

**SECTION 3**

WEST HILIGHT FIELD LBA TRACT

### **S3-1 TOPOGRAPHY AND PHYSIOGRAPHY**

The general analysis area for the West Hilight Field tract is located in the central portion of the general Wright analysis area. The LBA tract is bound by the Hilight Road and BNSF & UP railroad on the east and State Highway 450 on the north. The topography of the tract's general analysis area, like the area within the adjacent Black Thunder and Jacobs Ranch mines' existing permit areas, is relatively subdued. The landscape consists primarily of gently rolling terrain broken by minor drainages and internally-drained playa areas. Drainage densities are fairly low, and playas are common topographic and hydrologic features.

The general analysis area for the West Hilight Field tract is drained by Little Thunder Creek and Dry Fork Little Thunder Creek, which is a tributary of North Prong Little Thunder Creek. Bater Creek, an ephemeral tributary of Dry Fork Little Thunder Creek, drains the northern portion of the general West Hilight Field analysis area. The central portion of the general West Hilight Field analysis area is located at the divide between the Little Thunder Creek and Dry Fork Little Thunder Creek drainage basins. Along this drainage divide within the general West Hilight Field analysis area is a relatively large internally-drained area; therefore, much of the general analysis area does not contribute runoff to either stream. A large playa, referred to locally as Rochelle Lake, has formed in the lowest portion of this non-contributing drainage basin. The southern portion of the general West Hilight Field analysis area is drained by Little Thunder Creek and its ephemeral tributaries. Little Thunder Reservoir, located along Little Thunder Creek, and two prominent buttes, Grey Butte and Black Butte, located southeast of the tract's general analysis area, are notable topographic features.

Elevations range from 4,757 feet to 4,850 feet within the LBA tract as applied for, from 4,747 feet to 4,990 feet within the BLM study area, and from 4,747 feet to 5,040 feet within the tract's general analysis area. Slopes within the tract's general analysis area range from flat, where playa areas dominate the landscape, to slightly over 18 percent in the headwater areas of the ephemeral stream courses. The slopes of the gently rolling uplands, which comprise most (about 92 percent) of the general analysis area, seldom exceed 5 percent.

### **S3-2 GEOLOGY**

Stratigraphic units in the general analysis area include, in descending order, recent (Holocene age) alluvial and eolian deposits, the Eocene age Wasatch Formation (the overburden), and the Paleocene age Fort Union Formation (which contains the target coal beds).

The majority of the recent surficial deposits in the general analysis area are reworked Wasatch Formation residuum or deposits that are of mixed alluvial and eolian nature. The lithologies of these unconsolidated deposits represent materials eroded locally from the Wasatch Formation and reflect relatively near-source deposition. There are thin alluvial deposits along ephemeral

streams and closed basin drainage channels. These alluvial deposits typically consist primarily of poorly to well-sorted, irregularly bedded to laminated, unconsolidated sand, silt, and clay with minor intervals of fine gravel. Eolian processes have reworked some of the surficial sands and silts, resulting in isolated deflation basins having no natural drainage. These internally-drained surface features (playas) commonly contain fine-grained sediments recently deposited from seasonal rainfall or snowmelt runoff events.

The Eocene Wasatch Formation forms most of the overburden in the general analysis area. Wasatch rocks are exposed on the surface in some locations, particularly along steeper slopes formed by the more erosionally resistant strata and along the breaks or the broken land dissected by small ravines and gullies. The Wasatch overburden consists of interbedded, lenticular sands/sandstones, silts/siltstones, clays and shales with thin discontinuous coal seams. Typically, units are gradational mixtures of these sediments. There is no distinct boundary between the Wasatch Formation and the underlying Paleocene Fort Union Formation. From a practical standpoint, however, the top of the mineable coal zone is considered as the contact between the two formations.

There are two coal seams (referred to as Upper and Middle Wyodak) in the West Hilight Field LBA Tract as applied for and as configured under Alternative 2 (the BLM study area). The Upper and Middle seams are separated by interburden (siltstones and shales) of variable thickness, but averages approximately 32 feet. Due to quality issues, the Upper Wyodak may not be recovered. The upper coal seam within the study area averages approximately 6 feet, and the main coal seam within the study area averages approximately 87 feet, representing a cumulative coal depth of 93 feet. Table S3-1 presents the average thickness of the overburden, interburden, and the coal seams for the West Hilight Field LBA Tract. Figures S3-1 and S3-2 depict three geologic cross sections (one north-south and two east-west) drawn through the LBA tract's BLM study area.

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Table S3-1. Average Overburden and Coal Thicknesses in the West Hilight Field LBA Tract.

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<b>Mining Unit</b>	<b>Proposed Action (ft)</b>	<b>Alternative 2 (ft)</b>
Overburden	428.0	428.0
Coal	93.0	93.0
Interburden	32.0	32.0

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The Fort Union coal seams are subbituminous and are generally low-sulfur, low-ash coals. Typically, the coal being mined in the PRB has a lower heating value and higher sulfur content north of Gillette than south of Gillette. According to the analyses (which were done on an as-received basis) of exploration drilling samples collected in the West Hilight Field LBA Tract as applied for and the area added under Alternative 2, the average heating value of the coal is approximately 8,800 British thermal units per pound (Btu/lb),

Figure S3-1. Geologic Cross Sections for the West Hilight Field LBA Tract.

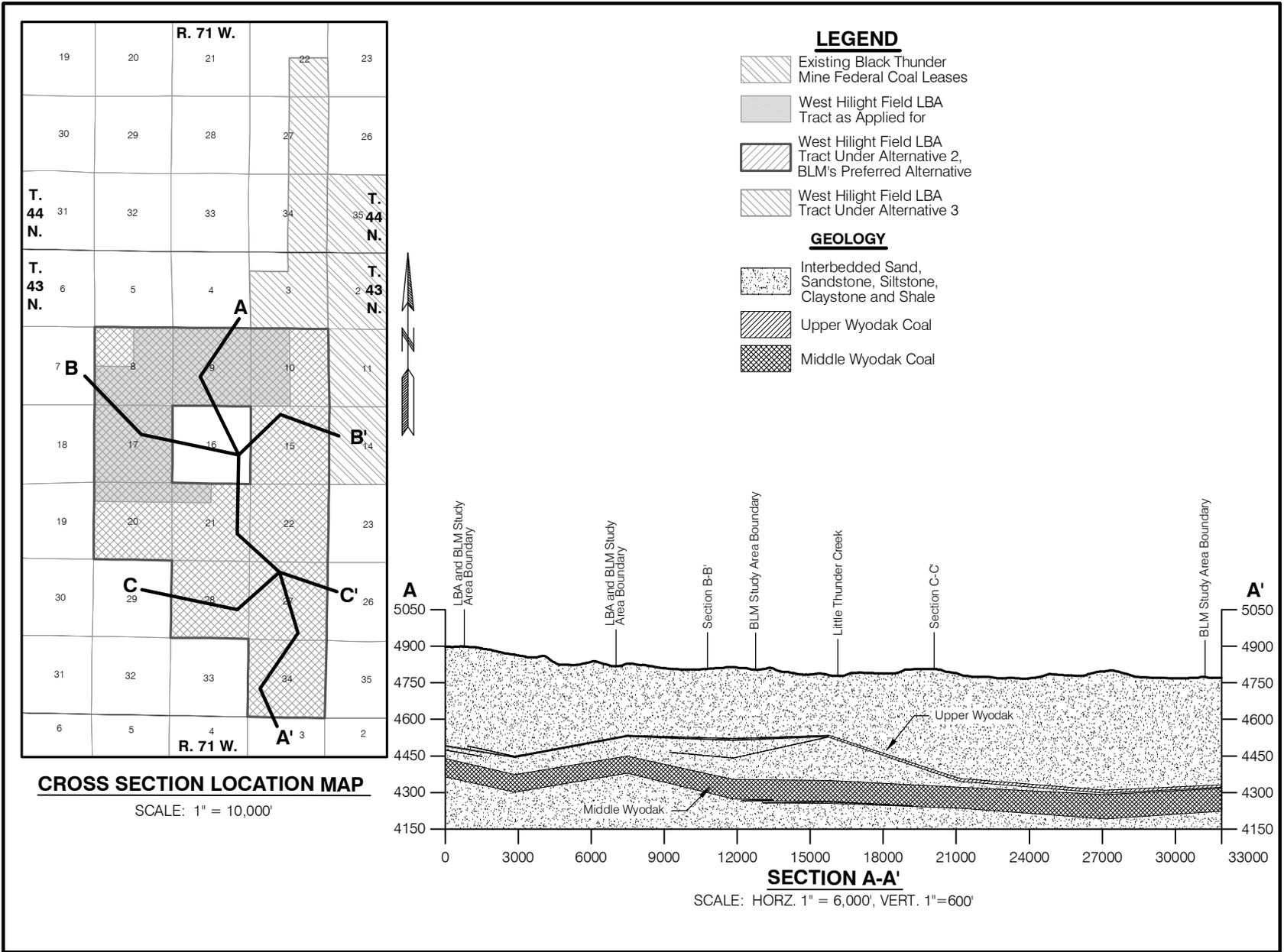
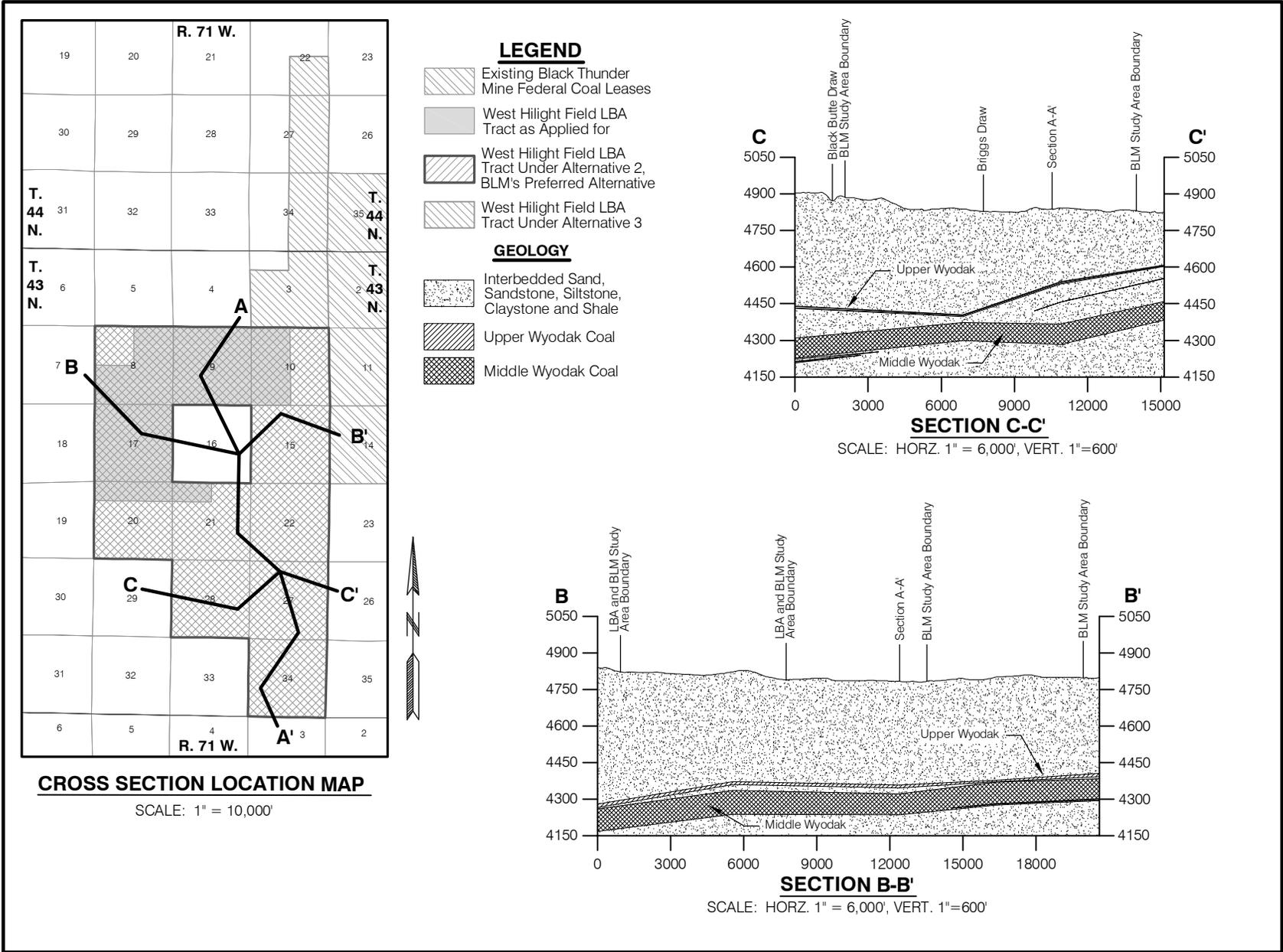


Figure S3-2: Geologic Cross Sections for the West Hilight Field LBA Tract.



with an average of less than 0.6 percent sulfur, 5.4 percent ash, and 27.2 percent moisture.

### **S3-3 PALEONTOLOGY**

Paleontological surveys were conducted in conjunction with the cultural resources inventories of the general analysis area for the West Hilight Field LBA Tract. Professional archeologists, in effort to locate unique pockets of fossilized bone such as those reported elsewhere in the Wasatch Formation in the PRB, closely examined outcrop localities during their intensive pedestrian surveys for cultural resources. Such concentrations of fossilized bone or fossil vertebrates were not found in any exposures of the Wasatch Formation. Fossilized leaves, wood, and gastropods are common and can be found at many unrecorded locations, particularly in association with coal outcrops. Due to the ubiquitous nature of the fossilized plant (tree) remains and gastropod fragments in the Wasatch Formation within the PRB, the recording of fossil locations was limited to unique finds. No outcrop localities produced exceptional examples and no unique finds were located within the LBA tract's general analysis area.

### **S3-4 AIR QUALITY**

#### **S3-4.1 Existing Emission Sources**

In the vicinity of the West Hilight Field LBA Tract, the main sources of air pollution are surface coal mining activities, vehicular traffic, railroad traffic, and various sources associated with oil and gas production and farming and ranching activities. The closest existing coal-fired power plants to the LBA tract are the Dave Johnston plant (approximately 54 miles south-southwest) and the Wyodak Complex (approximately 53 miles north), which consists of the 90-Mw WyGen No. 1, the 335-Mw Wyodak No. 1, the 21.8-Mw Neil Simpson No. 1, the 80-Mw Neil Simpson No. 2, and two 40-Mw natural gas-fired power plants.

#### **S3-4.2 Proposed Emission Sources**

All of the currently proposed emission sources in the eastern PRB are discussed in Chapter 4 of the WAC DEIS document. There are currently 12 pending LBA applications, including the West Hilight Field tract. Table S3-2 provides the approximate distances from the West Hilight Field tract to each of the other 11 pending LBA tracts.

Table S3-2. Distances to Pending LBA Tracts.

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<b>LBA Tract</b>	<b>Adjacent Mine</b>	<b>Distance from West Hilight Field</b>
Hay Creek II	Buckskin	52 miles northwest
Caballo West	Caballo	27 miles north
Belle Ayr North	Belle Ayr	27 miles north
West Coal Creek	Coal Creek	14 miles north
Maysdorf II	Cordero Rojo	17 miles north
West Jacobs Ranch	Jacobs Ranch	Proximate
South Hilight Field	Black Thunder	Proximate
North Hilight Field	Black Thunder	2 miles north
North Porcupine	North Antelope Rochelle	3 miles south
South Porcupine	North Antelope Rochelle	6 miles south
West Antelope II	Antelope	8 miles south

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### **S3-4.3 Historical Ambient Air Quality: Particulate Emissions**

Refer to the discussions on historical particulate emission producing activities, monitoring results, and control measures at the Black Thunder Mine in Section S1-4.3.

### **S3-4.4 Historical Ambient Air Quality: NO<sub>2</sub> Emissions**

Refer to the discussions on historical NO<sub>2</sub> emission producing activities, monitoring results, and control measures at the Black Thunder Mine in Section S1-4.4.

## **S3-5 WATER RESOURCES**

West Hilight Field LBA Tract is adjacent to the Black Thunder Mine's existing permit area; therefore, both the regional and site-specific baseline water resources around and within the West Hilight Field LBA Tract are extensively characterized in the mine's Wyoming Department of Environmental Quality/Land Quality Division (WDEQ/LQD) mine permit (TBCC 2005). The following analysis is based largely on those findings.

### **S3-5.1 Groundwater**

The West Hilight Field LBA Tract overlies three geologic water-bearing strata that have been or would be directly affected by mining. In descending order, these units are the recent alluvial deposits, the Wasatch Formation overburden, and the Fort Union Formation Wyodak coal seam that will be mined. The underlying, subcoal Fort Union Formation is utilized for industrial water supply at the nearby coal mines, but this unit is not physically disturbed

by mining activities. Baseline hydrogeologic conditions within and around the Black Thunder Mine are characterized in the WDEQ/LQD mine permit (TBCC 2005), and ongoing groundwater monitoring data (depth to water and water quality) are included in the mine permit and annual reports. Black Thunder Mine's current groundwater monitoring program is addressed in their 2007 WDEQ Annual Report (TBCC 2007), and Figure 3-20 in the Wright Area Coal Leases Draft EIS (WAC DEIS) depicts the locations of the currently active monitoring wells.

### Recent Alluvium

The West Hilight Field LBA Tract is within the Little Thunder Creek watershed. Recent alluvial deposits associated with surface drainages within the tract's general analysis area are generally very thin and not laterally extensive enough to be considered aquifers. In addition, these unconsolidated deposits are typically very fine-grained and have very limited permeabilities, precluding any significant storage and movement of groundwater (TBCC 2005). Mapping of the area's surficial geology (Reheis and Coates 1987, Moore and Coates 1978, Coates 1978a) shows that alluvial deposits within the LBA tract's general analysis area occur only along the channels of Little Thunder Creek and its tributary, Black Butte Draw (Figure S3-3), and these materials are comprised of stream-channel and overbank deposits.

No aquifer tests on valley fill deposits have been documented in the Black Thunder Mine permit area due to the minimal saturated thickness and low transmissivity of the deposits. Hydrologic properties of the stream laid deposits are variable throughout the permit area due to variable depositional environments. Based on the comparison of soil texture and type with permeability values presented in the literature (Cedergren 1977), the average hydraulic conductivity for the valley fill streamlaid deposits and colluvium is estimated to range from 0.2 to 20 feet per day (ft/day). The specific yield of the streamlaid deposits and colluvium, as determined through laboratory analysis, was an overall transmissivity of  $7 \times 10^{-2}$  to  $7 \times 10^{-5}$  gallons per day per square foot (gpd/ft<sup>2</sup>) (TBCC 2005).

Alluvial groundwater in this area is of poor quality and highly variable spatially. Available water quality data indicates alluvial groundwater from the valleys of Little Thunder Creek and North Prong Little Thunder Creek generally does not meet all of the WDEQ/WQD Standards (WDEQ/WQD 2009) for domestic and agricultural uses due to high total dissolved solids (TDS), sulfate and/or manganese concentrations. Ten monitoring wells installed to characterize alluvium at Black Thunder Mine exhibit an average TDS concentration of about 1,600 milligrams per liter (mg/L), which indicates the water is suitable for agricultural and livestock use. However, alluvial groundwater from monitoring wells BTA-24e and BTA-25 (refer to Figure 3-20 in the WAC DEIS for well locations) is not considered suitable for livestock use, as well as domestic and agricultural use (TBCC 2007).

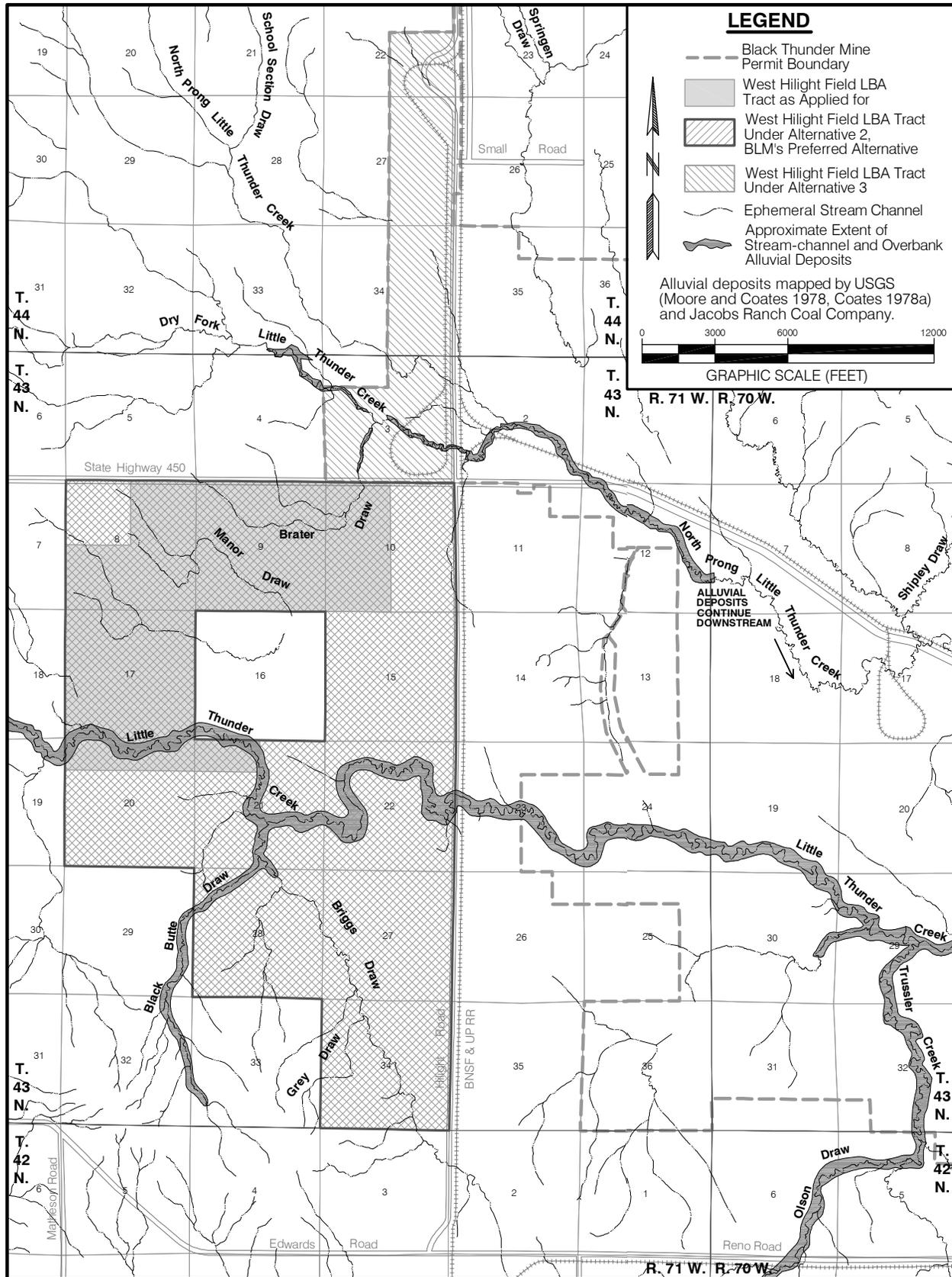


Figure S3-3. Stream Laid Deposits Within and Adjacent to the West Hilght Field LBA Tract.

Wasatch Formation

No significant differences in the physical and water-bearing characteristics of the Wasatch Formation strata (overburden) within the North Hilight Field and West Hilight Field LBA Tract's general analysis areas are known to exist. Therefore, refer to the Wasatch Formation discussion in Section S1-5.1.

Wyodak Coal

With the exception of the coal seam's average thickness (93 feet thick in the West Hilight Field tract verses 61 feet thick in the North Hilight Field tract), no significant differences in the physical and water-bearing characteristics of the Wyodak coal aquifer within the North Hilight Field and West Hilight Field LBA Tract's general analysis areas are known to exist. Therefore, refer to the Wyodak Coal discussion in Section S1-5.1.

Subcoal Fort Union Formation

Refer to the discussion on the subcoal Fort Union Formation that is used for industrial water supply at many PRB surface coal mines, including the Black Thunder Mine, in Section S1-5.1.

**S3-5.2 Surface Water**

The Black Thunder Mine site is situated near the eastern margin of the PRB, which is a broad structural trough that lies between the Big Horn Mountains and the Black Hills. The PRB is drained by three separate drainage systems: the Powder/Little Powder, the Cheyenne, and the Belle Fourche rivers. The Black Thunder Mine and West Hilight Field LBA Tract lie within the Little Thunder Creek watershed, which is a tributary of Black Thunder Creek, which is a tributary of the Cheyenne River. The topography of the Cheyenne River drainage basin is typified by broad, flat, inter-stream uplands and a wide, level expanse of eastward-sloping plains broken by a few isolated buttes.

Little Thunder Creek flows from west to east through the mine's permit area and empties into Black Thunder Creek approximately 25 miles east-southeast of the West Hilight Field LBA Tract. The total drainage for Little Thunder Creek is approximately 127 square miles, and the mainstream channel is about 26 miles long. The Little Thunder Creek watershed has a dendritic drainage pattern with an approximate width (north-south) of 11.7 miles and an approximate length (east-west) of 15.3 miles. The relief of Little Thunder Creek's drainage basin is 490 feet from its headwaters to its confluence with Black Thunder Creek.

The Black Thunder Mine disturbs several drainages within the Little Thunder Creek watershed and Little Thunder Creek is currently diverted by the mining operation. The Black Thunder Mine is currently permitted to disturb approximately 4 percent of the Little Thunder Creek drainage basin. The entire

Little Thunder Creek drainage basin was extensively studied by TBCC and the results of that study are included in the Black Thunder Mine permit (TBCC 2005). The West Hilight Field LBA Tract is adjacent to the mine's existing permit area. Little Thunder Creek and its tributaries drain most of the LBA tract's general analysis area. Dry Fork Little Thunder Creek, a second order, southeast-flowing ephemeral tributary of North Prong Little Thunder Creek, drains the northern-most portion of the LBA tract. The north-central portion of the LBA tract does not contribute runoff to any stream and drains to natural topographic depressions. The southern portion of the LBA tract's general analysis area is drained by Little Thunder Creek and its tributary, Briggs Draw. A short reach of the Little Thunder Creek channel crosses the central portion of the LBA tract's general analysis area. Figure 3-29 in the WAC DEIS depicts the surface water features within and adjacent to the West Hilight Field LBA Tract.

The topography of the West Hilight Field LBA Tract, like the area within the mine's existing permit area, is essentially subdued and drainage densities are fairly low and internally-drained playas are common topographic and hydrologic features. A large portion of the general analysis area for the LBA tract does not contribute runoff to any stream and a number of playas (the largest of which is called Rochelle Lake) have formed in the lowest portion of this non-contributing drainage area. This area, being within the Little Thunder Creek watershed and adjacent to the mine's permit area, was studied in the evaluation of the Little Thunder Creek drainage basin. The contributing drainage area for this internally-drained basin is roughly 3,560 acres. The hydrologic characteristics of these drainages were quantified and are included in Black Thunder Mine's permit (TBCC 2005).

Near the headwaters of Brater Draw, the stream channel elevation is about 4,790 feet. Total topographic relief in the stream's drainage basin is 90 feet, the channel thalweg length is about 2.43 miles, and the average channel gradient is 0.0070. The channel elevation is about 4,789 feet where it enters the LBA tract and approximately 4,705 feet where it leaves the LBA tract (TBCC 2005). Brater Draw has a total drainage area of approximately 1.71 square miles. Brater Draw drains about 29 percent of the general analysis area for West Hilight Field LBA Tract. Little Thunder Creek drains about 24 percent of the tract's general analysis area. The non-contributing, internally-drained area covers the balance (47 percent) of the LBA tract's general analysis area. The northwest-flowing Briggs Draw has a drainage area of approximately 6.8 square miles with a topographic relief of 206 feet and a thalweg length of 5.95 miles.

All streams within and adjacent to the LBA tract are typical for the region, in that flow events are ephemeral. Stream runoff is typically of short duration and exhibits temporal patterns similar to precipitation events. All ephemeral streams in the region show the characteristic extreme low-flow period from October through January. Flow events frequently result from snowmelt during the late winter and early spring. Although peak discharges from such events are generally small, the duration and therefore the percentage of annual runoff

volume can be considerable. During the spring, general storms (both rain and snow) are more frequent; hence increasing soil moisture and decreasing infiltration capacity, and subsequent rainstorms can result in higher runoff volumes and peak discharges.

Black Thunder Mine has not monitored the streamflow on the Dry Fork Little Thunder Creek or Little Thunder Creek in this area. Hydrographs generated using data collected from the gaging stations located on North Prong of Little Thunder Creek and Little Thunder Creek downstream of the West Hilight Field LBA Tract exhibit infrequent streamflow events of very low magnitude (less than 5 cubic feet per second). Each stream flow event is separated by periods of no flow ranging in duration from 3 days to 20 months with an average length of 8 months.

Presently, 10 reservoirs are located in the West Hilight Field LBA Tract as applied for, and an additional six reservoirs are located on lands added by the BLM study area. These impoundments have served to capture most of the streamflow, causing pronounced stream channel aggradation to the point at which it is difficult in places to distinguish the active channel from abandoned channel scars. The channel floor and banks are vegetated, no active erosion is evident, and the channel profile is irregular indicating the reduced streamflow cannot maintain its former gradient prior to the construction of the stock ponds. Due to the relatively small drainage area and the storage capacity of the impoundments, streamflow events are limited and heavily regulated (TBCC 2005).

Little Thunder Creek is listed in the WDEQ/WQD Surface Water Classification List as a Class 3B stream that is not known to support fish populations or drinking water supplies. Class 3B waters are intermittent or ephemeral streams with sufficient water present to normally support aquatic life including invertebrates, amphibians, or other flora and fauna at some stage of their life cycles. Class 3B waters are also characterized by frequent linear wetlands or impoundments over its entire length (WDEQ/WQD 2009).

Due to the lack of natural streamflow in Dry Fork Little Thunder Creek and Briggs Draw, flowing water quality samples have not been collected from the streams. Surface water samples have however been collected from Little Thunder Creek and North Prong Little Thunder Creek at Black Thunder Mine's monitoring sites, shown on Figure 3-29 in the WAC DEIS. Insufficient data and the ephemeral flows prevent the identification of seasonal trends; however, TDS values generally range from about 300 mg/L to 5,000 mg/L, and the water type is a sodium sulfate.

The streamflow and water quality in North Prong Little Thunder Creek and Little Thunder Creek are currently being monitored by the Black Thunder Mine at sites located upstream and downstream of the mine operation and the data are being reported to the WDEQ/LQD in the mine's annual reports.

### **S3-5.3 Water Rights**

The Wyoming State Engineer's Office (SEO) administers water rights in Wyoming. Water rights are granted for both groundwater and surface water appropriations. Prior to development of water resources associated with energy development, water appropriations (either groundwater or surface water) in the PRB were typically for livestock use.

Records of the SEO have been searched for groundwater rights within a 3-mile radius of the BLM study area for the West Hilight Field LBA Tract. This information is required for WDEQ permitting. The summary of the most recent search is provided below. Currently, mining companies and coal bed natural gas (CBNG) development companies hold the majority of the water rights in the search area. A more detailed listing of the non-coal mine related groundwater rights within a 3-mile radius of the LBA tract is presented in Table S3-3.

For the West Hilight Field LBA Tract, SEO data indicate that, as of October 8, 2007, there were 1,011 permitted water wells within 3 miles of the tract, of which, 149 wells are owned by coal mining companies. The other 862 non-coal mine related, permitted water wells, which include 750 wells permitted for uses related to CBNG development, are permitted for the following uses:

- 750 CBNG
- 69 livestock
- 20 domestic
- 19 monitoring
- 1 miscellaneous
- 3 municipal

SEO records have been searched for surface water rights within a 3-mile radius of the BLM study area for the West Hilight Field LBA Tract. Like the groundwater rights, this information is also required for WDEQ permitting. A summary of the most recent search is provided below. A more detailed listing of the non-coal mine related surface water rights is presented in Table S3-4.

For the West Hilight Field LBA Tract, SEO records indicate that as of October 9, 2007, there were 141 permitted surface water rights within 3 miles of the tract, of which 36 are owned by coal mining companies. The other 105 non-coal mine related, permitted surface water rights are permitted for the following uses:

- 3 irrigation
- 19 livestock
- 83 not designated

Table S3-3. Groundwater Rights for West Hilight Field LBA Tract.

Permit No.	Priority	TNS	RNG	SEC	QQ	Applicant	Facility Name	Status	Uses	Yld	TD
P5859P	12/31/1970	42	70	6	SWSW	RENO LIVESTOCK CORPORATION	HEARTSPEAR 5	GST	STO	2	-1
P85872W	8/20/1991	42	70	6	SWSW	THUNDER BASIN COAL CO., LLC	BTR-160	GST	MON	0	425
P157822W	4/9/2004	42	70	7	SWNW	BILL BARRETT CORPORATION	TRITON COAL 12-7-4270	GSI	CBM		
P157823W	4/9/2004	42	70	7	NENW	BILL BARRETT CORPORATION	TRITON COAL 21-7-4270	GSI	CBM		
P171649W	2/14/2005	42	70	7	NESW	YATES PETROLEUM CORP.	THUNDER BASIN CS FEDERAL #04	GST	STO,CBM,MIS	200	442
P171650W	2/14/2005	42	70	7	SWSW	YATES PETROLEUM CORP.	THUNDER BASIN CS FEDERAL #06	GST	STO,CBM,MIS	200	485
P172657W	1/12/2006	42	71	1	SWNE	TRITON COAL COMPANY, LLC- NORTH ROCHELLE	1/7/2005	GST	MON	0	305
P12757P	12/30/1950	42	71	2	NENW	USDA FOREST SERVICE	REVLAND #TB 35	GST	STO	4	165
P44327W	7/20/1978	42	71	2	NWSW	USDA FOREST SERVICE	MARG #2	GST	STO	3	373
P146425W	8/5/2002	42	71	2	SWNW	US FOREST SERVICE THUNDER BASIN NATIONAL GRASSLANDS** LANCE OIL & GAS COMPANY, INC	PORCUPINE FEDERAL #12-2	GSI	STO,CBM		
P146426W	8/5/2002	42	71	2	SWSW	US FOREST SERVICE THUNDER BASIN NATIONAL GRASSLANDS** LANCE OIL & GAS COMPANY, INC	PORCUPINE FEDERAL #14-2	GSI	STO,CBM		
P146427W	8/5/2002	42	71	2	NENW	US FOREST SERVICE THUNDER BASIN NATIONAL GRASSLANDS** LANCE OIL & GAS COMPANY, INC	PORCUPINE FEDERAL #21-2	GSI	STO,CBM		
P146428W	8/5/2002	42	71	2	NESW	US FOREST SERVICE THUNDER BASIN NATIONAL GRASSLANDS** LANCE OIL & GAS COMPANY, INC	PORCUPINE FEDERAL #23-2	GSI	STO,CBM		
P101801W	3/20/1996	42	71	3	NESW	BRIDLE BIT RANCH CO.	BBRC BLACK BUTTE #1	GST	STO	20	264
P167584W	5/19/2005	42	71	3	SESE	WEST ROUNDUP RESOURCES INC.	SC-3-0	GSI	MON		
P145445W	7/10/2002	42	71	3	SWNW	COLEMAN OIL & GAS, INC.**JERRY J/BARBARA H DILTS & BRIDLE BIT RANCH	BRIDLE BIT RANCH #3-12	GST	STO,CBM,RES	12	638
P145446W	7/10/2002	42	71	3	SWSW	COLEMAN OIL & GAS, INC.**JERRY J/BARBARA H DILTS & BRIDLE BIT RANCH	BRIDLE BIT RANCH #3-14	GST	STO,CBM	20	615
P145447W	7/10/2002	42	71	3	NENW	COLEMAN OIL & GAS, INC.**JERRY J/BARBARA H DILTS & BRIDLE BIT RANCH	BRIDLE BIT RANCH #3-21	GST	STO,CBM	7	541
P145448W	7/10/2002	42	71	3	NESW	COLEMAN OIL & GAS, INC.**JERRY J/BARBARA H DILTS & BRIDLE BIT RANCH	BRIDLE BIT RANCH #3-23	GST	STO,CBM	20	584
P150791W	4/4/2003	42	71	3	SWNE	MERIT ENERGY COMPANY**JERRY DILTS	PORCUPINE CBM 32-3-4271	GST	CBM	16	555
P150797W	4/4/2003	42	71	3	SWSE	MERIT ENERGY COMPANY**JERRY DILTS	PORCUPINE CBM 32-3-4271	GST	CBM	16	580
P150801W	4/4/2003	42	71	3	NENE	MERIT ENERGY COMPANY**JERRY DILTS	PORCUPINE CBM 41-3-4271	GST	CBM	16	500
P150808W	4/4/2003	42	71	3	NESE	MERIT ENERGY COMPANY**JERRY DILTS	PORCUPINE CBM 43-3-4271	GST	CBM	16	584
P145115W	5/20/2002	42	71	4	SWSW	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #14-4-4271	GSI	CBM		
P145116W	5/20/2002	42	71	4	NENW	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #21-4-4271	GSI	CBM		
P145117W	5/20/2002	42	71	4	NESW	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #23-4-4271	GSI	CBM		
P145118W	5/20/2002	42	71	4	SWNE	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #32-4-4271	GSI	CBM		
P145119W	5/20/2002	42	71	4	SWSE	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #34-4-4271	GSI	CBM		
P145120W	5/20/2002	42	71	4	NENE	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #41-4-4271	GSI	CBM		
P145121W	5/20/2002	42	71	4	NESE	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #43-4-4271	GSI	CBM		
P145144W	5/20/2002	42	71	4	SWNW	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #12-4-4271	GSI	CBM		
P163380W	10/19/2004	42	71	4	SWNW	MERIT ENERGY COMPANY	PORCUPINE FED 12-04-4271	GST	CBM	25	689
P163381W	10/19/2004	42	71	4	SWSW	MERIT ENERGY COMPANY	PORCUPINE FED 14-04-4271	GST	CBM	20	629
P163382W	10/19/2004	42	71	4	NENW	MERIT ENERGY COMPANY	PORCUPINE FED 21-04-4271	GST	CBM	12	673
P163383W	10/19/2004	42	71	4	NESW	MERIT ENERGY COMPANY	PORCUPINE FED 23-04-4271	GST	CBM	20	652.5
P163384W	10/19/2004	42	71	4	SWNE	MERIT ENERGY COMPANY	PORCUPINE FED 32-04-4271	GST	CBM	12	719
P163385W	10/19/2004	42	71	4	SWSE	MERIT ENERGY COMPANY	PORCUPINE FED 34-04-4271	GST	CBM	20	640.75
P163386W	10/19/2004	42	71	4	NENE	MERIT ENERGY COMPANY	PORCUPINE FED 41-04-4271	GST	CBM	12	708
P164544W	12/20/2004	42	71	4	NESE	MERIT ENERGY COMPANY	PORCUPINE FEDERAL 43-04-4271	GST	CBM	20	683

Supplementary Information on the Affected Environment

Table S3-3. Groundwater Rights for West Hilight Field LBA Tract (Continued).											
Permit No.	Priority	TNS	RNG	SEC	QQ	Applicant	Facility Name	Status	Uses	Yld	TD
P145122W	5/20/2002	42	71	5	NESW	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #23-5-4271	GSI	CBM		
P145123W	5/20/2002	42	71	5	NESE	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #43-5-4271	GSI	CBM		
P150784W	4/4/2003	42	71	5	SWNW	MERIT ENERGY COMPANY**JERRY DILTS	PORCUPINE CBM 12-5-4271	GST	CBM	25	718
P150788W	4/4/2003	42	71	5	NENW	MERIT ENERGY COMPANY	PORCUPINE CBM 21-5-4271	GST	CBM	16	749
P150792W	4/4/2003	42	71	5	SWNE	MERIT ENERGY COMPANY**JERRY DILTS	PORCUPINE CBM 32-5-4271	GST	CBM	16	670
P150798W	4/4/2003	42	71	5	SWSE	MERIT ENERGY COMPANY**JERRY DILTS	PORCUPINE CBM 34-5-4271	GST	CBM	16	598
P150802W	4/4/2003	42	71	5	NENE	MERIT ENERGY COMPANY**JERRY DILTS	PORCUPINE CBM 41-5-4271	GST	CBM	16	77
P163387W	10/19/2004	42	71	5	NESE	MERIT ENERGY COMPANY	PORCUPINE FED 43-05-4271	GST	CBM	12	649
P164545W	12/20/2004	42	71	5	NESW	MERIT ENERGY COMPANY	PORCUPINE FED 23-05-4271	GSI	CBM		
P150793W	4/4/2003	42	71	6	SWNE	MERIT ENERGY COMPANY**JERRY DILTS	PORCUPINE CBM 32-6-4271	GST	CBM	25	678
P150799W	4/4/2003	42	71	6	SWSE	MERIT ENERGY COMPANY**JERRY DILTS	PORCUPINE CBM 34-6-4271	GST	CBM	25	641
P150803W	4/4/2003	42	71	6	NENE	MERIT ENERGY COMPANY**JERRY DILTS	PORCUPINE CBM 41-6-4271	GST	CBM	25	701
P163416W	10/25/2004	42	71	6	SWSW	DEVON ENERGY PRODUCTION COMPANY, L.P.**JERRY J. - DILTS, ET AL DILTS	DILTS FEDERAL 6W-13	GST	STO,CBM	25	645
P163417W	10/25/2004	42	71	6	NESW	DEVON ENERGY PRODUCTION COMPANY, L.P.**JERRY J. - DILTS, ET AL DILTS	DILTS FEDERAL 6W-11	GST	STO,CBM	25	668
P163418W	10/25/2004	42	71	6	SWNW	DEVON ENERGY PRODUCTION COMPANY, L.P.**JERRY J. - DILTS, ET AL DILTS	DILTS FEDERAL 6W-5	GST	STO,CBM	25	711
P163419W	10/25/2004	42	71	6	NENW	DEVON ENERGY PRODUCTION COMPANY, L.P.**JERRY J. - DILTS, ET AL DILTS	DILTS FEDERAL 6W-3	GST	STO,CBM	25	652
P123474W	2/22/2000	42	71	7	SWNE	PRIMA OIL/GAS COMPANY	DILTS 4271-7-13UW	GST	STO,CBM	25	582
P123475W	2/22/2000	42	71	7	NWNW	PRIMA OIL/GAS COMPANY	DILTS 4271-7-22 UW	GST	STO,CBM	25	618
P123476W	2/22/2000	42	71	7	SWNW	PRIMA OIL/GAS COMPANY	DILTS 4271-7-23 UW	GST	STO,CBM	25	583
P123477W	2/22/2000	42	71	7	SENE	PRIMA OIL/GAS COMPANY	DILTS 4871-7-24 UW	GST	STO,CBM	25	580
P123478W	2/22/2000	42	71	7	NESW	PETRO-CANADA RESOURCES (INC)	PORCUPINE-TUIT #7-31	GSE	STO,CBM		
P123482W	2/22/2000	42	71	7	NWSE	PRIMA OIL/GAS COMPANY	DILTS 4271-7-42 UW	GST	STO,CBM	25	607
P123483W	2/22/2000	42	71	7	SWSE	PRIMA OIL/GAS COMPANY	DILTS 4271-7-43 UW	GST	STO,CBM	25	594
P150804W	4/4/2003	42	71	7	NENE	MERIT ENERGY COMPANY**JERRY DILTS	PORCUPINE CBM 41-7-4271	GSI	CBM		
P150943W	4/18/2003	42	71	7	SWSE	PRIMA OIL AND GAS COMPANY	ENL DILTS 4271-7-43UW	GST	STO,CBM	8	594
P150944W	4/18/2003	42	71	7	NWSE	PRIMA OIL AND GAS COMPANY	ENL DILTS 4271-7-42UW	GST	STO,CBM	8	607
P150947W	4/18/2003	42	71	7	SWNW	PRIMA OIL AND GAS COMPANY	ENL DILTS 4271-7-23UW	GST	STO,CBM	8	583
P150948W	4/18/2003	42	71	7	NWNW	PRIMA OIL AND GAS COMPANY	ENL DILTS 4271-7-22UW.	GST	STO,CBM	8	618
P150949W	4/18/2003	42	71	7	SWNE	PRIMA OIL AND GAS COMPANY	ENL DILTS 4271-7-13UW.	GST	STO,CBM	8	582
P153916W	8/25/2003	42	71	7	NESE	PETRO-CANADA RESOURCES (INC)	DILTS 4271-7-41UW	GSE	STO,CBM		
P145124W	5/20/2002	42	71	8	NENW	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #21-8-4271	GSI	CBM		
P145125W	5/20/2002	42	71	8	NESW	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #23-8-4271	GSI	CBM		
P145126W	5/20/2002	42	71	8	SWSE	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #34-8-4271	GSI	CBM		
P150785W	4/4/2003	42	71	8	SWNW	MERIT ENERGY COMPANY**JERRY DILTS	PORCUPINE CBM 12-8-4271	GST	CBM	16	588
P150787W	4/4/2003	42	71	8	SWSW	MERIT ENERGY COMPANY**JERRY DILTS	PORCUPINE CBM 14-8-4271	GST	CBM	25	624
P150794W	4/4/2003	42	71	8	SWNE	MERIT ENERGY COMPANY**JERRY DILTS	PORCUPINE CBM 32-8-4271	GST	CBM	16	594
P150805W	4/4/2003	42	71	8	NENE	MERIT ENERGY COMPANY**JERRY DILTS	PORCUPINE CBM 41-8-4271	GST	CBM	16	651
P150809W	4/4/2003	42	71	8	NESE	MERIT ENERGY COMPANY**JERRY DILTS	PORCUPINE CBM 43-8-4271	GSI	CBM		
P160710W	7/2/2004	42	71	8	NENW	MERIT ENERGY COMPANY	PORCUPINE FEDERAL 21-8-4271	GSI	CBM		
P160711W	7/2/2004	42	71	8	NESW	MERIT ENERGY COMPANY	PORCUPINE FEDERAL 23-8-4271	GSI	CBM		
P161326W	8/3/2004	42	71	8	SWSE	MERIT ENERGY COMPANY	PORCUPINE FED 34-8-4271	GSI	CBM		
P145127W	5/20/2002	42	71	9	SWNW	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #12-9-4271	GSI	CBM		
P145128W	5/20/2002	42	71	9	SWSW	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #14-9-4271	GSI	CBM		
P145129W	5/20/2002	42	71	9	NENW	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #21-9-4271	GSI	CBM		
P145130W	5/20/2002	42	71	9	NESW	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #23-9-4271	GSI	CBM		
P145131W	5/20/2002	42	71	9	SWNE	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #32-9-4271	GSI	CBM		

Table S3-3. Groundwater Rights for West Hilight Field LBA Tract (Continued).											
Permit No.	Priority	TNS	RNG	SEC	QQ	Applicant	Facility Name	Status	Uses	Yld	TD
P145132W	5/20/2002	42	71	9	SWSE	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #34-9-4271	GSI	CBM		
P145133W	5/20/2002	42	71	9	NENE	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #41-9-4271	GSI	CBM		
P145134W	5/20/2002	42	71	9	NESE	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #43-9-4271	GSI	CBM		
P163388W	10/19/2004	42	71	9	SWNW	MERIT ENERGY COMPANY	PORCUPINE FED 12-09-4271	GST	CBM	20	646
P163389W	10/19/2004	42	71	9	SWSW	MERIT ENERGY COMPANY	PORCUPINE FED 14-09-4271	GST	CBM	20	608
P163390W	10/19/2004	42	71	9	NENW	MERIT ENERGY COMPANY	PORCUPINE FED 21-09-4271	GST	CBM	20	588
P163391W	10/19/2004	42	71	9	NESW	MERIT ENERGY COMPANY	PORCUPINE FED 23-09-4271	GST	CBM	20	628
P163392W	10/19/2004	42	71	9	SWNE	MERIT ENERGY COMPANY	PORCUPINE FED 32-09-4271	GST	CBM	20	563
P163393W	10/19/2004	42	71	9	SWSE	MERIT ENERGY COMPANY	PORCUPINE FED 34-09-4271	GST	CBM	20	571
P163394W	10/19/2004	42	71	9	NENE	MERIT ENERGY COMPANY	PORCUPINE FED 41-09-4271	GST	CBM	20	600
P163395W	10/19/2004	42	71	9	NESE	MERIT ENERGY COMPANY	PORCUPINE FED 43-09-4271	GST	CBM	20	539
P98861W	4/21/1995	42	71	10	NWNE	JERRY DILTS	BBRC BIRDSALL #1	GST	STO	20	380
P149566W	1/13/2003	42	71	10	SWSW	WY STATE BOARD OF LAND COMMISSIONERS** MERIT ENERGY COMPANY	PORCUPINE CBM 14-10-4271	GST	CBM	16	561
P150786W	4/4/2003	42	71	10	SWNW	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	PORCUPINE CBM 12-10-4271	GST	CBM	16	528
P150789W	4/4/2003	42	71	10	NENW	MERIT ENERGY COMPANY**JERRY DILTS	PORCUPINE CBM 21-10-4271	GST	CBM	16	553
P150795W	4/4/2003	42	71	10	SWNE	MERIT ENERGY COMPANY**JERRY DILTS	PORCUPINE CBM 32-10-4271	GSI	CBM		
P150800W	4/4/2003	42	71	10	SWSE	MERIT ENERGY COMPANY**JERRY DILTS	PORCUPINE CBM 34-10-4271	GST	CBM	16	511
P150806W	4/4/2003	42	71	10	NENE	MERIT ENERGY COMPANY**JERRY DILTS	PORCUPINE CBM 41-10-4271	GST	CBM	16	581
P150810W	4/4/2003	42	71	10	NESE	MERIT ENERGY COMPANY**JERRY DILTS	PORCUPINE CBM 43-10-4271	GST	CBM	16	520
P32145W	2/10/1976	42	71	11	SWNE	USDA FOREST SERVICE	STUART #T.B. 174	GST	STO	10	380
P145102W	5/20/2002	42	71	11	SWSW	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	PORCUPINE FEDERAL #14-11-4271	GSI	CBM		
P145107W	5/20/2002	42	71	11	NESE	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	PORCUPINE FEDERAL #43-11-4271	GSI	CBM		
P145108W	5/20/2002	42	71	11	SWSE	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	PORCUPINE FEDERAL #34-11-4271	GSI	CBM		
P145109W	5/20/2002	42	71	11	NESW	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	PORCUPINE FEDERAL #23-11-4271	GSI	CBM		
P145110W	5/20/2002	42	71	11	SWNE	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #32-11-4271	GSI	CBM		
P145111W	5/20/2002	42	71	11	NENW	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #21-11-4271	GSI	CBM		
P145112W	5/20/2002	42	71	11	SWNW	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #12-11-4271	GSI	CBM		
P145113W	5/20/2002	42	71	11	NENE	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #41-11-4271	GSI	CBM		
P160430W	7/2/2004	42	71	11	SWNE	BILL BARRETT CORPORATION	PORK NW FEDERAL 32-11-4271	GST	CBM,MIS	7	610
P160431W	7/2/2004	42	71	11	NENE	BILL BARRETT CORPORATION	PORK NW FEDERAL 41-11-4271	GST	CBM,MIS	7	610
P161327W	8/3/2004	42	71	11	SWSW	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	PORCUPINE FED 14-11-4271	GSI	CBM		
P161328W	8/3/2004	42	71	11	NESW	MERIT ENERGY COMPANY	PORCUPINE FED 23-11-4271	GST	CBM	25	597
P161329W	8/3/2004	42	71	11	SWSE	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	PORCUPINE FED 34-11-4271	GST	CBM	25	593
P161330W	8/3/2004	42	71	11	NESE	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	PORCUPINE FED 43-11-4271	GST	CBM	25	625
P164546W	12/20/2004	42	71	11	SWNW	MERIT ENERGY COMPANY	PORCUPINE FED 12-11-4271	GST	CBM	12	579
P164547W	12/20/2004	42	71	11	NENW	MERIT ENERGY COMPANY	PORCUPINE FED 21-11-4271	GST	CBM	12	572
P8987P	7/13/1961	42	71	12	SESE	USDA FOREST SERVICE	STUART #T B 115	GST	STO	4	172
P145105W	5/20/2002	42	71	12	SWSW	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	PORCUPINE FEDERAL #14-15-4271	GSI	CBM		
P145106W	5/20/2002	42	71	12	SWNW	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	PORCUPINE FEDERAL #12-15-4271	GSI	CBM		

Supplementary Information on the Affected Environment

Table S3-3. Groundwater Rights for West Hilight Field LBA Tract (Continued).											
Permit No.	Priority	TNS	RNG	SEC	QQ	Applicant	Facility Name	Status	Uses	Yld	TD
P160432W	7/2/2004	42	71	12	SWNW	BILL BARRETT CORPORATION	PORK NW FEDERAL 12-12-4271	GST	CBM,MIS	8	538
P160433W	7/2/2004	42	71	12	NENW	BILL BARRETT CORPORATION	PORK NW FEDERAL 21-12-4271	GST	CBM,MIS	6	532
P160434W	7/2/2004	42	71	12	SWNE	BILL BARRETT CORPORATION	PORK NW FEDERAL 32-12-4271	GST	CBM,MIS	2	531
P160435W	7/2/2004	42	71	12	NENE	BILL BARRETT CORPORATION	PORK NW FEDERAL 41-12-4271	GST	CBM,MIS	11	489
P12755P	12/30/1950	42	71	13	SWSW	USDA FOREST SERVICE	STUART #TB 36	GST	STO	4	121
P160436W	7/2/2004	42	71	13	NESW	BILL BARRETT CORPORATION	PORK NW FEDERAL 23-13-4271	GST	CBM,MIS	12	544
P160438W	7/2/2004	42	71	13	NESE	BILL BARRETT CORPORATION	PORK NW FEDERAL 43-13-4271	GST	CBM,MIS	10	527
P162374W	9/10/2004	42	71	13	SWSW	BILL BARRETT CORPORATION	PORK NW FEDERAL 14-13-4271	GST	STO,CBM	10	510
P162375W	9/10/2004	42	71	13	SWNE	BILL BARRETT CORPORATION	PORK NW FEDERAL 32-13-4271	GST	STO,CBM	2	550
P162377W	9/10/2004	42	71	13	NENW	BILL BARRETT CORPORATION	PORK NW FEDERAL 21-13-4271	GSI	STO,CBM	0	569
P171779W	10/3/2005	42	71	13	NENE	YATES PETROLEUM CORP	THUNDER BASIN CS FEDERAL #17	GSI	CBM,MIS		
P167582W	5/19/2005	42	71	14	NWNE	WEST ROUNDUP RESOURCES INC.** WY STATE BOARD OF LAND COMMISSIONERS	SC-2-0	GSI	MON		
P149562W	1/13/2003	42	71	14	NENE	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	PORCUPINE CBM 41-14-4271	GSI	CBM		
P149563W	1/13/2003	42	71	14	SWNE	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	PORCUPINE CBM 32-14-4271	GSI	CBM		
P149564W	1/13/2003	42	71	14	NENW	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	PORCUPINE CBM 21-14-4271	GSI	CBM		
P149565W	1/13/2003	42	71	14	SWNW	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	PORCUPINE CBM 12-14-4271	GST	CBM	16	525
P150790W	4/4/2003	42	71	14	NENW	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	PORCUPINE CBM 21-14-4271	GST	CBM	16	532
P150796W	4/4/2003	42	71	14	SWNE	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	PORCUPINE CBM 32-14-4271	GST	CBM	16	545
P150807W	4/4/2003	42	71	14	NENE	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	PORCUPINE CBM 41-14-4271	GST	CBM	16	571
P160439W	7/2/2004	42	71	14	SWSW	BILL BARRETT CORPORATION	PORK NW FEDERAL 14-14-4271	GST	CBM,MIS	1	503
P160440W	7/2/2004	42	71	14	NESW	BILL BARRETT CORPORATION** WY STATE BOARD OF LAND COMMISSIONERS	PORK NW FEDERAL 23-14-4271	GST	CBM,MIS	0	517
P160441W	7/2/2004	42	71	14	SWSE	BILL BARRETT CORPORATION** WY STATE BOARD OF LAND COMMISSIONERS	PORK NW FEDERAL 34-14-4271	GST	CBM,MIS	8	500
P160442W	7/2/2004	42	71	14	NESE	BILL BARRETT CORPORATION	PORK NW FEDERAL 43-14-4271	GST	CBM,MIS	3	511
P145103W	5/20/2002	42	71	15	NESW	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	PORCUPINE FEDERAL #23-15-4271	GSI	CBM		
P145104W	5/20/2002	42	71	15	NENW	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	PORCUPINE FEDERAL #21-15-4271	GSI	CBM		
P149558W	1/13/2003	42	71	15	NESE	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	PORCUPINE CBM 43-15-4271	GST	CBM	16	530
P149559W	1/13/2003	42	71	15	NENE	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	PORCUPINE CBM 41-15-4271	GST	CBM	16	542
P149560W	1/13/2003	42	71	15	SWSE	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	PORCUPINE CBM 34-15-4271	GST	CBM	16	523
P149561W	1/13/2003	42	71	15	SWNE	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	PORCUPINE CBM 32-15-4271	GST	CBM	16	525
P161331W	8/3/2004	42	71	15	SWSW	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	PORCUPINE FED 14-15-4271	GST	CBM	25	543
P163396W	10/19/2004	42	71	15	SWNW	MERIT ENERGY COMPANY	PORCUPINE FED 12-15-4271	GST	CBM	25	540
P163397W	10/19/2004	42	71	15	NENW	MERIT ENERGY COMPANY	PORCUPINE FED 21-15-4271	GST	CBM	20	548
P163398W	10/19/2004	42	71	15	NESW	MERIT ENERGY COMPANY	PORCUPINE FED 23-15-4271	GST	CBM	25	563

Table S3-3. Groundwater Rights for West Hilight Field LBA Tract (Continued).

Permit No.	Priority	TNS	RNG	SEC	QQ	Applicant	Facility Name	Status	Uses	Yld	TD
P135205W	5/21/2001	42	71	16	NESE	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	STATE CBM 43-16	GST	CBM	20	530
P135206W	5/21/2001	42	71	16	NENE	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	STATE CBM 41-16	GST	CBM	20	554
P135207W	5/21/2001	42	71	16	SWSE	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	STATE CBM 34-16	GST	CBM	15	583
P135208W	5/21/2001	42	71	16	SWNE	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	STATE CBM 32-16	GST	CBM	20	554
P135209W	5/21/2001	42	71	16	NESW	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	STATE CBM 23-16	GST	CBM	20	554
P135210W	5/21/2001	42	71	16	NENW	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	STATE CBM 21-16	GST	CBM	20	583
P135211W	5/21/2001	42	71	16	SWSW	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	STATE CBM 14-16	GST	CBM	20	520
P135212W	5/21/2001	42	71	16	SWNW	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	STATE CBM 12-16	GST	CBM	20	556
P145135W	5/20/2002	42	71	17	NENW	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #21-17-4271	GSI	CBM		
P145136W	5/20/2002	42	71	17	NENE	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #41-17-4271	GSI	CBM		
P163399W	10/19/2004	42	71	17	NENW	MERIT ENERGY COMPANY	PORCUPINE FED 21-17-4271	GST	CBM	25	608
P163400W	10/19/2004	42	71	17	NENE	MERIT ENERGY COMPANY	PORCUPINE FED 41-17-4271	GST	CBM	25	550
P144957W	5/14/2002	42	71	18	NENE	PRIMA OIL AND GAS COMPANY	DILTS FED 4271-18-11 UW	GST	STO,CBM	25	623
P148094W	10/28/2002	42	71	18	NENE	PRIMA OIL AND GAS COMPANY	ENL DILTS FED 4271-18-11UW	GSI	STO,CBM		
P17997P	12/31/1937	42	72	1	NWNE	BILLY D. EDWARDS	HOUSE WELL #1	GST	DOM,STO	8	100
P17999P	12/31/1939	42	72	1	NWNE	BILLY D. EDWARDS	EDWARDS #1	GST	STO	6	130
P18001P	12/31/1938	42	72	1	NWNE	BILLY D. EDWARDS	BARN WELL #1	GST	STO	6	120
P59548W	2/17/1982	42	72	1	NWNE	DOROTHY J. EDWARDS	HOUSE WELL #2	GST	DOM,STO	20	238
P104261W	3/25/1996	42	72	1	SWNW	TORCH OPERATING CO	ENL MORGAN #1-12	GST	MIS,STO,CBM	5	359
P132145W	12/29/2000	42	72	1	SWNW	RMG I, LLC	ENL MORGAN # 1-12	UNA	CBM	95	359
P132146W	12/29/2000	42	72	1	SENE	RMG I, LLC	ENL MORGAN # 1-22	UNA	CBM	67	354
P137429W	7/25/2001	42	72	1	NENE	PRIMA OIL & GAS COMPANY	EDWARDS 42-42-1-11UW	GST	STO,CBM	25	697
P137430W	7/25/2001	42	72	1	SWNE	PRIMA OIL & GAS COMPANY	EDWARDS 4272-1-13UA	GST	STO,CBM	25	667
P137431W	7/25/2001	42	72	1	NESE	PRIMA OIL & GAS COMPANY	EDWARDS 4272-1-41UW	GST	STO,CBM	25	651
P144949W	5/14/2002	42	72	1	NENW	PETRO-CANADA RESOURCES (INC)	EDWARDS FED 4272-1-21UW	GSE	STO,CBM		
P144950W	5/14/2002	42	72	1	SWNW	PETRO-CANADA RESOURCES (INC)	EDWARDS FED 4272-1-23UW	GSE	STO,CBM		
P144951W	5/14/2002	42	72	1	NESW	PETRO-CANADA RESOURCES (INC)	EDWARDS FED 4272-1-31UW	GSE	STO,CBM		
P147884W	10/28/2002	42	72	1	NENE	PRIMA OIL AND GAS COMPANY	ENL EDWARDS 4272-1-11UW	GST	STO,CBM	10	697
P147885W	10/28/2002	42	72	1	SWNE	PRIMA OIL AND GAS COMPANY	EDWARDS 4272-1-13UW	GST	STO,CBM	10	667
P147886W	10/28/2002	42	72	1	NESE	PRIMA OIL AND GAS COMPANY	EDWARDS 4272-1-41UW	GST	STO,CBM	10	651
P147887W	10/28/2002	42	72	1	SWSE	PRIMA OIL AND GAS COMPANY	EDWARDS 4272-1-43UW	GST	STO,CBM	10	651
P148086W	10/28/2002	42	72	1	NENW	PRIMA OIL AND GAS COMPANY	ENL EDWARDS FED 4272-1-21UW	GSI	STO,CBM		
P148087W	10/28/2002	42	72	1	SWNW	PRIMA OIL AND GAS COMPANY	ENL EDWARDS FED 4272-1-23UW	GSI	STO,CBM		
P148088W	10/28/2002	42	72	1	NESW	PRIMA OIL AND GAS COMPANY	ENL EDWARDS FED 4272-1-31UW	GSI	STO,CBM		
P154466W	9/18/2003	42	72	1	SWNW	MERIT ENERGY COMPANY	TUIT DRAW CBM 12-01-4272	GSI	CBM		
P154468W	9/18/2003	42	72	1	NENW	MERIT ENERGY COMPANY	TUIT DRAW CBM 21-01-4272	GSI	CBM		
P154469W	9/18/2003	42	72	1	NESW	MERIT ENERGY COMPANY	TUIT DRAW CBM 23-01-4272	GSI	CBM		
P154476W	9/18/2003	42	72	2	NENE	MERIT ENERGY COMPANY	TUIT DRAW CBM 41-02-4272	GSI	CBM		
P133268W	3/23/2001	42	72	12	NENE	PRIMA OIL & GAS COMPANY	DILTS 4272-12-11UW	GST	STO,CBM	25	598
P2976P	6/11/1961	43	70	6	NWSE	MILLS LAND & LIVESTOCK CO., INC.	MILLS #25	GST	STO	5	260
P120269W	11/1/1999	43	70	6	NWNW	RIM OPERATING, INC	CBM H #11-06	GST	STO,CBM	25	301
P120270W	11/1/1999	43	70	6	NWSW	RIM OPERATING, INC	CBM H #13-06	GST	STO,CBM	0	259

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Permit No.	Priority	TNS	RNG	SEC	QQ	Applicant	Facility Name	Status	Uses	Yld	TD
P120271W	11/1/1999	43	70	6	SENW	RIM OPERATING, INC	CBM H #22-06	GST	STO,CBM	25	289
P120272W	11/1/1999	43	70	6	SESW	RIM OPERATING, INC	CBM H #24-06	GST	STO,CBM	1	265
P120273W	11/1/1999	43	70	6	NWNE	RIM OPERATING, INC	CBM H #31-06	GST	STO,CBM	25	300
P120274W	11/1/1999	43	70	6	NWSE	RIM OPERATING, INC	CBM H #33-06	GST	STO,CBM	1	273
P120275W	11/1/1999	43	70	6	SENE	RIM OPERATING, INC	CBM H #42-06	GST	STO,CBM	25	317
P120276W	11/1/1999	43	70	6	SESE	RIM OPERATING, INC	CBM H #44-06	GST	STO,CBM	25	291
P135816W	6/15/2001	43	70	6	SESE	RIM OPERATING, INC	ENL CBM H # 44-06	GST	STO,CBM	10	291
P135817W	6/15/2001	43	70	6	SENE	RIM OPERATING, INC	ENL CBM H # 42-06	GST	STO,CBM	10	317
P135818W	6/15/2001	43	70	6	SENW	RIM OPERATING, INC	ENL CBM H # 22-06	GST	STO,CBM	10	29
40/1/203W	6/6/2007	43	70	6	NWSW	THUNDER BASIN COAL COMPANY	DW0742	UNA	MIS		
40/10/202W	6/6/2007	43	70	6	NWSW	THUNDER BASIN COAL COMPANY	DW0741	UNA	MIS		
40/2/203W	6/6/2007	43	70	6	NWSW	THUNDER BASIN COAL COMPANY	DW0743	UNA	MIS		
40/3/203W	6/6/2007	43	70	6	NWSW	THUNDER BASIN COAL COMPANY	DW0744	UNA	MIS		
40/4/203W	6/6/2007	43	70	6	NWSW	THUNDER BASIN COAL COMPANY	DW0745	UNA	MIS		
40/5/203W	6/6/2007	43	70	6	NWSW	THUNDER BASIN COAL COMPANY	DW0746	UNA	MIS		
40/6/203W	6/6/2007	43	70	6	NWSW	THUNDER BASIN COAL COMPANY	DW0747	UNA	MIS		
P167211W	4/20/2005	43	70	6	NWSW	THUNDER BASIN COAL CO.	BT-2114, BT-2019-2020 & BT2115	GST	MIS	10	260
P167214W	4/20/2005	43	70	6	NESW	THUNDER BASIN COAL CO.	BT-2024	GST	MIS	7	270
P170557W	8/31/2005	43	70	6	SENE	THUNDER BASIN COAL CO.	BT-2288	GSI	MIS		
P176133W	6/20/2006	43	70	6	NWSE	THUNDER BASIN COAL CO.	BT2073	GSI	MIS		
P176134W	6/20/2006	43	70	6	NESW	THUNDER BASIN COAL CO.	BT2110	GSI	MIS		
P99926W	8/1/1995	43	70	6	NWSE	THUNDER BASIN COAL COMPANY, LLC	JRM T6-8W	GST	MON	0	160
P19254P	9/30/1954	43	70	7	NWSE	KENNETH & SYLVIA REVLAND	REVLAND #2	GST	STO	7	36
P31780W	1/7/1976	43	70	7	SWNW	RENO LIVESTOCK CORPORATION	RENO #1	GST	STO	25	110
P81595W	1/8/1990	43	70	7	SWSW	JACOBS LAND AND LIVESTOCK	#1 SOUTH CONSOL	GST	STO	10	100
P120277W	11/1/1999	43	70	7	NWNW	RIM OPERATING, INC	CBM H #11-07	GST	STO,CBM	25	289
P120278W	11/1/1999	43	70	7	SENW	RIM OPERATING, INC	CBM H #22-07	GST	STO,CBM	21	276
P120279W	11/1/1999	43	70	7	SENE	RIM OPERATING, INC	CBM H #42-07	GST	STO,CBM	25	267
P126215W	6/9/2000	43	70	7	NWNE	RIM OPERATING, INC	CBM H #31-07	GST	STO,CBM	21	270
P128063W	8/4/2000	43	70	7	SESW	RIM OPERATING, INC	CBM H 24-07	GST	STO,CBM	25	282
P135815W	6/15/2001	43	70	7	SENE	RIM OPERATING, INC	ENL CBM H # 42-07	GSI	STO,CBM	10	267
40/9/185W	6/1/2007	43	70	7	NWNW	THUNDER BASIN COAL CO., LLC	DW0756	UNA	MIS		
P100818W	10/30/1995	43	70	7	SWNE	THUNDER BASIN COAL COMPANY, LLC	JRM T7-5UC	GST	MON	0	185
P115668W	4/28/1999	43	70	7	SESE	THUNDER BASIN COAL COMPANY, LLC	TC-DW-1	UNA	MIS,RES	10	202
P167212W	4/20/2005	43	70	7	NWSW	THUNDER BASIN COAL CO.	BT-2246	GSI	MIS		
P170550W	8/31/2005	43	70	7	NWSW	THUNDER BASIN COAL CO.	BT-2300	GSI	MIS		
P170551W	8/31/2005	43	70	7	SWNW	THUNDER BASIN COAL CO.	BT-2299,BT2246	GSI	MIS		
P176127W	6/20/2006	43	70	7	NWSW	THUNDER BASIN COAL CO.	DW0619	GSI	MIS		
P176127W	6/20/2006	43	70	7	NWSW	THUNDER BASIN COAL CO.	DW0619	GSI	MIS		
P176129W	6/20/2006	43	70	7	NWSW	THUNDER BASIN COAL CO.	DW0617	GSI	MIS		
P176130W	6/20/2006	43	70	7	NWSW	THUNDER BASIN COAL CO.	DW0616	GSI	MIS		
P176131W	6/20/2006	43	70	7	SWNW	THUNDER BASIN COAL CO.	DW0615	GSI	MIS		
P176132W	6/20/2006	43	70	7	SWNW	THUNDER BASIN COAL CO.	DW0614	GSI	MIS		
P176136W	6/20/2006	43	70	7	SWNW	THUNDER BASIN COAL CO.	DW0613	GSI	MIS		
P176140W	6/20/2006	43	70	7	SWSW	THUNDER BASIN COAL CO.	BT2344	GSI	MIS		
P176141W	6/20/2006	43	70	7	NWSW	THUNDER BASIN COAL CO.	BT2348	GSI	MIS		
P176145W	6/20/2006	43	70	7	SWSW	THUNDER BASIN COAL CO.	BT2346	GSI	MIS		
P38081W	6/2/1977	43	70	7	NWNW	THUNDER BASIN COAL CO., LLC	BTW 16	GST	MON	0	100
P38085W	6/2/1977	43	70	7	NWNW	THUNDER BASIN COAL CO., LLC	BTR 27	GST	MON	0	296
P99927W	8/1/1995	43	70	7	SWNE	THUNDER BASIN COAL COMPANY, LLC	JRM T7-5C	GST	MON	0	261

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Table S3-3. Groundwater Rights for West Hilight Field LBA Tract (Continued).

Permit No.	Priority	TNS	RNG	SEC	QQ	Applicant	Facility Name	Status	Uses	Yld	TD
P99928W	8/1/1995	43	70	7	NESE	THUNDER BASIN COAL COMPANY, LLC	JRM T7-6W	GST	MON	0	145
P167213W	4/20/2005	43	70	18	NENW	THUNDER BASIN COAL CO.	BT-2097 & BT-2098	GST	MIS	25	324
P167215W	4/20/2005	43	70	18	NWSW	THUNDER BASIN COAL CO.	BT-2252	GSI	MIS		
P167216W	4/20/2005	43	70	18	SWSW	THUNDER BASIN COAL CO.	BT-2240	GSI	MIS		
P170552W	8/31/2005	43	70	18	SWNW	THUNDER BASIN COAL CO.	BT-2252,BT2277	GSI	MIS		
P170553W	8/31/2005	43	70	18	SWSW	THUNDER BASIN COAL CO.	BT-2276	GSI	MIS		
P176138W	6/20/2006	43	70	18	NWSW	THUNDER BASIN COAL CO.	BT2336	GSI	MIS		
P176139W	6/20/2006	43	70	18	NESW	THUNDER BASIN COAL CO.	BT2337	GSI	MIS		
P176144W	6/20/2006	43	70	18	SWSW	THUNDER BASIN COAL CO.	BT2335	GSI	MIS		
P4393W	1/20/1970	43	70	19	NESE	USDA FOREST SERVICE	RENO LIVESTOCK #T B 146	GST	STO	5	390
P153789W	8/22/2003	43	70	19	SWNW	LANCE OIL & GAS COMPANY, INC	ARCH FEDERAL 12-19-4370	GSE	CBM		
P153790W	8/22/2003	43	70	19	NENW	LANCE OIL & GAS COMPANY, INC	ARCH FEDERAL 21-19-4370	GSE	CBM		
P167217W	4/20/2005	43	70	19	SENW	THUNDER BASIN COAL CO.	BT-2091	GSI	MIS		
P170554W	8/31/2005	43	70	19	NWNW	THUNDER BASIN COAL CO.	BT-2274	GSI	MIS		
P176116W	6/20/2006	43	70	19	SENW	THUNDER BASIN COAL CO.	DW0610	GSI	MIS		
P176117W	6/20/2006	43	70	19	SENW	THUNDER BASIN COAL CO.	DW0609	GSI	MIS		
P176118W	6/20/2006	43	70	19	SENW	THUNDER BASIN COAL CO.	DW0608	GSI	MIS		
P176119W	6/20/2006	43	70	19	SENW	THUNDER BASIN COAL CO.	DW0611	GSI	MIS		
P38086W	6/2/1977	43	70	19	NWNW	THUNDER BASIN COAL CO., LLC	BTR 28	GST	MON	0	404
P69200W	2/2/1984	43	70	19	SESE	THUNDER BASIN COAL COMPANY	BT FU 29 1	GST	RES,MIS	250	2200
P147047W	9/16/2002	43	70	30	SWSE	UNITED STATES OF AMERICA, USDA FOREST SERVICE** THUNDER BASIN COAL COMPANY, LLC	BT-DW-15	GST	MIS	15	300
P147048W	9/16/2002	43	70	30	SESE	UNITED STATES OF AMERICA, USDA FOREST SERVICE** THUNDER BASIN COAL COMPANY, LLC	BT-DW-16	GST	MIS	15	300
P167218W	4/20/2005	43	70	30	NESW	THUNDER BASIN COAL CO.	BT-2084	GSI	MIS		
P176142W	6/20/2006	43	70	30	NWSW	THUNDER BASIN COAL CO.	BT2318	GSI	MIS		
P176143W	6/20/2006	43	70	30	SWNW	THUNDER BASIN COAL CO.	BT2319	GSI	MIS		
P85873W	8/20/1991	43	70	30	NWNW	THUNDER BASIN COAL CO., LLC	BTW-19	GST	MON	0	270
P167221W	4/20/2005	43	70	31	SESE	THUNDER BASIN COAL CO.	BT-2152	GSI	MIS		
P172659W	1/12/2006	43	70	31	NWSE	TRITON COAL COMPANY, LLC- NORTH ROCHELLE	31-10-05	GSI	MON	0	260
P176137W	6/20/2006	43	70	31	NENW	THUNDER BASIN COAL CO.	BT2355	GSI	MIS		
P132544W	2/8/2001	43	71	1	SWNE	RIM OPERATING, INC	CBM D # 32-01	GST	MON	0	365
P9681W	7/13/1971	43	71	1	NENE	BELLE FOURCHE PIPELINE CO.**GLADYS KINGTON NORWOOD	SOUTH HILIGHT #1	GST	DOM,STO	30	346
P120245W	11/1/1999	43	71	1	NWSW	RIM OPERATING, INC	CBM D #13-01	GST	STO,CBM	25	376
P120246W	11/1/1999	43	71	1	SESW	RIM OPERATING, INC	CBM D #24-01	GST	STO,CBM	25	359
P120248W	11/1/1999	43	71	1	SESE	RIM OPERATING, INC	CBM D #44-01	GST	STO,CBM	25	310
P121847W	12/27/1999	43	71	1	SENE	RIM OPERATING, INC	CBM D #42-01	GST	STO,CBM	25	310
P121848W	12/27/1999	43	71	1	SENW	RIM OPERATING, INC	CBM D #22-01	GST	STO,CBM	25	345
P123659W	2/28/2000	43	71	1	NWNE	RIM OPERATING, INC	CBM C #31-01	GST	STO,CBM	25	377
P125923W	5/25/2000	43	71	1	NWNW	RIM OPERATING, INC	CBM D #11-01	GST	STO,CBM	25	395
P128064W	8/4/2000	43	71	1	NWSE	USDA, NATIONAL FOREST SERVICE** RIM OPERATING, INC	CBM D 33-01R	GST	STO,CBM	25	326
P135820W	6/15/2001	43	71	1	SESW	RIM OPERATING, INC	ENL CBM D # 24-01	GST	STO,CBM	10	359
40/4/202W	6/6/2007	43	71	1	NWSW	THUNDER BASIN COAL COMPANY	DW0735	UNA	MIS		
40/5/202W	6/6/2007	43	71	1	NWSW	THUNDER BASIN COAL COMPANY	DW0736	UNA	MIS		
40/7/202W	6/6/2007	43	71	1	NWSW	THUNDER BASIN COAL COMPANY	DW0738	UNA	MIS		
40/8/202W	6/6/2007	43	71	1	NWSW	THUNDER BASIN COAL COMPANY	DW0739	UNA	MIS		

Supplementary Information on the Affected Environment

Table S3-3. Groundwater Rights for West Hilight Field LBA Tract (Continued).											
Permit No.	Priority	TNS	RNG	SEC	QQ	Applicant	Facility Name	Status	Uses	Yld	TD
P176135W	6/20/2006	43	71	1	NWSW	THUNDER BASIN COAL CO.	BT2296	GSI	MIS		
P99923W	8/1/1995	43	71	1	NWSE	THUNDER BASIN COAL COMPANY, LLC	JRM T1-8W	GST	MON	0	141
P19251P	9/30/1954	43	71	2	NWSE	ARK LAND COMPANY	REVLAND #1	GST	STO	10	147
P162567W	9/20/2004	43	71	2	NENE	RIM OPERATING, INC.	REVLAND TRUST FEDERAL #41-2-4371	GST	CBM	4	400
P162568W	9/20/2004	43	71	2	SWNE	RIM OPERATING, INC.	REVLAND TRUST FEDERAL #32-2-4371	GSI	CBM		
P162569W	9/20/2004	43	71	2	NESE	RIM OPERATING, INC.	REVLAND TRUST FEDERAL #43-2-4371	GST	CBM	15	383
40/6/202W	6/6/2007	43	71	2	NESE	THUNDER BASIN COAL COMPANY	DW0737	UNA	MIS		
40/9/202W	6/6/2007	43	71	2	NESE	THUNDER BASIN COAL COMPANY	DW0740	UNA	MIS		
P152950W	8/4/2003	43	71	2	NESE	THUNDER BASIN COAL COMPANY	NPLTC-03-2	GST	MON	0	10.5
P3050W	9/15/1969	43	71	3	SWSE	INC. STUART BROTHERS	STUART #10	GST	STO	5	145
P128467W	8/17/2000	43	71	3	SWNW	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 12-3-4371	GST	CBM	5	496
40/10/267W	7/18/2007	43	71	3	SESE	THUNDER BASIN COAL CO., LLC	WW07	UNA	MIS		
40/6/267W	7/18/2007	43	71	3	NENE	THUNDER BASIN COAL CO., LLC	WW03	UNA	MIS		
40/7/267W	7/18/2007	43	71	3	SENE	THUNDER BASIN COAL CO., LLC	WW04	UNA	MIS		
40/8/267W	7/18/2007	43	71	3	SENE	THUNDER BASIN COAL CO., LLC	WW05	UNA	MIS		
40/9/267W	7/18/2007	43	71	3	NESE	THUNDER BASIN COAL CO., LLC	WW06	UNA	MIS		
P3343W	10/6/1969	43	71	4	SWNE	STUART BROTHERS INC.	STUART #8	GST	STO	5	273
P118160W	8/6/1999	43	71	4	NWSW	LANCE OIL & GAS COMPANY, INC	STUART 13-4	GST	CBM	50	617
P118161W	8/6/1999	43	71	4	SESW	LANCE OIL & GAS COMPANY, INC	STUART 24-4	GST	CBM	45	571
P118162W	8/6/1999	43	71	4	NWSE	LANCE OIL & GAS COMPANY, INC	STUART 33-4	GST	CBM	45	590
P118163W	8/6/1999	43	71	4	SESE	LANCE OIL & GAS COMPANY, INC	STUART 44-4	GST	CBM	45	559
P118164W	8/6/1999	43	71	5	SENE	LANCE OIL & GAS COMPANY, INC	STUART 22-5	GST	CBM	40	702
P118165W	8/6/1999	43	71	5	SESW	LANCE OIL & GAS COMPANY, INC	STUART 24-5	GST	CBM	40	697
P118166W	8/6/1999	43	71	5	NWSE	LANCE OIL & GAS COMPANY, INC	STUART 33-5	GST	CBM	45	670
P118167W	8/6/1999	43	71	5	SENE	LANCE OIL & GAS COMPANY, INC	STUART 42-5	GST	CBM	45	628
P118168W	8/6/1999	43	71	5	SESE	LANCE OIL & GAS COMPANY, INC	STUART 44-5	GST	CBM	45	648
P121878W	12/29/1999	43	71	5	NWNW	LANCE OIL & GAS COMPANY, INC	STUART 11-5	GST	CBM	45	717
P121879W	12/29/1999	43	71	5	NWSW	LANCE OIL & GAS COMPANY, INC	STUART 13-5-4371	GST	CBM	45	688
P121880W	12/29/1999	43	71	5	NWNE	LANCE OIL & GAS COMPANY, INC	STUART 31-5-4371	GST	CBM	45	670
P101219W	1/8/1996	43	71	6	NWSE	PAUL R/RUBY H STUART	RED WINDMILL #1	GST	STO	12	200
P121881W	12/29/1999	43	71	6	NWNW	LANCE OIL & GAS COMPANY, INC	HENDERSON 11-6-4371	GST	CBM	40	832
P121882W	12/29/1999	43	71	6	NWSW	LANCE OIL & GAS COMPANY, INC	HENDERSON 13-6	GST	CBM	40	860
P121883W	12/29/1999	43	71	6	SENE	LANCE OIL & GAS COMPANY, INC	HENDERSON 22-6-4371	GST	CBM	40	792
P121884W	12/29/1999	43	71	6	NWNE	LANCE OIL & GAS COMPANY, INC	STUART 31-6-4371	GST	CBM	40	742
P121885W	12/29/1999	43	71	6	NWSE	LANCE OIL & GAS COMPANY, INC	STUART 33-6-4371	GST	CBM	40	760
P121886W	12/29/1999	43	71	6	SENE	LANCE OIL & GAS COMPANY, INC	STUART 42-6-4371	GST	CBM	40	722
P121887W	12/29/1999	43	71	6	SESE	LANCE OIL & GAS COMPANY, INC	STUART 44-6-4371	GST	CBM	40	703
P128475W	8/17/2000	43	71	6	SESW	LANCE OIL & GAS COMPANY, INC	HENDERSON FEDERAL 24-6-4371	GST	CBM	7	807
P107621W	9/17/1997	43	71	7	SWSW	LANCE OIL & GAS COMPANY, INC	EDWARDS 14-7	GST	STO, CBM	35	665
P107622W	9/17/1997	43	71	7	NWSW	LANCE OIL & GAS COMPANY, INC	EDWARDS 13-7	GST	STO, CBM	35	707
P107624W	9/17/1997	43	71	7	NWNW	LANCE OIL & GAS COMPANY, INC	EDWARDS 11-7	GST	STO, CBM	35	628
P112055W	10/6/1998	43	71	7	NENW	LANCE OIL & GAS COMPANY, INC	LITTLE THUNDER EDWARDS 21-7	GST	CBM, MIS	50	606
P112056W	10/6/1998	43	71	7	NESW	LANCE OIL & GAS COMPANY, INC	LITTLE THUNDER EDWARDS 23-7	GST	CBM	70	698
P112057W	10/6/1998	43	71	7	SESW	LANCE OIL & GAS COMPANY, INC	LITTLE THUNDER EDWARDS 24-7	GST	CBM	45	688
P116056W	5/27/1999	43	71	7	SWSW	WILLIAMS PRODUCTION RMT, COMPANY	ENL EDWARDS 14-7	GST	CBM	50	665
P116057W	5/27/1999	43	71	7	NWSW	WILLIAMS PRODUCTION RMT, COMPANY	ENL EDWARDS 13-7	GST	CBM	100	707
P121888W	12/29/1999	43	71	7	SWNE	LANCE OIL & GAS COMPANY, INC	LEADBETTER 32-7-4371	GST	CBM	40	640
P121889W	12/29/1999	43	71	7	SWSE	LANCE OIL & GAS COMPANY, INC	LEADBETTER 34-7	GST	CBM	40	667

Table S3-3. Groundwater Rights for West Hilght Field LBA Tract (Continued).											
Permit No.	Priority	TNS	RNG	SEC	QQ	Applicant	Facility Name	Status	Uses	Yld	TD
P121890W	12/29/1999	43	71	7	NENE	LANCE OIL & GAS COMPANY, INC	LEADBETTER 41-7-4371	GST	CBM	40	703
P121891W	12/29/1999	43	71	7	NESE	LANCE OIL & GAS COMPANY, INC	LEADBETTER 43-7-4371	GST	CBM	40	680
P12761P	12/30/1951	43	71	8	SWSW	USDA FOREST SERVICE	RENO #TB 41	GST	STO	4	152
P128481W	8/15/2000	43	71	8	NENE	LANCE OIL & GAS COMPANY, INC	FEDERAL 41-8-4371	GST	CBM	10	701
P165345W	1/31/2005	43	71	8	NESE	LANCE OIL & GAS COMPANY, INC	FEDERAL 43-8-4371	GSI	CBM		
P107568W	7/28/1997	43	71	9	NENE	LANCE OIL & GAS COMPANY, INC	STUART 1-41-9	GST	CBM,MIS	35	540
P110773W	6/22/1998	43	71	9	NESE	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 42-9	GST	CBM	41	542
P115199W	4/16/1999	43	71	9	NENE	BARRETT RESOURCES CORP	ENL STUART FED. 1-41-9	GST	CBM	50	540
P45855W	10/11/1978	43	71	10	SWNE	USDA FOREST SERVICE	MARG #13	GST	STO	3	383
P166310W	3/18/2005	43	71	10	SWSE	LANCE OIL & GAS COMPANY, INC	STUART FED 34-10-4371	GSI	CBM		
P166746W	4/1/2005	43	71	10	SWNE	LANCE OIL & GAS COMPANY, INC	STUART FED 32-10-4371	GSI	CBM		
P166747W	4/1/2005	43	71	10	NESE	LANCE OIL & GAS COMPANY, INC	STUART FED 43-10-4371	GSI	CBM		
P12762P	12/30/1950	43	71	11	SENE	USDA FOREST SERVICE	STUART #TB 37	GST	STO	4	146
P121916W	12/30/1999	43	71	11	SWSE	LANCE OIL & GAS COMPANY, INC	ZIMMER 34-11	GST	CBM	10	442
P121917W	12/30/1999	43	71	11	NESE	LANCE OIL & GAS COMPANY, INC	ZIMMER 43-11	GST	CBM	10	410
P5866W	6/22/1970	43	71	12	SWNE	DALE MILLS**RENO LIVESTOCK CORPORATION	HEARTSPEAR 12	ADJ	STO	25	212
P120249W	11/1/1999	43	71	12	NWNW	RIM OPERATING, INC	CBM D #11-12	GSE	STO, CBM		
P120250W	11/1/1999	43	71	12	NWSW	RIM OPERATING, INC	CBM D #13-12	GSE	STO, CBM		
P120251W	11/1/1999	43	71	12	SENE	RIM OPERATING, INC	CBM D #22-12	GST	STO, CBM	20	375
P120252W	11/1/1999	43	71	12	SESW	RIM OPERATING, INC	CBM D #24-12	GSE	STO, CBM		
P120253W	11/1/1999	43	71	12	NWNE	RIM OPERATING, INC	CBM D #31-12	GST	STO, CBM	25	365
P120254W	11/1/1999	43	71	12	NWSE	RIM OPERATING, INC	CBM D #33-12	GST	STO, CBM	25	392
P120255W	11/1/1999	43	71	12	SENE	RIM OPERATING, INC	CBM D #42-12	GST	STO, CBM	25	365
P120256W	11/1/1999	43	71	12	SESE	RIM OPERATING, INC	CBM D #44-12	GST	STO, CBM	3	375
P135819W	6/15/2001	43	71	12	NWNE	RIM OPERATING, INC	ENL CBM D # 31-12	GST	STO, CBM	10	365
P143826W	4/2/2002	43	71	12	SENE	RIM OPERATING, INC	ENL. CBM D #42-12	GST	STO, CBM	10	365
P144375W	5/2/2002	43	71	12	NWSE	RIM OPERATING, INC.	ENL. CBM D #33-12	GST	STO, CBM	15	392
39/1/547W	2/20/2007	43	71	12	NESE	THUNDER BASIN COAL COMPANY	DW0713	UNA	MIS		
39/10/546W	2/20/2007	43	71	12	NESE	THUNDER BASIN COAL COMPANY	DW0712	UNA	MIS		
39/2/547W	2/20/2007	43	71	12	NESE	THUNDER BASIN COAL COMPANY	DW0714	UNA	MIS		
39/3/547W	2/20/2007	43	71	12	SENE	THUNDER BASIN COAL COMPANY	DW0715	UNA	MIS		
39/4/547W	2/20/2007	43	71	12	SENE	THUNDER BASIN COAL COMPANY	DW0716	UNA	MIS		
39/5/546W	2/20/2007	43	71	12	SESE	THUNDER BASIN COAL COMPANY	DW0707	UNA	MIS		
39/5/547W	2/20/2007	43	71	12	SENE	THUNDER BASIN COAL COMPANY	DW0717	UNA	MIS		
39/5/578W	3/5/2007	43	71	12	SENE	THUNDER BASIN COAL COMPANY	DW0718	UNA	MIS		
39/6/546W	2/20/2007	43	71	12	SESE	THUNDER BASIN COAL COMPANY	DW0708	UNA	MIS		
39/7/546W	2/20/2007	43	71	12	SESE	THUNDER BASIN COAL COMPANY	DW0709	UNA	MIS		
39/8/546W	2/20/2007	43	71	12	NESE	THUNDER BASIN COAL COMPANY	DW0710	UNA	MIS		
39/9/546W	2/20/2007	43	71	12	NESE	THUNDER BASIN COAL COMPANY	DW0711	UNA	MIS		
40/1/185W	6/1/2007	43	71	12	NENE	THUNDER BASIN COAL CO., LLC	DW0748	UNA	MIS		
40/1/267W	7/18/2007	43	71	12	NENE	THUNDER BASIN COAL CO., LLC	CS08	UNA	MIS		
40/2/185W	6/1/2007	43	71	12	NENE	THUNDER BASIN COAL CO., LLC	DW0749	UNA	MIS		
40/2/267W	7/18/2007	43	71	12	NENE	THUNDER BASIN COAL CO., LLC	CS09	UNA	MIS		
40/3/185W	6/1/2007	43	71	12	NENE	THUNDER BASIN COAL CO., LLC	DW0750	UNA	MIS		
40/3/267W	7/18/2007	43	71	12	NENE	THUNDER BASIN COAL CO., LLC	CS10	UNA	MIS		
40/4/185W	6/1/2007	43	71	12	NENE	THUNDER BASIN COAL CO., LLC	DW0751	UNA	MIS		
40/5/185W	6/1/2007	43	71	12	NENE	THUNDER BASIN COAL CO., LLC	DW0752	UNA	MIS		
40/6/185W	6/1/2007	43	71	12	NENE	THUNDER BASIN COAL CO., LLC	DW0753	UNA	MIS		
40/7/185W	6/1/2007	43	71	12	NENE	THUNDER BASIN COAL CO., LLC	DW0754	UNA	MIS		

*Supplementary Information on the Affected Environment*

**Table S3-3. Groundwater Rights for West Hilight Field LBA Tract (Continued).**

<b>Permit No.</b>	<b>Priority</b>	<b>TNS</b>	<b>RNG</b>	<b>SEC</b>	<b>QQ</b>	<b>Applicant</b>	<b>Facility Name</b>	<b>Status</b>	<b>Uses</b>	<b>Yld</b>	<b>TD</b>
40/8/185W	6/1/2007	43	71	12	NENE	THUNDER BASIN COAL CO., LLC	DW0755	UNA	MIS		
P176120W	6/20/2006	43	71	12	SESE	THUNDER BASIN COAL CO.	DW0626	GSI	MIS		
P176121W	6/20/2006	43	71	12	SESE	THUNDER BASIN COAL CO.	DW0627	GSI	MIS		
P176122W	6/20/2006	43	71	12	NESE	THUNDER BASIN COAL CO.	DW0624	GSI	MIS		
P176123W	6/20/2006	43	71	12	NESE	THUNDER BASIN COAL CO.	DW0623	GSI	MIS		
P176124W	6/20/2006	43	71	12	NESE	THUNDER BASIN COAL CO.	DW0622	GSI	MIS		
P176125W	6/20/2006	43	71	12	NESE	THUNDER BASIN COAL CO.	DW0621	GSI	MIS		
P176126W	6/20/2006	43	71	12	NESE	THUNDER BASIN COAL CO.	DW0620	GSI	MIS		
P176128W	6/20/2006	43	71	12	NESE	THUNDER BASIN COAL CO.	DW0618	GSI	MIS		
P132545W	2/8/2001	43	71	13	NENE	RIM OPERATING, INC	CBM D # 41-13	GST	MON	0	385
P5862P	8/31/1968	43	71	13	NESW	RENO LIVESTOCK CORPORATION	HEARTSPEAR 8	GST	STO	2	324
P112580W	10/30/1998	43	71	13	NWNW	LANCE OIL & GAS COMPANY, INC	YOUNG 11-13	GST	CBM	29	410
P121919W	12/30/1999	43	71	13	SESW	LANCE OIL & GAS COMPANY, INC	ARCH 22-13	GST	CBM	10	410
P121920W	12/30/1999	43	71	13	SESW	LANCE OIL & GAS COMPANY, INC	ARCH 24-13	GST	CBM	10	415
P121989W	12/31/1999	43	71	13	NWSW	LANCE OIL & GAS COMPANY, INC	ARCH 13-13	GST	CBM	10	432
P123115W	2/7/2000	43	71	13	SESE	LANCE OIL & GAS COMPANY, INC	HOPKINS TRUST 44-13-4371	GST	CBM	20	384
P123116W	2/7/2000	43	71	13	NWSE	LANCE OIL & GAS COMPANY, INC	ARCH 33-13-4371	GST	CBM	18	450
P19253P	12/31/1950	43	71	14	SESW	ARK LAND COMPANY	REVLAND #3	GST	STO	10	80
P121921W	12/30/1999	43	71	14	SENE	LANCE OIL & GAS COMPANY, INC	ARCH 42-14	GST	CBM	10	462
P121922W	12/30/1999	43	71	14	SESE	LANCE OIL & GAS COMPANY, INC	ARCH 44-14	GST	CBM	10	467
P141592W	12/17/2001	43	71	14	SWSW	LANCE OIL & GAS COMPANY, INC	REVLAND TRUST 14-14-4371	GSI	CBM		
P166322W	3/18/2005	43	71	14	SWSE	LANCE OIL & GAS COMPANY, INC	FEDERAL 34-14-4371	GSI	CBM		
P166323W	3/18/2005	43	71	14	SWNE	LANCE OIL & GAS COMPANY, INC	FEDERAL 32-14-4371	GSI	CBM		
P139458W	9/24/2001	43	71	15	SWNW	COLEMAN OIL & GAS, INC.** THUNDER BASIN COAL COMPANY LLC	THUNDER BASIN #15-12	GST	STO,CBM	17	562
P139459W	9/24/2001	43	71	15	NENW	COLEMAN OIL & GAS, INC.** THUNDER BASIN COAL COMPANY LLC	THUNDER BASIN #15-21	GST	STO,CBM	0	519
P139460W	9/24/2001	43	71	15	SWSW	COLEMAN OIL & GAS, INC.** THUNDER BASIN COAL COMPANY LLC	THUNDER BASIN #15-14	GST	STO,CBM	0	543
P139461W	9/24/2001	43	71	15	NESW	COLEMAN OIL & GAS, INC.** THUNDER BASIN COAL COMPANY LLC	THUNDER BASIN #15-23	GST	STO,CBM	17	543
P145780W	6/26/2002	43	71	15	NESE	THUNDER BASIN COAL COMPANY** COLEMAN OIL & GAS, INC.	THUNDER BASIN #15-43	GST	STO,CBM	7	503
P145788W	6/26/2002	43	71	15	SWSE	THUNDER BASIN COAL COMPANY** COLEMAN OIL & GAS, INC.	THUNDER BASIN #15-34	GST	STO,CBM	9	542
P145789W	6/26/2002	43	71	15	NENE	THUNDER BASIN COAL COMPANY** COLEMAN OIL & GAS, INC.	THUNDER BASIN #15-41	GST	STO,CBM	3	521
P123106W	2/7/2000	43	71	16	SWSE	WY STATE BOARD OF LAND COMMISSIONERS** LANCE OIL & GAS COMPANY, INC	STATE 34-16-4371	GST	CBM	40	623
P123107W	2/7/2000	43	71	16	NESW	WY STATE BOARD OF LAND COMMISSIONERS** LANCE OIL & GAS COMPANY, INC	STATE 23-16-4371	GST	CBM	40	610
P123108W	2/7/2000	43	71	16	NENW	WY STATE BOARD OF LAND COMMISSIONERS** LANCE OIL & GAS COMPANY, INC	STATE 21-16-4371	GST	CBM	40	602
P123109W	2/7/2000	43	71	16	SWSW	WY STATE BOARD OF LAND COMMISSIONERS** LANCE OIL & GAS COMPANY, INC	STATE 14-16-4371	GST	CBM	40	620
P123110W	2/7/2000	43	71	16	SWNW	WY STATE BOARD OF LAND COMMISSIONERS** LANCE OIL & GAS COMPANY, INC	STATE 12-16-4371	GST	CBM	40	622

Table S3-3. Groundwater Rights for West Hilight Field LBA Tract (Continued).											
Permit No.	Priority	TNS	RNG	SEC	QQ	Applicant	Facility Name	Status	Uses	Yld	TD
P128141W	8/8/2000	43	71	16	NENE	WY STATE BOARD OF LAND COMMISSIONERS** COLEMAN OIL & GAS, INC.	EDWARDS STATE 16-1	GST	CBM	17	542
P128142W	8/8/2000	43	71	16	SWNE	WY STATE BOARD OF LAND COMMISSIONERS** COLEMAN OIL & GAS, INC.	EDWARDS STATE #16-2	GST	CBM	16	556
P129244W	9/5/2000	43	71	16	NESE	WY STATE BOARD OF LAND COMMISSIONERS** COLEMAN OIL & GAS, INC.	EDWARDS STATE #3-16	GST	STO,CBM	15	526
P33997W	7/6/1976	43	71	16	SESE	WY BOARD OF LAND COMMISSIONERS** THUNDER BASIN COAL COMPANY	WCH 3	GST	MON		
P123018W	1/19/2000	43	71	17	NENW	LANCE OIL & GAS COMPANY, INC	ARKLAND 21-17-4371	GST	CBM	20	630
P123019W	1/19/2000	43	71	17	NESW	LANCE OIL & GAS COMPANY, INC	ARKLAND 23-17-4371	GST	CBM	40	650
P123020W	1/19/2000	43	71	17	SWSE	LANCE OIL & GAS COMPANY, INC	ARKLAND 34-17-4371	GST	CBM	40	631
P123021W	1/19/2000	43	71	17	NESE	LANCE OIL & GAS COMPANY, INC	ARKLAND 43-17-4371	GST	CBM	40	610
P137865W	7/23/2001	43	71	17	SWNW	LANCE OIL & GAS COMPANY, INC	THUNDER BASIN COAL FEDERAL 12-17-4371	GST	CBM	10	643
P137866W	7/23/2001	43	71	17	SWSW	LANCE OIL & GAS COMPANY, INC	THUNDER BASIN COAL FEDERAL 14-17-4371	GST	CBM	10	641
P137867W	7/23/2001	43	71	17	SWNE	LANCE OIL & GAS COMPANY, INC	FEDERAL 32-17-4371	GST	CBM	16	590
P137868W	7/23/2001	43	71	17	NENE	LANCE OIL & GAS COMPANY, INC	FEDERAL 41-17-4371	GST	CBM	10	641
P152951W	8/4/2003	43	71	17	SESE	THUNDER BASIN COAL COMPANY	LTC-03-1	GST	MON	0	8.5
P143845W	4/9/2002	43	71	18	SWSE	LANCE OIL & GAS COMPANY, INC	FEDERAL 34-18-4371	GSE	CBM		
P143846W	4/9/2002	43	71	18	NESE	LANCE OIL & GAS COMPANY, INC	FEDERAL 43-18-4371	GSE	CBM		
P143858W	4/9/2002	43	71	18	SWSW	LANCE OIL & GAS COMPANY, INC	FEDERAL 14-18-4371	GSE	CBM		
P143859W	4/9/2002	43	71	18	NESW	LANCE OIL & GAS COMPANY, INC	FEDERAL 23-18-4371	GSE	CBM		
P148119W	10/29/2002	43	71	18	NENE	WESTPORT OIL & GAS COMPANY, L.P.	FEDERAL 41-18-4371	GST	CBM	1	637
P148120W	10/29/2002	43	71	18	SWNE	WESTPORT OIL & GAS COMPANY, L.P.	FEDERAL 32-18-4371	GST	CBM	10	650
P152897W	7/25/2003	43	71	18	SWNW	WILLIAMS PRODUCTION RMT COMPANY	EDWARDS FEDERAL 12-18-4371	GST	STO,CBM	19	723
P151684W	5/30/2003	43	71	19	NESE	WESTPORT OIL & GAS COMPANY INC	FEDERAL 43-19	GSE	CBM		
P151685W	5/30/2003	43	71	19	SWSE	WESTPORT OIL & GAS COMPANY INC	FEDERAL 34-19	GSE	CBM		
P151686W	5/30/2003	43	71	19	SWNE	WESTPORT OIL & GAS COMPANY INC	FEDERAL 32-19	GSE	CBM		
P151687W	5/30/2003	43	71	19	NESW	WESTPORT OIL & GAS COMPANY INC	FEDERAL 23-19-4371	GSE	CBM		
P151688W	5/30/2003	43	71	19	NENW	WESTPORT OIL & GAS COMPANY INC	FEDERAL 21-19-4371	GSE	CBM		
P151689W	5/30/2003	43	71	19	SWSW	WESTPORT OIL & GAS COMPANY INC	FEDERAL 14-19-4371	GSE	CBM		
P151690W	5/30/2003	43	71	19	SWNW	WESTPORT OIL & GAS COMPANY INC	FEDERAL 12-19-4371	GSE	CBM		
P153633W	8/12/2003	43	71	19	NENE	WILLIAMS PRODUCTION RMT COMPANY	ARCH STATE 41-19-4371	GST	STO,CBM	14	657
P38082W	6/2/1977	43	71	19	NWNW	ATLANTIC RICHFIELD COMPANY** THUNDER BASIN COAL COMPANY, L.L.C.	BTW 17	GST	MON	0	125
P143847W	4/9/2002	43	71	20	SWSW	LANCE OIL & GAS COMPANY, INC	FEDERAL 14-20-4371	GSE	CBM		
P143849W	4/9/2002	43	71	20	SWNW	WILLIAMS PRODUCTION RMT COMPANY	FEDERAL 12-20-4371	GSI	CBM		
P143850W	4/9/2002	43	71	20	NENW	LANCE OIL & GAS COMPANY, INC	FEDERAL 21-20-4371	GSE	CBM		
P143851W	4/9/2002	43	71	20	SWNE	LANCE OIL & GAS COMPANY, INC	FEDERAL 32-20-4371	GSE	CBM		
P143852W	4/9/2002	43	71	20	SWSE	LANCE OIL & GAS COMPANY, INC	FEDERAL 34-20-4371	GSE	CBM		
P143853W	4/9/2002	43	71	20	NENE	LANCE OIL & GAS COMPANY, INC	FEDERAL 41-20-4371	GSE	CBM		
P143854W	4/9/2002	43	71	20	NESE	LANCE OIL & GAS COMPANY, INC	FEDERAL 43-20-4371	GSE	CBM		
P154193W	9/9/2003	43	71	20	NWNW	WILLIAMS PRODUCTION RMT COMPANY	ARCH STATE 11-20-4371	GST	STO,CBM	10	664
P176288W	7/12/2006	43	71	21	SESW	THOMAS W. & LEAH B. EDWARDS	EDWARDS #8	GSI	STO		
P32088W	1/16/1976	43	71	21	SENE	UNIVERSITY OF WYOMING WRRI	LTB 2A	GST	MON	0	100
P32089W	1/16/1976	43	71	21	SENE	UNIVERSITY OF WYOMING WRRI	LTB 2B	GST	MON	0	200
P32090W	1/16/1976	43	71	21	SENE	UNIVERSITY OF WYOMING WRRI	LTB 2C	GST	MON	0	574
P84348W	2/5/1991	43	71	21	SENE	USDA FOREST SERVICE	EDWARDS #T.B. 266	GST	STO	2	574

Supplementary Information on the Affected Environment

Table S3-3. Groundwater Rights for West Hilight Field LBA Tract (Continued).											
Permit No.	Priority	TNS	RNG	SEC	QQ	Applicant	Facility Name	Status	Uses	Yld	TD
P143855W	4/9/2002	43	71	21	SWNW	LANCE OIL & GAS COMPANY, INC	FEDERAL 12-21	GSE	CBM		
P143856W	4/9/2002	43	71	21	SWSW	LANCE OIL & GAS COMPANY, INC	FEDERAL 14-21	GSE	CBM		
P143857W	4/9/2002	43	71	21	NENW	LANCE OIL & GAS COMPANY, INC	FEDERAL 21-21	GSE	CBM		
P167145W	4/13/2005	43	71	21	NESW	LANCE OIL & GAS COMPANY, INC	FEDERAL 23-21-4371	GSI	CBM		
P169600W	8/19/2005	43	71	21	SWNE	LANCE OIL & GAS COMPANY, INC.	FEDERAL 32-21-4371	GSI	CBM		
P169867W	8/15/2005	43	71	21	NENE	LANCE OIL & GAS COMPANY, INC.	FEDERAL 41-21-4371	GSI	CBM		
P8912W	5/4/1971	43	71	22	NWNW	USDA FOREST SERVICE	RENO #T B 152	GST	STO	4	-1
P8913W	5/24/1971	43	71	22	SWNW	USDA FOREST SERVICE	RENO #T B 153	GST	STO	5	-1
P121923W	12/30/1999	43	71	22	SWNE	LANCE OIL & GAS COMPANY, INC	ARCH 32-22	GST	CBM	45	541
P121924W	12/30/1999	43	71	22	SWSE	LANCE OIL & GAS COMPANY, INC	ARCH 34-22	GST	CBM	45	540
P121925W	12/30/1999	43	71	22	NENE	LANCE OIL & GAS COMPANY, INC	ARCH 41-22	GST	CBM	45	531
P121926W	12/30/1999	43	71	22	NESE	LANCE OIL & GAS COMPANY, INC	ARCH 43-22	GST	CBM	45	514
P152852W	7/24/2003	43	71	22	SWSW	WILLIAMS PRODUCTION RMT COMPANY	FEDERAL 14-22-4371R	GSE	CBM		
P167141W	4/13/2005	43	71	22	SWSW	LANCE OIL & GAS COMPANY, INC	FEDERAL 14-22-4371R	GSI	CBM		
P152949W	8/4/2003	43	71	22	SENE	THUNDER BASIN COAL COMPANY	LTC-03-2	GST	MON	0	8
P44326W	7/20/1978	43	71	23	SWSW	USDA FOREST SERVICE	MARG #1	GST	STO	3	375
P128505W	8/17/2000	43	71	23	SWSE	USDA, NATIONAL FOREST SERVICE** LANCE OIL & GAS COMPANY, INC	BRC FEDERAL 34-23	GST	CBM	20	475
P152855W	7/24/2003	43	71	23	NENW	WILLIAMS PRODUCTION RMT COMPANY	FEDERAL 21-23-4371	GSE	CBM		
P167138W	4/13/2005	43	71	23	SWNW	LANCE OIL & GAS COMPANY, INC	FEDERAL 12-23-4371	GSI	CBM		
P167144W	4/13/2005	43	71	23	NENW	LANCE OIL & GAS COMPANY, INC	FEDERAL 21-23-4371	GSI	CBM		
P167146W	4/13/2005	43	71	23	NESW	LANCE OIL & GAS COMPANY, INC	FEDERAL 23-23-4371	GSI	CBM		
P169601W	8/19/2005	43	71	23	SWNE	LANCE OIL & GAS COMPANY, INC.	FEDERAL 32-23-4371	GSI	CBM		
P169864W	8/15/2005	43	71	23	NESE	LANCE OIL & GAS COMPANY, INC.	FEDERAL 43-23-4371	GSI	CBM		
P169868W	8/15/2005	43	71	23	NENE	LANCE OIL & GAS COMPANY, INC.	FEDERAL 41-23-4371	GSI	CBM		
P121927W	12/30/1999	43	71	24	SENW	LANCE OIL & GAS COMPANY, INC	ARCH 22-24	GST	CBM	10	427
P121928W	12/30/1999	43	71	24	NWNE	LANCE OIL & GAS COMPANY, INC	ARCH 31-24	GST	CBM	10	470
P128509W	8/17/2000	43	71	24	SWSW	USDA, NATIONAL FOREST SERVICE** WILLIAMS PRODUCTION RMT, COMPANY	BRC FEDERAL 14-24	GST	CBM	20	421
P147621W	10/4/2002	43	71	24	NENE	LANCE OIL & GAS COMPANY, INC	ARCH 41-24-4371	GSE	CBM		
P147622W	10/4/2002	43	71	24	NESE	LANCE OIL & GAS COMPANY, INC	ARCH 43-24-4371	GSE	CBM		
P166461W	3/31/2005	43	71	24	NESW	LANCE OIL & GAS COMPANY, INC	FEDERAL 23-24-4371	GSI	CBM		
P167139W	4/13/2005	43	71	24	SWNW	LANCE OIL & GAS COMPANY, INC	FEDERAL 12-24-4371WY	GSI	CBM		
P169865W	8/15/2005	43	71	24	SWSE	LANCE OIL & GAS COMPANY, INC.	FEDERAL 34-24-4371	GSI	CBM		
P5860P	12/31/1930	43	71	25	SESE	RENO LIVESTOCK CORPORATION	HEARTSPEAR 6	GST	STO	1	-1
P5860P	12/31/1930	43	71	25	SESE	RENO LIVESTOCK CORPORATION	HEARTSPEAR 6	GST	STO	1	-1
P112564W	10/30/1998	43	71	25	NWNW	LANCE OIL & GAS COMPANY, INC	FEDERAL 11-25	GST	CBM	24	398
P112565W	10/30/1998	43	71	25	SWNW	LANCE OIL & GAS COMPANY, INC	FEDERAL 12-25	GST	CBM	32	375
P112566W	10/30/1998	43	71	25	SENW	LANCE OIL & GAS COMPANY, INC	FEDERAL 22-25	GST	CBM	12	370
P134996W	5/15/2001	43	71	25	SWSW	LANCE OIL & GAS COMPANY, INC	ARCH 14-25-4371	GST	CBM	10	432
P134997W	5/15/2001	43	71	25	NESW	LANCE OIL & GAS COMPANY, INC	ARCH 23-25-4371	GST	CBM	10	382
P134998W	5/15/2001	43	71	25	SWSE	LANCE OIL & GAS COMPANY, INC	ARCH 34-25-4371	GST	CBM	10	384
P134999W	5/15/2001	43	71	25	NESE	LANCE OIL & GAS COMPANY, INC	ARCH 43-25-4371	GST	CBM	10	324
P169602W	8/19/2005	43	71	25	SWNE	LANCE OIL & GAS COMPANY, INC.	FEDERAL 32-25-4371	GSI	CBM		
P169869W	8/15/2005	43	71	25	NENE	LANCE OIL & GAS COMPANY, INC.	FEDERAL 41-25-4371	GSI	CBM		
P112566W	10/30/1998	43	71	25	SENW	LANCE OIL & GAS COMPANY, INC	FEDERAL 22-25	GST	CBM	12	370
P134996W	5/15/2001	43	71	25	SWSW	LANCE OIL & GAS COMPANY, INC	ARCH 14-25-4371	GST	CBM	10	432
P134997W	5/15/2001	43	71	25	NESW	LANCE OIL & GAS COMPANY, INC	ARCH 23-25-4371	GST	CBM	10	382
P134998W	5/15/2001	43	71	25	SWSE	LANCE OIL & GAS COMPANY, INC	ARCH 34-25-4371	GST	CBM	10	384
P134999W	5/15/2001	43	71	25	NESE	LANCE OIL & GAS COMPANY, INC	ARCH 43-25-4371	GST	CBM	10	324

Table S3-3. Groundwater Rights for West Hilight Field LBA Tract (Continued).

Permit No.	Priority	TNS	RNG	SEC	QQ	Applicant	Facility Name	Status	Uses	Yld	TD
P169602W	8/19/2005	43	71	25	SWNE	LANCE OIL & GAS COMPANY, INC.	FEDERAL 32-25-4371	GSI	CBM		
P169869W	8/15/2005	43	71	25	NENE	LANCE OIL & GAS COMPANY, INC.	FEDERAL 41-25-4371	GSI	CBM		
P112567W	10/30/1998	43	71	26	SWNE	LANCE OIL & GAS COMPANY, INC.	FEDERAL 32-26	GST	CBM	20	449
P112568W	10/30/1998	43	71	26	NWSE	LANCE OIL & GAS COMPANY, INC.	FEDERAL 33-26	GST	CBM	20	420
P112569W	10/30/1998	43	71	26	SWSE	LANCE OIL & GAS COMPANY, INC.	FEDERAL 34-26	GST	CBM	15	428
P112570W	10/30/1998	43	71	26	SENE	LANCE OIL & GAS COMPANY, INC.	FEDERAL 42-26	GST	CBM	14	395
P112571W	10/30/1998	43	71	26	NESE	LANCE OIL & GAS COMPANY, INC.	FEDERAL 43-26	GST	CBM	30	420
P112572W	10/30/1998	43	71	26	SESE	LANCE OIL & GAS COMPANY, INC.	FEDERAL 44-26	GST	CBM	20	427
P113320W	12/14/1998	43	71	26	SWSW	LANCE OIL & GAS COMPANY, INC.	ARCH 14-26	GST	CBM	20	452
P113321W	12/14/1998	43	71	26	SWNW	LANCE OIL & GAS COMPANY, INC.	ARCH 12-26	GST	CBM	25	444
P113322W	12/14/1998	43	71	26	NESW	LANCE OIL & GAS COMPANY, INC.	ARCH 23-26	GST	CBM	20	451
P113855W	2/1/1999	43	71	26	SENW	LANCE OIL & GAS COMPANY, INC.	ARCH 22-26	GST	STO,CBM	30	465
P112572W	10/30/1998	43	71	26	SESE	LANCE OIL & GAS COMPANY, INC.	FEDERAL 44-26	GST	CBM	20	427
P81416W	12/6/1989	43	71	26	NENW	THUNDER BASIN COAL CO., LLC	BTR 158	GST	MON	0	502
P112579W	10/30/1998	43	71	27	NENW	LANCE OIL & GAS COMPANY, INC.	FEDERAL 21-27	GST	CBM	50	550
P113675W	12/30/1998	43	71	27	NESE	LANCE OIL & GAS COMPANY, INC.	ARCH 43-27	GST	STO,CBM	20	461
P113676W	12/30/1998	43	71	27	SENE	LANCE OIL & GAS COMPANY, INC.	ARCH 42-27	GST	CBM	20	463
P113677W	12/30/1998	43	71	27	SWNE	LANCE OIL & GAS COMPANY, INC.	ARCH 32-27	GST	STO,CBM	20	459
P113678W	12/30/1998	43	71	27	SWSE	LANCE OIL & GAS COMPANY, INC.	ARCH 34-27	GST	STO,CBM	20	479
P116992W	6/28/1999	43	71	27	SWNE	WILLIAMS PRODUCTION RMT, COMPANY	ENL ARCH 32-27	GST	CBM	50	459
P116993W	6/28/1999	43	71	27	SWNE	WILLIAMS PRODUCTION RMT, COMPANY	ENL ARCH 34-27	GST	CBM	50	479
P116994W	6/28/1999	43	71	27	SENE	WILLIAMS PRODUCTION RMT, COMPANY	ENL ARCH 42-27	GST	CBM	50	463
P116995W	6/28/1999	43	71	27	NESE	WILLIAMS PRODUCTION RMT, COMPANY	ENL ARCH 43-27	GST	CBM	50	461
P167140W	4/13/2005	43	71	27	SWNW	LANCE OIL & GAS COMPANY, INC.	FEDERAL 12-27-4371	GSI	CBM		
P167142W	4/13/2005	43	71	27	SWSW	LANCE OIL & GAS COMPANY, INC.	FEDERAL 14-27-4371	GSI	CBM		
P167147W	4/13/2005	43	71	27	NESW	LANCE OIL & GAS COMPANY, INC.	FEDERAL 23-27-4371	GSI	CBM		
P101905W	3/26/1996	43	71	28	SWNW	BRIDLE BIT RANCH CO.	BBRC BLACK BUTTE #2	GST	STO	5	184
P124262W	3/23/2000	43	71	28	SWSW	LANCE OIL & GAS COMPANY, INC.	SMITH 14-28-4371	GST	CBM	25	632
P147201W	9/19/2002	43	71	28	SWNW	LANCE OIL & GAS COMPANY, INC.	DILTS FEDERAL 12-28	GST	CBM	3	638
P147206W	9/19/2002	43	71	28	NENW	LANCE OIL & GAS COMPANY, INC.	DILTS FED 21-28-4371	GSI	CBM	5	598
P147207W	9/19/2002	43	71	28	NESE	LANCE OIL & GAS COMPANY, INC.	ARCH COAL FEDERAL 43-28-4371	GST	CBM	4	527
P147210W	9/19/2002	43	71	28	NESW	LANCE OIL & GAS COMPANY, INC.	FEDERAL 23-28	GST	CBM	6	579
P147211W	9/19/2002	43	71	28	SWNE	LANCE OIL & GAS COMPANY, INC.	FEDERAL 32-28	GST	CBM	51	572
P147212W	9/19/2002	43	71	28	SWSE	LANCE OIL & GAS COMPANY, INC.	ARCH COAL FEDERAL 34-28-4371	GST	CBM	7	519
P147213W	9/19/2002	43	71	28	NENE	LANCE OIL & GAS COMPANY, INC.	FEDERAL 41-28	GST	CBM	5	564
P124258W	3/23/2000	43	71	29	NESE	LANCE OIL & GAS COMPANY, INC.	BRIDLE BIT RANCH 43-29-4371	GST	CBM	30	643
P124259W	3/23/2000	43	71	29	NENE	WILLIAMS PRODUCTION RMT, COMPANY	BRIDLE BIT RANCH 41-29-4371	GST	CBM	30	643
P124260W	3/23/2000	43	71	29	SWSE	LANCE OIL & GAS COMPANY, INC.	BRIDLE BIT RANCH 34-29-4371	GST	CBM	30	624
P124261W	3/23/2000	43	71	29	SWNE	LANCE OIL & GAS COMPANY, INC.	BRIDLE BIT RANCH 32-29-4371	GST	CBM	25	693
P139784W	10/2/2001	43	71	29	SWNW	COLEMAN OIL & GAS, INC.**JERRY J/BARBARA H DILTS & BRIDLE BIT RANCH	BRIDLE BIT RANCH #29-12	GST	STO,CBM	17	657
P139785W	10/2/2001	43	71	29	SWSW	COLEMAN OIL & GAS, INC.**JERRY J/BARBARA H DILTS & BRIDLE BIT RANCH	BRIDLE BIT RANCH #29-14	GST	STO,CBM	20	625
P139786W	10/2/2001	43	71	29	NENW	COLEMAN OIL & GAS, INC.**JERRY J/BARBARA H DILTS & BRIDLE BIT RANCH	BRIDLE BIT RANCH #29-21	GST	STO,CBM	2	657
P139787W	10/2/2001	43	71	29	NESW	COLEMAN OIL & GAS, INC.**JERRY J/BARBARA H DILTS & BRIDLE BIT RANCH	BRIDLE BIT RANCH #29-23	GST	STO,CBM	20	631
P56708W	3/31/1981	43	71	30	SENW	HARRY UNDERWOOD	UNDERWOOD WELL #3	GST	STO	25	717
P139788W	10/2/2001	43	71	30	SWNW	COLEMAN OIL & GAS, INC.**JERRY J/BARBARA H DILTS & BRIDLE BIT RANCH	BRIDLE BIT RANCH #30-12	GST	STO,CBM	20	681
P139789W	10/2/2001	43	71	30	SWSW	JERRY J/BARBARA H DILTS & BRIDLE BIT RANCH COMPANY** COLEMAN OIL & GAS, INC.	BRIDLE BIT RANCH #30-14	GST	STO,CBM	10	747

*Supplementary Information on the Affected Environment*

**Table S3-3. Groundwater Rights for West Hilight Field LBA Tract (Continued).**

<b>Permit No.</b>	<b>Priority</b>	<b>TNS</b>	<b>RNG</b>	<b>SEC</b>	<b>QQ</b>	<b>Applicant</b>	<b>Facility Name</b>	<b>Status</b>	<b>Uses</b>	<b>Yld</b>	<b>TD</b>
P139790W	10/2/2001	43	71	30	NENW	COLEMAN OIL & GAS, INC.**JERRY J/BARBARA H DILTS	BRIDLE BIT RANCH #30-21	GST	STO,CBM	10	625
P139791W	10/2/2001	43	71	30	NESW	COLEMAN OIL & GAS, INC.**JERRY J/BARBARA H DILTS	BRIDLE BIT RANCH #30-23	GST	STO,CBM	10	673
P139792W	10/2/2001	43	71	30	SWNE	COLEMAN OIL & GAS, INC.**JERRY J/BARBARA H DILTS	BRIDLE BIT RANCH #30-32	GST	STO,CBM	20	676
P139793W	10/2/2001	43	71	30	SWSE	COLEMAN OIL & GAS, INC.**JERRY J/BARBARA H DILTS	BRIDLE BIT RANCH #30-34	GST	STO,CBM	15	673
P139794W	10/2/2001	43	71	30	NESE	COLEMAN OIL & GAS, INC.**JERRY J/BARBARA H DILTS	BRIDLE BIT RANCH #30-43	GST	STO,CBM	20	613
P151691W	5/30/2003	43	71	30	NENE	WESTPORT OIL & GAS COMPANY INC	FEDERAL 41-30	GSE	CBM		
P112454W	10/30/1998	43	71	31	NWSE	BARRETT RESOURCES CORP.	FEDERAL 33-31MS (MONITOR WELL)	GST	MON	0	310
P112455W	10/30/1998	43	71	31	NWSE	BARRETT RESOURCES CORP.	FEDERAL 33-31MC (MONITOR WELL)	GST	MON	0	675
P147199W	9/19/2002	43	71	31	SWNE	LANCE OIL & GAS COMPANY, INC	DILTS FEDERAL 32-31-4371	GST	CBM	7	662
P147202W	9/19/2002	43	71	31	SWNW	LANCE OIL & GAS COMPANY, INC	DILTS FEDERAL 12-31-4371	GST	CBM	17	675
P147203W	9/19/2002	43	71	31	SWSW	LANCE OIL & GAS COMPANY, INC	DILTS FEDERAL 14-31-4371	GST	CBM	17	700
P147204W	9/19/2002	43	71	31	NENW	LANCE OIL & GAS COMPANY, INC	DILTS FEDERAL 21-31-4371	GSI	CBM	7	681
P147208W	9/19/2002	43	71	31	SWSE	LANCE OIL & GAS COMPANY, INC	DILTS FEDERAL 34-31-4371	GST	CBM	16	675
P147209W	9/19/2002	43	71	31	NESE	LANCE OIL & GAS COMPANY, INC	DILTS FEDERAL 43-31-4371	GST	CBM	17	696
P147214W	9/19/2002	43	71	31	NESW	LANCE OIL & GAS COMPANY, INC	DILTS FEDERAL 23-31-4371	GST	CBM	15	670
P145114W	5/20/2002	43	71	32	NESE	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #43-32-4271	GSI	CBM		
P145137W	5/20/2002	43	71	32	SWNW	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #12-32-4371	GSI	CBM		
P145138W	5/20/2002	43	71	32	SWSW	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #14-32-4371	GSI	CBM		
P145139W	5/20/2002	43	71	32	NESW	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #23-32-4371	GSI	CBM		
P145140W	5/20/2002	43	71	32	NENW	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #21-32-4371	GSI	CBM		
P145141W	5/20/2002	43	71	32	SENE	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #32-32-4371	GSI	CBM		
P145142W	5/20/2002	43	71	32	SWSE	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #34-32-4371	GSI	CBM		
P145143W	5/20/2002	43	71	32	NENE	MERIT ENERGY COMPANY	PORCUPINE FEDERAL #41-32-4371	GSI	CBM		
P147357W	9/26/2002	43	71	32	SWNE	WESTPORT OIL & GAS COMPANY, L.P.	DILTS FEDERAL 32-32	GSI	CBM		
P147362W	9/26/2002	43	71	32	NESE	WESTPORT OIL & GAS COMPANY, L.P.	DILTS FEDERAL 43-32	GSI	CBM		
P147363W	9/26/2002	43	71	32	NENE	WESTPORT OIL & GAS COMPANY, L.P.	DILTS FEDERAL 41-32	GSI	CBM		
P147364W	9/26/2002	43	71	32	SWSE	WESTPORT OIL & GAS COMPANY, L.P.	DILTS FEDERAL 34-32	GSI	CBM		
P163664W	11/4/2004	43	71	32	SWNE	MERIT ENERGY COMPANY	PORCUPINE FED 32-32-4371	GSI	CBM		
P163665W	11/4/2004	43	71	32	SWSE	MERIT ENERGY COMPANY	PORCUPINE FED 34-32-4371	GSI	CBM		
P163666W	11/4/2004	43	71	32	NENE	MERIT ENERGY COMPANY	PORCUPINE FED 41-32-4371	GSI	CBM		
P163667W	11/4/2004	43	71	32	NESE	MERIT ENERGY COMPANY	PORCUPINE FED 43-32-4371	GSI	CBM		
P164548W	12/20/2004	43	71	32	SWNW	MERIT ENERGY COMPANY	PORCUPINE FED 12-32-4371	GST	CBM	12	688
P164549W	12/20/2004	43	71	32	SWSW	MERIT ENERGY COMPANY	PORCUPINE FED 14-32-4371	GST	CBM	12	743
P164550W	12/20/2004	43	71	32	NENW	MERIT ENERGY COMPANY	PORCUPINE FED 21-32-4371	GST	CBM	12	635
P164551W	12/20/2004	43	71	32	NESW	MERIT ENERGY COMPANY	PORCUPINE FED 23-32-4371	GST	CBM	12	743
P124256W	3/23/2000	43	71	33	NENW	LANCE OIL & GAS COMPANY, INC	MATHESON 21-33-4371	GST	CBM	25	586
P124257W	3/23/2000	43	71	33	SWNW	LANCE OIL & GAS COMPANY, INC	MATHESON 12-33-4371	GST	CBM	30	640
P147358W	9/26/2002	43	71	33	NESE	WESTPORT OIL & GAS COMPANY, L.P.	FEDERAL 43-33 (DILTS)	GST	CBM	30	633
P147359W	9/26/2002	43	71	33	NENE	WESTPORT OIL & GAS COMPANY, L.P.	FEDERAL 41-33	GST	CBM	0	523
P147360W	9/26/2002	43	71	33	SWSE	WESTPORT OIL & GAS COMPANY, L.P.	FEDERAL 34-33	GST	CBM	1	710
P147361W	9/26/2002	43	71	33	SWNE	WESTPORT OIL & GAS COMPANY, L.P.	FEDERAL 32-33	GST	CBM	5	611
P147640W	10/4/2002	43	71	33	SWSW	LANCE OIL & GAS COMPANY, INC	BRIDLE BIT RANCH 14-33-4371	GST	CBM	33	678
P147641W	10/4/2002	43	71	33	NESW	LANCE OIL & GAS COMPANY, INC	BRIDLE BIT RANCH 23-33-4371	GST	CBM	33	706
P44328W	7/20/1978	43	71	34	NWSE	USDA FOREST SERVICE	MARG #3	GST	STO	60	353

Table S3-3. Groundwater Rights for West Hilight Field LBA Tract (Continued).

Permit No.	Priority	TNS	RNG	SEC	QQ	Applicant	Facility Name	Status	Uses	Yld	TD
P113674W	12/30/1998	43	71	34	NWNW	LANCE OIL & GAS COMPANY, INC	DILTS 11-34	GST	STO,CBM	20	489
P113784W	1/25/1999	43	71	34	NWSW	LANCE OIL & GAS COMPANY, INC	DILTS 13-34	GST	STO,CBM	20	570
P113785W	1/25/1999	43	71	34	NESW	LANCE OIL & GAS COMPANY, INC	DILTS 23-34	GST	STO,CBM	20	566
P114640W	3/18/1999	43	71	34	NENW	LANCE OIL & GAS COMPANY, INC	DILTS 21-34	GST	CBM	20	471
P116808W	6/28/1999	43	71	34	SWNE	LANCE OIL & GAS COMPANY, INC	FEDERAL 32-34	GST	STO,CBM	55	515
P116809W	6/28/1999	43	71	34	NENE	LANCE OIL & GAS COMPANY, INC	FEDERAL 41-34	GST	STO,CBM	55	515
P116996W	6/28/1999	43	71	34	NWNW	WILLIAMS PRODUCTION RMT, COMPANY	ENL DILTS 11-34	GST	CBM	50	489
P116997W	6/28/1999	43	71	34	NWSW	WILLIAMS PRODUCTION RMT, COMPANY	ENL DILTS 13-34	GST	CBM	50	570
P116998W	6/28/1999	43	71	34	NENW	WILLIAMS PRODUCTION RMT, COMPANY	ENL DILTS 21-34	GST	CBM	50	471
P116999W	6/28/1999	43	71	34	NESW	WILLIAMS PRODUCTION RMT, COMPANY	ENL DILTS 23-34	GST	CBM	50	566
P147200W	9/19/2002	43	71	34	NESE	LANCE OIL & GAS COMPANY, INC	ARCH FEDERAL 43-34-4371	GSI	CBM		
P147205W	9/19/2002	43	71	34	SWSE	LANCE OIL & GAS COMPANY, INC	ARCH FEDERAL 34-34-4371	GSI	CBM		
P156945W	3/8/2004	43	71	34	NESE	LANCE OIL & GAS COMPANY, INC.	ARCH FED 43-34-4371	GST	CBM	1	515
P156946W	3/8/2004	43	71	34	SWSE	LANCE OIL & GAS COMPANY, INC.	ARCH FED 34-34-4371	GST	CBM	0	510
P14237W	6/14/1972	43	71	35	SWNW	USDA FOREST SERVICE	STUART #T.B. 165	GST	STO	5	275
P112562W	10/30/1998	43	71	35	SENE	LANCE OIL & GAS COMPANY, INC	FEDERAL 42-35	GST	CBM	20	422
P112563W	10/30/1998	43	71	35	NENE	BARRETT RESOURCES CORP.	FEDERAL 41-25	UNA	CBM	0	0
P112573W	10/30/1998	43	71	35	NWNW	LANCE OIL & GAS COMPANY, INC	FEDERAL 11-35	GST	CBM	11	480
P112574W	10/30/1998	43	71	35	SWNW	LANCE OIL & GAS COMPANY, INC	FEDERAL 12-35	GST	CBM	27	508
P112575W	10/30/1998	43	71	35	SENE	LANCE OIL & GAS COMPANY, INC	FEDERAL 21-35	GST	CBM	30	478
P112576W	10/30/1998	43	71	35	SENE	LANCE OIL & GAS COMPANY, INC	FEDERAL 22-35	GST	CBM	22	489
P112577W	10/30/1998	43	71	35	SENE	LANCE OIL & GAS COMPANY, INC	FEDERAL 31-35	GST	CBM	22	428
P112578W	10/30/1998	43	71	35	SENE	LANCE OIL & GAS COMPANY, INC	FEDERAL 32-35	GST	CBM	22	423
P113671W	12/30/1998	43	71	35	NENE	LANCE OIL & GAS COMPANY, INC	FEDERAL 41-35	GST	CBM	20	387
P128524W	8/17/2000	43	71	35	NESE	USDA, NATIONAL FOREST SERVICE** WILLIAMS PRODUCTION RMT, COMPANY	BRC FEDERAL 43-35	GST	CBM	30	388
P152861W	7/24/2003	43	71	35	NESW	WILLIAMS PRODUCTION RMT COMPANY	FEDERAL 23-35-4371	GSE	CBM		
P167127W	4/13/2005	43	71	35	NESW	LANCE OIL & GAS COMPANY, INC	FEDERAL 23-35-4371	GSI	CBM		
P167143W	4/13/2005	43	71	35	SWSW	LANCE OIL & GAS COMPANY, INC	FEDERAL 14-35-4371	GSI	CBM		
P169866W	8/15/2005	43	71	35	SWSE	LANCE OIL & GAS COMPANY, INC.	FEDERAL 34-35-4371	GSI	CBM		
P112562W	10/30/1998	43	71	35	SENE	LANCE OIL & GAS COMPANY, INC	FEDERAL 42-35	GST	CBM	20	422
P112563W	10/30/1998	43	71	35	NENE	BARRETT RESOURCES CORP.	FEDERAL 41-25	UNA	CBM	0	0
P112575W	10/30/1998	43	71	35	SENE	LANCE OIL & GAS COMPANY, INC	FEDERAL 21-35	GST	CBM	30	478
P112576W	10/30/1998	43	71	35	SENE	LANCE OIL & GAS COMPANY, INC	FEDERAL 22-35	GST	CBM	22	489
P112577W	10/30/1998	43	71	35	SENE	LANCE OIL & GAS COMPANY, INC	FEDERAL 31-35	GST	CBM	22	428
P112578W	10/30/1998	43	71	35	SENE	LANCE OIL & GAS COMPANY, INC	FEDERAL 32-35	GST	CBM	22	423
P113671W	12/30/1998	43	71	35	NENE	LANCE OIL & GAS COMPANY, INC	FEDERAL 41-35	GST	CBM	20	387
P128524W	8/17/2000	43	71	35	NESE	USDA, NATIONAL FOREST SERVICE** WILLIAMS PRODUCTION RMT, COMPANY	BRC FEDERAL 43-35	GST	CBM	30	388
P128524W	8/17/2000	43	71	35	NESE	USDA, NATIONAL FOREST SERVICE** WILLIAMS PRODUCTION RMT, COMPANY	BRC FEDERAL 43-35	GST	CBM	30	388
P152861W	7/24/2003	43	71	35	NESW	WILLIAMS PRODUCTION RMT COMPANY	FEDERAL 23-35-4371	GSE	CBM		
P167127W	4/13/2005	43	71	35	NESW	LANCE OIL & GAS COMPANY, INC	FEDERAL 23-35-4371	GSI	CBM		
P167143W	4/13/2005	43	71	35	SWSW	LANCE OIL & GAS COMPANY, INC	FEDERAL 14-35-4371	GSI	CBM		
P169866W	8/15/2005	43	71	35	SWSE	LANCE OIL & GAS COMPANY, INC.	FEDERAL 34-35-4371	GSI	CBM		
P111368W	8/7/1998	43	71	36	SENE	WYO BOARD OF LAND COMMISSIONERS** YATES PETROLEUM CORP.	RENO CS STATE #1	GST	STO,MIS,CBM	25	376
P112081W	9/30/1998	43	71	36	SENE	WYO BOARD OF LAND COMMISSIONERS** YATES PETROLEUM CORP.	ENL RENO CS STATE #1	GST	STO,MIS,CBM	25	376

*Supplementary Information on the Affected Environment*

<b>Table S3-3. Groundwater Rights for West Hilight Field LBA Tract (Continued).</b>											
<b>Permit No.</b>	<b>Priority</b>	<b>TNS</b>	<b>RNG</b>	<b>SEC</b>	<b>QQ</b>	<b>Applicant</b>	<b>Facility Name</b>	<b>Status</b>	<b>Uses</b>	<b>Yld</b>	<b>TD</b>
P115174W	4/12/1999	43	71	36	NENW	YATES PETROLEUM CORPORATION** WY STATE BOARD OF LAND COMMISSIONERS	RENO CS STATE #2	GST	STO,CBM	100	375
P115175W	4/12/1999	43	71	36	NWNW	YATES PETROLEUM CORPORATION** WY STATE BOARD OF LAND COMMISSIONERS	RENO CS STATE #3	GST	STO,CBM	100	397
P115176W	4/12/1999	43	71	36	SWSE	YATES PETROLEUM CORPORATION** WY STATE BOARD OF LAND COMMISSIONERS	RENO CS STATE #6	GST	STO,CBM	100	377
P115177W	4/12/1999	43	71	36	NENE	YATES PETROLEUM CORPORATION** WY STATE BOARD OF LAND COMMISSIONERS	RENO CS STATE #7	GST	STO,CBM	100	364
P115178W	4/12/1999	43	71	36	NWNE	YATES PETROLEUM CORPORATION** WY STATE BOARD OF LAND COMMISSIONERS	RENO CS STATE #8	GST	STO,CBM	100	380
P115179W	4/12/1999	43	71	36	SENE	YATES PETROLEUM CORPORATION** WY STATE BOARD OF LAND COMMISSIONERS	RENO CS STATE #9	GST	STO,CBM	100	357
P115180W	4/12/1999	43	71	36	NESE	YATES PETROLEUM CORPORATION** WY STATE BOARD OF LAND COMMISSIONERS	RENO CS STATE #10	GST	STO,CBM	100	355
P117263W	4/12/1999	43	71	36	NWSW	YATES PETROLEUM CORPORATION** WY STATE BOARD OF LAND COMMISSIONERS	RENO CS STATE #12	GST	STO,CBM	100	389
P117264W	4/12/1999	43	71	36	SESW	YATES PETROLEUM CORPORATION** WY STATE BOARD OF LAND COMMISSIONERS	RENO CS STATE #14	GST	STO,CBM	100	394
P117265W	4/12/1999	43	71	36	SWSW	YATES PETROLEUM CORPORATION** WY STATE BOARD OF LAND COMMISSIONERS	RENO CS STATE #13	GST	STO,CBM	100	394
P117266W	4/12/1999	43	71	36	SESE	YATES PETROLEUM CORPORATION** WY STATE BOARD OF LAND COMMISSIONERS	RENO CS STATE #11	GST	STO,CBM	100	359
P117267W	4/12/1999	43	71	36	SWNW	YATES PETROLEUM CORPORATION** WY STATE BOARD OF LAND COMMISSIONERS	RENO CS STATE #4	GST	STO,CBM	100	395
P117268W	4/12/1999	43	71	36	NESW	YATES PETROLEUM CORPORATION** WY STATE BOARD OF LAND COMMISSIONERS	RENO CS STATE #5	GST	STO,CBM	100	382
P111368W	8/7/1998	43	71	36	SENW	WYO BOARD OF LAND COMMISSIONERS** YATES PETROLEUM CORP.	RENO CS STATE #1	GST	STO,MIS,CBM	25	376
P112081W	9/30/1998	43	71	36	SENW	WYO BOARD OF LAND COMMISSIONERS*** YATES PETROLEUM CORP.	ENL RENO CS STATE #1	GST	STO,MIS,CBM	25	376
P115174W	4/12/1999	43	71	36	NENW	YATES PETROLEUM CORPORATION** WY STATE BOARD OF LAND COMMISSIONERS	RENO CS STATE #2	GST	STO,CBM	100	375
P115175W	4/12/1999	43	71	36	NWNW	YATES PETROLEUM CORPORATION** WY STATE BOARD OF LAND COMMISSIONERS	RENO CS STATE #3	GST	STO,CBM	100	397
P115176W	4/12/1999	43	71	36	SWSE	YATES PETROLEUM CORPORATION** WY STATE BOARD OF LAND COMMISSIONERS	RENO CS STATE #6	GST	STO,CBM	100	377

<b>Permit No.</b>	<b>Priority</b>	<b>TNS</b>	<b>RNG</b>	<b>SEC</b>	<b>QQ</b>	<b>Applicant</b>	<b>Facility Name</b>	<b>Status</b>	<b>Uses</b>	<b>Yld</b>	<b>TD</b>
P115177W	4/12/1999	43	71	36	NENE	YATES PETROLEUM CORPORATION** WY STATE BOARD OF LAND COMMISSIONERS	RENO CS STATE #7	GST	STO,CBM	100	364
P115178W	4/12/1999	43	71	36	NWNE	YATES PETROLEUM CORPORATION** WY STATE BOARD OF LAND COMMISSIONERS	RENO CS STATE #8	GST	STO,CBM	100	380
P115179W	4/12/1999	43	71	36	SENE	YATES PETROLEUM CORPORATION** WY STATE BOARD OF LAND COMMISSIONERS	RENO CS STATE #9	GST	STO,CBM	100	357
P115180W	4/12/1999	43	71	36	NESE	YATES PETROLEUM CORPORATION** WY STATE BOARD OF LAND COMMISSIONERS	RENO CS STATE #10	GST	STO,CBM	100	355
P117263W	4/12/1999	43	71	36	NWSW	YATES PETROLEUM CORPORATION** WY STATE BOARD OF LAND COMMISSIONERS	RENO CS STATE #12	GST	STO,CBM	100	389
P117264W	4/12/1999	43	71	36	SESW	YATES PETROLEUM CORPORATION** WY STATE BOARD OF LAND COMMISSIONERS	RENO CS STATE #14	GST	STO,CBM	100	394
P117265W	4/12/1999	43	71	36	SWSW	YATES PETROLEUM CORPORATION** WY STATE BOARD OF LAND COMMISSIONERS	RENO CS STATE #13	GST	STO,CBM	100	394
P117266W	4/12/1999	43	71	36	SESE	YATES PETROLEUM CORPORATION** WY STATE BOARD OF LAND COMMISSIONERS	RENO CS STATE #11	GST	STO,CBM	100	359
P117267W	4/12/1999	43	71	36	SWNW	YATES PETROLEUM CORPORATION** WY STATE BOARD OF LAND COMMISSIONERS	RENO CS STATE #4	GST	STO,CBM	100	395
P117268W	4/12/1999	43	71	36	NESW	YATES PETROLEUM CORPORATION** WY STATE BOARD OF LAND COMMISSIONERS	RENO CS STATE #5	GST	STO,CBM	100	382
P33645W	6/2/1976	43	71	36	NWNW	THUNDER BASIN COAL COMPANY**WYO BOARD OF LAND COMMISSIONERS	ECH 7	GST	MON	0	395
P85874W	8/20/1991	43	71	36	SWSW	THUNDER BASIN COAL CO., LLC	BTR-159	GST	MON	0	392
P33645W	6/2/1976	43	71	36	NWNW	THUNDER BASIN COAL COMPANY**WYO BOARD OF LAND COMMISSIONERS	ECH 7	GST	MON	0	395
P85874W	8/20/1991	43	71	36	SWSW	THUNDER BASIN COAL CO., LLC	BTR-159	GST	MON	0	392
39/8/477W	1/2/2007	43	72	1	NESE	PAUL R/RUBY H STUART	NORTHEAST PASTURE #2	UNA	STO		
P101221W	1/8/1996	43	72	1	NESE	PAUL R/RUBY H STUART	NORTHEAST PASTURE #1	GST	STO	3	120
P112058W	10/6/1998	43	72	1	NWSE	LANCE OIL & GAS COMPANY, INC	LITTLE THUNDER STUART 33-1	GST	CBM	70	791
P112059W	10/6/1998	43	72	1	SWSE	LANCE OIL & GAS COMPANY, INC	LITTLE THUNDER STUART 34-1	GST	CBM	70	770
P112060W	10/6/1998	43	72	1	NESE	LANCE OIL & GAS COMPANY, INC	LITTLE THUNDER STUART 43-1	GST	CBM	70	835
P112061W	10/6/1998	43	72	1	SESE	BARRETT RESOURCES CORP.	LITTLE THUNDER STUART 44-1	GST	CBM	120	765
P116058W	5/27/1999	43	72	1	NESE	WILLIAMS PRODUCTION RMT, COMPANY	ENL STUART 43-1	GST	CBM	50	835
P121892W	12/29/1999	43	72	1	NWSE	LANCE OIL & GAS COMPANY, INC	STUART 13-1-4372	GST	CBM	70	842
P121893W	12/29/1999	43	72	1	SESW	LANCE OIL & GAS COMPANY, INC	STUART 24-1	GST	CBM	70	882
P128527W	8/17/2000	43	72	1	SWNW	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 12-1-4372	GST	CBM	16	855
P128528W	8/17/2000	43	72	1	NENW	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 21-1-4372	GST	CBM	7	993
P128529W	8/17/2000	43	72	1	SWNE	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 32-1-4372	GST	CBM	7	890
P128531W	8/17/2000	43	72	1	NENE	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 41-1-4372	GST	CBM	16	931
P100735W	10/23/1995	43	72	2	SWSW	PAUL R/RUBY H STUART	PAUL #3	GST	DOM,STO	9	235
P2292W	12/31/1951	43	72	2	SWNW	COSNER RANCH INC.	COSNER #16	GST	STO	4	75
P65160W	2/10/1982	43	72	2	SESW	PAUL AND RUBY H. STUART	STUART BROTHERS #5	GST	STO	25	258
P130855W	11/14/2000	43	72	2	NESE	LANCE OIL & GAS COMPANY, INC	STUART 43-2-4372	GST	CBM	25	823
P130856W	11/14/2000	43	72	2	SWNE	LANCE OIL & GAS COMPANY, INC	STUART 32-2-4372	GST	CBM	25	830

Supplementary Information on the Affected Environment

Table S3-3. Groundwater Rights for West Hilight Field LBA Tract (Continued).											
Permit No.	Priority	TNS	RNG	SEC	QQ	Applicant	Facility Name	Status	Uses	Yld	TD
P130857W	11/14/2000	43	72	2	SWSE	LANCE OIL & GAS COMPANY, INC	STUART 34-2-4372	GST	CBM	16	800
P130858W	11/14/2000	43	72	2	NENE	LANCE OIL & GAS COMPANY, INC	STUART 41-2-4372	GST	CBM	16	881
P129035W	9/20/2000	43	72	11	NENE	WY STATE ENGINEER'S OFFICE	CBM-MON-7W	GST	MON	0	491
P13081P	7/31/1959	43	72	11	SEW	WYOMING STATE HIGHWAY DEPARTMENT	RENO CAMP #1	ADJ	DOM	10	513
P18211P	8/31/1959	43	72	11	NESW	DOUGLAS D WILLIAMS	COSNER #23	GST	DOM	10	490
P2296W	8/5/1951	43	72	11	NWSW	COSNER RANCH INC.	COSNER #17 (DEEPENED)	GST	STO	25	212
P31660W	12/2/1975	43	72	11	NWSW	COSNER RANCH INC.	ENL COSNER #17	GST	STO	21	212
P32087W	1/16/1976	43	72	11	SEW	UNIVERSITY OF WYOMING WRRRI	LTB 1	GST	MON	0	300
P5328W	4/22/1970	43	72	11	SWSW	COSNER RANCH INC.	COSNER #21	GST	STO	40	208
P59329W	6/16/1981	43	72	11	SEW	WYOMING STATE HIGHWAY DEPARTMENT	ENL RENO CAMP #1	ADJ	MIS	0	513
P65159W	2/10/1983	43	72	11	NWNE	PAUL AND RUBY H. STUART	STUART BROTHERS #1	GST	STO	25	234.5
P80780W	9/5/1989	43	72	11	SWSW	TED R. COSNER	#S1 COSNER	GST	STO	10	8
P94949W	4/12/1994	43	72	11	SEW	WYOMING DEPT. OF TRANSPORTATION	3093RJ-1	GST	MON	0	25
P94950W	4/12/1994	43	72	11	SEW	WYOMING DEPT. OF TRANSPORTATION	3093RJ-2	GST	MON	0	33
P94951W	4/12/1994	43	72	11	SEW	WYOMING DEPT. OF TRANSPORTATION	3093RJ-3	GST	MON	0	28
P94952W	4/12/1994	43	72	11	SEW	WYOMING DEPT. OF TRANSPORTATION	3093RJ-4	GST	MON	0	28
P121894W	12/29/1999	43	72	11	SWNW	WILLIAMS PRODUCTION RMT, COMPANY	STUART 12-11-4372	GSI	CBM		
P121895W	12/29/1999	43	72	11	NENW	LANCE OIL & GAS COMPANY, INC	STUART 21-11-4372	GSI	CBM		
P121897W	12/29/1999	43	72	11	SWNE	WILLIAMS PRODUCTION RMT, COMPANY	STUART 32-11-4372	GST	CBM	40	602
P121898W	12/29/1999	43	72	11	SWSE	LANCE OIL & GAS COMPANY, INC	STUART 34-11	GSI	CBM		
P121899W	12/29/1999	43	72	11	NESE	LANCE OIL & GAS COMPANY, INC	STUART 43-11-4372	GST	CBM		720
P147614W	10/4/2002	43	72	11	SWNW	LANCE OIL & GAS COMPANY, INC	STUART 12-11-4372	GST	CBM	16	824
P147615W	10/4/2002	43	72	11	NESW	LANCE OIL & GAS COMPANY, INC	STUART 23-11-4372	GST	CBM	16	838
P147616W	10/4/2002	43	72	11	NENW	LANCE OIL & GAS COMPANY, INC	STUART 21-11-4372	GST	CBM	16	834
P101218W	1/8/1996	43	72	12	NWNW	PAUL R/RUBY H STUART	SOUTH BARN #1	GST	STO	8	120
P101222W	1/8/1996	43	72	12	NWNW	PAUL R/RUBY H STUART	HOUSE #1	GST	DOM	10	95
P17996P	12/31/1935	43	72	12	SWSE	BILLY D. EDWARDS	HAY FIELD #1	GST	STO	6	340
P107613W	9/17/1997	43	72	12	SESE	LANCE OIL & GAS COMPANY, INC	EDWARDS 44-12	GST	STO,CBM	35	727
P107614W	9/17/1997	43	72	12	NESE	LANCE OIL & GAS COMPANY, INC	EDWARDS 43-12	GST	STO,CBM	35	675
P107617W	9/17/1997	43	72	12	SWSE	LANCE OIL & GAS COMPANY, INC	EDWARDS 34-12	GST	STO,CBM	35	716
P107618W	9/17/1997	43	72	12	NWSE	LANCE OIL & GAS COMPANY, INC	EDWARDS 33-12	GST	STO,CBM	35	671
P112062W	10/6/1998	43	72	12	SWSW	LANCE OIL & GAS COMPANY, INC	LITTLE THUNDER STUART 44-12	GST	CBM	45	733
P112063W	10/6/1998	43	72	12	NESW	LANCE OIL & GAS COMPANY, INC	LITTLE THUNDER STUART 23-12	GST	CBM	50	587
P112064W	10/6/1998	43	72	12	SESW	LANCE OIL & GAS COMPANY, INC	LITTLE THUNDER STUART 24-12	GST	CBM	70	690
P116053W	5/27/1999	43	72	12	NESE	WILLIAMS PRODUCTION RMT, COMPANY	ENL EDWARDS 43-12	GST	CBM	115	675
P116054W	5/27/1999	43	72	12	SWSE	WILLIAMS PRODUCTION RMT, COMPANY	ENL EDWARDS 34-12	GST	CBM	115	716
P116055W	5/27/1999	43	72	12	NWSE	WILLIAMS PRODUCTION RMT, COMPANY	ENL EDWARDS 33-12	GST	CBM	115	671
P116059W	5/27/1999	43	72	12	NESW	WILLIAMS PRODUCTION RMT, COMPANY	ENL STUART 23-12	GST	CBM	70	587
P116843W	6/24/1999	43	72	12	SESE	WILLIAMS PRODUCTION RMT, COMPANY	ENL EDWARDS 44-12	GST	CBM	115	727
P121900W	12/29/1999	43	72	12	SWNW	LANCE OIL & GAS COMPANY, INC	STUART 12-12-4372	GST	CBM	10	607
P121901W	12/29/1999	43	72	12	NENW	LANCE OIL & GAS COMPANY, INC	STUART 21-12-4372	GST	CBM	15	642
P106627W	6/10/1997	43	72	13	NWNW	LANCE OIL & GAS COMPANY, INC	EDWARDS FEDERAL #1-13	GST	STO,CBM	20	642
P141174W	11/27/2001	43	72	13	NENE	LANCE OIL & GAS COMPANY, INC	EDWARDS FEDERAL 41-13-4372	GST	CBM	11	603
P145688W	5/21/2002	43	72	13	NESW	PRIMA OIL AND GAS COMPANY	USFS4372-13-31	GST	STO,CBM,RES	17	759
P145689W	5/21/2002	43	72	13	SWSW	PRIMA OIL AND GAS COMPANY	PORCUPINE TUIT FED 13-33UW	GST	STO,CBM,RES	15	771
P152894W	7/25/2003	43	72	13	SWSE	LANCE OIL & GAS COMPANY, INC	EDWARDS 34-13-4372	GST	CBM	9	710
P158173W	4/1/2004	43	72	13	NESE	LANCE OIL & GAS COMPANY, INC.	EDWARDS 43-13-4372	GSI	CBM		
P173883W	3/24/2006	43	72	13	SWNE	LANCE OIL & GAS COMPANY, INC.	EDWARDS FED 32-13-4372	GST	CBM	15	571

Supplementary Information on the Affected Environment

Table S3-3. Groundwater Rights for West Hilight Field LBA Tract (Continued).											
Permit No.	Priority	TNS	RNG	SEC	QQ	Applicant	Facility Name	Status	Uses	Yld	TD
P147608W	10/4/2002	43	72	14	NENE	LANCE OIL & GAS COMPANY, INC	CARLSON 41-14-4372	GST	CBM	16	798
P149731W	2/19/2003	43	72	14	SWNE	LANCE OIL & GAS COMPANY, INC	CARLSON 32-14-4372	GST	CBM	23	792
P151692W	5/30/2003	43	72	14	NESE	WESTPORT OIL & GAS COMPANY INC	FEDERAL 43-14	GSE	CBM		
P151693W	5/30/2003	43	72	14	SWSE	WESTPORT OIL & GAS COMPANY INC	FEDERAL 34-14	GSE	CBM		
P158965W	5/17/2004	43	72	14	NESW	DEVON ENERGY PRODUCTION COMPANY, L.P.**DEAN COSNER	D COSNER FEDERAL 14W-11	GST	STO,CBM	25	787
P158966W	5/17/2004	43	72	14	SWSW	DEVON ENERGY PRODUCTION COMPANY, L.P.**DEAN COSNER	D COSNER FEDERAL 14W-13	GST	STO,CBM	25	821
P2956P	5/22/1969	43	72	23	SENE	INC. COSNER RANCH	COSNER #20	GST	STO	4	360
P145690W	5/21/2002	43	72	23	NENE	PRIMA OIL AND GAS COMPANY	USFS 4372-23-11UW	GST	STO,CBM,RES	21	758
P145691W	5/21/2002	43	72	23	NESE	PRIMA OIL AND GAS COMPANY	USFS 4372-23-41UW	GST	STO,CBM,RES	15	766
P159553W	5/21/2004	43	72	23	NENW	DEVON ENERGY PRODUCTION COMPANY, L.P.	D COSNER FEDERAL 23W-3	GST	STO,CBM	25	795
P159554W	5/21/2004	43	72	23	SWNW	DEVON ENERGY PRODUCTION COMPANY, L.P.	D COSNER FEDERAL 23W-5	GST	STO,CBM	25	865
P159555W	5/21/2004	43	72	23	SWNE	DEVON ENERGY PRODUCTION COMPANY, L.P.	D COSNER FEDERAL 23W-7	GST	STO,CBM	25	809
P159556W	5/21/2004	43	72	23	NESW	DEVON ENERGY PRODUCTION COMPANY, L.P.	D COSNER FEDERAL 23W-11	GST	STO,CBM	25	855
P159557W	5/21/2004	43	72	23	SWSW	DEVON ENERGY PRODUCTION COMPANY, L.P.	D COSNER FEDERAL 23W-13	GST	STO,CBM	25	919
P159558W	5/21/2004	43	72	23	SWSE	DEVON ENERGY PRODUCTION COMPANY, L.P.	D COSNER FEDERAL 23W-15	GST	STO,CBM	25	827
P12765P	2/12/1937	43	72	24	SESW	USDA FOREST SERVICE	EDWARDS #TB 27	GST	STO	4	-1
P82834W	7/2/1990	43	72	24	SENE	USA USDA FOREST SERVICE	EDWARDS #TB 265	GST	STO	5	99
P145692W	5/21/2002	43	72	24	NENW	PRIMA OIL AND GAS COMPANY	USFS 4372-24-21UW	GST	STO,CBM,RES	16	740
P145693W	5/21/2002	43	72	24	SWNW	PRIMA OIL AND GAS COMPANY	USFS 4372-24-23UW	GST	STO,CBM,RES	15	742
P145694W	5/21/2002	43	72	24	NESW	PRIMA OIL AND GAS COMPANY	USFS 4372-24-31US	GST	STO,CBM,RES	17	698
P145695W	5/21/2002	43	72	24	SWSW	PRIMA OIL AND GAS COMPANY	USFS 4372-24-33UW	GST	STO,CBM,RES	17	740
P145696W	5/21/2002	43	72	24	SWSE	PRIMA OIL AND GAS COMPANY	USFS 4372-24-43UW	GST	STO,CBM,RES	16	680
P145701W	5/21/2002	43	72	24	NESE	PRIMA OIL AND GAS COMPANY	USFS 4372-24-41UW	GST	STO,CBM,RES	14	689
P152895W	7/25/2003	43	72	24	NENE	LANCE OIL & GAS COMPANY, INC	EDWARDS 41-24-4372	GST	STO,CBM	18	730
P152896W	7/25/2003	43	72	24	SWNE	LANCE OIL & GAS COMPANY, INC	EDWARDS 32-24-4372	GST	CBM	13	740
P18000P	12/31/1938	43	72	25	NWSW	BILLY D. EDWARDS	RODMAN #1	GST	STO	4	115
P67900W	7/10/1984	43	72	25	NWNW	USA USDA FOREST SERVICE	EDWARDS SPRING #T B 64	GST	STO	1	8
P18000P	12/31/1938	43	72	25	NWSW	BILLY D. EDWARDS	RODMAN #1	GST	STO	4	115
P67900W	7/10/1984	43	72	25	NWNW	USA USDA FOREST SERVICE	EDWARDS SPRING #T B 64	GST	STO	1	8
P145697W	5/21/2002	43	72	25	NENE	PRIMA OIL AND GAS COMPANY	USFS 4372-25-11UW	GST	STO,CBM,RES	18	681
P145698W	5/21/2002	43	72	25	SWNE	PRIMA OIL AND GAS COMPANY	USFS 4372-25-13UW	GST	STO,CBM,RES	17	730
P145699W	5/21/2002	43	72	25	NESE	PRIMA OIL AND GAS COMPANY	USFS 4372-25-41	GST	STO,CBM,RES	14	740
P145700W	5/21/2002	43	72	25	SWSE	PRIMA OIL AND GAS COMPANY	USFS 4372-25-43	GST	STO,CBM,RES	16	789
P154712W	10/9/2003	43	72	25	NESW	DEVON ENERGY PRODUCTION COMPANY, L.P.**TOM EDWARDS	EDWARDS 25W-11	GST	STO,CBM	25	853
P154713W	10/9/2003	43	72	25	SWSW	DEVON ENERGY PRODUCTION COMPANY, L.P.**TOM EDWARDS	EDWARDS 25W-13	GST	STO,CBM	25	833
P145697W	5/21/2002	43	72	25	NENE	PRIMA OIL AND GAS COMPANY	USFS 4372-25-11UW	GST	STO,CBM,RES	18	681
P145698W	5/21/2002	43	72	25	SWNE	PRIMA OIL AND GAS COMPANY	USFS 4372-25-13UW	GST	STO,CBM,RES	17	730
P145699W	5/21/2002	43	72	25	NESE	PRIMA OIL AND GAS COMPANY	USFS 4372-25-41	GST	STO,CBM,RES	14	740
P145700W	5/21/2002	43	72	25	SWSE	PRIMA OIL AND GAS COMPANY	USFS 4372-25-43	GST	STO,CBM,RES	16	789
P154712W	10/9/2003	43	72	25	NESW	DEVON ENERGY PRODUCTION COMPANY, L.P.**TOM EDWARDS	EDWARDS 25W-11	GST	STO,CBM	25	853
P154713W	10/9/2003	43	72	25	SWSW	DEVON ENERGY PRODUCTION COMPANY, L.P.**TOM EDWARDS	EDWARDS 25W-13	GST	STO,CBM	25	833

Supplementary Information on the Affected Environment

Table S3-3. Groundwater Rights for West Hilight Field LBA Tract (Continued).											
Permit No.	Priority	TNS	RNG	SEC	QQ	Applicant	Facility Name	Status	Uses	Yld	TD
P101531W	3/7/1996	43	72	26	NESW	CHARLES TYRREL	CRIPPLE CREEK NUMBER ONE	GST	DOM	25	346
P102921W	7/10/1996	43	72	26	SENW	FREDERICK M WATERHOUSE	SISTER BAY #1	GST	DOM	10	340
P34469W	8/6/1976	43	72	26	NESW	COSNER RANCH INC.	COSNER #6A	GST	STO	25	280
P101531W	3/7/1996	43	72	26	NESW	CHARLES TYRREL	CRIPPLE CREEK NUMBER ONE	GST	DOM	25	346
P102921W	7/10/1996	43	72	26	SENW	FREDERICK M WATERHOUSE	SISTER BAY #1	GST	DOM	10	340
P34469W	8/6/1976	43	72	26	NESW	COSNER RANCH INC.	COSNER #6A	GST	STO	25	280
P108027W	11/3/1997	43	72	26	SWSW	CRAWLEY PETROLEUM CORP.**TED COSNER	COSNER #1-26	GST	CBM,MIS	8	1050
P108422W	12/18/1997	43	72	26	SWSW	CRAWLEY PETROLEUM CORP.	ENL COSNER I-26	GST	CBM,MIS	19	1050
P151120W	5/6/2003	43	72	26	SWNW	BILL BARRETT CORPORATION	T.COSNER 12-26-4372	GST	CBM	21	877
P151176W	4/15/2003	43	72	26	NESE	DEVON ENERGY PRODUCTION COMPANY, L.P.	EDWARDS 26W-9	GST	CBM	25	862
P151394W	5/19/2003	43	72	26	NENW	BILL BARRETT CORPORATION	T. COSNER 21-26-4372	GST	CBM	15	851
P152664W	6/23/2003	43	72	26	SWSE	BILL BARRETT CORPORATION	WILKINSON 34-26-4372	GST	CBM	19	842
P154610W	9/24/2003	43	72	26	NESW	BILL BARRETT CORPORATION	FEDERAL 23-26-4372	GST	CBM	22	860
P154611W	9/24/2003	43	72	26	SWNE	BILL BARRETT CORPORATION	FEDERAL 32-26-4372	GST	CBM	15	860
P108027W	11/3/1997	43	72	26	SWSW	CRAWLEY PETROLEUM CORP.**TED COSNER	COSNER #1-26	GST	CBM,MIS	8	1050
P108422W	12/18/1997	43	72	26	SWSW	CRAWLEY PETROLEUM CORP.	ENL COSNER I-26	GST	CBM,MIS	19	1050
P151120W	5/6/2003	43	72	26	SWNW	BILL BARRETT CORPORATION	T.COSNER 12-26-4372	GST	CBM	21	877
P151176W	4/15/2003	43	72	26	NESE	DEVON ENERGY PRODUCTION COMPANY, L.P.	EDWARDS 26W-9	GST	CBM	25	862
P151394W	5/19/2003	43	72	26	NENW	BILL BARRETT CORPORATION	T. COSNER 21-26-4372	GST	CBM	15	851
P152664W	6/23/2003	43	72	26	SWSE	BILL BARRETT CORPORATION	WILKINSON 34-26-4372	GST	CBM	19	842
P154610W	9/24/2003	43	72	26	NESW	BILL BARRETT CORPORATION	FEDERAL 23-26-4372	GST	CBM	22	860
P154611W	9/24/2003	43	72	26	SWNE	BILL BARRETT CORPORATION	FEDERAL 32-26-4372	GST	CBM	15	860
P95497W	6/2/1994	43	72	32	SWNE	CLAYTON AND CINDY MCGUIRE	WEST RATTLESNAKE BUTTE	GST	STO	7	170
P17998P	12/31/1943	43	72	35	SESE	BILLY EDWARDS	BULL PASTURE #1	GST	STO	4	150
P3918P	5/31/1968	43	72	35	NESW	HARRY UNDERWOOD	UNDERWOOD #3	GST	STO	15	80
P43665W	6/2/1978	43	72	35	SWSE	WANDA S. & JOHNNY BIL EDWARDS	EDWARDS #1	GST	DOM	15	192
P17998P	12/31/1943	43	72	35	SESE	BILLY EDWARDS	BULL PASTURE #1	GST	STO	4	150
P3918P	5/31/1968	43	72	35	NESW	HARRY UNDERWOOD	UNDERWOOD #3	GST	STO	15	80
P43665W	6/2/1978	43	72	35	SWSE	WANDA S. & JOHNNY BIL EDWARDS	EDWARDS #1	GST	DOM	15	192
P154497W	9/18/2003	43	72	35	NENW	MERIT ENERGY COMPANY	TUIT DRAW CBM 21-35-4372	GSI	CBM		
P154498W	9/18/2003	43	72	35	NESW	MERIT ENERGY COMPANY	TUIT DRAW CBM 23-35-4372	GSI	CBM		
P154499W	9/18/2003	43	72	35	SWNE	MERIT ENERGY COMPANY	TUIT DRAW CBM 32-35-4372	GSI	CBM		
P154500W	9/18/2003	43	72	35	NENE	MERIT ENERGY COMPANY	TUIT DRAW CBM 41-35-4372	GSI	CBM		
P154501W	9/18/2003	43	72	35	NESE	MERIT ENERGY COMPANY	TUIT DRAW CBM 43-35-4372	GSI	CBM		
P161332W	8/3/2004	43	72	35	SWSE	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	TUIT DRAW CBM 34-35-4372	GSI	CBM		
P154497W	9/18/2003	43	72	35	NENW	MERIT ENERGY COMPANY	TUIT DRAW CBM 21-35-4372	GSI	CBM		
P154498W	9/18/2003	43	72	35	NESW	MERIT ENERGY COMPANY	TUIT DRAW CBM 23-35-4372	GSI	CBM		
P154499W	9/18/2003	43	72	35	SWNE	MERIT ENERGY COMPANY	TUIT DRAW CBM 32-35-4372	GSI	CBM		
P154500W	9/18/2003	43	72	35	NENE	MERIT ENERGY COMPANY	TUIT DRAW CBM 41-35-4372	GSI	CBM		
P154501W	9/18/2003	43	72	35	NESE	MERIT ENERGY COMPANY	TUIT DRAW CBM 43-35-4372	GSI	CBM		
P161332W	8/3/2004	43	72	35	SWSE	MERIT ENERGY COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	TUIT DRAW CBM 34-35-4372	GSI	CBM		
P154184W	9/8/2003	43	72	36	SWNW	DEVON ENERGY PRODUCTION COMPANY, L.P.** WY STATE BOARD OF LAND COMMISSIONERS	STATE (EDWARDS) 36W-5	GST	STO, CBM	25	762
P154185W	9/8/2003	43	72	36	SWNE	DEVON ENERGY PRODUCTION COMPANY, L.P.** WY STATE BOARD OF LAND COMMISSIONERS	STATE (EDWARDS) 36W-7	GST	STO, CBM	25	703

Permit No.	Priority	TNS	RNG	SEC	QQ	Applicant	Facility Name	Status	Uses	Yld	TD
P154186W	9/8/2003	43	72	36	NENE	DEVON ENERGY PRODUCTION COMPANY, L.P.** WY STATE BOARD OF LAND COMMISSIONERS	STATE (EDWARDS) 36W-1	GST	STO,CBM		741
P154187W	9/8/2003	43	72	36	SWSE	DEVON ENERGY PRODUCTION COMPANY, L.P.** WY STATE BOARD OF LAND COMMISSIONERS	STATE (EDWARDS) 36W-15	GST	STO,CBM	25	665
P154188W	9/8/2003	43	72	36	SWSW	DEVON ENERGY PRODUCTION COMPANY, L.P.** WY STATE BOARD OF LAND COMMISSIONERS	STATE (EDWARDS) 36W-13	GST	STO,CBM	25	747
P154189W	9/8/2003	43	72	36	NESW	DEVON ENERGY PRODUCTION COMPANY, L.P.** WY STATE BOARD OF LAND COMMISSIONERS	STATE (EDWARDS) 36W-11	GST	STO,CBM	25	709
P154190W	9/8/2003	43	72	36	NESE	DEVON ENERGY PRODUCTION COMPANY, L.P.** WY STATE BOARD OF LAND COMMISSIONERS	STATE (EDWARDS) 36W-9	GST	STO,CBM	25	680
P154191W	9/8/2003	43	72	36	NENW	DEVON ENERGY PRODUCTION COMPANY, L.P.** WY STATE BOARD OF LAND COMMISSIONERS	STATE (EDWARDS) 36W-3	GST	STO,CBM	25	783
P154184W	9/8/2003	43	72	36	SWNW	DEVON ENERGY PRODUCTION COMPANY, L.P.** WY STATE BOARD OF LAND COMMISSIONERS	STATE (EDWARDS) 36W-5	GST	STO,CBM	25	762
P154185W	9/8/2003	43	72	36	SWNE	DEVON ENERGY PRODUCTION COMPANY, L.P.** WY STATE BOARD OF LAND COMMISSIONERS	STATE (EDWARDS) 36W-7	GST	STO,CBM	25	703
P154186W	9/8/2003	43	72	36	NENE	DEVON ENERGY PRODUCTION COMPANY, L.P.** WY STATE BOARD OF LAND COMMISSIONERS	STATE (EDWARDS) 36W-1	GST	STO,CBM		741
P154187W	9/8/2003	43	72	36	SWSE	DEVON ENERGY PRODUCTION COMPANY, L.P.** WY STATE BOARD OF LAND COMMISSIONERS	STATE (EDWARDS) 36W-15	GST	STO,CBM	25	665
P154188W	9/8/2003	43	72	36	SWSW	DEVON ENERGY PRODUCTION COMPANY, L.P.** WY STATE BOARD OF LAND COMMISSIONERS	STATE (EDWARDS) 36W-13	GST	STO,CBM		
P154189W	9/8/2003	43	72	36	NESW	DEVON ENERGY PRODUCTION COMPANY, L.P.** WY STATE BOARD OF LAND COMMISSIONERS	STATE (EDWARDS) 36W-11	GST	STO,CBM	25	709
P154190W	9/8/2003	43	72	36	NESE	DEVON ENERGY PRODUCTION COMPANY, L.P.** WY STATE BOARD OF LAND COMMISSIONERS	STATE (EDWARDS) 36W-9	GST	STO,CBM	25	680
P154191W	9/8/2003	43	72	36	NENW	DEVON ENERGY PRODUCTION COMPANY, L.P.** WY STATE BOARD OF LAND COMMISSIONERS	STATE (EDWARDS) 36W-3	GST	STO,CBM	25	783
P175241W	6/2/2006	44	70	30	SWSW	JACOBS RANCH COAL CO.	TW-30SWSW	GSI	TST		
P178333W	10/4/2006	44	70	30	SWSW	JACOBS RANCH COAL COMPANY	DW 2006-1,2,5,6	GSI	MIS		
P2975P	12/21/1934	44	70	31	SWNW	MILLS LAND & LIVESTOCK CO., INC.	MILLS #24	GST	STO	5	60
P128099W	8/7/2000	44	70	31	NWNW	RIM OPERATING, INC	CBM G 11-31	GST	STO,CBM	7	305
P128100W	8/7/2000	44	70	31	NWSW	RIM OPERATING, INC	CBM G 13-31	GST	STO,CBM	0	245
P128101W	8/7/2000	44	70	31	SENW	RIM OPERATING, INC	CBM G 22-31	GST	STO,CBM	4	308
P147293W	9/27/2002	44	70	31	NWNW	JACOBS RANCH COAL COMPANY	JRM 31-2W40	GST	MON	0	30
P166503W	3/31/2005	44	70	31	NESW	JACOBS RANCH COAL COMPANY	02PIEZO2005	GSI	MON		
P175242W	6/2/2006	44	70	31	NWNW	JACOBS RANCH COAL CO.	TW-31NW	GSI	TST		
P178326W	10/4/2006	44	70	31	SWNW	JACOBS RANCH COAL COMPANY	DW 2006-17,18,19,21,22,24,25	GSI	MIS		
P178327W	10/4/2006	44	70	31	SENW	JACOBS RANCH COAL COMPANY	DW 2006-16,23	GSI	MIS		
P178329W	10/4/2006	44	70	31	NWNW	JACOBS RANCH COAL COMPANY	DW 2006-9,10,13,14	GSI	MIS		
P178330W	10/4/2006	44	70	31	NENW	JACOBS RANCH COAL COMPANY	DW 2006-8,15	GSI	MIS		

Supplementary Information on the Affected Environment

Table S3-3. Groundwater Rights for West Hilight Field LBA Tract (Continued).											
Permit No.	Priority	TNS	RNG	SEC	QQ	Applicant	Facility Name	Status	Uses	Yld	TD
P121839W	12/27/1999	44	71	25	NWSE	RIM OPERATING, INC	CBM C #33-25	GST	STO,CBM	0	326
P123657W	2/28/2000	44	71	25	NWNW	RIM OPERATING, INC	CBM C #11-25	GST	STO,CBM	25	327
P123658W	2/28/2000	44	71	25	NWSW	RIM OPERATING, INC	CBM C #13-25	GST	STO,CBM	Unk	357
P123891W	3/6/2000	44	71	25	SESW	RIM OPERATING, INC	CBM C #24-25	GST	STO,CBM	18	355
P123893W	3/6/2000	44	71	25	SEW	RIM OPERATING, INC	CBM C #22-25	GST	STO,CBM	0	324
P128292W	8/14/2000	44	71	25	SESE	RIM OPERATING, INC	CBM C #44-25	GST	STO,CBM	20	345
P151454W	5/2/2003	44	71	25	NWNW	JACOBS RANCH COAL COMPANY	JRM-DW-25-1	GSE	MIS		
P151457W	5/2/2003	44	71	25	SEW	JACOBS RANCH COAL COMPANY	JRM-DW-25-4	GSE	MIS		
P151458W	5/2/2003	44	71	25	NWSW	JACOBS RANCH COAL COMPANY	JRM-DW-25-5	GSE	MIS		
P166504W	3/31/2005	44	71	25	SEW	JACOBS RANCH COAL COMPANY	03PIEZO2005	GSI	MON		
P170774W	10/28/2005	44	71	25	SESE	JACOBS RANCH COAL CO.	TW-25SE1	GSI	TST		
P170775W	10/28/2005	44	71	25	SESE	JACOBS RANCH COAL CO.	TW-25SE2	GSI	TST		
P170778W	10/28/2005	44	71	25	SWNW	JACOBS RANCH COAL CO.	TW-25NW1	GSI	TST		
P170779W	10/28/2005	44	71	25	SWNW	JACOBS RANCH COAL CO.	TW-25NW2	GSI	TST		
P178332W	10/4/2006	44	71	25	SESE	JACOBS RANCH COAL COMPANY	DW 2006-3,4	GSI	MIS		
P121838W	12/27/1999	44	71	26	NWNE	RIM OPERATING, INC	CBM C #31-26	GST	STO,CBM	0	348
P128068W	8/4/2000	44	71	26	SESE	RIM OPERATING, INC	CBM C 44-26	GST	STO,CBM	0	385
P128069W	8/4/2000	44	71	26	SENE	RIM OPERATING, INC	CBM C 42-26	GST	STO,CBM	0	300
P128070W	8/4/2000	44	71	26	NWSE	RIM OPERATING, INC	CBM C 33-26	GST	STO,CBM	25	405
P128293W	8/14/2000	44	71	26	NWNW	RIM OPERATING, INC	CBM C #11-26	GST	STO,CBM	33	422
P128294W	8/14/2000	44	71	26	NWSW	RIM OPERATING, INC	CBM C #13-26	GST	STO,CBM	25	437
P128295W	8/14/2000	44	71	26	SEW	RIM OPERATING, INC	CBM C #22-26	GST	STO,CBM	25	407
P128296W	8/14/2000	44	71	26	SESW	RIM OPERATING, INC	CBM C #24-26	GST	STO,CBM	25	427
P135821W	6/15/2001	44	71	26	SESW	RIM OPERATING, INC	ENL CBM C # 24-26	GST	STO,CBM	10	427
P135822W	6/15/2001	44	71	26	NWSW	RIM OPERATING, INC	ENL CBM C # 13-26	GST	STO,CBM	10	437
P135823W	6/15/2001	44	71	26	NWNW	RIM OPERATING, INC	ENL CBM C # 11-26	GST	STO,CBM	10	422
P120167W	11/1/1999	44	71	26	NENE	JACOBS RANCH MINE JACOBS RANCH COAL COMPANY	JACOBS RANCH MINE JRM 26-2W41	GST	MON	0	105
P170780W	10/28/2005	44	71	26	NESE	JACOBS RANCH COAL CO.	TW-26SE1	GSI	TST		
P170781W	10/28/2005	44	71	26	NESE	JACOBS RANCH COAL CO.	TW-26SE2	GSI	TST		
P175240W	6/2/2006	44	71	26	NWNE	JACOBS RANCH COAL CO.	TW-26NE	GSI	TST		
P3215P	7/16/1930	44	71	27	SENE	W. L. FERGUSON	FERGUSON #1	GST	DOM	10	24
P3216P	10/17/1944	44	71	27	SENE	W. L. FERGUSON	FERGUSON #2	GST	DOM,STO	10	100
P118863W	9/1/1999	44	71	27	SWSW	LANCE OIL & GAS COMPANY, INC	CHITTENDEN 14-27	GST	CBM	45	503
P118864W	9/1/1999	44	71	27	NESW	LANCE OIL & GAS COMPANY, INC	CHITTENDEN 23-27	GST	CBM	45	523
P128584W	8/22/2000	44	71	27	SWSE	LANCE OIL & GAS COMPANY, INC	FERGUSON 34-27-4471	GST	CBM	30	501
P128585W	8/22/2000	44	71	27	NESE	LANCE OIL & GAS COMPANY, INC	FERGUSON 43-27-4471	GST	CBM	30	501
P131375W	12/4/2000	44	71	27	SWNW	DAVID D. FERGUSON, ET AL.** COLEMAN OIL & GAS, INC.	FERGUSON #12-27	GST	STO,CBM	0	571
P131376W	12/4/2000	44	71	27	NENW	DAVID D. FERGUSON, ET AL.** COLEMAN OIL & GAS, INC.	FERGUSON #21-27	GST	STO,CBM	0	527
P145783W	6/26/2002	44	71	27	SWNE	DAVID D. FERGUSON, ET AL.** COLEMAN OIL & GAS, INC.	FERGUSON #32-27	GST	STO,CBM	19	512
P145786W	6/26/2002	44	71	27	NENE	DAVID D. FERGUSON, ET AL.** COLEMAN OIL & GAS, INC.	FERGUSON #41-27	GST	STO,CBM	13	458
P118170W	8/6/1999	44	71	28	SWSW	LANCE OIL & GAS COMPANY, INC	STUART 14-28	GST	CBM	45	607
P118171W	8/6/1999	44	71	28	NESW	LANCE OIL & GAS COMPANY, INC	STUART 21-28	GST	CBM	45	582
P118865W	9/1/1999	44	71	28	SWSE	LANCE OIL & GAS COMPANY, INC	CHITTENDEN 34-28	GST	CBM	45	557
P118866W	9/1/1999	44	71	28	NESE	LANCE OIL & GAS COMPANY, INC	CHITTENDEN 43-28	GST	CBM	45	542
P121902W	12/29/1999	44	71	28	SWNW	LANCE OIL & GAS COMPANY, INC	SNODGRASS 12-28-4471	GST	CBM	45	622
P121903W	12/29/1999	44	71	28	NENW	LANCE OIL & GAS COMPANY, INC	SNODGRASS 21-28-4471	GST	CBM	45	609

Table S3-3. Groundwater Rights for West Hilight Field LBA Tract (Continued).

Permit No.	Priority	TNS	RNG	SEC	QQ	Applicant	Facility Name	Status	Uses	Yld	TD
P121904W	12/29/1999	44	71	28	SWNE	LANCE OIL & GAS COMPANY, INC	SNODGRASS 32-28-4471	GST	CBM	45	565
P121905W	12/29/1999	44	71	28	NENE	LANCE OIL & GAS COMPANY, INC	SNODGRASS 41-28-4471	GST	CBM	40	583
P92738W	9/3/1993	44	71	29	SESE	JAMES R. AND IRENE STUART	ALICE #2	GST	STO	6	100
P118172W	8/6/1999	44	71	29	SWSE	LANCE OIL & GAS COMPANY, INC	STUART 34-29	GST	CBM	40	683
P118173W	8/6/1999	44	71	29	NESE	LANCE OIL & GAS COMPANY, INC	STUART 43-29	GST	CBM	45	642
P121906W	12/29/1999	44	71	29	SWNW	LANCE OIL & GAS COMPANY, INC	STUART 12-29-4471	GST	CBM	45	742
P121907W	12/29/1999	44	71	29	SWSW	LANCE OIL & GAS COMPANY, INC	STUART 14-29-4471	GST	CBM	45	722
P121908W	12/29/1999	44	71	29	NENW	LANCE OIL & GAS COMPANY, INC	STUART 21-29-4471	GST	CBM	40	682
P121909W	12/29/1999	44	71	29	NESW	LANCE OIL & GAS COMPANY, INC	STUART 23-29-4471	GST	CBM	45	690
P121910W	12/29/1999	44	71	29	SWNE	LANCE OIL & GAS COMPANY, INC	STUART 32-29-4471	GST	CBM	45	642
P121911W	12/29/1999	44	71	29	NENE	LANCE OIL & GAS COMPANY, INC	STUART 41-29-4471	GST	CBM	45	662
P128459W	8/17/2000	44	71	30	NESE	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 43-30-4471	GST	CBM	20	722
P128460W	8/17/2000	44	71	30	NENE	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 41-30-4471	GST	CBM	20	784
P128461W	8/17/2000	44	71	30	SWSE	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 34-30-4471	GST	CBM	20	790
P128462W	8/17/2000	44	71	30	SWNE	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 32-30-4471	GST	CBM	20	835
P137904W	7/23/2001	44	71	30	SWSW	LANCE OIL & GAS COMPANY, INC	FEDERAL 14-30-4471	GST	CBM	20	935
P137915W	7/23/2001	44	71	30	NESW	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 23-30-4471	GST	CBM	20	795
P137919W	7/23/2001	44	71	30	SWNW	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 12-30-4471	GST	CBM	10	855
P137927W	7/23/2001	44	71	30	NENW	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 21-30-4471	GST	CBM	20	847
P106969W	8/1/1997	44	71	31	SENE	BARRETT RESOURCES CORP.	STUART FED. 42-31A	GST	MON	0	580
P106970W	8/1/1997	44	71	31	SENE	BARRETT RESOURCES CORP.	STUART FED. 42-31B	GST	MON	0	744
P106971W	8/1/1997	44	71	31	SENE	BARRETT RESOURCES CORP.	STUART FED. 42-31C	GST	MON	0	850
P81413W	12/4/1989	44	71	31	NWNE	PAUL R/RUBY H STUART	PAUL #1	GST	STO	10	205
P123408W	2/18/2000	44	71	31	SWSW	LANCE OIL & GAS COMPANY, INC** WY STATE BOARD OF LAND COMMISSIONERS	HAYNES 14-31-4471	GST	CBM	30	830
P128457W	8/17/2000	44	71	31	SENE	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 42-31-4471	GST	CBM	20	863
P137908W	7/23/2001	44	71	31	NESW	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 23-31-4471	GST	CBM	20	820
P137910W	7/23/2001	44	71	31	NENW	LANCE OIL & GAS COMPANY, INC	HAYNES FEDERAL 21-31-4471	GST	CBM	20	975
P137912W	7/23/2001	44	71	31	SWNW	LANCE OIL & GAS COMPANY, INC	HAYNES FEDERAL 12-31-4471	GST	CBM	20	863
P141956W	1/4/2002	44	71	31	NWNE	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 31-31-4471	GST	CBM	15	902
P170782W	10/28/2005	44	71	31	NENW	JACOBS RANCH COAL CO.	TW-31NW1	GSI	TST		
P170783W	10/28/2005	44	71	31	NENW	JACOBS RANCH COAL CO.	TW-31NW2	GSI	TST		
P118174W	8/6/1999	44	71	32	SWNE	LANCE OIL & GAS COMPANY, INC	STUART 32-32	GST	CBM	65	640
P118175W	8/6/1999	44	71	32	NENE	LANCE OIL & GAS COMPANY, INC	STUART 41-32	GST	CBM	40	622
P118184W	8/6/1999	44	71	32	SWSW	LANCE OIL & GAS COMPANY, INC	FLOCCHINI 14-32	GST	CBM	65	730
P118185W	8/6/1999	44	71	32	NESW	LANCE OIL & GAS COMPANY, INC	FLOCCHINI 23-32	GST	CBM	65	695
P118186W	8/6/1999	44	71	32	SWSE	LANCE OIL & GAS COMPANY, INC	FLOCCHINI 34-32	GST	CBM	65	652
P118187W	8/6/1999	44	71	32	NESE	LANCE OIL & GAS COMPANY, INC	FLOCCHINI 43-32	GST	CBM	65	620
P118868W	9/1/1999	44	71	32	SWNW	LANCE OIL & GAS COMPANY, INC	STUART 12-32	GST	CBM	65	710
P118869W	9/1/1999	44	71	32	NENW	LANCE OIL & GAS COMPANY, INC	STUART 21-32	GST	CBM	65	692
P118176W	8/6/1999	44	71	33	SWNW	LANCE OIL & GAS COMPANY, INC	STUART 12-33	GST	CBM	60	620
P118177W	8/6/1999	44	71	33	SWSW	LANCE OIL & GAS COMPANY, INC	STUART 14-33	GST	CBM	60	577
P118178W	8/6/1999	44	71	33	NENW	LANCE OIL & GAS COMPANY, INC	STUART 21-33	GST	CBM	65	610
P118179W	8/6/1999	44	71	33	NESW	LANCE OIL & GAS COMPANY, INC	STUART 23-33	GST	CBM	65	579
P118180W	8/6/1999	44	71	33	SWNE	LANCE OIL & GAS COMPANY, INC	STUART 32-33	GST	CBM	60	560
P118181W	8/6/1999	44	71	33	SWSE	LANCE OIL & GAS COMPANY, INC	STUART 34-33	GST	CBM	65	505
P118182W	8/6/1999	44	71	33	NENE	LANCE OIL & GAS COMPANY, INC	STUART 41-33	GST	CBM	45	580
P152948W	8/4/2003	44	71	33	SWSE	THUNDER BASIN COAL COMPANY	NPLTC-03-01	GST	MON	0	9.6
P5971W	5/29/1970	44	71	34	NESE	INC. STUART BROTHERS	SWP #1	GST	STO	25	245
P5972W	5/29/1970	44	71	34	NESE	INC. STUART BROTHERS	SWP #2	GST	STO	25	250
P92345W	7/20/1993	44	71	34	SWSE	JAMES R. AND IRENE STUART	ALICE #1	GST	DOM	8	630

Supplementary Information on the Affected Environment

Table S3-3. Groundwater Rights for West Hilight Field LBA Tract (Continued).											
Permit No.	Priority	TNS	RNG	SEC	QQ	Applicant	Facility Name	Status	Uses	Yld	TD
P128453W	8/17/2000	44	71	34	NESW	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 23-34-4471	GST	CBM	10	522
P128454W	8/17/2000	44	71	34	NENW	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 21-34-4471	GST	CBM	10	495
P128455W	8/17/2000	44	71	34	SWSW	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 14-34-4471	GST	CBM	10	501
P128456W	8/17/2000	44	71	34	SWNW	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 12-34-4471	GST	CBM	10	518
P136616W	7/2/2001	44	71	34	NESE	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 43-34-4471	GST	CBM	10	443
P136617W	7/2/2001	44	71	34	SWSE	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 34-34-4471	GST	CBM	10	480
P145784W	6/26/2002	44	71	34	SWNE	DAVID D. FERGUSON, ET AL.** COLEMAN OIL & GAS, INC.	FERGUSON #32-34	GST	CBM	0	495
P145787W	6/26/2002	44	71	34	NENE	DAVID D. FERGUSON, ET AL.** COLEMAN OIL & GAS, INC.	FERGUSON #41-34	GST	CBM	0	446
40/4/267W	7/18/2007	44	71	34	NESE	THUNDER BASIN COAL CO., LLC	WW01	UNA	MIS		
40/5/267W	7/18/2007	44	71	34	SESE	THUNDER BASIN COAL CO., LLC	WW02	UNA	MIS		
40/6/277W	7/25/2007	44	71	34	NESE	THUNDER BASIN COAL CO.	WW08	UNA	MIS		
P19250P	12/31/1961	44	71	35	SENE	ARK LAND COMPANY	REVLAND #5	GST	DOM,STO	15	125
P30419W	7/16/1975	44	71	35	NENE	ARK LAND COMPANY	REVLAND #1	GST	DOM,STO	25	303
P128066W	8/4/2000	44	71	35	SENE	RIM OPERATING, INC	CBM C 42-35	GST	STO,CBM	18	425
P128067W	8/4/2000	44	71	35	NWNE	RIM OPERATING, INC	CBM C 31-35	GST	STO,CBM	25	405
P143825W	4/2/2002	44	71	35	NWNE	RIM OPERATING, INC	ENL. CBM C #31-35	GST	STO,CBM	10	405
P146103W	7/19/2002	44	71	35	NWNW	RIM OPERATING, INC.	CBM C # 11-35	GSE	STO,CBM		
P146104W	7/19/2002	44	71	35	SENW	RIM OPERATING, INC.	CBM C # 22-35	GSE	STO,CBM		
P121835W	12/27/1999	44	71	36	NWNE	RIM OPERATING, INC	CBM C #31-36	GST	STO,CBM	25	296
P121844W	12/27/1999	44	71	36	NWSE	RIM OPERATING, INC** WY STATE BOARD OF LAND COMMISSIONERS	CBM C #33-36	GST	STO,CBM	17	282
P121845W	12/27/1999	44	71	36	NWSW	RIM OPERATING, INC** WY STATE BOARD OF LAND COMMISSIONERS	CBM C #13-36	GST	STO,CBM	21	386
P121846W	12/27/1999	44	71	36	NWNW	RIM OPERATING, INC** WY STATE BOARD OF LAND COMMISSIONERS	CBM C #11-36	GST	STO,CBM	18	337
P125924W	5/25/2000	44	71	36	SENE	RIM OPERATING, INC** WY STATE BOARD OF LAND COMMISSIONERS	CBM C #42-36	GST	STO,CBM	0	262
P125925W	5/25/2000	44	71	36	SENW	RIM OPERATING, INC** WY STATE BOARD OF LAND COMMISSIONERS	CBM C #22-36	GST	STO,CBM	25	355
P125926W	5/25/2000	44	71	36	SESW	RIM OPERATING, INC** WY STATE BOARD OF LAND COMMISSIONERS	CBM C #24-36	GST	STO,CBM	18	390
P128065W	8/4/2000	44	71	36	SESE	WY STATE BOARD OF LAND COMMISSIONERS** RIM OPERATING, INC	CBM C 44-36	GST	STO,CBM	22	313
P170784W	10/28/2005	44	71	36	NESE	JACOBS RANCH COAL CO.** WY STATE BOARD OF LAND COMMISSIONERS	TW-36SE1	GSI	TST		
P170785W	10/28/2005	44	71	36	NESE	JACOBS RANCH COAL CO.** WY STATE BOARD OF LAND COMMISSIONERS	TW-36SE2	GSI	TST		
P170786W	10/28/2005	44	71	36	NENW	JACOBS RANCH COAL CO.** WY STATE BOARD OF LAND COMMISSIONERS	TW-36NW1	GSI	TST		
P170787W	10/28/2005	44	71	36	NENW	JACOBS RANCH COAL CO.** WY STATE BOARD OF LAND COMMISSIONERS	TW-36NW2	GSI	TST		
P178325W	10/4/2006	44	71	36	SENE	JACOBS RANCH COAL COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	DW 2006-20	GSI	MIS		
P178328W	10/4/2006	44	71	36	NENE	JACOBS RANCH COAL COMPANY** WY STATE BOARD OF LAND COMMISSIONERS	DW 2006-11,12	GSI	MIS		
P33644W	6/2/1976	44	71	36	NENE	WYO BOARD OF LAND COMMISSIONERS** THUNDER BASIN COAL CO., LLC	ECH 6	GST	MON	0	395
P137954W	7/23/2001	44	72	25	SWSW	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 14-25-4472	GST	CBM	20	934
P137971W	7/23/2001	44	72	25	NESW	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 23-25-4472	GST	CBM	20	872

Table S3-3. Groundwater Rights for West Hilight Field LBA Tract (Continued).

Permit No.	Priority	TNS	RNG	SEC	QQ	Applicant	Facility Name	Status	Uses	Yld	TD
P137972W	7/23/2001	44	72	25	SWSE	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 34-25-4472	GST	CBM	20	906
P137974W	7/23/2001	44	72	25	NESE	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 43-25-4472	GST	CBM	20	990
P137981W	7/23/2001	44	72	25	SWNE	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 32-25-4472	GST	CBM	20	1017
P137983W	7/23/2001	44	72	25	NENE	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 41-25-4472	GST	CBM	20	905
P101357W	6/14/1995	44	72	35	SEW	WRIGHT WATER AND SEWER DISTRICT	ENL RJ-3 WELL	UNA	MUN	100	2730
P124992W	4/10/2000	44	72	35	SEW	WRIGHT WATER & SEWER DISTRICT	ENL RJ-3 WELL	UNA	MUN	0	2730
P145604W	7/1/2002	44	72	35	SWNE	WDEQ/WQD	MW1354	GST	MON	0	20
P46696W	2/9/1979	44	72	35	SEW	WRIGHT WATER AND SEWER DISTRICT	RJ 3	ADJ	MUN	225	2730
P71147W	9/16/1985	44	72	35	SWSW	CHARLES TYRREL	LITTLE THUNDER #1	GST	DOM	25	700
P80562W	8/30/1990	44	72	35	SWSW	CHARLES T. TYRREL**RANDY REEVES	TR #1	GST	DOM	25	660
P137871W	7/23/2001	44	72	35	SWSE	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 34-35-4472	GST	CBM	16	955
P137872W	7/23/2001	44	72	35	NESE	LANCE OIL & GAS COMPANY, INC	STUART FEDERAL 43-35-4472	GST	CBM	16	1069
P101216W	1/8/1996	44	72	36	SESE	WYO BOARD OF LAND COMMISSIONERS**PAUL R/RUBY H STUART	NORTH SCHOOL WELL #1	GST	STO	10	141
P101218W	1/8/1996	44	72	36	SESE	PAUL R/RUBY H STUART	SOUTH BARN #1	GST	STO	8	120
P101219W	1/8/1996	44	72	36	NWSE	PAUL R/RUBY H STUART	RED WINDMILL #1	GST	STO	12	200
P123400W	2/18/2000	44	72	36	SWNW	LANCE OIL & GAS COMPANY, INC** WY STATE BOARD OF LAND COMMISSIONERS	STATE 12-36-4472	GST	CBM	55	996
P123401W	2/18/2000	44	72	36	SWSW	LANCE OIL & GAS COMPANY, INC** WY STATE BOARD OF LAND COMMISSIONERS	STATE 14-36-4472	GST	CBM	62	1023
P123402W	2/18/2000	44	72	36	NENW	LANCE OIL & GAS COMPANY, INC** WY STATE BOARD OF LAND COMMISSIONERS	STATE 21-36-4472	GST	CBM	58	934
P123403W	2/18/2000	44	72	36	NESW	LANCE OIL & GAS COMPANY, INC** WY STATE BOARD OF LAND COMMISSIONERS	STATE 23-36-4472	GST	CBM	50	967
P123404W	2/18/2000	44	72	36	SWNE	LANCE OIL & GAS COMPANY, INC** WY STATE BOARD OF LAND COMMISSIONERS	STATE 32-36-4472	GST	CBM	55	987
P123405W	2/18/2000	44	72	36	SWSE	WY STATE BOARD OF LAND COMMISSIONERS** LANCE OIL & GAS COMPANY, INC	STATE 34-36-4472	GST	CBM	55	962
P123406W	2/18/2000	44	72	36	NENE	WY STATE BOARD OF LAND COMMISSIONERS** LANCE OIL & GAS COMPANY, INC	STATE 41-36-4472	GST	CBM	51	923
P123407W	2/18/2000	44	72	36	NESE	LANCE OIL & GAS COMPANY, INC** WY STATE BOARD OF LAND COMMISSIONERS	STATE 43-36-4472	GST	CBM	60	921

**Notes for Non Mining-related Groundwater Rights within Three Miles of the West Hilight Field LBA Tract**

**Search Conducted October 8, 2007**

**Groundwater Right Search Area:**

<b>Township</b>	<b>Range</b>	<b>Sections</b>
42N	70W	6-7, 18
42N	71W	1-18
42N	72W	1-2, 12
43N	70W	6-7, 18-19, 30-31
43N	71W	1-36
43N	72W	1-2, 11-14, 23-26, 35-36
44N	70W	30-31
44N	71W	25-36
44N	72W	25, 35-36

Water rights were searched to the nearest quarter-quarter of each section listed above. Any part of a quarter-quarter that lies within three miles of the LBA tract is included.

**Permit number suffixes are denoted as follows:**

"A" Adjudicated (finalized) rights; unless the right is a territorial appropriation, there will be a match in the reference column from one of the following permit types for the unadjudicated portion:

"P" Stock and domestic use wells completed prior to May 24, 1969 and registered with the State Engineer's Office prior to December 31, 1972

"W" Permits are for wells with a priority date for the date of filing with the State Engineer

**Status Codes**

ADJ	Adjudicated
GSE	Good standing, permitted time limits have been extended
GSI	Good standing incomplete; required notices not received; not yet expired
GSM	Good standing but map is still required
GST	Good standing
UNA	Unadjudicated

Approximately 237 separate water rights with a status code of ABA (Abandoned), A&C (Abandoned and Cancelled), CAN (Cancelled), or EXP (Expired) have been eliminated from the listing provided above, as none of these well codes represent a valid current right.

**Use Codes**

CBM	Coal Bed Methane	IRR	Irrigation
DEW	Dewatering	MIS	Miscellaneous
DOM	Domestic	MON	Monitoring
DRI	Drilling	MUN	Municipal
IND	Industrial	RES	Reservoir Supply
STO	Stock	TEM	Temporary Use

Lands described in these copies are the water rights of record in the SEO database and may or may not reflect the actual situation on the ground. Failure to exercise a water right for five years, when water is available, may constitute grounds for forfeiture.

Table S3-4. Surface Water Rights for West Hilight Field LBA Tract.

Permit No.	Priority	TNS	RNG	SEC	QQ	Applicant	Appropriation	Facility Name	Status	Source	Uses
33/4/110S	9/26/2005	43	71	5	0	JAMES R. & IRENE STUART TRUSTS			UNA	DRY FORK LITTLE THUNDER CREEK	
C42/270A		43	71	17	16		FLORENCE B. ELEXANDER	FLORENCE RESERVOIR	PUO		STO
CR1/387A		43	71	3	9		E. E. STUART	STUART RESERVOIR	PUO		STO
CR2/455A		43	71	22	6		USDA, FOREST SERVICE	THUNDER BASIN NO. 10 RESERVOIR	PUO		STO
CR4/254A		43	71	10	4		USDA, FOREST SERVICE	STUART #F.S.9-256-3 STOCK RESERVOIR	PUO		STO
CR9/356A		43	71	27	8		USDA, FOREST SERVICE	RENO #9-221-2 STOCK RESERVOIR	PUO		STO
P10084S	2/9/1987	43	71	19	0	USA USDA FOREST SERVICE	USDA, FOREST SERVICE	RENO #9-239-1STOCK RESERVOIR	UNA	RENO DRAW	STO
P10085S	2/9/1987	43	71	20	0	USA USDA FOREST SERVICE	USDA, FOREST SERVICE	RENO #9-239-2 STOCK RESERVOIR	GST	SAGER DRAW	STO
P10087S	2/9/1987	43	71	25	0	USA USDA FOREST SERVICE	USDA, FOREST SERVICE	RENO #9-240-13 STOCK RESERVOIR	UNA	PETTERS DRAW	STO
P1163S	3/3/1955	43	71	3	6	E. E. STUART ESTATE				PETTERS BASIN	
P1164S	3/3/1955	43	71	9	16	E. E. STUART ESTATE			PUO	MANOR DRAW	
P1165S	3/3/1955	43	71	4	6	E. E. STUART ESTATE			PUO	SPRINGEN DRAW	
P16214S	12/2/2004	43	71	34	0	JERRY DILTS**TOM EDWARDS			UNA	GREY DRAW	
P16747S	12/6/2004	43	71	31	0	BRIDLE BIT RANCH CO.			UNA	BLACK BUTTE DRAW	
P17302S	8/23/2005	43	71	29	10	JERRY & BARBARA DILTS			UNA	BIRD DRAW	
P17303S	8/23/2005	43	71	30	13	JERRY & BARBARA DILTS			UNA	BIRD DRAW	
P17378S	9/26/2005	43	71	6	0	PAUL R. STUART REVOCABLE TRUST			UNA	DRY FORK LITTLE THUNDER CREEK	
P17441S	9/26/2005	43	71	18	7	THOMAS W. & LEAH B. EDWARDS			UNA	LITTLE THUNDER CREEK	
P2343S	8/4/1958	43	71	10	11	PAUL AND RUBY H. STUART			PUO	SCHROYER DRAW	
P2926S	11/3/1959	43	71	34	5	HALBERT MATHESON			UNA	BRIGGS DRAW	
P33347D	11/2/2005	43	71	22	13	E.H. OFTEDAL & SONS, INC.			UNA	LITTLE THUNDER CREEK	
P3402R	1/4/1917	43	71	17	16	MARION C. ELEXANDER			PUO	NORTH PRONG LITTLE THUNDER CREEK	
P4579S	4/28/1964	43	71	32	11	HALBERT MATHESON			PUO	BLACK BUTTE DRAW	
P4843R	3/31/1938	43	71	22	6	USDA FOREST SERVICE			ADJ	LITTLE THUNDER CREEK	
P5501R	3/1/1943	43	71	3	9	E.E. STUART			ADJ	DRY FORK LITTLE THUNDER	
P5723S	10/10/1966	43	71	4	6	STUART BROTHERS INC.			PUO	HAUMAN DRAW	

Supplementary Information on the Affected Environment

Table S3-4. Surface Water Rights for West Hilght Field LBA Tract (Continued).											
Permit No.	Priority	TNS	RNG	SEC	QQ	Applicant	Appropriation	Facility Name	Status	Source	Uses
P5724S	10/10/1966	43	71	11	16	HAROLD E. ZIMMER			UNA	ZIMMER DRAW	
P5938S	2/27/1967	43	71	10	4	USDA FOREST SERVICE			ADJ	ERICKSON DRAW	
P8135S	7/21/1976	43	71	27	8	USDA FOREST SERVICE			PUO	DRY LAKE BED	
P16807S	8/11/2004	44	72	35	0	PAUL STUART			UNA	FEVER DRAW	
P16679S	9/23/2004	44	72	36	13	PAUL STUART** WYO STATE OFFICE OF LANDS & INVESTMENTS			UNA	DRY FORK LITTLE THUNDER CREEK	
C27/359A		44	71	28	12		JOHN MORTON SHEEP COMPANY	THUNDER BASIN NO. 1 RESERVOIR	PUO		STO
P17790S	3/3/2006	44	71	28	9	JAMES & IRENE STUART TRUST			UNA	DRY DRAW	
P946R	11/30/1906	44	71	28	12	JOHN MORTON SHEEP COMPANY			PUO	DRY DRAW	
P17789S	3/3/2006	44	71	30	9	JAMES & IRENE STUART TRUST			UNA	GRAND VIEW DRAW	
P17849S	3/3/2006	44	71	30	15	JAMES & IRENE STUART TRUST			UNA	TULIP DRAW	
P1166S	3/3/1955	44	71	31	9	PAULINE S. WARD			PUO	KELLY DRAW	
P16678S	9/23/2004	44	71	31	0	PAUL STUART			UNA	HAUMAN DRAW	
P18350S	8/23/2005	44	71	32	6	PAUL R. STUART REVOCABLE TRUST			UNA	DRY FORK LITTLE THUNDER CREEK	
P2344S	8/4/1958	44	71	34	8	PAUL AND RUBY H. STUART			PUO	DWIGHT DRAW	
P17672S	9/1/2005	44	71	36	9	DALE MILLS TRUST			UNA	QUIGLEY DRAW	
P33346D	11/2/2005	44	71	36	14	E.H. OFTEDAL & SONS, INC.			UNA	NORTH SECTION 36 PLAYA (A CLOSED BASIN)	
P416S	10/7/1953	44	70	31	3	RALPH E. MILLS			UNA	MILLS #1 DRAW (17-43-70)	
P418S	10/7/1953	44	70	31	15	RALPH E MILLS			UNA	MILLS #1 DRAW (17-43-70)	
POU		43	70	7	11				GSI		
CR3/299A		42	70	7	14		USDA, FOREST SERVICE	RENO LIVESTOCK #9-240-2 STOCK RESERVOIR	PUO		STO
P16846S	1/26/2004	42	70	7	14	USFS			UNA	OLSON DRAW	
P3931S	3/18/1963	42	70	7	14	USDA FOREST SERVICE			PUO	OLSON DRAW	
P10086S	2/9/1987	42	71	2	0	USA USDA FOREST SERVICE	USDA, FOREST SERVICE	RENO #9-240-12 STOCK RESERVOIR	GST	SAFFORD DRAW	STO
P16867S	5/12/2004	42	71	3	0	BRIDLE BIT RANCH CO.** MERIT ENERGY CO.			UNA	SOHN DRAW	
P16868S	6/9/2003	42	71	4	0	BRIDLE BIT RANCH CO.			UNA	BAHL DRAW	
P4578S	4/28/1964	42	71	5	8	HALBERT MATHESON			UNA	BIRDSALL DRAW	
C27/364A		42	71	7	5		EDITH M. SIMPSON	SHEEP DITCH	PUD		IRR
C27/365A		42	71	7	6		EDITH M. SIMPSON	LITTLE ANTELOPE DITCH NO. 1	PUD		IRR
C27/366A		42	71	7	6		EDITH M. SIMPSON	LITTLE ANTELOPE DITCH NO. 2	PUD		IRR
P7104D	2/13/1906	42	71	7	5	EDITH M. SIMPSON			PUD	SHEEP CREEK	
P7105D	2/13/1906	42	71	7	6	EDITH M. SIMPSON			PUD	LITTLE ANTELOPE CREEK	
P7106D	3/8/1906	42	71	7	6	EDITH M. SIMPSON			PUD	LITTLE ANTELOPE CREEK	
P16869S	6/9/2003	42	71	8	2	BRIDLE BIT RANCH CO.			UNA	BLACK BUTTE CREEK	
P16870S	6/9/2003	42	71	8	14	BRIDLE BIT RANCH CO.			UNA	BLACK BUTTE CREEK	
P16871S	6/9/2003	42	71	8	14	BRIDLE BIT RANCH CO.			UNA	BLACK BUTTE CREEK	
P16872S	6/9/2003	42	71	8	15	BRIDLE BIT RANCH CO.			UNA	BLACK BUTTE CREEK	

Supplementary Information on the Affected Environment

Table S3-4. Surface Water Rights for West Hilight Field LBA Tract (Continued).											
Permit No.	Priority	TNS	RNG	SEC	QQ	Applicant	Appropriation	Facility Name	Status	Source	Uses
CR4/303A		42	71	9	15		USDA, FOREST SERVICE	MATHESON #F.S.9-228-7 STOCK RESERVOIR	ADJ		STO
P5557S	5/6/1966	42	71	9	15	USDA FOREST SERVICE			ADJ	BAHL DRAW	
P16914S	6/9/2003	42	71	10	0	BRIDLE BIT RANCH CO.** WYO STATE OFFICE OF LANDS & INVESTMENTS			UNA	GRAY CREEK	
CR3/301A		42	71	11	2		USDA, FOREST SERVICE	REVLAND #242-1 STOCK RESERVOIR	PUO		STO
P4191S	1/31/1964	42	71	11	2	USDA FOREST SERVICE			PUO	BRIGGS DRAW	
CR2/459A		42	71	12	1		USDA, FOREST SERVICE	THUNDER BASIN RESERVOIR NO. 54	PUO		STO
P4991R	2/17/1939	42	71	12	1	USDA FARM SECURITY ADMINISTRATION			PUO	TANNER DRAW	
P7102D	2/13/1906	42	71	12	2	EDITH M. SIMPSON			PUD	LITTLE PORCUPINE CREEK	
CR3/309A		42	71	13	10		USDA, FOREST SERVICE	STUART #256-2 STOCK RESERVOIR	PUO		STO
P3906S	8/8/1962	42	71	13	10	USDA FOREST SERVICE			PUO	STUART DRAW	
P16918S	6/9/2003	42	71	14	0	BRIDLE BIT RANCH CO.** WYO STATE OFFICE OF LANDS & INVESTMENTS			UNA	STEW DRAW	
P16915S	6/9/2003	42	71	15	0	BRIDLE BIT RANCH CO.** WYO STATE OFFICE OF LANDS & INVESTMENTS			UNA	BAHL DRAW	
P16916S	6/9/2003	42	71	15	0	BRIDLE BIT RANCH CO.** WYO STATE OFFICE OF LANDS & INVESTMENTS			UNA	GRAY CREEK	
P16917S	6/9/2003	42	71	15	0	BRIDLE BIT RANCH CO.** WYO STATE OFFICE OF LANDS & INVESTMENTS			UNA	GRAY CREEK	
CR4/305A		42	72	1	6		USDA, FOREST SERVICE	WILMOT #F.S.9-266-3 STOCK RESERVOIR	PUO		STO
P17508S	11/1/2004	42	72	1	0	TOM EDWARDS** MERIT ENERGY CO.			UNA	LITTLE PORCUPINE CREEK	
P29308D	2/10/1986	42	72	1	2	DIAMOND SHAMROCK EXPLORATION COMPANY			PUD	CRIPPLE CREEK	
P29823D	12/11/1987	42	72	1	2	MAXUS EXPLORATION COMPANY			PUD	CRIPPLE CREEK	
P5562S	5/6/1966	42	72	1	6	THOMAS & LEAH EDWARDS			ADJ	LITTLE PORCUPINE CREEK	
P1167S	3/3/1955	43	72	1	16	E. E. STUART ESTATE			PUO	WARD DRAW	
P1379S	2/6/1956	43	72	1	7	E. E. STUART			PUO	MC GEE DRAW	
P17370S	9/26/2005	43	72	1	15	PAUL R. STUART REVOCABLE TRUST			UNA	WARD DRAW	
P16677S	9/23/2004	43	72	2	0	PAUL STUART			UNA	RENO DRAW	
P1574R	7/14/1909	43	72	11	2	BURTON L. RENO			PUO	LITTLE THUNDER CREEK	
P9165D	7/6/1909	43	72	11	2	BERTON L. RENO			PUD	NAMING ERRORS	
P9166D	7/6/1909	43	72	11	2	BURTON L. RENO			PUD	NAMING ERRORS	
P17371S	9/26/2005	43	72	12	10	PAUL R. STUART REVOCABLE TRUST			UNA	LITTLE THUNDER CREEK	

*Supplementary Information on the Affected Environment*

<b>Table S3-4. Surface Water Rights for West Hilight Field LBA Tract (Continued).</b>											
<b>Permit No.</b>	<b>Priority</b>	<b>TNS</b>	<b>RNG</b>	<b>SEC</b>	<b>QQ</b>	<b>Applicant</b>	<b>Appropriation</b>	<b>Facility Name</b>	<b>Status</b>	<b>Source</b>	<b>Uses</b>
P17372S	9/26/2005	43	72	12	8	PAUL R. STUART REVOCABLE TRUST			UNA	STUART DRAW	
P17440S	9/26/2005	43	72	12	15	THOMAS W. & LEAH B. EDWARDS			UNA	LITTLE THUNDER CREEK	
P17084S	9/15/2004	43	72	14	7	LAWRENCE D. CARLSON**BARBARA A. TUNKS			UNA	BEFUDDLEMENT DRAW	
P2347S	8/6/1958	43	72	14	4	CHELMER WILMOT			PUO	WILMOT DRAW	
CR4/255A		43	72	23	13		USDA, FOREST SERVICE	WILMOT #F.S.9-266-4 STOCK RESERVOIR	PUO		STO
CR4/257A		43	72	23	2		USDA, FOREST SERVICE	WILMOT #F.S.9-266-6 STOCK RESERVOIR	PUO		STO
P15115S	11/22/2002	43	72	23	0	U.S. DEPT. OF AGRICULTURE, FOREST SERVICE			UNA	NICHOLSON DRAW	
P5563S	5/6/1966	43	72	23	0	USDA FOREST SERVICE			ADJ	NICHOLSON DRAW	
P5937S	2/27/1967	43	72	23	0	USDA FOREST SERVICE			ADJ	BRANAMAN DRAW	
P2348S	8/6/1958	43	72	24	11	CHELMER WILMOT			PUO	QUICKSAND DRAW	
CR4/256A		43	72	25	6		USDA, FOREST SERVICE	WILMOT #F.S.9-266-5 STOCK RESERVOIR	PUO		STO
P15116S	11/22/2002	43	72	25	0	U.S. DEPT. OF AGRICULTURE, FOREST SERVICE			UNA	DOUGLAS DRAW	
P15117S	8/20/2003	43	72	25	0	TOM EDWARDS			UNA	EAST RIDGE DRAW	
P15234S	10/17/2003	43	72	25	0	THOMAS W. EDWARDS			UNA	LITTLE ANTELOPE CREEK	
P15234S	10/17/2003	43	72	25	11	THOMAS W. EDWARDS			UNA	LITTLE ANTELOPE CREEK	
P5928S	2/27/1967	43	72	25	6	USDA FOREST SERVICE			PUO	DOUGLAS DRAW	

**Notes for Non Mining-related Surface Water Rights within Three Miles of the West Hilgert Field LBA Tract**

**Search Conducted October 9, 2007**

**Surface Water Right Search Area:**

<b>Township</b>	<b>Range</b>	<b>Sections</b>
42N	70W	6-7, 18
42N	71W	1-18
42N	72W	1-2, 12
43N	70W	6-7, 18-19, 30-31
43N	71W	1-36
43N	72W	1-2, 11-14, 23-26, 35-36
44N	70W	30-31
44N	71W	25-36
44N	72W	25, 35-36

Water rights were searched to the nearest quarter-quarter of each section listed above. Any part of a quarter-quarter that lies within three miles of the LBA tract is included.

**Record suffixes are denoted as follows:**

- "A" Adjudicated (finalized) rights; unless the right is a territorial appropriation, there will be a match in the reference column from one of the following permit types for the unadjudicated portion
- "D" Ditch or pipeline permit
- "E" Enlargement of a ditch or pipeline permit
- "R" Reservoir permit
- "S" Stock reservoir permit

**Status Codes**

ABA	Abandoned	A&C	Abandoned and Cancelled
AME	Amended (moved)	ADJ	Adjudicated
CAN	Cancelled	DSC	Description
ELI	Eliminated	EXP	Expired
GST	Good standing	REJ	Rejected
PU	Point of use non irrigation (not actual status)		
PUD	Point of diversion (not actual status)		
PUO	Point of reservoir outlet (not actual status)		
TEM	Temporary	TRA	Transferred
UNA	Unadjudicated		

**Use Codes**

DOM	Domestic	IRR	Irrigation
RES	Reservoir supply	STO	Stock

Approximately 49 separate water rights with a status code of ABA, A&C, AME, CAN, ELI, EXP, REJ, or TRA have been eliminated from the search area listing provided above (including those belonging to the mining companies), as none of these use codes represent a valid current right.

**The following quarter-quarters are designated by the "QQ" field:**

1	NE $\frac{1}{4}$ NE $\frac{1}{4}$	9	NE $\frac{1}{4}$ SW $\frac{1}{4}$
2	NW $\frac{1}{4}$ NE $\frac{1}{4}$	10	NW $\frac{1}{4}$ SW $\frac{1}{4}$
3	SW $\frac{1}{4}$ NE $\frac{1}{4}$	11	SW $\frac{1}{4}$ SW $\frac{1}{4}$
4	SE $\frac{1}{4}$ NE $\frac{1}{4}$	12	SE $\frac{1}{4}$ SW $\frac{1}{4}$
5	NE $\frac{1}{4}$ NW $\frac{1}{4}$	13	NE $\frac{1}{4}$ SE $\frac{1}{4}$
6	NW $\frac{1}{4}$ NW $\frac{1}{4}$	14	NW $\frac{1}{4}$ SE $\frac{1}{4}$
7	SW $\frac{1}{4}$ NW $\frac{1}{4}$	15	SW $\frac{1}{4}$ SE $\frac{1}{4}$
8	SE $\frac{1}{4}$ NW $\frac{1}{4}$	16	SE $\frac{1}{4}$ SE

### **S3-6 ALLUVIAL VALLEY FLOORS**

Under the Surface Mining Control and Reclamation Act of 1977 (SMCRA), surface coal mining operations that would interrupt, discontinue, or preclude farming on alluvial valley floors (AVFs) is prohibited unless the affected AVF is undeveloped rangeland that is not significant to farming or if the affected AVF is of such small acreage that it would have a negligible impact on a farm's agricultural production. These restrictions also apply if AVFs that are downstream of the area proposed for mining would be affected by disruptions in streamflow. Provided Wyoming Department of Environmental Quality/Land Quality Division (WDEQ/LQD) determines that an AVF is not significant to agriculture, it can be disturbed by mining but must be restored as part of the reclamation process. For any designated AVF, regardless of its significance to agriculture, it must be demonstrated that the essential hydrologic functions of the AVF, both within and outside the mine area, will be protected.

WDEQ regulations define AVFs as unconsolidated stream laid deposits where water availability is sufficient for subirrigation or flood irrigation agricultural activities. Guidelines established by the Office of Surface Mining Reclamation and Enforcement (OSM) and WDEQ/LQD for the identification of AVFs require detailed studies of geomorphology, soils, hydrology, vegetation, and land use. These studies are used to identify: 1) the presence of unconsolidated stream laid deposits, 2) the possibility for artificial flood irrigation, 3) past and/or present flood irrigation, and 4) apparent subirrigated areas and the possibility for natural flood irrigation. Areas that are identified as AVFs following these studies are evaluated for their significance to farming by WDEQ/LQD.

In a decision by the U.S. District Court for the District of Columbia, Civil Action Number 69-1144 (1980) (known as the Flannery Decision), the court noted that an AVF must satisfy both geologic criteria (unconsolidated stream laid deposits) and hydrologic criteria (water sufficient to sustain agriculture). Therefore, the court emphasized that the key to the existence of an AVF is the presence of both geologic and water availability characteristics, which together sustain agricultural activities.

Little Thunder Creek and its tributaries drain most of the LBA tract's general analysis area. Dry Fork Little Thunder Creek, a second order, southeast-flowing ephemeral tributary of North Prong Little Thunder Creek, drains the northern-most portion of the LBA tract. The north-central portion of the LBA tract does not contribute runoff to any stream and drains to natural topographic depressions. The southern portion of the LBA tract's general analysis area is drained by Little Thunder Creek and its tributary, Briggs Draw. A short reach of the Little Thunder Creek channel crosses the central portion of the LBA tract's general analysis area. All streams within and adjacent to the LBA tract are typical for the region, in that flow events are ephemeral. Stream runoff is typically of short duration and exhibits temporal patterns similar to precipitation events. All ephemeral streams in the region show the characteristic extreme low-flow period from October through January. Flow

events frequently result from snowmelt during the late winter and early spring. During the spring, general storms (both rain and snow) are more frequent; hence increasing soil moisture and decreasing infiltration capacity and subsequent rainstorms can result in higher runoff volumes and peak discharges.

Mapping of the area's surficial geology (Reheis and Coates 1987, Moore and Coates 1978, Coates 1978a) shows that alluvial deposits within the LBA tract's general analysis area occur only along the channels of Little Thunder Creek and its tributary, Black Butte Draw (Figure S3-3), and these materials are comprised of stream-channel and overbank deposits. Due to its limited areal extent, limited saturated thickness, and low hydraulic conductivity, these alluvial deposits do not consistently produce enough water to be put to beneficial use. Available water quality data indicate that groundwater from the valley fill deposits of Little Thunder Creek and North Prong Little Thunder Creek does not meet the WDEQ/WQD standards for domestic and agricultural uses and is marginal or fails to meet the standards for livestock and wildlife use, depending on the location (TBCC 2007). Surface water quantity and quality are insufficient to support agricultural activities.

Little Thunder Creek and its tributaries within and extending a half mile beyond Black Thunder Mine's existing permit boundary have been investigated for the presence of AVFs by TBCC. Those investigations concluded, and WDEQ has concurred, that no AVFs exist along Little Thunder Creek within the South Hilight Field LBA Tract. Little Thunder Creek has not been formally investigated for the presence of AVFs within the general analysis area for the West Hilight Field LBA Tract; however, based on previous non-AVF declarations made on Little Thunder Creek immediately downstream of the West Hilight Field tract, and the fact that the stream is smaller and AVF characteristics (i.e., extent of alluvial deposits, water availability, and water quality) are negligible, it is unlikely that the stream would have the characteristics an AVF in the West Hilight Field tract. The declared AVF at the North Prong Little Thunder Creek and Little Thunder Creek confluence is located roughly 7 miles downstream from the West Hilight Field LBA Tract and would not be affected by mining and reclamation within the tract.

Other drainages on the West Hilight Field tract are much smaller and AVF characteristics are negligible. Few stream laid deposits are present; the streams do not consistently produce enough runoff to be put to beneficial use, and the soils that dominate the drainage bottoms within the general analysis area are classified by the Natural Resource Conservation Service (NRCS) as unsuitable for irrigation. In addition, there are no present or historical records of agricultural use, other than undeveloped range land, of the stream channels and associated stream laid deposits within the general analysis area for the tract. There are some areas within the LBA tract's general analysis area that have been used as hayland. In years with sufficient precipitation, grass hay (crested wheatgrass) is harvested. Production from these fields is solely driven

by early season precipitation; none is due to flood irrigation (artificial or natural) or subirrigation.

If the West Hilight Field LBA Tract is leased and proposed for mining, an AVF assessment would be part of the mine permitting process, although it is unlikely that the WDEQ/LQD would declare that an AVF is present.

### **S3-7 WETLANDS**

The federal and state regulatory programs, which are administered by the U.S. Army Corps of Engineers (COE) and Wyoming Department of Environmental Quality/Land Quality Division (WDEQ/LQD), respectively, that require special permitting procedures to assure that after mining there are no net loss of wetlands are described in Section S1-7. A description of wetland types and Other Waters of the United States (OWUS) from a permitting perspective is also given in Section S1-7.

A preliminary wetlands inventory of the general analysis area for the West Hilight Field LBA Tract was conducted by Knight Technologies Inc. (KTI), of Gillette, Wyoming, in 2007. This inventory was based on United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) mapping (1980), review of color-infrared orthophotography maps (2001), and visual field reconnaissance of vegetation and hydrology indicators. Figure S3-4 depicts the USFWS NWI mapping within the general analysis area (wetlands analysis area) for the West Hilight Field LBA Tract.

KTI's initial field reconnaissance indicated that wetland areas mapped by the USFWS NWI in 1980 have been altered due to coal bed natural gas (CBNG)-related water production within and upstream of the tract's general analysis area. This preliminary assessment identified the presence of several categories of wetlands and OWUS. The categories consisted of dry ephemeral drainages and the following USFWS wetland habitat classifications:

- Palustrine emergent (PEM),
- Palustrine aquatic bed (PAB), and
- Palustrine unconsolidated (PU).

Within the entire general analysis area for the West Hilight Field LBA Tract (9,188.6 acres), the preliminary wetland inventory identified a total of 262.7 acres of wetlands and OWUS. These wetlands and OWUS were found within five general land categories: ephemeral streams, playas, ponds/reservoirs, isolated depressions, and excavated upland areas. Of these 262.7 acres, approximately 252.8 acres are vegetated wetlands that consist of approximately 240.6 acres of palustrine emergent herbaceous wet meadow or marsh and approximately 12.2 acres of palustrine aquatic beds located along ephemeral stream channels and around ponds, playas and depressions. The remaining 9.9 acres are channel and pond OWUS (open water in Little Thunder Creek and Little Thunder Reservoir). Little Thunder Creek was initially classified as a

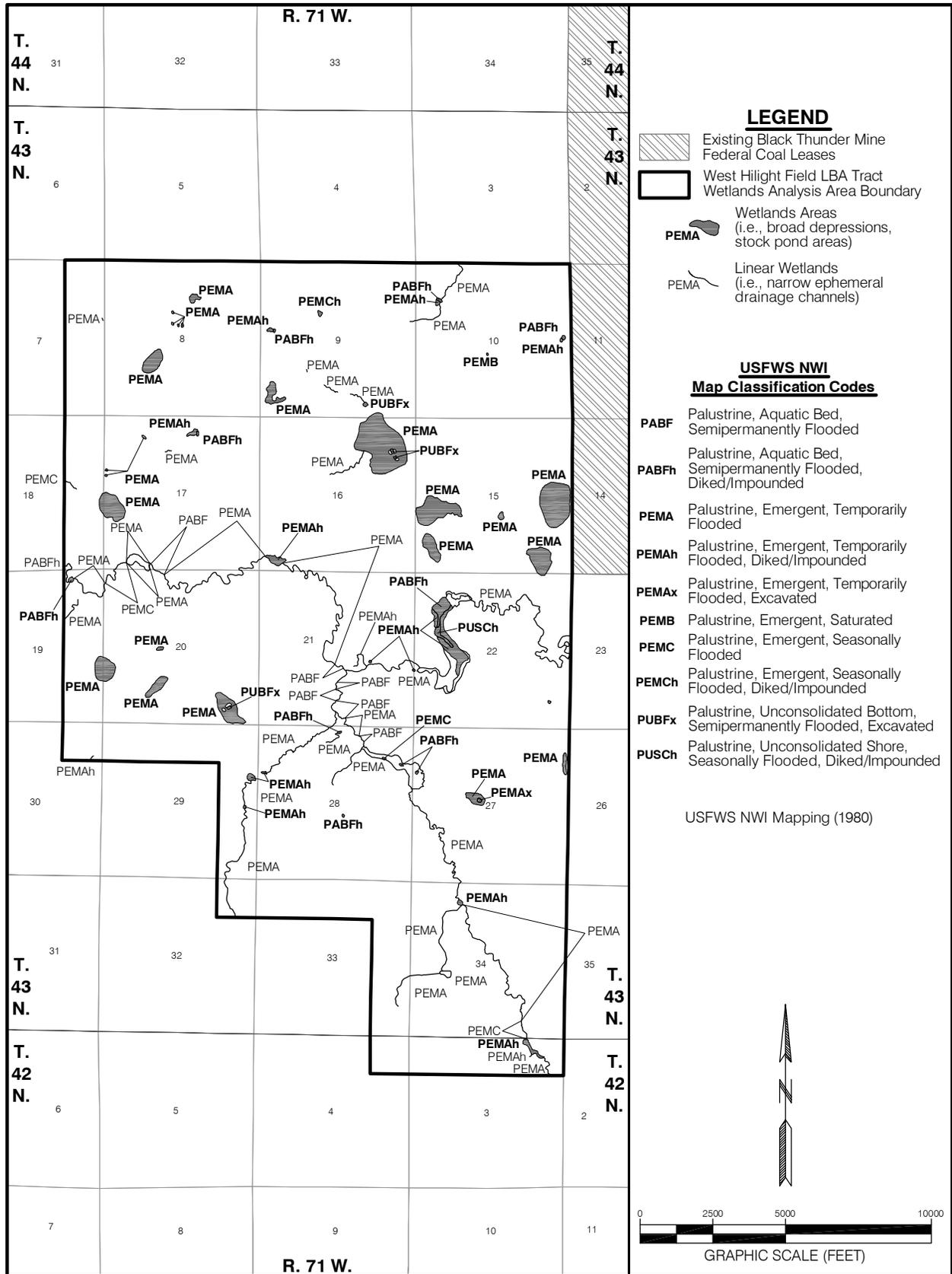


Figure S3-4. Wetlands Within the General Analysis Area for the West Hilgite Field LBA Tract.

palustrine wetland (PEMA on Figure S3-4) by NWI, but currently meets the classification of a riverine, streambed system that is being influenced by CBNG discharge water. Open water or PAB areas typically support a fringe of area classified as PEM wetlands.

At this time, a distinction has not been made between jurisdictional and non-jurisdictional acreages of wetlands and OWUS since only the COE has the authorization to make such determination following the submittal and review of a formal wetland delineation as part of the permitting process. A wetland delineation would be conducted and submitted to the COE with a formal Section 404 Jurisdictional Determination request as part of the WDEQ/LQD mine permitting process.

### **S3-8 SOILS**

The general analysis area for the West Hilight Field LBA Tract has been subjected to Order 1-2 and/or Order 3 soil surveys in the recent past. Those surveys being:

- Sections 10, 15 and 22, T.43N., R.71W., were mapped during the baseline Order 1-2 soil survey of the Little Thunder Amendment Area of the Black Thunder Mine, which is part of its existing approved WDEQ/LQD mine permit.
- The remainder of the LBA tract's general analysis area has been covered by the National Resource Conservation Service (NRCS) Order 3 soil survey of southern Campbell County (Prink et al. 2004).

The Order 1-2 soil survey was completed in accordance with WDEQ/LQD Guideline No.1, which outlines required soils information necessary for a coal mining operation. The WDEQ inventories included field sampling and observations at the requisite number of individual sites, and laboratory analysis of representative collected samples. Soils within the analysis area were identified by series, which consist of soils that have similar horizons in their profile. Horizons are soil layers having similar color, texture, structure, reaction, consistency, mineral and chemical composition, and arrangement in the profile.

NRCS Order 3 mapping is completed according to national guidelines and standards. This scale of mapping, i.e., 40 acre minimum size delineation of soil map unit polygons, is much larger than the WDEQ surveys.

Soils vary depending upon where and how they were formed. Major factors involved in the formation of soils include whether or not the material was transported and how the material was weathered during transportation. Four primary soil formation processes causing different soil types were noted: 1) those soils developing predominantly in thin residuum from sandstone or shale on upland ridges, 2) those soils developing predominantly in slopewash, colluvium, or alluvial fan deposits from mixed sources on gently sloping

uplands, 3) those soils developing predominantly in coarse-textured alluvium or sandy eolian deposits on rolling uplands, and 4) drainage soils developing in mixed stream laid alluvium on terraces and channels, and in fine-textured playa deposits in depressions and closed basins.

The soil depths and types in the general analysis area for the West Hilight Field tract are similar to soils currently being salvaged and utilized for reclamation at the neighboring Black Thunder and Jacobs Ranch mines, as well as other mines in the eastern PRB. The following is a list of the soil types delineated in the tract's BLM study area (note that some series determinations have changed since the original surveys were completed). The major soils series encountered within the soil survey area were grouped according to the primary soil formation processes and are listed as follows:

***Soils developing predominantly in thin residuum from sandstone or shale on upland ridges and hills***

- Shallow Entisols
- Worf loam, 3 to 15 percent slopes
- Shingle loam, 3 to 10 percent slopes
- Renohill-Shingle-Worf Complex, 3 to 15 percent slopes

***Soils developing predominantly in colluvium or alluvial fan deposits from mixed sources on gently sloping uplands***

- Arvada, thick surface very fine sandy loam, 0 to 6 percent slopes
- Arvada thick surface-Arvada-Slickspots Complex, 0 to 6 percent slopes
- Arvada (Absted) thick surface, 0 to 3 percent slopes
- Bidman-Parmleed loams, 0 to 6 percent slopes
- Bidman-Parmleed loams, 6 to 15 percent slopes
- Bidman-Ulm loams, 0 to 6 percent slopes
- Forkwood-Cushman loams, 0 to 6 percent slopes
- Forkwood-Ulm loams, 0 to 6 percent slopes
- Forkwood loam, 0 to 6 percent slopes
- Theedle-Kishona-Shingle loams, 3 to 30 percent slopes
- Ulm-Renohill clay loams, 0 to 6 percent slopes
- Cushman loam, 0 to 6 percent slopes
- Forkwood loam, 0 to 6 percent slopes
- Renohill fine sandy loam, 0 to 6 percent slopes
- Bidman loam, 0 to 6 percent slopes
- Ulm loam, 0 to 8 percent slopes
- Parmleed (Briggsdale) loam, 0 to 6 percent slopes
- Theedle loam, 0 to 6 percent slopes
- Heldt clay loam, 0 to 6 percent slopes
- Savageton clay loam, 6 to 15 percent slopes
- Pugsley fine sandy loam, 0 to 10 percent slopes
- Renohill-Savageton clay loams, 6 to 15 percent slopes

**Soils developing predominantly in coarse-textured residuum, alluvium and sandy eolian deposits on rolling uplands**

- Hiland-Bowbac fine sandy loams, 6 to 15 percent slopes
- Maysdorf fine sandy loam, 0 to 6 percent slopes
- Bowbac fine sandy loam, 0 to 6 percent slopes
- Hiland (Olney) fine sandy loam, 0 to 6 percent slopes
- Bowbac fine sandy loam, 6 to 15 percent slopes
- Hiland (Olney) fine sandy loam, 6 to 15 percent slopes
- Keeline-Tullock-Niobrara, dry complex, 3 to 30 percent slopes
- Maysdorf-Pugsley fine sandy loam, 0 to 6 percent slopes
- Maysdorf-Pugsley sandy loams, 6 to 15 percent slopes
- Vonalee sandy loam, 3 to 10 percent slopes

**Drainage soils developing in mixed stream laid alluvium on terraces and channels and in fine-textured playa deposits in depressions and closed basins**

- Felix clay, ponded, 0 to 2 percent slopes
- Aeric Fluvaquents, 0 to 3 percent slopes

Table S3-5 provides the extent of five depth classes of suitable topsoil within the BLM study area.

Table S3-5. Acres of Topsoil Available for Reclamation Within the BLM Study Area for the West Hilight Field LBA Tract.

<b>Thickness of Suitable Topsoil (inches)</b>	<b>Acres</b>	<b>Percent</b>
0	124.66	1.5
0 - 12	1,859.64	23.8
12 - 30	1,380.79	17.7
30 - 48	4,056.17	52.2
48 - 60	300.28	3.8
Water	51.91	1.0
<b>Total</b>	<b>7,773.44</b>	<b>100.0</b>

The West Hilight Field LBA Tract baseline soils analysis, in conjunction with the county-wide NRCS soil survey, indicates that the amount of suitable topsoil that would be available for redistribution on all disturbed acres within the analysis area during reclamation would have an average depth of 2.3 feet. Areas of unsuitable soils include sites with high alkalinity, salinity or clay content. The tract is expected to have adequate quantity and quality of soil for reclamation. Both the NRCS Order 3 soil survey and the Order 1-2 soil survey have located hydric soils, which are one component used in identifying wetlands.

**S3-9 VEGETATION**

The vegetation communities in the general analysis area for the West Hilight Field LBA Tract (9,188 total acres) were appraised and mapped by Habitat Management, Inc. of Gillette, Wyoming in 2007 to provide a preliminary assessment.

Vegetation within the LBA tract's general analysis area consists of species common to eastern Wyoming. A total of eight vegetation types have been preliminarily identified and mapped within the LBA tract's general analysis area. Table S3-6 presents the acreage and percent of the analysis area encompassed by each vegetation type. The vegetation types include Mixed Prairie Grassland, Big Sagebrush Shrubland, Playas, Streamside Grassland, Agricultural Pasture, Saline Bottomland, and variations of these communities. Disturbed lands, reclaimed lands, and reservoir areas were also identified.

**Table S3-6. Vegetation Types Identified and Mapped Within the West Hilight Field LBA Tract.**

<b>Vegetation Type</b>	<b>Area Applied For</b>		<b>BLM Study Area</b>		<b>General Analysis Area</b>	
	<b>(Acres)</b>	<b>(Percent)</b>	<b>(Acres)</b>	<b>(Percent)</b>	<b>(Acres)</b>	<b>(Percent)</b>
Mixed Prairie Grassland	456.92	19.29	1,518.13	21.12	1,669.05	18.16
Big Sagebrush Shrubland	1,262.31	53.30	4,131.14	57.48	5,505.86	59.92
Playa - Densely Vegetated	25.11	1.06	48.35	0.67	103.66	1.13
Playa - Barren	20.19	0.85	60.76	0.85	75.47	0.82
Streamside Grassland	28.32	1.20	139.48	1.94	170.91	1.86
Alkali Bottom Grassland	0.00	0.00	0.00	0.00	0.00	0.00
Agricultural Pasture 1 (< 20% Shrubs)	76.74	3.24	76.74	1.07	139.00	1.51
Agricultural Pasture 2 (>=20% Shrubs)	28.11	1.19	36.09	0.50	68.82	0.75
Wildfire Modified Agricultural Pasture 2	0.00	0.00	0.00	0.0	0.00	0.00
Pasture / Hayland	0.00	0.00	0.00	0.00	0.00	0.00
Saline Bottomland	385.21	16.27	770.26	10.72	1,065.19	11.59
Disturbed Lands (Roads, Trails, etc)	67.05	2.83	229.05	3.19	184.08	2.00
Reclaimed Lands	10.21	0.43	132.71	1.85	157.64	1.72
Reservoir	8.11	0.34	43.92	0.61	48.67	0.53
<b>Total</b>	<b>2,368.00</b>	<b>100.00</b>	<b>7,187.00</b>	<b>100.00</b>	<b>9,188.00</b>	<b>100.00</b>

In terms of total acres of occurrence in the general analysis area, the predominant vegetation types are Big Sagebrush Shrubland (roughly 60 percent), Mixed Prairie Grassland (roughly 18 percent), and Saline Bottomland (roughly 12 percent).

These vegetation types are described as follows:

The **Big Sagebrush Shrubland** community is characterized by the presence of Wyoming big sagebrush (*Artemisia tridentata* ssp. *Wyomingensis*) at a density of 20 percent or greater, and the grasses western wheatgrass (*Pascopyrum smithii*), blue grama (*Bouteloua gracilis*), green needlegrass (*Nassella viridula*), needle and thread (*Hesperostipa comata*), and crested wheatgrass (*Agropyron cristatum*). The density of shrubs and grasses varies throughout the area, with some portions consisting of very dense shrubs with minimal grass component and other areas with a lower density of shrubs and a very heavy grass component. Plains prickly pear (*Opuntia polyacantha*) is also common throughout this community type, and lichen can make a substantial contribution to ground cover particularly in dry years. This community is associated with a wide variety of soil types.

The **Mixed Prairie Grassland** community is characterized by the presence of western wheatgrass, blue grama, green needlegrass, needle and thread, and crested wheatgrass and a low density of shrub species (less than 20 percent). This community frequently occurs on Hiland-Bowbac fine sandy loam soils with 0-6 percent slopes, but can be found on a wide variety of soil types.

**Saline Bottomland** is characterized by the presence of highly compacted, exposed soils, Wyoming big sagebrush, and plains prickly pear, and a low density of grasses, although inland saltgrass (*Distichlis spicata*) and alkali sacaton (*Sporobolus airoides*) are found here. This community has been overgrazed and the surface is highly erodible. It occurs almost exclusively on the Arvada, thick surface-Arvada-slickspots soil complex.

**Playas** are distinct, low-lying patches that likely accumulate moisture during times of high precipitation or significant snowmelt. They are essentially absent of any shrub component and are usually either dominated by grasses including inland salt grass and foxtail barley (*Hordeum jubatum*) or are barren. Many playas have been modified in the center; with a large pond/reservoir excavated for use as either water sources for livestock or containment for CBMG production-associated discharge water. These playas most frequently occur on Felix clay ponded soils with 0-2 percent slopes, although they also occur on other soil types.

**Streamside Grassland** is dominated by inland salt grass, alkali sacaton and some sedge and rush species (*Carex spp.* and *Juncus spp.*). Grasses present in the Mixed Prairie Grassland are also found here. Some areas categorized as streamside grassland may include true wetland; however wetlands were not delineated for the purpose of determining vegetation communities. Streamside grassland is most frequently found on the Arvada, thick surface-Arvada-Slickspots soil complex, and the Theedle-Kishona-Shingle loam soils with 3-30 percent slopes, but can be found on several other soil types as well.

**Agricultural Pasture 1 and 2** are areas that have been historically seeded with crested wheatgrass for agricultural or grazing purposes, and the species has persisted over time. Vegetation communities delineated as Agricultural Pasture 1 have a low shrub component of 0-20 percent and are generally dominated by a crested wheatgrass monoculture. Agricultural Pasture 1 communities may

be currently under use for hay production. Vegetation communities delineated as Agricultural Pasture 2 have a greater shrub component with a density of 20 percent or more, and, although still dominant, the density of crested wheatgrass is reduced and other graminoid species are present.

**Disturbed** lands include roads, areas surrounding active construction sites and mining facilities, oil and gas facilities, and occupied and abandoned homesteads. Several deciduous and/or coniferous trees have been planted around most homestead sites. Reclaimed lands include areas that were recently reclaimed after disturbance for the installation of oil and gas facilities or pipelines, road construction and other activities. Several reservoirs constructed for containment of CBNG discharge water, irrigation and/or livestock use are also present.

### **S3-10 WILDLIFE**

#### **S3-10.1 Wildlife Resources**

Background information on wildlife in the vicinity of the West Hilight Field LBA Tract was drawn from several sources, including Wyoming Game and Fish Department (WGFD) and U.S. Fish and Wildlife Service (USFWS) records, the Wyoming Natural Diversity Database (WYNDD), recent PRB federal coal lease application EIS documents (available for public review on Wyoming BLM's website at <http://www.blm.gov/wy/st/en.html>), and personal contacts with WGFD and USFWS biologists. Site-specific data for the LBA tract's general analysis area were obtained from several sources, including WDEQ/LQD mine permit applications and annual wildlife monitoring reports for the nearby coal mines. Due to the proximity of the proposed lease area to the adjacent mines' (Black Thunder and Jacobs Ranch) permit areas, the general analysis area for the West Hilight Field tract has received some level of coverage annually since the early 1980s. Increasing percentages of the tract's general analysis area were included in annual monitoring efforts as survey areas for the adjacent mines have been expanding due to previous coal lease acquisitions and subsequent permit area amendments. Baseline and annual wildlife surveys cover a large perimeter around mine permit areas; consequently, a majority of the proposed lease area and adjacent lands have been surveyed for wildlife species as part of the required monitoring surveys for these adjacent mines. In addition, Thunder Basin Coal Company (TBCC) initiated baseline investigations during 2006 and early 2007 expressly for the West Hilight Field LBA Tract with additional surveys targeting the North and South Hilight Field LBA Tracts in 2007 and 2008. The results of site-specific surveys for the entire leased area and appropriate perimeter will be part of the mine permitting process if the lease sale is held and the tract is proposed for mining. Thunderbird-Jones & Stokes (J&S), formerly Thunderbird Wildlife Consulting, Inc. (TWC), of Gillette, Wyoming, has conducted the historical and recent wildlife studies for the Black Thunder Mine, while Intermountain Resources (IR), of Laramie, Wyoming, has conducted the historical and recent wildlife studies specifically for the Jacobs Ranch Mine.

In an undisturbed condition, the major vegetation types in the tract's general analysis area provide habitats for many species. Vegetation types tend to occur in a mosaic across the landscape; therefore, many wildlife species can be expected to utilize more than one habitat type. Predominant habitat types classified on the LBA tract and adjacent area correspond with the major plant communities defined by the vegetation survey and consist primarily of sagebrush shrublands (roughly 60 percent of the area), mixed prairie grasslands (roughly 18 percent of the area), and saline bottomlands (roughly 12 percent of the area). Disturbed lands include a network of oil and gas field access roads and areas surrounding oil and gas development activities (i.e., well pads, pipelines, tank batteries), and both active and abandoned ranching-related facilities. Reclaimed lands include areas that were recently reclaimed after disturbance for the installation of oil and gas facilities or pipelines, road construction and other activities with varying degrees of recovering vegetation cover.

The predominant natural wildlife habitat is shrubland with upland/mixed prairie grassland as the next largest habitat type. Wyoming big sagebrush characterizes the shrubland and native upland grasses of the region (i.e., western wheatgrass, needleandthread, prairie junegrass, blue grama, Sandberg bluegrass, and cheatgrass brome) characterize the mixed prairie grassland. The few trees that exist on the six WAC LBA tracts are largely limited to those planted around homesteads and ranch buildings. No designated critical, crucial, or unique wildlife habitats are present in the area. No perennial streams or other permanent water bodies exist within the general analysis area for the West Hilight Field LBA Tract.

### **S3-10.2 Big Game**

The two big game species that are common in suitable habitat throughout the general analysis area for the West Hilight Field tract are pronghorn (*Antilocapra americana*) and mule deer (*Odocoileus hemionus*). Elk (*Cervus elaphus*) are frequent winter residents in the area, but spend most of the year in the Rochelle Hills east of the general analysis area. White-tailed deer (*Odocoileus virginianus*) are transients in the area due to their preference for riparian woodlands and irrigated agricultural lands. No crucial big game habitat or migration corridors are recognized by the WGFD in this area. Crucial range is defined as any particular seasonal range or habitat component that has been documented as the determining factor in a population's ability to maintain and reproduce itself at a certain level.

No significant differences in the occurrence of big game and their habitats within the general analysis areas for the North Hilight Field and West Hilight Field LBA Tract's exist (refer to Section S1-10.2). The West Hilight Field tract is within the Cheyenne River Pronghorn Herd Unit (Hunt Area 27) and the Thunder Basin Mule Deer Herd Unit (Hunt Area 10) (WGFD 2007a).

### **S3-10.3 Other Mammals**

With the exception of the number and locations of prairie dog colonies, no significant differences in the occurrence of small- and medium-sized mammals and their habitats within the general analysis areas for the North Hilight Field and West Hilight Field LBA Tracts exist (refer to Section S1-10.3). Qualified wildlife biologists with IR and J&S have mapped the current acreage of prairie dog colonies in the vicinity of the Jacobs Ranch and Black Thunder mines, respectively, by walking the perimeters of colonies and delineating them using hand-held global positioning system (GPS) receivers and/or by visually mapping them on topographic maps.

Surveys conducted within 2 miles of the general analysis area for the West Hilight Field LBA Tract located eight prairie dog colonies that cover a total of approximately 167.5 acres (the colonies are depicted on Figure 3-34 in the WAC DEIS). Only one colony (approximately 89.1 acres in size) is within the tract's general analysis area itself (the area likely to be affected by development of the West Hilight Field LBA Tract). The other seven colonies are approximately 0.1, 2.6, 3.4, 7.7, 17.9, 19.5, and 27.2 acres in size.

### **S3-10.4 Raptors**

Raptor species that are known to commonly nest in the general Wright analysis area are discussed in Section S1-10.4.

The raptor monitoring areas for the Black Thunder and Jacobs Ranch mines include their respective permit areas and a surrounding 1- or 2-mile perimeter. Due to the proximity of the West Hilight Field LBA Tract to those adjacent mine survey areas, the tract's entire general analysis area and most of the wildlife survey area for West Hilight Field LBA Tract have been included in annual monitoring surveys since the early 1980s. Previous information regarding nests, including their historical use by nesting raptors is available in the mines' permit applications and annual wildlife monitoring reports.

Figure 3-34 in the WAC DEIS document depicts the locations of raptor nests identified within the West Hilight Field tract's wildlife survey area, which includes the tract's general analysis area and a 2-mile perimeter encompassing the general analysis area. Over time, raptors have built new nests and natural forces have destroyed many nests, while others have been relocated for mitigation or removed by mining activities. In some cases, nests have been created to mitigate other nest sites impacted by mining operations at this mine.

A total of six raptor species have nested within the combined North, South, and West Hilight Field wildlife survey areas. Five of those six species have regularly nested within this area since annual monitoring began. Swainson's hawks began nesting in the area more recently, and have been a consistent breeder ever since. Based on sightings of young, it is likely that at least one pair of American kestrels nested in one of the many small cavities present in the snags

along Little Thunder Creek. There is overlap between these three tracts' study area boundaries, and as such, there is overlap in the reporting of raptor nests on the wildlife figures and in the North, South, and West Hilight Field tract discussions. In addition, due to the West Jacobs Ranch LBA Tract's proximity to the three Hilight Field LBA Tracts, there is also an overlap in the reporting of raptor nests. The number of nests recorded within each of the wildlife survey areas are addressed separately in this supplemental information document, as well as in Section 3.10 of the WAC DEIS document.

During surveys completed in 2007 by J&S, a total of 42 intact raptor nests (26 ferruginous hawk nests, three Swainson's hawk nests, three burrowing owl nest sites, two platform nests erected for ferruginous/red-tailed hawks, one platform nest erected for golden eagles, and four nests that have been used by multiple raptor species) were present within 2 miles of the general analysis area for the West Hilight Field LBA Tract (see Figure 3-34 in the WAC DEIS for locations). Eight intact nests were within the general analysis area (six ferruginous hawk, one burrowing owl, and one golden eagle nest), no intact nests were present within the LBA tract as applied for, and two intact ferruginous hawk nests were within the area added by Alternative 2. Three of the eight intact nests within the tract's general analysis area were active during 2007. The remaining 34 intact nests were within 2 miles of the tract's general analysis area.

### **S3-10.5 Upland Game Birds**

Upland game bird species that have historically been documented in the general Wright analysis area are discussed in Section S1-10.5. The historical and recently conducted sage-grouse surveys conducted by the three applicant coal mines specific to this EIS are also discussed in Section S1-10.5.

Despite the prevalence of sagebrush in the combined wildlife survey areas for the North, South and West Hilight Field LBA Tracts, sage-grouse numbers were never especially high in the area. Five sage-grouse leks are located on and within 2 miles of the North, South, and West Hilight Field tracts' general analysis areas: Stuart I, Stuart II, Black Thunder, Butch, and Hansen Lakes.

Two sage-grouse leks have been documented on and within 2 miles of the West Hilight Field general analysis area: Stuart I and Stuart II (Figure 3-34). The Stuart II lek is located within the LBA tract as applied for, and the Stuart I lek is located approximately 1.3 miles west of the general analysis area for the West Hilight Field LBA Tract. The Stuart II lek was monitored by the WGFD and/or USFS at approximately three-year increments from 1979 through 2004. The highest number of grouse ever recorded during that period was seven in 1991. That was also the last year when grouse were confirmed at the lek. The Stuart II lek has been monitored by private consultants in each of the last four years (2005 through 2008) and no grouse were observed. The Stuart I lek was discovered in 1977. The lek was monitored in three of the following four years, and was active in each survey year. Monitoring efforts were reduced to every

third year (WGFD standard timing) from 1982 through 2003; annual monitoring began in 2004. Grouse were observed in only one of the monitoring years from 1982 through 2007. Two males were recorded at the Stuart I lek in 1991 and that was the last year when grouse or sign were confirmed at the lek.

No sage-grouse have been recorded at the Stuart I and II leks for over 10 years; however, not enough consistent data have been collected to classify either as abandoned. Both Stuart I and Stuart II leks are now classified “undetermined” (insufficient information to designate the leks as unoccupied). Because the two Stuart leks were not monitored annually, their management status is “undetermined”, despite consistently low counts when surveys did occur. No other leks have been documented within the wildlife study area for the West Hilight Field LBA Tract.

### **S3-10.6 Migratory Bird Species of Management Concern in Wyoming**

Surveys conducted by the Black Thunder Mine for migratory birds of concern are discussed in Section S1-10.6.

Thirty of the 40 listed Level I and II species have historically been observed within northeastern Wyoming (Latilong 13) and 18 species have been recorded in the vicinity of the West Hilight Field LBA Tract (Table S3-7). The USFWS considers Level I species as in need of conservation action, which includes having a monitoring and mitigation plan for those birds. The 16 Level I and II species that historically have been recorded, or are suspected of nesting in the West Hilight Field general analysis area include the Greater sage-grouse, McCown’s longspur, ferruginous hawk, Brewer’s sparrow, Swainson’s hawk, short-eared owl, burrowing owl, upland sandpiper, lark bunting, chestnut-collared longspur, sage thrasher, grasshopper sparrow, loggerhead shrike, vesper sparrow, lark sparrow, and merlin. The other non-nesting species documented less often and that have only been observed as migrants in the area include the long-billed curlew and bald eagle.

Table S3-7. Migratory Bird Species of Management Concern in Wyoming: Their Regional Status, and Expected and Actual Occurrence on or Near the West Hilight Field LBA Tract.

Species <sup>1</sup> (Scientific Name)	Seasonal Status/Breeding Records in Northeastern WY <sup>1</sup>	Historical Occurrence in the Vicinity of the LBA <sup>2</sup>	Occurrence and Status in the LBA in 2007 <sup>3</sup>
<b>LEVEL I (species need conservation action)</b>			
Mountain plover ( <i>Charadrius montanus</i> )	Summer/Breeder	Not Expected	None
Greater sage-grouse ( <i>Centrocercus urophasianus</i> )	Resident/Breeder	Uncommon	None
McCown’s longspur ( <i>Calcarius mccownii</i> )	Summer/Breeder	Uncommon	None
Baird’s sparrow ( <i>Ammodramus bairdii</i> )	Summer/Observed	Not Expected	None
Ferruginous hawk ( <i>Buteo regalis</i> )	Resident/Breeder	Common	Non-breeder

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**Table S3-7. Migratory Bird Species of Management Concern in Wyoming: Their Regional Status, and Expected and Actual Occurrence on or Near the West Hilight Field LBA Tract (Continued).**

<b>Species<sup>1</sup> (Scientific Name)</b>	<b>Seasonal Status/Breeding Records in Northeastern WY<sup>1</sup></b>	<b>Historical Occurrence in the Vicinity of the LBA<sup>2</sup></b>	<b>Occurrence and Status in the LBA in 2007<sup>3</sup></b>
<b>LEVEL I (species need conservation action)</b>			
Brewer's sparrow ( <i>Spizella breweri</i> )	Summer/Breeder	Common	Breeder
Sage sparrow ( <i>Amphispiza belli</i> )	Summer/Breeder	Not expected	None
Swainson's hawk ( <i>Buteo swainsoni</i> )	Summer/Breeder	Common	Non-breeder
Long-billed curlew ( <i>Numenius americanus</i> )	Summer/Observed	Uncommon	None
Short-eared owl ( <i>Asio flammeus</i> )	Resident/Breeder	Uncommon	None
Peregrine falcon ( <i>Falco peregrinus</i> )	Resident/Observed	Not expected	None
Burrowing owl ( <i>Athene cunicularia</i> )	Summer/Breeder	Common	Non-breeder
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	Resident/Breeder	Common	None
Upland sandpiper ( <i>Bartramia longicauda</i> )	Summer/Breeder	Uncommon	None
<b>LEVEL II (species need monitoring)</b>			
Cassin's kingbird ( <i>Tyrannus vociferans</i> )	Never Recorded	Not Expected	None
Lark bunting ( <i>Calamospiza melanocorys</i> )	Summer/Breeder	Common	Breeder
Dickcissel ( <i>Spiza americana</i> )	Summer/Observed	Not Expected	None
Chestnut-collared longspur ( <i>Calcarius ornatus</i> )	Summer/Breeder	Uncommon	None
Black-chinned hummingbird ( <i>Archilochus alexandri</i> )	Never Recorded	Not Expected	None
Pygmy nuthatch ( <i>Sitta pygmaea</i> )	Never Recorded	Not Expected	None
Marsh wren ( <i>Cistothorus palustris</i> )	Never Recorded	Not Expected	None
Western bluebird ( <i>Sialia mexicana</i> )	Summer/Breeder	Not Expected	None
Sage thrasher ( <i>Oreoscoptes montanus</i> )	Summer/Breeder	Uncommon	None
Grasshopper sparrow ( <i>Ammodramus savannarum</i> )	Summer/Breeder	Uncommon	None
Bobolink ( <i>Dolichonyx oryzivorus</i> )	Summer/Observed	Not Expected	None
Common loon ( <i>Gavia immer</i> )	Summer/Observed	Not Expected	None
Black-billed cuckoo ( <i>Coccyzus erythrophthalmus</i> )	Never Recorded	Not Expected	None
Red-headed woodpecker ( <i>Melanerpes erythrocephalus</i> )	Summer/Breeder	Not Expected	None
Yellow-billed cuckoo ( <i>Coccyzus americanus</i> )	Summer/Observed	Not Expected	None
Eastern screech-owl ( <i>Megascops asio</i> )	Never Recorded	Not Expected	None
Western screech-owl ( <i>Megascops kennicottii</i> )	Never Recorded	Not Expected	None

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**Table S3-7. Migratory Bird Species of Management Concern in Wyoming: Their Regional Status, and Expected and Actual Occurrence on or Near the West Hilight Field LBA Tract (Continued).**

<b>Species<sup>1</sup> (Scientific Name)</b>	<b>Seasonal Status/Breeding Records in Northeastern WY<sup>1</sup></b>	<b>Historical Occurrence in the Vicinity of the LBA<sup>2</sup></b>	<b>Occurrence and Status in the LBA in 2007<sup>3</sup></b>
<b>LEVEL II (species need monitoring)</b>			
Western scrub-jay ( <i>Aphelocoma californica</i> )	Never Recorded	Not Expected	None
Loggerhead shrike ( <i>Lanius ludovicianus</i> )	Summer/Breeder	Common	None
Vesper sparrow ( <i>Pooecetes gramineus</i> )	Summer/Breeder	Common	Breeder
Lark sparrow ( <i>Chondestes grammacus</i> )	Summer/Breeder	Uncommon	None
Ash-throated flycatcher ( <i>Myiarchus cinerascens</i> )	Summer/Observed	Not Expected	None
Bushtit ( <i>Psaltriparus minimus</i> )	Never Recorded	Not Expected	None
Merlin ( <i>Falco columbarius</i> )	Resident/Breeder	Uncommon	None
Sprague's pipit ( <i>Anthus spragueii</i> )	Never Recorded	Not Expected	None
Barn owl ( <i>Tyto alba</i> )	Summer/Observed	Not Expected	None

<sup>1</sup> Latilong 13 - Atlas of Birds, Mammals, Amphibians, and Reptiles in Wyoming (Cеровski et al. 2004).

<sup>2</sup> Historical Occurrence/Status in the West Hilight Field LBA survey area is based on records from annual monitoring conducted at the Black Thunder and Jacobs Ranch mines from 1993 through 2007.

<sup>3</sup> Sighting records were derived from actual occurrence on or within ½ mile of the LBA tract and the Alternative 2 tract configuration area or from observations related to Black Thunder and Jacobs Ranch mines' baseline and annual monitoring.

**S3-10.7 Other Species**

Refer to Section S1-10.7.

**S3-11 LAND USE AND RECREATION**

A majority (approximately 60 percent) of the surface estate on the West Hilight Field LBA Tract as applied for and the area added under Alternative 2 (the BLM study area) is privately owned, and nearly 40 percent of the tract's BLM study area is owned by the U.S. Department of Agriculture and administered by the Forest Service (USFS). The surface ownership of the West Hilight Field tract is shown in detail on Figure 3-42 and the distribution of surface ownership is given in Table 3-14 in the WAC DEIS document. Livestock grazing is the primary land use within the BLM study area for the LBA tract, while oil and gas production, wildlife habitat, and recreation are secondary land uses.

Areas of disturbance within and near the West Hilight Field tract include roads, oil and gas wells and associated production facilities, surface mine-related facilities and activities, and activities associated with ranching operations. State Highway 59, which runs north-south, is located about 2½ miles west of the LBA tract, and State Highway 450, which runs east-west, borders the northern edge of the West Hilight Field LBA Tract. Hilight Road (County Road 52) borders the eastern edge of the West Hilight Field Tract configured under Alternative 2, and it provides public and private access within and near the

tract. Several unnamed two-track roads also traverse and provide private and public access within and near the proposed lease area. The Burlington Northern Santa Fe & Union Pacific (BNSF & UP) railroad right-of-way (ROW) is adjacent to the eastern edge of the Hilight Road ROW (Figure 3-1, in the WAC DEIS document).

The oil and gas estate within the West Hilight Field LBA Tract as applied for and the area added under Alternative 2 is federally and privately owned, with the majority (approximately 63.5 percent) being federally owned. The ownership of the West Hilight Field oil and gas estate is shown in the WAC DEIS document on Figure 3-48. A listing of the current federal oil and gas lessees of record is included as Table 3-17 in the WAC DEIS document.

According to the Wyoming Oil and Gas Conservation Commission (WOGCC) records as of May 14, 2008, there were two conventional gas wells on lands included in the West Hilight Field LBA Tract as proposed and the lands added under Alternative 2 that were producing or capable of producing and four oil wells had been plugged and abandoned (refer to Figure 3-48 in the WAC DEIS document for locations). The most recent conventional oil and gas wells in the general analysis area were drilled in 1984 (WOGCC 2008a). Conventional oil and gas wells capable of production within the BLM study area for the West Hilight Field tract are listed in Appendix E of the WAC DEIS document.

According to the WOGCC records as of May 14, 2008, 38 coal bed natural gas (CBNG) wells were producing and nine CBNG wells were shut-in within the lands encompassed by the West Hilight Field LBA Tract as applied for and the lands added under Alternative 2 (refer to Figure 3-48 in the WAC DEIS document for locations). Extensive CBNG development has occurred on lands surrounding the tract as well. CBNG wells capable of production within the BLM study area for the West Hilight Field LBA Tract are listed in Appendix E of the WAC DEIS document.

Refer to the discussion on mining and recreational land uses in the general Wright analysis area within Section S1-11.

### **S3-12 CULTURAL RESOURCES**

The entire general analysis area for the West Hilight Field LBA Tract has been intensively surveyed at a Class III level. Cultural resource inventories in this area began in the early 1980s and continued with numerous projects associated with oil and gas field development as well as surface mining operations throughout the 1990s and 2000s. Thunder Basin Coal Company, LLC (TBCC) contracted with GCM Services, Inc., of Butte, Montana to perform Class I inventories of all previous surveys and Class III surveys of all unsurveyed areas within the general analysis area for the West Hilight Field LBA Tract. GCM completed the Class III level inventory of the tract's general analysis area in the summer of 2007 (reports not yet accessioned by the SHPO). The 2007 survey included a total of approximately 6,840 acres within

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the combined general analysis areas for the North, South and West Hilight Field LBA Tracts.

A review of the Wyoming Cultural Resource Information System (WYCRIS) produced information from a total of 24 large-scale (40-acres or larger) Class III cultural resource inventory projects that have been conducted within the general analysis areas for the West and South Hilight Field tracts. Sixteen large-scale studies encompass the West Hilight Field tract and 17 studies encompass the South Hilight Field tract (many of these studies occur in both tracts). In addition, several small-scale inventories were reported in these areas. Small-scale inventories include seismic grids, well pads, access routes, utility corridors and drill holes associated with oil and gas development. These small projects were not listed in the large block inventory summary table (Table S3-8); however, any sites associated with small projects are included on the site summary table (Table S3-9).

**Table S3-8. Large Block Class III Cultural Resource Inventories Within the General Analysis Area for the West Hilight Field LBA Tract.**

<b>Accession No.</b>	<b>Survey Organization</b>	<b>Location</b>	<b>Year</b>	<b>Project Name</b>
not accessioned	GCM Services	T42N, R71W, Section 3, NN	2007	TBCC W., S. and N. Hilight Amendment Area
95 594	GCM Services	T42N, R71W, Section 4, NENE	1995	Fiddleback Land Exchange
not accessioned	GCM Services	T43N, R71W, Section 7, EE	2007	TBCC W., S. and N. Hilight Amendment Area
1 334 0	Pronghorn Archaeological Services	T43N, R71W, Section 8, NENE	2001	Rochelle Lake POD CBM
1 1767 2	Arcadis	T43N, R71W, Section 8, all	2001	Thunderhead III POD CBM
1 334 0	Pronghorn Archaeological Services	T43N, R71W, Section 9, all	2001	Rochelle Lake POD CBM
81 798	Archaeological Services	T43N, R71W, Section 9, SESE	1981	Rochelle Lake Fed 1 Well Pad
0 1541 0	GCM Services	T43N R71W Section 10 E	2000	TBCC- Little Thunder Creek LBA addition
0 1541 3	GCM Services	T43N, R71W, Section 10, all	2001	TBCC- Little Thunder Creek Amendment Area

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**Table S3-8. Large Block Class III Cultural Resource Inventories Within the General Analysis Area for the West Hilight Field LBA Tract (Continued).**

<b>Accession No.</b>	<b>Survey Organization</b>	<b>Location</b>	<b>Year</b>	<b>Project Name</b>
1-1845	Arcadis	T43N, R71W, Section 10, E	2001	Thunderhead 2 POD CBM
1 334 0	Pronghorn Archaeological Services	T43N R71W Section 10W	2001	Rochelle Lake POD CBM
0 1541 3	GCM Services	T43N, R71W Section 15, all	2001	TBCC- Little Thunder Creek Amendment Area
6-1648	GCM Services	T43N, R71W, Section 16, all	2006	TBCC- original W. Hilight LBA
1 1537 0	Pronghorn Archaeological Services	T43N, R71W, Section 17, NNW, SENW	2001	Little Thunder Drainage POD CBM
98 1488 2	Pronghorn Archaeological Services	T43N, R71W, Section 17, SW, SWNW, NE	1998	Little Thunder Block Survey
6-1648	GCM Services	T43N, R71W, Section 17, SE	2006	TBCC- original W. Hilight LBA
1 1767 2	Arcadis	T43N, R71W, Section 18, S	2001	Thunderhead III POD CBM
98 1488 2	Pronghorn Archaeological Services	T43N, R71W, Section 18, ESE	1998	Little Thunder Block Survey
not accessioned	GCM Services	T43N R71W Section 18EE	2007	TBCC W., S. and N. Hilight Amendment Area
1 1767 2	Arcadis	T43N, R71W, Section 19, EE	2001	Thunderhead III POD CBM
1 1767 2	Arcadis	T43N, R71W, Section 20, all	2001	Thunderhead III POD CBM
1 1767 0	Arcadis	T43N, R71W, Section 21, W	2001	Thunderhead II POD CBM
not accessioned	GCM Services	T43N, R71W Section 21, E	2007	TBCC W., S. and N. Hilight LBA

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**Table S3-8. Large Block Class III Cultural Resource Inventories Within the General Analysis Area for the West Hilight Field LBA Tract (Continued).**

<b>Accession No.</b>	<b>Survey Organization</b>	<b>Location</b>	<b>Year</b>	<b>Project Name</b>
2 1792 2	Greer Services	T43N R71W Section 21, E	2002	Black Thunder POD CBM
0 1541 0	GCM Services	T43N, R71W, Section 22, W	2000	TBCC- Little Thunder Creek LBA
0 1541 3	GCM Services	T43N, R71W Section 22, E	2000	TBCC- Little Thunder Creek Amendment Area
2 1792 2	Greer Services	T43N, R71W, Section 22, E	2002	Black Thunder POD CBM
not accessioned	GCM Services	T43N, R71W, Section 27, all	2007	TBCC W., S. and N. Hilight LBA
2 1792 2	Greer Services	T43N, R71W, Section 27, W	2002	Black Thunder POD CBM
7 1031	GCM Services	T43N, R71W, Section 28, W	2007	TBCC Priority Drilling Area (Meyer 2007b)
not accessioned	GCM Services	T43N, R71W, Section 28, E	2007	TBCC W., S. and N. Hilight LBA
81 292	Office of the Wyoming State Archaeologist	T43N, R71W, Section 29, NWNW	1981	Four Well Pad Locations
not accessioned	GCM Services	T43N, R71W, Section 29, N, SENE, ESE	2007	TBCC W., S. and N. Hilight LBA
3 1218	Greer Services	T43N, R71W, Section 30, NENE	2003	Nicholson POD CBM
1 334 0	Pronghorn	T43N, R71W, Section 32, NENE	2001	Rochelle Lake POD CBM
not accessioned	GCM Services	T43N, R71W, Section 33, N, SENE, ESE	2007	TBCC W., S. and N. Hilight LBA
not accessioned	GCM Services	T43N, R71W, Section 34, all	2007	TBCC W., S. and N. Hilight LBA

Note: Some project areas may overlap in spatial extent. This may or may not reflect overlapping pedestrian surveys. Overlapping surveys may occur from unrelated projects (e.g., CBNG and coal mine projects on the same parcel), which occur close in time, delayed report accession, file search error, or intentional re-inspection of a previously surveyed area, due to unevaluated sites, project age, etc.

*Supplementary Information on the Affected Environment*

Table S3-9. Cultural Resource Sites in the General Analysis Area for the West Hilight Field LBA Tract.

<b>Site Number</b>	<b>NRHP Status</b>	<b>Recommended</b>	<b>Year</b>	<b>Recorder's Affiliation</b>
<b>Prehistoric sites</b>				
48CA634	U	request review	1980	Arch. Services
48CA1123	NE	no further work	1981	Arch. Services
48CA1124	NE	no further work	1981	Arch. Services
48CA1160	U	not found in 2007	1981	Arch. Services
48CA2930	NE	no further work	1995	GCM Services
48CA3196	NE	no further work	1998	Pronghorn
48CA3459	U	request review	1998	Pronghorn
48CA3786	NE	no further work	2001	Pronghorn
48CA4099	NE	no further work	2000	GCM Services
48CA4100	NE	no further work	2000	GCM Services
48CA4101	NE	no further work	2000	GCM Services
48CA4147	NE	no further work	2001	Arcadis U.S.
48CA4149	NE	no further work	2001	Arcadis U.S.
48CA4150	NE	no further work	2001	Arcadis U.S.
48CA4151	U	formal testing	2001	Arcadis U.S.
48CA4152	NE	no further work	2001	Arcadis U.S.
48CA4153	U	formal testing	2001	Arcadis U.S.
48CA4154	NE	no further work	2001	Arcadis U.S.
48CA4155	NE	no further work	2001	Arcadis U.S.
48CA4156	NE	no further work	2001	Arcadis U.S.
48CA4157	NE	no further work	2001	Arcadis U.S.
48CA4158	NE	no further work	2001	Arcadis U.S.
48CA4159	NE	no further work	2001	Arcadis U.S.
48CA4160	NE	no further work	2001	Arcadis U.S.
48CA4161	NE	no further work	2001	Arcadis U.S.
48CA4162	NE	no further work	2001	Arcadis U.S.
48CA4163	NE	formal testing*	2001	Arcadis U.S.
48CA4169	NE	no further work	2001	Arcadis U.S.
48CA4170	NE	no further work	2001	Arcadis U.S.
48CA4171	NE	no further work	2001	Arcadis U.S.
48CA4189	NE	no further work	2001	Arcadis U.S.
48CA4190	NE	no further work	2001	Arcadis U.S.
48CA4191	NE	no further work	2001	Arcadis U.S.
48CA4192	NE	no further work	2001	Arcadis U.S.
48CA4403	E	avoid or mitigate	2002	AEC
48CA4484	NE	no further work (no data)	2003	Greer Services
48CA4681	U	formal testing**	2007	GCM Services
48CA4683	U	formal testing**	2007	GCM Services
48CA4684	U	formal testing**	2007	GCM Services
48CA4686	U	formal testing**	2007	GCM Services
48CA6403	E	avoid or mitigate	2006	GCM Services
48CA6404	E	avoid or mitigate	2006	GCM Services
48CA6405	E	avoid or mitigate	2006	GCM Services
48CA6406	E	avoid or mitigate	2006	GCM Services
48CA6407	E	avoid or mitigate	2006	GCM Services
48CA6725	U	significant/testing	2007	GCM Services
48CA6726	U	significant/testing	2007	GCM Services

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**Table S3-9. Cultural Resource Sites in the General Analysis Area for the West Hilight Field LBA Tract (Continued).**

<b>Site Number</b>	<b>NRHP Status</b>	<b>Recommended</b>	<b>Year</b>	<b>Recorder's Affiliation</b>
48CA6727	U	significant/testing	2007	GCM Services
48CA6728	U	significant/testing	2007	GCM Services
48CA6729	U	significant/testing	2007	GCM Services
48CA6730	U	significant/testing	2007	GCM Services
48CA6731	U	significant/testing	2007	GCM Services
48CA6732	U	significant/testing	2007	GCM Services
48CA6844	U	formal testing	2007	GCM Services
48CA6845	U	request review	2007	GCM Services
48CA6846	U	request review	2007	GCM Services
48CA6848	U	request review	2007	GCM Services
48CA6849	U	formal testing	2007	GCM Services
48CA6851	U	formal testing	2007	GCM Services
<b>Historic sites</b>				
48CA803	U	request review	1981	OWSA
48CA2188	U	re-evaluate	1985	Greer Services
48CA4098	NE	no further work	2000	GCM Services
48CA4102	NE	no further work	2000	GCM Services
48CA4680	U	request review	2003	Greer Services
48CA4682	U	request review	2003	Greer Services
48CA4685	U	request review	2003	Greer Services
48CA4687	U	request review	2003	Greer Services
48CA4688	U	request review	2003	Greer Services
48CA4689	U	request review	2003	Greer Services
48CA4690	U	request review	2003	Greer Services
48CA4691	U	request review	2003	Greer Services
48CA4696	U	request review	2007	GCM Services
48CA6852	U	request review	2007	GCM Services
48CA6853	U	request review	2007	GCM Services

U = undetermined or no review by SHPO. Site may have a consultant and/or agency recommendation, but has either not been reviewed by SHPO or SHPO required additional information in order to make a determination. This site must be avoided until a determination is made.

NE = Not Eligible (with SHPO concurrence). This site requires no further consideration.

E = Eligible (with SHPO concurrence). This site will have to be avoided or an approved mitigation plan implemented.

\* re-evaluated as eligible by GCM.

\*\* sites combined, recommended NRHP eligible by GCM.

Formal testing: Site has potential to meet eligibility criteria, formal testing required to make determination.

Request review: Site is recommended not eligible by recorder, no SHPO review as yet, recommend no additional work.

Significant/testing: Site is recommended eligible by recorder, no SHPO review, formal testing may be required.

Re-evaluate: Site is unlikely to meet eligibility requirements but inadequate data exists for SHPO determination.

Avoid or mitigate: Site is determined eligible for NRHP by SHPO and must be avoided or mitigation plan approved.

Not found in 2007: Site was previously recorded but was not found during 2007 inventory (presumed destroyed).

No data: The site database is incomplete; date entry error suspected.

### Supplementary Information on the Affected Environment

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Within the general analysis areas for the North, South and West Hilight Field tracts, a total of 147 cultural properties (sites) have been recorded. Of these, 110 sites were previously recorded and were identified during record searches. An additional 37 sites were located during the 2007 Class III inventories of the remaining unsurveyed lands. The State Historic Preservation Office (SHPO) has not made National Register of Historic Places (NRHP) eligibility determinations for these sites at this time. Some of the cultural site's eligibility determinations are pending remote sensing (magnetometer surveys) work and formal testing.

A total of 74 cultural sites have been documented in the general analysis area for the West Hilight Field tract. Of these, 59 are prehistoric and 15 are historic. Prehistoric sites consist primarily of lithic scatters and campsites. Historic sites consist primarily of trash dumps. Thirty of the prehistoric sites and two of the historic sites have been determined *not eligible* for the NRHP by the SHPO. Six of the prehistoric sites and none of the historic sites have been determined to be *eligible* for the NRHP by the SHPO. Twenty-three of the prehistoric sites and 13 historic sites are considered *unevaluated* for eligibility by the SHPO, most of which have never been reviewed, while at least 13 will require additional documentation, testing or evaluation in order for the SHPO to make an eligibility determination. Table S3-9 lists the cultural sites, the site type (prehistoric or historic), the NRHP status (eligible, not eligible, or undetermined), the recommended action, and the recorder's affiliation.