (BADT) analysis was completed as part of its application, consistent with the CEMA ADMF, which requires companies to evaluate BADT in its technology choices. Suncor stated that the BADT analysis considered all relevant factors, including capital and operating costs, environmental performance, socioeconomic considerations, applicable regulatory standards, reliability, safety, and integration with other technologies. Suncor submitted that the decision to select the various technologies proposed in the applications was a balanced decision, having regard for all these relevant factors.

Suncor noted that it was committed to participate in AENV's best available technology economically achievable (BATEA) review and would support that work on a regional and industry-wide basis. However, Suncor did not agree that it should be required to change technology solely as a result of AENV's BATEA review, assuming that the review concluded that technology other than that used by Suncor should be used. Suncor did commit to carry out its operations in compliance with the applicable regulations and guidelines established by AENV. Suncor submitted that because AENV had the authority to enact legislation and establish regulations and guidelines with respect to BATEA, the Board should not impose any conditions regarding BATEA in any approval it may issue for the Voyageur Project.

16.2 Views of OSEC

OSEC understood AENV's evidence to be that the Voyageur Project would be required to adopt any new technologies identified as achievable through the current BATEA, which was expected to be completed by the end of this year.

OSEC requested that any approval issued to Suncor should ensure that the technology described in its application (which has the same emission control as its existing technology) must be changed to comply with the recommendations of AENV's BATEA review. OSEC also requested that the Board recommend that the BATEA review be completed by year end.

16.3 Views of Alberta

It was AENV's view that the increase in NO_x in the regional airshed was substantial and expected to increase in the future. Acting on CEMA's recommendation, AENV believed that these increases warranted a review of NO_x emission controls and the application of BATEA. AENV submitted that any *EPEA* approval that may be issued for the Voyageur Project may require Suncor to participate in a study to evaluate BATEA for stationary sources of NO_x and control NO_x emissions using BATEA that is determined from the study. AENV stated that it hoped to have this review completed before issuing any *EPEA* approval for the Voyageur Project. AENV also suggested that if it was not able to complete the work in a timely fashion, it may consider conditioning any approval such that the requirements established could then be applied to the Voyageur Project.

16.4 Views of the Board

The Board notes that AENV has initiated a study to look at BATEA for stationary NO_x sources and that any *EPEA* approval may be conditioned based on the results. The Board also understands that not all of the NO_x emissions from the Voyageur Project would be applicable to this study. As such, the Board will not condition the approval with respect to the results of the BATEA study. However, the Board does support AENV's stated intention to consider conditioning any *EPEA* approval so as to allow requirements resulting from the study to be applied to the Voyageur Project.

The Board acknowledges that the proposed technology used by Suncor to control NO_x emissions at the VU would meet the current *Canadian Council of Ministers of the Environment National*

Emission Guidelines for Commercial/Industrial Boilers and Heaters. The Board notes that there are other technologies that could be used to reduce NO_x emissions even further.

The Board considers that proponents of oil sands developments in Alberta need to be aware of reasonably foreseeable changes to current emission standards or guidelines or to recommended pollution control technology. The Board believes that oil sands operators need to incorporate flexibility in the design of the plants to facilitate retrofitting of improved controls, should these become necessary or desirable. In the Board's view, changes to recommended pollution control technology are reasonably foreseeable; it is therefore prudent for proponents of oil sands developments to incorporate design flexibility into their projects so that improved technology could be adopted within a reasonable time frame.

17 LIABILITY MANAGEMENT

17.1 Views of Suncor

Suncor stated that it was in compliance with disclosure requirements for reclamation liabilities as set out by the securities commissions in Canada and the United States. It also stated that it was in compliance with reclamation security requirements defined by AENV. Suncor maintained that information beyond that reported publicly was considered internal and proprietary. It indicated that if it were required by a new regulatory requirement to disclose information in addition to what was already public, there were mechanisms in place for Suncor to provide that information to the Board under confidentiality.

Suncor indicated that its financial statements were subject to a third-party independent audit and that its reclamation security was also audited independently.

17.2 Views of MCFN

MCFN recognized that Suncor was subject to the Environmental Protection Security Fund (reclamation security) administered by AENV and indicated that it was aware that AENV was in the process of developing the MLMP. MCFN expressed concern that neither the existing program nor the proposed MLMP required Suncor to disclose anything other than a rolled-up calculation of reclamation liabilities.

MCFN suggested that there was considerable value in requiring Suncor to publicly disclose a more detailed account of how it calculated its reclamation liability and what aspects of its operations were covered under the current (or new) security/bonding requirements. MCFN requested that Alberta ensure that security requirements were based on the full long-term costs related to re-establishment of equivalent capability.

MCFN also expressed concerns specific to Alberta's mechanism of calculating reclamation security and the use of a net approach that made deductions based on the replacement of material rather than proven sustainability. MCFN recommended that CEMA be required to report on issues that influenced liability variance in the short, medium, and long term, including variability, technology, and cost assumptions.

MCFN requested that Suncor be required to dedicate sufficient resources by way of security or third-party surety to ensure certainty with respect to reclamation success. It was MCFN's position that a third-party assessment of securities for all projects including historical, present, and future scenarios was necessary. MCFN also requested that Suncor be required to hold environmental and catastrophic risk coverage.

17.3 Views of Alberta

Alberta indicated that reclamation security was based on the full cost of reclaiming disturbed lands. Security was held for the costs of moving large amounts of material, capping landforms, and revegetation. Alberta confirmed that current reclamation security was a net calculation determined annually and that it had the ability to consider reclamation of tailings in determining whether the security required would increase or decrease.

Alberta confirmed that reclamation securities did not include removal and decommissioning of the plant site. Alberta stated that the proposed MLMP would likely consider the decommissioning of plant sites in its calculations. Alberta also confirmed that the determination of reclamation costs was not a public process. Alberta agreed that if there were a comprehensive review of a program like the MLMP that included a consultation component, there may be an increase in stakeholder confidence.

17.4 Views of the Board

The Board acknowledges that the current security program does not require a deposit or the posting of security with respect to total project liabilities and that work is under way to address the shortcomings of the existing program. It is the Board's view that a liability management program should provide a financial mechanism for funding of total project liabilities, including decommissioning of project facilities; reclamation/remediation of all disturbed lands, and any end-of-project life-monitoring that maybe required for each project. The Board expects Suncor to fully comply with the new liability management program when it is implemented and to meet or exceed the disclosure obligations that will be outlined in that program.

18 CONCLUSION

The Board finds that the Voyageur Project is needed to increase the recovery of bitumen resources within Suncor's oil sands project and to provide the upgrading capacity required by Suncor for the additional bitumen production from its mining and in situ projects.

The Board appreciates that continued oil sands development has the potential to further strain public infrastructure and public service delivery in the Wood Buffalo region. The Board believes that the responsible government agencies are aware of and are responding to a number of the socioeconomic impacts. However, the Board is concerned that a sustained high rate of development, coupled with capacity constraints for some infrastructure and services, has limited the ability of the RMWB and NLHR to adaptively respond to the cumulative impact of oil sands development. The Board acknowledges the challenges that exist and believes that public infrastructure and service providers in the region must have the necessary planning in place and the financial strength to implement capital projects necessary to meet the existing and expected

service requirements. The Board believes that additional infrastructure investment in the Wood Buffalo region is needed, and it believes that there is a short window of opportunity to make these investments in parallel with continued oil sands development.

The Board is satisfied that Suncor conducted a public consultation program that adequately informs its stakeholders and makes the public aware of its projects. The Board believes that Suncor's program responded to concerns, made steps towards mitigating those concerns, and in some cases reached agreement for non-objection.

With respect to resource recovery, the Board finds that Suncor's mine plan and sulphur recovery configuration are appropriate and it expects Suncor to meet the operating requirements for bitumen and sulphur recovery. The Board finds that it is appropriate to reduce the diluent loss criteria to a maximum of 4.0 volumes of diluent to thousand volumes of bitumen produced. The Board believes that the incorporation of a coke gasifier into Suncor's operation is a positive step towards using coke as an energy resource and reducing Suncor's use of natural gas. Regarding tailings management, the Board is concerned about the growing inventory of MFT on Suncor's site. The Board also has concerns about whether Suncor's CT performance can operate at the level projected in the application to consume the MFT to allow the reclamation of its tailings ponds and ensure the success of EPLs. Therefore, the Board will require Suncor to show that it can meet its projected tailings plan, create Pond 8 in-pit tailings storage, and begin CT production from the Millennium Extraction plant prior to mining any ore from the NSME.

The Board finds that the impacts on the air from the Voyageur Project are acceptable provided that Suncor's commitments are upheld and appropriate emission limits are set as suggested by AENV. The Board expects Suncor to minimize the frequency and duration of upsets, and the Board is prepared to take corrective action to ensure the risks to humans and the environment from upset emissions are minimized. The Board believes that ongoing monitoring through CEMA, WBEA, and TEEM is the key to ensuring that air quality and air emission effects on the environment in the region are properly managed. The Board believes that AENV is the appropriate regulatory authority for managing GHG emissions from the Voyageur Project.

The Board finds that the impacts on water from the Voyageur Project are acceptable and the mitigation proposed is appropriate. The Board believes that ongoing monitoring is the key to ensuring that mitigation is effective and that water quality predictions are met. With respect to reclamation, the Board notes that a number of stakeholders have concerns about the lack of certainty that reclamation plans will ultimately be successful. The Board believes that one key component of reclamation certainty is the success of Suncor's tailings management plan. The Board is optimistic that the requirements the Board has put in place regarding tailings management and the recommendations from AENV will help to ensure that the projects are successfully reclaimed. The Board also believes that coordination between operators regarding mine planning and reclamation are important to ensure successful reclamation.

Regarding health concerns, the Board notes that AHW has initiated an independent review of the health risks from arsenic exposure and is assessing the need for further health studies in the region. The Board believes that this is the appropriate course of action to address these concerns and notes that the contribution of the Voyageur Project to arsenic exposure levels is projected to

be negligible. However, if human health risks from arsenic exposure are confirmed, the Board would require Suncor and other operators in the area to take appropriate actions to address the problem. With respect to TLU and TEK, it is the Board's view that operators should include TLU/TEK into its project development throughout the life of the project. The Board finds that Suncor has adequately incorporated TLU/TEK into its application and has committed to using updated information in its final designs.

The Board notes that a number of stakeholders are concerned about the progress of CEMA. The Board believes that the work CEMA is doing is valuable. The Board has made a number of comments in this decision report regarding CEMA, include comments on priorities, timelines, outstanding issues, expectations, and regulatory backstops. Regarding BATEA, the Board notes that AENV has initiated a study to look at BATEA for stationary NO_x sources. The Board anticipates that AENV will take the results of the study into account when issuing any *EPEA* approval for the Voyageur Project. With respect to liability management, the Board notes that AENV will require Suncor to provide a deposit or posting of security with respect to the reclamation liability of its project.

The Board concludes that based on the above findings, the Voyageur project is in the public interest provided that the Board's conditions are met..

Dated in Calgary, Alberta, on November 14, 2006.

ALBERTA ENERGY AND UTILITIES BOARD

<original signed by>

J. D. Dilay, P.Eng.
Presiding Member

<original signed by>

J. R. Nichol, P.Eng.
Board Member

<original signed by>

T. M. McGee
Board Member

APPENDIX 1 HEARING PARTICIPANTS**Principals and Representatives
(Abbreviations used in report)****Witnesses****Suncor Energy Inc. (Suncor)**

M. Ignasiak
A. Hayter
S. Finlay
C. Anderson

T. Bachinski
P. Galachuik, P.Eng.
J. Heisler, P.Eng.
J. Gulley, P.Biol.
M. Shaw, P.Eng.
S. Neilson, P.Eng.
C. Burton
K. Froese, Ph.D.
W. Speller, P.Eng.
B. Stuart, P.Eng.
D. Kennedy, P.Eng.
D. Schaaf

Athabasca Chipewyan First Nation (ACFN)

K. Buss

B. Whenham

Canadian Natural Resources Limited

H. Longworth

Clearwater River Paul Cree Band #175

J. Malcolm

Fort McKay First Nation (Fort McKay)

K. Buss

**Imperial Oil Resources Ventures Limited
(Imperial)**

S. Luciuk
S. Nadeau

Mikisew Cree First Nation (MCFN)

D. Mallon, Q.C.
A. Floden

S. Coutoreille
R. Marten
M. R. Waquan (interpreted by R. Marten)
M. Lepine
D. Tuccaro
J. Tanner, Ph.D.
S. Shih P.Biol.
U. Weyer, Ph.D., P.Geol.
S. Kienzle, Ph.D.
J. Byrne, Ph.D.

(continued)

APPENDIX 1 HEARING PARTICIPANTS (continued)

Principals and Representatives

(Abbreviations used in report)

Witnesses

Mikisew Cree First Nation (MCFN) (continued)

D. Walker, Ph.D., P.Ag., P.Biol.
M. Scott-Brown
J. Wells

Oil Sands Environmental Coalition (OSEC)

K. Buss

C. Severson-Baker
K. McDonald, Ph.D.
A. Dort-Maclean
S. Dyer
M. Reynolds, Ph.D.
M. Kitagawa

Shell Canada Limited (Shell)

D. Kolenick

Syncrude Canada Limited (Syncrude)

L. Estep

E. Cook

Synenco Energy Inc.

D. Sheehan

Wood Buffalo First Nation (WBFN) and Wood
Buffalo First Nation Elders Society (WBFNES)

J. Malcolm

Wood Buffalo Métis Locals Association
(WBMLA)

D. Bishop

C. Bertolin

R. Quintal
S. Loutitt
R. Plews
H. Herman
G. Tremblay
B. Loutitt
E. Yanich
J. Grant
B. Fayant
F. McDonald

Northern Lights Health Region (NLHR)

T. Boomer

G. Garside

D. Busch

J. Fitzner
B. Blais
S. Corbett, M.D.

(continued)

APPENDIX 1 HEARING PARTICIPANTS (concluded)Principals and Representatives
(Abbreviations used in report)

Witnesses

Regional Municipality of Wood Buffalo (RMWB)

R. Purdy, Q.C.
T. D. Marriott
R. Salamucha

M. Blake
B. Newell
B. Sanders
L. Viarobo
E. Hutton
H. Vanwaas
D. Howery
A. Preiksaitis
T. MacDougall
H. R. Kuehne, P.Eng.

Her Majesty the Queen in Right of Alberta
(Alberta)

D. Stepaniuk
J. Moore
T. Rothwell
A. Edgington
T. Hurlburt

P. McEachern, Ph.D.
S. Williams
D. Jackson
C. Holly
W. Jackson
R. Wigston
K. Singh, P.Eng.
B. White, Ph.D.
J. Pentland
P. Marriott, P.Eng.
D. Hopkins
A. MacKenzie
R. Barrett
R. Dyer
E. Grilo, R.P.F
P. Weclaw

G. Boutilier, MLA

G. Boutilier

Alberta Energy and Utilities Board (EUB) staff

G. Perkins, Board Counsel
B. Bricker
A. Malik, P.Eng.
C. Farn-Baker, P.Ag.
E. Rahn
F. Haddad, P.Eng.
K. Parsons, P.Eng.
K. Siriunas, P.Eng.
R. Graham
W. MacKenzie

APPENDIX 2 SUMMARY OF CONDITIONS

Conditions generally are requirements in addition to or otherwise expanding upon existing regulations and guidelines. An applicant must comply with conditions or it is in breach of its approval and subject to enforcement action by the EUB. Enforcement of an approval includes enforcement of the conditions attached to that approval. Sanctions imposed for the breach of such conditions may include the suspension of the approval, resulting in the shut-in of a facility. The conditions imposed on the approval are summarized below. In the event that there is a discrepancy between this summary and the condition as set out in the main body of the decision report, the wording in the main body of the report shall prevail.

- Suncor shall submit for EUB approval the detailed geotechnical designs for the External Overburden Disposal structure and the In-pit Overburden Disposal structure along the Steepbank River at least six months prior to field preparation in these areas.
- Suncor shall submit for EUB approval a finalized plan for mining at the lease boundary between the NSME and Lease 29 five years prior to mining at this lease boundary. The plan should address the lack of drilling information on Lease 29 and contain a comprehensive evaluation of the lease boundary geology and reserves, geotechnical conditions, alternative mining scenarios and impacts, and associated costs, in accordance with Section 3.1 of *ID 2001-07*.
- Suncor shall meet a lower requirement for its annual diluent losses. The lower diluent loss limit of 4.0 volumes of diluent per thousand volumes of bitumen will take effect November 1, 2008.
- Suncor shall not mine oil sands from the North Steepbank Mine Extension that meet the requirements under *ID 2001-07* until
 - it meets a CT efficiency of 76 per cent on a quarterly basis not later than the first quarter of 2009,
 - Pond 8 tailings storage is available for the deposition of CT, and
 - commercial CT production commences from the Millennium Extraction Plant.
- Suncor shall provide to the Board detailed information on the ability of the CT stored in its tailings ponds to provide a trafficable surface for reclamation. This information should include annual pond surveys, sampling data, vane shear testing, and other information as specified by the Board.
- Suncor shall provide detailed plans on the incorporation of supplementary tailings techniques to reduce Suncor's MFT inventory in its annual tailings plan beginning in 2007.
- Suncor shall provide an annual update of its efforts to coordinate mine planning and closure with other operators in terms of landform design, drainage, and material balances as part of its annual mine plan reporting.

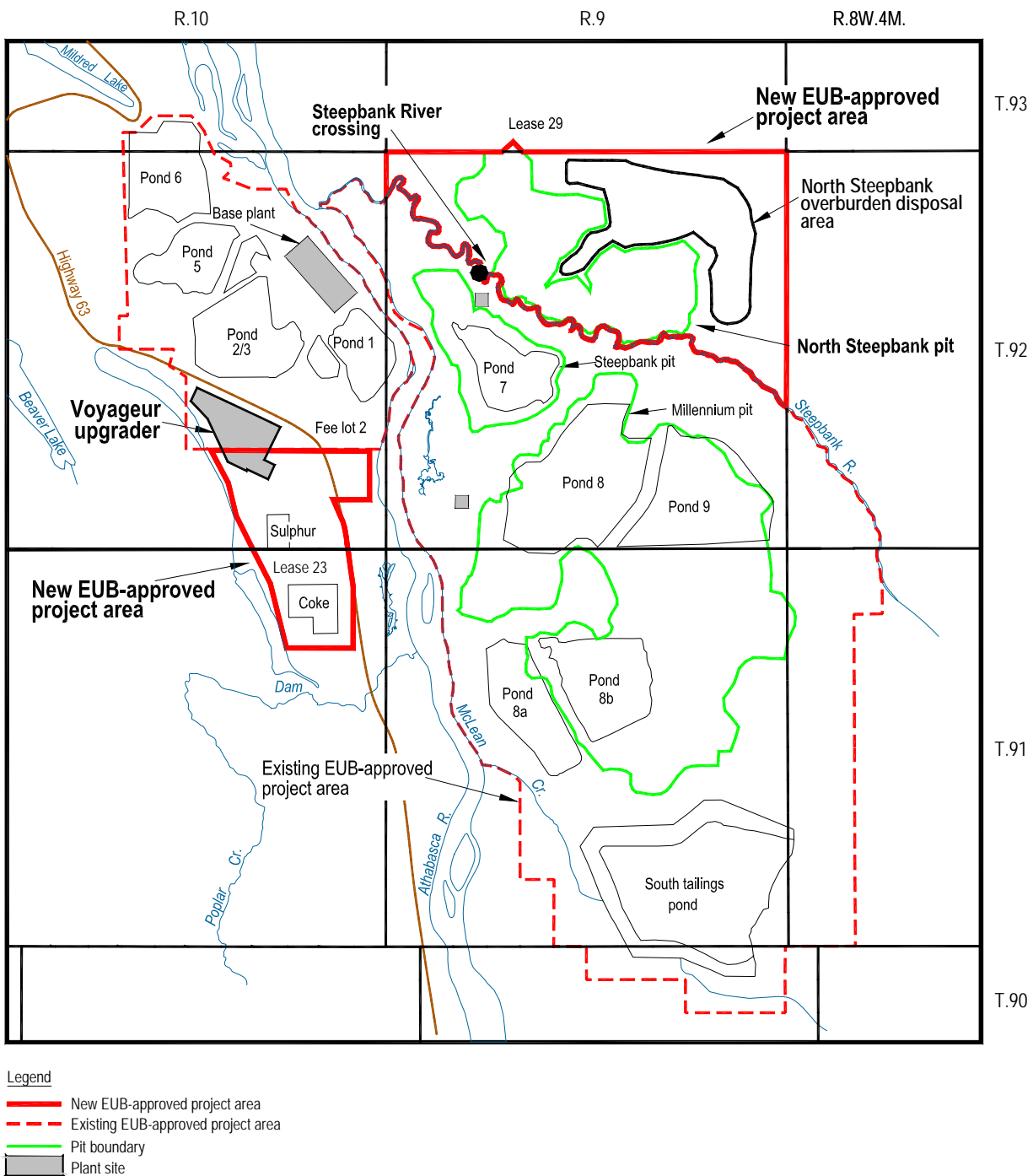


Figure 1. Suncor oil sands site plan