

## 4.0 Environmental Consequences

### 4.1 Introduction

The purpose of this chapter is to discuss and disclose the potential environmental consequences of the Proposed Action, Proposed Alternatives and the No Action Alternative. An Environmental Impact is defined as a change in the quality or quantity of a given resource due to a modification in the existing environment resulting from project-related activities. Impacts may be beneficial or adverse, may be primary (direct) or secondary (indirect) as a result of an action and they may be permanent and long-term or temporary and of short duration. Impacts may vary in degree from a slight discernable change to a total change in the environment. This impact assessment assumes the successful implementation of all construction and reclamation measures described in:

1. the Plan of Development (POD),
2. the Applicant Committed Environmental Protection Measures (ACEPM-Chapter 2.1.14),
3. the Surface Use Plan (SUP),
4. the Reclamation Plan (Appendix A),
5. all other applicable BLM stipulations.

This analysis compares the impacts of three alternatives, the Proposed Action (enhanced production at undefined spacing using underground access and a commitment to reclaim all existing surface disturbance), the No Action Alternative (continued current operations), and Alternative A (enhanced production at 2.5 acres spacing).

Cumulative impacts result from the incremental impacts of an action added to other past, present and reasonably foreseeable future actions, regardless of the party or parties responsible for such actions. Cumulative impacts may result from individually minor, but collectively significant, actions occurring over a period of time (40 CFR 1508.7).

Residual impacts are unavoidable impacts resulting from the Proposed Action after application of appropriate mitigation (BLM 1988).

The Poison Spider project area has been the site of various human related activities since the early 1900's, including homesteading, oil exploration and production and agricultural operations (livestock grazing). Evidence of mans activity is quite evident in the project area. Past disturbances to the area include construction and operation of numerous well sites and oil fields, crude oil production operations, geophysical exploration, homestead construction and occupancy, and the construction of roads to serve outlying ranches, as well as infrastructure such as gas pipelines, electrical lines, fences and telephone lines. Other oil fields in the general area include (BLM 1981 and WOGCC web page):

Burnt Wagon	Sec 19-T32N-R84W	discovered 1976
South Casper Creek	T33N-R83W	discovered 1919
Iron Creek	Sec 11-T32N-R82W	discovered 1917
Oil Mountain	Sec 35-T32N-R85W	discovered 1945
West Poison Spider	T33-R84W	discovered 1948
Poison Spider Creek	T31-R84W	discovered 1958

The project area is in an active crude oil field. There are no reasonably foreseeable future actions other than the proposed action within the general project area that would contribute to any cumulative impacts. If RWP is successful, it is possible that the UAORF process might be initiated in some of the surrounding fields.

The Proposed Action would result in approximately 17.0 acres of initial surface disturbance from new construction and 31.37 acres of disturbance as a result of the reclamation of areas previously disturbed by oil production activities, for a total short term disturbance of approximately 48.5 acres. The long-term or LOP surface disturbance resulting from shaft and service areas, two outside injection wells, one vent shaft and access roads will be approximately 8.6 acres.

The No Action Alternative would result in the continuation of the current level of production with the possibility of additional wells being permitted in the future. There would be no commitment of enhanced reclamation of areas previously disturbed by field operations or the elimination of camp housing. The current operational area and camp housing encompasses approximately 23 acres with previously disturbed spill sites and shut-in well locations approaching 8.6 acres for a total LOP disturbance area of approximately 31.37 acres.

Alternative A, infill drilling on 2.5 acres spacing to enhance the rate of production from the field, would result in a ST disturbance of 214 acres and a LOP disturbance of 80 acres.

Cumulative Impacts in the project area include the production on the northern portion of the Poison Spider field area. This area has also been authorized by WOGCC to enhance development by implementing 2.5 acres spacing. Down spacing in the northern portion of the field could result in approximately 410 acres of new LOP disturbance. Down spacing or in-fill development throughout the Poison Spider Oil field would result in LOP Cumulative Impacts of approximately 490 acres, not including the current level of disturbance in the northern portion of the field.

Cumulative impacts resulting from the Proposed Action would result in a net reduction of surface disturbance relative to the current condition of 22.7 acres.

The impact analysis assumes all mitigation measures included in the POD, the reclamation plan and the SUP in the APD are fully and successfully implemented as well as all ACEPM listed in Chapter 2 of this EA.

## **4.2 Physical Resources**

### **4.2.1 Air Quality**

Air quality impacts are limited by state and federal regulation, standards and implementation plans prepared and approved under the Clean Air Act and State of Wyoming law. The BLM cannot authorize an activity that does not conform to all applicable local, state and federal air quality laws. The rules, regulations and laws include the Wyoming Ambient Air Quality Standards (WAAQS) and the National Ambient Air Quality Standards (NAAQS) as well as the Prevention of Significant Deterioration (PSD) Class I and Class II increments, as shown in Table 3-3.

#### 4.2.1.1 Proposed Action

Pollutants of concern associated with the Proposed Action are regulated by the WDEQ/AQD and include nitrogen oxides (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), carbon monoxide (CO), volatile organic compounds (VOC), hazardous air pollutants (HAPs), total suspended particulate (TSP), particulates less than 10 microns in diameter (PM<sub>10</sub>), and particulates less than 2.5 microns in diameter (PM<sub>2.5</sub>). All of these compounds will be generated at some point during the life of the project as a result of shaft drilling, earth moving, oil treating and storage, fuel combustion, fuel storage, and electrical power generation. A permit from the WDEQ/AQD will be required and an application must be made on forms provided by the WDEQ/AQD and accompanied by site information, plans, descriptions, specifications, and drawings showing the design of the source, the nature and amount of the emissions, and the manner in which it will be operated and controlled. The resulting permit assures that the proposed facility will utilize the Best Available Control Technology (BACT) for controlling emissions, will not prevent the attainment or maintenance of any ambient air quality standard, and will comply with all rules and regulations of the WDEQ/AQD.

It is anticipated the electricity for the shaft drilling rig will initially be supplied from a diesel powered portable electric power generator set. This power source will be operated for approximately two months until commercial power becomes available at the project site. The electric power generator will be required to meet BACT for the criteria pollutants listed above, as determined by the WDEQ/AQD. BACT determinations will depend on the size of the equipment and type of fuel necessary for the project.

Emissions from diesel combustion will also be generated by equipment (loaders, haul trucks, etc.) operating in the underground tunnel and on the surface; however, these mobile emissions sources do not require WDEQ/AQD permits to operate. It is anticipated that drilling and construction operations will be completed within 36 months.

There will be a surface facility at the Poison Spider site used to treat the produced crude oil. Equipment associated with the surface facility will consist of a water knockout, heater treater, several tanks used for the storage of crude oil and produced water, and a standby diesel generator to be used in the event of power failures. Maximum production at the site is expected in October 2008 when 20,000 BWPD and 2,000 BOPD will be produced. The primary emissions from the surface facility will be VOC generated from the water knockout, heater treater, and storage tanks. VOC emissions generated from the heater treater will be used as fuel for the heater treater burner and any excess gas will be flared in compliance with the WDEQ/AQD permit and with BLM approval. If required by BACT, emissions from the water knockout and storage tanks will also be flared. Emissions from the standby generator are expected to be negligible due to minimal operation. The crude oil produced from the Sundance formation is low in VOCs and results in negligible amounts of associated natural gas at current production rates.

Particulate emissions, also known as fugitive dust, are anticipated during most phases of activity including shaft and service area construction, initial shaft drilling, topsoil and spoil stockpiling, reclamation and access road re-construction. The generation of fugitive dust is dependent on climatic conditions such as wind, temperature, soil moisture, etc. As described in the Proposed Action, the project proponent will be responsible for controlling dust on the project access road and operational areas.

Not all equipment specifications have been determined and emission rates are not yet known as production operations are not anticipated for at least two years. Equipment needs will be determined by the results of well bore development following shaft and tunnel construction. As stated above, all appropriate WDEQ/AQD permits will be obtained prior to the installation of equipment at the site.

#### 4.2.1.2 No Action Alternative

Under the No Action Alternative impacts to the air quality resource would remain at existing levels. Any increase in emissions from diesel combustion as a result of occasional workover or drilling operations would be negligible as would particulate emissions from any field maintenance activities.

#### 4.2.1.3 Alternative A

The area of surface soil disturbance associated with Alternative A is 9.5 times greater than that of the Proposed Action and would result in potentially greater particulate emissions. The temporary generator for high voltage electricity needed for shaft drilling would not be required for this alternative, so the emissions from that equipment would not be realized. An additional 128 wells would be drilled from the surface resulting in significantly greater diesel fuel emissions compared to the Proposed Action. Drilling rig emissions are considered mobile sources and do not require a WDEQ/AQD permit. Assuming one rig drilling year round, drilling and construction related disturbances would continue for a period of 18.5 years. VOC emissions from crude oil production would be comparable to the Proposed Action and greater than the No Action Alternative.

#### 4.2.1.4 Mitigation and Monitoring

It is recommended that BACT and other applicable and appropriate emission reductions measures be implemented in accordance with the Wyoming Air Quality standards and regulations. It is also recommended that dust abatement be applied to materials handling activities such as stockpiling of spoil material from tunnel construction, and on the access road as needed to control particulate emissions, wind erosion control should be implemented on reclaimed areas. These mitigation measures and the mitigation measures included in the POD, the reclamation plan, and the SUP and the ACEPM in the APD are adequate to reduce the potential for adverse impact to the wind quality in the project area.

#### 4.2.1.5 Residual Impacts

There would be an increase in emissions compared to the current level as a result of the Proposed Action. However these impacts will be within the State permitted levels; the majority of particulate and diesel emissions would be localized and temporary (less than 3 years).

#### 4.2.1.6 Cumulative Impacts

Minimal cumulative impacts to the air quality would be expected as a result of implementation of the Proposed Action.

A successful project might lead to more UAORF projects in surrounding fields-if there is no additional development resulting from a successful project, the cumulative impact would be essentially the same as that anticipated and analyzed for the Proposed Action.

If in-fill drilling as proposed in Alternative A were to occur on both the north and south portions of the Poison Spider field area, significant diesel and particulate emissions over

a long period of time (from 16 to 32 years) could be realized.

## **4.2.2 Geology and Minerals**

### 4.2.2.1 Proposed Action, Direct and Indirect Impacts

The Poison Spider Field Project will impact the geological resources in two ways. First the tunnel area, service area and access road will be constructed on the formations listed in Table 3-4. The second impact will be specifically on the Muddy Sandstone, the Sundance “Crow Mountain” or Canyon Springs and the Tensleep Sandstone when the oil, gas and water are withdrawn from the porosity in the sandstones.

The surface disturbance impacts to the various affected geologic units will be mitigated through the implementation of an aggressive reclamation plan (Appendix A) and the implementation of the BMP’s required by the DEQ/WQD General Permit for Storm Water Discharges Associated with Large Construction Operations.

The withdrawal of the oil and gas from the prospective pay sands is the objective of this project. While this activity will impact the productive sandstones, the impact is not considered to be negative or adverse. Poison Spider Field has been producing since 1917. Current oil field practices and regulations are protective of surface geology. When the project is concluded, the tunnel and the holes drilled up through the Popo Agie Shale into the Sundance Sandstone will be plugged according to the requirements of the Wyoming Oil and Gas Conservation Commission.

### 4.2.2.2 No Action Alternative and Alternative A

All the alternatives including the No Action Alternative will affect the geology of the area by producing crude oil from the Sundance and injecting water into the Sundance and/or Tensleep formations. All alternatives would impact the surface, Alternative A significantly more so than the Proposed Action or the No Action Alternative. None of the alternatives would affect the subsurface formations with the exception of the Sundance and the Tensleep, as the wells would be cased from the surface to the producing or injection zones.

### 4.2.2.3 Mitigation and Monitoring

The withdrawal of oil and gas from the Sundance is the objective of this project. While this activity will impact the future production of the Sundance formation the impact is not considered to be negative or adverse. When the project is concluded, the shaft and all bore holes and injection wells will be plugged and abandoned pursuant to the requirement of the Wyoming Oil and Gas Conservation Commission rules and regulations.

### 4.2.2.4 Residual Impacts

There would be the removal of crude oil and water from the Sundance. A portion of that fluid would be replaced by the injection of some of the produced water back into the Sundance. The majority of the produced water would be injected into the Tensleep. All alternatives will impact the surface; none of the alternatives would affect the subsurface formations with the exception of the Sundance and the Tensleep, as the boreholes and wells would be cased from the surface to the producing or injection zones.

### 4.2.2.5 Cumulative Impacts

There would be no cumulative impact to the geologic features in the area with the

exception of the removal of crude oil and water from the Sundance and the enhanced volume of water placed into the Tensleep.

A successful project might lead to more UAORF projects in surrounding fields-if there is no additional development resulting from a successful project, the cumulative impact would be essentially the same as that anticipated and analyzed for the Proposed Action.

### **4.2.3 Soils**

#### **4.2.3.1 Proposed Action, Direct and Indirect Impacts**

Exposure and compaction of the surface soil in the area to be occupied by surface facilities and construction of impermeable structures (buildings, concrete pads) would decrease infiltration capacity and increase surface runoff, wind and water erosion, and off-site sedimentation. Operating areas would be graded and surfaced with gravel. Access road re-construction would be as directed in the BLM Gold Book, to provide all-weather access and minimize erosion and rutting.

The Proposed Action includes the reclamation of existing surface disturbances and dismantling of the unnecessary structures within three years of project commencement. The Proposed Action would result in approximately 17.0 acres of initial surface disturbance from new construction and 31.37 acres of disturbance as a result of the reclamation of areas previously disturbed by oil production activities, for a total short term disturbance of approximately 48.5 acres. The long-term or LOP surface disturbance resulting from shaft and service areas, two outside injection wells, one vent shaft and access roads will be approximately 8.6 acres.

Impacts to the soil resource would be mitigated by protecting stockpiled soils from erosion, and by the re-vegetation of replaced soils as rapidly as possible following construction and reclamation activities.

A Construction Storm Water Pollution Prevention Plan would be prepared and implemented as required by the WDEQ/Water Quality Division rules and regulations to control off site transport of sediment due to wind and water erosion.

#### **4.2.3.2 No Action Alternative**

Under the No Action Alternative no additional surface disturbance associated with this project would take place. The access road erosion would continue over time depending on weather and use. Existing surface disturbance would remain at 31.37 acres.

#### **4.2.3.3 Alternative A**

This alternative would result in the disturbance of 214 acres in the short term and 80 acres LOP. Reclamation of previously disturbed areas and dismantling of unneeded facilities would occur during the 18 year development process.

#### **4.2.3.4 Mitigation and Monitoring**

The mitigation measures included in the POD, the reclamation plan, and the SUP and the ACEPM in the APD are adequate to reduce the potential for adverse impact to the soil resource in the project area.

#### **4.2.3.5 Residual Impacts**

The implementation of the Proposed Action would result in a long term reduction in surface disturbance relative to the other alternatives and an overall reduction of

approximately 23 acres compared to the No Action Alternative. Implementation of the reclamation plan would result in the enhancement of the surface soils and the overall vegetative productivity of the project area.

#### 4.2.3.6 Cumulative Impacts

There are no other activities planned in the project area with the exception of the continued use of the oil field directly to the north. If the entire Poison Spider Oil field, including the area to the north of the Proposed Action, was developed at the WOGCC approved 2.5 acre spacing, approximately 490 acres of soil disturbance would occur during the development phase which could last 18 years, depending on drilling intensity.

A successful project might lead to more UAORF projects in surrounding fields-if there is no additional development resulting from a successful project, the cumulative impact would be essentially the same as that anticipated and analyzed for the Proposed Action.

### **4.2.4 Water Resources**

#### 4.2.4.1 Proposed Action, Direct and Indirect Impacts

Under the Proposed Action water will be produced in conjunction with the crude oil from the Sundance. Currently the oil water ratio is 1:10, this is not expected to change. At full production it is anticipated that 20,000 barrels of water per day would be produced and re-injected. Produced water will be re-injected into the Sundance from well Federal #8 or into the Tensleep from three new wells to be completed in the field (see Figure 1-2).

The Sundance is a confined, gravity drive oil reservoir that is not connected hydraulically to the North Platte River system therefore the removal of water from this formation would not impact the volume of water in the river. The injection of Sundance water into the Tensleep, a water drive reservoir, would possible augment the water available to the North Platte River.

Exposure and compaction of the surface soil in the area to be occupied by surface facilities and construction of impermeable structures (buildings, concrete pads) would decrease infiltration capacity and increase surface runoff, erosion, and off-site sedimentation. Conversely, the demolition and reclamation of unneeded surface facilities and the reclamation of previously disturbed areas as detailed in Appendix A would result in increased infiltration and decreased surface runoff, erosion and sedimentation. The area to be covered by impermeable structures (less than 6 acres) represents a small fraction of the surface area available for recharge of the Poison Spider Creek system.

The shaft will be drilled using native mud (i. e. waste and soil), standard drilling additives may be added if needed. The spent mud will be rotated to a lined reserve pit; water from the pit will be recycled to the extent possible with make up water added as depth is reached. The reserve pit will be allowed to dry and would be backfilled in compliance with WOGCC and BLM regulations.

Spoil material from tunnel excavation will be transported to the surface on the "skip" and stockpiled for use in the reclamation project. It is anticipated that the majority of the spoil material would be used, resulting in no stockpiles of material in the long term. Adequate material for shaft closure will be stockpiled, re-contoured and re-vegetated and held in reserve for sealing the shaft once the project is complete. If adequate material for shaft closer is not available due to the volume of material need to implement the reclamation

plan, additional suitable material would be brought to the site when needed.

Two existing water wells provide domestic use water to Poison Spider camp and the Arnell operations, immediately to the north. These wells are completed at approximately 730 feet. These wells would not be impacted by the installation of the shaft as the shaft will be grouted with cement through the water and hydrocarbon bearing zones as well as being cased and cemented once total depth is reached. Any unidentified springs in the area would likewise be protected.

Natural drainage systems do not occur in the project area and the manmade canal and pond system will not be used by RWP for water disposal. Shallow subsurface water was not identified in the area. The opportunity for releases of hydrocarbon or other industrial wastes to impact ground water is negligible due to the depth of the fresh water zone at approximately 730 feet. The production facilities will be closed piping and tankage systems minimizing the potential for spills. System piping will be monitored for potential leaks. Earthen berms or equivalent structures would be constructed around the shaft and service area oil and fuel storage equipment to provide secondary containment as described in the site Spill Prevention Control and Countermeasure (SPCC) Plan. In accordance with the WDEQ/WQD Construction Storm Water Pollution Protection Plan (SWPPP) General Permit additional containment or BMP's would be constructed to preclude and control storm water runoff that may contain operational pollutants.

To further prevent potential degradation of shallow groundwater all boreholes and wells would be constructed (cased and cemented) and abandoned in accordance with WOGCC and BLM rules. These construction requirements mitigate the risk of groundwater contamination from either the surface or from the Sundance which, at approximately 1400 feet bgs may be under sufficient pressure to flow up an open borehole, allowing possibly lesser quality water to flow into shallow, higher quality zones. All produced fluids will be collected from the wells in a closed piping and manifold system and transported via piping above ground for processing at the service area.

#### 4.2.4.2 No Action Alternative

Under this alternative, water resources within the Poison Spider Field area would remain as described in Chapter 3 (Affected Environment). Water resources in the area would continue to be affected by existing oil production operations, livestock and wildlife use and land management decisions.

#### 4.2.4.3 Alternative A

Under this alternative development and production operations would impact the entire 560 acre lease area, resulting in decrease infiltration capacity and increased surface runoff, erosion, and off-site sedimentation. In addition the increase in flowlines from wells to production facilities would result in a greater potential for releases of crude oil as a result of pipeline failure. As with the Proposed Action, all well bores would be cased and cemented as required by WOGCC and BLM regulations, protecting shallow ground water resources. System piping would be monitored and secondary containment structures would be installed as required by USEPA SPCC regulations. WDEQ Storm water BMP's would be implemented to minimize the opportunity for contaminated storm water run-off

#### 4.2.4.4 Mitigation and Monitoring

The mitigation measures included in the POD, the reclamation plan, and the SUP and

the ACEPM in the APD are adequate to reduce the potential for adverse impact to the soil resource in the project area.

#### 4.2.4.5 Residual Impacts

Residual impacts resulting from the Proposed Action are limited to the addition of produced water to the Tensleep and possible increases to the volume of water reaching the North Platte River.

#### 4.2.4.6 Cumulative Impacts

There are no other known planned developments within the project area that would impact ground and surface water resources. Surface water resources would continue to be impacted by the few known existing uses which are currently limited to stock and wildlife water. Cumulative disturbance in the project area of 490 acres from the Proposed Action would consist of short term disturbance of approximately 48.5 acres, including the new development and the aggressive field reclamation plan. The long-term or LOP surface disturbance resulting from shaft and service areas, two outside injection wells, one vent shaft and access roads will be approximately 8.6 acres.

A successful project might lead to more UAORF projects in surrounding fields-if there is no additional development resulting from a successful project, the cumulative impact would be essentially the same as that anticipated and analyzed for the proposed Action.

### **4.2.5 Noise**

#### 4.2.5.1 Proposed Action, Direct and Indirect Actions

Surface construction of the facility areas and improvement of the access roads as well as initiation of the shaft would have an audible noise level of 90 to 95 dB(A) compared to a background level of 30 to 50 dB(A). This noise level could disrupt the activity of wildlife and livestock in the immediate construction area but these would be short term events.

- Noise associated with ongoing production drilling and well completion activities would be muffled by the tunnel and shaft structure.
- The shaft area would have increased noise levels when compared with background primarily as a result of a temporary high voltage electrical generator. The generator would be muffled for safety and aesthetics. This generator will be replaced in the near term by permanent electrical service.
- Oil processing equipment (heater treater, free water knock-out and crude oil stock tanks) typically do not generate noise.
- Rigs used for the drilling of three injection wells will generate engine noise as well as equipment impact noise. These are short term events.
- The tunnel and shaft vents have large blower systems and create significant noise when left uncontrolled. Vent blowers would be muffled and placed behind noise attenuation screening to further reduce noise levels. The vent raise fan is expected to be approximately 100,000 and will be powered by 50 to 60 HP electric motors. The anticipated unmuffled noise level is 85 to 94 dBA; noise attenuating housing will be installed to reduce ambient noise. Fencing will be set approximately 20 feet from the vent end to preclude human and wildlife encroachment. The vent end will be directed away from public road ways and raptor nests. The increase in short and long term noise may be noticeable to persons using Poison Spider Road, as well as wildlife and livestock in the area.

#### 4.2.5.2 No Action Alternative

Under the No Action Alternative the Proposed Action would be denied and no increase in project related noise would take place, with the exception of occasional noise related to work over operations and general field maintenance actions. Noise levels in the project area would also continue to be influenced as they are now by weather and occasional vehicle passage.

#### 4.2.5.3 Alternative A

This alternative would result in the construction and drilling of a significant number of wells from the surface. As indicated above, this alternative would take up to 18 years to achieve full development. During the development period construction of well sites and the drilling and completion of wells would be continual unless timing restrictions are placed by BLM to protect nesting raptors. In the event timing stipulations are implemented the disturbance period would be up to 35 years.

#### 4.2.5.4 Mitigation and Monitoring

As discussed in Section 4.2.6.1 tunnel vents and temporary generators would be muffled to minimize audible equipment noise. No other mitigation measures are necessary to reduce the potential for adverse impact from noise in the project area.

#### 4.2.5.5 Residual Impacts

Implementation of the Proposed Action would result in life of project increases in noise levels; short term noise levels will be reduced significantly following completion of the shaft drilling and site reclamation activities. Once the project is depleted and production operations have been abandoned and reclaimed noise generating equipment will be removed from the area leaving no residual impact.

#### 4.2.5.6 Cumulative Impacts

There are no other known planned developments within the project area that would increase background noise levels. Ambient noise would continue to be impacted by traffic along Poison Spider Road, continued oil production operations, livestock grazing and the wind. Noise sensitive areas would include occupied raptor nests. The aerial extent of noise propagation from the Proposed Action is unknown due to the lack of information on the residual or uncontrolled noise generated by the tunnel vents.

A successful project might lead to more UAORF projects in surrounding fields-if there is no additional development resulting from a successful project, the cumulative impact would be essentially the same as that anticipated and analyzed for the Proposed Action.

### **4.3 Biological Resources**

#### **4.3.1 Vegetation including Invasive Non-native Species**

##### 4.3.1.1 Proposed Action, Direct and Indirect Impacts

As discussed in Chapter 3, vegetation in the Poison Spider project area is classified as Wyoming Big Sagebrush grasslands (WGISC 2006).

Disturbances to the vegetation within the PSF would result from the preparation of the shaft and service facilities. Two new injection wells will be drilled within the shaft and service areas, one will be drilled from the location of the existing Federal 9 well location, the forth (Federal 8) is already in place and in operation. The selected well locations

eliminate the need for additional surface disturbance. The reclamation operation may disturb some existing vegetation. The duration of the impact would be dependent on the time required to re-establish native vegetation to pre-disturbance levels. Of the 560 acres within the PSF approximately 48.4 acres or 8.7% would be impacted for the construction of new facilities and the reclamation plan which would result in vegetation removal or disturbance. The shaft and service areas, the two outside injection wells and the vent shaft would result in approximately 1.5% of the lease surface area being impacted by long term or LOP vegetative removal.

The reclamation project described in Appendix A would entail the demolition and removal of unnecessary structures and the reclamation of 31.37 acres made up of 13 existing well sites, old oil and produced water spills, access roads, housing sites, tank battery and shop areas. The reclamation effort would commence once the Proposed Action is approved, with completion planned within three years. Once the field has been drained using the underground access procedure the production equipment and facilities would be removed, the shaft would be sealed with material stockpiled or brought in for that purpose and the remaining 8.6 acres of disturbance reclaimed. Material needed for final site reclamation will be augmented with nutrients as needed; re-soiled areas will re-vegetated with the appropriate native plants (see Appendix A).

As there are no unique vegetative communities, T&E or BLM sensitive plant species known within the PS project area the loss of individual plants is not considered significant. The existing plant communities are common and wide spread.

The only intermittent drainage in the area is Poison Spider Creek, 1800 feet to the south of the lease boundary. Poison Spider Creek is a tributary to the North Platte River, located approximately 15 miles to the south and east. While no formal wetlands inventories have been conducted in the area portions of Poison Spider Creek have been identified as potential Palustrine (freshwater) wetlands in the National Wetlands Inventory (USFWS1997). Over time isolated wetlands have developed in association with the WDEQ/WQD WYPDES permitted produced water discharges to the creek. None of these wetlands are within the project area or associated with the operation of the Poison Spider Oil field. The Proposed Action would not require the construction of any creek crossings or potential impacts to wetlands vegetation; in addition there would be no impacts to riparian vegetation as none exists within the project area.

There would be the potential for the introduction of invasive non-native plant species into the areas of the project undergoing surface disturbance and reclamation. Invasive non-native species have become a rangeland concern in Wyoming. The more common invasive species include Canadian thistle, musk thistle, cheat grass, Russian knapweed and halogeton. While the project area has not been surveyed for invasive species some are expected to be present. The project proponent would coordinate with the Natrona County Weed and Pest and the BLM regarding weed control activities. Weed management is part of the Reclamation Plan found in Appendix A, this effort to prevent the establishment of non-desirable species would result in a negligible impact on the vegetation resource.

#### 4.3.1.2 No Action Alternative

Under the No Action Alternative the Proposed Action would be denied and little or no new project related disturbance would take place. Vegetative communities would continue to be impacted as they are now by weather, livestock and wildlife grazing and

continued oil production operations.

#### 4.3.1.3 Alternative A

Alternative A would result in a greater number surface disturbance acres as well as the reclamation of some previous disturbance areas over the life of the project. Approximately 14% of the 560 acres lease would be disturbed by the development described in Alternative A in the long term. Construction, development and reclamation would continue for approximately 18 years under this alternative. As with the Proposed Action no wetlands, riparian areas, sensitive or T&E species would be impacted by these alternatives. Active weed management would be necessary for the duration of the project. Reclamation of approximately 80 acres would be required once the field was depleted.

#### 4.3.1.3 Mitigation and Monitoring

The mitigation measures included in the POD, the reclamation plan, and the SUP and the ACEPM in the APD are adequate to reduce the potential for adverse impact to the vegetation resource in the project area.

#### 4.3.1.4 Residual Impacts

The Proposed Action would result in the loss of 48.5 acres of vegetation in the short term as a result of the disturbance caused by the construction of the new facilities and the reclamation of the existing disturbance. Life of project disturbance will be approximately 8.6 acres. It is anticipated it could take 20 or more years for vegetation to achieve pre-disturbance levels and successional diversity following completion of reclamation activities.

#### 4.3.1.5 Cumulative Impacts

Vegetation in the PS field area would continue to be impacted by ongoing livestock grazing activities and oil field operations. There are no other known or anticipated surface disturbing activities occurring or expected to occur within the project area. Invasive species would be controlled, and reclamation would occur as directed by the federal land manager.

A successful project might lead to more UAORF projects in surrounding fields-if there is no additional development resulting from a successful project, the cumulative impact would be essentially the same as that anticipated and analyzed for the Proposed Action.

### **4.3.2 Wildlife Resources**

The Poison Spider area provides habitat for many species of game and non-game wildlife including pronghorn, mule deer, greater sage-grouse, various raptors, predators and furbearers as well as reptiles, amphibians and a variety of migratory and non-migratory birds.

#### 4.3.2.1 Proposed Action, Direct and Indirect Impacts

The Proposed Action could result in the displacement of wildlife species due to habitat loss, mortality due to vehicle collision or construction related activities, and increased mortality due to poaching and harassment. The project area has been an active oil field since 1917 and lies adjacent to Poison Spider Road. The area has been disturbed by these activities and wildlife has been displaced or has habituated to the activity. These impacts would be minimized to some extent by the minimal long term footprint of the

Proposed Action, implementation of the Reclamation Plan and the numerous other proponent committed mitigation measures discussed in Chapter 2.

### Big Game

As discussed in Chapter 3, the Poison Spider oil field is contained within year long and winter yearlong habitats for mule deer and pronghorn. There are no crucial winter habitats identified in the area. The project area comprises approximately 0.00066% of the mule deer and 0.00088% of the pronghorn WGFD herd management units. The greatest potential impact on big game species would be the displacement of individual animals from preferred habitats as a result of the increased human presence and associated noise. It is unlikely that the project area is the preferred habitat for either species though antelope are commonly seen within the production area. It is likely that the reclamation project will benefit big game species in the long term as the operations are concentrated into the area adjacent to Poison Spider Road, the housing and other existing structures are eliminated and the native vegetation is reestablished across the lease. The extent of displacement is unknown and each species and each individual responds differently to human activity. It is generally accepted that displacement occurs and the extent of it is dependent on many variables including the species, the vegetative or topographic cover available to the individual, the predictability of the human action and time of year. Mule deer and pronghorn are known to habituate to human activity and associated noise, pronghorn more so than mule deer. The avoidance distances would likely be reduced approximately three years into the project when noise levels have dropped, construction activities have ceased and routine operational regimes are established.

An additional impact on big game species includes the potential for increased mortality as a result of collisions and the opportunity for poaching or harassment. The mitigation of site worker education would aid in reducing the potential for some of these impacts. Poison Spider Road is the primary access to the hunting and recreational areas west of Casper, and receives a considerable volume of traffic. Crude oil tank trucks use this road to access the numerous oil fields not connected to pipeline. Wildlife mortality as a result of collision with private and commercial vehicles is common. The area is relatively close to Casper, is very popular with hunters (WG&F 2006b) and is uncontrolled access public land, these factors make poaching and wildlife harassment an unfortunate reality.

It is not expected that wildlife will use portions of the field associated with concentrated operations activity such as the service or shaft areas. It is anticipated that once the demolition and reclamation operations have taken place and human activity associated with the ongoing project has become predictable displacement of wildlife will return to the unused areas of the field. The succession of vegetation in the reclaimed areas will provide habitat for wildlife and will take approximately 20 years to reach the climax community. At that time the area would again be fully utilized by big game species. In the long term the area of activity will be reduced to approximately 8.6 acres, most of which is adjacent to the road, leaving approximately 551.4 acres of the 560 acre lease as available habitat.

Despite the continued displacement from habitat immediately adjacent to the operational areas the impacts to big game species from the project are expected to be low.

### Small Mammals

Impacts to small mammals from the Proposed Action would include direct mortality as a result of construction operations and vehicle collisions. Most small mammals have small home ranges and are tolerant of human activity making them more likely to experience mortality as a result of project related activities. The shaft and service areas would no longer provide habitat for some species such as coyotes but would continue to be used by others such as cotton tailed rabbits and rodents. Project related impacts to small mammals, rodents and lagomorphs, would likely be masked by their reproductive rates, impacts of weather and the occurrence of disease. RWP's commitment to aggressively reclaim previously disturbed areas and the small foot print of the Proposed Action minimizes the impact to small mammals.

### Raptors

As indicated in Chapter 3 the project area is proximal to potential and active nesting habitat for a variety of raptor species including golden eagle, ferruginous hawk, Swainson's hawk, red tailed hawk and prairie falcon (Wyoming Game and Fish 2004). BLM has identified four raptor nests within a one mile radius of the area of project disturbance; two of these nests are to the southwest and two are to the north east (BLM 2006a) of the shaft and service areas. BLM season buffer zone stipulations are based on the species, current land uses, as well as natural visual and sound barriers (BLM 1984).

It is possible that the nests located approximately 1/3 mile to the southwest of the shaft and service areas would be deserted. Project impacts on raptors would be negligible given the mitigations in place including the commitment to implement the best management practices for raptor proofing improved and new electrical poles as per the Avian Power Line Interaction Committee (APLIC 1996) standards and the availability of nesting habitat in the Poison Spider area.

### Upland Game Birds and Other Migratory Birds

New surface disturbance in the PSF would result in the short term removal of approximately 17.0 additional acres of Wyoming Big Sagebrush grasslands vegetation. The Wyoming Big Sagebrush grasslands provides nesting habitat, security cover and food for the numerous bird species listed in Table 3-7 that may be residents or casual users of the area. The reclamation of approximately 31.37 acres of existing disturbance will, over time, restore area vegetation and reduced the long term habitat loss to the 8.6 acres associated with the Proposed Action. It will take approximately 20 years for vegetation to achieve pre-disturbance character. The succession of vegetation in the reclaimed areas will provide a variety of habitats over that time period. In addition to habitat loss, increased mortality would result from vehicle collisions. Seasonal behaviors such as breeding and brood rearing that occur in the islands of remaining habitat within the lease area may be indirectly impacted by the project activity levels. Given the small area to be disturbed within the vegetation type, however, the impact on birds is considered negligible.

The Greater Sage-Grouse, a BLM sensitive species, is known to use the project area seasonally; this species is discussed later in this chapter.

### Amphibians, Reptiles and Fish

Potential impacts could occur to amphibians and reptiles as a result of project related surface disturbing activities impacting their habitats, displacing individuals or mortality.

These impacts would be proportional to the amount of appropriate habitat affected; given the lack of suitable habitat in the project area fish are not present, and amphibian species will be limited to those that may occur proximal to the housing areas where cool and damp micro-habitats may exist. Reptiles may be impacted by habitat disturbance and direct mortality due to vehicle collision and construction activity. Due to the lack of wetlands or other suitable habitat impacts to amphibians and reptiles is considered negligible.

#### 4.3.2.2 No Action Alternative

Under the No Action Alternative the Proposed Action would be denied and no project related disturbance would take place. Wildlife populations would continue at current levels with fluctuations due to natural causes such as weather, disease and other natural perturbations.

#### 4.3.2.3 Alternative A

This alternative would result in greater impacts to wildlife as 214 acres of habitat would be taken out of service in the short term and would remain severely fragmented in the long term by well locations, access roads and power lines. The application of BLM spring timing stipulations to mitigate impacts to nesting raptors would double the time needed to fully develop the field from 16 years to 32 years. It is possible that the implementation of these timing stipulations would have no positive effect on raptors due to the concentrated and continual activity in the field area. Interim reclamation of the area would take place over the development life of the project followed by final reclamation of the area when production declines made operations uneconomic. In the long term disruptive activities would occur across the entire lease area for the life of the project.

#### 4.3.2.4 Mitigation and Monitoring

The mitigation measures included in the POD, the reclamation plan, and the SUP and the ACEPM in the APD are adequate to reduce the potential for adverse impact to the vegetation resource in the project area.

#### 4.3.2.5 Residual Impacts

The Proposed Action would result in the long term loss of approximately 8.6 acres of habitat. Implementation of the Reclamation Plan would initially affect the areas of past and present operations in the field and result in the replacement of almost 23 acres of habitat. Some species such as mule deer and pronghorn would be temporarily displaced by the additional and different activity at the site. Over the LOP some increased wildlife mortality would occur, most commonly in small mammals, reptiles and birds.

#### 4.3.2.6 Cumulative Impacts

Cumulative impacts to wildlife resources are expected to occur in direct proportion to the current availability of the required habitat and the loss of that habitat. Given the level of disturbance resulting from current and adjacent field operations, recreation and livestock grazing additional displacement of wildlife by the Proposed Action will be minimal. The reclamation of existing disturbance and the concentration of activity into an area adjacent to Poison Spider Road would result in an overall net improvement to wildlife habitat. When the oil resource is depleted and facilities are removed, the remaining 8.6 acres of disturbance will be reclaimed, to achieve pre-disturbance condition. There is no anticipation of significant cumulative impacts to wildlife species in the analysis area.

The cumulative impact analysis area for the big game species is the appropriate WGFD herd unit. The herd units for mule deer and pronghorn are extremely large (approximately 1000 square miles) and contain numerous disturbance features including the western rural expansion of the City of Casper, numerous oil and gas fields including those listed in Section 3-1 of this document, many ranching operations, a few small towns, etc. It is likely that displacement of these species has already occurred in the project area and that the increased disturbance from the propose action is cumulatively insignificant.

The cumulative impacts analysis area for small mammals, raptors, upland game birds, migratory birds, amphibians, reptiles and fish is the PS project area. Impacts to all these species would be low to negligible and would decline as project disturbance is reclaimed.

### **4.3.3 Threatened, Endangered, Proposed and Candidate Species**

Threatened, endangered, proposed and candidate (TEPC) species that could possibly occur in the PSF include the black-footed ferret, bald eagle, Preble's meadow jumping mouse, Colorado butterfly plant, blowout penstemon, Ute ladies'-tresses; the five species found in the North Platte River that could be impacted by water depletions are also identified in Table 3-5.

#### 4.3.3.1 Proposed Action, Direct and Indirect Impacts

Based on a survey of the project area for suitable habitat it was determined that the likely hood of impacting any of these species is minimal. Suitable habitat for the black-footed ferret, Preble's meadow jumping mouse, Colorado butterfly plant, blowout penstemon and Ute ladies'-tresses does not occur in the project area.

The five North Platte species would not be impacted by the project as the Sundance formation is not hydraulically connected in the subsurface to the North Platte River therefore removal of water from this zone would not reduce the volume of subsurface water potentially recharging the river system. Injection of water into the Tensleep formation would result in a net addition to the water resource in that formation which may be hydraulically connected to the North Platte River.

The bald eagle may be an occasional visitor to the project area while foraging or migrating, but this activity would intermittent and of short duration. Roosting and nesting habitat is present in the project area; summer foraging habitat (open water) is not available, winter foraging opportunities are present. To minimize the opportunity to impact raptors, including the bald eagle, utility pole installations and upgrades will include raptor proofing as provided in Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996 (APLIC 1996). Once construction has been completed the opportunity for bald eagles to habituate to project activities exists as human activity will be repetitive and limited to the area of the shaft and service areas, access road and injection wells.

#### 4.3.3.2 No Action Alternative

Under the No Action Alternative the Proposed Action would be denied and no additional project related disturbance would take place. Threatened and endangered, proposed and candidate species that occur in the project area would continue at current levels with

fluctuations due to natural causes such as weather, disease and other natural perturbations and the continuation of oil production operations.

#### 4.3.3.3 Alternative A

This alternative would result in similar impacts to TEPC species as would the Proposed Action, with the exception of potential impacts to the Bald Eagle. This species would likely learn to avoid the project area due to the level and duration of development activity.

#### 4.3.3.4 Mitigation and Monitoring

No additional mitigation beyond those measures included in the APD SUP and ACEPM and as discussed in Section 4.3.3.1 are recommended.

#### 4.3.3.5 Residual Impacts

The Proposed Action would result in the short term loss of approximately 17.0 acres of habitat from new disturbance and 31.37 acres of reclaimed area from previous disturbance. The LOP disturbance is estimated at 8.6 acres. Individual bald eagles may be temporarily displaced from foraging in the area of operations during periods of construction and reclamation. No other TEPC species are anticipated in the project area.

#### 4.3.3.6 Cumulative Impacts

Cumulative impacts to threatened, endangered, proposed and candidate species would be limited to the effects of the operations on bald eagles. These impacts would occur in direct proportion to the current availability of the required habitat and the loss of that habitat and would be limited to those areas where suitable habitat would be removed. Due to the existing level of disturbance the project area does not provide high quality foraging habitat. The pre existing disturbance Reclamation Plan would be implemented within the first three years of the Proposed Action and would take up to 20 years to achieve pre-disturbance condition. When the oil resource is depleted and facilities are removed, the remaining 8.6 acres of disturbance will be reclaimed, to achieve pre-disturbance condition. There are no other activities planned in the area with the exception of the continuation of oil production at existing fields. There is no anticipation of significant cumulative impacts to TEPC wildlife species in the analysis area.

A successful project might lead to more UAORF projects in surrounding fields-if there is no additional development resulting from a successful project, the cumulative impact would be essentially the same as that anticipated and analyzed for the Proposed Action.

### **4.3.4 BLM Sensitive Species**

BLM sensitive species that may occur in the Poison Spider field area are discussed in Section 3.4.4 and identified in Tables 3-6 to 3-9. The tables reflect only those species that appear on the Wyoming Game and Fish and BLM sensitive species lists. The potential for these species to occur in the PSFA are noted in the column heading "Likely to Occur". The potential for occurrence is based on the WYNDD report (WYNDD 2006) and the habitat requirements of the species.

#### 4.3.4.1 Proposed Action, Direct and Indirect Impacts

The impacts to most BLM sensitive species as a result of the Poison Spider project would be in direct proportion to the amount of habitat that would be disturbed. The Proposed Action would result in the loss of a total of approximately 48.5 acres of

disturbance in the short term and 8.6 acres of LOP habitat loss or approximately 8.7% and 1.5%, respectively, of the PSF lease area. In the short term, disturbed area habitat would change substantially resulting in approximately 20 years of vegetative succession to achieve the current condition. The proximity of the shaft and service areas to the reclaimed areas would likely result in displacement of more sensitive species from the reclaimed areas until shaft drilling and facilities construction operations were completed. During construction most species are sufficiently mobile that they would leave the area of activity, some individuals of less mobile species would be killed by vehicle or equipment collision or be temporarily displaced from their preferred habitats. Given the expanse of the habitat type these impacts would be limited to few individuals and would not adversely affect the populations as a whole.

White-tailed prairie dogs were not identified in the project area during field surveys in 2006.

Greater sage-grouse leks identified in the BLM and Wyoming Game and Fish data bases (see Section 3.4.4) are located more than three miles from the project area. Surveys in the spring of 2006 did not identify any potential leks in the project area. BLM (Jim Wright 2006b, pers com) and third party surveys of the area identified suitable nesting and brood rearing habitat in the project area as well as evidence of its use by greater sage-grouse. The extent to which the grouse use these habitats is unknown.

BLM timing restrictions and avoidance areas protect breeding habitat as well as nesting and brood rearing habitats associated with identified leks. The avoidance of disturbance of good quality sagebrush habitats protects the habitat from destruction. Enforcement of speed limits and employee training minimizes the opportunity for vehicle and equipment collision and the installation of perching deterrent devices on utility poles and production facilities minimizes the opportunity for raptor perching.

Ferruginous hawk active nesting locations were identified by BLM biologists within a ½ mile radius of the project (Jim Wright 2006a, pers. com.). While it is possible that the Proposed Action would affect nesting Ferruginous hawks, the birds may not be impacted due to habituation to human activities. BLM will consider the topography and prey habitat surrounding the active nest site in determining the set back distance of from ¼ to ½ mile (BLM 1984).

#### 4.3.4.2 No Action Alternative

Under the No Action Alternative the Proposed Action would be denied and no additional project related disturbance would take place. BLM sensitive species populations would continue at current levels with fluctuations due to natural causes such as weather, disease and other natural perturbations as well as potential disturbance resulting from occasional field development and maintenance operations.

#### 4.3.4.3 Alternative A

Approximately 214 acres or 38% of the 560 acre lease would be disturbed by this alternative in the short term, and would impact less mobile sensitive species inhabiting the area. The project area would no longer provide foraging opportunities for Ferruginous hawks. Disturbance would continue year round for 16 years or would cease for the raptor breeding season but continue for upwards of 32 years. This stipulation may not benefit Ferruginous hawk due to the level and duration of activity related to field development activities. Greater sage-grouse nesting and brood rearing habitat in the

field would be eliminated.

#### 4.3.4.4 Mitigation and Monitoring

No mitigation in addition to the mitigation measures included in the APD SUP and ACEPM are necessary to reduce the potential for adverse direct or indirect impact to the sensitive species in the project area.

#### 4.3.4.5 Residual Impacts

The Proposed Action would result in the short term loss of approximately 48.5 acres of habitat in the short term and 8.6 acres LOP. Some species such as nesting or brood rearing greater sage-grouse would possibly be displaced by the project activity. Mitigation, as described above, should reduce the opportunity for project related sage-grouse mortality.

#### 4.3.4.6 Cumulative Impacts

Cumulative impacts to wildlife resources are expected to occur in direct proportion to the current availability of the required habitat and the loss of that habitat. The cumulative loss of habitat as a result of implementing the Proposed Action would total approximately 48.5 acres in the short term and 8.6 acres LOP, or approximately 8.7% and 1.5%, respectively, of the PSF lease area. In the short term, disturbed area habitat would change substantially resulting in approximately 20 years of vegetative succession to achieve the current condition. The short term disturbance would be reclaimed as the Reclamation Plan is implemented and upon completion of construction activities. It would take up to 20 years to achieve pre-disturbance condition. When the oil resource is depleted and facilities are removed, all remaining disturbed areas (approximately 8.6 acres) would be reclaimed, to achieve pre-disturbance condition. There is no anticipation of significant cumulative impacts to BLM sensitive species in the analysis area.

The cumulative impact analysis area for BLM sensitive species is the Poison Spider project area with the exception of the greater sage-grouse for which the analysis area is a 2 mile radius from each sage-grouse lek and ½ mile for the Ferruginous Hawk. The Poison Spider field area is generally characterized by scattered mature oil fields, livestock grazing operations, hunting and casual recreational activity. It is likely that displacement of these species has already occurred proximal to the oil fields and Poison Spider and Powder River roads. It is expected that sage-grouse are impacted by upland game bird hunting (Wyoming Game and Fish 2006b). Traffic on area roads has likely caused disturbance to Ferruginous hawks and vehicle collisions with greater sage grouse. The increased disturbance from the Poison Spider project on these populations is cumulatively insignificant.

A successful project might lead to more UAORF projects in surrounding fields-if there is no additional development resulting from a successful project, the cumulative impact would be essentially the same as that anticipated and analyzed for the Proposed Action.

## **4.4 Human Resources**

### **4.4.1 Cultural / North American Religious Concerns**

Cultural resources, including archaeological and historical sites, on lands subject to federal authority are protected by various laws and regulations commencing with the American Antiquities Act of 1906. Specific directives concerning Cultural Resource Management can be found in Archaeological and Historical Preservation: Secretary of

the Interior's Standards and Guidelines (Federal Register 1983) and BLM Manual Section 8100. Prior to the initiation of any federal action, cultural resources must be inventoried and evaluated to determine their eligibility for inclusion in the National Register of Historic Places (NRHP). This evaluation is a comprehensive screening process to determine significance and is designated to protect only the most significant sites. NRHP criteria (36 CFR 60.4) for determining eligibility define four (4) criteria of significance based upon " the quality of significance in American history, architecture, archaeology, and culture present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, and association; and that:

- Are associated with events that have made a significant contribution to the broad patterns of our society; or
- Are associated with the lives of persons significant in our past; or
- Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- Have yielded, or may be likely to yield, information important in the prehistory or history".

Cultural properties are generally not eligible for inclusion in the NRHP if they lack diagnostic artifacts, subsurface remains, or structural features. Furthermore, sites that cannot be placed in a temporal context or shown to be related to other sites are usually not eligible and therefore are not formally protected.

Guidelines for determining adverse impacts to any site currently on, or eligible for, the NRHP have been developed by the Advisory Council on Historic Preservation [36 CFR 800.9 (b)(1), (2), (3)]. These adverse impacts could be in the form of direct, indirect, or cumulative impacts to cultural resources.

Determining the potential effect(s) of any impact depends upon the level of information available. Should the occasion arise where an unavoidable impact to cultural resources either on, or eligible for nomination to the NRHP was identified, the proponent would be required to develop a mitigation plan designed to minimize disturbance to the site. This mitigation plan would be developed in consultation with both the State Historic Preservation Officer (SHPO) and the appropriate surface Management Agency (SMA).

Commencement of construction activities would not proceed until the mitigation plan had been approved by both the SHPO and SMA and subsequently implemented.

#### 4.4.1.1 Proposed Action, Direct and Indirect Impacts

As described in Chapter 3, a Class III intensive cultural resource survey was conducted on 560 acres surrounding a UAOR project area. Twenty-two cultural localities were found in the project area, of which all but one were found to not be significant, and no further work or attention is recommended. The historic depression site (possibly the original oilfield camp), the West Poison Spider Oilfield Camp, and the historic road are within planned impact areas, but they are not considered significant. Thus, no further work is recommended in any area as long as the significant location is avoided.

#### 4.4.1.2 No Action Alternative

The site identified as significant is located outside areas that have been or could reasonably be developed within the existing production scenario in the Poison Spider Oil Field. If additional development was planned avoidance or additional archeological work would be recommended for the prehistoric campsites. No further work is recommended in any area as long as the eligible site is avoided.

#### 4.4.1.3 Alternative A

The single significant site is located outside the area that have been or could reasonably be developed within the Alternative A development scenario for the Poison Spider Oil Field. If the Alternative A development scenario was proposed, avoidance or additional archeological work would be recommended for the significant prehistoric campsite. No further work is recommended in any area as providing the eligible site is avoided.

#### 4.4.1.4 Mitigation and Monitoring

No additional monitoring or mitigation is recommended.

#### 4.4.1.5 Residual Impacts

None of the alternatives analyzed would result in any residual impacts to identified cultural resources. However, some loss of undiscovered cultural resources or artifacts could occur.

#### 4.4.1.6 Cumulative Impacts

The Cumulative Impacts Analysis Area for Cultural Resources is the 560 acres leasehold. The entire area has been surveyed and avoidance recommended for the one site identified as significant. If the site cannot be avoided it would be mitigated in accordance with SHPO and BLM recommendations.

### **4.4.2 Native American Religious Concerns**

#### 4.4.2.1 Proposed Action, Direct and Indirect Impacts

No sites of religious concern to Native Americans are known to occur within the PS UAOR project area. Stone circle and rock cairn sites were identified within the 560 acre lease boundary but are located outside the project development area. Consultation has been initiated with the potentially affected tribes.

#### 4.4.2.2 No Action Alternative

Under the No Action Alternative continued oil production would continue in the areas currently being produced. Changes could occur in the operating configuration of the Poison Spider Field but it is unlikely that the operations would take place near the identified cultural sites. If operations were proposed for the areas where the potential religious features are located their presence would be taken into consideration by the BLM and address accordingly.

#### 4.4.2.3 Alternative A

Under Alternative A oil production would continue in the areas currently developed with additional development in outlying areas. It is not likely that these changes in the operating configuration of the Poison Spider would take place near the identified cultural sites. If operations were proposed for the areas where the potential religious features are located their presence would be taken into consideration by the BLM and address accordingly.

#### 4.4.2.4 Mitigation and Monitoring

As the proposed action will not impact the cultural site areas, no additional monitoring or mitigation is recommended.

#### 4.4.2.5 Residual Impacts

No residual impacts to Native American religious sites are anticipated.

#### 4.4.2.6 Cumulative Impacts

Cumulative impacts to Native American religious sites would not likely occur as no sites of religious concern to Native Americans are known to occur within the area of the Proposed Action. If concerns are expressed by the Tribes during consultation, changes to the Proposed Action would be considered.

### **4.4.3 Land Use (Landownership and General Use / Livestock Grazing / Recreation/ Mineral Development)**

The Poison Spider lease area of approximately 560 acres is 100% BLM managed surface and minerals.

#### 4.4.3.1 Proposed Action, Direct and Indirect Impacts

The Proposed Action is designed to take advantage of areas of previous field development activities. The access roads to the injection wells and the vent shaft are already in place, the existing injection well will be used and a new injection well will be completed at the site of an existing well (Federal 9), water injection lines will be installed in the bar ditch of the existing roads. The shaft area had at one time been disturbed but native vegetation has been re-established; the service area will be constructed on land that appears to be previously undisturbed. Access to the area is from Poisons Spider Road (Co. Rd. 201) and Powder River Road (Co Rd. 210). Access into the field area is not controlled.

Use of the area by livestock would be impacted by the reduction in available forage as a result of the implementation of the Proposed Action. The surrounding area is rated at 7.5 acres per AUM (animal unit month), the interior of the field likely supports cattle at a much lower rate due to the amount of area impacted by past oil and produced water spills, the housing and other structures, such as the tank battery and shop buildings. This area likely supports approximately 71.5 AUMs at the current time, not considering drought conditions. RWP plans to implement the Reclamation Plan which will affect approximately 31.37 acres of previously disturbed area; the shaft and service areas and vent shaft would impact 9 acres of previously undisturbed area resulting in the short term loss of 2.7 AUMs and would result in the LOP net gain of 2.0 AUMs compared to today. The total area impacted by LOP oil field development from the Proposed Action would be approximately 8.6 acres compared to the 31.37 acres affected today. Reductions in the available AUMs are assumed in the BLM land use planning process (BLM 1981).

Non-developed recreation in the general vicinity of the Poison Spider oil field includes big game and upland game bird hunting. Access into the area via Poison Spider and Powder River roads is uncontrolled and provides recreational opportunities to many residents of Casper and Natrona County. Access to the area hunting and recreational opportunities would not be impacted by the Proposed Action. Hunting opportunities in close proximity of the shaft may be impacted during shaft drilling by noise and activity.

Mineral ownership in the project are would not be impacted by the Proposed Action. No sand and gravel operations will take place or be impacted by the Proposed Action.

#### 4.4.3.2 No Action Alternative

Under the No Action Alternative the Proposed Action would be denied and no project related disturbance would take place. Federal minerals will not be recovered and revenues from these minerals will not be realized by the State of Wyoming and the federal government. There would be no impacts to non-developed recreation and the livestock AUMs and wildlife forage will not be reduced nor would the forage be enhanced by implementation of the Reclamation Plan.

#### 4.4.3.3 Alternative A

Under Alternative A the AUMs available in the field area would be reduced from the current level of 71.5 to approximately 44 AUMs in the short term and 61 in the long term. Minerals would be recovered at a much slower rate but would be recovered over a period of 20 to 60 years depending on the rate of development. Non-developed recreation would not be impacted by the development activity as the field area does not currently provide hunting opportunities due to the housing and field activities.

#### 4.4.3.4 Mitigation and Monitoring

Noise abatement as discussed in Section 4.2.5 is important to the maintenance of the rural atmosphere appreciated by hunters as well as maintaining the habitat of wildlife such as greater sage-grouse. Reclamation of project disturbances and noxious weed control, as described in Section 4.3.1, reduce the short and long term reduction of forage available for wildlife and livestock.

#### 4.4.3.5 Residual Impacts

Once the resource is depleted, equipment removed and the surface is fully reclaimed forage for wildlife and wildlife will be fully recovered. Minerals developed and produced are removed and will not return. The rural feeling of the area will also be restored and enhanced by the removal of housing and unnecessary structures.

#### 4.4.3.6 Cumulative Impacts

The cumulative impact analysis area for land use resources, with the exception of the mineral resource, is the poisons Spider field area. Current land uses in the JDPA will not be affected beyond those impacts discussed in section 4.4.2.1 with the exception of the availability of forage AUMs. There is no anticipation of significant cumulative impacts to current land uses in the analysis area unless the field area to the north is developed at 2.5 acres spacing, as authorized by the WOGCC (2006a). Minerals are impacted by the continued development, production and sale of oil from the Sundance formation throughout the Platte River Resource Area. It is anticipated that this is a significant impact but one that was anticipated in the development of the RMP and as a result of mineral leasing by BLM.

A successful project might lead to more UAORF projects in surrounding fields-if there is no additional development resulting from a successful project, the cumulative impact would be essentially the same as that anticipated and analyzed for the Proposed Action.

#### **4.4.4 Visual Resources**

The Bureau of Land Management has mapped the Poison Spider field area as VRM Class IV (BLM 1981, BLM 2006c). The objective of this classification is to “provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However every effort should be made to minimize the impact of these activities through careful location, minimal disturbance and repeating the basic elements.”

##### 4.4.4.1 Proposed Action, Direct and Indirect Impacts

The proposed project is expected to meet the BLM VRM objective. The entire field area is visible to anyone traveling on area roads due to the rolling and open topography and the sagebrush grasslands vegetation. The shaft and service areas would be adjacent to Poison Spider Road, the vent shaft is just east of Powder River Road, the reclamation areas and the two individual water injection wells, while in the interior of the field would also be visible. Photographs of the proposed development and LOP surface equipment are found in Chapter 2, photographs of the area are found in Chapter 3.

Visually remarkable features of the Proposed Action include:

- Shaft Area features:
  - Cuttings pit
  - Cuttings pit spoil and top soil stock piles
  - Spoils pile from tunnel excavation
  - Miscellaneous equipment including closed drilling mud system for underground operations, equipment storage and bulk fuel tanks
  - Drilling mechanism for shaft construction
  - Shaft headframe
- Service Facility features:
  - Office and employee change room trailers
  - Storage and shop building
  - Pole barn
- Reclamation Area features:
  - Stockpiles of spoil and topsoil at the demolished housing area
  - 31.37 acres of reclaimed area with associated storm water control BMP's

Shaft drilling equipment would be highly visible throughout that stage of the operation; once drilling was completed the equipment would be removed from the site. The spoil stock pile at the Camp Area could be as much as 53 feet tall while the top soil pile and the Shaft Area spoil pile could be as high as 24 feet at various times in the project.

Material will be removed from the tunnel and either moved directly to the Camp Area spoil pile area or will be stockpiled at the shaft area for use. These piles will expand and contract as the Reclamation Plan is implemented. These piles would be completely consumed in the reclamation process with the exception of 8,700 cubic yards of material which would be stockpiled in the Shaft Area for the eventual closure of the shaft and vent raise. This LOP stock pile would be contoured and reseeded for stability and to reduce visual intrusion. Drilling cuttings pit would be allowed to dry following completion of all drilling operations then backfilled in compliance with WOGCC and BLM requirements, this area would then be reseeded. The portable equipment storage buildings in the Shaft Area would be removed when no longer needed as would the generators and closed drilling mud system. These highly visible features would cease

to exist approximately three years into the project.

Remaining at the Shaft Area would be the fuel tankage as well as the shaft headframe. The headframe, see Photo 2-2, would be approximately 80 feet tall and would be present through the life of the project. The Service Area would also be a life of project feature, though the portable crew trailers would be removed from the site once underground development work was completed, all remaining aboveground facilities not requiring safety coloration will be painted with appropriate non-reflective standard environmental colors (Carlsbad Canyon or Desert Brown, or other specified standard environmental colors) as determined by the Authorizing Officer.

Three years into the project the shaft and service areas will continue to be highly visible from Poison Spider Road but the stock piles and numerous pieces of temporary and portable equipment will have been removed, the reclamation plan would have been fully implemented and the housing and outbuildings would have been removed reducing the operational area to the 8.6 acres associated with the Proposed Action.

The extension of electrical power from the current tank battery area to the service and shaft areas would be with wooden poles to conform to the BLM Poison Spider corridor requirement.

Once the resource is depleted and operations cease all equipment and structures, including the headframe, would be removed and the disturbed areas re-contoured and re-vegetated as described in the Reclamation Plan.

#### 4.4.4.2 No Action Alternative

Under the No Action Alternative the Proposed Action would be denied and no new project related disturbance or visual intrusions on the natural landscape would take place.

#### 4.4.4.3 Alternative A

This alternative would result in the addition of 192 wells with pumping units spread across 2/3 of the 560 acres leased area. Roads, pipelines and power lines would connect these wells to the service area tank battery. These wells would be drilled over the next 16 to 32 years, reclamation of unneeded disturbed areas would take place over that same time frame. It would be expected that some wells would be depleted prior to the completion of full field development and would be plugged over the same time periods.

#### 4.4.4.4 Mitigation and Monitoring

The mitigation measures included in the POD, the reclamation plan, and the SUP and the ACEPM in the APD are adequate to reduce the potential for adverse impact to the visual resource in the project area.

#### 4.4.4.5 Residual Impacts

The Proposed Action would not result in permanent changes to the existing landscape. Implementation of the Reclamation Plan would facilitate the return of the pre-existing vegetative community.

#### 4.4.4.6 Cumulative Impacts

The cumulative impact analysis area for visual resources is the general vicinity of the

Poison Spider project area. There are numerous man made disturbances in the project area including other mature oil field, range improvements, roads, pipelines, power lines, and residences. Oil and gas production facilities are a common part of the landscape of western Natrona County though the occurrence of headframe is unique. Some long term impacts are expected from the project but they are considered consistent with the VRM IV classification.

A successful project might lead to more UAORF projects in surrounding fields-if there is no additional development resulting from a successful project, the cumulative impact would be essentially the same as that anticipated and analyzed for the Proposed Action.

#### **4.4.5 Socioeconomics**

##### 4.4.5.1 Proposed Action, Direct and Indirect Impacts

The Proposed Action would provide continued and improved employment opportunities for some residents of Natrona County. Tax revenues to Natrona County would increase with the development of non-stripper crude oil production and the increase in the local tax base. Benefits would accrue to the state and federal governments from the sale of crude oil. Impacts on local government services would be minimal as the anticipated workforce is relatively small. The stability of the workforce through the development and production phases of the project benefits the local governments by not contributing to the perception or reality of boom and bust oil and gas development cycles and maintaining the stability of families.

The Proposed Action would have a minor impact on the BLM grazing lessee as a result of the short term reduction of AUMs. LOP impacts to the lessee would result in a net increase of 2.0 AUMs relative to the current condition.

##### 4.4.5.2 No Action Alternative

Under the No Action Alternative the Proposed Action would be denied and no additional project related crude oil development would take place. Additional Federal minerals would not be recovered and revenues from these un-recovered minerals would not be realized by the federal and state governments, nor would additional tax revenues be realized by local governments.

##### 4.4.5.3 Alternative A

Alternative A would achieve similar production rates as the Proposed Action but would take 16 to 32 years to reach those volumes. Benefit to state and federal governments would be deferred. Impacts to the grazing lessee would be the loss of 27 of the 71.5 AUMs currently realized on the lease.

##### 4.4.5.4 Mitigation and Monitoring

No additional mitigation or monitoring is recommended.

##### 4.4.5.5 Residual Impacts

The Proposed Action would contribute economic benefit to all levels of government and some individuals.

##### 4.4.5.6 Cumulative Impacts

The underground access crude oil development project at Poison Spider would contribute to the overall economic stability of the City of Casper, Natrona County, the State of Wyoming and the nation by providing well paying stable jobs, spending,

additional tax revenue, and mineral royalties. The current infrastructure of the county would be capable of absorbing the relatively small employee base needed for the project. The overall impact of the project on socioeconomics is positive.

A successful project might lead to more UAORF projects in surrounding fields-if there is no additional development resulting from a successful project, the cumulative impact would be essentially the same as that anticipated and analyzed for the Proposed Action.

#### **4.4.6 Health, Safety, and Transportation**

Health and safety risks arising from the project that may affect the general public or those working on the project include oil and gas occupational hazards, occupational hazards associated with mining operations, the operation of vehicles on improved and unimproved roads, winter driving and working conditions, hunting related firearms accidents, collisions with livestock and big game, natural hazards associated with wild fires. Of these, transportation issues would create the greatest public concern.

##### 4.4.6.1 Proposed Action, Direct and Indirect Impacts

Health and safety risks to personnel would be mitigated through the implementation of compliance programs consistent with applicable MSHA and OSHA standards. As reflected in Chapters 2 and 3, Poison Spider Road (County Road 201) is the only direct route from Casper to the project area. This route is commonly used by the owners of the seasonal/recreational properties west of the project area; it is used by casual recreationalists, hunters, area ranchers and crude oil hauling trucks. Poison Spider is a poor quality, narrow, paved road that is maintained by the Natrona County Road and Bridge Department.

The Proposed Action includes cooperating with the Natrona County Road and Bridge Department to provide safe year round access for crude hauling trucks, mining equipment and crews. As indicated in Table 2-1, it is anticipated that during construction and development operations 9 passenger vehicles, supply trucks and semi-tractors per day will be accessing the project area from Poison Spider Road. This number will remain the same during production but will change from mainly crew and supply vehicles to primarily crude haulers.

The Poison Spider Field is not connected to pipeline; crude oil has traditionally been hauled to Casper markets in tanker trucks. At the anticipated production rate of 2000 BOPD 8 tanker trucks would be needed daily. A 6 inch diameter crude line (BLM permit number W88682) is located approximately one mile west of the field. A pipeline connection to the project area may be economically viable at the anticipated production rates. A right-of-way for such a pipeline would typically be issued in the name of the pipeline company. A right-of-way across BLM managed surface would be required and the pipeline would be constructed, used, maintained, and terminated in conformance with the pipeline company's application/plan of development. The right-of-way would be monitored for construction, use, and reclamation. A separate environmental assessment would be conducted for a pipeline construction permit.

##### 4.4.6.2 No Action Alternative

Under the No Action Alternative the Proposed Action would be denied and no additional project related health or safety impacts would be realized. There would be no increase in road usage, vehicle collisions or road surface wear.

#### 4.4.6.3 Alternative A

Alternative A would result in slightly higher road usage than the current condition as only one drilling rig would be in operation at any one time. An occasional work over rig could also be in operation as well as a small production operations staff. Crude oil production would increase up slowly as new in-fill wells are drilled and completed resulting in a slow increase in the number of tanker trucks on the road.

#### 4.4.6.4 Mitigation and Monitoring

Investigate the possibility of a crude oil pipeline connection as described in 4.4.5.1, above.

#### 4.4.6.5 Residual Impacts

Project related health and safety policies would be implemented but some accidents to personnel would occur. Due to the increased level of truck traffic on Poison Spider Road there is an opportunity for increased risk of traffic accidents and collisions with wildlife and livestock. Proper licensing and awareness training of equipment operators would mitigate and minimize these impacts to some extent.

#### 4.4.6.6 Cumulative Impacts

Cumulative impacts resulting from implementation of the Proposed Action include the following considerations. Increased vehicle traffic especially crude haul trucks on Poison Spider Road would increase as would the opportunity for vehicle and wildlife collisions. Occupational hazards associated with mining and oil and gas development and operations, the risks of operation of vehicles on narrow, poor condition paved roads and poor winter conditions could also contribute to the cumulative impacts of the project on health, safety and transportation.

A successful project might lead to more UAORF projects in surrounding fields-if there is no additional development resulting from a successful project, the cumulative impact would be essentially the same as that anticipated and analyzed for the Proposed Action.

### **4.4.7 Wastes (Solid and Hazardous)**

There are no known solid or hazardous waste sites within the Poison Spider Field area but it is expected that a solid waste disposal sites are present due to the age of the field and the presence of the camp housing area. Reserve pits from earlier oil exploration activities are likely buried adjacent to each active or plug and abandonment well marker, this is an accepted and common industry practice. At least one septic system is in operation, others may also be present.

#### 4.4.7.1 Proposed Action, Direct and Indirect Impacts

Under the Proposed Action RWP would generate limited quantities of solid (non-hazardous) waste and hazardous waste. No hazardous wastes would be disposed of in the project area. All wastes would be managed in compliance with the applicable and appropriate state and federal regulations. Any release of a hazardous material would be managed and reported as required within CERCLA. Such reports would be made to WDEQ/WQD or SHWD, the EPA and/or the WOGCC. The applicable agency spill response and clean-up standards would apply.

Drilling fluids from shaft drilling would be managed in a lined pit located within the shaft area. The mud in this system would be native material comprised of soil and water, standard drilling additives may be used if determined to be necessary.

Spoil from tunnel excavation will be managed as described in the Reclamation Plan (Appendix A). This material will be brought up the shaft on the skip and either loaded for transportation to the Camp area stock pile or will be stock piled in the shaft area. The majority of this material will be used for reclamation of previously disturbed areas or will be maintained in a long term stock pile for final closure of the shaft and vent raise. If water is encountered during tunnel excavation it would be gathered in a sump and pumped to the cuttings pit on the surface for use in the borehole drilling project.

Drilling fluids from the subsurface bore hole drilling operation will be pumped to a closed mud system located on the surface. Cleaned, recycled mud will be pumped back down the shaft for continued use. The closed system technology significantly reduces the volume of water and mud required for well drilling activities and the volume of material to be disposed. Cuttings will be managed in compliance with the WOGCC and BLM requirements and may be buried on site.

Produced water will be injected into the Tensleep and Sundance formations under permits from BLM and WOGCC.

Domestic refuse and non-hazardous construction debris will be removed from the project area and disposed of in a WDEQ approved waste disposal facility. Equipment maintenance fluids and wastes such as used oil, antifreeze, and used oil filters will be managed as required by WDEQ and related EPA rules and regulations. Any waste disposal sites that may be discovered as a result of implementation of the Reclamation Plan would be removal and managed appropriately.

Solid wastes will not be disposed of on site. Permitted third party recyclers may also be used. Sewage will be managed using contract portable toilets and WDEQ approved and installed septic systems constructed on site. All hazardous and non-hazardous wastes will be managed in accordance with applicable state and federal rules and regulations. The overall impact from waste management associated with the project would be minimal.

*The BLM required Hazardous Materials Inventory* for the Proposed Action is located in Appendix D.

#### 4.4.7.2 No Action Alternative

Under the No Action Alternative the Proposed Action would be denied. Wastes consistent with continued operations would continue to be generated and disposed of as according to RWP policies, the applicable state and federal regulations as discussed above and BLM approval. Wastes previously disposed of within the project area, if any, would remain at existing levels.

#### 4.4.7.3 Alternative A

Alternative A would generate drilling fluid at each of the 192 well sites, either closed or standard mud systems would be used. Transferring mud from well site to well site to reduce mud product, water usage and waste disposal costs would be anticipated in an area of concentrated activity. Considerable non-hazardous waste in the form of trash, rig and vehicle maintenance fluids and human wastes would be generated in the course of constructing well sites, drilling wells and laying gathering lines. All these materials would be managed according to the applicable state and federal regulations and as

approved by BLM. Produced water would continue to be injected or may be surface discharged under a WDEQ/WQD WYPDES permit. Existing waste disposal sites in the field would remain as they are unless uncovered and managed during construction operations.

#### 4.4.7.4 Mitigation and Monitoring

No additional mitigation or monitoring is recommended beyond that described above.

#### 4.4.7.5 Residual Impacts

Some environmental damage would occur as a result of the release of hazardous materials such as crude oil within the project area. Such impacts would likely be minor and the spill response and clean-up timely and appropriate as required by state and federal regulations. Implementation of the RWP Reclamation Plan would result in removal and management of any waste disposal sites that may be discovered.

#### 4.4.7.6 Cumulative Impacts

The Proposed Action would result in a net reduction of wastes buried in the current Poison Spider oil field. Drilling cuttings would continue to be buried on site. RWP may generate waste materials that would require registration as a small quantity hazardous waste generator and implement the appropriate waste management procedures. The cumulative impact of waste generation and management by RWP will have a negligible impact on the project area.