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ENVIRONMENTAL ASSESSMENT
THE ENCOAL MILD GASIFICATION
DEMONSTRATION PROJECT

JULY 1990

U.S. DEPARTMENT OF ENERGY

WASHINGTON, D.C. 20585

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(DOE/EA-0439)

INTRODUCTION

On September 27, 1988, Public Law 100-446, "An Act Making Appropriations for the Department of the Interior and Related Agencies for the Fiscal Year Ending September 30, 1989, and Other Purposes" was signed into law. Among other things, the Act provided funding to the Department of Energy (DOE) to cost-share the design, construction, and operation of Clean Coal Technology (CCT) projects that demonstrate the feasibility of technologies capable of retrofitting or repowering existing coal-burning power plants to obtain reduced emissions of sulfur dioxide and oxides of nitrogen.

On May 1, 1989, DOE issued Program Opportunity Notice (PON) Number DE-PS01-89FE61825 for Round III of the CCT program, soliciting proposals to conduct cost-shared CCT projects to demonstrate innovative, energy-efficient clean coal technologies that are capable of being commercialized in the 1990s. The ENCOAL Mild Gasification Demonstration Project was selected from among 48 proposals received.

The CCT program has developed a three-level strategy for complying with the National Environmental Policy Act (NEPA) that is consistent with the President's Council on Environmental Quality (CEQ) regulations implementing NEPA and the DOE Guidelines for Compliance with NEPA. The strategy includes the consideration of programmatic and project-specific environmental impacts during and subsequent to the project selection process. As the first level, DOE published and publicly distributed a Programmatic Environmental Impact Statement (EIS) for the Clean Coal Technology

Demonstration Program (DOE/EIS-0146) in November of 1989. The Programmatic EIS assessed the impacts of all technologies proposed to be demonstrated under the Clean Coal Program. As a second level, prior to project selection, DOE prepared a confidential, project-specific analysis for Internal DOE use in the decision-making process. This Environmental Assessment (EA), which represents the third level of NEPA review, provides a site-specific analysis of the expected environmental impacts of the proposed ENCOAL project.

As required by Section 1508.9 of the CEQ regulations, the sections contained in this EA include the following:

- 1.0 Purpose and Need for the Proposed Action;
- 2.0 Alternatives Including the Proposed Action;
- 3.0 Environmental Impacts of the Proposed Action and the No Action Alternative; and
- 4.0 List of Agencies and Persons Consulted.

1.0 PURPOSE AND NEED FOR ACTION

The DOE plans to enter into a Cooperative Agreement with ENCOAL Corporation, a wholly owned subsidiary of Shell Mining Company, for the cost-shared design, construction and operation of a mild gasification facility based on Liquids-from-Coal (LFC) technology. The facility is planned to be located at the Triton Coal Company's Buckskin Mine near Gillette, Wyoming (Figure 1). The mild gasification process to be demonstrated will produce two new, low-sulfur fuel forms (a solid and a liquid) from subbituminous coal. The new fuel forms would be suitable for combustion in commercial, industrial, and utility boilers.

This EA has been prepared by the DOE to comply with the requirements of the NEPA. The sources of information for this EA include the following: ENCOAL's technical proposal for the project submitted to DOE in response to the CCT, Round III, PON; discussions with Shell Mining Company

Figure 1. General Location Map, ENCOAL Mild Gasification Project.

and ENCOAL staff; the volume of environmental information for the project provided by ENCOAL; and a site visit to the proposed project site.

2.0 ALTERNATIVES

2.1 NO ACTION

Under the No Action Alternative, the ENCOAL LFC mild gasification plant would not be built, and the new technology would not be demonstrated for future commercialization. The potential for national benefits derived from the demonstration of this technology, such as reduced air emissions and cost reductions resulting from the increased heating value of the coal and the reduced fuel shipment weight due to the decreased moisture content, would not be realized. The use and transportation of the coal from the existing mine would continue under the current methods.

2.2 THE PROPOSED ACTION

ENCOAL proposes to construct and operate a facility to demonstrate the LFC mild gasification process for coal. Construction is expected to begin in August 1990, and plant operation would begin in July 1992. Demonstration operations would continue for a 24-month period under the Cooperative Agreement with DOE, after which the project is expected to continue in private commercial operation.

The proposed ENCOAL technology involves the following steps:

- Moisture is removed from coal in a rotary grate dryer.
- Dried coal is transferred to a pyrolyzer where the temperature is increased to decompose the coal chemically and produce gases and residual solids.
- Solids are cooled and processed physically to produce Process Derived Fuel (PDF).
- Gaseous, volatile organic compounds are cooled and condensed to form a Coal Derived Liquid (CDL). Non-

condensable gases are used internally as process heating fuel.

- Off-gas from the dryer is passed through a cyclone and a venturi scrubber to remove particulates and through a flue-gas desulfurization unit to remove sulfur oxides.

The LFC mild gasification process used by ENCOAL differs from conventional coal drying processes in that it produces not only physical changes in the coal but chemical changes as well. The process transforms wet subbituminous coal into a stable, low-sulfur, high-Btu solid fuel (PDF) with composition and handling properties similar to those of bituminous coal, and would also produce a liquid fuel (CDL) from condensation of coal gases generated during pyrolysis. The CDL would be a low-sulfur fuel similar in properties to a low-sulfur, number 6 fuel oil. Spent scrubber solution is discharged to an evaporation-disposal pond. Solid and liquid products from the LFC plant would be transported to on-site silos and storage tanks for storage pending commercial sale. Figure 2 presents a simplified schematic of the ENCOAL LFC mild gasification process.

The proposed project would require approximately 10.5 acres of land. The LFC mild gasification plant would be located on approximately 4.5 acres of a 572-acre federal coal lease (permit area is 1,467 acres) operated by the Triton Coal Company as the Buckskin Mine. The lease is located in Campbell County, 10 miles north of the town of Gillette, Wyoming. (An application was submitted to the Wyoming Department of Environmental Quality in 1989 to extend the mining area to encompass 5,444 acres.) An evaporation-disposal pond would be constructed on an additional 6 acres of land southeast of the plant; this land is included in the mine expansion permit application. The LFC plant would be in close proximity to the mine's on-site railroad loop and an active mining and reclamation area. This rail loop connects to a dedicated, 7-mile spur from Burlington Northern's Gillette North Line. A small-diameter gas pipeline would be installed from State Highway 14/16 west of the mine to the facility. The pipeline is proposed to follow the main access road to the mine. Figure 3 shows the proposed facility locations.

Figure 2. Simplified Flow Diagram

Figure 3. Proposed Facility Layout for the ENCOAL Mild Gasification Project

New facilities to be constructed include the following: the LFC demonstration plant, a crushing and screening building adjacent to the plant, an evaporation-disposal pond, a new 2400-ton coal storage silo adjacent to existing load-out silos, two new PDF storage silos adjacent to existing storage silos, a CDL product storage area (including a 50,000-barrel steel storage tank), CDL loading facilities, a 3-mile natural gas pipeline, and upgrading of the existing power substation at the mine site.

The Buckskin Mine currently operates with the approval of the State of Wyoming, which regulates mining, reclamation, air quality, water quality, and solid waste programs. The permit for the existing mine includes the following activities: construction of ancillary buildings and coal handling facilities, including a truck dump, primary and secondary crushers, transfer/sampling towers, storage and loadout silos and rail spur and loop; wastewater and sedimentation control devices; topsoil and overburden stockpiles; and water wells. The Buckskin Mine facilities will be operational throughout the mine-life, which is currently estimated to extend until at least the year 2030.

The LFC plant would use run-of-mine (ROM) coal from the Buckskin Mine that would be continuously processed at a rate of 1000 tons per day. Buckskin ROM coal is typical of the coals in the eastern end of the Powder River Basin: high moisture content, low sulfur content, and low heating value. Table 1 shows the typical analysis of the feedstock coal in comparison with the resultant PDF. The mine currently produces about 8 million tons annually; the ENCOAL project would consume about 4.5% of the annual mine production. Natural gas, to supplementally fuel the process, would be supplied from an existing Phillips Petroleum pipeline about 3 miles from the plant site. A new pipeline (2- to 6-inch diameter) will be constructed to connect the LFC facility. This will require the temporary disturbance of approximately 0.03 square mile of land along the pipeline right-of-way. Electric power would be supplied by the Tri-County Electric Association, Inc., via a 69-kilovolt line. Additional transformer capacity [from 10 megavolt-ampere (mva) at present to 25 mva; of which 5 mva

Table 1. Run-of-Mine Coal (ROM) and Process Derived Fuel (PDF) Typical Analysis for the ENCOAL Mild Gasification Project

	(As Received)	
	<u>ROM</u>	<u>PDF</u>
Heating Value (BTU/lb)	8,370	12,000
H ₂ O (% wt)	30	4
Ash (% wt)	5	10
Volatiles (% wt)	29	19
Fixed Carbons (% wt)	36	67
Sulfur (% wt)	0.52	0.44
Ash Fusion Temp.	2220	2220
SO ₂ (#/MMBTU)	1.2	.8

is due to the LFC project] and circuit protection equipment would be installed at the main substation on the mine site to meet increased power demand from the LFC plant. Construction of the pipeline and the substation upgrade will be performed by the respective utility companies. A landowner waiver may be required for a 50-foot wide pipeline right-of-way. No permits are required for these actions.

Operation of the plant's flue gas desulfurization scrubbers would consume about 769 pounds of sodium carbonate per hour. Sodium carbonate is available locally and will be delivered by truck and stored in a small bin until it is fed to the flue gas desulfurization unit. Ultimate disposition of this material would be in the evaporation-disposal pond to be constructed for this project. Fugitive dust from coal handling would be controlled by the use of a molasses-based dust suppressant known as MK, which would be applied at a rate of 111 pounds per hour as the PDF is transferred to storage. Area sugar beet plants will be the likely supplier of MK, which will be delivered by truck and stored in a tank until fed to the process. This material becomes part of the PDF product, thus requiring no disposal. Between 5 and 25 pounds of boiler corrosion inhibitors (such as ammonia and hydrazine) would be consumed annually. All materials would be supplied locally (truck delivery) and stored in appropriate containers until fed to the standby, gas-fired boiler. The materials would be consumed and exhausted in the steam used for process heating.

As the demonstration facility would be located entirely within the permitted operating area of the Buckskin Mine, some environmental permits have already been issued that will require only modification to include the construction and operation of the new facility. The Land, Air Quality, and Water Quality divisions of the Wyoming Department of Environmental Quality (DEQ) have primacy for enforcing the mining and reclamation requirements of the federal Office of Surface Mining and the Clean Water Act [National Pollutant Discharge Elimination System (NPDES)] and Clean Air Act regulations

[Prevention of Significant Deterioration (PSD), National Ambient Air Quality Standards (NAAQS)] of the U.S. Environmental Protection Agency.

To date, the ENCOAL project has received Wyoming DEQ approval of an air-quality Permit-to-Construct for the demonstration facility. The permit defines the Best Available Control Technology to be used during the demonstration and establishes allowable stack emission rates for the plant. Following tests conducted during startup of the facility, it is expected that an air-quality Permit-to-Operate will be issued by Wyoming DEQ.

The Water Quality Permit to Discharge for the Buckskin Mine, which applies to discharges from sediment ponds, wastewater reservoirs, and two on-site sewage treatment plants, would need to be amended to include discharges resulting from the solids-handling area wash-down, indirect cooling system, and sewage. Applications for approval of these changes will be submitted to Wyoming DEQ and the Wyoming State Engineer's Office. Table 2 presents the permitting requirements anticipated for the project.

2.3 ALTERNATIVES ELIMINATED FROM CONSIDERATION

2.3.1 Other Technologies

Other technologies that could be demonstrated under the Clean Coal Program were fully assessed by DOE in the confidential, pre-selection analysis. These technologies, therefore, need not receive further consideration.

2.3.2 Other Sites

Alternative sites to the proposed site were considered within the scope of the confidential assessment performed by the DOE prior to selection of this project, which included consideration of such factors as the necessity of locating at a mine site. Therefore consideration of alternative sites has been addressed and eliminated from further consideration.

Table 2. Permitting Requirements for the
ENCOAL Mild Gasification Project

<u>Permit</u>	<u>Agency</u>	<u>Status</u>
Air Permit	Wyoming Air Quality Division (WDEQ-AQD)	Issued
To construct		To be submitted
To operate		
Evaporation Pond	Wyoming Water Quality Division (WDEQ-WQD) Wyoming Land Quality Division (WDEQ-LQD) Wyoming State Engineer's Office (WSEO) Mine Safety & Health Administration (MSHA)	To be submitted
Mine Permit Modification	Wyoming Land Quality Division (WDEQ-LQD)	State review
Safety, Health, Training	Mine Safety & Health Administration	In progress
CDL Storage Tank	Spill Prevention Control Countermeasure Plan (SPCC)	In progress

3.0 ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION AND THE NO ACTION ALTERNATIVE

3.1 THE PROPOSED ACTION

Air Quality

Construction of the demonstration plant and support facilities, including the evaporation-disposal pond, would result in atmospheric emissions of particulate matter in the form of fugitive dust from earthwork and vehicle exhaust. Vehicle traffic is expected to increase by an estimated 10-70 vehicles per day, which includes transportation of construction workers to the site. Gaseous emissions from the internal combustion engines of construction equipment also would include sulfur dioxide (SO_2), nitrogen oxides (NO_x), carbon monoxide (CO), and volatile organic compounds (VOC). Because of the relatively small area of land potentially disturbed (10.5 acres) and because emissions from construction would be limited to a 22-month period and be localized, changes in ambient levels of particulate matter, SO_2 , NO_x , CO, and VOC would be minimal and temporary.

Atmospheric emissions from operation of the demonstration plant would have two major sources: the dryer vent stack and the crusher/screen house. The crusher/screen house would generate total suspended particulate matter (TSP) only (7 tons per year). The dryer stack emissions are summarized in Table 3. Annual releases of each pollutant would be less than the 100 tons per year regulatory threshold that triggers a PSD review of a new source; therefore, the proposed facility would not require a PSD review or permit. The closest Class I PSD area (pristine areas allowing little or no deterioration of air quality) is the Wind Cave National Park, which is approximately 120 miles to the southeast of the project.

Dispersion modeling results indicate that operations emissions of SO_2 , NO_2 , and particulate matter would all be less than existing background concentrations of each. The sum of background concentrations and maximum predicted ambient pollutant concentrations from the ENCOAL project would be

Table 3. Air Emissions Summary for the Encoal Demonstration Project

Tons/Year at Anticipated Operating Conditions			
Pollutant	Dryer Vent Stack	Crusher/ Screen House	Major New Source (PSD)*
SO ₂	71.6		100
SO ₃	7.0		
NO _x	75.5		100
CO	98.0		100
HC (VOC)	43.0		100
Particulate	75.0	6.78	100
H ₂ SO ₄	0.0		N/A
Be	<0.0005		N/A
Pb	<0.0005		N/A
Flourine (as fines)	0.0029		N/A
Hg	0.0		N/A
CO ₂	52,000		N/A

* Prevention of Significant Deterioration

well below Wyoming and National Ambient Air Quality Standards for these pollutants. Table 4 presents this information. These data were presented to the Wyoming DEQ-Air Quality Division for review in issuance of the permit-to-construct. It should also be noted that Wyoming DEQ Air Quality Standards are more stringent than NAAQS.

In addition, the plant would emit about 52,000 tons of carbon dioxide per year. As a comparison, a 1000-MW bituminous coal-fired power plant emits about 17.5 million tons of carbon dioxide per year. Although carbon dioxide is not generally considered to be an air pollutant, increases in atmospheric carbon dioxide have been linked to the greenhouse effect or global warming trend. The contribution of the ENCOAL project to global warming is believed to be insignificant when compared with the amount generated by other sources nationally and internationally.

Water Resources

Construction of the demonstration plant and support facilities is not expected to negatively impact existing surface water or groundwater resources. All surface drainage at the mine is currently diverted around the active mine areas. Existing erosion and sedimentation control measures for operations at the site, including the use of filter fences, diversion ditches, and sedimentation ponds, would minimize the potential for contamination of surface waters by surface runoff.

During operation, the plant would consume approximately 71,400 gallons of water per day (an increase of 42% over current consumption). Water from the mine dewatering sedimentation pond would be recycled for process use. Total storage capacity of this sedimentation pond is 21.2 million gallons (65.13 acre-feet), with current in-flow to this sedimentation pond ranging from 200-400 gallons per minute, which results in a minimum of 288,000 gallons per day. The recycled water from this pond is the primary source of water for the LFC plant. During dry periods, a backup supply of water would be available

**Table 4. Maximum Ambient Ground-Level Concentrations
Associated with the Encoal Mild Gasification Project**

Pollutant	Average Time	Concentration		Air Quality Standard	
		Existing ($\mu\text{g}/\text{m}^3$)	Projected ($\mu\text{g}/\text{m}^3$)	Wyoming ($\mu\text{g}/\text{m}^3$)	National ($\mu\text{g}/\text{m}^3$)
SO ₂	3-hr	707	707	1,300	1,300
	24-hr	241	241	260	365
	Annual	26	26	60	80
NO ₂	Annual	10	10	100	100
	24-hr	30	45	150	---
PM-10	24-hr	20	35	150	150
	Annual	28	28	50	50

from two existing wells at the mine (612,000 gallons per day total capacity). These wells are completed in the Ft. Union formation and currently provide potable, sanitary, and fire protection water to the mine complex. Historically, water consumption has been about 1% of that which is allowed by the state permit. Groundwater would supply potable water for the project. Operation of the facility is anticipated to increase on-site groundwater withdrawal by less than 1% over the current level. Present and projected water usage is summarized in Table 5.

Ground and surface water rights are permitted by the Wyoming State Engineer's Office. In the event of a dispute over water rights, the State Engineer's Office intervenes and settles the dispute by examining permitted water consumption and the date of permit issuance. Since the LFC demonstration project water consumption volume is small in comparison with permitted consumption, no adverse effect to water conveyance is anticipated.

Operation of the demonstration plant would add two new wastewater streams at the site: plant wash-down and effluent from the flue-gas scrubber. Wash-down from solids handling areas and the screening building would discharge at a rate of 6 gallons per minute to an existing, permitted wastewater pond. Total capacity of this wastewater pond is 2.21 million gallons (6.01 acre-feet). A NPDES permit regulates a point source discharge from the wastewater pond to Spring Draw, a tributary to Rawhide Creek. Both Spring Draw and Rawhide Creek are intermittent and ephemeral streams. NPDES discharge volume under current mining operations is established at approximately 640,000 gallons per day. Other discharge limitations (daily average) for both the wastewater pond and the sedimentation pond (process water source) are the following:

Table 5. Water Impacts and Sources for the ENCOAL Mild Gasification Project

Present Water Consumption:	5,800* Gal/Day (GPD)
Potable	7,400*
Utility	55,000*
Process	100,000**
Dust Control	168,200
Total	
Project Water Consumption	62,352**
Make-up	8,208**
Plant Wash-down	288**
Boiler Feed	576*
Potable	71,424
Total	
New Total Consumption	239,624 GPD
Total Sources:	
Wells (2)	612,000 GPD
Sediment Ponds	288,000
Total	900,000 GPD

* From the water wells.

** From sedimentation ponds.

<u>Effluent</u>	<u>Daily Ave.</u> (mg/l)	<u>Daily Max.</u> (mg/l)	<u>Instantaneous Max.</u> (mg/l)
Total Sus. Solids	30	45	90
Total Iron	3.0	6.0	9.0
Total Manganese*	2.0	4.0	6.0
Oil and Grease	N/A	N/A	10

*only applies when pH is less than 7.0; pH shall not be less than 6.0 nor greater than 9.0.

Scrubber effluent would discharge at a rate of 16 gallons per minute to a proposed double-lined evaporation-disposal pond that will have a leak detection system. The pond will be divided into three cells: 2 one-acre cells, each 17 feet in depth for evaporation of the scrubber effluent; and 1 four-acre cell, 15 feet in depth for ultimate disposal of the scrubber sludge. The disposal cell will be equipped with a drainage layer above the liner to allow further gravity dewatering of the sludge. This water will be collected in a sump and returned to the evaporation cells. The pond will be constructed above the local groundwater surface to allow on-site encapsulation and burial of dewatered sludge at the end of the project life. This pond would require a state permit-to-construct from the Wyoming DEQ (Water Quality Division), but there would be no effluent discharge because all the contained water from the lined pond is expected to evaporate; therefore, a NPDES permit is not required for the evaporation-disposal pond. Provisions to exclude waterfowl and terrestrial wildlife from the evaporation pond will be contained in the permit issued by the state. Wastewater from all sources that contact the CDL would be collected in a surge vessel and returned to the process.

Land Use

A portion of the proposed project would be constructed and operated within an active coal mining area where the existing land use is primarily industrial. Although some of the proposed project site is undisturbed and could be used for wildlife habitat and livestock grazing, the adjacent mining activity makes such use impractical. Construction would flatten the local topography. Upon the ultimate demolition of the demonstration facilities, the land would be recontoured and reclaimed in accordance with the mine permit requirements.

Waste Management

Solid and liquid wastes would be generated by construction and operation. Nonhazardous construction wastes (e.g., cement and debris) would be disposed of in the mine pit in accordance with the Buckskin Mine solid waste disposal permit. Incidental hazardous wastes resulting from construction (e.g., paints, solvents, and lubricants) and routine maintenance (e.g., solvents, cleaning solutions) would be accumulated on-site in accordance with Resource Conservation and Recovery Act (RCRA) regulations with subsequent removal and ultimate disposal by a RCRA-licensed carrier to one of several RCRA-licensed disposal facilities approved by Shell Mining Company. The Buckskin Mine and associated facilities (including the LFC facility) are a conditionally exempt small quantity generator under RCRA regulations. Other non-hazardous solid waste would be collected and hauled by commercial carrier to the county landfill in accordance with current mine practice.

Following the demonstration, evaporation pond sediment (scrubber sludge) would be encapsulated in the pond's synthetic liner and buried in place in accordance with the disposal pond permit. Sediment from the wastewater treatment pond would be removed periodically and disposed of in the mine pit in accordance with the mining permit. Sanitary waste is collected in an

underground holding tank, which is regularly cleaned out by a local contract service. No hazardous waste results from project operation.

Ecological Impacts

Construction and operation of the proposed project is expected to have minimal impact on existing vegetation, wildlife, and habitat. Because of mining and industrial activities, few wildlife frequent the project areas. Because the project is located adjacent to an ephemeral drainage and separated from an intermittent stream by an active mining area, impacts to the aquatic biota of the nearest perennial streams are not expected.

DOE has been advised by the U.S. Fish and Wildlife Service and the Wyoming DEQ by a letter dated April 12 1990 that no federal- or state-listed threatened and endangered species and no critical habitat will be adversely impacted by the proposed project.

Floodplain and Wetlands

Facilities to be constructed for the project are above the 100-year floodplain. No wetlands would be affected by construction or operation at the project site.

Socioeconomic Impacts

Construction of the ENCOAL facilities would require about 100 workers at peak construction in addition to the 130 workers currently employed at the mine. Most of these would come from the local labor pool. The civilian labor force in Campbell County in 1988 was 15,033, with an unemployment rate of 7.1%; thus, the area is capable of supplying the needed workers. Fifteen permanent jobs would be added for operation of the project. The permanent positions would likely include a plant manager, a plant engineer, and thirteen operators and maintenance workers. A few specialized skills may be required; however, the small number of in-migrating workers and families would not

significantly increase the local population. Because of the negligible population increase, adverse impacts to housing, public services, and the local infrastructure are not expected.

Traffic generated by construction and operation would increase somewhat but is not expected to adversely affect the existing traffic patterns and flow in the region.

Cultural Resources

By letter dated April 26, 1990, the State Historic Preservation Officer confirmed that no historic or archaeological resources exist within the project area.

Noise

During construction and operation, equipment and vehicle operation would increase ambient noise levels. Because of the location of the project in an active mining area, off-site perception of ambient changes in noise levels is unlikely. During the operation phase, with the application of noise control measures, the anticipated maximum noise level inside plant boundaries is estimated to be approximately 85 dBA. Natural and man-made sound barriers are expected to reduce the maximum noise level to 65 dBA at the property line, 1000 feet east of the site, which is not accessible to the general public.

Noise from the project would be imperceptible to the nearest off-site human receptor, who is potentially located on State Route 14/16, three miles west of the project site. It is anticipated that the highway traffic noise and the distance from the plant would mitigate impacts to the public from noise generated by plant operations. Three residences are located within a 2-mile radius of the project, with an estimated inhabitation of 6 people. No hospitals, nursing homes, schools or other public facilities are located within a 2-mile radius of the project.

Workplace noise exposure inside plant boundaries will be subject to compliance with Office of Safety and Health Administration's Noise Regulations, and appropriate engineering controls and personal hearing protection will be employed.

Occupational Health and Safety

No negative impacts to occupational health and safety are expected as a result of the proposed action. Any potential exposure of workers to hazards from chemical substances or physical agents will be minimized using a combination of engineering controls, work practices and procedures, and personal protective equipment. Training programs will be implemented to ensure that workers are knowledgeable of potential hazards and effectively able to use these control measures. Surveillance of workplace health and safety will be maintained through an exposure monitoring program, medical surveillance program, and recordkeeping. Workers would be protected from unexpected hazards arising during construction and operation by adherence to the existing occupational health and safety regulations required by ENCOAL's policies and procedures.

Summary

The proposed ENCOAL Mild Gasification Demonstration Project would be constructed on land primarily used for industrial purposes. The air impacts would be minimal; emissions of each criteria pollutant are expected to be less than the 100 tons per year threshold for a major new source and PSD review. The impact on water resources is not expected to be significant. While water usage would increase approximately 40% over current use, the water needs for all process water (make-up, boiler feed, and plant wash-down) will be met by recycling water from a sedimentation pond that collects water from the mining operation. Groundwater will be used for potable water, which will require less than a 1% increase over current withdrawal. The impact of waste disposal

is expected to be minimal. Wastes generated by the process will be non-hazardous and either contained on-site in accordance with state waste disposal permits or transported off-site by commercial carriers to licensed disposal facilities. Incidental hazardous wastes used in construction or routine facility maintenance will be disposed of in accordance with RCRA regulations by a licensed carrier. Noise is expected to be imperceptible at the nearest point of public access to the project location; no noise-sensitive facilities are located within a 2-mile radius of the project site.

3.2 NO ACTION ALTERNATIVE

Under the no action alternative, there would be no change in present conditions at the proposed project site.

4.0 LIST OF AGENCIES AND PERSONS CONSULTED

U.S. Fish and Wildlife Service
Fish and Wildlife Enhancement
2617 East Lincolnway, Suite A
Cheyenne, WY 82001

State Planning Coordinator's Office
Herschler Building, 4th East
Cheyenne, WY 82002

State Historic Preservation Office
2301 Central
Cheyenne, WY 82002

Wyoming Department of Environmental Quality
Land Quality Division
Sheridan District Office
2161 Coffeen Ave., Suite 401
Sheridan, WY 82801

Wyoming State Engineer's Office
Herschler Building, 4th East
Cheyenne, WY 82002

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