APPENDIX D

Scotty Lake CBNG Pilot Project Water Management Plan

HUDSON GROUP, LLC

SCOTTY LAKE CBNG PILOT PROJECT

Sections 17, 18, 19 & 20, T26N-R96W
Sections 14, 22, 23, 24 & 26, T26N-R97W
Sweetwater County, Wyoming

WATER MANAGEMENT PLAN

Prepared for Hudson Group, LLC & U.S. Bureau of Land Management, Rawlins Field Office

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HUDSON GROUP, LLC
SCOTTY LAKE CBNG PILOT PROJECT

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HUDSON GROUP, LLC
SCOTTY LAKE CBNG PILOT PROJECT

WATER MANAGEMENT PLAN

Project Location - Geographic & Geologic Settings

Hudson Group, LLC has proposed the development of their Scotty Lake CBNG Pilot Project. The purpose of this project is to determine the feasibility of establishing commercial natural gas production from the Scotty Lake Coals contained within the Tertiary (Eocene) Fort Union Formation. The development of this pilot project will also provide the opportunity to collect site-specific hydrologic and geologic data for possible use in future analyses.

The project consists of 18 wells, including three alternate wells, and 15 discharge points. There are also three existing CBNG wells and three existing discharge points within the project area, which were included in this analysis. Produced water will be pumped to direct surface discharge points, stock ponds or recharge pits with outlets. This project is located within the Picket Lake Field, which has produced natural gas from the Cretaceous Lewis Formation since the field's discovery in 1978. The project will be developed in three phases, commencing with the drilling of four wells in phase I this year. NPDES discharge points have already been permitted with the Wyoming Department of Environmental Quality (WDEQ). The Water Management Map shows the project outline by phases, proposed CBNG well locations, discharge point locations, stock ponds, pits and existing wells.

The pilot project covers an area of 4.5 square miles (mi^2) and lies in the northern portion of the Great Divide Basin (GDB) at an elevation of approximately 7000 to 7100 ft. The GDB covers an area of 3500 mi^2, lying NE of Rock Springs and NW of Rawlins. The GDB is both a topographic and structural basin with internal drainage, meaning surface water drains towards the center of the basin. Water loss is by evaporation, transpiration by plants and infiltration or seepage into the subsurface. The climate is arid, with average annual rainfall of 9.8 inches (Lowham 1988). Evaporation is approximately 10 times the annual precipitation rate (Welder *et al* 1966). Photographs OP 13, 16, 27, 29, 31, 34, 38 & 42 document the nature of the terrain within the project area. Drainages are established and ephemeral, flowing only in response to precipitation events and snowmelt. Sandstone lenses outcrop in the project area. Sediments in the drainages are silty and sandy.

The structural geology of the GDB is an asymmetric syncline trending NW-SE with the synclinal axis located towards the northern flank of the basin. Geologic dips are approximately 3° northeasterly off the Rock Springs uplift. The syncline is bounded on the north by the Wind River Thrust fault and associated normal faults. Surface outcrops in the project area are the Eocene-age Cathedral Bluffs tongue of the Wasatch Formation, consisting of shale and siltstone with interbedded sandstones. These rocks overlie the Tipton Shale tongue of the Green River Formation (Welder *et al* 1966). The Scotty Lake coals are a localized deposit in the northern portion of the GDB, covering an area of approximately 55 mi^2; this is different than the deeper Big Red coals, which have been deposited basin-wide. The Scotty Lake coals occur at a depth of between 2000 and 5000 ft in the project area. These are multiple coal beds ranging in thickness from 2 to 50 ft each. The Big Red coals are almost 3000 ft deeper. These relationships can be seen on the Type Log.

Watershed Delineation

Water discharged by the Scotty Lake project will enter one of three local drainage basins (DB), designated A, B and C in this report. These sub-basins are defined relative to their respective confluence with Red Creek. The areas and basin slopes of these sub basins are:

Drainage Basin (DB)	Area, mi^2	Slope, ft/mi
A	6.51	246
B	3.97	155
C	10.07	204

The Red Creek watershed, defined from the confluence of DB C with Red Creek covers an area of 119 mi^2. The total area of DB's A, B and C is 20.55 mi^2, or 17.3 % of the Red Creek watershed, as defined here. The project drainage area is 0.59% of the area of the Great Divide Basin. Red Creek terminates in Hay Reservoir, approximately 8.7 miles south of the confluence with DB C. The Wyoming Department of Environmental Quality (WDEQ) conducted a use attainability analysis (UAA) on Red Creek and its tributaries in September 2002 (WDEQ 2002). The UAA found no significant wetlands present and resulted in the reclassification of Red Creek and its tributaries from 3B to 4B.

The tributaries contained within DB's A, B and C have been subdivided and given numbered designations for this study. The DB's and reaches are presented on the enclosed Index Map. All of the designated tributaries are ephemeral (dry most of the time) and are losing streams. That is, the water table is below the base of the channels, so water in the channels will infiltrate or seep downward into the alluvial sediments in the drainages and the underlying weathered bedrock. The total length of the tributaries within DB's A, B and C that will receive CBNG water is 35.58 miles.

Produced Water - Project

The 18 project wells are expected to initially produce CBNG water at the rate of 550 bpd (16 gpm) per well. Wells will be drilled on an average spacing of 128 acres, one well per location. The maximum, total initial production from 21 wells (18 new, 3 existing) will be approximately 11,550 bpd (336 gpm or 0.755 cfs). Hudson Group has received approved NPDES permits for up to 19,286 bpd (0.81 mgpd). Because the Scotty Lake coals are normally pressured, the rate of water production is expected to decline at an annual rate of 10 to 30% per year. CBNG water decline rates have been documented for the Powder River Basin by Advanced Resources International (2002) (BLM 2003a) and numerous press releases and talks by the Wyoming Oil & Gas Conservation Commission. It should be noted that only enough water will be removed from the coals to lower the reservoir pressure to allow the adsorbed gas to break free from the coal and flow to the wells. For example, this volume of water has been estimated at 20% of the recoverable water volume contained in the Wasatch and Fort Union Formations in the Powder River Basin (BLM 2003a). When production ceases, water levels will mostly recover - rapidly at first - then more slowly as the water levels approach original static conditions. Proposed well locations are shown on the enclosed water management map and listed in Table 1.

Table 2a presents the water quality analysis dated 3/9/03 for the PL #1 well completed in the Scotty Lake Main coals. A summary of the produced water quality and the standards imposed by the approved project NPDES permit are as follows:

Parameter Analyzed	Well	Permit
Total dissolved solids @ 180° C, mg/l	1060	---
Specific conductance @ 25° C, µmhos/cm	1750	7500
pH, su	8.24	6.5 - 8.5
Sulfate, mg/l	ND	3000
Chloride, mg/l	74.1	2000
Sodium adsorption ration	42.9	---
Total radium 226, pCi/l	1.6	60
Total petroleum hydrocarbons, mg/l	1.5	10
Dissolved iron, µg/l	212	---
Total barium, µg/l	8440	---
Dissolved manganese, µg/l	ND	---
Total arsenic	1	---

ND = not detected

This water is Class III groundwater, suitable for livestock & wildlife consumption. The alluvial sediments and soils in the project area contain sulfate, which is expected to react with the barium in the produced water, precipitating as barite, a stable, inert mineral. Soil samples from the project area contained sulfate concentrations between 710 and 1490 mg/kg-dry.

Produced Water - Non-Project Related

<u>Existing Wells</u>

There are two existing, permitted water wells within a one-mile radius of the project: PL #1 WW (NW¼SE¼, Section 24, T26N, R97W) and PL #40-13 WW (SW¼SE¼, Section 13, T26N, R97W). Both wells are operated by Hudson Group. The PL #1WW is the only water well within ½ mile of a CBNG well.

<u>Potential Development</u>

It is anticipated that additional leases within the Red Creek watershed may be developed in the future. The occurrence of the Scotty Lake coals is limited to an area of 55 mi^2. However this area is the zero-line for the coal. The area for potential development is more like 40 mi^2. A maximum development scenario for the Red Creek drainage basin is 200 wells on 120-acre spacing with one well per location. This includes the 18 project wells and 3 existing wells. It is premature to evaluate this scenario at this time. The pilot project will provide site-specific data for further analysis if additional exploration and/or development is warranted in the future.

Surface Water

Surface water rights permitted with the Wyoming State Engineer's Office (WSEO) are listed in Table 3 (WSEO 2004). There are no surface water rights within a one-mile radius of the project area. Osborne Springs, which is discussed in this report, is located three miles southwest of the project area. All tributaries within and downstream of the Scotty Lake project are ephemeral, losing streams classified 4B by WDEQ.

Ground Water

Ground water rights near the Scotty Lake Project that are permitted with the WSEO are listed in Table 4 (WSEO 2004). There are no springs within a one-mile radius of the Scotty Lake project. Welder *et al* (1966) indicated that most of the water wells in the Great Divide Basin are completed in confined aquifers. By definition, the static water level in a well completed in a confined aquifer will rise above the top of the aquifer. This indicates the aquifer is under pressure, which means it is confined by low-permeability rocks effectively sealing it from the local surface. A review of available data on water wells in the northern Great Divide Basin supports Welder's conclusion. Data from water wells in T26N, R96 & 97W have average reported yields of 36.5 gpm from depths of 350 to 810 ft. Most well depths are between 400 and 600 ft. Static water levels in these wells are all above the tops of the water-bearing zones. The mean static water level is 141 ft and the mean top of the aquifers is 382 ft. These are confined aquifers.

Figure 1 is a schematic diagram of the PL #40-13 water well, operated by Hudson and located ¼ mi north of Phase I of the Scotty Lake CBNG Pilot Project. It is completed in two water-bearing sandstones at depths of 410 to 445 ft and 460 to 530 ft. The static water level in this well is at a depth of 210 ft, therefore the aquifers are confined. There is 150 ft of shale in two zones overlying the aquifers, providing good seals from shallow groundwater. Shale has very low permeability and therefore does not transmit water very well; it is a good seal. In areas of intense structural geology, most shales deform plastically rather than fracturing; a characteristic also making them good seals.

Ground water is contained in aquifers that are a part of a hydrologic system. These systems can be local, intermediate or regional in scale. Local systems cover the smallest area and are generally located near the source or recharge area for the water in the aquifer. The recharge areas can be the outcrop of the aquifer at the surface or water contained in streams, lakes or reservoirs that infiltrates downward. The water from local hydrologic systems has the best water quality of the three types of systems because the water spends the least time in the aquifer and travels the least distance, so it has less time to dissolve minerals from the rocks and sediments. Regional hydrologic systems have the poorest water quality because the water in these systems travels greater distances at greater depths, which gives the water in the aquifer a much longer residence time at higher temperatures and pressures; this results in a high mineral content in the water.
It is important to note the fact that ground water travels very slowly in the aquifer, at a rate of a few ft to 10's of ft per year. Seasonal or temporary changes in recharge or discharge rates may not even be detectable in water level data from aquifers in intermediate or regional systems.

Welder *et al* (1966) reports water quality data from one well in Section 34, T27N, R97W and one spring in Section 32, T27N, R97W north of the continental divide from the project area. The well had a conductivity of 580 µmhos/cm and the spring had a conductivity of 980 µmhos/cm. Water from the Scotty Lake coals has a conductivity of 1750 µmhos/cm. This supports the interpretation that the Scotty Lake coals are part of an intermediate hydrologic system separate from the more local hydrologic system feeding lakes, springs and shallow aquifers along the continental divide. Thus, temporary changes in the water pressures within the Scotty Lake coals should not affect the local hydrologic system.

A water sample was collected from Osborne Spring, located three miles southwest of the project area. The lab analysis is found in Table 2b. There are significant differences between the water from Osborne Spring and the water produced from the Scotty Lake coals. The following is a comparison of the differences in the two waters:

Parameter Analyzed	Osborne Spring	Scotty Lake coal
Total dissolved solids @ 180° C, mg/l	2300	1060
Sulfate, mg/l	652	3000
Sodium adsorption ration	28.5	42.9
Dissolved iron, µg/l	5620	212
Total barium, µg/l	146	8440
Nickel, µg/l	48	ND
Zinc, µg/l	85	ND
Aluminum	8460	188

ND = not detected

These two waters have sufficiently different chemistries to conclude they are from different hydrologic systems. Temporary water pressure changes in the Scotty Lake coals should have no impact on Osborne Spring.

The enclosed type log is from the PL #1 well, an existing well within Phase I of the Scotty Lake CBNG Pilot Project. The well was originally drilled to 13,652 ft and produced gas from the Lewis Formation. It has been plugged back to 4800 ft and recompleted in the main Scotty Lake coals between depths of 3604 and 3706 ft on the type log. Shales > 10 ft thick above and below the Scotty Lake coal interval have been shaded gray. Coals > 10 ft thick are indicated by black in the well column. There is 748 ft of shale between the base of surface casing and the top of the Scotty Lake coal. There is also 786 ft of shale between the base of the Scotty Lake coal and the top of the Big Red coal. The Scotty Lake coal is effectively sealed from overlying shallow hydrologic systems and the underlying regional hydrologic system containing the Big Red coal.

Before full water production begins from CBNG wells in Phase I, an isotopic analysis will be performed on a water sample from the producing formation to verify that there is not a connection between the CBNG water and the North Platte River system.

Discharge Point Siting & Design

Four field days were spent on-site examining drainages and discharge point locations. Observation points where data were collected are shown on the Water Management Map and their locations are listed in Table 5. There are 43 observation points; most were photographed. Selected photos are included in this report. The tributaries were subdivided into reaches within their respective local drainage basins. These are presented on the Drainage Basin & Reach Index Map.

Channel reach gradients were determined from USGS 7½ minute topographic maps and field checked at the observation points. The map gradients and field gradients are in agreement. Drainages near the divides begin as gentle swales, but quickly become small, active channels as they progress downslope. Overall, channels are entrenched with defined, vegetated banks. One major headcut 5 to 6 ft high was observed at observation point (OP) 18 (photo). No project water will be discharged above this point. Smaller headcuts, generally of one ft or less were observed on some of the steeper slopes in the upper reaches within the project area (photo OP 34). Channels in the upper reaches are typically 1 to 3 ft wide and 1 ft or less deep with gradients between 0.02 & 0.03 (1° & 2°). Channels at the lowest point receiving discharges are typically 2 to 4 ft wide and 1 ft +/- deep with gradients between 0.010 & 0.018 (0.5° & 1°). The main tributaries leaving the project boundaries are typically 3 to 6 ft wide, 1 ft deep sub-channels within a larger 6 to 8 ft wide 3 to 6 ft deep draw. Gradients are between 0.010 & 0.016 (0.5° & 1°). All channels are ephemeral with silty and sandy bottoms.

Discharge points are shown as triangles on the Water Management Map and are listed in Table 6. Some discharge points will be designed to receive water from multiple wells and some wells will be able to discharge water at multiple points to allow flexibility and control of water flow. Water will be moved off higher elevations and steeper slopes through pipelines to discharge points located in stable channels with acceptable gradients. The discharge points are distributed across the unnamed tributaries within the three drainage basins in the project area; this will keep the volume and velocity of the discharged water within acceptable limits.

Three methods of handling the surface discharge of CBNG produced water will be utilized for this project: 1) direct discharge to drainages, either through perforated pipe encased in rip-rap lying in the bottom of a channel or an energy dissipating riser (bubbler) located adjacent to a channel with a rip-rap riffle trench into the channel (Figure 2); 2) an off-channel recharge pit with an outlet to a drainage; or 3) a stock pond without an outlet with the water source also connected to a surface discharge point (photos OP 8, 10 & 19). Conveyance losses are expected to be high in the project area. This project is located within a closed basin and the produced water meets WDEQ standards for direct discharge. Other issues regarding the use of pits and ponds include surface disturbance, wildlife, and the distribution of the wild horse populations. Ponds/pits can be designed or fenced to manage wildlife, wild horse or livestock access and to address concerns with providing additional water sources in this area, These concerns will be routinely evaluated during the APD process before each phase of the project.

There is an existing stock pond and a flow-through pit that will be utilized in water management for this project. The pond and pit specifications are shown in Table 7. These were described in the EA prepared for the recompletion of three existing wells in the Picket Lake Field in February 2003

(BLM 2003b). Recompletion work on the three wells is still in progress, so sustained production has not yet been achieved. The monitoring, data collection, and analysis described in that document will continue.

All of the discharge points referenced in this report have approved NPDES permits issued by WDEQ. The permits allow the actual location of each discharge point to be administratively moved within a 1/2-mile radius of the permitted location. All discharge points described in this water management plan are within the 1/2-mile radius of the permitted location.

Subject to additional field work in Phases II & III and monitoring of the effectiveness of present discharge points, individual discharge point designs and locations may be modified, if deemed necessary, by BLM. This could include the use of additional pits or ponds at locations with higher channel gradients or where erosion downstream is of concern. When discharge ceases, all pits, ponds and discharge points will be rehabilitated to the original topography using the same standards as well pads (reference for well pad rehabilitation). Upon completion of the CBNG project, BLM may decide to evaluate some pits or ponds for potential beneficial use, which will require a dedicated water source (well). If a water source is available and it is determined to be feasible in the NEPA analysis, the project will be managed as a range or wildlife improvement project. The operator will not be responsible for maintenance or rehabilitation of pits or ponds converted to range or wildlife improvement projects, but will still be responsible for the rehabilitation of all sites not converted to BLM projects.

The USDI/BLM #25-23-96 flowing well located in Section 25, T23N, R96W is a good analog for surface discharge. This well has recently been reconfigured by the BLM to flow into a small pond, then through an outlet to a small channel. A water sample was collected from this well in 1963 and published by Welder *et al* (1966). The water analysis is as follows:

Conductivity, µmhos/cm	1750
pH, su	7.6
TDS, ppm	1110
Sodium, ppm	462
Calcium, ppm	3.4
Magnesium, ppm	0.1
Potassium, ppm	3.4
Bicarbonate, ppm	1120
Carbonate, ppm	918
Chloride, ppm	53
Sulfate, ppm	0.2
Nitrate, ppm	0.1
Iron, ppm	0.05
Silicon, ppm	13
Fluoride, ppm	5.5
Boron, ppm	0.09
SAR	67

Welder reported the flow from this well as 50 gpm and total depth of the well as 2250 ft. The WSEO database currently shows this well with a reported yield of 25 gpm, total depth of 1160 ft, top of main water zone 810 ft and static water level 7 ft above ground level (WSEO 2004). The well has been flowing for decades with no adverse impacts. The channel receiving the flow from the well is small (1 to 2 ft wide; 4 inches deep) and stable with riparian vegetation developed adjacent to the channel (Photos a & b). The area receiving the discharged water is approximately 30 acres in size, containing some wetland habitat. It is providing beneficial use to wildlife.

Peak Flows

Peak flows were computed for drainage basins (DB) A, B and C using the methods published by Miller (2003) and Lowham (1988). The input and results are presented in Table 8. The Q 1.5 through Q 500 nomenclature are recurrence intervals for the type storm events. A Q 1.5 event can be expected to occur statistically once every 1.5 years; a Q 100 event once every 100 years, etc. However these are statistics. In reality, a 100-year event could occur in consecutive years or even months. Active channels are generally formed by one or two-year events. The Q 2 events calculated using Miller's method range from 20.0 to 35.6 cfs; comparable statistics from Lowham range from 37.2 to 60.7 cfs.

Table 8 also contains Q 10 & Q 25 peak flow data in units of cfs/mi for use in culvert sizing. Lowham's method also estimates mean annual flow. These range from a low of 0.11 cfs for DB B to a high of 0.24 cfs for DB C.

Project Flows - Channel Capacity

Estimated discharge rates and velocities are found in Table 9. This table assumes a per well rate of 550 bpd (0.037 cfs) and no conveyance loss. Estimates were made for the tributary reaches in DB's A, B and C that will receive CBNG water. Discharges range from 0.036 cfs (1 well) to 0.236 cfs (6.5 wells). Respective velocities are 0.5 to 1.2 ft/sec. Water depths in the channels for the same cases are 0.26 and 0.78 inches. These estimates are comparable to Lowham's mean annual flows and are less than 2% of the Q 1.5 estimates by Miller's method. The project discharges are well within the capacities of the existing drainages and should not contribute significantly to natural erosional processes.

Conveyance Loss

Conveyance loss (CL) is the cumulative effect of evaporation, transpiration and infiltration on surface water. Percolation tests (PT) were conducted at two sites in channels receiving water from the project, one at PT 1 in Section 24 and one at PT 2 in Section 27. These points are shown by circles with labels on the Water Management Map. PT 1 resulted in a rate of 3.38 min/inch and PT 2 was 1.68 min/inch. The test holes were presoaked overnight to allow for any clays that might be present to swell. The percolation rates from both of these tests are high. These rates were adjusted to area in a 3 ft wide channel and units of bpd of loss per mile of channel. To account for channel width & sediment variation and the decrease in infiltration rates with increasing saturation, 1% of the CL rates estimated from the percolation tests were used for this analysis. These are 996 and 2012 bpd/mi of channel for PT 1 and PT 2, respectively. Losses to evaporation and transpiration were not added to this factor, but will be significant additional losses.

Table 10A shows the estimated flow distances down tributaries receiving CBNG water assuming a water rate of 550 bpd/well (0.036 cfs/well) and a loss rate of 1500 bpd/mi (0.097 cfs/mi). The maximum flow distance is 2.38 mi for reach 1 & 2 in DB C. Available reach lengths are also included in the table. In this scenario, no produced water will leave drainage basins A, B or C.

Table 10B presents the results for a scenario where the discharge rate is 550 bpd/well (0.036 cfs/well) and the loss rate is 750 bpd/mi (0.049 cfs/mi). The maximum flow distance is 4.77 mi in reaches 1 & 2 in DB C. Again, the water does not leave drainage basins A, B or C.

Water Balance

Three water balance scenarios have been analyzed for the project and are presented in Tables 11a, 11b and 11c. This includes 18 new CBNG wells in the pilot project plus 3 existing CBNG wells. The water balance does not include precipitation and the conveyance loss used in the water balance does not include evaporation. To provide a conservative view, water production is held constant at initial rates and all wells begin production simultaneously. The two existing ponds are used; one taking 550 bpd and one taking 225 bpd. Table 11a is based on production of 550 bpd/well and a loss of 1500 bpd/mi. Table 11b uses production of 1200 bpd/well and loss of 1500 bpd/mi. Table 11c uses production of 550 bpd/well and loss of 750 bpd/mi. All three cases result in a net surplus loss capacity.

For the actual project, 18 wells will gradually be installed over a 3-year period; the water produced from the wells should decline with time; and evaporation will be a significant additional factor in conveyance loss. All of these factors will result in less project water than that used in the water balance cases.

Downstream Impacts

The channels receiving CBNG water should have wetted surfaces below the downstream discharge points no further downstream than 3.7 mi in DB A, 2.2 mi in DB B and 4.8 mi in DB C. Project flows will be much less than natural flows. Velocities for the project flows are less than 2 ft/sec and most are less than 1 ft/sec. These velocities are below erosion thresholds. Impacts within the wetted tributaries include possible minor initial erosion in some of the channels and a vegetation change to riparian species in close proximity to the channels. There are no irrigation activities in the area, so the SAR levels will not have significant impacts.

Erosion Control Plan

Best management practices (BMP's) will be used for erosion control and the diversion of overland flows away from all facilities.

Monitoring & Mitigation

Each discharge point will be monitored monthly for the first year of operation. Inspectors will note the condition of the discharge point, check for evidence of erosion and schedule any remedial work, if required.

All pit/pond outlets and culverts will be checked quarterly, and after major storm events for the first year of operation. Inspectors will note the condition of the outlets and culverts, check for evidence of erosion and schedule any remedial work, if required.

Channels receiving discharge water will be monitored monthly for the first year of operation in that channel. If accelerated erosion is noted (i.e., a vertical change of one ft or a lateral change of three ft), the BLM will be notified and remedial work will be scheduled subject to BLM approval. The GPS locations of the downstream limits of the wetted channels will be documented as part of the inspection process.

After the first year of operation, inspections will only occur annually, unless specific sites have required remedial action. If the wetted limits of the channels are still moving downstream after one year, monthly monitoring and documentation will continue until the channels reach equilibrium.

LESSEE'S OR OPERATOR'S REPRESENTATIVE AND CERTIFICATION

I hereby certify that I, or persons under my direct supervision, have inspected the watershed area(s) affected by our coal bed natural gas drilling and production plans; that I am familiar with the conditions that currently exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with operations proposed herein will be performed by Hudson Group, LLC and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

Date August 2, 2004

Name s/Kirk W. Hudson
for Hudson Group, LLC

Title Kirk W. Hudson, Petroleum Engineer

HUDSON GROUP, LLC
SCOTTY LAKE CBNG PILOT PROJECT

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