



**Work Plan for Visual Monitoring of Surface Water  
F12E Drilling and Completion Activities  
November 3, 2011**

Encana Oil & Gas (USA) Inc. (Encana) is providing this Work Plan in accordance with the Conditions of Approval (COAs, specifically COA #27) for APD #400062039 for well drilling and completion on Encana's F12E well pad. This Work Plan describes our schedule and locations for visual monitoring of West Divide Creek (WDC) and other surface water bodies as outlined in COA #22.

The attached F12E Location Map highlights known areas within the topographic sections identified in COA #22, where, depending on weather and seasonal conditions, there is potential for surface water to exist. The primary areas identified are:

- Three ponds located on the Langegger property (all observed on Thursday October 20, 2011 to contain water).
- The area of West Divide Creek which falls within Section 12

These areas will collectively be referred to as the F12E Designated Area. These conditions may change/fluctuate with winter/spring weather and/or the start of irrigation season. Encana has expanded visual observations of WDC, originally conducted for the Moon Property/P3 Well Pad investigation, to include the length of stream within Section 12 (F12E Location Map).

In order to meet the COAs for the F12E well pad, Encana proposes a schedule of visual observations in the F12E Designated Area based on corresponding drilling/completion activity. This schedule is described in the following sections. Possible exceptions to the overall schedule are discussed later in the Work Plan.

**Surface Hole Drilling**

The five wells of concern (12-4A1, 12-4D1, 12-5A1, 12-5A2 and 12-5D1) will be drilled on the F12E well pad with an approximate start date of December 10<sup>th</sup>, 2011. The actual start date for the drilling of these five wells will be communicated to the COGCC once known. It is anticipated that the surface holes (approximate depth of 1,100 feet) will be drilled for each of the five wells consecutively, beginning from north to south on the well pad, prior to drilling any well to total depth. It should be noted that surface holes will be drilled starting with the non-COA wells (See F12E Typical Rig Layout).

Visual inspections in the F12E Designated Area will begin the first day of drilling on the COA wells and continue at least twice weekly and at equal intervals between inspections while the surface hole is drilled for each of the five wells. Drilling, cementing and rig skid is estimated to take approximately 24 to 48 hours per surface hole, or about 10 days total. Once the surface hole is completed on the fifth well, drilling the remainder of that well to total depth will commence.

#### Drilling to Total Depth

While drilling to total depth, the frequency of the visual observations will be conducted three times per week for wells, 12-4A1, 12-4D1 and 12-5A2 which pass underneath WDC and for well 12-5A1 due to the proximity to WDC. Visual observations for well 12-5D1 will be conducted at a frequency of twice per week as the bottom hole location does not cross under WDC. Drilling to total depth is expected to take 6-7 days per well, with an anticipated drilling rate of 1,000 feet per day.

Once drilling and cementing of production casing is completed on each of the five wells of concern, the drill rig will continue the drilling of the additional five wells on the pad (non-COA wells) prior to moving from location. This will initiate a period of limited activity during which visual observations of surface water areas may not occur. This decision will be based on visual observations (or lack thereof) during drilling activities of the COA wells and take into account the schedule for upcoming well completion activities (including hydraulic fracturing of each well) and with the approval of COGCC staff.

#### Well Completion

During well completion activities (including hydraulic fracturing of each well), visual observations will be completed twice weekly in the F12E Designated Area with the exception of well 12-5A1 which will be conducted daily due to the wells proximity to WDC and the original seep area.

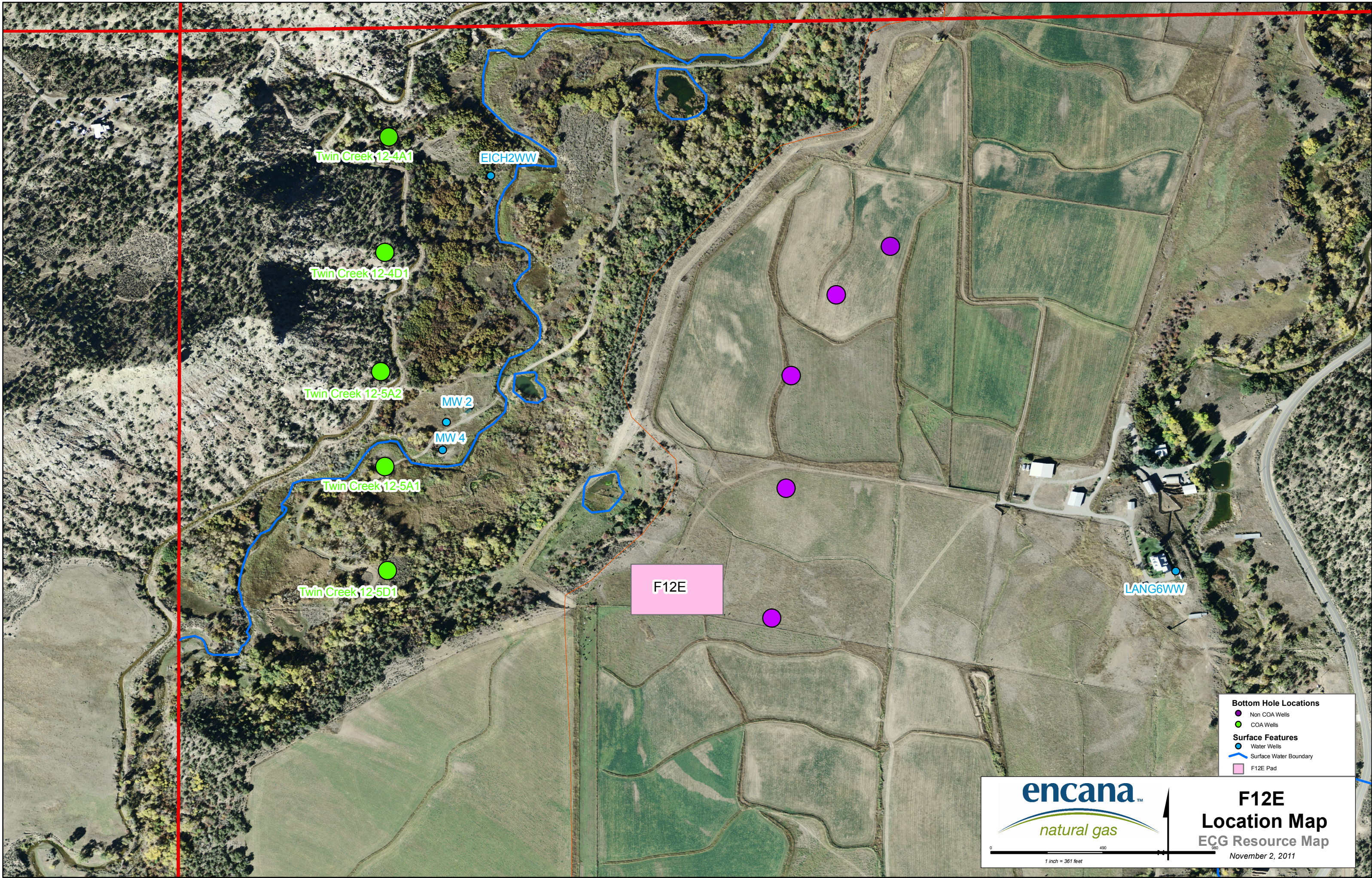
#### Overall Approach to Visual Observations

Encana will visually monitor the designated areas of potential surface water as described above for evidence of bubbling, or other obvious signs of release of gas, air, or fluid other than natural springs. Specific locations will not be observed within the F12E Designated Area, rather the length of WDC within Section 12 will be walked and observed. Before beginning visual observations in the F12E Designated Area, the field observer will check with the drilling supervisor and record the current depth of drilling. Visual observations for evidence of bubbling in existing surface water will be documented in a field notebook. Any consistent or continued bubbling will be documented with a GPS unit, given a location identification, and recorded on video camera. In the event that consistent or continued bubbling is observed in sufficient quantity for sample collection, samples will be obtained for laboratory analysis and notification will be made to Linda Spry O'Rourke, Environmental Protection Specialist with COGCC, as directed in COA #s 24 and 25.

It is believed that using a flexible two/three times per week schedule will reduce the possibility that weather conditions will affect the visual observations from being conducted. However, if inclement weather persists, personnel safety will be considered before initiating observations. Any other changes to the proposed schedule of observations will be discussed with and approved by COGCC before implementing.

Drilling and well completion activities are currently estimated to be completed by June 30, 2012. COGCC will be updated of any changes to this estimated schedule.





**Bottom Hole Locations**

- Non COA Wells
- COA Wells

**Surface Features**

- Water Wells
- Surface Water Boundary

- F12E Pad

**encana**<sup>TM</sup>

*natural gas*

**F12E**

**Location Map**

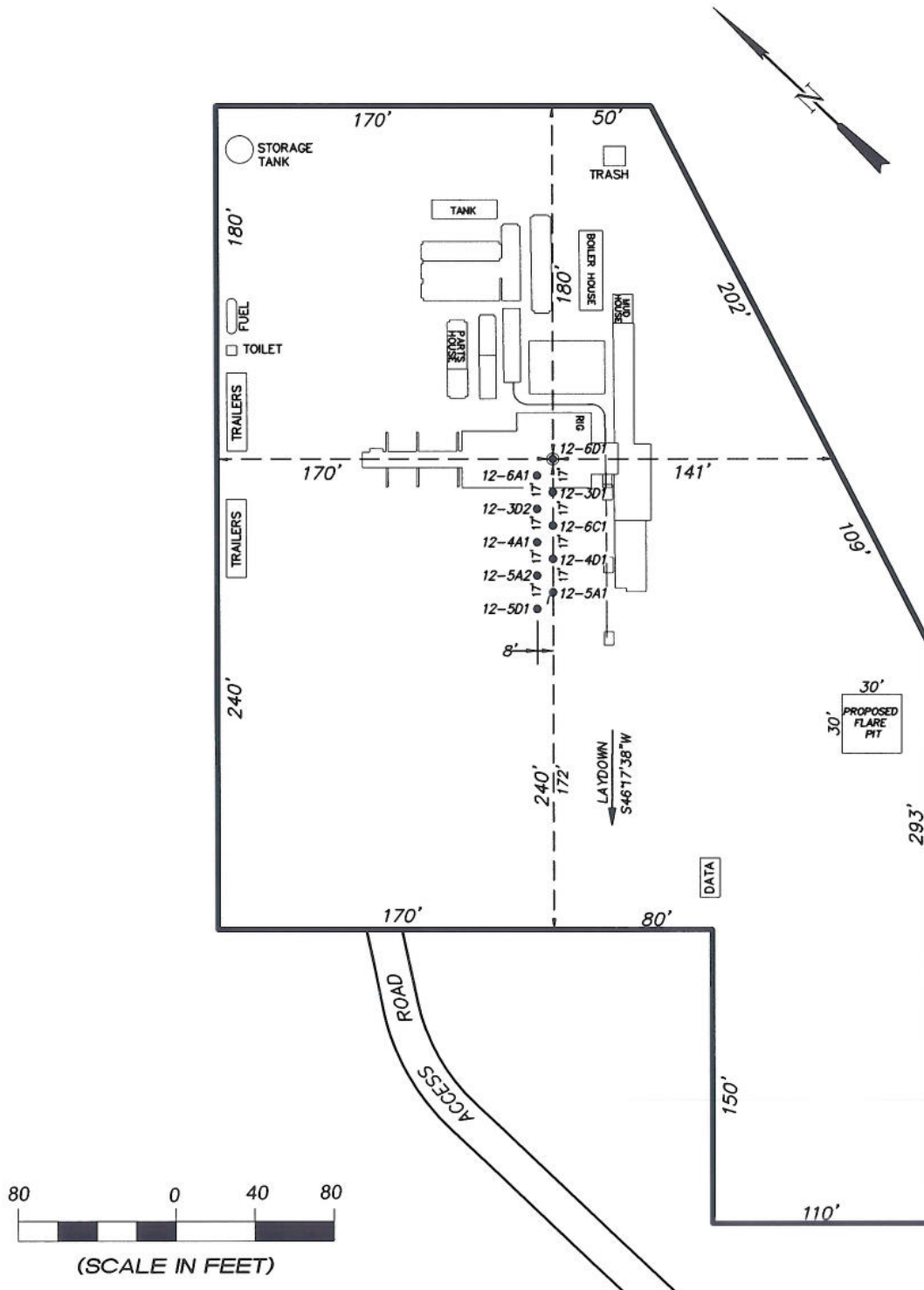
**ECG Resource Map**

November 2, 2011



# EnCana Oil & Gas (USA) Inc.

## Well Pad (F12E) TYPICAL RIG LAYOUT



906 Main Street  
Evanston, Wyoming 82930  
Phone No. (307) 789-4545

Rig Layout		Scale: 1" = 80'	SHEET
Project No.	08-04-53	Date Surveyed: 08/13/08	5 OF 10
Date Drawn:	12/15/09	Latest Revision Date: 1/19/10	