



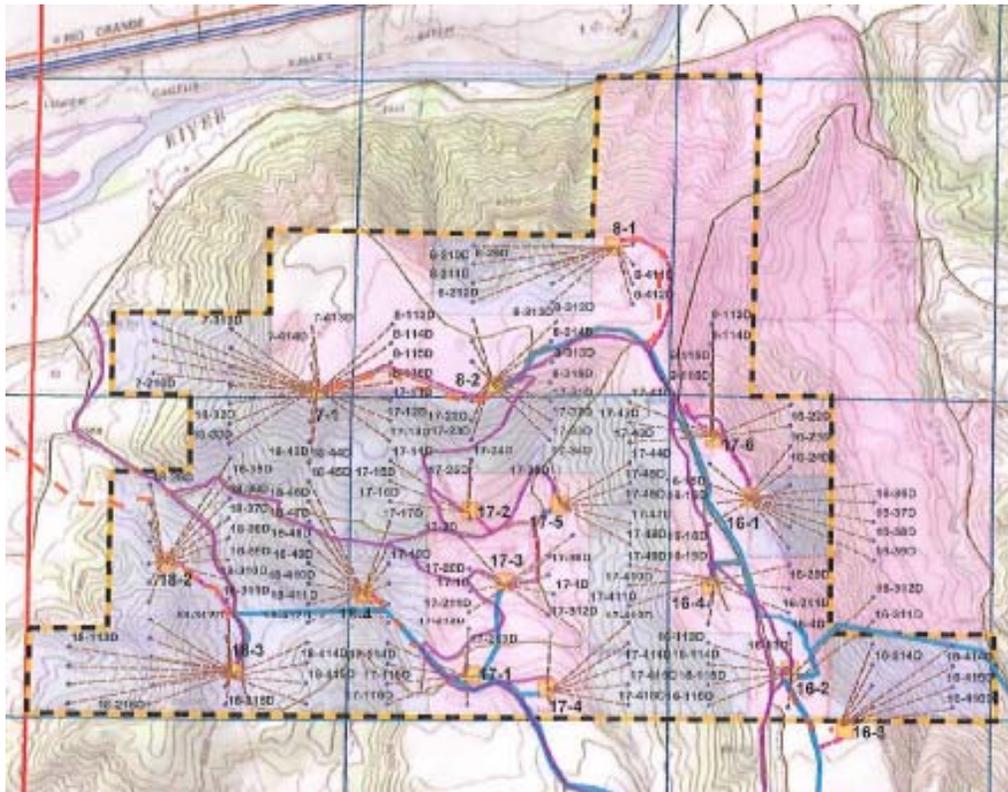
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## Proposed Action of the Kokopelli Master Development Plan for Oil and Gas



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for

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## INTRODUCTION

Orion Energy Partners (Orion) is proposing a four to seven year development program for natural gas on approximately 1,200 acres of public and split estate lands. In addition, approximately 1,040 acres of private mineral estate in the area will be developed. The lands are located in the Piceance Basin approximately four miles southwest of New Castle, Colorado. This proposal, referred to as the Kokopelli Master Development Plan (KMDP), arises from the implementation of private mineral drilling that successfully demonstrated the potential of the Jolley Mesa area to contain economically viable reserves of natural gas.

This proposal consists of constructing, drilling, completing and operating up to 116 federal wells and 70 private wells from one new and one existing Bureau of Land Management (BLM) location, and five new and nine existing private (fee) locations. These numbers include four federal and 19 fee wells already drilled. Ancillary facilities connected to the project include access roads, natural gas and produced water lines, and a variety of surface production equipment. Included in the proposal is a range of mitigation measures designed to minimize or eliminate impacts to surface and subsurface resources.

### Purpose and Need for Action

The purpose of this proposal is to develop natural gas resources on federal lease COC51146 consistent with existing federal lease rights. The action is needed to increase the development of natural gas resources for commercial marketing to the public.

Instead of structuring the development of these leases as a series of individual actions, the current Glenwood Springs Resource Area (GSRA) land use plan (BLM 1999), in addition to more recent BLM policy, specify the use of multi-well development plan proposals to more effectively manage federal lease development.

## THE PROPOSED ACTION

The KMDP is intended to describe future development strategy by Orion given current market conditions and company constraints. If fully developed, this proposal will result in 116 federal wells and 70 private wells drilled at 16 surface locations (**Figure 1**).

The total number of wells drilled, and wells drilled per year will depend largely on factors out of Orion's control, such as availability of drill rigs, geologic success, engineering technology, economic factors (e.g., the price of natural gas and the cost of services), availability of commodity markets, and lease stipulations and notices.

Associated with these developments will be the construction of up to 2.5 miles of new proposed access roads, and up to 2.5 miles of pipelines (**Figure 1**).

The proposed development area encompasses approximately 2,240 acres of which 520 acres are characterized by federal surface and mineral ownership and 680 acres are characterized by typical split estate (i.e., private surface and federal mineral ownership), and 1,040 acres are characterized by private surface and mineral ownership (**Figure 1**).

Each major element of the proposal is described below under the headings: **Development** (Construction/Drilling/Completion), **Production** (Operation and Maintenance), **Abandonment and Reclamation**, and **Road Maintenance**.

## **Development (Construction, Drilling and Completion)**

During the course of development, numerous construction activities will be needed. All of these activities could occur simultaneously. The following is a description of construction methods proposed for well pads, access roads, and gas gathering and produced water pipelines.

### ***Construction***

#### *Proposed Well Pads*

The locations of the well pads reflect the results of onsite exams conducted by the BLM, Orion, Orion subcontractors, and private landowners. The primary purpose of the onsite inspections was to assess potential resource impacts associated with the various construction activities. The onsite inspection included assessment of the proposed pad and pit layout, cuts and fills, topsoil stockpiling, erosion control, access, pipeline routes, and reclamation potential of each activity. In some cases, multiple revisions to the proposed well location, pipeline, and access routes were made to minimize potential impacts and accommodate landowner's requests. A surface use agreement currently exists between Orion and the landowners.

The proposed well pads will be constructed from the native soil and rock materials present using a bulldozer, grader, and excavator. The pads will be constructed by clearing all vegetation, stripping and stockpiling topsoil, and leveling the pad area using cut-and-fill techniques. Juniper trees will be selectively removed by the excavator and placed at the toe of the fill slopes to "catch" the fill, as well as act as a filtration system for storm water management. Pinyon trees will be chipped, or logged and removed from the site. Any other woody vegetation will be mulched or used in reclamation, and/or placed at the toe of the fill slopes. Cut slopes, associated with pad construction, will be left rough to provide a seed catchment surface, and may require "step cutting" when heights exceed 15 feet. Cut slopes for pad construction should not be steeper than 1.5: 1 (horizontal: vertical), except when approved by the BLM Authorized Officer. The tops of the cut banks and pad corners may be rounded to improve their appearance and reduce the volume of cut and fill material.

Initially, the size of the newly constructed pads will range from about 2.3 to 5.5 acres. After all wells are drilled, completed and production facilities are installed, interim reclamation activities will begin. Cuts and fills will be recontoured and revegetated to blend in with adjacent natural slopes as much as possible, and seeded to reestablish vegetation cover. These interim reclamation techniques will result in approximately 58% reduction in surface disturbance that will remain over the long-term life of the project (i.e., 20 to 30 years). **Table 1** presents the size of the pads during drilling and completion activities (short-term disturbance) and after interim reclamation (long-term disturbance).

Drill cuttings will be allowed to dry and will be buried on location in the cuttings pit. If all wells on the pad are not drilled concurrently, Orion will request approval to leave the pad unreclaimed, fencing the cuttings pit until the following drilling season. After one year from spudding the initial well, or one year after spudding any successive well(s), Orion will implement and complete temporary (pre-interim) reclamation or standard interim reclamation practices as identified in the surface Conditions of Approval, or submit proposed best management practices approved by the Authorized Officer that will be implemented on the "open" pad to control storm water drainage and weeds, and provide for wildlife protection measures, dust abatement plan and visual resource management.

To prevent livestock from accessing any open cuttings pit, a fence will be constructed and remain until all wells are drilled, completed and the pit is closed.

**Table 1. Proposed Well Pads, Roads, and Pipelines**

<b>Proposed/Existing Well Pads</b>						
<b>Pads</b>	<b>Lease</b>	<b>Legal Description T6S, R 91W</b>	<b>Surface</b>	<b>Short Term Acres</b>	<b>Long Term Acres</b>	<b>Remarks</b>
<b>Proposed</b>						
Kokopelli Fed #18-2	COC51146	NESW Sec. 18	BLM	2.9	0.7	
Jolley #7-1	COC51146/ Fee	SESE Sec. 7	Private	3.8	1.6	
Jolley #8-1	COC51146/ Fee	NESE Sec. 8	Private	3.5	1.5	
Jolley #16-3	COC51146	NWNE Sec. 21	Private	2.4	1.0	
Jolley #17-6	COC51146/ Fee	NWNW Sec. 16	Private	3.3	0.9	
Jolley #18-4	COC51146	NWSW Sec. 17	Private	2.3	0.8	
<b>Existing Pads</b>						
Jolley #8-2	COC51146/ Fee	SESW Sec. 8	Private	3.6	1.4	3.6 ac existing
Jolley #16-1	COC51146/ Fee	SWNW Sec. 16	Private	5.2	1.5	5.2 ac existing
Jolley #16-2	COC51146/ Fee	SESW Sec. 16	Private	2.4	0.9	2.4 ac existing
Jolley #16-4	COC51146/ Fee	NWSW Sec. 16	Private	4.0	1.5	4.0 ac existing
Kokopelli Fed #17-1	COC51146/ Fee	SESW Sec. 17	Private	3.0	0.9	3.0 ac existing
Jolley #17-2	COC51146/ Fee	SENW Sec. 17	Private	3.0	0.5	1.8 ac existing
Jolley #17-3	Fee	NESW Sec. 17	Private	NA	NA	Existing fee
Kokopelli Fed #17-4	COC51146/ Fee	SWSE Sec. 17	Private	5.5	1.6	5.5 existing
Kokopelli Fed #17-5	COC51146/ Fee	SWNE Sec. 17	Private	2.6	0.9	2.6 ac existing
Kokopelli Fed #18-3	COC51146	SWSE Sec. 18	BLM	4.5	1.6	2.7 ac existing
<b>Subtotal</b>			<b>BLM</b>	<b>7.4</b>	<b>2.3</b>	
<b>Subtotal</b>			<b>Private</b>	<b>44.6</b>	<b>15.0</b>	
<b>TOTAL</b>				<b>52.0</b>	<b>17.3</b>	
<b>Proposed New Roads</b>						
<b>Well Pad</b>	<b>Length</b>		<b>Surface</b>	<b>50' Short-Term Acres</b>	<b>30' Long-Term Acres</b>	<b>Remarks</b>
	<b>miles</b>	<b>feet</b>				
Access Road	0.19	992	BLM	1.1	0.7	
Access Road	0.80	4,215	Private	4.8	2.9	
Jolley #7-1	0.60	3,168	Private	3.6	2.2	
Jolley #8-1	0.05	250	Private	0.3	0.2	
Jolley #16-1	0.20	1,056	Private	1.2	0.7	
Jolley #16-3	0.07	350	Private	0.4	0.2	
Jolley #17-6	0.20	1,056	Private	1.2	0.7	
Kokopelli Fed #18-2	0.20	1,056	BLM	0.9**	0.4**	
Jolley #18-4	0.20	1,056	Private	1.2	0.7	
<b>Subtotal BLM</b>	<b>0.39</b>	<b>2,048</b>		<b>2.0</b>	<b>1.1</b>	
<b>Subtotal Private</b>	<b>2.12</b>	<b>11,151</b>		<b>12.7</b>	<b>7.6</b>	
<b>TOTAL</b>	<b>2.51</b>	<b>13,199</b>		<b>14.7</b>	<b>8.7</b>	
**Disturbance acreage estimates are less 12' feet wide because of existing two-track road.						
<b>Proposed New Pipelines</b>						
<b>Pipelines*</b>	<b>Length</b>		<b>Surface</b>	<b>50' Short-Term Acres</b>	<b>30' Long-Term Acres</b>	<b>Remarks</b>
	<b>miles</b>	<b>feet</b>				
Kokopelli Fed #18-2	0.20	1,056	BLM	1.2	0.7	
Jolley #7-1	0.60	3,168	Private	3.6	2.2	
Jolley #8-1	0.45	2,362	Private	2.7	1.6	
Jolley #16-1	0.20	1,056	Private	1.2	0.7	
Jolley #16-3	0.07	350	Private	0.4	0.2	
Jolley #17-6	0.20	1,056	Private	1.2	0.7	

Table 1. Proposed Well Pads, Roads, and Pipelines							
Pipelines*	Length			Surface	50' Short Term Acres	30' Long Term Acres	Remarks
	miles	feet					
Jolley #18-4	0.20	1,056		Private	1.2	0.7	
Jolley #16-4	0.15	792		Private	0.9	0.6	
Jolley #17-2	0.15	792		Private	0.9	0.6	
Kokopelli Fed #17-5	0.30	1,584		Private	1.8	1.1	
<b>Subtotal BLM</b>	<b>0.20</b>	<b>2,640</b>		<b>BLM</b>	<b>1.2</b>	<b>0.7</b>	
<b>Subtotal Private</b>	<b>2.32</b>	<b>12,216</b>		<b>Private</b>	<b>13.9</b>	<b>8.4</b>	
<b>TOTAL</b>	<b>2.52</b>	<b>14,856</b>			<b>15.1</b>	<b>9.1</b>	

				Short Term Acres	Long Term Acres		
<b>TOTAL</b>				<b>BLM</b>	<b>10.6 ac</b>	<b>4.1 ac</b>	
<b>TOTAL</b>				<b>Private</b>	<b>71.2 ac</b>	<b>31.0 ac</b>	
<b>GRAND TOTAL</b>					<b>81.8 ac</b>	<b>35.1 ac</b>	<b>58% Interim</b>

Notes:

- (1) Road disturbance is estimated at an average of 50' from the toe of fill to top of cut. Long term disturbance is estimated at 30' (22' running surface and 4' borrow ditches).
- (2) Pipelines will parallel the road corridor and will require a 50' short term disturbance and 30' long-term disturbance.
- (3) It was assumed that the 2-track to Jolley #7-1 would be improved for the disturbance calculations.
- (4) The disturbance area was split between Jolley #17-6 and #16-1 to avoid duplication of disturbance calculations.
- (5) It was assumed that the pipeline to Jolley #17-5 was built first and the pipeline to Jolley #17-2 was built from #17-5 to avoid duplication of disturbance calculations.

The sides of the well pads will be bermed to prevent storm water from flowing off the pad and into nearby drainages. Storm water will be directed to an opening in the berm that leads off the pad to a sediment trap. The channel from the opening to the sediment trap, and the overflow from the trap will be lined with rip-rap to dissipate energy and control erosion. Orion's storm water management efforts may include additional engineering measures, such as the installation of culverts to divert water flow away from surface locations as needed.

*Proposed Access Roads*

The primary access route to the area will be from Interstate 70 exiting at Silt, Colorado (Exit 97). The directions to the Kokopelli area are as follows: After exiting I-70 proceed to the frontage road at the south end of the Silt/I-70 interchange; proceed in a general easterly direction along said frontage road 0.4 miles to the intersection with county road 311 on the right; proceed right in a general southerly direction along county road 311 crossing the Colorado River 0.6 miles to the intersection with county road 331; proceed left in a general easterly direction continuing along county road 331 for 1.4 miles to the intersection with county road 335; proceed in a general easterly direction along county road 335 for 1.1 miles to an existing gravel pit on the right; proceed right in a general southeasterly direction traveling over private surface to the project area (**Figure 1**).

Within the project area, the road network will be extended from existing and proposed roads to provide access to the proposed pad locations (see **Figure 1**). The extension of the road network will involve improvement of approximately 2.51 miles of new road.

Roads will be designed and maintained to an appropriate standard no higher than necessary to accommodate their intended functions, as described in the *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development* (BLM and USFS, 2006) and BLM Handbook 9113- *Roads Manual*.

Various segments of the proposed and existing access roads are outside Orion's lease boundaries. In order to gain access for the use of existing roads and the construction and use of proposed roads, Orion intends to apply for a Right of Way (ROW) authorization that will grant access across those BLM administered lands outside the lease boundaries. Orion will apply for ROW authorization to access the 16 well pads. The ROW area applied for the proposed roads will be 30 feet wide.

The running surface will be an all-weather type with an aggregate surface. The width could vary from 22 to 24 feet, but will typically be 22 feet wide throughout the project area with safety, site distance, grade, topography, anticipated traffic flow, and visual resource management concerns being factors in the width determination.

Road construction/reconstruction will include clearing and grubbing of brush and trees, windrowing of topsoil, construction of reinforced rolling dips and grade dips where feasible, installation of culverts in ditched sections and side drainages to provide ditch relief and sediment control, construction of retaining structures on steep slopes (as approved by the BLM), placement of slash and topsoil on cut and fill slopes, placement of erosion control matting on cut and fill slopes as designated on the ground by the BLM, seeding of all disturbed areas outside of the travel way, and installation of cattle guards and road closure gates where needed.

Revegetation of road ditches and cut and fill slopes will help stabilize exposed soil and reduce sediment loss, reduce the growth of noxious weeds, reduce maintenance costs, maintain scenic quality and forage, and protect habitat. To ensure successful growth of plants and forbs, topsoil will be stripped and stockpiled during road construction and re-spread to the greatest degree practical on cut slopes, fill slopes, and borrow ditches prior to seeding.

The average grade will be 10% or less, wherever possible. The 10% grade will only be exceeded where the physical terrain or unusual circumstances require it. Minimum horizontal curve radii will be 100 feet. Where terrain will not allow a 100-foot curve radius, the curve will be widened. Road construction will result in 14.7 acres of short-term ground disturbance. Following interim reclamation, the long-term disturbance will be approximately 8.7 acres. Road maintenance will be performed as needed to ensure safe travel.

#### *Proposed Gas Gathering and Water Pipelines*

A gas gathering and water pipeline network is necessary to both gather and deliver gas off site to existing Encana main gathering lines, and to transport flowback water to facilities outside the project area.

Orion will prepare and submit a ROW application to construct and operate the gas gathering lines. The gas gathering system will consist of steel pipelines, with a maximum allowable working pressure (MAWP) of 1440 psi and a diameter up to 12 inches. Those gathering lines that parallel new road construction will be installed in the uphill or cut side of the road in the shoulder prior to final grading and aggregate application.

Orion will install 4 – 12 inch water lines in a common trench with the gas gathering lines at the same time to minimize surface disturbance. A ROW application will be submitted by Orion for the construction and

operation of these water lines. The water lines will be operated and maintained by Orion through the life of the project.

The ROW request for the pipeline will be 30 feet wide with an additional 20 feet also authorized as a temporary work space for a period of up to one year. The 30-foot width will include the 22-foot road travel way. Orion will install the gathering lines in the disturbed area necessary to construct the access road. Construction will be performed within this area of disturbance. The road will be the working side of the construction. Following construction, the permanent 30-foot ROW will be needed for maintenance purposes. The pipeline trench will be excavated mechanically primarily in the uphill, or cut side of the road corridor, with an excavator (trackhoe) and will be approximately three feet wide and at least four feet deep. Gas pipeline segments will be welded together and lowered in the trench. The water line will then be placed into the ditch and separated from the gas line by sandbags, or other means. Both lines will be covered with excavated material, and then each pipeline will be pressure tested with fresh water and/or nitrogen gas to locate any leaks. Fresh water, or nitrogen used for testing will be obtained offsite and transported to the testing location by truck. After testing, the water will be disposed of at an existing offsite evaporation pond facility, or discharged into surface water drainages as approved by the BLM and State of Colorado. Nitrogen will be vented to the atmosphere.

#### *Mitigation Common to All Construction Operations*

As part of the KMDP, Orion is submitting a Master Application for Permit to Drill (MAPD) that includes a drilling plan and a surface use plan of operations that incorporates the drilling and mitigation measures that are common to all of the federal, split estate and private well pads within the KMDP area. Mitigation for site specific pads not incorporated by Orion in the MAPD will be attached as Conditions of Approval to APD's filed with the Glenwood Springs Energy Office.

Trees removed from the pad locations will be placed at the toe of the fill slopes to act as a filtration system for storm water management, and /or placed back on the reclaimed surfaces. Trees removed along access roads will be selectively removed by an excavator and placed at the toe of the fill slopes to "catch" the fill, as well as act as a filtration system for storm water management. Cut pinyon pine trees will be chipped, buried, or logged and removed from the site to prevent the spread of the Ips beetle. If an excavator is not used, then trees will be cut to a maximum stump height of six inches (6") and placed back onto the cut and/or fill slopes with the slash height not to exceed 24 inches (24"). Root balls will be buried or placed at the toe of the fill slopes. Trees will not be dozed off the access road, except on private surface where trees may be dozed upon consent from the landowner. Trees and other vegetation may be dozed on pipeline routes and then pulled back onto the ROW as part of final reclamation. Other vegetation, such as sagebrush and other shrubs, may be scattered off site or placed on well pads and road fills to help visually screen the slopes. On pads where boulder fields exist, reclamation will include the replacement of boulders in order to reconstruct the natural appearance.

#### *Drilling and Completion*

Up to 186 wells will be drilled as part of the proposed action. **Table 2** lists the surface location of the wells, as well as the well bottomhole locations. Orion's drilling operations will be conducted in compliance with all federal Onshore Oil and Gas Orders, all applicable rules and regulations, and Notices to Lessees (NTLs). Drilling rigs in the KMDP area will be targeting natural gas producing horizons in the Mesa Verde and Iles formations at depths of 6,500 to 8,500 feet. Wells will require approximately 15 days to drill and 30 days to complete. Pads with multiple wells will be occupied for a more extended period of time, depending on the number of wells drilled. Production results for wells drilled during the first year will be used to plan and design the drilling program for subsequent years.

**Table 2: List of Fee/Federal Wells and Bottom Hole Locations**

<b>PAD #18-2 WELL NAME</b>	<b>SEC</b>	<b>T</b>	<b>R</b>	<b>FOOTAGES</b>	<b>MINERALS</b>	<b>COMMENTS</b>
Kokopelli Fed #18-25D	18	6S	91W	1,570' FNL, 1,980' FWL	Federal	
Kokopelli Fed #18-26D	18	6S	91W	1,882' FNL, 1,980' FWL	Federal	
Kokopelli Fed #18-27D	18	6S	91W	2,194' FNL, 1,980' FWL	Federal	
Kokopelli Fed #18-28D	18	6S	91W	2,506' FNL, 1,980' FWL	Federal	
Kokopelli Fed #18-29D	18	6S	91W	2,462' FSL, 1,980' FWL	Federal	
Kokopelli Fed #18-210D	18	6S	91W	2,150' FSL, 1,980' FWL	Federal	
Kokopelli Fed #18-211D	18	6S	91W	1,838' FSL, 1,980' FWL	Federal	
Kokopelli Fed #18-34D	18	6S	91W	1,125' FNL, 1,980' FEL	Federal	
Kokopelli Fed #18-35D	18	6S	91W	1,450' FNL, 1,980' FEL	Federal	
Kokopelli Fed #18-36D	18	6S	91W	1,775' FNL, 1,980' FEL	Federal	
Kokopelli Fed #18-37D	18	6S	91W	2,100' FNL, 1,980' FEL	Federal	
Kokopelli Fed #18-38D	18	6S	91W	2,425' FNL, 1,980' FEL	Federal	
Kokopelli Fed #18-39D	18	6S	91W	2,530' FSL, 1,980' FEL	Federal	
Kokopelli Fed #18-310D	18	6S	91W	2,205' FSL, 1,980' FEL	Federal	
<b>PAD #18-3 - Existing Pad WELL NAME</b>	<b>SEC</b>	<b>T</b>	<b>R</b>	<b>FOOTAGES</b>	<b>MINERALS</b>	<b>COMMENTS</b>
Kokopelli Fed #18-113D	18	6S	91W	1,070' FSL, 660' FWL	Federal	
Kokopelli Fed #18-114D	18	6S	91W	763' FSL, 660' FWL	Federal	
Kokopelli Fed #18-115D	18	6S	91W	456' FSL, 660' FWL	Federal	
Kokopelli Fed #18-116D	18	6S	91W	150' FSL, 660' FWL	Federal	
Kokopelli Fed #18-212D	18	6S	91W	1,526' FSL, 1,980' FWL	Federal	
Kokopelli Fed #18-213D1	18	6S	91W	1,213' FSL, 1,980' FWL	Federal	
Kokopelli Fed #18-213D	18	6S	91W	900' FSL, 1,980' FWL	Federal	Drilled
Kokopelli Fed #18-215D	18	6S	91W	450' FSL, 1,980' FWL	Federal	Drilled
Kokopelli Fed #18-216D	18	6S	91W	140' FSL, 1,980' FWL	Federal	
Kokopelli Fed #18-311D	18	6S	91W	1,880' FSL, 1,980' FEL	Federal	
Kokopelli Fed #18-312D	18	6S	91W	1,555' FSL, 1,980' FEL	Federal	
Kokopelli Fed #18-313D1	18	6S	91W	1,230' FSL, 1,980' FEL	Federal	
Kokopelli Fed #18-313D	18	6S	91W	900' FSL, 1,980' FEL	Federal	Drilled
Kokopelli Fed #18-315D	18	6S	91W	450' FSL, 1,980' FEL	Federal	Drilled
Kokopelli Fed #18-316D	18	6S	91W	140' FSL, 1,980' FEL	Federal	
Kokopelli Fed #18-413D	18	6S	91W	1,146' FSL, 660' FEL	Federal	
Kokopelli Fed #18-414D	18	6S	91W	814' FSL, 660' FEL	Federal	
Kokopelli Fed #18-415D	18	6S	91W	482' FSL, 660' FEL	Federal	
Kokopelli Fed #18-416D	18	6S	91W	150' FSL, 660' FEL	Federal	
<b>PAD #18-4 WELL NAME</b>	<b>SEC</b>	<b>T</b>	<b>R</b>	<b>FOOTAGES</b>	<b>MINERALS</b>	<b>COMMENTS</b>
Kokopelli Fed #18-45D	18	6S	91W	1,478' FNL, 660' FEL	Federal	
Kokopelli Fed #18-46D	18	6S	91W	1,810' FNL, 660' FEL	Federal	
Kokopelli Fed #18-47D	18	6S	91W	2,142' FNL, 660' FEL	Federal	

**Table 2: List of Fee/Federal Wells and Bottom Hole Locations**

Kokopelli Fed #18-48D	18	6S	91W	2,474' FNL, 660' FEL	Federal	
Kokopelli Fed #18-49D	18	6S	91W	2,474' FSL, 660' FEL	Federal	
Kokopelli Fed #18-410D	18	6S	91W	2,142' FSL, 660' FEL	Federal	
Kokopelli Fed #18-411D	18	6S	91W	1,810' FSL, 660' FEL	Federal	
Kokopelli Fed #18-412D	18	6S	91W	1,478' FSL, 660' FEL	Federal	
Kokopelli Fed #17-17D	17	6S	91W	2,142' FNL, 660' FWL	Federal	
Kokopelli Fed #17-18D	17	6S	91W	2,474' FNL, 660' FWL	Federal	
Kokopelli Fed #17-19D	17	6S	91W	2,474' FSL, 660' FWL	Federal	
Kokopelli Fed #17-110D	17	6S	91W	2,142' FSL, 660' FWL	Federal	
Kokopelli Fed #17-111D	17	6S	91W	1,810' FSL, 660' FWL	Federal	
Kokopelli Fed #17-112D	17	6S	91W	1,478' FSL, 660' FWL	Federal	
<b>PAD #7-1 WELL NAME</b>	<b>SEC</b>	<b>T</b>	<b>R</b>	<b>FOOTAGES</b>	<b>MINERALS</b>	<b>COMMENTS</b>
Kokopelli Fed #7-213D	7	6S	91W	1,070' FSL, 1,980' FWL	Federal	
Kokopelli Fed #7-214D	7	6S	91W	797' FSL, 1,980' FWL	Federal	
Kokopelli Fed #7-215D	7	6S	91W	524' FSL, 1,980' FWL	Federal	
Kokopelli Fed #7-216D	7	6S	91W	250' FSL, 1,980' FWL	Federal	
Kokopelli Fed #7-313D	7	6S	91W	1,070' FSL, 1,980' FEL	Federal	
Kokopelli Fed #7-314D	7	6S	91W	764' FSL, 1,980' FEL	Federal	
Kokopelli Fed #7-315D	7	6S	91W	458' FSL, 1,980' FEL	Federal	
Kokopelli Fed #7-316D	7	6S	91W	150' FSL, 1,980' FEL	Federal	
Kokopelli Fed #18-31D	18	6S	91W	150' FNL, 1,980' FEL	Federal	
Kokopelli Fed #18-32D	18	6S	91W	475' FNL, 1,980' FEL	Federal	
Kokopelli Fed #18-33D	18	6S	91W	800' FNL, 1,980' FEL	Federal	
Jolley #7-413D	7	6S	91W	1,070' FSL, 660' FEL	Fee	
Jolley #7-414D	7	6S	91W	764' FSL, 660' FEL	Fee	
Jolley #7-415D	7	6S	91W	458' FSL, 660' FEL	Fee	
Jolley #7-416D	7	6S	91W	150' FSL, 660' FEL	Fee	
Kokopelli Fed #18-41D	18	6S	91W	150' FNL, 660' FEL	Federal	
Kokopelli Fed #18-42D	18	6S	91W	482' FNL, 660' FEL	Federal	
Kokopelli Fed #18-43D	18	6S	91W	814' FNL, 660' FEL	Federal	
Kokopelli Fed #18-44D	18	6S	91W	1,146' FNL, 660' FEL	Federal	
Jolley #8-113D	8	6S	91W	1,110' FSL, 660' FWL	Fee	
Jolley #8-114D	8	6S	91W	790' FSL, 660' FWL	Fee	
Jolley #8-115D	8	6S	91W	470' FSL, 660' FWL	Fee	
Jolley #8-116D	8	6S	91W	150' FSL, 660' FWL	Fee	
Kokopelli Fed #17-11D	17	6S	91W	150' FNL, 660' FWL	Federal	
Kokopelli Fed #17-12D	17	6S	91W	482' FNL, 660' FWL	Federal	
Kokopelli Fed #17-13D	17	6S	91W	814' FNL, 660' FWL	Federal	
<b>PAD #17-1 - Existing Pad WELL NAME</b>	<b>SEC</b>	<b>T</b>	<b>R</b>	<b>FOOTAGES</b>	<b>MINERALS</b>	<b>COMMENTS</b>
Kokopelli Fed #17-113D	17	6S	91W	1,146' FSL, 660' FWL	Federal	
Kokopelli Fed #17-114D	17	6S	91W	814' FSL, 660' FWL	Federal	

**Table 2: List of Fee/Federal Wells and Bottom Hole Locations**

Kokopelli Fed #17-115D	17	6S	91W	482' FSL, 660' FWL	Federal	
Kokopelli Fed #17-116D	17	6S	91W	150' FSL, 660' FWL	Federal	
Jolley #17-212D	17	6S	91W	1,381' FSL, 1,980' FWL	Fee	
Jolley #17-213D	17	6S	91W	1,073' FSL, 1,980' FWL	Fee	
Jolley #17-214D	17	6S	91W	765' FSL, 1,980' FWL	Fee	
Jolley #17-215D	17	6S	91W	457' FSL, 1,980' FWL	Fee	
Jolley #17-216D	17	6S	91W	150' FSL, 1,980' FWL	Fee	
Jolley-Newcastle #17-14	17	6S	91W	610' FSL, 1,910' FWL	Fee	Drilled - to be plugged
Jolley #1C-17	17	6S	91W	628' FSL, 2,086' FWL	Fee	Drilled - Plugged
<b>PAD #17-2 - Existing Pad</b>						
<b>WELL NAME</b>	<b>SEC</b>	<b>T</b>	<b>R</b>	<b>FOOTAGES</b>	<b>MINERALS</b>	<b>COMMENTS</b>
Kokopelli Fed #17-14D	17	6S	91W	1,146' FNL, 660' FWL	Federal	
Kokopelli Fed #17-15D	17	6S	91W	1,478' FNL, 660' FWL	Federal	
Kokopelli Fed #17-16D	17	6S	91W	1,810' FNL, 660' FWL	Federal	
Kokopelli Fed #17-24D	17	6S	91W	1,116' FNL, 1,980' FWL	Federal	
Jolley #17-25D	17	6S	91W	1,438' FNL, 1,980' FWL	Fee	
Jolley #17-6R	17	6S	91W	1,760' FNL, 1,980' FWL	Fee	
Jolley #17-6	17	6S	91W	1,800' FNL, 2,031' FWL	Fee	Drilled - to be plugged
Jolley #17-26D	17	6S	91W	2,082' FNL, 1,980' FWL	Fee	
<b>PAD #8-2 - Existing Pad</b>						
<b>WELL NAME</b>	<b>SEC</b>	<b>T</b>	<b>R</b>	<b>FOOTAGES</b>	<b>MINERALS</b>	<b>COMMENTS</b>
Jolley #8-213D	8	6S	91W	1,170' FSL, 1,980' FWL	Fee	Drilled
Jolley #8-214D	8	6S	91W	830' FSL, 1,980' FWL	Fee	
Jolley #8-215D	8	6S	91W	490' FSL, 1,980' FWL	Fee	Drilled
Jolley #8-216D	8	6S	91W	150' FSL, 1,980' FWL	Fee	
Jolley #1-8	8	6S	91W	202' FSL, 2,403' FWL	Fee	Drilled - to be plugged
Kokopelli Fed #17-21D	17	6S	91W	150' FNL, 1,980' FWL	Federal	
Kokopelli Fed #17-22D	17	6S	91W	472' FNL, 1,980' FWL	Federal	
Kokopelli Fed #17-23D	17	6S	91W	794' FNL, 1,980' FWL	Federal	
Jolley #8-313D	8	6S	91W	1,170' FSL, 1,980' FEL	Fee	Drilled
Jolley #8-314D	8	6S	91W	830' FSL, 1,980' FEL	Fee	
Jolley #8-315D	8	6S	91W	490' FSL, 1,980' FEL	Fee	Drilled
Jolley #8-316D	8	6S	91W	150' FSL, 1,980' FEL	Fee	
Kokopelli Fed #17-31D	17	6S	91W	150' FNL, 1,980' FEL	Federal	
Kokopelli Fed #17-32D	17	6S	91W	470' FNL, 1,980' FEL	Federal	
Kokopelli Fed #17-33D	17	6S	91W	790' FNL, 1,980' FEL	Federal	
<b>PAD #17-5 - Existing Pad</b>						
<b>WELL NAME</b>	<b>SEC</b>	<b>T</b>	<b>R</b>	<b>FOOTAGES</b>	<b>MINERALS</b>	<b>COMMENTS</b>
Kokopelli Fed #17-34D	17	6S	91W	1,110' FNL, 1,980' FEL	Federal	
Jolley #17-35D	17	6S	91W	1,430' FNL, 1,980' FEL	Fee	
Jolley #17-36D	17	6S	91W	1,750' FNL, 1,980' FEL	Fee	

**Table 2: List of Fee/Federal Wells and Bottom Hole Locations**

Jolley #17-37D	17	6S	91W	2,070' FNL, 1,980' FEL	Fee	
Jolley #1	17	6S	91W	1,885' FNL, 1,810' FEL	Fee	Drilled - to be plugged
Jolley-Newcastle #17-7	17	6S	91W	2,080' FNL, 2,070' FEL	Fee	Drilled - to be plugged
Kokopelli Fed #17-44D	17	6S	91W	1,146' FNL, 660' FEL	Federal	
Kokopelli Fed #17-45D	17	6S	91W	1,478' FNL, 660' FEL	Federal	
Kokopelli Fed #17-46D	17	6S	91W	1,810' FNL, 660' FEL	Federal	
Kokopelli Fed #17-47D	17	6S	91W	2,142' FNL, 660' FEL	Federal	
Kokopelli Fed #17-48D	17	6S	91W	2,474' FNL, 660' FEL	Federal	
<b>PAD #17-3 - Existing Pad WELL NAME</b>	<b>SEC</b>	<b>T</b>	<b>R</b>	<b>FOOTAGES</b>	<b>MINERALS</b>	<b>COMMENTS</b>
Jolley #17-2D	17	6S	91W	2,403' FNL, 1,768' FWL	Fee	Drilled
Jolley #17-28D	17	6S	91W	2,400' FSL, 1,980' FWL	Fee	
Jolley #17-1D	17	6S	91W	1,997' FSL, 1,991' FWL	Fee	Drilled
Jolley #17-211D	17	6S	91W	1,689' FSL, 1,980' FWL	Fee	
Jolley #17-3D	17	6S	91W	2,400' FNL, 1,698' FEL	Fee	Drilled
Jolley #17-39D	17	6S	91W	2,595' FSL, 1,980' FEL	Fee	
Jolley #17-4D	17	6S	91W	2,004' FSL, 2,022' FEL	Fee	Drilled
Jolley #17-311D	17	6S	91W	2,299' FSL, 1,980' FEL	Fee	
Jolley #17-312D	17	6S	91W	1,652' FSL, 1,980' FEL	Fee	
<b>PAD #17-4 - Existing Pad WELL NAME</b>	<b>SEC</b>	<b>T</b>	<b>R</b>	<b>FOOTAGES</b>	<b>MINERALS</b>	<b>COMMENTS</b>
Jolley #17-313D	17	6S	91W	1,300' FSL, 1,980' FEL	Fee	
Jolley #17-15	17	6S	91W	762' FSL, 2,058' FEL	Fee	Drilled
Jolley #17-315D	17	6S	91W	450' FSL, 1,980' FEL	Fee	
Jolley #17-316D	17	6S	91W	150' FSL, 1,980' FEL	Fee	
Kokopelli Fed #17-412D	17	6S	91W	1,478' FSL, 660' FEL	Federal	
Kokopelli Fed #17-413D	17	6S	91W	1,146' FSL, 660' FEL	Federal	
Kokopelli Fed #17-414D	17	6S	91W	814' FSL, 660' FEL	Federal	
Kokopelli Fed #17-415D	17	6S	91W	482' FSL, 660' FEL	Federal	
Kokopelli Fed #17-416D	17	6S	91W	150' FSL, 660' FEL	Federal	
<b>PAD #8-1 WELL NAME</b>	<b>SEC</b>	<b>T</b>	<b>R</b>	<b>FOOTAGES</b>	<b>MINERALS</b>	<b>COMMENTS</b>
Kokopelli Fed #8-29D	8	6S	91W	2,390' FSL, 1,980' FWL	Federal	
Kokopelli Fed #8-210D	8	6S	91W	2,084' FSL, 1,980' FWL	Federal	
Kokopelli Fed #8-211D	8	6S	91W	1,778' FSL, 1,980' FWL	Federal	
Kokopelli Fed #8-212D	8	6S	91W	1,470' FSL, 1,980' FWL	Federal	
Kokopelli Fed #8-39D	8	6S	91W	2,390' FSL, 1,980' FEL	Federal	
Kokopelli Fed #8-310D	8	6S	91W	2,084' FSL, 1,980' FEL	Federal	
Kokopelli Fed #8-311D	8	6S	91W	1,778' FSL, 1,980' FEL	Federal	
Kokopelli Fed #8-312D	8	6S	91W	1,470' FSL, 1,980' FEL	Federal	
Jolley #8-45D	8	6S	91W	1,550' FNL, 660' FEL	Fee	

**Table 2: List of Fee/Federal Wells and Bottom Hole Locations**

Jolley #8-46D	8	6S	91W	1,875' FNL, 660' FEL	Fee	
Jolley #8-47D	8	6S	91W	2,200' FNL, 660' FEL	Fee	
Jolley #8-48D	8	6S	91W	2,525' FNL, 660' FEL	Fee	
Jolley #8-49D	8	6S	91W	2,429' FSL, 660' FEL	Fee	
Jolley #8-410D	8	6S	91W	2,104' FSL, 660' FEL	Fee	
Jolley #8-411D	8	6S	91W	1,779' FSL, 660' FEL	Fee	
Jolley #8-412D	8	6S	91W	1,454' FSL, 660' FEL	Fee	
<b>PAD #17-6</b>						
<b>WELL NAME</b>	<b>SEC</b>	<b>T</b>	<b>R</b>	<b>FOOTAGES</b>	<b>MINERALS</b>	<b>COMMENTS</b>
Kokopelli Fed #17-41D	17	6S	91W	150' FNL, 660' FEL	Federal	
Kokopelli Fed #17-42D	17	6S	91W	482' FNL, 660' FEL	Federal	
Kokopelli Fed #17-43D	17	6S	91W	814' FNL, 660' FEL	Federal	
Jolley #9-113D	9	6S	91W	1,146' FSL, 660' FWL	Fee	
Jolley #9-114D	9	6S	91W	814' FSL, 660' FWL	Fee	
Jolley #9-115D	9	6S	91W	482' FSL, 660' FWL	Fee	
Jolley #9-116D	9	6S	91W	150' FSL, 660' FWL	Fee	
Jolley #16-11D	16	6S	91W	150' FNL, 660' FWL	Fee	
Jolley #16-12D	16	6S	91W	482' FNL, 660' FWL	Fee	
Jolley #16-13D	16	6S	91W	814' FNL, 660' FWL	Fee	
Jolley #16-21D	16	6S	91W	150' FNL, 1,980' FWL	Fee	
Jolley #16-22D	16	6S	91W	490' FNL, 1,980' FWL	Fee	
<b>PAD #16-1 – Existing Pad</b>						
<b>WELL NAME</b>	<b>SEC</b>	<b>T</b>	<b>R</b>	<b>FOOTAGES</b>	<b>MINERALS</b>	<b>COMMENTS</b>
Jolley #16-14D	16	6S	91W	1,146' FNL, 660' FWL	Fee	
Jolley #16-15D	16	6S	91W	1,478' FNL, 660' FWL	Fee	
Jolley #16-16D	16	6S	91W	1,810' FNL, 660' FWL	Fee	
Jolley #16-17D	16	6S	91W	2,142' FNL, 660' FWL	Fee	
Jolley #16-23D	16	6S	91W	830' FNL, 1,980' FWL	Fee	
Jolley #16-24D	16	6S	91W	1,170' FNL, 1,980' FWL	Fee	
Kokopelli Fed #16-25D	16	6S	91W	1,470' FNL, 1,980' FWL	Federal	
Kokopelli Fed #16-26D	16	6S	91W	1,810' FNL, 1,980' FWL	Federal	
Kokopelli Fed #16-27D	16	6S	91W	2,150' FNL, 1,980' FWL	Federal	
Kokopelli Fed #16-28D	16	6S	91W	2,490' FNL, 1,980' FWL	Federal	
Hilton #16-36D	16	6S	91W	1,725' FNL, 1,980' FEL	Fee	
Hilton #16-37D	16	6S	91W	2,040' FNL, 1,980' FEL	Fee	
Hilton #16-38D	16	6S	91W	2,355' FNL, 1,980' FEL	Fee	
Hilton #16-39D	16	6S	91W	2,588' FSL, 1,980' FEL	Fee	
<b>PAD #16-2 - Existing Pad</b>						
<b>WELL NAME</b>	<b>SEC</b>	<b>T</b>	<b>R</b>	<b>FOOTAGES</b>	<b>MINERALS</b>	<b>COMMENTS</b>
Kokopelli Fed #16-113D	16	6S	91W	1,170' FSL, 660' FWL	Federal	
Kokopelli Fed #16-114D	16	6S	91W	830' FSL, 660' FWL	Federal	

**Table 2: List of Fee/Federal Wells and Bottom Hole Locations**

Kokopelli Fed #16-115D	16	6S	91W	490' FSL, 660' FWL	Federal	
Kokopelli Fed #16-116D	16	6S	91W	150' FSL, 660' FWL	Federal	
Jolley #16-4D	16	6S	91W	1,320' FSL, 1,995' FWL	Fee	Drilled
Jolley #16-3D	16	6S	91W	990' FSL, 1,995' FWL	Fee	
Jolley #16-1	16	6S	91W	698' FSL, 1,995' FWL	Fee	Drilled
Jolley #16-2D	16	6S	91W	412' FSL, 1,995' FWL	Fee	
Jolley #16-216D	16	6S	91W	125' FSL, 1,980' FWL	Fee	
Hilton #16-311D	16	6S	91W	1,650' FSL, 1,980' FEL	Fee	
Hilton #16-312D	16	6S	91W	1,980' FSL, 1,980' FEL	Fee	Drilled
<b>PAD #16-3 WELL NAME</b>	<b>SEC</b>	<b>T</b>	<b>R</b>	<b>FOOTAGES</b>	<b>MINERALS</b>	<b>COMMENTS</b>
Kokopelli Fed #16-313D	16	6S	91W	1,170' FSL, 1,980' FEL	Federal	
Kokopelli Fed #16-314D	16	6S	91W	830' FSL, 1,980' FEL	Federal	
Kokopelli Fed #16-315D	16	6S	91W	490' FSL, 1,980' FEL	Federal	
Kokopelli Fed #16-316D	16	6S	91W	150' FSL, 1,980' FEL	Federal	
Kokopelli Fed #16-413D	16	6S	91W	1,170' FSL, 660' FEL	Federal	
Kokopelli Fed #16-414D	16	6S	91W	830' FSL, 660' FEL	Federal	
Kokopelli Fed #16-415D	16	6S	91W	490' FSL, 660' FEL	Federal	
Kokopelli Fed #16-416D	16	6S	91W	150' FSL, 660' FEL	Federal	
<b>PAD #16-4 - Existing Pad WELL NAME</b>	<b>SEC</b>	<b>T</b>	<b>R</b>	<b>FOOTAGES</b>	<b>MINERALS</b>	<b>COMMENTS</b>
Kokopelli Fed #17-49D	17	6S	91W	2,474' FSL, 660' FEL	Federal	
Kokopelli Fed #17-410D	17	6S	91W	2,142' FSL, 660' FEL	Federal	
Kokopelli Fed #17-411D	17	6S	91W	1,810' FSL, 660' FEL	Federal	
Jolley #16-18D	16	6S	91W	2,474' FNL, 660' FWL	Fee	
Jolley #16-19D	16	6S	91W	2,474' FSL, 660' FWL	Fee	
Jolley #16-12	16	6S	91W	2,319' FSL, 683' FWL	Fee	Drilled - to be plugged
Jolley #16-110D	16	6S	91W	2,142' FSL, 660' FWL	Fee	
Jolley #16-111D	16	6S	91W	1,810' FSL, 660' FWL	Fee	
Jolley #16-112D	16	6S	91W	1,470' FSL, 660' FWL	Fee	
Jolley #16-29D	16	6S	91W	2,490' FSL, 1,980' FWL	Fee	
Jolley #16-210D	16	6S	91W	2,100' FSL, 1,980' FWL	Fee	
Jolley #16-211D	16	6S	91W	1,710' FSL, 1,980' FWL	Fee	

Orion intends initially to drill and complete eight to 26 wells on a pad, causing drilling operations to be conducted in more than one phase. Development will be highly sensitive to price of gas and cost of services. The BLM will be notified of scheduling changes in a timely manner. If all wells on the pad are not drilled concurrently, Orion may request approval for the pad to remain unreclaimed, until the following drilling season. After one year from spudding the initial well, or one year after spudding any successive well(s), Orion will implement and complete temporary (i.e. pre-interim) reclamation or standard interim reclamation practices as identified in the surface use Conditions of Approval, or submit proposed best management practices (BMP) to be approved by the Authorized Officer. The BMPs will

be implemented on the “open” pad to control storm water drainage and weeds, and provide for wildlife protection measures, dust abatement, and visual resource management. Because of geologic and market uncertainties, Orion may drill fewer wells than those described in the KMDP.

Prior to drilling below the surface casing, well control equipment (Blowout Preventer and Choke Manifold) will be installed on the surface casing and both the well control equipment and surface casing will be tested to ensure adequate well control. The well control equipment will meet the minimum standards of ONSHORE OIL and GAS ORDER No. 2 (Drilling Operations), and the BLM will be notified in advance of all pressure tests in order to be present and witness the tests, if so desired. Charts of the test are kept on location and are available to the BLM for inspection at any time.

Orion will use a small truck-mounted drilling rig to drill the conductor pipe and rat holes. Once the conductor pipe is set and cemented in place to the surface, a conventional drilling rig will be moved in and rigged up to spud (begin drilling) the surface hole and production holes to total depth. A downhole motor is used to directionally drill the well and to increase penetration rate. The motor is powered by drilling fluids that are used to drive the motor, cool the bit, and carry drill cuttings to the surface. Conventional water based drilling mud/fluids will be utilized in the drilling of the wells. In order to maintain borehole stability, minimize possible damage to the formation, provide adequate carrying viscosity (thickness) to carry the drill cuttings out of the wellbore, and reduce downhole fluid losses, various non-toxic chemicals and certain materials may need to be added to the mud system.

For the directional wells, an S-shaped directional design will be used to reach the targeted well locations. In general, a target radius of 50 feet will be used. Specific directional plans for each well will be included with the APDs. Downhole operations will be done with directional tools to facilitate proper direction and path of the well.

Drill cuttings from the wellbore (mainly shale, sand, and miscellaneous rock minerals) will be directed to a reserve pit, and eventually buried on location. The reserve pit will adhere to BLM and Colorado Oil and Gas Conservation Commission (COGCC) guidelines. No hazardous substances will be placed in any pits.

After drilling the hole to its total depth, logging tools will be run into the well to evaluate the potential hydrocarbon resource. If the evaluation indicates adequate hydrocarbon resources are present and recoverable, steel production casing will be run and cemented in place in accordance with the well design, as approved by the BLM and any applicable Conditions of Approval (COAs). The proposed casing and cementing program will be designed to protect and/or isolate all usable water zones, potentially productive zones, lost circulation zones, abnormally pressured zones, and any prospectively valuable deposits of minerals. BLM approval is necessary prior to the use of any isolating medium other than cement.

After production casing has been cemented in place, completion equipment is moved onto the location. Well completion consists of running a Cement Bond log to evaluate the cement integrity and to correlate the cased hole logs to the open hole logs, perforating the casing across the hydrocarbon producing zones, and stimulating the formation to enhance the production of oil and gas. The typical method used for stimulation consists of hydraulic fracture treatment of the reservoir, in which sand with non-toxic fluids is pumped into the producing formation with sufficient hydraulic pressure to fracture the rock formation. The sand serves as a proppant to keep the created fracture open, thereby allowing reservoir fluids to move more efficiently into the wellbore.

The source of water for drilling purposes will be the Colorado River. The water will be transported by pipeline or licensed haulers. Water permits will be filed appropriately by the licensed haulers.

## **Production**

### ***Surface Facilities***

Surface facilities at each well pad location will consist of wellheads, separation units, gas metering units and above ground condensate and produced water tanks with approximately 300 to 400-barrel capacities each. When needed for visual mitigation, low profile 250 barrel steel tanks will be installed. Multi-well locations will share production equipment, whenever feasible, to minimize surface occupancy and disturbance. All production equipment will be located on the associated pad, except for pad 18-2 where the production equipment will be located approximately 450 feet southeast of the pad. All production equipment located on, or associated with the development of federal leases will be painted to match the surrounding terrain and located to reasonably minimize visual impact. BLM will select the color for these facilities, including containment barriers, at each site. The production equipment will be fenced to prevent contact with wildlife/livestock. Telemetry equipment will be used to remotely monitor well conditions. The use of telemetry equipment will minimize traffic to, and from the well locations. Automated tank gauging will also be employed to minimize the risk of spills.

Tank batteries will be placed within secondary containment to prevent the offsite migration of accidentally-spilled condensate or produced water. Secondary containment will consist of corrugated steel containment rings. Construction of the containment rings surrounding the tank batteries will be conducted to prevent lateral movement of fluids through an impermeable barrier attached to the rings and laid under the tanks. Secondary containment will be sized to contain a minimum of 110 percent of the storage capacity of the largest tank within the barrier. All loading lines will be placed inside the containment barrier.

### ***Gas Gathering***

Encana has a contractual agreement with Orion to gather Orion's gas in the project area. The gas produced will be gathered and will flow to the existing Encana 12" main gathering line located in Section 1 of T7S, R92W, which currently flows to the Mamm Creek Compressor Station.

### ***Produced Water Management***

#### ***Completion Phase***

All "frac" flowback water will be contained in temporary tanks or lined frac pits during completion operations and will be recycled for re-use, or trucked off site to approved commercial disposal facilities.

#### ***Production Phase***

Permanent 300- 400 bbl steel tanks, or where needed for visual mitigation, 250 barrel low-profile steel storage tank(s), will be installed on the well pad or offsite facilities to capture flowback water. These tanks will be onsite for the life of the wells. Flowback water captured in the storage tanks will be transferred to centralized tank batteries at Orion pads by trucking when the pipeline system is not operational. Once collected at a central site, the flowback water will be recycled for use in drilling and completion operations, or processed into freshwater by the use of a distillation system for a variety of local uses such as dust suppression, irrigation, or ponding for wildlife use, or trucked offsite to approved commercial disposal facilities. Prior to any discharges, all required permits from the State of Colorado, as well as approval from the BLM (if discharges are proposed on BLM lands) will be acquired. Condensate will be captured at the well site in steel storage tank(s) and transported to market by tanker trucks.

### ***Interim Reclamation***

After completion activities, Orion will reduce the size of the well pad to the minimum surface area needed for production facilities and future workovers, while providing for reshaping and stabilization of cut and fill slopes. In brief, interim reclamation will be accomplished by grading, leveling, and seeding, as recommended by the BLM or landowner. Interim reclamation will reduce the disturbed area at each pad to approximately 1.6 acres or less after well development.

The following is a summary of interim reclamation activities Orion will implement after all wells have been completed on a location:

- The well location and surrounding areas(s) will be cleared of all debris, materials, and trash not required for production. Other waste and spoil materials will be disposed of at a local landfill.
- All pits, cellars, rat holes and other bore holes at drilling locations unnecessary for further lease operations will be back-filled to conform to surrounding terrain after the drilling rig is released.
- Areas not necessary for production and future workovers will be reshaped to resemble the original landscape contour. Stockpiled topsoil will be redistributed and disked on the area to be reclaimed and re-seeded according to BLM recommendations.

Interim reclamation of that portion of the well pads and access roads not needed for production facilities/operations will be reclaimed within ninety (90) days from the date of well completion, weather permitting. Dry/non-producing well locations will be plugged, abandoned and reclaimed within 90 days of well completion, weather permitting.

Some locations will require the use of special reclamation practices. These practices could include hydro-mulching, straw mat application on steeper slopes, fertilizing, seed-bed preparation, contour furrowing, watering, terracing, water barring, and the replacement of topsoil. All reclamation efforts will employ seed mixes as approved by the BLM or by the landowner. To prevent livestock/wildlife grazing pressure, pads will be fenced for the first two growing seasons or until the seeded species are established.

### ***Workovers / Recompletion***

Periodically, the workover or recompletion of a well may be required to ensure that efficient production is maintained. Workovers can include repairs to the well bore equipment (casing, tubing, rods, or pump) the wellhead, or the production facilities. These repairs will usually be completed during daylight hours. The frequency of this type of work cannot be accurately projected because workovers vary from well to well. In the case of multi-well pads, space for equipment will usually be limited to the “in-use” (i.e., disturbed) area of the surface location, although it is possible that interim reclamation could be delayed by workover operations. In the case of a well recompletion, a water completion pit may have to be constructed.

### **Final Abandonment and Reclamation**

#### ***Well and Pipeline Plugging and Abandonment***

Upon abandonment, each well will be plugged with cement and its related surface equipment will be removed. Subsurface pipelines will be plugged at specific intervals and site contouring will be accomplished using appropriate heavy equipment. All disturbed surface soil will be reseeded with native vegetation. The seed mix used will conform to the typical vegetation surrounding the specific well site and

will be approved by the BLM or private landowner.

A Sundry Notice will be submitted by Orion to the BLM describing the technical or environmental aspects of final plugging and abandonment. This notice will describe final reclamation procedures and any mitigation measures associated with the final reclamation performed by the operator. The BLM and COGCC standards for plugging will be followed. A configuration diagram, a summary of plugging procedures, and a job summary with techniques used to plug the well bore (e.g., cementation) will be included in the Sundry Notice.

### ***Final Reclamation***

All surface disturbances will be recontoured and revegetated according to an approved reclamation plan. <sup>1</sup>Final well site reclamation will be performed and monitored in accordance with the 1998 GSRA reclamation policy, including control of noxious weeds. Further information on reclamation standards is available in Appendix I of the 1999 Oil and Gas Leasing and Development EIS. One of the basic goals of the policy is to “establish desirable (seeded and native) vegetation to set the stage for the natural process to restore the site.” Consequently, one of the goals in this proposal is to accomplish as much reclamation on each well pad during the life of the well as possible, even on those pads with a large final reclamation or “in-use” area. Unreclaimed areas or reclaimed areas that do not meet the objective of three-to-four years of sustained reclamation (known as “operator complete”) will undergo the reclamation re-treatment measures described in the Surface Use Plan of Operations, submitted as part of the KMDP, and referenced with each Application for Permit to Drill (APD). Orion will also meet the BLM bonding requirements. Additional bonding will be provided for sites with extremely difficult reclamation conditions, if repeated reclamation attempts have been unsuccessful, or final reclamation cannot be completed with standard reclamation measures.

Orion will restore the well locations and access roads to approximately their original contours. During reclamation of these sites, fill material will be pushed into cuts and up over the back slope. No depressions will be left that will trap water or form ponds. Upon completion of backfilling, leveling and recontouring, the stockpiled topsoil will be evenly spread over the reclaimed areas(s). All disturbed surfaces will be re-seeded with a seed mixture recommended by the BLM or private landowner. The seedbed will then be prepared by disking and roller packing following the natural contours. Seed will be drilled on contours at a depth no greater than one-half inch (1/2”). In areas that cannot be drilled, seed will be broadcast at double the seeding rate and harrowed into the soil. Certified weed-free seed will be used per BLM policy. Seeding should occur within 24 hours following completion of final seedbed preparation to reduce the potential for establishment of weeds and before crusting of the soil, which can impede germination. If the seeding is unsuccessful, Orion may be required to make subsequent seedings.

<sup>1</sup>Reclamation will be considered successful when the objectives described in the GSRA Reclamation Policy are achieved. Revegetation will be considered successful if it meets the objectives set forth in the Conditions of Approval identified in Appendix E of the GSRA Oil & Gas Leasing & Development Draft Supplemental Environmental Impact Statement (DSEIS) (BLM 1998). To summarize the objectives in Appendix E of the DSEIS, revegetation will be considered successful when the following objectives are met:

- Immediate short term: Establishment of desirable perennial vegetation by end of the second growing season, capable of renewing itself.
- Acceptable establishment: Acceptable level of desirable vegetation by the end of the fifth growing

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<sup>1</sup> Or as identified by BLM policy in effect at the time reclamation takes place.

season.

- Long-term establishment: Level of revegetation approximates the original pre-disturbed condition, in terms of canopy cover and species composition.

## **Road Maintenance**

The access roads will be inspected by the BLM and, if necessary, maintained by Orion on an as needed or quarterly basis (at a minimum) to include such items as:

- Road surface grading and graveling;
- Relief ditch, culvert and cattle guard cleaning;
- Erosion control measures for cut and fill slopes and other disturbed areas;
- Road closures in periods of excessive soil moisture to prevent rutting caused by vehicular traffic;
- Road and slope stabilization measures as required until final abandonment and reclamation;
- Weed control; and
- Dust abatement techniques and frequency will be determined by the BLM, private landowners, and Orion.

## **THE NO ACTION ALTERNATIVE**

The proposed action involves federal subsurface minerals that are encumbered with federal oil and gas leases, which grant the lessee a right to explore and develop the lease. Although BLM cannot deny the right to drill and develop the leasehold, individual APDs can be denied to prevent unnecessary and undue degradation. The no action alternative constitutes denial of the APDs associated with the proposed action.

However, there are elements of the proposed action that do not require federal approval prior to implementation. For example, thirteen of the fourteen pads are located on private lands and the 70 proposed fee wells could be developed on these pads even if the APDs associated with the federal leases are denied.

Although the development of the fee wells would not result from the selection of the no action alternative *per se*, impacts to the affected environment would occur from the development of the fee location. These effects provide the basis for comparison to the impacts of the proposed action. This comparison is important because it shows what is likely to happen if the proposed action was not taken.

For the purposes of comparison, the no action alternative is associated with the drilling and development of 70 fee wells on five new and nine existing fee pads, but the development of up to 116 federal wells and the construction of 1 new pad on BLM surface would not occur and associated access roads and pipelines involving this one federal surface location would not be installed or constructed.

The construction of five fee well pads would involve approximately 15.3 acres of new surface disturbance over the short-term and 5.8 acres over the long-term (i.e., after interim reclamation). Access to the area would follow the route defined and as presented in the proposed action. However, the construction of 0.2 miles of new pipeline and 0.39 miles of new road, resulting in approximately 2.3 acres of surface disturbance on BLM land, would not be required.

Gas and flowback water would be transported offsite through the construction of approximately 13.9 miles of new pipelines. Construction, drilling and completion, production, interim reclamation, workovers or recompletion, final abandonment, final reclamation, and weed management would generally follow the

methods presented in the proposed action.

Under this alternative, the BLM would have no authority to institute mitigation measures designed to minimize impacts to natural and cultural resources. Any such measures would come under the jurisdiction of the COGCC.

### SUMMARY OF LEASE STIPULATIONS

Table 3 provides a summary of lease stipulations that would apply to the proposed action.

<b>Table 3. Summary of Lease Stipulations within the KMDP Area</b>		
<i>Lease</i>	<i>Description of Lands</i>	<i>Lease Stipulations</i>
COC51146	T6S, R91W, 6 <sup>th</sup> P.M., Garfield County, Colorado Section 7: SESW, SWSE Section 8: NESW, NWSE Section 16: SENW, SWSW, S2SE Section 17: E2E2, NWNE, NENW, W2W2 Section 18: Lot 4, E2, SENW, E2SW	<b>Timing Limitation:</b> No surface use is allowed during the following time period January 16 through April 29. This stipulation does not apply to operation and maintenance of production facilities. For the purpose of minimizing watershed damage and to protect important seasonal wildlife habitat. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes.

Although these lease stipulations do not apply to all of the elements of the proposed action and no action alternative, these and any other protective measures deemed appropriate by the Authorized Officer could be applied as COAs on individual APDs. The lease stipulations would not apply to the wells drilled from the Jolley 7-1, 8-1, 8-2, 16-1, 16-2, 16-3, 16-4, 17-1, 17-2, 17-3, 17-4, 17-5, 17-6, since these well sites are accessed by and located on private lands. They would also not apply to the 70 wells drilled under the no action alternative from the 13 pads located on private property, since no federal gas would be produced.

### LAND USE PLAN CONFORMANCE REVIEW

The proposed action and no action alternative are subject to and have been reviewed for conformance with the following plan (43 CFR 1610.5, BLM 1617.3):

Name of Plan: Glenwood Springs Resource Management Plan (BLM 1984).

Date Approved: Amended in November 1991 - Oil and Gas Leasing and Development - Final Supplemental Environmental Impact Statement; amended in March 1999 – Oil and Gas Leasing & Development Final Supplemental Environmental Impact Statement.

Decision Number/Page: Record of Decision, Glenwood Springs Resource Management Plan Amendment, November 1991, page 3. Record of Decision and Resource Management Plan Amendment, March 1999, page 15.

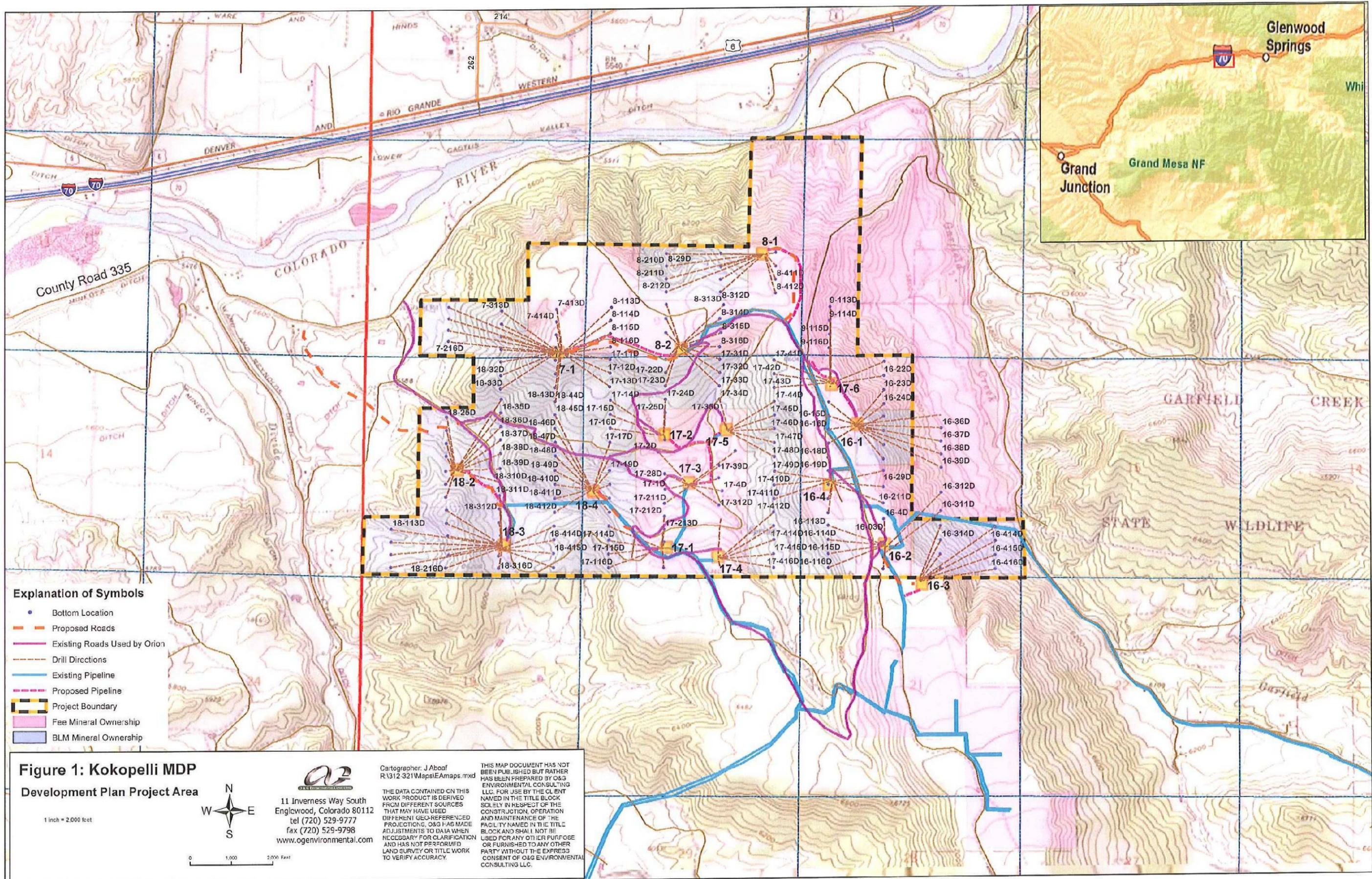
Decision Language: “697,720 acres of BLM-administered mineral estate within the Glenwood Springs Resource Area are open to oil and gas leasing and development, subject to lease terms and (as applicable) lease stipulations.” This decision was carried forward unchanged in the 1999 RMP amendment (BLM 1999a).

“In areas being actively developed, the operator must submit a Geographic Area Proposal (GAP) [currently referred to as a Master Development Plan, MDP] that describes a minimum of two to three years activity for operator controlled leases within a reasonable geographic area” (BLM 1999a).

Discussion: The proposed action is in conformance with the 1991 (and 1999) RMP amendments because the Federal mineral estate proposed for development is open for oil and gas leasing and development. In addition, the proposed action describes a multi-year development plan over a large geographic area and, as such, is in conformance with decision to require operators to submit GAPs (MDPs).

## **STANDARDS FOR PUBLIC LAND HEALTH**

In January 1997, Colorado BLM approved the Standards for Public Land Health. The five standards cover upland soils, riparian systems, plant and animal communities, threatened and endangered species, and water quality. Standards describe conditions needed to sustain public land health and relate to all uses of the public lands. The environmental analysis must address whether the proposed action or alternatives being analyzed would result in impacts that would maintain, improve, or deteriorate land health conditions relative to these resources.



**Explanation of Symbols**

- Bottom Location
- Proposed Roads
- Existing Roads Used by Orion
- - - Drill Directions
- Existing Pipeline
- - - Proposed Pipeline
- Project Boundary
- Fee Mineral Ownership
- BLM Mineral Ownership

**Figure 1: Kokopelli MDP**

Development Plan Project Area

1 inch = 2,000 feet



0 1,000 2,000 Feet

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