U.S. Department of the Interior
Bureau of Land Management
Colorado State Office

Glenwood Springs Energy Office

THE HELMER GULCH GEOGRAPHIC AREA PLAN FOR OIL AND GAS DEVELOPMENT

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for the
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INTRODUCTION

The Petrogulf Corporation, et al. is proposing a 4-to 8-year program of oil and gas development on approximately 1,946 acres of public, split estate, and private lands located in the Piceance Basin about 2 miles southwest of Rifle, Colorado. This proposal, referred to as the Helmer Gulch Geographic Area Plan (HGGAP), arises from the implementation of the prior Porcupine Creek Plan of Development that successfully demonstrated the potential of the area to contain economically viable reserves of natural gas (TBI 1997).

The proposal consists of constructing, drilling, completing and operating up to 136 new wells from up to 14 new and one existing surface location. Ancillary facilities connected to the project include access roads, natural gas and produced water pipelines, 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 the action is to develop oil and gas resources on Federal leases COC 41916 and COC 64181 consistent with existing federal lease rights. The action is needed to increase the development of oil and 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 multiple well development plan proposals to more effectively manage Federal lease development.

THE PROPOSED ACTION

The HGGAP is intended to describe a future development strategy given current market conditions and company constraints. If fully developed, this proposal would result in up to 136 bottomhole locations drilled at 15 surface locations (i.e., 14 new locations and 1 existing pad) (**Figures 1 & 2**). If approved, Petrogulf expects to drill up to 4 wells within the HGGAP area in 2007, and larger numbers per year in subsequent years (i.e., up to the maximum of 136).

However, the total number of wells drilled and wells drilled per year would depend largely on factors out of Petrogulf'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.

In light of these factors, all or any combination of the following developments could ultimately be implemented:

- Fourteen new well pads with 101 Federal wells and 33 fee wells:
  - Nine Federal pads (20-34, 29-22, 29-23, 29-24, 29-31, 29-34, 29-41, 30-33A, and 30-33B) drilling 80 Federal and three fee bottom holes
  - Two split estate pads (Levench B and Levench E) drilling 18 Federal bottom holes
  - Three fee pads (Levench A, Levench C, Levench D) drilling 30 fee and 3 Federal bottom holes

- One existing pad (31-41) drilling 2 Federal bottom holes

Associated with these developments would be the construction of up to 6.1 miles of new access roads, and up to 5.3 miles of pipelines (see Figure 1).

The proposed development area encompasses approximately 1,946 acres, of which 1,157 acres are characterized by Federal surface and mineral ownership, 483 acres are characterized by typical split estate (i.e., private surface and Federal mineral ownership), and 306 acres are characterized by private surface and mineral ownership (**Figure 2**).

Each major element of the proposed action is described below under the headings, **Development** (Construction/Drilling/Completion), **Production** (Operation and Maintenance), **Abandonment and Reclamation, Road Maintenance,** and **Wildlife Habitat Mitigation**.

Development - Construction, Drilling and Completion

During the course of development, numerous construction activities would 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.

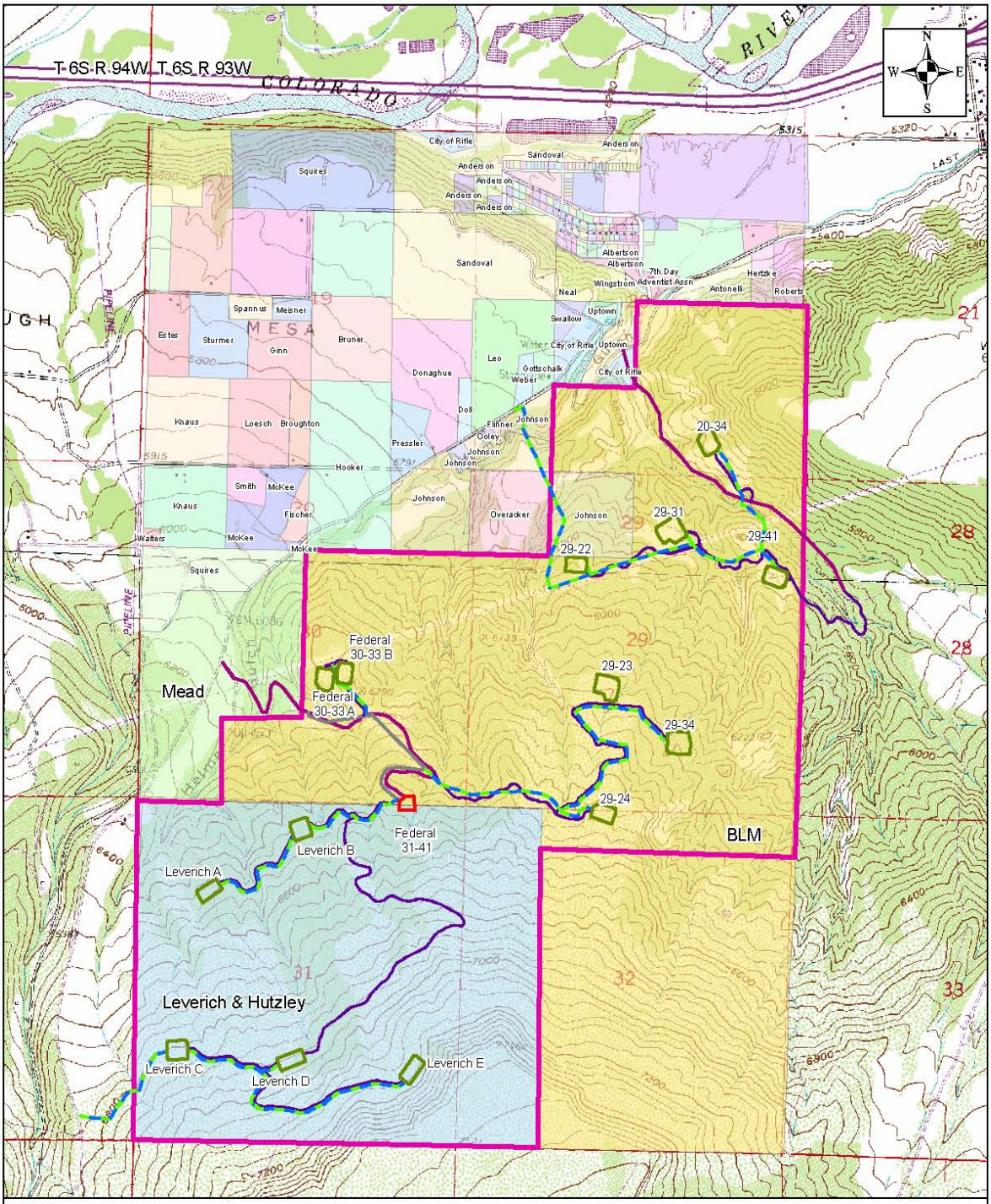
Construction

Proposed Well Pads

The locations of the 14 new well pads reflect the results of on-site exams conducted by the BLM, the operator, and subcontractors to assess proposed pad and pit layout, cuts and fills, topsoil stockpiling, erosion control, and reclamation potential of each surface pad. The primary purpose of on-site inspections was to assess potential resource impacts associated with their construction. In some cases, revisions to the proposed pad and pit layout were made to minimize potential impacts.

The proposed well pads would be constructed from the native soil and rock materials present using a bulldozer, grader, front-end loader, or backhoe. The pad would be constructed by clearing all vegetation, stripping and stockpiling topsoil, and leveling the pad area using cut-and-fill techniques. Woody vegetation will be mulched for use in reclamation, and/or placed at the toe of fill slopes. Cut slopes, associated with pad construction, would be left rough to provide a seed catchment surface, and may require “step cutting” when heights exceed 15 feet. Cut slopes required for pad construction should not be steeper than 1.5:1 (horizontal:vertical), except when approved by the 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.

Initially, the size of the newly constructed pads would range from about 2.5 to 6.8 acres. The completed pad, Federal 31-41 has a total disturbed area of 5.22 acres. After all wells are drilled, completed, and production facilities are installed at each pad, interim reclamation activities would begin. Cuts and fills would be recontoured and revegetated to blend in with adjacent natural slopes and seeded to re-establish vegetative cover. These interim reclamation techniques would result in about an 76 percent reduction in surface disturbance that would 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).



Legend

- Proposed Pad
- Existing Pad
- Proposed Gas/Water Gathering System
- Existing Canyon Pipeline
- Proposed Roads
- Existing Road
- Project Boundary

Figure 1. Petrogulf Helmer Gulch GAP
T 6 S, R 93 W, 6th P.M.
Garfield County, Colorado

0 0.25 0.5 1
Miles

1:24,000

Datum: NAD27 UTM 13N
Date: May 23, 2007

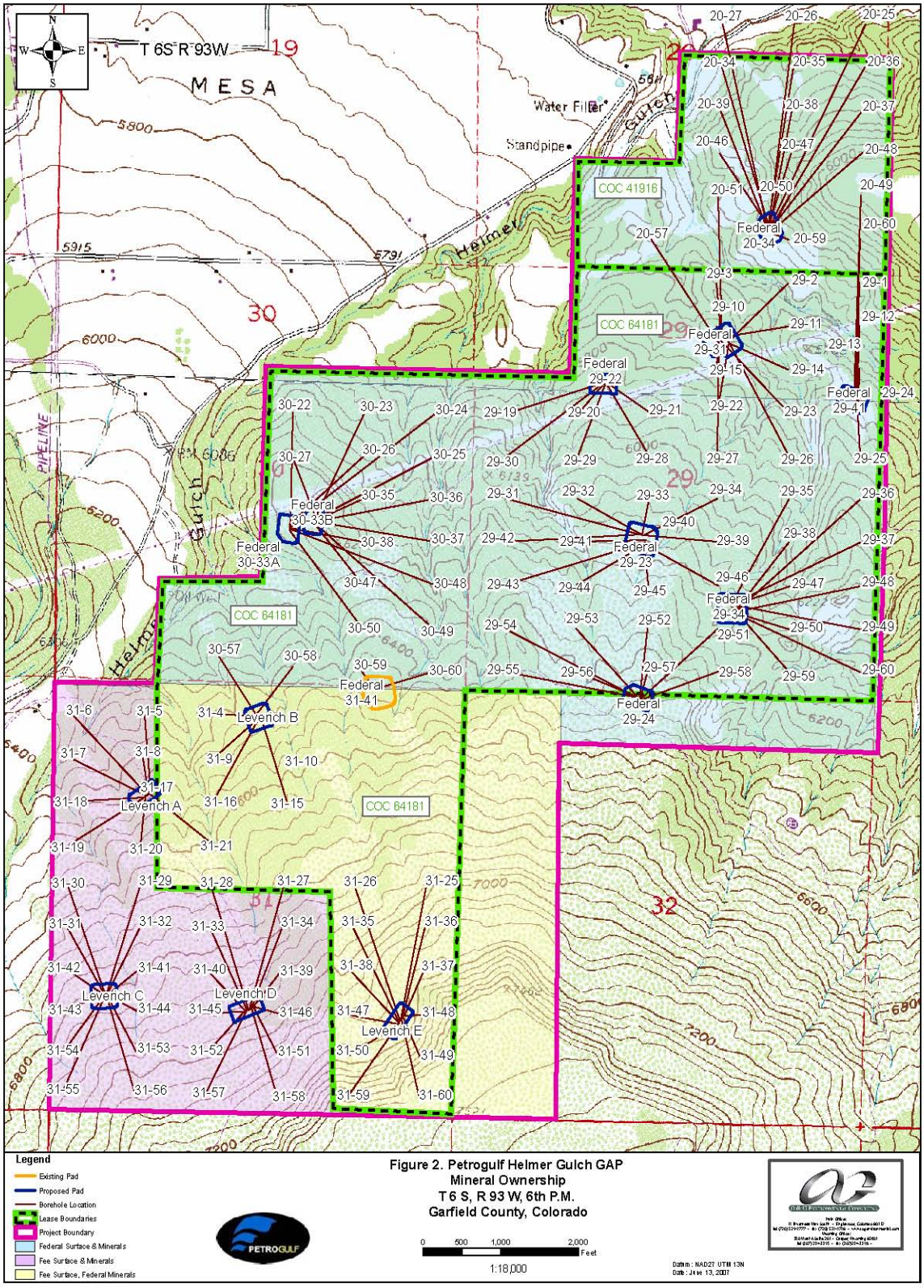


Figure 2. Petrogulf Helmer Gulch GAP
Mineral Ownership
T 6 S, R 93 W, 6th P.M.
Garfield County, Colorado

Table 1. Proposed Well Pads, Roads, and Pipelines.					
Well Pads	***Mineral Lease***	***Legal Description (T. 6S., R. 93W.)***	***Surface Ownership***	***Acres of Short-term Disturbance***	***Acres of Long-term Disturbance***
20-34	COC41916	SWSE, Section 20	100% Federal	3.8	1.0
29-22	COC64181	SENW, Section 29	100% Federal	2.5	0.7
29-23	COC64181	NESW, Section 29	100% Federal	3.7	0.4
29-24	COC64181	NENW, Section 32	100% Federal	2.9	0.3
29-31	COC64181	NWNE, Section 29	100% Federal	4.7	1.4
29-34	COC64181	SWSE, Section 29	100% Federal	3.9	0.7
29-41	COC64181	NENE, Section 29	100% Federal	3.3	0.8
30-33A and B	COC64181	NWSE, Section 30	100% Federal	6.8	1.9
Leverich Pad A	Private	Lot 2, SWNW, Section 31	100% Private	3.4	0.8
Leverich Pad B	COC64181	NWNE Section 31	100% Private	3.7	0.8
Leverich Pad C	Private	Lot 3, NWSW Section 31	100% Private	3.6	0.7
Leverich Pad D	Private	SWSE Section 31	100% Private	3.0	0.9
Leverich Pad E	COC64181	SESE Section 31	100% Private	3.5	1.2
Subtotal				**48.8**	**11.6**
Well Pad	***Road Length***				
20-34	0.2	SE, Section 20 NE, Section 29	100% Federal	0.7	0.4
29-22	0.4	NW, Section 29 NE, Section 29	100% Federal	1.4	0.8
29-23	0.6	SW, Section 29	100% Federal	2.4	1.3
29-24	0.6	SE, Section 30 SW, Section 29, NW, Section 32	100% Federal	2.1	1.1
29-31	0.5	NW, Section 29	100% Federal	1.7	0.9
29-34	0.2	SW, Section 29	100% Federal	0.8	0.4
29-41	0.5	NW, Section 28, NE, Section 29	100% Federal	1.7	0.9
30-33	0.3	S½ ,Section 30	100% Federal	0.9	0.5
Leverich Pad A	0.4	NW, Section 31	100% Private	1.3	0.7
Leverich Pad B	0.3	NE, Section 31	100% Private	1.1	0.6
Leverich Pad C	0.2	SW, Section 31	100% Private	0.9	0.5
Leverich Pad D	1.3	E½, Section 31	100% Private	5.0	2.6
Leverich Pad E	0.6	S½, Section 31	100% Private	2.2	1.2
Subtotal	**6.1**			**22.2**	**11.9**
Pipeline Corridor	***Length***				
All new pipeline	3.1	Sections 29, 30, 31	59% Federal	19.0	11.4
All new pipeline	2.2	Sections 20 and 29	41% Private	13.2	7.9
Subtotal	**5.3**			**32.2**	**19.3**
GRAND TOTAL	**11.4**			**103.2**	**42.8**

Notes: Short-term disturbance road width estimated at 30 feet and long-term road disturbance width was estimated at 16 feet.

***Pipelines serving proposed well pads would be buried within 50 feet disturbance corridor. Permanent right-of-way estimated to be 30 feet.**

Closed loop drilling systems would be used and drill cuttings would be buried on location.

Lined water pits may be at each location to hold fresh and produced water used for completion operations. Given the variation in the size and dimensions of the proposed well pads and the

number of proposed wells that may be drilled at any given location, the size of these pits could vary. The pits would be designed and constructed to prevent storm water runoff from entering the pit and would allow for a minimum of two feet of free board, measured from the highest level of fluids in the pit to the lowest surface elevation of ground at the pit perimeter. If all well bores on the pad are not drilled concurrently, Petrogulf may request approval to leave the pad and water pits un-reclaimed, but pumped dry and fenced, until the following drilling season. After 1 year from spudding the initial well, or 1 year after spudding any successive well(s), Petrogulf will be required to 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 to be approved by the Authorized Officer that would 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 the frac pit a fence shall be constructed and remain until all wells have been drilled, completed and the pit closed.

The sides of the well pad would be bermed to prevent storm water from flowing off the pad and into nearby drainages. Storm water would 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 would be lined with rip-rap to dissipate energy and control erosion. Petrogulf'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 would be from Interstate 70 exiting at Rulison (Exit 81). Traffic would then travel south on CR323 and turn east onto CR320 (Rifle-Rulison Road). Vehicles would travel in an easterly direction on CR320 and travel for approximately 5 miles to CR317 (Beaver Creek Road). At this point, traffic to the southern part of the project area would turn south and travel 0.75 miles to the existing 31-41 access road, while traffic to the northern part of the project area would stay on CR320 and travel through switchbacks, turning east on BLM Road 8185.

Within the project area, the road network would be extended from existing roads to provide access to the proposed pad locations (see **Figure 1**). The extension of the road network would involve the construction of approximately 6.1 miles of new roads.

Roads would 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 not located on Petrogulf's lease holdings. In order to gain legal access for the use of existing roads and the construction and use of proposed roads, Petrogulf intends to apply for a ROW authorization that would grant access across BLM-administered lands not located on their lease holdings. Petrogulf would apply for authorizations for proposed road segments running to the 29-24, 29-23, and 29-41 well pad locations. The right-of-way area granted for the proposed roads would be 30-feet wide.

Running surface would be all weather type with an aggregate surface and the width could vary from 16 to 24 feet throughout the project area with safety, site distance, grade, topography, anticipated traffic flow, and visual resource management concerns being factors in width determination.

Road construction/reconstruction may 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 travelway, and installation of cattle guards and road closure gates where needed.

Revegetation of road ditches and cut and fill slopes will help stabilize exposed soils 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 must be salvaged where available during road construction and respread to the greatest degree practical on cut slopes, fill slopes, and borrow ditches prior to seeding.

The average grade would be 10% or less, wherever possible. The 10% grade would only be exceeded where physical terrain or unusual circumstances require it. Minimum horizontal curve radii would be 100 feet. Where terrain would not allow a 100-foot curve radius, the curve would be widened. Road construction would result in approximately 22.2 acres of short-term ground disturbance. Following interim reclamation, the long-term surface disturbance would be approximately 11.9 acres. Road maintenance would be performed as needed to ensure safe travel.

Proposed Gas Gathering and Water Pipelines

A gas gathering and produced water pipeline network is necessary to both gather and deliver gas off-site to existing Canyon Gas Resources, LLC, main gathering lines, and to transport produced water to centralized tank batteries outside of the project area.

Canyon Gas Resources, LLC ("Canyon") has a contractual agreement with Petrogulf to gather Petrogulf's gas in the project area. Canyon would develop and submit a ROW application to construct and operate the gas gathering lines. The gas gathering system would consist of pipelines, typically steel, with a maximum allowable working pressure (MAWP) of 740 psig and a diameter of up to 12". The gas produced by the eight pads within the central portion of the HGGAP area is expected to flow toward the existing Mead C pad and eventually tie-in to an existing 12" main gathering line which currently flows to the West Rifle compressor station. The gas produced by the three pads in the southern portion of the HGGAP area is expected to flow west to the same 12" main gathering line. The gas produced by the four pads in the northern portion of the HGGAP area is expected to flow north to an existing pipeline which eventually ties into the same 12" main gathering line as the proposed wells in the central and southern portions of the HGGAP area.

Petrogulf would installed the produced water lines in the same ditch, and at the same time as the gas gathering lines are installed to minimize surface disturbance. A ROW application would be submitted by Petrogulf for the construction and operation of these produced water lines. Petrogulf would operate and maintain the produced water lines.

The right-of-way area granted for the pipeline would be 30-feet wide with an additional adjacent 20-

foot wide area also authorized as a temporary work space for a period of up to one year (usually one year). Construction would be performed within this 50-foot wide area. Following construction, the permanent 30-foot ROW will be needed for maintenance purposes. In order to minimize surface disturbance, pipelines will be constructed within the access road ROWs wherever practicable. The pipeline trench would be excavated mechanically with a trackhoe and would be approximately 3-feet wide and at least 4-feet deep. Gas pipeline segments would be welded together and lowered into the trench. The water line would then be placed into the ditch and separated from the gas line by sandbags. Both lines would be covered with excavated material, and then each pipeline would be pressure tested with fresh water and/or nitrogen gas to locate any leaks. Fresh water or nitrogen used for testing would be obtained off-site and transported to the testing location by truck. After testing, the water would be disposed at an existing off-site evaporation pond facility, or discharged into surface water drainages if approved by the BLM and the State of Colorado. Nitrogen would be vented to the atmosphere if used instead of water.

Mitigation Common to All Construction Operations

The APDs filed with the Glenwood Springs Energy Office would include drilling and surface use plans that cover mitigation of impacts to vegetation, soil, water, and other resources. Mitigation not incorporated by Petrogulf in the drilling and surface use plans would be attached as Conditions of Approval (COAs) by the BLM to the approved APDs.

Trees removed from pad locations would be placed at the toe of fill slopes and placed back on the reclaimed surfaces. Trees removed along access roads would be cut to a maximum stump height of six inches (6”) and placed back onto the cut and/or fill slopes with slash height not to exceed 24 inches (24”). Trees would 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. Cut pinyon pine trees would either be: chipped, buried or disposed of, to prevent the spread of the Ips beetle. Rootballs would be buried or placed off the locations, access roads, or pipeline routes and scattered back over the disturbed area as part of the final reclamation. Other vegetation, such as sagebrush and other shrubs, may be scattered off-site or placed on well pad and road fills to help visually screen the slopes. On pads where boulder fields exist, reclamation would include the replacement of boulders in order to reconstruct the natural appearance.

Drilling and Completion

Up to 136 wells would be drilled as part of the proposed action. **Table 2** lists the approximate surface and bottom hole locations of the proposed wells. Petrogulf’s drilling operations would be conducted in compliance with all Federal Oil and Gas Onshore Orders, and all applicable rules and regulations. Rigs in this GAP would be targeting gas production zones at depths of 6500 to 10,000 feet. Wells would require approximately 22 days to drill and 30 days to complete. Pads with multiple well bores would be occupied for a more extended period of time, depending on the number of well bores. Production results for wells drilled the first year would be used to plan the drilling programs for subsequent years.

Table 2. Locations of Proposed Wells.				
Lease	***Pad***	***Proposed Wells***	***Surface Location (T6S, R93W)***	***Bottom Hole Location (T6S, R93W)***
COC 41916	Proposed 20-34 (14 wells)	Fee 20-25	Sec 20, 387 FSL & 1282 FEL	Sec 20, 2250 FNL & 230 FEL
		Fee 20-26	Sec 20, 395 FSL & 1294 FEL	Sec 20, 2270 FNL & 1150 FEL
		Fee 20-27	Sec 20, 403 FSL & 1307 FEL	Sec 20, 2290 FNL & 2070 FEL
		Federal 20-34	Sec 20, 411 FSL & 1319 FEL	Sec 20, 2460 FSL & 2070 FEL
		Federal 20-35	Sec 20, 420 FSL & 1332 FEL	Sec 20, 2480 FSL & 1150 FEL
		Federal 20-36	Sec 20, 428 FSL & 1345 FEL	Sec 20, 2500 FSL & 230 FEL
		Federal 20-37	Sec 20, 436 FSL & 1357 FEL	Sec 20, 1970 FSL & 230 FEL
		Federal 20-38	Sec 20, 403 FSL & 1271 FEL	Sec 20, 1950 FSL & 1150 FEL
		Federal 20-39	Sec 20, 412 FSL & 1283 FEL	Sec 20, 1930 FSL & 2070 FEL
		Federal 20-46	Sec 20, 420 FSL & 1296 FEL	Sec 20, 1400 FSL & 2070 FEL
		Federal 20-47	Sec 20, 428 FSL & 1309 FEL	Sec 20, 1420 FSL & 1150 FEL
		Federal 20-48	Sec 20, 436 FSL & 1321 FEL	Sec 20, 1440 FSL & 230 FEL
		Federal 20-50	Sec 20, 444 FSL & 1334 FEL	Sec 20, 890 FSL & 1150 FEL
		Federal 20-59	Sec 20, 453 FSL & 1347 FEL	Sec 20, 360 FSL & 1150 FEL
COC 64181	Proposed 29-22 (Six wells)	Federal 29-21	Sec 29, 1459 FNL & 1758 FWL	Sec 29, 1810 FNL & 2300 FWL
		Federal 29-28	Sec 29, 1459 FNL & 1743 FWL	Sec 29, 2340 FNL & 2300 FWL
		Federal 29-29	Sec 29, 1459 FNL & 1728 FWL	Sec 29, 2360 FNL & 1380 FWL
		Federal 29-20	Sec 29, 1459 FNL & 1713 FWL	Sec 29, 1830 FNL & 1380 FWL
		Federal 29-30	Sec 29, 1459 FNL & 1698 FWL	Sec 29, 2380 FNL & 460 FWL
		Federal 29-19	Sec 29, 1459 FNL & 1683 FWL	Sec 29, 1850 FNL & 460 FWL
COC 64181	Proposed 29-23 (12 wells)	Federal 29-31	Sec 29, 1854 FSL & 2229 FWL	Sec 29, 2370 FSL & 460 FWL
		Federal 29-32	Sec 29, 1868 FSL & 2225 FWL	Sec 29, 2390 FSL & 1380 FWL
		Federal 29-33	Sec 29, 1883 FSL & 2222 FWL	Sec 29, 2410 FSL & 2300 FWL
		Federal 29-34	Sec 29, 1897 FSL & 2218 FWL	Sec 29, 2430 FSL & 2070 FEL
		Federal 29-39	Sec 29, 1912 FSL & 2214 FWL	Sec 29, 1900 FSL & 2070 FEL
		Federal 29-40	Sec 29, 1926 FSL & 2210 FWL	Sec 29, 1880 FSL & 2300 FWL
		Federal 29-41	Sec 29, 1971 FSL & 2168 FWL	Sec 29, 1860 FSL & 1380 FWL
		Federal 29-42	Sec 29, 1967 FSL & 2153 FWL	Sec 29, 1840 FSL & 460 FWL
		Federal 29-43	Sec 29, 1963 FSL & 2139 FWL	Sec 29, 1310 FSL & 460 FWL
		Federal 29-44	Sec 29, 1959 FSL & 2124 FWL	Sec 29, 1330 FSL & 1380 FWL
		Federal 29-45	Sec 29, 1955 FSL & 2109 FWL	Sec 29, 1350 FSL & 2300 FWL
		Federal 29-46	Sec 29, 1952 FSL & 2095 FWL	Sec 29, 1360 FSL & 2070 FEL
COC64181	Proposed 29-24 (Eight wells)	Federal 29-51	Sec 29, 59 FNL & 2246 FWL	Sec 29, 830 FSL & 2070 FEL
		Federal 29-52	Sec 29, 55 FNL & 2232 FWL	Sec 29, 810 FSL & 2300 FWL
		Federal 29-53	Sec 29, 50 FNL & 2218 FWL	Sec 29, 790 FSL & 1380 FWL
		Federal 29-54	Sec 29, 45 FNL & 2203 FWL	Sec 29, 770 FSL & 460 FWL
		Federal 29-55	Sec 29, 41 FNL & 2189 FWL	Sec 29, 240 FSL & 460 FWL
		Federal 29-56	Sec 29, 36 FNL & 2175 FWL	Sec 29, 260 FSL & 1380 FWL
		Federal 29-57	Sec 29, 31 FNL & 2160 FWL	Sec 29, 280 FSL & 2300 FWL
		Federal 29-58	Sec 29, 27 FNL & 2146 FWL	Sec 29, 300 FSL & 2070 FEL
COC 64181	Proposed 29-31 (Twelve wells)	Federal 29-2	Sec 29, 953 FNL & 1896 FEL	Sec 29, 180 FNL & 1150 FEL
		Federal 29-3	Sec 29, 940 FNL & 1903 FEL	Sec 29, 200 FNL & 2070 FEL
		Federal 29-10	Sec 29, 938 FNL & 1911 FEL	Sec 29, 730 FNL & 2070 FEL
		Federal 29-11	Sec 29, 915 FNL & 1919 FEL	Sec 29, 710 NFL & 1150 FEL
		Federal 29-14	Sec 29, 903 FNL & 1927 FEL	Sec 29, 1240 FNL & 1150 FEL
		Federal 29-15	Sec 29, 890 FNL & 1935 FEL	Sec 29, 1260 FNL & 2070 FEL
		Federal 29-22	Sec 29, 869 FNL & 2003 FEL	Sec 29, 1790 FNL & 2070 FEL
		Federal 29-23	Sec 29, 877 FNL & 2015 FEL	Sec 29, 1770 FNL & 1150 FEL
		Federal 29-26	Sec 29, 885 FNL & 2028 FEL	Sec 29, 2300 FNL & 1150 FEL

Table 2. Locations of Proposed Wells.				
Lease	***Pad***	***Proposed Wells***	***Surface Location (T6S, R93W)***	***Bottom Hole Location (T6S, R93W)***
		Federal 29-27	Sec 29, 893 FNL & 2041 FEL	Sec 29, 2320 FNL & 2070 FEL
COC 41916		Federal 20-51	Sec 29, 902 FNL & 2053 FEL	Sec 20, 870 FSL & 2070 FEL
		Federal 20-57	Sec 29, 910 FNL & 2066 FEL	Sec 20, 320 FSL & 2300 FWL
COC 64181	Proposed 29-34 (Ten wells)	Federal 29-35	Sec 29, 866 FSL & 1824 FEL	Sec 29, 2450 FSL & 1150 FEL
		Federal 29-36	Sec 29, 880 FSL & 1818 FEL	Sec 29, 2470 FSL & 230 FEL
		Federal 29-37	Sec 29, 894 FSL & 1812 FEL	Sec 29, 1940 FSL & 230 FEL
		Federal 29-38	Sec 29, 903 FSL & 1806 FEL	Sec 29, 1920 FSL & 1150 FEL
		Federal 29-47	Sec 29, 922 FSL & 1800 FEL	Sec 29, 1380 FSL & 1150 FEL
		Federal 29-48	Sec 29, 984 FSL & 1806 FEL	Sec 29, 1400 FSL & 230 FEL
		Federal 29-49	Sec 29, 990 FSL & 1819 FEL	Sec 29, 870 FSL & 230 FEL
		Federal 29-50	Sec 29, 995 FSL & 1833 FEL	Sec 29, 850 FSL & 1150 FEL
		Federal 29-59	Sec 29, 1001 FSL & 1847 FEL	Sec 29, 320 FSL & 1150 FEL
		Federal 29-60	Sec 29, 1006 FSL & 1861 FEL	Sec 29, 340 FSL & 230 FEL
COC 64181	Proposed 29-41 (Seven wells)	Federal 29-1	Sec 29, 1634 FNL & 269 FEL	Sec 29, 160 FNL & 230 FEL
		Federal 29-12	Sec 29, 1629 FNL & 284 FEL	Sec 29, 690 FNL & 230 FEL
		Federal 29-13	Sec 29, 1625 FNL & 298 FEL	Sec 29, 1220 FNL & 230 FEL
		Federal 29-24	Sec 29, 1620 FNL & 312 FEL	Sec 29, 1750 FNL & 230 FEL
		Federal 29-25	Sec 29, 1615 FNL & 326 FEL	Sec 29, 2280 FNL & 230 FEL
COC 41916		Federal 20-49	Sec 29, 1610 FNL & 340 FEL	Sec 20, 910 FSL & 230 FEL
		Federal 20-60	Sec 29, 1605 FNL & 354 FEL	Sec 20, 380 FSL & 230 FEL
COC 64181	Proposed 30-33Aand B (14 wells)	Federal 30-22	Sec 30, 2013 FSL & 2319 FEL	Sec 30, 1910 FNL & 2300 FEL
		Federal 30-23	Sec 30, 1998 FSL & 2321 FEL	Sec 30, 1890 FNL & 1380 FEL
		Federal 30-24	Sec 30, 1983 FSL & 2323 FEL	Sec 30, 1870 FNL & 460 FEL
		Federal 30-25	Sec 30, 1968 FSL & 2325 FEL	Sec 30, 2400 FNL & 460 FEL
		Federal 30-26	Sec 30, 1953 FSL & 2327 FEL	Sec 30, 2420 FNL & 1380 FEL
		Federal 30-27	Sec 30, 1939 FSL & 2328 FEL	Sec 30, 2440 FNL & 2300 FEL
		Federal 30-35	Sec 30, 2330 FSL & 2330 FEL	Sec 30, 2330 FSL & 1380 FEL
		Federal 30-36	Sec 30, 2093 FSL & 1996 FEL	Sec 30, 2350 FSL & 460 FEL
		Federal 30-37	Sec 30, 2079 FSL & 1997 FEL	Sec 30, 1820 FSL & 460 FEL
		Federal 30-38	Sec 30, 2064 FSL & 1999 FEL	Sec 30, 1800 FSL & 1380 FEL
		Federal 30-47	Sec 30, 2049 FSL & 2001 FEL	Sec 30, 1270 FSL & 1380 FEL
		Federal 30-48	Sec 30, 2034 FSL & 2002 FEL	Sec 30, 1290 FSL & 460 FEL
		Federal 30-49	Sec 30, 2019 FSL & 2004 FEL	Sec 30, 750 FSL & 460 FEL
		Federal 30-50	Sec 30, 2004 FSL & 2005 FEL	Sec 30, 740 FSL & 1380 FEL
Fee	Proposed Leverich A (Nine wells)	Leverich 31-5	Sec 31, 1349 FNL & 1256 FWL	Sec 31, 390 FNL & 1150 FWL
		Leverich 31-6	Sec 31, 1356 FNL & 1243 FWL	Sec 31, 410 FNL & 230 FWL
		Leverich 31-7	Sec 31, 1364 FNL & 1231 FWL	Sec 31, 940 FNL & 230 FWL
		Leverich 31-8	Sec 31, 1373 FNL & 1219 FWL	Sec 31, 920 FNL & 1150 FWL
		Leverich 31-17	Sec 31, 1381 FNL & 1206 FWL	Sec 31, 1450 FNL & 1150 FWL
		Leverich 31-18	Sec 31, 1390 FNL & 1194 FWL	Sec 31, 1470 FNL & 230 FWL
		Leverich 31-19	Sec 31, 1398 FNL & 1181 FWL	Sec 31, 2000 FNL & 230 FWL
		Leverich 31-20	Sec 31, 1406 FNL & 1169 FWL	Sec 31, 1980 FNL & 1150 FWL
COC 64181		Federal 31-21	Sec 31, 1415 FNL & 1157 FWL	Sec 31, 1960 FNL & 2070 FWL
COC 64181	Proposed Leverich B (Six wells)	Federal 30-57	Sec 31, 377 FNL & 2667 FEL	Sec 30, 160 FNL & 2070 FWL
		Federal 30-58	Sec 31, 382 FNL & 2653 FEL	Sec 30, 180 FNL & 2300 FEL
		Federal 31-4	Sec 31, 387 FNL & 2639 FEL	Sec 31, 370 FNL & 2070 FWL
		Federal 31-9	Sec 31, 358 FNL & 2660 FEL	Sec 31, 900 FNL & 2070 FWL
		Federal 31-15	Sec 31, 363 FNL & 2646 FEL	Sec 31, 1410 FNL & 2300 FEL
		Federal 31-16	Sec 31, 369 FNL & 2632 FEL	Sec 31, 1430 FNL & 2070 FWL

Table 2. Locations of Proposed Wells.				
Lease	***Pad***	***Proposed Wells***	***Surface Location (T6S, R93W)***	***Bottom Hole Location (T6S, R93W)***
Fee	Proposed Leverich C (Twelve wells)	Leverich 31-29	Sec 31, 2140 FSL & 1075 FWL	Sec 31, 2510 FNL & 11520 FWL
		Leverich 31-30	Sec 31, 2155 FSL & 1075 FWL	Sec 31, 2530 FNL & 230 FWL
		Leverich 31-31	Sec 31, 2155 FSL & 1090 FWL	Sec 31, 2230 FSL & 230 FWL
		Leverich 31-32	Sec 31, 2140 FSL & 1090 FWL	Sec 31, 2240 FSL & 1150 FWL
		Leverich 31-41	Sec 31, 2125 FSL & 1090 FWL	Sec 31, 1730 FSL & 1150 FWL
		Leverich 31-42	Sec 31, 2110 FSL & 1090 FWL	Sec 31, 1730 FSL & 230 FWL
		Leverich 31-43	Sec 31, 2110 FSL & 1075 FWL	Sec 31, 1230 FSL & 230 FWL
		Leverich 31-44	Sec 31, 2125 FSL & 1075 FWL	Sec 31, 1230 FSL & 1150 FWL
		Leverich 31-53	Sec 31, 2125 FSL & 1090 FWL	Sec 31, 730 FSL & 1150 FWL
		Leverich 31-54	Sec 31, 2110 FSL & 1090 FWL	Sec 31, 730 FSL & 230 FWL
		Leverich 31-55	Sec 31, 2110 FSL & 1075 FWL	Sec 31, 230 FSL & 230 FWL
		Leverich 31-56	Sec 31, 2125 FWL & 1075 FWL	Sec 31, 230 FSL & 1150 FWL
COC 64181	Proposed Leverich D (Twelve wells)	Federal 31-27	Sec 31, 1304 FSL & 2613 FEL	Sec 31, 2470 FNL & 2300 FEL
		Federal 31-28	Sec 31, 1298 FSL & 2627 FEL	Sec 31, 2490 FNL & 2070 FWL
Fee		Leverich 31-33	Sec 31, 1292 FSL & 2644 FWL	Sec 31, 2260 FSL & 2070 FWL
		Leverich 31-34	Sec 31, 1286 FSL & 2630 FWL	Sec 31, 2280 FSL & 2300 FEL
		Leverich 31-39	Sec 31, 1281 FSL & 2616 FWL	Sec 31, 1740 FSL & 2300 FEL
		Leverich 31-40	Sec 31, 1275 FSL & 2602 FWL	Sec 31, 1730 FSL & 2070 FWL
		Leverich 31-45	Sec 31, 1269 FSL & 2588 FWL	Sec 31, 1230 FSL & 2070 FWL
		Leverich 31-46	Sec 31, 1263 FSL & 2575 FWL	Sec 31, 1230 FSL & 2300 FEL
		Leverich 31-51	Sec 31, 1258 FSL & 2561 FWL	Sec 31, 730 FSL & 2300 FEL
		Leverich 31-52	Sec 31, 1252 FSL & 2547 FWL	Sec 31, 730 FSL & 2070 FWL
		Leverich 31-57	Sec 31, 1246 FSL & 2533 FWL	Sec 31, 230 FSL & 2070 FWL
		Leverich 31-58	Sec 31, 1240 FSL & 2519 FWL	Sec 31, 230 FSL & 2300 FEL
COC 64181	Proposed Leverich E (Twelve wells)	Federal 31-25	Sec 31, 1243 FSL & 687 FEL	Sec 31, 2430 FNL & 460 FEL
		Federal 31-26	Sec 31, 1231 FSL & 695 FEL	Sec 31, 2450 FNL & 1380 FEL
		Federal 31-35	Sec 31, 1219 FSL & 703 FEL	Sec 31, 2300 FSL & 1380 FEL
		Federal 31-36	Sec 31, 1206 FSL & 711 FEL	Sec 31, 2320 FSL & 460 FEL
		Federal 31-37	Sec 31, 1194 FSL & 719 FEL	Sec 31, 1780 FSL & 460 FEL
		Federal 31-38	Sec 31, 1181 FSL & 728 FEL	Sec 31, 1760 FSL & 1380 FEL
		Federal 31-47	Sec 31, 1169 FSL & 736 FEL	Sec 31, 1230 FSL & 1380 FEL
		Federal 31-48	Sec 31, 1157 FSL & 744 FEL	Sec 31, 1250 FSL & 460 FEL
		Federal 31-49	Sec 31, 1144 FSL & 752 FEL	Sec 31, 730 FSL & 460 FEL
		Federal 31-50	Sec 31, 1132 FSL & 762 FEL	Sec 31, 730 FSL & 1380 FEL
		Federal 31-59	Sec 31, 1119 FSL & 769 FEL	Sec 31, 230 FSL & 1380 FEL
		Federal 31-60	Sec 31, 1107 FSL & 777 FEL	Sec 31, 230 FSL & 460 FEL
COC 64181	Existing 31-41 (Two wells)	Federal 30-59	Sec 30,	Sec 30,
		Federal 30-60	Sec 30,	Sec 30,

Petrogulf may drill and complete about 3 to 4 wells on a pad, causing drilling operations to be conducted in more than one phase. Development would be highly sensitive to price of gas and cost of services. The BLM would be notified of scheduling changes in a timely manner. If all well bores on the pad are not drilled concurrently, Petrogulf may request approval to leave the pad and water pits un-reclaimed, but pumped dry and fenced, until the following drilling season. After 1 year from spudding the initial well, or 1 year after spudding any successive well(s), Petrogulf would be required to 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 to be approved by the Authorized Officer that would 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. Petrogulf may drill fewer wells than those described in this GAP, because of geologic and market uncertainties.

Prior to drilling below the surface casing, a Blowout Preventer (BOP) would be installed on the surface casing and both the BOP and surface casing would be tested for pressure integrity. The BOP and related equipment would meet the minimum requirements of Onshore Oil and Gas Order No. 2, and the BLM would be notified in advance of all pressure tests in order to witness these tests, if so desired.

A downhole mud motor may be used to increase penetration rate. The rig would pump drilling fluids to drive the mud motor, cool the drill bit, and remove cuttings from the wellbore. Petrogulf proposes to drill each well with one rig.

In order to achieve borehole stability, minimize possible damage to the formations, provide adequate viscosity 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 would be used to reach the targeted bottom hole locations. In general, a target radius of 50 feet would be used. Specific directional plans for each well will be included with the APDs. Downhole operations would be done with tools to facilitate proper direction and path of the well.

Drill cuttings from the wellbore (mainly shale, sand, and miscellaneous rock minerals) will be buried on location. Frac pits, containing water used in the completion process, would be planned for each new pad location in this GAP. No hazardous substances would be placed in any pits.

After drilling the hole to its total depth, logging tools would 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 would 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 would 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.

Production

Surface Facilities

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

Tank batteries would be placed within secondary containment to prevent the offsite migration of accidentally spilled condensate or produced water. Secondary containment would consist of corrugated steel containment barriers or earthen berms. Compaction and construction of earthen berms surrounding the tank batteries would be performed to prevent lateral movement of fluids through the utilized materials. Secondary containment would be sized to contain a minimum of 110 percent of the storage capacity of the largest tank within the barrier. All loading lines would be placed inside the containment barrier.

Produced water may be confined to the pit for a period of 90 days after initial production as per Onshore Order No. 7. A permanent steel tank(s) would be installed next to the production facilities to temporarily contain produced water for the duration of operation of the wells. Produced water at well pads would be transported by buried pipeline to centralized tank batteries at Petrogulf pads, then trucked offsite to an approved commercial disposal facility. Condensate would be transported to market by tanker trucks.

Several systems would be needed for disposal of produced water. As pads are constructed and pipeline infrastructure installed, the following plan would be implemented to more efficiently transport produced water from on-location tanks to disposal facilities. For the south half of section 31, the water would be piped to a collection point at the Leverich C pad from the Leverich D and E pads. It would be trucked to a disposal site from Leverich C. Produced water from Leverich A and B as well as from proposed pads 29-23, 29-24, and 29-34 would be piped to pad Federal 31-41. Water from these five pads plus Federal 31-41 produced water would then be piped to the existing Mead A pad for trucking to a disposal facility. From the proposed 30-33 A & B pads, it would be piped to the existing Mead C pad then to the existing Mead A pad where it would be trucked for commercial disposal. Produced water from pad located in Sections 29 and 20 would be piped to the existing Overacker pad, then across Helmer Gulch to the existing McLeod B pad, and trucked to a disposal facility from there.

Interim Reclamation

After completion activities, Petrogulf would 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 would be accomplished by grading, leveling and seeding, as recommended by the BLM. Interim reclamation would reduce the disturbed area at each pad to approximately one acre after well development.

The following is a summary of interim reclamation activities that would take place after all wells have been completed on a location:

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

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

Some locations would require 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 would employ seed mixes as approved by the BLM. Pads would be fenced for the first two growing seasons or until the seeded species have established to prevent livestock/wildlife grazing pressure.

Workovers / Recompletion

Periodically, the work-over or re-completion of a well may be required to ensure that efficient production is maintained. Work-overs can include repairs to the well bore equipment (casing, tubing, rods, or pump) the wellhead, or the production facilities. These repairs would usually be completed during daylight hours. The frequency of this type of work cannot be accurately projected because work-overs vary from well to well. In the case of multi-well pads, space for equipment would 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 work-over operations. In the case of a well re-completion, a water completion pit may have to be constructed.

Final Abandonment and Reclamation

Well and Pipeline Plugging and Abandonment

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

A Sundry Notice would be submitted by the operator to the BLM that describes the engineering, technical, or environmental aspects of final plugging and abandonment. This notice would describe final reclamation procedures and any mitigation measures associated with the final reclamation performed by the operator. The BLM and Colorado Oil & Gas Conservation Commission (COGCC) standards for plugging would 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) would be included in the Sundry Notice.

Final Reclamation

All surface disturbances would be recontoured and revegetated according to an approved reclamation plan. [1]Final well site reclamation would 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 of the Proposed Action 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. Un-reclaimed areas or reclaimed areas that do not meet the objective of three-to-four years of sustained reclamation (known as "operator complete") would undergo the reclamation re-treatment measures described in the 13-Point Surface Use Plan submitted as required with the Application for Permit to Drill (APD). Petrogulf would also meet the BLM bonding requirements. Additional bonding would 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.

Petrogulf would restore the well locations and access roads to approximately their original contours. During reclamation of these sites, fill material would be pushed into cuts and up over the back slope. No depressions would be left that would trap water or form ponds. Upon completion of backfilling, leveling and re-contouring, the stockpiled topsoil would be evenly spread over the reclaimed areas(s). All disturbed surfaces would be re-seeded with a seed mixture recommended by the BLM. The seedbed would then be prepared by disking and roller packing following the natural contours. Seed would be drilled on contours at a depth no greater than one-half inch (1/2"). In areas that cannot be drilled, seed would be broadcast at double the seeding rate and harrowed into the soil. Certified weed-free seed would 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, Petrogulf may be required to make subsequent seedings.

[1]Reclamation would be considered successful when the objectives described in the GSRA Reclamation Policy are achieved. Re-vegetation would 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, re-vegetation would 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 season.
- Long-term establishment: Level of re-vegetation approximates the original pre-disturbed condition, in terms of canopy cover and species composition.

[1] Or as identified by BLM policy in effect at the time reclamation takes place.

Road Maintenance

The access roads would be inspected by the BLM and, if necessary, maintained by Petrogulf on a 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 and Petrogulf.

Wildlife Habitat Mitigation

Petrogulf proposes to improve wildlife habitat to offset anticipated project-related big game habitat disturbance. The proposed improvements were developed with the support and guidance of the BLM and the Colorado Division of Wildife (CDOW). Mitigation objectives include improving foraging habitat and upgrading or adding watering features in the area.

Improvements to foraging habitat

Within the HGGAP project area, openings/meadows within pinyon-juniper woodlands provide critical foraging habitat for big game species. These openings, which are often dominated by sagebrush, are slowly being overrun by young juniper. As the landscape loses this patchwork quality, the healthy balance (i.e., forage to cover) of habitat types is lost, and the overall value of the area to big game and livestock is diminished. Petrogulf proposes to restore this balance by:

- Promoting regrowth of sagebrush within identified openings in pinyon-juniper woodlands present on the lower slopes of the HGGAP project area. This objective would be achieved by removing in-growth of young juniper and mowing unproductive decadent growth of sagebrush. When practical, broadcast seeding of native grass species within these treated areas would be used to inhibit growth of cheat grass and allow reestablishment of native species.

- Where dense stands of gambel oak and other species of the mountain shrub community are encountered, mowing and/or hydro-axing of old-growth would be utilized to encourage regrowth.

Both of the foraging habitat improvements described above would be carried out over a two to three season period allowing monitoring and, if needed, adjustments necessary to achieve desired outcomes.

Improvements and addition of watering features

Where practical, installations of new water features, and improvements to existing stock ponds will be made. These efforts would provide water to big game and livestock in the area, and would include:

- Lining up to four existing stock ponds with bentonite clay. This activity would slow infiltration rates and leave water available to animals for longer periods following runoff or periodic rain events.

- Installing up to four guzzlers in appropriate areas to provide additional water resources for resident animals.

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, three of the proposed pads (Leverich A, Leverich C, and Leverich D) would not be located on a Federal lease and the 30 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 30 fee wells on 3 new fee pads, but the development of up to 103 wells from 11 new and 1 existing pad would not occur and associated access roads and pipelines involving Federal surface and/or Federal mineral estate would not installed or constructed.

The construction of three fee well pads would involve approximately 10.0 acres of new surface disturbance over the short-term and 2.6 acres over the long-term (i.e., after interim reclamation). Access to the area would follow the route defined for the southern project area as presented in the proposed action. However, the construction of 2.5 miles of new access road, resulting in approximately 9 acres of surface disturbance, would be required.

Gas and produced water would be transported offsite through the construction of approximately 1.5 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 Colorado Oil and Gas Conservation Commission (COGCC).