3.0 Project Setting

3.1 JACOS CORPORATE BACKGROUND

JACOS is a 100% owned Canadian subsidiary of Canada Oil Sands Co., Ltd. (CANOS), a Japanese subsidiary of Japan Petroleum Exploration Co., Ltd. (JAPEX). JAPEX is a petroleum exploration and production company and is traded on the Tokyo Stock Exchange (Securities Code Number 1662).

3.2 EXISTING OPERATIONS, LOCATION AND HISTORY

JACOS has been involved in various in-situ oil sands research and development efforts for more than 30 years. Development of the Hangingstone site began in 1983 with a cyclical steam stimulation (CSS) pilot test. The CSS pilot was operated until 1994 by the PCEJ consortium which consisted of Suncor Energy Inc. (formerly Petro-Canada), Nexen Inc. (formerly Canadian Occidental Petroleum Ltd.), Imperial Oil Resources Ltd. (formerly Esso Resources Canada Ltd.) and JACOS. In 1997, JACOS proposed to convert the CSS pilot test to a steam-assisted gravity drainage (SAGD) demonstration project and test the applicability of SAGD technology in reservoir conditions encountered over much of the oil sands leases held by JACOS and the PCEJ (see Volume 1, Section 7 for a detailed description of the reservoir).

The Demonstration Project was established in 1999 about 48 km south southwest of Fort McMurray in Twp 84, Rge 11, W4M and is shown in Volume 1, Section 1, Figure 1-4. A phased approach was taken to evaluate different resource recovery strategies, minimize risk and maximize knowledge gained from each subsequent phase of the Demonstration Project. Plant 1 (formerly called Phase 1) was started in 1999 with a nominal bitumen processing capacity of 318 m^3/d (2000 bpd).

Plant 2 (formerly called Phases 2 and 3) was constructed and started in two phases with a capacity of 1272 m^3/d (8000 bpd) as follows:

- Phase 2, started in 2000, has a nominal bitumen processing capacity of 636 m^3/d (4000 bpd)
- Phase 3, started in 2002, also has a capacity of 636 m^3/d (4000 bpd)

Total facility capacity for Plant 1 and Plant 2 is 1590 m^3/d (10 000 bpd).

3.3 INTEGRATION OF HANGINGSTONE EXPANSION OPERATIONS

The scope of the Expansion Project, increasing production capacity in JACOS' Hangingstone area operations by more than 300% together with surface considerations such as Horse Creek, favour the construction of a new facility rather than expanding the existing facilities. The central processing facility (CPF) for the Expansion Project will be located about 4 km southeast of the existing Demonstration Project (see Volume 1, Section 1, Figure 1-4). This will optimize the new CPF's location by placing it central to the resource being developed, but still allow some integration of activities between the two facilities. The following subsections describe features that may be integrated between the operations.

3.3.1 Product Metering and Delivery

Bitumen product from the Demonstration Project is currently delivered to market by tanker truck, the only economically viable option for the current volume. Assuming demand for undiluted bitumen persists in the area, loading and trucking bitumen from the Demonstration Project to local markets will continue.

The proposed expansion would provide an opportunity to combine bitumen from the Demonstration Project and Expansion Project for delivery to market. Existing equipment at the Demonstration Project could be used to transfer hot bitumen to a new pump station and then to the new CPF. Pipe pigging facilities would be required to ensure the hot bitumen pipeline could be displaced from the line in the case of an extended outage.

Bitumen delivered from the Demonstration Project to the new CPF would be metered separately at the CPF's inlet and bitumen from both plants would be stored in common tanks. Hot bitumen from the Demonstration Project would be diluted to the same blend as the new CPF and cooled to avoid flashing of diluent in the product tanks. The decision to construct a bitumen line connecting the two plants will be made if the local market is no longer an economic option. However, this application does not include interconnection of the bitumen product from the Demonstration Project at this time.

3.3.2 Makeup Water Source

The water source for the Demonstration Project is a deep quaternary aquifer (possibly the Muriel Lake Formation) in which two water withdrawal wells (DQ02-2, DQ06-7) have been completed. The wells are located about 6.5 km south of the Demonstration Project in LSD 1-11-84-11 W4M, or 1.2 km south of the new CPF location. The wells are shown in Volume 1, Section 11, Figure 11-1 and their completion details are summarized in Table 3-1. The licensed allocation for this source is 438 000 m^3 annually (1200 m^3/d). Current make-up water demand for the Demonstration Project ranges from 550 to 600 m^3/d. JACOS proposes to use the remainder of the 1200 m^3/d allocation for the Expansion Project.

Table 3-1: Summary of Deep Quaternary Well Completion Information

Well			Screen Placement			Pump Setting		
	Top (mbg)	Bottom (mbg)	Interval (m)	Initial Water Level (mbg)	Drop Pipe (m)	Top of Pump to Suction (m)	Well Cap to Ground Level (m)	Pump Suction (mbg)
DQ02-2	64.6	82.9	18.3	26.3	55.95	1.61	0.6	57.56
DQ06-7	70.9	86.5	15.6	25.9	65.40	1.61	1.0	67.01

The normal makeup water requirement for the Expansion Project is expected to peak at just under 1400 m^3/d. When the surplus water from JACOS' existing allocation is factored in, an additional 750 to 800 m^3/d will be required. The remainder will be made up from the Empress Formation, a deeper

unit within the Quaternary into which JACOS has also completed a production well (DQ06-8). Pump testing from this interval indicates a sustainable yield of 780 m^3/d for which JACOS has applied separately under the *Water Act.* The surplus from the existing allocation in combination with the new allocation will result in an available make-up water supply of between 1380 to 1430 m^3/d.

Although this meets the steady state operating needs for the Expansion Project, it does mean that initial start-up and a restart from an extended shutdown or turnaround will need to be paced to the available water supply.

3.3.3 Wastewater Disposal

A portion of the concentrated boiler blowdown from the Demonstration Project is currently trucked off site, with the remainder disposed into two Energy Resources Conservation Board (ERCB) licensed Class 1b disposal wells (WS2-23 F1/02-23-084-11W4/0 and WD3 00/15-14-084-11W4/0) located about 3.5 km south of the Demonstration Project in the Project Area (see Volume 1, Section 11, Figure 11-1). However, the disposal capacity of these wells is limited and injectivity is declining.

Processes that will generate wastewater at the new CPF, and their expected volumes and characteristics, are described in Volume 1, Section 9.5. See Section 12.7 for wastewater disposal alternatives, Section 12.8 for the proposed option and Section 12.10 for contingency plans.

Some of the oldest steam chambers at the Demonstration Project are expected to be depleted by the Expansion Project's start up in 2014. These chambers will provide a viable and safe zone to accept and contain wastewater, and JACOS proposes to use them for wastewater from both its existing and proposed operations. A buried pipeline will deliver wastewater from the new CPF to the Demonstration Project. The pipeline will follow existing source and disposal water pipeline right-of-ways where possible (see Volume 1, Section 1, Figure 1-4). Connections will be made at the Demonstration Project to send wastewater to a disposal well(s) at an existing wellpad using existing plant piping, where possible.

3.3.4 Solid Waste Handling

A number of solid waste products will be generated from drilling programs, operations and maintenance activities. See Volume 1, Section 13 for a description of these wastes. Solid wastes from the Demonstration Project that meet Class II landfill criteria are currently disposed of at third-party industrial landfills. Other wastes (e.g., sludge) that do not meet Class II landfill criteria are sent to appropriate treatment facilities. Preliminary economics indicate the construction of a JACOS-owned landfill will be a viable option to offset third-party solid waste disposal. The current development plan includes a proposed landfill sized to accommodate waste from both the Demonstration Project and Expansion Project. If a decision is made to construct a landfill, it will be licensed to accept waste from both facilities. JACOS will inform the ERCB and Alberta Environment should it not proceed with a landfill onsite.

3.3.5 Site Access

Roads accessing the Expansion Project are discussed in Volume 1, Section 11.1. The existing JACOS access road (LOC 831007) will be extended to provide access to the new CPF. Both the road and Highway 63 approach will be upgraded as per Alberta Transportation guidelines. Gates, traffic signs and warning signs will be installed throughout the development area to guide, control or restrict the traffic onto various access roads.