EA-1178; Environmental Assessment and FONSI 300 Area Steam Plant Replacement, Hanford Site, Richland, Washington

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SUMMARY

The U.S. Department of Energy needs to take action to reduce energy expenditures and improve system reliability at the 300 Area of the Hanford Site. This action is needed because the existing central steam plant is inefficient, requires significantly more resources, and results in higher emission rates of sulfur dioxide, nitrogen oxides, and fine particulate matter, relative to installation of boiler units designed and sized to individual building needs. The U.S. Department of Energy has made a commitment to the State of Washington to reduce sulfur dioxide and overall air quality emissions.

The 300 Area of the Hanford Site currently provides research and support functions for the U.S. Department of Energy and Hanford Site. Steam to support process operations and facility heating is currently produced by a centralized oil-fired plant located in the 300 Area and piped to approximately 26 facilities in the 300 Area. This plant was constructed during the 1940s and, because of its age, is not efficient, requires a relatively large operating and maintenance staff, and is not reliable.

The U. S. Department of Energy is proposing an energy conservation measure (the proposed action) for a number of buildings in the 300 Area of the Hanford Site. This action includes replacing the centralized heating system with heating units for individual buildings or groups of buildings, constructing new natural gas pipelines to provide a fuel source for many of these units and constructing a central control building to operate and maintain the system. A new steel-sided building would be constructed in the 300 Area in a previously disturbed area at least 400 m (one-quarter mile) from the Columbia River, or an existing 300 Area building would be modified and used. This proposed action and other energy conservation measures for 300 Area facilities are designed to reduce energy consumption and facility maintenance. The proposed action is expected to cost approximately $13 million for installation.

This Environmental Assessment also evaluates alternatives to the proposed actions. Alternatives considered are: (1) the no action alternative; (2) use of alternative fuels, such as low-sulfur diesel oil; (3) construction of a new central steam plant, piping and ancillary systems; (4) upgrade of the existing central steam plant and ancillary systems; and (5) alternative routing of the gas distribution pipeline that is a part of the proposed action.

A biological survey and culture resource review and survey were conducted. The biological survey concluded that no

plant or animal species of concern would be affected by the proposed action. The culture resources review and survey concluded that there are no known cultural or historic properties that would be adversely affected. However, work may be performed within the culturally sensitive zone located within 400 meters (one-quarter mile) of the Columbia and Yakima Rivers. Any work in these areas would require continuous monitoring during construction by a qualified archaeologist. If cultural remains were encountered, work would be stopped, the findings assessed, and actions taken to mitigate impacts. The proposed action includes the tie-in of steam lines to buildings that have been identified as being historically significant. Potential impacts on these buildings have been reviewed with the Washington State Historical Preservation Officer.

Construction impacts from the proposed action would be minimal. Construction traffic, noise, and dust would have no appreciable impact relative to existing activities underway on the site or along the natural gas pipeline route. No radiation exposure is expected. However, there is a potential to encounter radioactive material.

Operational impacts are anticipated to be less than current conditions. The use of natural gas in the boilers would reduce sulfur dioxide, nitrogen oxides, and fine particulate emissions relative to the existing system.

The no-action alternative, upgrade of the existing steam plant, replacement of the existing steam plant, and use of alternative fuels would result in actions that would be more expensive, would offer less efficiency and reliability, and/or would result in higher emissions. Alternative pipeline routing would be shorter but could result in greater disruption of traffic patterns in Richland during the construction period.

There are a number of permitting requirements that have been identified and reviewed as applicable to the proposed action. These requirements would be fully complied with during construction and operation.

The impact of the proposed action on the area economy would be relatively small, and is not expected to disproportionately affect minority or low-income populations.

1 PURPOSE AND NEED FOR AGENCY ACTION

The U.S. Department of Energy (DOE) needs to reduce energy expenditures and improve energy supply reliability at the 300 Area of the Hanford Site.

The 300 Area contains laboratories, research and development facilities, offices, and numerous other support facilities for the Hanford Site. Steam to support process operations and facility heating is currently produced by a centralized oil-fired boiler plant located in the 300 Area and piped to approximately 26 facilities in the 300 Area. This plant was constructed during the 1940s and, because of its age, is not efficient, requires a relatively large operating and maintenance staff, and is not reliable.

The low efficiency and design of the boiler also result in high emission rates of sulfur dioxide (SO_2), nitrogen oxides (NO_x), and particulates (total suspended particulates and fine particulate matter [PM_{10}]). DOE has committed to the State of Washington to reduce sulfur dioxide emissions in the 300 Area (Ecology, 1996a).

2 DESCRIPTION OF PROPOSED ACTION

The proposed action is an energy conservation measure for a number of facilities in the 300 Area of the Hanford Site. The measure includes replacing the centralized heating system with heating units for individual facilities and constructing a new natural gas pipeline to provide a fuel source for many of these units. Implementation of the proposed action would reduce energy consumption and facility maintenance.

The environmental review of the decommissioning of the central 300 Area steam plant and other steam plants on the Hanford Site is addressed by separate National Environmental Policy Act of 1969 (NEPA) documentation (DOE, 1996).

Implementation of the energy conservation activities consists of two phases: construction and operation. Detailed discussions of these two phases are provided in the next two sections.

2.1 CONSTRUCTION

The following is a discussion of construction of the pipeline, maintenance and control building and installation of steam and heating units.

2.1.1 Construction of Natural Gas Pipeline, Distribution Network and Control System

Natural gas would be delivered to the new steam boilers, hot water heaters, and furnaces via a medium pressure main (up to 20 centimeters [cm] or 8 inches [in] in diameter) pipeline and then through a distribution network of 5-cm (2-in) pipes.

The main pipeline would be approximately 11 kilometers (km) (7 miles [mi]) long, and would parallel the existing DOE-owned railroad that serves the Hanford Site. All construction would be performed on the DOE right-of-way, but not under the supporting rail bed. The new pipeline would be tied into the existing Cascade Natural Gas Company pipeline near Thayer Drive and the Bypass Highway. The medium pressure main would terminate at the south end of the 300 Area near the Cypress Gate. A diagram of the proposed pipeline route is shown in Figure 1.

Natural gas distribution on site would be through a distribution network of 5-cm (2-in) pipes. A control system would also be installed to monitor and control the flow of natural gas to these units.

Construction of the pipeline route along the railroad right-of-way would involve excavating to a depth of approximately 1 meter (m) (3.3 feet [ft]), using a backhoe or ditcher. The width of the ditch would be approximately 0.5 m (1.7 ft). Excavated material would be stockpiled next to the ditch and used for backfill after pipe installation. The ditch would be bedded with approximately 10 cm (4 in) of sand or clean, rock-free dirt. The polyethylene pipe would be "fusion" joined, placed in the ditch, and pressure-tested. The pipe would be covered with approximately 5 cm (2 in) of sand or rock-free dirt and then backfilled with the excavated material.

Figure 1 Proposed Natural Gas Pipeline Route

Excavation and backfilling would be performed with heavy machinery such as bulldozers, backhoes, etc. Installation of pipes would require the use of heat fusion tools and mechanical fittings. The equipment used for these activities would be operated by qualified personnel. All offsite areas would be returned to their former contours as work proceeded, and reseeded as appropriate.

Underground interferences would be located prior to excavation to prevent damage to existing utilities. Dust generated during construction would be controlled through localized application of water. Construction across roadways and the railroad right-of way would proceed in such a manner as to minimize traffic disruption. This would include boring under the road and scheduling construction activities during low use periods, and the use of metal plates to maintain traffic flow during peak hours.

The 5-cm (2-in) pipe distribution network would be connected to the main pipeline near the Cypress Gate near the southwest corner of the 300 Area. A diagram of the distribution network is shown in Figure 2.

Construction of the on-site portion of the pipeline would require excavation to a depth of approximately 1 m (3.3 ft). It would involve digging through concrete or asphalt paving in roads, walkways, or parking lots as needed; excavating gravel and dirt to create a ditch along the pre-determined routes; installing the 5-cm (2in) polyethylene pipe and associated instrumentation; cover with approximately 5-cm (2-in) of sand-rock free dirt and then backfilling with the excavated materials; and restoring the sites to the pre-construction conditions and reseeded as appropriate.

Construction in the 300 Area may take place in locations suspected of chemical or radioactive contamination. In those situations, the location would be surveyed to determine the potential hazards. If the area is contaminated, alternative

routing or surface construction would be selected wherever feasible. If alternative routing is not feasible, the work would be performed with appropriately trained personnel. Personal protective equipment, engineering barriers, and administrative controls would be employed as necessary to minimize health risks.

The main control instruments and offices for maintenance personnel would be housed in a building of approximately 460 square meters (m^2) (5,000 square feet [ft^2]). A new steel-sided building would be constructed in the 300 Area in a previously disturbed area at least 400 m (one-quarter mile) from the Columbia River, or an existing 300 Area building would be modified and used.

All construction materials would be transported to the work site by common truck carrier. The materials would be staged in a designated, previously-disturbed laydown area, most likely at the south end of the 300 Area. After completion of the construction, the laydown yard would be restored to its former condition and reseeded as appropriate.

Figure 2 Proposed Natural Gas Distribution

Non-regulated waste would be generated during construction of the new natural gas main and distribution pipelines and construction of the instrumentation building. This waste includes approximately 40 cubic meters (m^3) (50 cubic yards [yd^3]) of broken concrete, 80 m^3 (100 yd^3) of asphaltic concrete, and 80 m^3 (100 yd^3) of miscellaneous trash. Non-regulated waste would be managed, stored or disposed of at an approved landfill. In addition, small amounts of radioactive or hazardous wastes may be encountered. The wastes would be handled in accordance with federal, state, and local regulations as well as DOE Orders as applicable (see Section 6).

Construction of the new main and distribution pipelines and installation of control instruments would last approximately seven months. About 25 workers would be involved in this effort.

2.1.2 Installation of New Steam and Heating Units

Twenty-six steam boilers would be installed to provide heat and/or process steam at seventeen 300 Area facilities. As shown in Table 1, the sizes of these boilers and heaters vary from 10 to 300 horsepower (hp). Natural gas would be used as fuel for these boilers and heaters. In addition, heating for eight other facilities is currently provided using small steam units. The proposed action would replace these with more efficient and low maintenance electric space heaters or natural gas heaters or furnaces.

Most steam boilers would be installed outside the buildings; thus concrete pads would be constructed as needed to support their weight. Penetrations through building roofs or walls would be necessary to connect the boilers to the existing building heating systems. Penetrations would be accomplished by using jack-hammers or power saws. Appropriate safety measures would be employed.

Workers may encounter materials contaminated with radionuclides or hazardous chemicals (including asbestos) in and around these buildings. Personal protective equipment, engineering barriers, and administrative controls would be employed as necessary to minimize health risks. Radioactive or hazardous wastes, if encountered, would be disposed of in accordance with federal and state environmental regulations as well as DOE Orders as applicable (see Section 6). Wet methods, use of glove bags, construction of mini-enclosures, and pipe removal would be used as necessary to limit worker exposure during disturbances of asbestos-covered pipe insulation. Asbestos wastes would be double-bagged, labeled as necessary, and disposed of properly.

Installation of the steam and heating units would be performed concurrently with the pipeline construction. About 40 workers would be involved in this task.

Table 1 Proposed Energy Conservation Activities

Building	Activities (boiler's horsepower and pressure is approximate)

305	Install one 40 hp 15 pounds per square inch (PSI) natural gas boiler
306E	Install one 150 hp 15 PSI natural gas boiler
318	Install one 30 hp 15 PSI natural gas boiler
320	Install two 125 hp 15 PSI natural gas boilers
323/3760	Install one 50 hp 15 PSI natural gas boiler
324	Install two 300 hp 100 PSI natural gas boilers
325	Install two 100 hp 15 PSI natural gas boilers
326	Install two 100 hp 15 PSI natural gas boilers
327	Install one 200 hp 15 PSI natural gas boiler
328	Install one 30 hp 15 PSI natural gas boiler
329	Install two 100 hp 15 PSI natural gas boilers
331	Install two 300 hp 50 PSI natural gas boilers
337/337B	Install two 60 hp 15 PSI natural gas boilers
3705	Install one 15 hp 15 PSI natural gas boiler
3709	Install one natural gas heater
3709A	Install one 10 hp natural gas boiler
3706/3717/3717B	Install one 80 hp 15 PSI natural gas boiler
3720	Install one 125 hp 15 PSI natural gas boiler
3745	Install one 10 hp 15 PSI natural gas boiler
3506A	Install one natural gas heater
382/382B/ 382C/382D	Install one 200 hp 15 PSI natural gas boiler
3711	convert to electric
3713	Install one natural gas heater
3718	convert to electric
3718 A/B	Install one natural gas furnace
3722	Install one natural gas heater
3730	Convert to electric
384	Shutdown existing power plant (addressed by separate EA [DOE, 1996]), reroute backup electrical system, and relocate electrically powered air compressor.

2.2 OPERATION

Operations of the natural gas pipelines, steam boilers, hot water heaters, furnaces, and electric space heaters would require little maintenance. Periodic repairs and calibration of control instruments would be performed to keep the units in operation. Approximately 8-12 operation and maintenance personnel would be needed for this purpose. The current operation and maintenance staff consists of about 29 personnel.

Natural gas would be used as fuel for most of the steam and heating units because it burns very cleanly and efficiently. The total capacity of the units would allow a maximum fuel consumption equivalent to approximately 1,100 billion British thermal units (Btu) annually. This theoretical consumption would be true if the units are operated at maximum output throughout the entire year. However, heating would not be required for the 300 Area facilities during most of the year and actual fuel consumption would be substantially less than the maximum. The actual consumption would be

approximately 180 billion Btu of natural gas in an average year.

3 ALTERNATIVES TO THE PROPOSED ACTION

3.1 NO ACTION ALTERNATIVE

The central steam plant would not be shut down in the no action alternative. Steam would continue to be produced, utilizing number 6 fuel oil as a fuel source, at the large central plant and distributed throughout the 300 Area buildings for heat. Heating units would not be installed in individual 300 Area facilities. A natural gas pipeline would not be built. Cost savings associated with reduced energy and operational costs would not be achieved. The existing steam plant would continue to age, becoming even less efficient and requiring additional maintenance. The existing steam piping would further deteriorate and experience line losses (e.g., leaks). The no action alternative would not fulfill DOE's commitment to the State of Washington to reduce sulfur dioxide emissions in the 300 Area (Ecology, 1996a).

3.2 ALTERNATIVE FUELS

A number of alternative fuel sources for the proposed boilers were considered during the development of the energy conservation measure. These sources include: propane, electricity and fuel oil. Cost savings were the primary consideration in the selection of the proposed boiler fuel. When compared to natural gas, the three other sources have a higher cost per unit of heat delivered and impart higher operation and maintenance costs. Fuel oil does not have the secure availability into the future as does natural gas. When combusted in the proposed boilers, some alternative fuels emit greater quantities of particulates to the air when compared to natural gas. Additionally, use of propane and fuel oil requires on-site locations for fuel storage which represent fire or spill hazards.

Relative to natural gas alternative fuels have:

- Higher cost per unit of heat delivered
- Higher emissions of the fossil fuels available for use
- Higher permitting difficulty
- Higher heating equipment maintenance costs
- Less abundant supply
- On site fuel storage requirements.

3.3 REPLACE CENTRAL STEAM SYSTEM

Under this alternative the existing central steam system throughout the 300 Area would be replaced with a new system. A replacement of the system would reduce some operational costs through elimination of inefficiencies currently experienced with the existing, aged system. The new system would continue to use fuel oil as a fuel source and the cost savings and reduced emissions associated with converting to natural gas as a fuel source would not be realized.

3.4 UPGRADE CENTRAL STEAM SYSTEM

Under this alternative the existing central steam system throughout the 300 Area would be upgraded. An upgrade of the system would reduce some operational costs through elimination of inefficiencies currently experienced with the existing, aged system. The system would use higher grade (e.g., number 1 or 2) fuel oil in order to reduce emissions. Under this alternative the cost savings of a dispersed demand system would not be realized.

3.5 PIPELINE ALTERNATIVE ROUTE

An alternative would be to connect the 300 Area to an existing 15-cm (6-in) natural gas pipeline in the north end of Richland. This pipeline runs west of George Washington Way, terminating just south of Horn Rapids Road; approximately 900 m (3,000 ft) south of the 300 Area (see Figure 1). The most direct route would cross approximately

300 m (100 ft) of disturbed habitat. During peak periods, this pipeline may not be able to support residential, commercial, and educational demand and provide sufficient natural gas to the 300 Area. Meeting these demands and the needs of the 300 Area could require replacing at least 3,000 m (9,000 ft) of the existing line with a 20-cm (8-in) natural gas pipeline or installing an additional 15-cm (6in) pipe.

3.6 COMPARISON OF THE PROPOSED AND NO ACTION ALTERNATIVES

Table 2 provides a comparison of the proposed action and the no action alternative. Operations cost under the proposed action would be reduced due to reduced energy consumption of less expensive fuel (i.e., natural gas) and reduced staff requirements.

Table 2 Comparison of Proposed and No Action Alternatives

Parameter	Proposed Action	No Action
Annual Energy Usage	1.80×10^8 ft^3 (1.80×10^{11} Btu) natural gas	1.87×10^6 gallons (2.86×10^{11} Btu) fuel oil
Operations Staff	8-12*	29
Annual Emissions Nitrogen oxides (NO_x) Sulfur dioxide (SO_2) Carbon Monoxide (CO) Fine particulates (PM_{10})	 4,700kg (5.1 tons) 49kg (0.054 tons) 18,000kg (20 tons) 970kg (1.1 tons)	 21,000 kg (23 tons) 102,000 kg (113 tons) 1,800 kg (2 tons) 6,300 kg (7 tons)

* This staff would also support comparable activities in the 200 Areas, if approved.

4 AFFECTED ENVIRONMENT

The proposed action would take place within the 300 Area of the Hanford Site and along existing railroad right-of-way for a distance of approximately 11 km (7 miles) to the south of the site. The railroad and right-of-way are managed by DOE for support of the Hanford Site (see Figure 1).

The 300 Area and the railroad right-of-way are located in a semiarid region of southeastern Washington. The 300 Area is adjacent to the Columbia River and approximately 2.5 km (1.6 mi) north of Richland. The 300 Area contains laboratories, research and development facilities, offices, and numerous other support facilities for the Hanford Site.

The proposed pipeline route would cross existing roads, some of which are heavily used for access to and from the Hanford Site and the Tri-Cities from nearby communities. The proposed route generally follows State Highway 240 adjacent to the railroad right-of-way. The land west of Highway 240 along the railroad right-of-way is mostly undeveloped. One apartment complex, other commercial and Federal facilities are located on and adjacent to the proposed route which is predominantly used for commercial and industrial purposes. To the east of the railroad right-of-way is the Bypass Highway and residential and commercial development. Utilities are co-located or cross the railroad right-of-way.

Community noise levels in North Richland were measured at 60.5 A-weighted decibels (dBA)[1] in June 1981 (Neitzel, 1996). Noise along the Bypass Highway (parallel to the proposed pipeline) would range from 70 to 89 dBA at a distance of 15 m (50 ft) (Canter, 1996).

Current traffic on the DOE railroad is light. The proposed route for the pipeline would be within areas along the railroad right-of-way that have been previously disturbed.

Some environmental features would not be affected by the proposed upgrade activity but are noted briefly to ensure all aspects have been reviewed. Groundwater, found at depths of 9 to 19 m (30 to 62 ft) below ground surface, would not be impacted by the proposed upgrade activities. The flood plain of the Yakima River has been mapped and shows that the entire route is above the 100-year floodplain (City of Richland, 1993). The 100-year flood of the Columbia River is not expected to inundate the 300 Area or the pipeline route.

Various biological resource surveys of this region have been conducted for DOE. The study area is botanically characterized as shrub-steppe. The site is dominated by cheatgrass, russian thistle and mustard with interspersed clumps of gray rabbitbrush. Some remnant populations of Sandberg's bluegrass, sand dropseed, big sagebrush and green rabbitbrush were observed during a project specific survey. Other flora include needle-and-thread grass and Indian ricegrass. Heterogeneity of species composition varies with soil, slope and elevation (Neitzel, 1996).

Wildlife observed in and around the 300 Area include species that are candidates for state or federal listing as endangered or threatened or are listed as monitor species by Washington State. The majority of these species use the wetter (riparian) zone along the Columbia River and would not be impacted by the proposed upgrade activities. Three of these species are associated with the shrub-steppe habitat surrounding the proposed pipeline route. These activities comprise a small portion of the available habitat and no species are known to depend on the habitats within the 300 Area (Brandt et al., 1993). The Washington Department of Fish and Wildlife reviewed their Priority Habitat and Species maps for wetlands and other priority species and found none in the immediate vicinity of the proposed project (WDFW, 1996a). Further consultation revealed the presence of three riparian areas south of Van Giesen Street within 400 m (one-quarter mile) of the railroad right-of-way. One location is noted as having a regular large occurrence of wintering waterfowl (WDFW, 1996b).

An archaeologic and historic review reveals that, with the exception of the 300 Area, no historic properties included or eligible for inclusion on the National Register of Historic Places are likely to be impacted by pipeline construction. Inventory along the railroad lines resulted in the identification of no National Register of Historic Places cultural resources. Scattered historic debris and portions of a historic irrigation canal were identified during studies conducted along the alternative gas line route (see Figure 1) east of Stevens Drive and north of Horn Rapids Road.

Within the 300 Area are a number of historic structures, which have been determined eligible for the National Register of Historic Places as contributing properties to a Hanford Site Historic District. A list of all properties that would require mitigation has been completed and submitted to the Washington State Office of Archaeology and Historic Preservation for review and inclusion in the Historic District. This list, which is subject to change, includes 17 structures in the 300 Area proposed for gas boiler modification. Mitigation of impacts to these structures would be covered under the "Programmatic Agreement among the U.S. Department of Energy Richland Operations Office, the Advisory Council on Historic Preservation, and the Washington State Historic Preservation Office for the Maintenance, Deactivation, Alteration, and Demolition of the Built Environment on the Hanford Site, Washington" (DOE, et al., 1996).

See the cultural resources evaluation, Appendix B, for additional details regarding the historic and archaeologic characteristics of the project area.

More information is provided in the *Hanford Site National Environmental Policy Act (NEPA) Characterization* report (Neitzel, 1996), and the 300-FF-1 Operable Unit remedial investigation report (DOE, 1993).

dBA or the "A-weighted sound-level" scale is most representative of the human ear response to noise.

5 ENVIRONMENTAL IMPACTS

5.1 CONSTRUCTION

The major portion of the construction that would take place during implementation of the proposed action would not directly involve radioactive or other hazardous materials, but would present common construction hazards and impacts.

All construction work on the Hanford site would take place under procedures and controls to ensure that appropriate radiological and industrial safety precautions are followed to prevent inadvertent exposures, accidents and injuries. These procedures and controls would include radiological surveys and assessments of any potentially contaminated areas that might be involved in the construction or demolition of existing systems, and pre-job safety briefings to ensure that any known hazards are described and understood and appropriate safety measures taken.

Disturbances to soil surfaces would be restored by backfilling, compaction and reseeding, as appropriate. All construction activities would take place in previously disturbed areas. The only consumption of nonrenewable resources would be the relatively minor amounts of concrete and metals used in the heating equipment and pads, and construction vehicle fuel used. There would be no releases of contaminants to the soil or groundwater from implementation of this proposed action, and no anticipated releases of any radioactive or hazardous materials.

Small amounts of construction waste and debris would be generated during implementation of the proposed action. This waste would be surveyed as necessary to ensure that it was free of radioactive and hazardous constituents and disposed of at approved landfill(s). If any radioactive or hazardous materials are encountered during construction activities, appropriate precautions would be taken to control airborne concentrations and any wastes produced. Any contaminated waste would be properly characterized and disposed in accordance with all applicable regulations. Only incremental impacts on the Richland City Landfill or other Hanford waste disposal facilities are anticipated.

5.1.1 Air Quality

Some dust, vehicle exhaust gases, and heat from construction equipment would be released to the air as a result of construction activities associated with implementing the proposed action. Dust mitigation measures would be implemented as needed to control dust levels. The incremental effects of dust, vehicle exhaust emissions and equipment heat rejection on the local air quality would be negligible compared to the routine daily traffic in the area. Non-toxic materials would be used for insulation to ensure that workers and facility occupants are not exposed to harmful vapors or materials during construction or operations of the enhanced systems.

5.1.2 Accident Risk

Potential accidents during construction of the energy conservation measures proposed would include routine industrial events associated with heavy equipment, excavation of pipelines and other underground utilities (electrical power, water mains, sewer lines, etc.) and building construction. These accidents can result in generally accepted routine risks of accidental death or injury associated with construction work. Pre-job safety briefings and worker training would be in place to minimize anticipated accidents and resultant consequences.

Based on a review of the construction zones and currently known areas of radioactive contamination in the 300 Area, the probability of accidents involving radioactive contamination would be minimal. However there are unknowns associated with the 300 Area, and excavation work could encounter radioactively contaminated soil and could uncover or break abandoned radioactively contaminated lines. Radiological surveys and as low as reasonably achievable (ALARA) evaluations of potentially contaminated areas impacted by construction activities would be performed to ensure that workers are not inadvertently exposed to radioactive materials without appropriate protective clothing and devices to minimize the consequences of any contact. Stringent radiological exposure limits would be enforced to ensure that no unacceptable doses are received by workers involved in implementing the proposed action. In addition a Safety Analysis Report will be performed on applicable buildings and related Energy Conservation Measures. Acceptance of the Safety Analysis Report is a prerequisite to the acceptance of the applicable Energy Conservation Measure.

5.1.3 Health Effects

Using industry-wide accident statistics (NSC, 1995) for construction workers of 2.4×10^{5} disabling injuries and 7.3×10^{8} deaths per work-hour, and projected personnel requirements estimated for the project of 45,000 work-hours, the total average numbers of projected industrial disabling injuries and deaths from implementing the proposed action are

estimated to be 1.1 and 0.0033, respectively. On the job training and management emphasis of safety would be used to reduce the possibility of disabling accidents to the degree practicable.

5.1.4 Noise and Sound Levels

Ambient noise levels would temporarily increase in the immediate vicinity as a result of project construction activities. Noise measured at construction sites with equipment comparable to the proposed action ranges from 65 to 88 dBA (Canter, 1996). These noise levels would be in the same range and would be masked by the noise level of the Bypass Highway. Construction would take place during daylight hours and would last only a few days in any one location. Workers would wear appropriate hearing protection as necessary.

5.1.5 Cultural Resources

Historic properties are defined as buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, and/or scientific importance. A variety of laws, regulations and statutes, on both the federal and state level, seek to manage or protect such resources. Specifically, Section 106 of the National Historic Preservation Act and its implementing procedures require federal agencies to take into account the potential effects of proposed projects on historic properties listed on or potentially eligible for the National Register of Historic Places.

The Hanford Site and surrounding areas contain a rich diversity of cultural resources, including properties of prehistoric, historic, and traditional Native American significance, many of which date back several thousand years. Many of these sites have been listed on or determined eligible for the National Register of Historic Places. Finally, the Hanford Site contains natural resources and traditional and sacred sites important to present Native American cultural groups.

Completion of a records search and literature review revealed that, with the exception of the 300 Area, no significant historic properties are likely to be impacted by pipeline construction. Inventory along the railroad lines resulted in the identification of no significant cultural resources. Scattered historic debris and portions of a historic irrigation canal were identified during studies conducted along the alternative gas line route, east of Stevens Drive and north of Horn Rapids Road, but these do not appear to be significant. Their location, condition, and significance, however, should be verified upon finalization of the project corridor.

Within the 300 Area several properties, proposed for modification, have been determined eligible for the National Register of Historic Places. Mitigation of impacts would be required for these properties as indicated in the Programmatic Agreement. In addition, cultural resource monitoring would be required during all trenching and other subsurface disturbance activities. On-site monitoring would be required during all activities conducted within 400 m (one-quarter mile) of the Yakima River, during pipeline installation, and the Columbia River, during pipeline installation and boiler installation. See Appendix B, "Cultural Resources Evaluation" for additional information on mitigation measures required for the proposed action.

5.1.6 Transportation

Impacts to the existing Hanford Site and the City of Richland transportation system due to constructing the natural gas pipeline, installing the proposed boilers and heaters, and performing the other associated energy conservation measures would be minimal. Approximately 250 truck trips would be generated as equipment is brought onto the Hanford Site. An additional 65 trips per day would be anticipated as workers supporting the construction activities travel to and from their work locations. These trips would typically be confined to within and south of the 300 Area. When compared to the estimated 17,300 vehicles that pass the 300 Area each work day, the additional traffic would not appreciably impact the existing Hanford Site roadway service levels or distribution. Although portions of the Hanford Site railroad system and the proposed natural gas main footprint are in close proximity to each other, it is not anticipated that the localized construction activities would impact use of the railroad system.

As natural gas distribution lines are installed, congestion in the vicinity of the installation work may be expected. As

needed, traffic revisions would be used to assure smooth traffic flow. These localized revisions would be of short-term duration, and would be used only as needed during the construction activities.

The natural gas pipeline may have to cross the railroad line one or more times. Railroad crossings would be bored under the rail bed and are not expected to disrupt rail traffic.

5.1.7 Ecosystems

A biological survey along railroad right-of-way revealed disturbed habitat (see Appendix A). Installation of the gas line and boilers under the proposed action would disturb only small areas of habitat. The impact of this activity on the ecosystem as a whole would be minimal. The habitat is considered low quality, with most areas supporting non-native species of grass due to previous disturbance. Three riparian/wetland areas are located within 400 m (one-quarter mile) of the railroad right-of-way south of Van Giesen Street. No direct disturbance is anticipated. Waterfowl using these wetlands are probably acclimated to some human activity as this area is within a suburban area (WDFW, 1996b).

5.2 OPERATION

Operation of the energy conservation measures proposed in this Environmental Assessment would have the effect of lowering environmental impacts from process steam generation and space heating at the 300 Area through improved efficiencies of boilers and heating units, as well as converting to more cleanly burning fuel. Routine operations would not result in any radioactively contaminated effluents or hazardous materials emissions. The only releases would be exhaust gases from combustion of natural gas.

5.2.1 Accident Risk

Use of natural gas as a fuel supply introduces the risk of leaks that could lead to explosions or asphyxiation if the leaks occurred in confined spaces. This risk has been shown over many years to be very small and acceptable in residential and commercial uses. Mercaptan is routinely added to natural gas to provide an odor warning of leaks. All piping, boilers and heating equipment would be designed and inspected to meet applicable codes and standards, and would be leak tested prior to placement into service. All steam and hot water systems would include code-required pressure relief devices to preclude the possibility of steam explosions. Non-toxic materials would be used for insulation. No credible accidents have been identified that are directly associated with implementation of the proposed action. Maintenance workers supporting the new steam supply and heating equipment would experience the routine risks common to similar industrial activities.

5.2.2 Health Effects

Using industry-wide accident statistics (NSC, 1995), for transportation and utility workers of 2.1×10^{-5} disabling injuries and 6.13×10^{-8} deaths per work-hour, and projected operating personnel requirements estimated for operations of 42,000 work-hours per year, the total average numbers of projected industrial disabling injuries and deaths from operating the proposed energy conservation measures are estimated to be 0.88 and 0.0026 per year, respectively.

If work takes place in a radiation zone, the recommendations of a radiation control organization would be followed in the performance of the work. These recommendations may include working within a "greenhouse" or other controlled environment, equipment and personnel radiation surveys and monitors, and/or the use of personal protection equipment by the workers. Based on the application of these measures, minimal radiological exposure impacts would be associated with operation of the proposed energy conservation measures. No hazardous material exposure impacts would be associated with the proposed energy conservation measures.

5.2.2.1 Air Quality

Operation of the new natural gas boilers and space heaters would cause air emissions of combustion products from

burning natural gas. The anticipated annual consumption of natural gas would be about 5.1 million m^3 (180 million cubic feet [ft^3]). The resulting emissions are shown in Table 3. These are compared to 1993 emissions for the 300 Area reported in Neitzel (1996). Implementing the proposed action would result in a reduction in NO_x, SO_2, and PM_{10} emissions and an increase in CO emission for the 300 Area. Carbon monoxide emission from the proposed action would average about 1.8 kg (4.0 pounds) per hour. This would be less than the emissions that would result from two automobiles traveling at 100 km (62 mi) per hour (Canter, 1996).

Leak testing and surveillance of the natural gas distribution system and burners designed and constructed to applicable codes and standards ensure that fugitive emissions of natural gas are minimized.

Table 3 Comparison of Emissions (per year)

Material	Proposed Action	No Action Alternative
Nitrogen Oxides (NO_x)	4,700 kg (5.1 tons)	21,000 kg (23 tons)
Sulfur Dioxide (SO_2)	49 kg (0.054 tons)	102,000 kg (113 tons)
Carbon Monoxide (CO)	18,000 kg (20 tons)	1,800 kg (2 tons)
Fine Particulates (PM_{10})	970 kg (1.1 tons)	6,300 kg (7 tons)

5.2.2.2 Radiation and Chemical Releases

No radioactive or other hazardous materials would be released as a result of implementation of operations under this proposed action.

5.2.3 Noise and Sound Levels

Localized increases in noise levels are expected in the immediate vicinity of the new boiler annexes, however these noise levels are not expected to exceed allowable noise levels for the protection of hearing of directly involved workers.

5.2.4 Transportation

Approximately 25 daily vehicle trips would be eliminated when the 300 Area central steam plant is closed. In addition, the vehicle trips associated with transporting fuel oil to the central steam plant would also be eliminated due to operating the proposed natural gas pipeline. It is anticipated that the localized activities associated with operating the natural gas main and distribution systems would not physically impact the use of the railroad system.

5.3 IMPACTS FROM ALTERNATIVES

5.3.1 No Action Alternative

Impacts of the no action alternative would be increased risk over time of leaks in the system as it continues to age and deteriorate. Operational costs associated with maintenance of a deteriorating system would increase with time. The reduction in emissions and cost savings associated with converting from number 6 fuel oil to natural gas would not be realized (see Table 3).

The no action alternative would not fulfill DOE's commitment to the State of Washington to reduce sulfur dioxide emissions in the 300 Area (Ecology, 1996a).

5.3.2 Alternative Fuels

A number of impacts are associated with using fuels other than natural gas. Fuel costs are expected to be higher. Greater risk is associated with using these alternative fuels because their future availability and cost are less certain. Boiler retrofitting costs might, therefore, be incurred at some point in the future if another fuel were chosen for the boilers. Use of another fossil fuel would result in increased air emissions, and would therefore slow the permitting process. Additionally, fuel storage locations for the fossil fuel would have to be constructed, thus increasing the cost of the project, reducing the overall energy conservation savings, and increasing the potential of impacting the environment. Additionally, use of propane and oil requires on-site locations for fuel storage which represent fire or spill hazards.

5.3.3 Replace Central Steam System

Construction costs for a new central steam system would be higher than the proposed action. Operational costs associated with maintenance of a deteriorating system would be reduced after the system was replaced. However, the energy efficiencies associated with tailoring energy needs to specific facilities would not be achieved.

5.3.4 Upgrade Central Steam System

Impacts from upgrading the central steam system would include a reduction in the operational costs associated with maintenance of a deteriorating system. The reduction in emissions and cost savings associated with converting from fuel oil to natural gas would not be realized.

5.3.5 Pipeline Alternate Route

The existing 15-cm (6-in) pipeline in the north end of Richland is currently committed to existing and anticipated domestic, commercial, and educational users in that part of town. During peak periods, this pipeline may not be able to support these uses and provide sufficient natural gas to the 300 Area. Meeting these demands and the needs of the 300 Area could require replacing at least 3,000 m (9,000 ft) of the existing line with a 20-cm (8-in) natural gas pipeline or installing an additional 15-cm (6-in) pipe. Both of these alternatives would require excavation and construction work along one of the most heavily traveled streets in Richland.

5.4 CUMULATIVE IMPACTS

Cumulative impacts from the proposed energy conservation measures would include a small increase in the amount of solid waste sent to onsite and offsite solid waste disposal facilities. Reduced air emissions during operations would provide a beneficial impact and enable DOE to meet more stringent air pollution prevention standards. The temporary increase in the number of onsite workers during the construction period, when compared to the overall decline in the Hanford Site work force, is expected to be negligible. The decrease in the number of onsite workers during the operations period is expected to very minimally impact the regional socioeconomic structure.

Hanford Site emission for NO_x, SO_2, and PM_{10} would decline and CO emissions would increase. These, when considered in conjunction with future proposed Hanford Site actions would result in a measurable change in air quality only in the 300 Area, and are expected to pose no threat to health.

5.5 ENVIRONMENTAL JUSTICE

Executive Order 12898 (59 FR 7629), *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires that federal agencies identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of their programs and activities on minority and low-income populations. DOE is in the process of developing official guidance on the implementation of the Executive Order.

With respect to this project, environmental justice issues would concern either socioeconomic conditions or health risk

exposures. The impact of the proposed action on the area economy would be relatively small, and is not expected to disproportionately affect minority or low-income populations. The proposed action is not expected to substantially affect human health or result in disproportionately high and adverse impacts to minority and low-income populations.

6 PERMITS AND REGULATORY REQUIREMENTS

Several permit and regulatory requirements would be required to support the proposed action. These requirements pertain to effluent emissions from the boilers and potential asbestos emissions that may be generated during the possible disturbance of some existing piping systems. Other regulations require proper management of dangerous and radioactive wastes that could be generated during the action. Additional regulatory requirements provide for the protection of cultural and historical resources, as well as priority wildlife habitat and species.

6.1 AIR REQUIREMENTS

Under Washington Administrative Code (WAC) 173-400-110, "New Source Review," a notice of construction would be submitted to the Washington State Department of Ecology (Ecology) regarding the anticipated emissions from the boilers. Based on the information contained in the notice of construction, Ecology would issue an order of approval containing conditions necessary to maintain the regional air quality (WAC 173-400-113). These conditions would be complied with throughout the operational life of the boilers.

These boilers may qualify as being a single source because they would be located on the contiguous Hanford Site and would be under the common control of DOE [WAC 173400030(69)]. If these boilers qualify as a single source, a single notice of construction would be submitted. However, it is possible the more than one notice of construction may be required. Best Available Control Technology would be used as necessary to ensure compliance with emissions requirements. Additionally, reasonable precautions would be used to prevent fugitive dust generated during the installation of the fuel pipeline and boilers from becoming airborne [WAC 173400040(8)].

An agreement between Ecology and DOE was recently developed to reduce air pollution at the Hanford Site (Ecology, 1996b). In the Agreed Order, Ecology accepts commitments provided by DOE. These include the discontinued operation of four boilers located at the 300 Area Powerhouse; a 25 percent reduction (from calendar year 1995 emissions) in SO_2 emissions from the 300 Area during the period July 1, 1997 through June 30, 1998; a 50 percent reduction (from calendar year 1995 emissions) in SO_2 emissions from the 300 Area during the period July 1, 1998 through June 30, 1999; and by July 1, 1998 discontinue use of high-sulfur fuel oil (exceeding 0.7 percent by volume) on the Hanford Site. Additional commitments require new emission sources to contribute to the overall emission reductions and use of Best Available Control Technology standards as established by Chapter 173-400 WAC.

Washington's Prevention of Significant Deterioration program (WAC 173-400-141) is designed to preserve air quality areas, such as Benton County, where ambient standards have been met. The Prevention of Significant Deterioration program applies to emissions sources that have the potential to emit over 227,000 kg (250 tons) per year of a regulated pollutant; over 91,000 kg (100 tons) per year of a regulated pollutant if the source falls within one of 28 listed source categories; or, as a result of a modification, would result in a significant net emissions increase of a regulated pollutant (40 CFR 52.21). Emissions data from the existing steam plant would be provided to Ecology along with the potential to emit emissions data from the proposed natural gas boilers. This would demonstrate that the net change in emissions would not be sufficient for entry of the proposed boilers into the Prevention of Significant Deterioration program.

Sections of existing steam piping potentially lagged with asbestos insulation could be disturbed during activities associated with the proposed action. These activities would typically be small-scale, short-duration operations. The U.S. Environmental Protection Agency has established notification requirements and procedures for emission controls for asbestos under 40 CFR Part 61 Subpart M, "National Emission Standard for Asbestos." This program is administered for the EPA by the Benton County Clean Air Authority (Clean Air Authority Regulations, Article 8). The Benton County Clean Air Authority would be notified pursuant to 40 CFR 61.145(b)(4) a minimum of 10 working days before starting activities that would disturb in excess of 20 square feet or 35 linear feet of asbestos-containing material. Proper engineering controls and work practices would be used to limit employee exposure and control

asbestos emissions.

6.2 WASTE MANAGEMENT REQUIREMENTS

The Resource Conservation and Recovery Act, as amended, provides the basic framework for regulation of hazardous waste. Much of the federal program is administered by Ecology through the dangerous waste regulations of Chapter 173-303 WAC. These regulations control the generation, transportation, storage, and disposal of dangerous waste and mixed waste (dangerous waste portion only) through a comprehensive "cradle to grave" system of waste management techniques and requirements. Any dangerous waste generated during activities associated with the proposed action would be properly managed in accordance with the requirements established at Chapter 173-303 WAC. Any radioactive waste generated during these activities would be properly managed in accordance with DOE Orders and regulations.

6.3 PROTECTION OF HISTORIC RESOURCES

A variety of laws, regulations, and statutes seek to manage or protect historic resources. Such resources include buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, and/or scientific importance. The requirements include the Antiquities Act of 1906; Reservoir Salvage Act of 1960; National Historic Preservation Act of 1966; National Environmental Policy Act of 1969; Executive Order 11593 (Protection and Enhancement of the Cultural Environment, 1971); and the Archaeological and Historical Preservation Act of 1974. Section 106 of the National Historic Preservation Act and its implementing procedures require federal agencies to take into account the potential effects of proposed projects on historic properties listed on or potentially eligible for the National Register of Historic Places. A literature search of existing cultural resources reviews has determined that with the exception of the 300 Area, no significant historic properties are likely to be impacted by the natural gas pipeline construction. Mitigation measures would be developed for those historic properties within the 300 Area impacted by the proposed action. Any work within 400 m (1,300 ft) of the Yakima and Columbia Rivers would be monitored by a qualified archaeologist and coordinated with DOE and appropriate American Indian Tribal Government representatives. If additional or previously recorded cultural resources are identified during any phase of the proposed action, work would be stopped, the findings assessed, and appropriate mitigation measures taken.

6.4 PROTECTION OF PRIORITY HABITATS AND SPECIES

The Endangered Species Act provides for a program for the conservation, protection, restoration, and propagation of selected species of native fish, wildlife, and plants. The Washington State Department of Wildlife, Priority Habitat and Species Program has been consulted to determine whether federal and state priority habitat and species are known to be in the vicinity of the proposed activities (WDFW, 1996a). Priority habitats have unique or significant value to many species. Priority species are wildlife species requiring protective measures for their perpetuation due to their population status, their sensitivity to habitat alteration, and/or their recreational importance. A survey of the proposed natural gas pipeline location has occurred. No known priority habitats, plants, or animals were identified. If priority habitat and species are encountered, work would be stopped, the findings assessed, and actions taken to mitigate impacts.

7 CONSULTATIONS

The following agencies and tribes were contacted during the preparation of this EA.

Federal Agencies

U.S. Environmental Protection Agency

Tribes

The Nez Perce Tribe
Confederated Tribes and Bands of the Yakama Indian Nation

State Agencies

Washington Department of Ecology
Washington Department of Fish and Wildlife

Other Agencies

City of Richland Planning Department

A draft of this document was sent to the following agencies, tribes and organizations for review and comment:

Federal Agencies

U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service

Tribes

Confederated Tribes of the Umatilla Indian Reservation
Confederated Tribes and Bands of the Yakama Indian Nation
Nez Perce Tribe
Wanapum Band

State Agencies

Washington Department of Ecology
Washington Department of Health
Washington State Historic Preservation Officer
Washington Department of Fish and Wildlife

Other Agencies

City of Richland Planning Department
Benton County Clean Air Authority
Port of Benton

Organizations

Washington State Historical Railroad Association
B-Reactor Historical Association
Hanford Advisory Board
Physicians for Social Responsibility

Comments were received from the Benton County Clean Air Authority, the State of Washington, and the B-Reactor Historical Association. These comments were considered in preparing the final Environmental Assessment. Comments received and comment responses are appended to this assessment as Appendix C.

8 REFERENCES

59 FR 7629, Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," *Federal Register*, February 16, 1994.

Brandt, C. A., C. E. Cushing, W. H. Rickard, N. A. Cadoret, and R. Mazaika, 1993, *Biological Resources of the 300-FF-5 Operable Unit*, WHC-SD-EN-TI-121, Westinghouse Hanford Company, Richland, Washington.

Canter, Larry W., 1996, *Environmental Impact Assessment*, McGraw-Hill, Inc.

City of Richland, 1993, Ordinance No. 48-93, An Ordinance of the City of Richland relating to sensitive areas.

Neitzel, D. A., 1996, *Hanford Site National Environmental Policy Act (NEPA) Characterization*, PNL-6415, Rev. 8, Pacific Northwest National Laboratory, Richland, Washington.

DOE 1993, *Phase I Remedial Investigation Report for the 300-FF-1 Operable Unit*, DOE/RL-92-43, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE 1996, *Environmental Assessment: Salvage/Demolition of 200 West Area, 200 East Area and 300 Area Steam Plants, Hanford Site, Richland, Washington*, DOE/EA1177, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE, et al., 1996, "Programmatic Agreement among the U.S. Department of Energy Richland Operations Office, the Advisory Council on Historic Preservation, and the Washington State Historic Preservation Office for the Maintenance, Deactivation, Alteration, and Demolition of the Built Environment on the Hanford Site, Washington"

Ecology, 1996a, Letter of March 6, 1996 from Washington State Department of Ecology to U.S. Department of Energy.

Ecology, 1996b, Agreed Order DE96NM-087, issued by the Washington State Department of Ecology to the U.S. Department of Energy.

NSC, 1995, National Safety Council, *Accident Facts, 1995 Edition*, Itasca, Illinois.

WDFW, 1996a, Washington State Department of Wildlife, Personal communication with Dames & Moore, July 11, 1996.

WDFW, 1996b, Washington State Department of Wildlife, Personal communication with Dames & Moore, August 27, 1996.

Appendix A
Biological Resources Evaluation

Letter concerning Field Investigation at Hanford Site, Page 1
Letter concerning Field Investigation at Hanford Site, Page 2

Table A-1 Vegetation Along Proposed Gas Lines in the 1100 and 300 Areas

Common Name	Genus Species
alfalfa	*Medicago sativa*
cheatgrass	*Bromus tectorum*
Russian thistle	*Salsola kali*
fiddleneck tarweed	*Amsinckia lycopsoides*
prickly lettuce	*Lactuca serriola*
yarrow	*Achillea millefolium*
sand dropseed	*Sporobolus cryptandrus*
gray rabbitbrush	*Chrysothamnus nauseosus*

Russian or Diffuse knapweed	*Centaurea repens or C. diffusa*
meadow salsify	*Tragopogon sp.*
needle-and-thread grass	*Stipa comata*
common mustard	*Cruciferae sp.*
Sandberg's bluegrass	*Poa sandbergii*
bulbous bluegrass	*Poa bulbosa*
big sagebrush	*Artemisia tridentata*
sunflower (arrowleaf balsamroot)	*Balsamorhiza sagitata*
slender wheatgrass	*Agropyron trachycaulum*
Indian ricegrass	*Oryzopsis hymenoides*
green rabbitbrush	*Chrysothamnus viscidiflorus*
prickly pear	*Opuntia sp.*
storksbill	*Erodium cicutarium*

Appendix B
Cultural Resources Evaluation

Appendix C
EA Comments and Responses

Finding of No Significant Impact

March 1997

AGENCY: U.S. Department of Energy

ACTION: Finding of No Significant Impact

SUMMARY: The U.S. Department of Energy (DOE) has prepared an Environmental Assessment (EA), DOE/EA-1178, to assess environmental impacts associated with replacing a centralized heating system in the 300 Area of the Hanford Site, near Richland, Washington. The current heating system would be replaced with heating units for individual buildings or groups of buildings. This activity includes constructing new natural gas pipelines to provide a fuel source for many of these units and construction of a central control building or conversion of an existing building to operate and maintain the system. These energy conservation measures for 300 Area facilities are designed to reduce energy consumption and facility maintenance and reduce emissions of pollutants to the environment. Alternatives considered in the review process were: (1) the no action alternative; (2) the use of alternative fuels, such as low-sulfur

diesel oil; (3) construction of a new central steam plant, piping and ancillary systems; (4) upgrade of the existing central steam plant and ancillary systems; and (5) alternative routing of the gas distribution pipeline that is a part of the proposed action.

Based on the analysis in the EA and considering the comments of the Benton County Clean Air Authority and the State of Washington, DOE has determined that the proposed action is not a major federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. 4321, et seq. Therefore the preparation of an Environmental Impact Statement (EIS) is not required.

SINGLE COPIES OF THE ENVIRONMENTAL ASSESSMENT AND FURTHER PROJECT INFORMATION ARE AVAILABLE FROM:

Mr. William A. Rutherford, Director
Site Infrastructure Division MS A2-45
U.S. Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352-0550
(509 376-7597
E-mail: william_a_rutherford@rl.gov

FOR FURTHER INFORMATION REGARDING THE DOE NEPA PROCESS CONTACT:

Ms. Carol M. Borgstrom, Director
Office of NEPA Policy and Assistance
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585
(202) 586-4600 or (800) 472-2756

PURPOSE AND NEED: DOE needs to reduce energy expenditures and improve energy supply reliability at the 300 Area of the Hanford Site.

BACKGROUND: The 300 Area contains laboratories, research and development facilities, offices, and numerous other support facilities for the Hanford Site. Steam to support process operations and facility heating is currently produced by a centralized oil-fired boiler plant located in the 300 Area and piped to approximately 26 facilities in the 300 Area. This plant was constructed during the 1940s and, because of its age, is not efficient, requires a relatively large operating and maintenance staff, and is not reliable.

The low efficiency and design of the boiler also result in high emission rates of sulfur dioxide (SO_2), nitrogen oxides (NO_x), and particulates (total suspended particulates and fine particulate matter [PM_{10}]). DOE has committed to the State of Washington to reduce sulfur dioxide emissions in the 300 Area.

PROPOSED ACTION: DOE is proposing an energy conservation measure (the proposed action) for a number of buildings in the 300 Area of the Hanford Site. This action includes replacing the centralized heating system with heating units for individual buildings or groups of buildings, constructing new natural gas pipelines to provide a fuel source for many of these units and construction of a central control building or conversion of an existing building to operate and maintain the system. The action would also include rerouting backup electrical lines and relocating electrically powered air compressors. The proposed action is designed to reduce energy consumption and facility maintenance.

ALTERNATIVES CONSIDERED: Alternatives to the proposed action included: (1) no action alternative; (2) use of alternative fuels, such as low-sulfur diesel oil; (3) construction of a new central steam plant, piping and ancillary systems; (4) upgrade of the existing central steam plant and ancillary systems; and (5) alternative routing of the gas

distribution pipeline that is a part of the proposed action.

The no-action alternative, use of alternative fuels, replacement of the existing steam plant, and upgrade of the existing steam plant would result in actions that would be more expensive, would offer less efficiency and reliability, and/or would result in higher emissions. Except for electrical boilers, the use of alternative fuels would result in higher emissions than the proposed action. Alternative pipeline routing would be shorter but could result in greater disruption of traffic patterns in Richland during the construction period.

ENVIRONMENTAL IMPACTS:

CONSTRUCTION: The major portion of the construction that would take place during implementation of the proposed action would not directly involve radioactive or other hazardous materials, but would present common construction hazards and impacts, mitigated through appropriate industrial safety precautions to prevent inadvertent exposures, accidents and injuries. Radiological safety precautions would be followed where appropriate, to prevent inadvertent exposure to radioactive materials.

All construction activities would take place in previously disturbed areas. The only consumption of nonrenewable resources would be the relatively minor amounts of concrete and metals used in the heating equipment and pads, and construction vehicle fuel used. There would be no releases of contaminants to the soil or groundwater from implementation of this proposed action, and no anticipated releases of any radioactive or hazardous materials.

Small amounts of construction waste and debris would be generated during implementation of the proposed action. If any radioactive or hazardous materials are encountered during construction activities, appropriate precautions would be taken to control airborne concentrations and any wastes produced.

Some dust, vehicle exhaust gases, and heat from construction equipment would be released to the air as a result of construction activities associated with implementing the proposed action. Dust mitigation measures would be implemented as needed to control dust levels. The incremental effects of dust, vehicle exhaust emissions and equipment heat rejection on the local air quality would be negligible compared to the routine daily traffic in the area.

Potential accidents during construction of the energy conservation measures proposed would include routine industrial events associated with use of heavy equipment, excavation of pipelines and utilities, and construction of a central control building or conversion of an existing building to operate and maintain the system.

Ambient noise levels would temporarily increase in the immediate vicinity as a result of project construction activities. These noise levels would be in the same range and would be masked by the noise level of the Bypass Highway, for pipeline installation, and existing operations for 300 Area construction.

No significant historic properties are likely to be impacted by pipeline construction. The cultural resource survey along the railroad lines resulted in the identification of no significant cultural resources. Cultural resource monitoring would be required during all trenching and other subsurface disturbance activities. On-site monitoring would be required during all activities conducted within 400 meters (one-quarter mile) of the Yakima and Columbia Rivers. If it is found that this project may result in adverse effects on National Register eligible properties, steps to mitigate the effect will be identified and implemented according to the recently executed Programmatic Agreement on the built environment.

Installation of the gas line and boilers, rerouting of the backup electrical lines, and the relocation of air compressors as proposed under the preferred alternative would disturb only small areas of poor quality habitat. The impact of this activity on the ecosystem as a whole would be minimal.

OPERATION: Operation of the energy conservation measures proposed in this EA would have the effect of lowering environmental impacts from process steam generation and space heating at the 300 Area through improved efficiencies of boilers and heating units, as well as converting to cleaner burning fuel. Routine operations would not result in any radioactively contaminated effluents or hazardous materials emissions. The only releases would be exhaust gases from combustion of natural gas.

Use of natural gas as a fuel supply introduces the risk of leaks that could lead to explosions or asphyxiation if the leaks occurred in confined spaces. This risk has been shown over many years to be very small and acceptable in residential and commercial uses.

If work takes place in a radiation zone, the recommendations of a radiation control organization would be followed. These recommendations may include working within a "greenhouse" or other controlled environment, equipment and personnel radiation surveys and monitors, and/or the use of personal protection equipment by the workers. Based on the application of these measures, minimal radiological exposure impacts would be associated with operation of the proposed energy conservation measures. No hazardous material exposure impacts would be associated with the proposed energy conservation measures.

Operation of the new natural gas boilers and space heaters would cause air emissions of combustion products from burning natural gas. Implementing the proposed action would result in a reduction in NO_x, SO_2, and fine particulate (PM_{10}) emissions and an increase in carbon monoxide (CO) emission for the 300 Area.

Localized increases in noise levels are expected in the immediate vicinity of the new boiler annexes and compressors, however these noise levels are not expected to exceed allowable noise levels for the protection of hearing of directly involved workers.

Approximately 25 daily vehicle trips would be eliminated when the 300 Area central steam plant is closed. In addition, the vehicle trips associated with transporting fuel oil to the central steam plant would also be eliminated due to operating the proposed natural gas pipeline.

CUMULATIVE IMPACTS: Cumulative impacts from the proposed energy conservation measures would include a small increase in the amount of solid waste sent to onsite and offsite solid waste disposal facilities. Reduced air emissions during operations would provide a beneficial impact and enable DOE to meet more stringent air pollution prevention standards. The temporary increase in the number of onsite workers during the construction period, when compared to the overall decline in the Hanford Site work force, is expected to have negligible impacts. The decrease in the number of onsite workers during the operations period is expected to very minimally impact the regional socioeconomic structure.

Hanford Site emission for NO_x, SO_2, and PM_{10} would decline and CO emissions would increase. These, when considered in conjunction with future proposed Hanford Site actions would result in a measurable change in air quality only in the 300 Area, and are expected to pose no threat to health.

ENVIRONMENTAL JUSTICE: The impact of the preferred alternative on the area economy would be relatively small, and is not expected to disproportionately affect minority or low-income populations. The preferred alternative is not expected to substantially affect human health or result in disproportionately high and adverse impacts to minority and low-income populations.

DETERMINATION: Based on the analysis in the EA and considering the comments from the Benton County Clean Air Authority and the State of Washington, I conclude that the proposed replacement of the centralized heating system with heating units for individual buildings or groups of buildings, constructing new natural gas pipelines to provide a fuel source for many of these units, construction of a central control building or conversion of an existing building to operate and maintain the system, and rerouting backup electrical lines and relocating air compressors does not constitute a major federal action significantly affecting the quality of the human environment within the meaning of NEPA. Therefore the preparation of an EIS is not required.
Signature