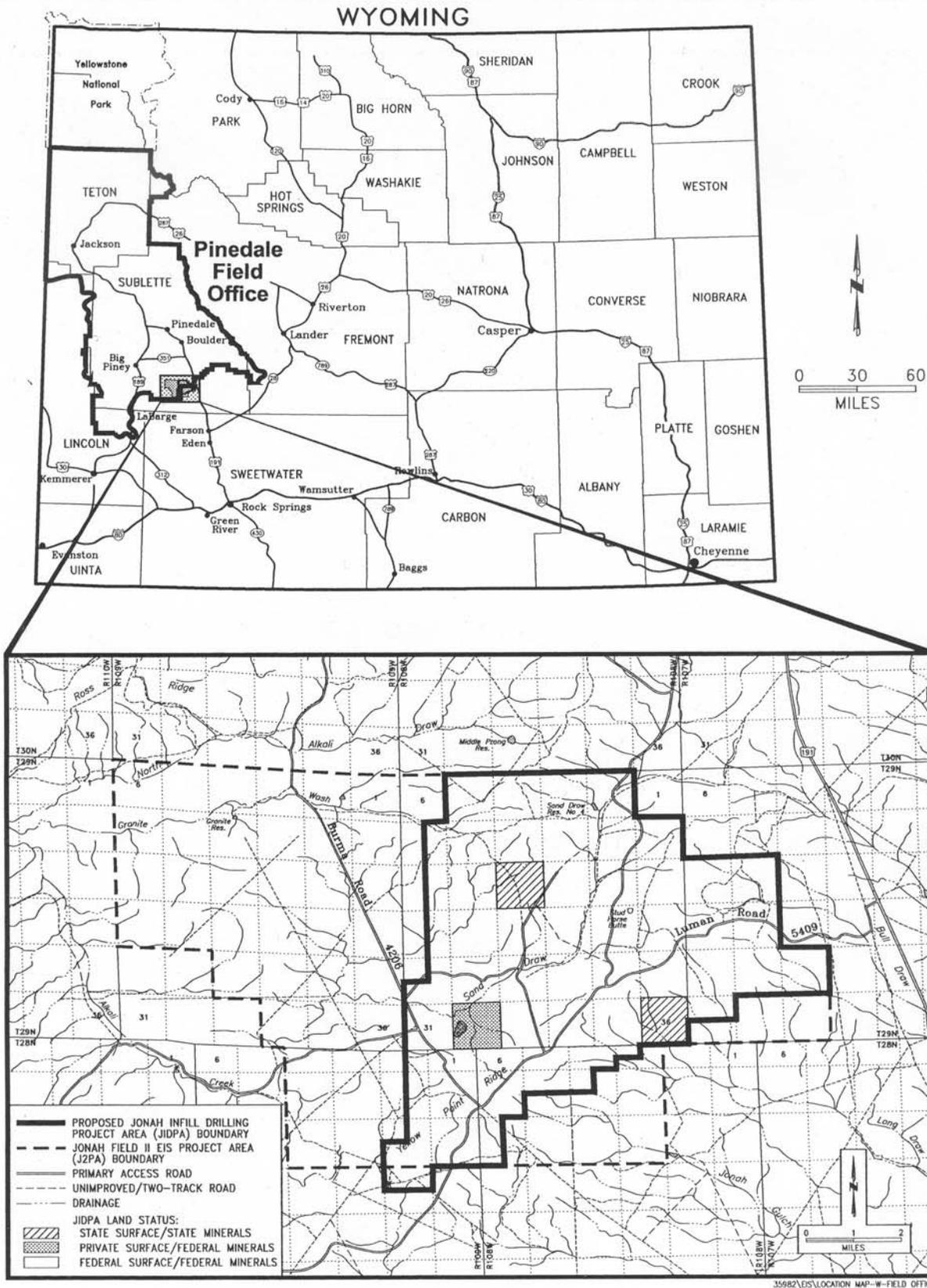


## **1.0 INTRODUCTION**

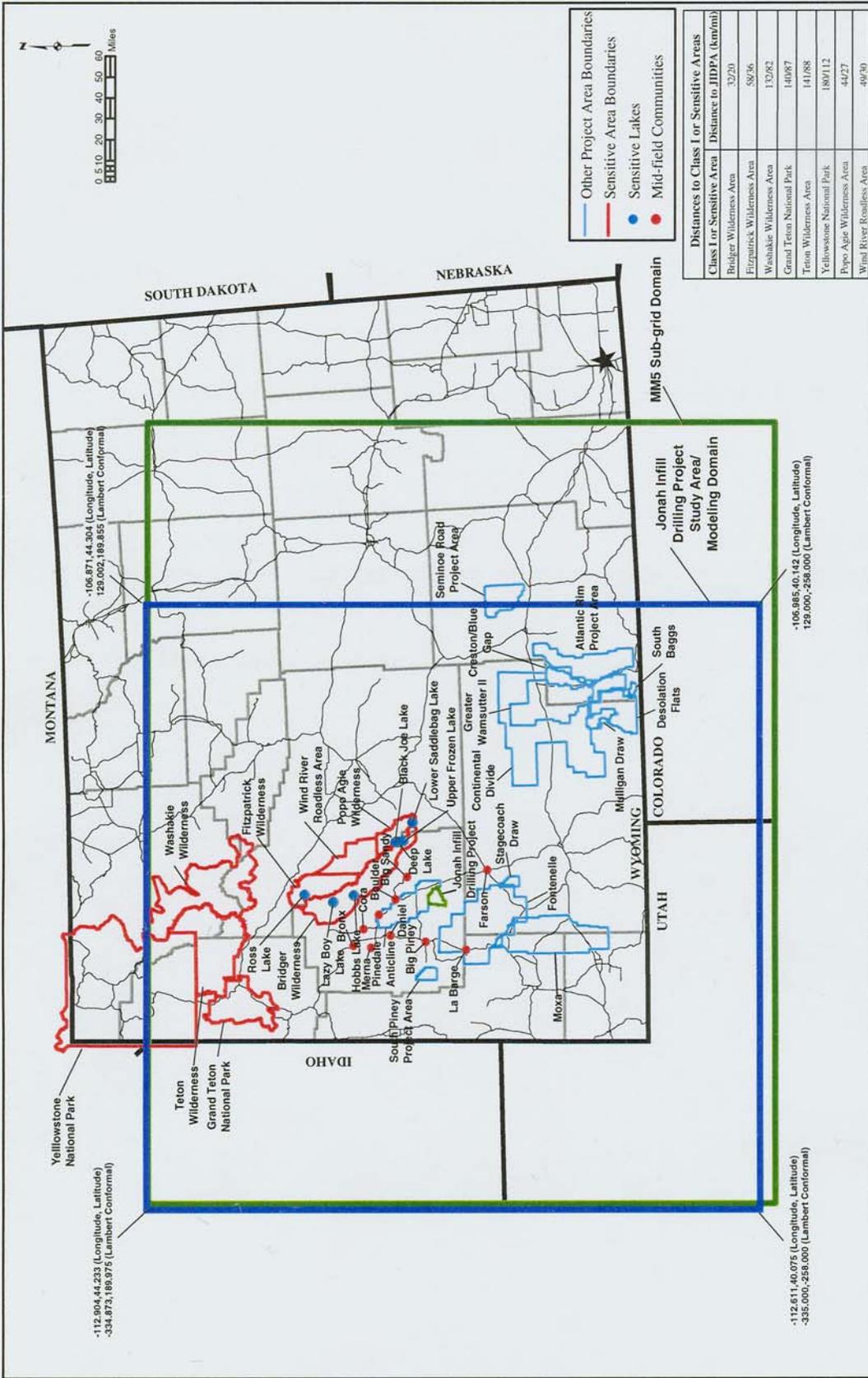
This Air Quality Technical Support Document (AQTSD) was prepared to summarize analyses performed to quantify potential air quality impacts from the proposed Jonah Infill Drilling Project (Project). The methodologies utilized in the analysis were originally defined in an air quality impact assessment protocol (Protocol) prepared by TRC Environmental Corporation (TRC) (2003) with input from the lead agency, U.S. Department of Interior Bureau of Land Management (BLM), and project stakeholders including the U.S. Environmental Protection Agency (EPA), National Park Service (NPS), U.S. Department of Agriculture Forest Service (USDA Forest Service), and Wyoming Department of Environmental Quality Air Quality Division (WDEQ-AQD). The AQTSD discusses those methodologies as necessary and summarizes the findings of the air emissions inventories and subsequent dispersion modeling analyses.

The Project's location in west-central Wyoming required the examination of Project and cumulative source impacts in Wyoming, northwestern Colorado, northeastern Utah, and southeastern Idaho within a defined study area (modeling domain) (Maps 1.1 and 1.2). The analysis area includes the area surrounding the proposed Project area (JIDPA) and all or a portion of the Bridger, Fitzpatrick, Popo Agie, Teton, and Washakie Wilderness Areas; the Wind River Roadless Area; and Grand Teton and Yellowstone National Parks.

Impacts analyzed include those on air quality and air quality related values (AQRVs) resulting from air emissions from: 1) project sources within the JIDPA, 2) non-project state-permitted and reasonably foreseeable future action (RFFA) sources within the modeling domain, and 3) non-project reasonably foreseeable development (RFD) within the modeling domain. The Project source emissions inventory was performed in accordance with the Protocol and following WDEQ-AQD oil and gas inventory guidance (WDEQ-AQD 2001). Portions of the inventory were submitted to WDEQ-AQD for review prior to inventory finalization. Non-project sources were inventoried as part of a cooperative effort between the BLM Wyoming State Office, the



Map 1.1 Jonah Infill Drilling Project Location, Sublette County, Wyoming.



Map 1.2 Air Quality Study Area/Modeling Domain.

Project proponents, and the Atlantic Rim Natural Gas Development Project proponents. These data were obtained for use in the Rawlins and Pinedale Resource Management Plan (RMP) revisions, the Project environmental impact statement (EIS) air quality analysis, and the Atlantic Rim Natural Gas Development Project EIS air quality analysis. Chapter 2.0 specifically presents an overview of the emissions inventories.

The remainder of this AQTSD describes the Project in further detail, provides a description of the alternatives proposed and evaluated, and presents a list of tasks performed for the study. Descriptions of the near-field air quality impact assessment methodology and impacts are provided in Chapter 3.0, and Chapter 4.0 describes the CALPUFF analyses performed for assessment of in-field cumulative, mid-field cumulative, and far-field Project direct and cumulative impacts.

## **1.1 PROJECT DESCRIPTION**

EnCana Oil & Gas (USA) Inc. (EnCana), BP America Production Company (BP), and other oil and gas companies (collectively referred to as the Operators) have notified the BLM, Pinedale Field Office (PFO), that they propose to continue development of natural gas resources located within the JIDPA (see Map 1.1). The JIDPA is generally located in Townships 28 and 29 North, Ranges 107 through 109 West, Sublette County, Wyoming. The JIDPA encompasses approximately 30,500 acres, of which 28,580 acres are federal surface/federal mineral estate, 1,280 acres are State of Wyoming surface/mineral estate, and 640 acres are private surface/federal mineral estate.

The Operator Proposed Action for this Project involves the development of up to 3,100 new natural gas wells on up to 16,200 acres of new surface disturbance. However, additional alternatives involving alternate well pad densities, alternate well numbers, and variable mitigations are also analyzed. The maximum number of wells would be 3,100, assuming an approximately 5- to 10-acre down-hole well spacing throughout the JIDPA. Depending upon the authorized rate of development (75, 150, or 250 wells per year), development operations are

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expected to last from approximately 5 to 42 years, with a total life-of-field (LOF) of approximately 43 to 85 years. The JIDPA is currently accessed by existing developed roads.

Approximately 63-87 days would be required to develop each well (four days to construct the well pad and access road, from one to four days for rig-up, generally from 18 to 36 days for drilling [an average of 23 days is used in this air quality analysis], 35 days over a 60-day period for completion and testing, from one to four days for rig-down, and four days for pipeline construction). The estimated size of each single-well drill pad is 3.8 acres, of which approximately 2.9 acres would be reclaimed after the well is completed and the gas gathering pipeline is installed. A reserve pit would be constructed at each drill site location to hold drilling fluids and cuttings. Non-productive and non-economical wells would be reclaimed as soon as practical to appropriate federal, state, or private landowner specifications.

The gas produced within the JIDPA would be transported by existing pipelines from the field. To facilitate a complete cumulative impact assessment and since gas compression needs for the Project cannot reasonably be separated from those necessary for the adjacent Pinedale Anticline Project Area (PAPA), future compression requirements for the PAPA are also considered in this air quality analysis. Projections of future compression requirements supporting both the JIDPA and the PAPA were obtained from pipeline companies currently transporting gas from these areas. This total regional compression estimate was analyzed as part of both the Proposed Action and alternatives.

## **1.2 ALTERNATIVES EVALUATED**

Nine project alternatives are currently being analyzed in the *National Environmental Policy Act* (NEPA) EIS for this Project. These alternatives are summarized below:

- the No Action Alternative - no further development includes 533 wells from 497 well pads; LOF is approximately 43 years;

- the Proposed Action - up to 3,100 new wells (2,705 straight, 395 directional) on up to 16,200 acres of new surface disturbance, a well development rate (WDR) of 250 wells/year (WDR250), and an LOF of 56 years;
- Alternative A - up to 3,100 new wells (all straight) from approximately 3,100 new well pads, WDRs of 75, 150, and 250, and an LOF from 56 to 85 years;
- Alternative B - up to 3,100 new wells (all directional) from the existing 497 well pads, WDRs of 75, 150, and 250, and an LOF from 56 to 85 years;
- Alternative C - up to 1,250 new wells (all straight) from a maximum of 1,250 new well pads, WDRs of 75, 150, and 250, and an LOF from 48 to 60 years;
- Alternative D - up to 2,200 new wells (all straight) from a maximum of 2,200 new well pads, WDRs of 75, 150, and 250, and an LOF from 52 to 73 years;
- Alternative E - up to 3,100 new wells (266 straight, 2,834 directional) on up to 266 new well pads (16 total pads/section), WDRs of 75, 150, and 250, and an LOF from 56 to 85 years;
- Alternative F - up to 3,100 new wells (1,028 straight, 2,072 directional) on up to 1,028 new pads (32 total pads/section), WDRs of 75, 150, and 250, and an LOF from 56 to 85 years;
- Alternative G - up to 3,100 new wells (2,553 straight, 547 directional) on up to 2,553 new well pads (64 total pads/section), WDRs of 75, 150, and 250, and an LOF from 56 to 85 years; and
- Preferred Alternative - up to 3,100 new wells (2,553 straight, 547 directional), WDRs of 75, 150, and 250, and an LOF from 56 to 85 years..

Modeling analyses were performed to quantify near-field pollutant concentrations within and nearby the JIDPA from project-related emissions sources for the range of alternatives to assure that the maximum near-field impacts were estimated. Impacts from scenarios considering 1,250 and 3,100 wells in production, at various well-spacing densities of 5, 10, 20, and 40 acres were modeled. Emissions from directional and straight drilling and construction of alternate well pads sizes of 3.8, 7.0, and 10.0 acres were evaluated. Near-field impacts are described in detail in Chapter 3.0.

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Direct project and cumulative mid-field and far-field modeling analyses were not performed for every NEPA alternative analyzed, since there is considerable similarity of modeled air quality components within many proposed alternatives, and due to the additional time and resources required for performing all of the potential analyses. Modeling scenarios were developed to approximate a range of project development alternatives including: No Action, Proposed Action, Alternative A, Alternative B, Alternative C, and Alternative F. These modeling scenarios assumed the maximum field emissions which could potentially occur concurrently (i.e., the final year of construction representing the maximum annual construction activity rate combined with nearly full-field production). Three WDRs were analyzed--250 wells/year (WDR250), 150 wells/year (WDR150), and 75 wells/year (WDR75). Development rates considered both straight and directional drilling operations and are generally consistent with the proposed Project alternatives.

Mid-field and far-field impacts and their applicability to each alternative are described in greater detail in Chapter 4.0.

### **1.3 STUDY TASKS**

The following eight tasks were performed for air quality and AQRVs impact assessment:

1. **Project Air Emissions Inventory.** Development of an air pollutant emissions inventory for the Project.
2. **Regional Air Emissions Inventory.** Development of an air pollutant emissions inventory for other regional sources not represented by background air quality measurements, including state-permitted sources, RFFA, and RFD.
3. **Project Near-Field Analysis.** Assessment of near-field air quality concentration impacts resulting from activities proposed within the JIDPA.

4. **Regional Near-Field Analysis.** Assessment of near-field air quality concentration impacts resulting from activities proposed within the JIDPA in combination with other existing and proposed regional compressor stations.
5. **In-Field Cumulative Analysis.** Assessment of concentration impacts within the JIDPA resulting from the project and other regional sources inventoried under item 2 above.
6. **Mid-Field Cumulative Analysis.** Assessment of mid-field visibility impacts to regional communities resulting from the Project and other regional sources.
7. **Far-Field Direct Project Impact Analysis.** Assessment of far-field air quality concentration and AQRV impacts resulting from proposed Project activities.
8. **Far-Field Cumulative Impact Analysis.** Assessment of far-field air quality concentration and AQRV impacts resulting from activities proposed within the JIDPA combined with other regional sources inventoried under item 2 above.