



Supporting Documentation Elmworth Energy

DATE: Aug 28, 2008

SUBJECT: Elmworth Energy Corporation
Application for Industrial Approval: Brine Storage Ponds
KC#1 and KC#2 Shale Gas Well Sites

OUR FILE: 07-8198-0000

In 2007, Elmworth entered into a business arrangement with Contact Exploration (Contact), holder of Exploration Agreement 99-09-15-02, to undertake oil and natural gas exploration drilling and seismic in Hants County, Nova Scotia (NS). Elmworth believes it has discovered a significant shale gas resource, with along with indications of traditional (conventional) oil and natural gas potential in the Windsor Block.

Beginning in the spring of 2007, Elmworth initiated a multi-phase exploration program, culminating in the drilling of two wells referred to as Kennetcook # 1 (KC#1) and KC#2 and field acquisition of 63 square km of 3D and 53 linear km of 2D seismic surveys. Activities associated with the drilling and completion stages of the project at each site included:

- Site surveys.
- Pre-assessments to identify sensitive areas (i.e., wetlands) and potential receptors; and, to collect baseline soil and water samples.
- Road and drill pad construction:
 - Removal of surface soil (stored on the lease property for future reclamation).
 - Establishment of secure areas for the storage of support equipment and materials.
 - Construction of ditching/berms to control surface water drainage (sedimentation control will be established in the ditch if necessary).
- Construction of a 10,000 m³ pond for storage of water required for and during well completion (fracking).
- Drill and support equipment mob/demob.

This Industrial Approval Application to NS Environment (NSE) addresses Brine Storage Ponds associated with the KC#1 and KC#2 drill sites. The brine ponds resulted from the use of the above noted 10,000 m³ for containment of formation water produced during well completion.

In accordance to the checked items under Section 6 (Supporting Documentation to Attach) of the Application for Approval please note the following:

1. Copies of land lease agreements (Attachment 1).
2. A copy of Elmworth's Registry of Joint Stocks (Attachment 2).
3. Existing Approvals

Elmworth made (and received approval) Application to NS Department of Energy (DOE) to drill KC#1 and KC#2. Other documentation/applications (on file with NSE) made in association with these drill site are:

- Application and Approval to withdraw water from the Kennetcook River
- Application to renew Kennetcook Water Withdrawal Permit
- An Environmental Management Plan
- A Health and Safety Manual
- An Emergency Response Plan

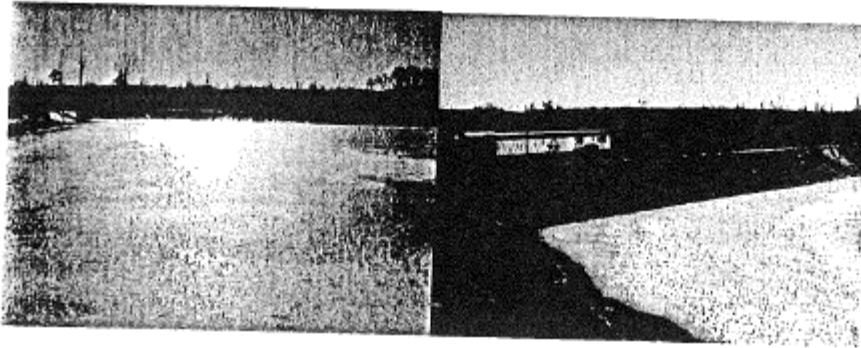
4. Process Description

KC#1 and KC#2 were completed in late fall 2007. At this time, the majority of infrastructure (excluding a support/security trailer and the 10,000 m³ capacity liquid holding ponds) and equipment have been removed and the wells have been secured in preparation for an anticipated pipeline tie-in in the 2009-2010 timeframe. As noted above, the holding ponds were constructed to store fresh water required for well completion. Approximately 7,000 m³ of fresh water was used to frac each well. The return formation water exhibited an exceptionally high salinity resulting in the transformation of fresh water ponds into brine ponds. See Section 8 for description of liquid.

5. Development Plan

The holding ponds were designed by Dillon (engineering drawings attached) and constructed according to specifications (included on the drawing) by Ian Sinclair Contracting Limited. A local land surveyor was engaged to perform topographic surveys of the proposed locations and test pit programs were conducted to determine availability (i.e., sufficient depth) and general character of the soil. A civil engineering software package was used to establish the sizes and depths based on the 10,000 m³ storage requirement, local topography and property constraints.

The ponds were constructed with HPDE liners. Side slopes are set at 2H:1V. They measure (from top/inner edges of the berm) 55 x 60 m in size with base elevations of 56 and 86 masl (KC#1 and KC#2 respectively). Elevations at the top of the berm are 61 and 91 masl (KC#1 and KC#2 respectively). The 3 m wide berm allowed ample space for a walkway and perimeter fencing.



When determined not to be of any further use, the ponds will be decommissioned. This will involve:

- Disposal of any remaining water/fluid at an approved facility.
 - Disposal of any sludge at an approved facility.
 - Removal of the liners, fences and all other infrastructure.
 - Backfilling, compacting and grading of the pond footprints.
6. Site Plans and associated figures (**Attachment 3**)
 7. Engineering drawings (**Attachment 4**)
 8. Description of liquid

The liquid represents a mixture of freshwater obtained from the Kennetcook River, formation water extracted during stimulation of KC#1 and KC#2 and rain water.

Results of samples collected from the Kennetcook River on September 7, 2007; KC#1 and KC#2 on December 15, 2007 (subsequent to fracturing); KC#1 and KC#2 ponds on March 11, 2008 and, again from KC#2 Pond on June 20, 2008 are provided in **Attachment 5**. The following table provides a summary of concentrations for a number of inorganic parameters (including metals) within these samples. It is noted that the March 2008 pond samples were collected when the water levels were high. The KC#2 pond sample was collected subsequent to the removal/disposal of most of the water.

Parameter	Concentrations (mg/L)					
	KC#1 Well	KC#2 Well	Kennetcook River	KC#1 Pond Mar. 11/08	KC#2 Pond Mar. 11/08	KC#2 Pond June 20/08
TDS	118,000	91,900	198	40,500	39,300	92,100
hardness	8,200	5,300	53	2,500	2,000	5,100
alkalinity	84	65	84	37	54	61
calcium	1.4	1.2	17.9	570	450	1,100
chloride	72,000	58,000	30	24,000	23,000	56,000
sodium	44	32	16.8	16,000	16,000	34,000

TOC	120	27	-	10	19	5
pH	6.24	5.95	7.14	6.63	6.44	6.78
sulphate	100	200	28	66	120	210
barium	6.3	2.2	0.03	0.77	1.8	nd
boron	0.9	1.3	-	nd	nd	nd
iron	65	110	0.48	42	7.4	nd
manganese	4.3	7.8	0.02	2.9	1.8	3.5
strontium	18	8.9	0.14	4.2	6.3	8.3

Note
 elevated detection limits for metals in the KC#2 Pond sample collected in June 2008

Petroleum Hydrocarbon (TPH/BTEX) and Polycyclic Aromatic Hydrocarbon (PAH) data for samples collected from the ponds on March 11, 2008 are also included in Attachment 5. Except for a traces (0.001 and 0.002 mg/L) of benzene lighter end (<C₆) components were not detected. The total concentrations of petroleum hydrocarbons were also low (0.1 and 3.7 mg/L).

PAHs were not recorded above the laboratory detection limit in the KC#1 sample. A number of compounds were observed in the KC#2 sample, however, the concentrations were low (only slightly above detection limits).

9. Air Emissions – none

10. Solid Waste

With the possible exception of a small amount of sludge accumulated at the bottom of the ponds, there is no solid waste associated with this process. Such sludge will be removed and disposed of at an acceptable off-site facility.

11. Contingency Plan

See accompanying document.