3.13 HEALTH AND SAFETY

The Umatilla Generating Project has been designed with attention to the reduction of hazards associated with its operation and meets or exceeds state and federal safety standards in all its components. Its design includes safety and emergency systems that would be included during construction to ensure safe and reliable operation of the proposed power plant. Through continuous monitoring of process variables and a thorough maintenance program, safety and reliability would be further increased.

This section discusses health and safety issues including: occupational health and safety; fuel management; use, handling, and storage of hazardous non-fuel substances; fire protection; solid and liquid waste disposal; electric shock hazard; electric and magnetic fields; and noise.

3.13.1 Construction and Operation of Proposed Project

Occupational Health and Safety

Umatilla Generating Company, L.P. intends to implement a comprehensive occupational health and safety program to protect workers during all phases of construction and operation of the proposed power plant. The program would meet or exceed all federal, state, and local requirements.

Health and Safety During Construction: A construction safety program would be implemented by the prime contractor, based on Umatilla Generating Company, L.P.'s safety program and industry standards for accident prevention. At a minimum, the construction safety program would comply with all existing federal, state, and local health and safety regulations. All contractors involved with the proposed project would be required by their contract terms to comply with the construction safety program. Key elements of the plan would include:

- Responsibilities of construction team and subcontractors
- Job site rules and regulations
- Emergency response procedures
- Safety inspections and audits
- Medical services and first aid
- Safety meetings, employee training, and communications, including the hazard communications program and a review of procedures when performing high risk tasks
- Personal protective equipment
- Standard construction procedures
- Accident investigation and reporting

Hazardous materials on site during construction would most likely be limited to equipment fuels (gasoline and diesel), lubricants, solvents, and paints. These would be handled according to standard safety precautions described in the Construction Safety Program, such as no smoking in refueling areas, storing materials in original containers, and proper disposal of empty containers.

Health and Safety during Operation: An employee safety program for plant operations would be implemented by Umatilla Generating Company, L.P. It would include regular employee education and training in safe working practices for general work practices and for particular tasks; communication of hazards in accordance with state and federal standards; accident incident evaluations; administrative safety procedures; emergency response; fire protection and fire response; and maintenance of safety performance data. All operations personnel would be provided with written safety guidance similar to that used at other PG&E National Energy Group facilities. A first aid station containing basic first aid equipment would be established near the control room. First aid training would be offered to all operators.

The project as proposed would provide adequate safety measures for workers, so no significant impacts are identified.

Fuel Management

The natural gas that would fuel the Umatilla Generating Project would be provided by a pipeline connected to the PG&E GTN pipeline, approximately five miles south of the site. The proposed power plant would not have an alternative fuel source. Diesel fuel for the fire pumps would be stored on site in an above-ground tank.

Hazardous Non-fuel Substances:

Several hazardous materials would be used at the power plant. The following list summarizes typical chemicals currently planned for use at the proposed power plant. The chemicals and quantities may change as the plant design is refined.

- Aqueous ammonia used as a reagent in the control of NO_x
- Lubricating oils, insulating oils, hydraulic fluids, and other hydrocarbons used to operate and maintain plant equipment
- Battery acid used in all batteries
- Sodium hypochlorite used as a disinfectant and biocide in cooling tower water
- Sulfuric acid for corrosion control in cooling tower water and to neutralize the pH of cooling tower water
- A neutralizing amine solution, an oxygen scavenging solution, and inorganic phosphates to be used for boiler feedwater treatment

Fire Protection

The proposed power plant site is located in an industrial area with agricultural land nearby. Personnel from the power plant would provide fire control for incipient fire fighting only. Primary fire fighting would be provided by nearby fire departments identified in Section 3.13, Public Services and Utilities.

Electrical Shock Hazard

Power lines can cause serious electric shocks if they are not constructed to minimize the shock hazard. Also, high-voltage transmission lines can cause nearby ungrounded metal objects to become charged, such as wire fencing mounted on wooden fence posts that prevent the energy from discharging into the ground. Providing grounding for the charged object solves this problem.

Noise

There are several significant noise sources in the vicinity of the proposed power plant site, including Interstate Highways 82 and 84 (I-82 and I-84), a railroad line, the Hermiston Generating Plant (a 474-MW combustion turbine electric power generation plant similar to the proposed power plant) and a food processing facility. The proposed power plant would generate additional noise that would increase ambient noise levels and could potentially affect homes and businesses in the project area.

The potentially affected environment includes the vicinity of the proposed power plant site and those areas that could be affected by construction noise at the gas pipeline and electrical transmission line construction sites.

Noise Measurement and Terminology

Noise is commonly defined as unwanted sound that disrupts normal human activities or diminishes the quality of the human environment. Ambient noise consists of all noise generated in the vicinity of a chosen location by typical noise sources, such as local traffic, wind blowing in trees, neighboring industries, and aircraft. The total noise level as measured with a sound level meter is comprised of a typical mix of all sources, both distant and nearby, which constitutes the ambient noise environment at the measurement location.

Noise is measured as a sound pressure level exerted on the microphone of a sound meter. The magnitude of audible sound levels, decibels (dB), has a very wide range. Decibel measurement scales are based upon the logarithm, which is not linear, and consequently sound pressure levels from different noise sources cannot be added arithmetically. For example, a 70 dB sound added to another of equal magnitude will equal a sound of 73 dB.

The apparent loudness of sound is not directly related only to the decibel level as detected by the microphone, since the human ear is more sensitive to higher frequency (or higher pitched) sound. Sound levels are adjusted (or weighted) by the sound meter for the variation in ear sensitivity and are reported as A-weighted decibels (dBA).

Noise levels also change with time. The following methods of averaging noise are commonly used to describe the noise environment and time-varying noise levels:

- Maximum sound pressure level (L_{max}) – the highest sound pressure level observed during a measurement, either from the ambient noise or from a particular noise source.
- Statistical noise level (L_{10}, L_{50}, etc.) – for time-varying noise sources, the statistical sound levels describe how often a given sound level is exceeded during the period of the measurement. For example, L_{10} is the noise level exceeded 10 percent of the time. The L_{90} noise level would be exceeded 90 percent of the time, and would represent the background noise level or lowest ambient noise levels of the noise environment. Particular, identifiable noise sources are added to the background noise, forming the total noise environment.

Typical ambient noise levels are shown in Table 3.13.1.

- Equivalent sound pressure level (L_{eq}) – the sound level of a steady, non-time varying noise which is equivalent in total acoustic energy to the noise level of time-varying noise. The L_{eq} is measured over a specified period of time, usually one hour, and represents an average acoustic energy for that time period.

Noise Regulations

The Oregon Department of Environmental Quality has established noise regulations to "protect the health, safety and welfare of Oregon's citizens from the hazards and deterioration of the quality of life imposed by excessive noise emissions." The regulations are contained in OAR 340-035-0035. New industrial and commercial noise sources are not permitted to increase ambient noise levels above the levels shown in Table 3.13.2. Because the proposed power plant would typically operate 24 hours each day the more stringent nighttime noise limits would apply. In addition, new commercial and industrial sources are not allowed to increase ambient noise levels by more than 10 dBA. Temporary, daytime construction activities are exempt from the noise standards.

Noise Emissions

Operation of the proposed power plant would produce noise. Noise sources would include the combustion turbines and generators, the heat recovery steam generator, the steam turbine, the transformers and the cooling towers. Once built, the gas pipeline and electrical transmission lines would not be noise sources.

Noise would also be produced during project construction. Noise would be produced by a range of construction equipment, including light and heavy trucks, backhoes, bulldozers, graders, cranes, air compressors, welding machines and power hand tools. Pile driving, typically the noisiest of construction activities, would probably not be required.

Sensitive Receptors

Because the proposed power plant would be located in an industrial area there are few sensitive receptors in the vicinity. The closest sensitive receptors are two residences located approximately 762 meters (2,500 feet) northeast and 579 meters (1,900) feet south of the proposed power plant site.

Ambient Noise Measurements

Baseline noise measurements were made at two locations in the vicinity of the proposed power plant site. The two locations are shown in Figure 3.13.1 and are adjacent to the two sensitive receptors referred to above. Traffic on I-82 and I-84 was the dominant source of continuous noise. Intermittent noise sources include traffic on local roads, frequent freight trains on the Union Pacific Railroad tracks just south of the proposed power plant site, and aircraft flyovers. Daytime L_{50} noise levels were in the range of 41 to 53 dBA. Nighttime L_{50} noise levels were in the range of 49 to 58 dBA. The higher nighttime noise levels are probably attributable to higher volumes of truck traffic on I-82 and I-84 during the night.

3.13.2 Environmental Consequences and Mitigation Measures

Construction and operation of the proposed project would not have a significant adverse effect on health and safety. Various features would be built into the proposed project, and operational practices adopted, to ensure that the proposed project meets or exceeds state and federal safety standards in all its components.

Impact 3.13.1 Natural Gas Leakage

Assessment of Impact Natural gas could leak, posing a risk of fire. The proposed project includes design features to reduce the chance of a natural gas leak, as well as prescribed measures to be taken in case of a gas leak. The natural gas pipeline would be constructed in accordance with the requirements of the U.S. Department of Transportation as set forth in 49 CFR and OAR 345-24-060.

Fuel control systems on the gas turbines would include separate fuel shut-off valves to stop all fuel flow to the units under shutdown conditions. Fuel flow would be restarted only when all permissive firing conditions have been satisfied. Each fuel shut-off valve would have a mechanical device for local manual tripping and a means for remote tripping. A vent valve would be provided on fuel gas systems downstream of the pipeline to automate venting of the piping downstream of the shut-off valve when the valve closes.

Isolation valves would be installed on the gas pipeline at the GTN pipeline connection point and at the power plant. Gas handling facilities would be operated in accordance with accepted, proven industry standards and procedures.

Recommended Mitigation Measures No measures beyond those included in the proposed project are recommended.

Impact 3.13.2 Diesel Fuel Spill

Assessment of Impact Three hundred and seventy-nine liters (100 gallons) of diesel fuel would be stored on site for use by the fire pump. Diesel fuel could leak from the tank, posing a fire risk and possible contamination of soils.

The proposed project would include measures to reduce the risk of fire and to contain any spill to prevent contamination. A complete fire protection system would be installed within the buildings and yard areas at the proposed power plant site, reducing the fire risk. Approximately 379 liters (100 gallons) of diesel fuel would be stored in an above-ground tank located on a curbed concrete pad. The volume of the curbed area would be sufficient to contain any spill of fuel without overflow to unsurfaced areas. In the event of a spill, the contents would be contained within the curbed pad and removed by a licensed spill response contractor.

Recommended Mitigation Measures No measures beyond those included in the proposed project are recommended.

Impact 3.13.3 Aqueous Ammonia Spills

Assessment of Impact A 19 percent aqueous ammonia solution would be stored onsite in a 75,708-liter (20,000-gallon) tank. The design of the aqueous ammonia storage and handling subsystem was done with careful attention to the goal of eliminating hazards associated with the use of ammonia. Nonetheless, ammonia could spill and/or ammonia vapor could be released to the atmosphere, posing a health risk.

By using a lower-concentration aqueous ammonia solution, the rate of evaporation for any spilled ammonia is reduced, lowering the risk to humans. Additionally, secondary containment for the ammonia tank would inhibit release of ammonia in the event of a spill. The secondary containment would have the capacity to contain 110 percent of the volume of the ammonia tank, plus the hundred-year, twenty-four-hour storm event. The secondary containment would isolate any spill to a small area, thereby minimizing evaporation of ammonia.

Recommended Mitigation Measures An SPCC Plan should be developed in accordance with 40 CFR 112 and implemented prior to the arrival of any hazardous materials at the proposed power plant site. The SPCC should address issues regarding storage and the proper response should a release or other incident occur. In addition, all applicable reporting requirements mandated under SARA Title III should be met, including the notification of Local Emergency Planning Committees of the quantities and types of chemicals used at the proposed power plant.

All hazardous materials should be stored in structures that meet the requirements of the Uniform Fire Code, Article 80. In addition, a Hazardous Materials Inventory Statement and a Hazardous Materials Management Plan should be written and filed with the Hermiston Fire Department.

Impact 3.13.4 Spills of Other Hazardous, Non-fuel Substances:

Assessment of Impact Hazardous non-fuel substances could spill, with the potential to harm people in the plant and in the surrounding area.

The following measures would be taken in order to prevent and minimize the impacts of a spill of any hazardous, non-fuel substance:

- Management of hazardous substances would be conducted in accordance with all applicable federal, state, and local regulatory standards for public and occupational safety and health protection. Training would be provided to appropriate workers in materials handling and disposal. The storage and conveyance systems for liquid hazardous chemicals have been designed to prevent and contain spills through pumping and storage controls and secondary containment for tanks. Pumping and storage tank controls would include:

- Dry disconnect transfer hose and piping connections
- Automatic pump shut-off on tank high-level indicators
- Redundant tank level indicators and alarms
- Daily inspections
- Supervised unloading and transfer operations

- Foundations and slabs for equipment containing lubricating oil, insulating oil, or hydraulic fluid would be designed to contain any spill.
- Suitable garment coverings would be provided for all personnel handling sulfuric acid
- Curbs would be installed at all chemical storage areas. If a spill occurred, it would be contained in the curbed concrete containment area until it could be removed by a licensed spill contractor.
- Sulfuric acid used for pH control would be stored in two tanks on site. The tanks would be supported on saddles and surrounded by a secondary containment crib. A normally closed drain valve would be provided at the bottom of the crib. The area enclosed by the crib would be partially filled with coarse limestone to passively neutralize any potential leakage from the tank.
- The power plant would incorporate an on site fire suppression system and would be constructed from fire retardant materials to the extent reasonably feasible. The power plant design would incorporate spill prevention and containment designs for storage of all hazardous materials. Compliance with all applicable fire suppression and hazardous material safety requirements would be established in consultation with the Hermiston Fire Department, the State Fire Marshall, and the Building Codes Agency.
- The Umatilla Generating Company, L.P. has submitted a plan as part of the Application for Site Certificate for responding to an emergency at the Umatilla Chemical Depot. The plan is the same as that developed in consultation with the Umatilla County Chemical Stockpile Emergency Preparedness Program for the Hermiston Generating Plant.
- Umatilla Generating Company, L.P. would conduct an Accidental Release Assessment for the proposed project. The assessment would provide the basis for the Emergency Response Plan that would be in place before operations commence.

<u>Recommended Mitigation Measures</u> As noted in the discussion of aqueous ammonia, Umatilla Generating Company, L.P. should prepare an SPCC Plan and emergency response plan regarding storage, handling and spill response for hazardous materials. Preparation and implementation of the plan would be adequate to mitigate the potential impacts of other non-fuel hazardous material spills.

Impact 3.13.5 Fire Potential

Assessment of Impact A fire could occur at the power plant, posing a threat to workers and nearby people and structures. To reduce the risk and consequences of fires:

- A complete fire protection system would be installed within the buildings and yard areas at the proposed power plant site. The system would be designed to meet the requirements of the Uniform Fire Code, as amended by Oregon and the National Fire Protection Association, and all other applicable fire protection standards.
- The fire water system would include a fire water supply loop, fire hydrants, sprinkler systems and hoses placed at appropriate locations. Reserved capacity in the cooling tower basin would serve as the water source for the fire system.
- The turbine housings, the mechanical/electrical control enclosures of the turbines and the switchgear room would be protected by foam or CO_2 extinguishing systems. If the systems were to be activated, an alarm would sound or a visual indicator would light up on the gas turbine control panel.
- Portable fire extinguishers would be placed at key locations within the proposed power plant site. The type and number of portable extinguishers would conform with code requirements.

Recommended Mitigation Measures No measures beyond those included in the proposed project are recommended.

Impact 3.13.6 Electrical Shocks

Assessment of Impact High-voltage transmission lines can cause electrical shocks directly and from induced charges. The transmission line would be designed so that induced currents resulting from the transmission line and related facilities would be as low as reasonably achievable. Umatilla Generating Company, L.P. would agree to a program or ensure that the entity responsible for the transmission line agrees to a program that would provide reasonable assurances that all fences, gates, cattle guards, trailers, or other permanent objects or structures that could become inadvertently charged with electricity would be grounded through the life of the line.

Recommended Mitigation Measures No measures beyond those included in the proposed project are recommended.

Impact 3.13.7 Increase in Electric and Magnetic Fields

Assessment of Impact This section contains a discussion of electric and magnetic fields (EMFs), a brief description of the current understanding of their health effects, and estimates of the maximum electric and magnetic field strengths produced by reconductoring and reinsulating the

UEC's existing Westland-McNary Transmission Line from 115/230 kV to 230/230 kV. These estimates are computed for a height of 1 meter above the ground and include the canceling effects of other electrical transmission lines existing along the proposed transmission line right-of-way.

Oscillating electric and magnetic fields (EMF) at power frequency are generated by all electrical devices. The Earth itself has naturally occurring steady-state magnetic and electric fields. When a conductor (in this case, the power line) is energized, an electric field is formed around the conductor that is proportionate to the voltage. The strength of the electric field is independent of the current flowing in the conductor. When alternating current (AC) flows through a conductor, an alternating magnetic field is created around the conductor. Areas of equal magnetic field intensity can be envisioned as concentric cylinders with the conductor at the center. The magnetic field intensity drops rapidly with distance from the conductor.

In AC power systems, voltage swings positive to negative and back to positive, a 360-degree cycle, 60 times every second. Current follows the voltage, flowing forward, reversing direction, and returning to the forward direction, again a 360-degree cycle, 60 times every second. Each AC transmission circuit carries power over three conductors. One phase of the circuit is carried by each of the three conductors. The AC voltage and current in each phase conductor is out of sync with the other two phases by 120 degrees, or one-third of the 360-degree cycle. The fields from these conductors tend to cancel out because of the phase difference. However, when a person stands on the right-of-way under a transmission line, one conductor is always significantly closer and will contribute a net uncanceled field at the person's location. The strength of the magnetic field depends on the current in the conductor, the geometry of the structures, the degree of cancellation from other conductors, and the distance from the conductors.

Typical Electric and Magnetic Field Strengths: Electric and magnetic fields are found around any electrical wiring, including household wiring and electrical appliances and equipment. Throughout a home, the electric field strength from wiring and appliances is typically less than 0.01 kilovolts per meter (kV/m). However, fields of 0.1 kV/m and higher can be found very close to electrical appliances. Typical electric and magnetic field strengths for some common electrical appliances are given in Table 3.13.3. Average magnetic field strength in most homes (away from electrical appliances and home wiring, etc.) is typically less than 2 milligauss. Very close to appliances carrying high current, fields of tens to hundreds of milligauss are present.

Studies of Health Risk Associated with Electric and Magnetic Fields: Both electric and magnetic AC fields induce currents in conducting objects, including people and animals. These currents, even from the largest power lines, are too weak to be felt. However, some scientists believe that these currents might be potentially harmful and that long-term exposure should be minimized. Hundreds of studies on electric and magnetic fields have been conducted in the

United States and other countries. Studies of laboratory animals generally show that these fields have no obvious harmful effects.

Concern about health effects arose in 1979 when researchers looked at wire code classifications for residences and the incidence of leukemia. The study resulted in a weak statistical link between proximity to power lines and childhood leukemia. Since the release of this study there has been a lot of effort to determine if this statistical link is reproducible and if there are any other human health effects from exposure to EMFs. The National Academy of Sciences (NAS) reviewed more than 500 studies from a period of 17 years and issued a report in October 1996 which says that there is no conclusive evidence that EMFs play a role in the development of cancer, reproductive and developmental abnormalities, or learning and behavioral problems (NRC, 1996). An additional report issued May 4, 1999 by the National Institute of Environmental Health Science came to the conclusion that the data showing the link between EMFs and cancer showed only marginal scientific support and concluded that aggressive regulation was not warranted. The report did recommend that attempts be made to minimize the exposure of the public to EMFs (NIEHS, 1999).

Magnetic Field Analysis and Exposure Assessments: The proposed project calls for reconductoring and reinsulating the UEC's existing Westland-McNary Transmission Line from 115/230 kV to 230/230 kV. The proposed conductor arrangement for the reconductored Westland-McNary Transmission Line consists of two, three-phase, 230-kV circuits with two conductors per phase (a total of 12 wires). In Chapter 2, Figure 2.8 illustrates the typical proposed structural configuration of the Westland-McNary Transmission Line. Figure 3.13.2 illustrates the configuration for that segment of the transmission line that parallels the BPA transmission corridor. Except for special construction required for crossing under other transmission lines, the ground-level magnetic field intensity across the corridor is determined by the currents and geometry of these facilities.

There are 22 residential dwellings found within the 61 meter (200 feet) of the transmission centerline. These houses are located near Powerline Road just south of Umatilla. See the overall map in Figure 3.13.3. The detail map and residential locations with lot location numbers shown for each house are on Figure 3.13.4. Table 3.13.4 lists each lot number and the corresponding distance from the transmission centerline to the house at that location. The table also shows the calculated electric and magnetic field intensity produced by the proposed construction. These estimates are computed for a height of 1 meter above the ground and include the canceling effects of other electrical transmission lines along the proposed transmission line right-of-way.

The maximum peak magnetic field increase at the nearest home or business (11 meter [35 feet] from the centerline of the transmission pole) due to the proposed transmission line route is predicted to increase by 51.5 milligauss. The corresponding maximum peak electric field increase occurs at the same location and is expected to increase by 0.966 kV/m.

Power utilities that operate transmission lines attempt to organize the conductors attached to structures in ways that are consistent and intuitive, so that line workers are less apt to make mistakes in maintenance operations. For the double circuit transmission line proposed here, the most common transmission conductor arrangement would place both A-phase conductors at the top position, both B-phase conductors in the middle, and both C-phase conductors on the bottom. For the case where the power in all circuits flows in the same direction, there is some field cancellation to be gained by rearranging the locations of the phase conductors. Field reduction will be achieved by rearranging the conductors of the second 230-kV circuit so the phases are A-phase, B-phase, and C-phase (top to bottom) on one side of the tower, and C-phase, B-phase, and A-phase (top to bottom) on the other side. Due to resultant cancellation effects, the overall field strengths for this configuration would be less than the existing transmission line configuration.

Recommended Mitigation Measures No measures beyond those included in the proposed project are recommended.

Impact 3.13.8 Exposure of Workers to Electric and Magnetic Fields

Assessment of Impact Any electrical generation plant produces some level of electric and magnetic fields within the plant. Workers in such a plant are exposed to these fields while performing their jobs. The levels and duration of exposure to those that would be working at the Umatilla Generating Project cannot be calculated accurately until the energy facility is designed in detail. However, because worker's exposure to electric and magnetic fields would be intermittent, it is not expected that there would be an unacceptable risk to health.

Recommended Mitigation Measures No measures beyond those included in the proposed project are recommended.

Impact 3.13.9 Operation of the proposed power plant could affect noise levels

Assessment of Impact Noise sources at the proposed power plant would include the combustion turbines and generators, auxiliary equipment in enclosure, the heat recovery steam generator, the steam turbine, the transformers and the cooling towers. The proposed project includes a number of features to reduce noise emissions. They include incorporating shielding, noise dampening and other noise control measures into the design of buildings and equipment.

Total noise emissions for the proposed power plant were estimated by summing the emissions of proposed power plant components that were obtained from the component manufacturers. Generally accepted noise models were used to predict noise levels at the sensitive receptors.

Noise levels at the two closest residences were predicted with the proposed power plant in operation. The L_{50} or median noise levels at the two nearest residential receivers would be 48 and 49 dBA. These noise levels are in compliance with limits established by the Oregon Department of Environmental Quality. Because the proposed power plant would be a relatively constant noise source, compliance with the L_{10} and L_1 limits would also be achieved.

In addition to complying with the noise limits described above, the proposed power plant would not be allowed to increase ambient noise levels by more than 10 dBA. The minimum ambient noise level measured was 41 dBA. To comply with the standard, the proposed power plant would not be permitted to increase noise levels above 51 dBA at the nearest residences. The noise levels at the residences are predicted to be 48 and 49 dBA, and thus compliance would be achieved.

Because the proposed power plant would comply with Oregon's noise standards for new industrial and commercial sources, the proposed power plant would have no significant adverse impacts on noise levels standards.

Recommended Mitigation Measures No measures beyond those included in the proposed project are recommended.

Impact 3.13.10 Construction of the proposed project could affect noise levels

Assessment of Impact Construction of the proposed power plant would involve the operation of a range of construction equipment including light and heavy trucks, backhoes, bulldozers, graders, cranes, air compressors, welding machines and power hand tools. Pile driving, typically the noisiest of construction activities, will probably not be required. Noise levels would be similar to those from any medium to large construction project and would continue for about 20 months.

The equipment used and the noise levels at the gas pipeline construction site would be similar to those at the power plant site but would not persist for more than two weeks at any single location. Noise levels at the transmission line reconductoring sites would be less than at the pipeline construction site, because no excavation would be involved. Noise from transmission line reconductoring would not persist at any one site for more than two weeks.

As noted above, the proposed power plant site is within an industrial area that is subject to noise from a number of existing sources. The nearest sensitive receptor is 579 meters (1,900 feet) away from the proposed power plant site. Although the noise produced by construction activities would be audible at the receptor it would not be qualitatively different from noise already experienced. Engine noise from construction equipment would blend with similar vehicular noise on I-82 and I-84. It is not expected that the increase in noise levels attributable to construction of the proposed power plant would have a significant adverse effect on sensitive receptors.

To reduce noise impacts on nearby residences during construction of the proposed project, most heavy construction work would be scheduled to occur during daylight hours when people are generally less sensitive to noise. Construction work at night would be limited to relatively quiet activities such as work inside buildings and other structures.

All combustion engine-powered construction equipment would be equipped with exhaust mufflers. A complaint response system would be set up at the construction manager's office to address noise complaints if they occur.

Recommended Mitigation Measures No measures beyond those included in the proposed project are recommended.

3.13.3 Cumulative Impacts

Some elements of the proposed project could potentially increase risk to public health and safety. They include the transmission of natural gas in an underground pipeline and use and storage of hazardous chemicals. Although safety features would be built into the proposed project to reduce hazards to public health and safety, the risk of accidents cannot be completely eliminated. The same is true for the other existing and future industrial facilities. Thus, the proposed project and other industrial facilities in the vicinity pose some cumulative risk to public health and safety.

Electric and Magnetic Fields

The effect of electric and magnetic fields on human health has been a matter of controversy for about 20 years, but currently there is no conclusive evidence that electric and magnetic fields cause adverse health effects. The proposed project would decrease the strength of electromagnetic fields along most of the reconductored transmission line. Thus, the proposed project would not contribute to a cumulative increase in electromagnetic field strength.

Noise

The proposed project would be a new source of noise but one that complies with Oregon's noise control regulations. Other significant noise sources in the vicinity of the site include the Hermiston Generating Plant, traffic on Interstate Highways 82 and 84, and trains on the Union Pacific Railroad line. Future industrial and commercial development in the vicinity would likely further increase noise emissions, although these new uses would also have to comply with Oregon's noise control regulations.

Noise levels at the residences nearest to the proposed project would be at or slightly less than noise standards. While the proposed power plant would be in compliance, any new noise sources located near the proposed project would have to be controlled to the degree necessary to prevent any further increase in noise at the residences.

Table 3.13.1:
Typical Sound Levels (Daytime Residual Level Exceeded 90 Percent Of The Time, L_{90})

Descriptor	Typical Range (dBA)	Average
Very Quiet Rural Area	25 to 35 inclusive	33
Quiet Suburban Residential	36 to 40 inclusive	38
Normal Suburban Residential	41 to 45 inclusive	43
Urban Residential	46 to 50 inclusive	48
Noisy Urban Residential	51 to 55 inclusive	53
Very Noisy Urban Residential	56 to 60 inclusive	58

Source: Hessler Associates, Inc. 1994

Table 3.13.2:
Allowable Statistical Noise Levels in Any One Hour

	Measurement Period	
Statistical Noise Level	7 AM to 10 PM	10 PM to 7 AM
L_{50}	55 dBA	50 dBA
L_{10}	60 dBA	55 dBA
L_{1}	75 dBA	60 dBA

Source: OAR, Chapter 340, Division 35, Section 035

Table 3.13.3:
Typical Electric and Magnetic Field Strengths from Common Appliances[1]

Appliance	Electric Field (kV/m)	Magnetic Field[2] (mG)
Coffee Maker	0.030	1 to 1.5
Electric Range	0.004	4 to 40
Hair Dryer	0.040	0.1 to 70
Television	0.030	0.4 to 20
Vacuum Cleaner	0.016	20 to 200
Electric Blanket[3]	0.01 to 1.0	15 to 100

[1] Values are calculated using a distance of 30.5 centimeters (1 foot) from appliance.

[2] By 1 to 1.5 meters (3 to 5 feet), the magnetic field from appliances is usually decreased to less than 1 mG

[3] Values are for distances from a blanket in normal use, not 1 foot away.

Source: Miller 1974, Gauger 1985

Notes: kV/m = kilovolts per meter
mG = milligauss

Table 3-13-4. Electric and Magnetic Fields Calculated for Residences along Powerline Road Due to Project.

LOCATION NO.	DISTANCE FROM THE POLE CENTERLINE * (FT)	ELECTRIC FIELD (KV/m) Proposed	ELECTRIC FIELD (KV/m) Existing**	MAGNETIC FIELD (m-GAUSS) Proposed	MAGNETIC FIELD (m-GAUSS) Existing**
1	35 W	0.969	0.448	51.79	24.79
2	54 W	0.387	0.290	27.84	33.25
3	125 W	0.023	0.114	4.78	8.81
4	180 W	0.020	0.080	1.85	4.26
19	112 E	0.016	0.102	6.54	5.71
20	87 E	0.053	0.086	11.92	8.14
22	125 E	0.023	0.097	4.76	4.75
23	119 E	0.021	0.099	5.27	5.04
24	109 W	0.016	0.102	6.54	5.71
30	203 W	0.018	0.068	1.40	3.46
32	195 W	0.018	0.071	1.50	3.65
34	192 W	0.019	0.074	1.60	3.84
36	186 W	0.020	0.077	1.72	4.06
38	186 W	0.020	0.077	1.72	4.06
41	185 W	0.020	0.077	1.72	4.06
42	190 W	0.019	0.074	1.60	3.84
43	48 W	0.641	0.415	37.86	37.19
44	48 W	0.641	0.418	37.86	37.19
45	61 W	0.293	0.192	23.96	29.75
46	73 W	0.160	0.049	17.92	21.56
50	54 W	0.387	0.290	27.81	33.25
333	200 E	0.018	0.059	1.38	2.27

* For the distances shown with W, W designates west of the pole centerline.
For the distances shown with E, E designates east of the pole centerline along Powerline Road.

** Existing data from the study Hermiston Generating Project EIS July 1994