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PRELIMINARY WORKING DRAFT

# HANFORD NATURAL RESOURCE TRUSTEE PILOT PREASSESSMENT SCREEN FOR THE USDOE 1100 AREA OPERABLE UNITS

## 1.0 INTRODUCTION

### 1.1 Authorities

"The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 U.S.C. 9601-9657, and the Clean Water Act (CWA), 33 U.S.C. 1251-1376, provide that Federal and State agencies who are authorized to act as trustees of natural resources may assess damages to natural resources resulting from a discharge of oil or a release of a hazardous substance covered under CERCLA or the CWA and may seek to recover those damages." [§ 11.10 of Natural Resource Damage Assessments (NRDA); 43 CFR Part 11]. "Section 107(f) of CERCLA also recognizes the authority of Indian tribes to commence actions as natural resource trustees." (58 FR 39328).

The use of the NRDA regulations is not mandatory. Trustees can decide individually or collectively what process works best for both assessing natural resource damages and seeking restoration of lost resources and the services they provide.

### 1.2 Purpose

The purpose of this preliminary working draft is to conduct a pilot Preassessment Screen (PAS) for selected waste sites in the 1100 Area. This exercise is intended to facilitate Trustee understanding of the PAS process.

The purpose of a PAS is to enable the Natural Resource Trustees to make an informed decision in regard to whether a past or continuing discharge of oil or release of a hazardous substance warrants the preparation of a formal and comprehensive natural resource damage assessment. In brief, the PAS is "...a rapid review of readily available information...[in regard to trust resources with which to] ensure that there is a reasonable probability of making a successful claim" [§ 11.23(b) of NRDA] and, therefore, to determine whether a damage assessment should be performed.

In lieu of a PAS, Trustees can use a similar process that satisfies the requirements of the PAS [§ 11.23(f)(4) of NRDA].

### 1.3 Scope

The scope of this pilot PAS is limited to the Horn Rapids Landfill (HRL) and the groundwater immediately upgradient and downgradient of the landfill (both sites are within the 1100-EM-1 Operable Unit). Other sites, such as the landfills associated with the Fitzner/Eberhardt Arid Lands Ecology Reserve, NIKE missile base (1100-IU-1 Operable Unit), may be added for evaluation at a later date.

For the purposes of this pilot PAS, all potential releases of a hazardous substance from the 1100 Area are assumed to be addressed under only CERCLA and not the CWA. No

further mention will be made in regard to either a discharge of oil or the CWA's applicability to a natural resource damage claim.

### 1.4 Criteria to be Addressed

This pilot PAS will use the criteria established by § 11.23(e) of NRDA as a framework for organizing relevant information and for drawing conclusions. The decision to proceed past the preassessment phase (PAS) to a full assessment is based on satisfying all of the criteria . These criteria are:

- A release of a hazardous substance has occurred;
- Natural resources for which the Federal or State agency [or Indian tribe] may assert trusteeship under CERCLA have been or are likely to have been adversely affected by the release;
- The quantity and concentration of the released hazardous substance is sufficient to potentially cause injury, as that term is used in [43 CFR 11], to those natural resources;
- Data sufficient to pursue an assessment are readily available or likely to be obtained at reasonable cost; and
- Response actions, if any, carried out or planned do not or will not sufficiently remedy the injury to natural resources without further action.

### 1.5 Damages Excluded from Liability Under CERCLA

A natural resource damage assessment under 43 CFR Part 11 shall not be continued for potential injuries if one or more of the following criteria of § 11.24(b)(1) of NRDA are met:

- The release was specifically identified as an irreversible and irretrievable commitment of natural resources in an environmental impact statement or other comparable environmental analysis, that the decision to grant the permit or license authorizes such commitment of natural resources, and that the facility or project was otherwise operating within the terms of its permit or license; or
- The release of the hazardous substance(s) and the resultant damages occurred wholly before the enactment of CERCLA; or
- The damages resulted from the application of a pesticide product registered under the Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. 135–135k; or
- The damages resulted from any other federally permitted release, as defined in Section 101(10) of CERCLA.

## 2.0 CRITERIA 1: OCCURRENCE OF A RELEASE OF A HAZARDOUS SUBSTANCE

### 2.1 Horn Rapids Landfill

#### 2.1.1 Site Description and Release Information

The HRL covers about 20 ha (50 acres) northeast of the Siemens Power Corporation (SPC) facility and north of Horn Rapids Road. The landfill was operated as an uncontrolled landfill from the late 1940s until the 1970s. The landfill is sited in generally flat terrain. Five partially to completely filled disposal trenches have been identified at the site through a study of historic aerial photographs, onsite investigations, and geophysical surveys. Disposal of office and construction waste, asbestos wastes, sewage sludge, and fly ash is known to have occurred at the landfill.

Surface debris consisting of auto and truck tires, wood, metal shavings, soft drink cans and bottles, and other small pieces of refuse are scattered across the site.

2.1.2 Identity of the Hazardous Substance(s) Released

Debris encountered during characterization activities (i.e., trenching) included automotive, shop, construction, miscellaneous, medical, and unknown. Although only a single trench, the western-most of the identified waste disposal trenches, was posted with signs warning that the area contained asbestos, the collection of asbestos-containing materials during trenching activities indicated that these materials are scattered throughout what is estimated to be the 10.1 ha (25 acre) area actively used as the landfill (DOE-RL, 1993). Much of the collected asbestos material is in a friable state.

Polychlorinated biphenyl (PCB) contaminants were encountered in the surface and subsurface soils of the HRL (DOE-RL, 1993). All PCBs detected above background levels in the surface soil samples were identified as Aroclor-1248. Subsurface samples with above background concentrations contained either Aroclor-1248 or Aroclor-1254. All samples in which PCB concentrations were above background were collected from within a localized area of the landfill. The estimated volume of the contaminated soil is 460m$^3$ (600 yd$^3$) (DOE-RL, 1993).

2.1.3 Additional Hazardous Substance(s) Potentially Released from the Site

Besides PCBs and asbestos, numerous inorganic, organic, and pesticide contaminants were encountered during characterization activities in the surface and subsurface soils of the HRL (see DOE-RL, 1993; pages 3–24 and 3–28). The soil contaminants of potential concern for the HRL are identified on page 4–18 of DOE-RL (1993).

2.1.4 Relevant Operations Occurring at or Near the Site

The majority of the land nearby is undeveloped. To the south are areas that contain vehicle maintenance and warehouse activities (remainder of the 1100-EM-1 Operable Unit sites). To the east of the landfill are the Battelle Pacific Northwest Laboratory office complex. To the southeast are Kaiser offices, lay-down yard and staging areas (part of the DOE 3000 Area), and several office buildings. To the west and southwest of the landfill is an area of mixed types of industrial and commercial uses that includes light industrial, commercial, the Richland Airport, SPC (reactor fuel rod facility), and the Richland sanitary landfill.

2.1.5 Potentially Responsible Parties

The U.S. Department of Energy has taken responsibility for the HRL.

2.1.6 Damages Excluded from Liability Under CERCLA

Because there is the potential that asbestos and PCB contamination is causing ongoing injuries to natural resources (see Section 4.1.2), the releases of asbestos and PCBs are not excluded from liability under CERCLA.

## 2.2 Groundwater Upgradient and Downgradient of the Horn Rapids Landfill

### 2.2.1 Site Description and Release Information

Groundwater contaminated with trichloroethene (trichloroethylene; TCE) and nitrate has been identified both upgradient and downgradient of the HRL. Monitoring data indicates that the TCE contamination is the result of a single or limited spill. The total amount of TCE released, based on 1990 well data (DOE-RL, 1993), is estimated to be no more than 110 liters (30 gallons). The TCE plume is about 1.6 km (1 mile) long and 0.3 km (0.2 mile) wide. Contaminants within the plume are moving in a northeasterly direction.

### 2.2.2 Identity of the Hazardous Substance(s) Released

Nitrate and TCE have been released into the groundwater beneath the HRL.

### 2.2.3 Additional Hazardous Substance(s) Potentially Released from the Site

Groundwater sampled from monitoring wells on SPC property that intercept the plume contains dissolved ammonia, sulphate, fluoride, and elevated beta activity, as well as TCE and nitrate. Technetium-99 (Tc-99) seems to account for most, if not all, of the elevated beta activity. Table 3–7 of DOE-RL (1993) contains the complete list of groundwater analytes detected during 1100-EM-1 groundwater investigations that exceeded background or the Maximum Contaminant Levels (MCLs) of the National Drinking Water Regulations. Only TCE and nitrate were evaluated as contaminants of potential concern for the 1100-EM-1 Operable Unit groundwater. Technetium-99 was eliminated from further consideration because of its low average concentration compared to its proposed MCL value (DOE-RL, 1993).

### 2.2.4 Relevant Operations Occurring at or Near the Site

See Section 2.1.4 above.

### 2.2.5 Potentially Responsible Parties

The following information is taken from DOE-RL (1993). Siemens Power Corporation is the current corporate entity that owns the fuel fabrication facility in Richland, Washington. Several chemical waste storage lagoons are maintained onsite. The lagoons received wastes from the fabrication process that contained dissolved ammonia, sulfate, fluoride, and nitrate. Trichloroethene, nitrate, ammonia, fluoride, and radionuclides (gross-alpha and gross-beta radiation) were found to be present in the groundwater at the SPC facility. All of these analytes can be attributed to the lagoons except TCE, which was not used in process applications; TCE was used during lagoon liner installation as a cleaning agent. The TCE data from SPC wells does not support the existence of a continuous source at SPC. A TCE source from the HRL is not supported by the available data. The potential for a nitrate source in HRL cannot be entirely ruled out; however, as for TCE, the location and concentrations observed in the groundwater beneath HRL are consistent with the migration of nitrate from SPC to HRL. Subsequent groundwater sampling and analyses have shown TCE and nitrates to be the major contaminants of concern.

2.2.6 Damages Excluded from Liability Under CERCLA

The releases of TCE and nitrate are not excluded from liability under CERCLA.

## 3.0 CRITERIA 2: LIKELIHOOD OF TRUST RESOURCES HAVING BEEN ADVERSELY AFFECTED BY THE RELEASE

### 3.1 Horn Rapids Landfill

3.1.1 Preliminary Identification of Potential Exposure Pathways

Potentially wildlife can be exposed to asbestos-containing materials by air and direct contact with contaminated soils. Asbestos-containing materials were found dispersed throughout the landfill soils; thus, there is the potential for asbestos fibers to be dispersed to the air as a fugitive dust component when soil disturbance occurs. Direct contact also can occur when asbestos is exposed on the surface or to burrowing mammals below surface.

PCBs are relatively immobile in the soil/groundwater system due to rapid and strong soil sorption; however, they are then available for direct contact by soil fauna. PCBs can be bioaccumulated; thus, wildlife exposure can occur via the food chain.

3.1.2 Estimate of Exposed Areas

According to DOE-RL (1993), asbestos-containing materials are dispersed over about 10.1 hectares (25 acres). PCB contaminated soils are present within a localized area of the landfill. The PCB contaminated area is estimated to be bounded by a 17.3m by 17.3m (57.75 $ft^2$) square. The estimated volume of the contaminated soil is $460m^3$ (600 $yd^3$). There is no evidence to suggest that the asbestos has spread to other areas through pathways such as air and food chains; however, PCB contamination may have spread to Swainson's hawks (*Buteo swainsoni*) that nest outside the landfill and may forage at the landfill (see Section 4.1.2).

3.1.3 Estimate of Groundwater or Surface Water Exposed

There is no evidence to suggest that asbestos and PCBs have migrated from the HRL to surface water or groundwater (DOE-RL, 1993).

3.1.4 Identification of Potentially Affected Natural Resources and a Preliminary Estimate of the Services They Provide

Natural resources that could be injured from the release of a hazardous substance include the air, groundwater, surface water, geologic, or biological resources. Because of the possibility of the release of asbestos as a component of fugitive dust, the air resource at HRL could be injured. The presence of asbestos fibers in the air could preclude use of the area for recreation or for traditional Native American uses. There is no evidence that PCBs from the HRL are leaching into the groundwater.

A biotic survey was performed at the HRL in the spring of 1989 (DOE-RL, 1990). The most common plant species observed included rabbitbrush (*Chrysothamnus* spp.), cheatgrass (*Bromus tectorum*), Sanberg's bluegrass (*Poa sandbergii*), and Russian thistle (*Salsoa kali*). Only scattered big sagebrush (*Artemisia tridentata*) and

bitterbrush were present (*Purshia tridentata*). The HRL and surrounding area is primarily a big sagebrush / Sandberg's bluegrass community typical of the lower Columbia River plain within the Hanford Site (Brandt, 1993). The entire area was overrun by wildfire 10–15 years in the past and has lost most of its large shrub cover. Additionally, the HRL shows the obvious signs of physical disturbance that indicate its past use as a disposal area (DOE-RL, 1990).

Mammal species observed or their sign during the biotic survey included the Townsend ground squirrel (*Spermophilus townsendii*), cottontail rabbit (*Sylvilagus* sp.), Great Basin pocket mouse (*Perognathus parvus*), mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*), and badger (*Taxidea taxus*). Bird species observed included the northern harrier (*Circus cyaneus*), western meadowlark (*Sturnella neglecta*), horned lark (*Eremophilia arvensis*), and long-billed curlew (*Numenius americanus*) (state monitor species). Historic records identify the HRL and immediate surrounding area as a curlew nesting area (Allen, 1980). The biotic surveys may have been conducted too early in the year to detect all migratory birds frequenting the HRL area (DOE-RL, 1990). Swainson's hawks (state candidate species) have historically nested in trees close to the HRL (Poole et al., 1988). Moreover, burrowing owls (*Athene cunicularia*) (state candidate species) also may use the site (DOE-RL, 1990). The biotic survey did not report on the occurrence of amphibians, reptiles, or invertebrates at the HRL.

The soil portion of the geologic resources also could be injured from the presence of contaminants at the HRL. Soil provides services such as a growth medium for vegetation and habitat for biota other than vegetation (USDOI, 1987).

## 3.2 Groundwater Upgradient and Downgradient of the Horn Rapids Landfill

### 3.2.1 Preliminary Identification of Potential Exposure Pathways

Potential exposure pathways are limited to groundwater and surface water. Nitrate is highly mobile and TCE is relatively mobile in the soil/groundwater system. Natural attenuation of TCE can occur through dispersion, volatilization, and biodegradation. The biodegradation byproducts are dichloroethene and vinyl chloride.

### 3.2.2 Estimate of Exposed Areas

Exposed areas are limited to groundwater. There is no evidence to suggest that the nitrate and TCE contamination have spread to other areas through pathways such as air and food chains.

### 3.2.3 Estimate of Groundwater or Surface Water Exposed

According to DOE-RL (1993), the TCE plume is about 1.6 km (1 mile) long and 0.3 km (0.2 mile) wide. The total volume of groundwater within the TCE plume is approximately 132,000 $m^3$ (0.5 billion gallons). The TCE plume is estimated to be distributed evenly in the vertical direction throughout the unconfined aquifer. The extent of the nitrate plume was not described. There is no evidence to suggest that surface waters have come in contact with contaminated groundwater.

Because DOE-RL (1993) provides an evaluation of the area exposed to TCE, use of Appendix I of 43 CFR Part 11 to estimate the area of groundwater exposed is not

necessary. Should an estimate be necessary for the extent of nitrate contamination, then Appendix 1 can be consulted.

3.2.4 Identification of Potentially Affected Natural Resources and a Preliminary Estimate of the Services They Provide

The contaminated plume itself is the potentially injured natural resource. Although not currently used as a drinking water source, it potentially could provide that service as well as providing water for irrigation or watering stock. There also is the possibility, however remote, that in the future the groundwater plume could contaminate surface waters. There are no current wildlife uses of this groundwater; however, installation of supply wells could make this water available to wildlife.

## 4.0 CRITERIA 3: QUANTITY AND CONCENTRATION OF THE RELEASED HAZARDOUS SUBSTANCE(S) AND ITS SUFFICIENCY TO POTENTIALLY CAUSE INJURY TO TRUST RESOURCES

### 4.1 Horn Rapids Landfill

4.1.1 Estimate of Concentrations

Asbestos-containing materials are dispersed throughout the landfill; however, neither DOE-RL (1993) nor DOE-RL (1994) provide information on expected concentrations of asbestos fibers in the fugitive dust that could be released during remediation or on potential soil concentrations.

The maximum detected soil concentration of PCBs at the HRL was 102 mg/kg (Table 4–7 in DOE-RL, 1993). Table L-2 of Appendix L of DOE-RL (1993) provides information on maximum soil concentrations for other contaminants of potential concern that could be present at the HRL (The concentrations are based on the maximum concentrations recorded for each contaminant within the entire 1100-EM-1 Operable Unit and not necessarily at the HRL.).

4.1.2 Sufficiency to Cause Injury to Potentially Affected Natural Resources

Not a lot is known about the toxicological effects of asbestos on wildlife. Opresko et al. (1993) provide some extrapolated toxicological benchmarks for asbestos effects on select wildlife species. To determine whether or not wildlife at HRL would be potentially injured from asbestos exposure requires information on exposure concentrations and pathways.

Polychlorinated biphenyls occur in a variety of different formulations. The Aroclor formulations differ in the percent chlorine they contain. Generally, the higher the chlorine content — for example, Aroclor-1254 has more chlorine than Aroclor-1248 — the greater the toxicity (Opresko et al., 1993). Opresko et al. (1993) provide toxicological benchmarks for Aroclor-1254 for various, but limited, mammal and bird species that are extrapolated from experimental results on specific species (Eisler, 1986, proposes even more conservative benchmark criteria to minimize the effects of PCB exposure to wildlife.). Relevant values here are the extrapolated no-observed-adverse-effects-levels (NOAELs) for the cottontail rabbit and red-tailed hawk (*Buteo jamaicensis*) of 0.046 mg/kg/d and 1.57 mg/kg/d, respectively. The DOE-RL (1993) benchmark value for PCBs was 325 mg/kg ( instead of a NOAEL this represents a Toxic Dose Low value for mammals).

The Swainson's hawk was identified as a measurement endpoint for the ecological risk assessment for the 1100-EM-1 Operable Unit (DOE-RL, 1993). The risk assessment models of DOE-RL (1993) are used here as one means of assessing whether there are potentially injured natural resources at the HRL. Risk assessment must account for the potential of the released hazardous substance to cause either direct or indirect injury to a species that acts as a measurement endpoint. Thus, it is important to compare potential site-specific uptake values of a contaminant with toxicological benchmarks for both the species of interest and for other species that may constitute part of its food requirement. Benchmark values for the cottontail rabbit can be used to indicate potential effects to the Swainson's hawk prey base and values for the red-tailed hawk can be used to assess the potential for direct injury to the Swainson's hawk.

Based on a PCB contaminant concentration of 100 mg/kg, DOE-RL's (1993) ecological risk assessment (Appendix L) identified a Swainson's hawk uptake rate of 2.5 mg/kg/d. This exceeds the red-tailed hawk NOAEL value of 1.57 mg/kg/d. Uptake rates for the cottontail rabbit were not calculated by DOE-RL (1993). An uptake rate for the cottontail rabbit is not provided by DOE-RL (1993) but can be estimated from the data in Opresko et al. (1993) for food intake rate and body weight, the plant uptake rate for PCBs in DOE-RL (1993), and by assuming that the combination of exposure frequency, duration , and averaging time (DOE-RL, 1993) equals one. This results in an uptake rate of 0.026 mg/kg/d. Compared to the benchmark value of 0.046 mg/kg/d the cottontail rabbit should not be adversely affected by exposure to PCBs at HRL. In conclusion, the Swainson's hawk is potentially injured by the direct effects of PCB uptake but not by indirect injuries to a portion of its prey base.

The level of PCBs concentrations at the HRL also could cause injury to the soil. There is not enough information available to make a conclusive determination; however, it is possible that the PCBs have caused injuries to soil microbes and invertebrates.

## 4.2 Groundwater Upgradient and Downgradient of the Horn Rapids Landfill

### 4.2.1 Estimate of Concentrations

Nitrate and TCE concentration data differ according to location in the plume (i.e., upgradient and downgradient) and time of sampling relative to when the release occurred (The TCE release may no longer be occurring and some attenuation of the contaminant's concentration has already occurred.). Maximum reported concentrations were 1800 mg/L for nitrate and 420 µg/L for TCE (DOE-RL, 1993). Human risk assessments were performed using values of 45 mg/L and 75 µg/L for nitrate and TCE, respectively (Table 5–17 of Appendix K in DOE-RL, 1993).

### 4.2.2 Sufficiency to Cause Injury to Potentially Affected Natural Resources

Both nitrate and TCE concentrations in the plume exceed drinking water standards. As such, this represents an injury to the groundwater.

There are no freshwater water quality criteria for both TCE and nitrate by which to judge a potential injury to wildlife (Water Quality Standards Regulation - 40 CFR 131, as amended through December 22, 1992); however, EPA (1987) does suggest lowest-observed-adverse-effect-levels (LOAELs) of 45,000 µg/L (acute) and 21,900 µg/L(chronic) for TCE and a NOAEL of 90 mg/L for nitrate (based on warmwater fish).

Opresko et al. (1993) extrapolated from human toxicological data to obtain a nitrate toxicological benchmark of 26 mg/L for water consumption by white-tailed deer (*Odocoileus virginianus*). Because mule deer average slightly larger in body weight than white-tailed deer their benchmark value would be slightly lower (Opresko et al., 1993).

Although the maximum recorded nitrate concentration exceeds a toxicological benchmark for some aquatic organisms (also see Driver, 1994), mean plume concentrations are generally well below these values. The risk assessment benchmark value of 45 mg/L nitrate exceeds the drinking water benchmark for deer. For TCE, even the maximum recorded TCE concentration is well below any toxicological benchmark.

Although nitrate concentrations may exceed some toxicological benchmarks, there is at present no pathway of exposure from the groundwater to wildlife for both nitrate and TCE.

## 5.0 CRITERIA 4: SUFFICIENT DATA TO PURSUE AN ASSESSMENT ARE READILY AVAILABLE OR OBTAINABLE AT REASONABLE COST

### 5.1 Horn Rapids Landfill

### 5.2 Groundwater Upgradient and Downgradient of the Horn Rapids Landfill

## 6.0 CRITERIA 5: ADEQUACY OF RESPONSE ACTIONS TO REMEDY THE INJURY TO TRUST RESOURCES WITHOUT FURTHER ACTION

### 6.1 Horn Rapids Landfill

The Record of Decision for the USDOE Hanford 1100 Area (September 1993) identified the selected remedial action at the HRL as first the removal of the contaminated soil containing PCBs to a cleanup level of 5 mg/kg and then the placement of an asbestos cap over the actively used 10.1 ha (25 acre) portion of the landfill. All soil above 5 mg/kg PCBs (estimated at 226 $m^3$ or 296 $yd^3$) would be removed to an offsite permitted landfill. The asbestos cap would be placed in accordance with the asbestos National Emissions Standards for Hazardous Air Pollutants (40 CFR 61.151). Total cap thickness would be 60 cm (2 ft), the last 15 cm (6 in) of which would be topsoil that was seeded with dryland grasses. To restrict public access to the site a perimeter chain link fence would be erected and posted with warning signs to indicate the site contained asbestos (DOE-RL, 1993, 1994). Deed restrictions also would be necessary.

A soil concentration level of PCBs of 5 mg/kg would result in an uptake rate of 0.125 mg/kg/d for the Swainson's hawk. This is 10 times lower than the toxicological benchmark of 1.57 mg/kg/d. The remaining PCB contaminated soil should not pose a threat to most wildlife; however, unless there are data to suggest otherwise, soil biota may still be affected. Thus, there may still be an impact to soil services.

The description of alternatives for constructing the asbestos cap in DOE-RL (1993) included one option that involved an established and maintained vegetative cover over 15 cm of non-asbestos-containing soil. This alternative seems to have been

rejected because of the anticipated difficulty in establishing and maintaining a vegetative cover in a semi-arid environment (DOE-RL, 1993). Thus, the vague reference to the seeding of dryland grasses and the concern over the difficulty of successful revegetation implies that a native vegetative cover may not be restored at the HRL as part of the response action. This could have an impact on potential wildlife usage of the area; for example, nesting by curlews and foraging by Swainson's hawks could be precluded. Further, the placement of a perimeter fence will potentially limit the services that the natural resources of the site could provide. Access will not be possible for recreational or traditional Native American uses.

### 6.2 Groundwater Upgradient and Downgradient of HRL

The Record of Decision for the USDOE Hanford 1100 Area (September 1993) identified the selected remedial action for the groundwater to be the use of natural attenuation, monitoring, and evaluating the need for further action. Under this action groundwater contamination would be allowed to attenuate naturally. Restrictions would be imposed on the drilling of drinking water supply wells. The contaminated plume is not used currently as a drinking water supply and there are no domestic consumers downgradient of the plume (DOE-RL, 1993). Monitoring wells would be installed to keep track of plume migration and nitrate and TCE levels. Active groundwater remediation would be evaluated should TCE concentrations exceed the MCL at the monitoring wells.

Wildlife resources are not currently impacted by the contaminated plume; however, while the plume remains contaminated it remains unavailable to provide the service of a water supply for drinking, irrigation, and watering stock.

## 7.0 SUMMARY EVALUATION OF PAS CRITERIA

## 8.0 CONCLUSIONS AND FURTHER TRUSTEE ACTION

## 9.0 LITERATURE CITED

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