VOLUME 1 CHAPTER 2

2.0 GENERAL FACILITY DESCRIPTION

2.1 GENERAL FACILITY DESCRIPTION

2.1.1 General

This Part B Hazardous Waste Permit Application has been prepared in accordance with permanent facility standards, 40 CFR 264, to cover post-closure care and ground water protection measures due to the on-site disposal of creosote. Creosote leaked into the subsurface gravels and bedrock, and creosote constituents have been detected in ground water located below the PacifiCorp Hazardous Waste Management Facility (HWMF). From a regulatory stand point, the remaining creosote impacts are being interpreted as a landfill type of land disposal unit (LDU).

2.1.2 Location

The PacifiCorp Idaho Falls HWMF is located in the northeast quarter of Section 25, Township 2N, Range 37E in Bonneville County, Idaho, as shown on Figure 1.1. The site is a trapezoidal shaped area of 5.4 acres which is located between 20th and 23rd Streets and Leslie and Yellowstone Avenues in Idaho Falls, Idaho. The creosote release occurred in the southwest portion of the site within the area labeled as the LDU on Figure 2.1.

2.1.3 Creosote Treatment Facility

The PacifiCorp Idaho Falls Pole Treatment Yard was a facility for non-pressurized creosote treatment of wooden electrical power poles. The poles were dipped into a treatment vat containing creosote until takeup of creosote was completed, then they were removed and suspended over the tank to allow excess creosote to run off. The poles were then transferred to other areas of the site where they were left to cure and stored until needed.

The creosote which was utilized to treat the poles is listed as a hazardous substance and is assigned hazardous waste number U051 (40 CFR 261.33(f)).

Prior to July 1983 when the creosote leak was discovered, the creosote treatment facility consisted of a treatment vat, a condensate tank, a storage tank and a boiler to provide heating of the creosote. These facilities were located in the area labeled as the LDU as shown on Figure 2.1, except for the boiler located south of the LDU in the boiler building. All creosote treatment facilities have been removed from the site and disposed of at on off-site hazardous waste management facility (Envirosafe Services of Idaho near Mountain Home, Idaho) and no future pole treatment facilities or operations are proposed at the facility.

2.1.4 Creosote Leakage at Facility

In July of 1983, a leak in the creosote line was discovered in the underground piping connecting the vat to the storage tank. Exploration borings, surface sampling and earthwork activities performed as part of the corrective action indicated that creosote contaminated the soil immediately below the original treatment equipment and also has contaminated the bedrock both below and immediately adjacent to these facilities. Ground water detection monitoring wells also indicate the presence of some creosote constituents in the ground water. The amount of creosote released at the site is difficult to determine because the site was operated as a creosote treatment facility for approximately sixty years.

2.1.5 Topography

The original site topography was relatively level with maximum relief from the north to the south on the order of four to five feet. Figure 2.3 presents the site topography as it was (October 1984). The excavation area where the creosote leakage occurred has been backfilled and graded to provide positive drainage away from the spill area with an established slope of one to two percent.

The more regional topography is also relatively level except where the surface slopes down approximately 20 feet to the Snake River located 1,000 yards northwest of the site.

2.1.6 Land Use

The site is located in the southwest part of Idaho Falls along Yellowstone Avenue. Commercial/industrial facilities presently border Yellowstone Avenue with the nearest residential structures located several blocks east of the site.

The pole yard area is zoned I&M-1 Industrial and Manufacturing, (Idaho Falls, 2007). Therefore, this area is presently zoned to continue to be developed primarily for commercial and industrial purposes. The 2007 zoning map for the city of Idaho Falls is provided as Figure 2.2 and available online at http://www.ci.idaho-falls.id.us.

2.1.7 Climate

The Idaho Falls area has the semi-arid continental climate typical of eastern Idaho. Summers are warm and winters are cold. Summer day temperatures are moderated by the high altitude and the evenings are cool. Spring is usually cool and often windy. Average January minimum and maximum temperatures are 10.1 and 28.4° F, respectively while average July minimum and maximum temperatures are 52.1 and 86.3°F, respectively.

Annual precipitation averages 8.7 inches, most of which occurs during the winter. Precipitation during November through March normally falls in the form of snow. Pan evaporation is approximately 50 inches per year (Kohler and others, 1955). Therefore, as is typical of semi-arid climates, annual evapotranspiration greatly exceeds precipitation. The prevailing wind direction is from the south-southwest as shown by the wind rose on Figure 2.3.

2.1.8 Subsurface Investigation Findings

2.1.8.1. Soil Investigation Findings

The subsurface investigation conducted at the site determined that the primary source of creosote release was from a failure of an underground piping system which conveyed creosote between the boiler and the treatment vat. The creosote vat was located in the general vicinity of soil boring BH-5 shown on Figure 2.7. Creosote impacts were observed in the thirty feet of shallow overburden sands and gravels as well as the underlying fractured basaltic bedrock.

Remedial activities implemented at the site involved the decommissioning of the creosote treatment facilities and the excavation and disposal of approximately 37,000 tons of impacted soil. The limits of the October 1983 excavation are illustrated on Figure 2.4. The excavation area was backfilled by placing approximately 12 feet of compacted clay immediately above bedrock, followed by clean native gravel to a depth of approximately 2.5 feet below grade. The excavation was then filled with a low permeability clay layer to existing grade. The area of excavation and cross sectional views through the clay cover are shown on Figures 2.5 and 2.6.

The site investigation determined that groundwater in two hydrogeologic units (Aquifers 1 and 2) beneath the site had been impacted with creosote constituents. No impacts were discovered in Aquifer 3. Historical geologic cross sections through the Idaho Falls Pole Yard site are provided in Figures 2.7 through 2.14.

An unconfined aquifer (Aquifer 1) exists within alternating layers of basalt and interflow deposits positioned between the static water level and a depth of 160 feet below ground surface (bgs). Depths to static water level vary seasonally between approximately 110 and 140 feet bgs. The saturated thickness of Aquifer 1, therefore, ranges between a low of approximately 20 feet to a high of 50 feet.

A hard basalt aquitard extending between the depths of approximately 160 and 250 feet bgs underlies Aquifer 1. Aquifer 2 was encountered between the depths of approximately 250 and 270 feet bgs. This semiconfined aquifer exists within a zone of cinder, broken rock, rubble, and fractured basalt. A second aquitard consisting of very dense basalt was then found between the depths of approximately 270 and 370 feet bgs. Aquifer 3 is encountered within high permeability cinder, broken rock, rubble, and fractured basalt materials immediately beneath the second aquitard. The bottom of Aquifer 3 was not defined during the subsurface investigation.

2.2 CHEMICAL AND PHYSICAL ANALYSES OF CREOSOTE

Creosote is a listed hazardous substance with an assigned hazardous waste number of UO51 (40 CFR 261.33(f)). Creosote consists of an oily, translucent distillate of coal tar whose properties vary depending upon the source of the tar. Over 400 individual compounds have been identified. The majority of these compounds are present only in small quantities with major constituents comprising 21 compounds which are listed in Table 3.1. Major components of creosote include polynuclear aromatic hydrocarbons (PAHs), phenols, and cresols. Creosote is heavier than water having a specific gravity of 1.05 to 1.09 (at 15 degrees C), but may sink or float on water depending on its composition. Coal-tar creosote as a whole is considered practically insoluble.

Wood-preserving creosote is a distillate from coal tar made by high temperature carbonization of bituminous coal; the typical boiling range of creosote is 175°C to about 450°C (Nestler, 1974). Differences between coal-tar creosotes result from the relative amounts and distribution of types of chemical compounds but not the nature of the compounds. Although numerous individual compounds have been identified in creosote, the components belong to a relatively small number of chemical classes. One of these, the polynuclear aromatic hydrocarbons (PAH), generally accounts for 90 percent of the constituents in creosote and the major members of this class contain no substituent groups. All high-temperature coal-tar creosotes are similar to the extent that they contain varying quantities of the same restricted number of chemical classes. Because of the high

distillation temperature, no significant amounts of volatile organic compounds would be expected. Chlorinated organics would also not be expected.

To evaluate the chemical and physical properties of the contaminated material, a sample of creosote-contaminated soil and water was obtained from BH-5, which is located as shown on Figure 2.7. BH-5 was drilled into the bedrock below the area where the release occurred. Creosote-contaminated liquid accumulated in the open borehole after drilling and a sample of this material was obtained and analyzed. Organic constituents measured are similar to those which would be expected in creosote. No pentachlorophenol was used at the site and none has been detected. Measurements of total arsenic and total cyanide were very low.

Creosote was sampled from bedrock fractures in the bottom of the pit excavation. This sampling was performed jointly with the EPA. EP-toxicity tests indicated very low levels of heavy metals, arsenic and selenium far below levels which would define soils as hazardous waste.

Based on the results of the analyses it was concluded that the major constituents of creosote occur in the sample from BH-5 and sample 15DUP. The reason all of the major constituents of creosote were not present in the samples is because the compounds in a particular creosote product are dependent on the creosote distilling (temperature) process performed.

2.3 WASTE ANALYSES PLAN

The creosote which was released from the treatment facility is a highly complex material. However, major constituents which are typically identified in creosote have also been identified in the subsurface samples. Therefore, it is believed that the single sample from BH-5 is representative of the residual creosote material and that additional sampling and analysis was considered unnecessary.

2.4 SECURITY

The PacifiCorp HWMF is surrounded by a 7.8 foot high galvanized steel, chain link security fence as shown on Figure 2.5. The steel poles to which the fence is attached are set in concrete, the chain link extends 6.8 feet above the ground and above that are three strands of barbed wire angled away from the site. The fence extends completely around the HWMF. This security fence is maintained with locked gates to limit access during non-business hours.

There are warning signs located every 50 feet on the perimeter fence. This sign reads:

"DANGER - HAZARDOUS WASTE, AUTHORIZED PERSONNEL ONLY."

2.5 GENERAL INSPECTIONS

Presented in Volume I Chapter 6 Section 2 of this application.

2.6 PREPAREDNESS AND PREVENTION MEASURES

Presented in Volume 1 Chapters 5 and 6 of this application

2.6.1 Design and Operation of Facility

Presented in Volume 1 Chapters 9 and 10 and Volume II Chapter 1 of this application.

2.6.2 Required Equipment

2.6.2.1. Alarm System

Presented in Volume I Chapter 10 of this permit reapplication.

2.6.2.2. Emergency Equipment

Presented in Volume 1 Chapter 5 Section 4.

2.6.2.3. Water Supply - Fire Fighting

There are four city fire hydrants located outside and near the HWMF. Three are located on the east side of Leslie Avenue approximately 400 feet apart, supplied by the Idaho Falls public water supply and have rated capacities of 1277 gpm at 54 flow psig. The other hydrant is located on the east side of 23rd Street near the main gate and has a rated capacity of 1060 gpm at 42 flow prig. (City of Idaho Falls Fire Department 1984).

In the event of an emergency where the hydrants were not functional, the Snake River is located 3,000 feet from the northwest corner of the facility and water could be obtained by pumping or hauling to the site.

2.6.2.4. Testing and Maintenance of Equipment

All emergency equipment, outer perimeter fence and gate, and communication system are inspected on a regular basis. Most of the emergency equipment is inspected quarterly. Detailed information can be found in Volume I Chapter 10 of this application.

2.6.3 Access to Alarm Systems, Emergency Services and Required Aisle Space

Due to the relatively small size of this facility and the short distances which separate the few relatively small buildings, all access to alarm systems or emergency equipment can be easily attainable by either direct contact or visual/voice contact with another employee.

All remedial action facilities added will be located to allow movement of emergency equipment to all areas of the site.

2.6.4 Arrangements with Local Authorities

The City of Idaho Falls Ambulance, Fire, and Police Departments, the State Police Headquarters, the Public Works Division, Columbia Eastern Idaho Regional Medical Center, and the State of Idaho's Emergency Medical Service, Environmental Health Division and Department of Water Resources services are available to the HWMF for emergency assistance. In addition, there is a Poison Control Center in Idaho Falls and a Telephone-Medical Information number available. The present facilities do not necessitate the need for detailed emergency arrangements; however, emergency contact numbers are provided in the contingency plan of this permit application in Volume I Chapter 5.

2.7 CONTINGENCY PLAN

Presented in Volume I Chapter 5 of this application.

2.8 GENERAL HAZARD PREVENTION

All the creosote and creosote-contaminated material are located under the surface of the ground, below a low permeability cap. Present HWMF operations do not pose a hazard to human life or the environment due to unloading/loading operations, run-off, surface water supply contamination, equipment failures and power outages, and exposure to personnel. However, the ground water sampling operations generate small quantities of contaminated ground water, which is treated on site at the facility or shipped off as samples for analysis.

2.8.1 Unloading/Loading Operations

The following procedures should be observed for all contaminated ground water or granular activated carbon (GAC) loading, unloading and transporting operations:

1. Establish quick and easy lines of communication for all those involved in loading, unloading or transportation or other operations.

2. Load/unload vehicles in asphalt-paved areas which are removed from drains or storm sewers.

3. Load/unload vehicles carrying liquids in a bermed or diked area so in the event of a spill, the material will be contained in a limited area.

4. Require that a manifest and/or record be kept of all pickups and transportation.

5. Drivers should be equipped with sets of procedures and a spill equipment control kit in case of an emergency.

2.8.2 Run-off

The asphalt cover over the HWMF area was constructed to provide positive drainage away from the LDU during precipitation events. All graded slopes were constructed at one to two percent grade with the overall drainage from the LDU toward the southeast corner of the HWMF site. Details of the asphalt cover over the LDU are presented in Volume II Chapter 2.

The HWMF is not located in the 100-year flood plain as described in detail in Section 2.11.2 of this chapter.

2.8.3 Water Supply Contamination

The entire 5.4 acres of the HWMF have been paved with asphalt to establish a very low permeability surface to minimize infiltration. This effectively reduces the potential for ground water contamination by minimizing the potential of surface water infiltrating through the contaminated unsaturated bedrock zones, which could result in the leaching of creosote contaminants down to underlying aquifers. In addition, the asphalt surface minimizes the possibility that a creosote or contaminated ground water spill from the treatment plant would infiltrate into the subsurface bedrock and ground water.

2.8.4 Effects of Equipment Failures and Power Outages

Under the present operating conditions, equipment failures or power outages will not cause any hazards to human life or the environment. But to be conservative, Volume I Chapter 5 of this permit reapplication discusses the emergency coordination plan as part of the contingency plan, and Volume I Chapter 6 discusses the spill prevention control and countermeasures plan.

2.8.5 Exposure of Personnel

All personnel who conduct operations, inspections, etc., in and around the HWMF have some level of exposure to hazardous materials. All on-site personnel need to comply with the requirements of the site-specific Health and Safety Plan. In addition, waste exposure is emphasized in the training program detailed in Volume I Chapter 7 of this permit reapplication.

2.8.6 Ongoing Repair of the Land Disposal Unit Asphalt Cover

The portion of the asphalt that covers the Land Disposal Unit at the site will be inspected weekly and maintained as necessary to facilitate runoff of precipitation and snow melt. If cracks in the asphalt are discovered, any volume of washed out soil beneath the crack would be filled immediately with clean sand and then plastic sheeting temporarily placed over the cracked area. The plastic sheets would be held in place with sand bags or other materials as needed. Sand and plastic sheeting materials will be stored on site to allow for rapid response to any evidence of deterioration of the asphalt covering the Land Disposal Unit. As soon as possible after discovering the need for repair, Pacificorp would contract with a local company to replace the damaged asphalt.

2.9 PREVENTION OF IGNITION OR REACTION OF WASTES

Creosote-contaminated materials will be handled on-site. Creosote is listed as a hazardous material by virtue of its toxicity (carcinogenicity) rather than its ignitability or

reactivity. Also, since the creosote may be removed from an aqueous environment this material would not be considered ignitable or reactive and the demonstration of compliance with 40 CFR 264.17 is not applicable.

2.10 TRAFFIC

Figure 2.15 shows the roadways into and surrounding the Idaho Falls HWMF. All entrance gates into the facility are located on Figure 2.16. Visitor and employee parking are available near the office and on the west side of Leslie Avenue, just outside and along the facility.

Yellowstone Avenue, adjacent to the west side of the property, is the main public road used near the facility. Employees use the 23rd Street and Leslie Avenue to gain access into the facility area. Leslie Avenue on the east side and 23rd Street along the southwest corner are also public roadways; however, they are not as heavily traveled as Yellowstone. Yellowstone Avenue is an asphalt-surfaced, four-lane roadway. There is a traffic light at the Yellowstone and 12th Street (Pancheri) intersection located north-northeast of the facility. The speed limit along Yellowstone Avenue is 35 miles per hour. Leslie and 23rd street are asphalt-surfaced, two-lane roadways. The speed limit along Leslie is 25 miles per hour and the speed limit along 23rd where it curves in front of the main gate to the site is 15 miles per hour. The following stop signs are located near the facility:

- on Leslie at 19th on
- 20th at Leslie on 21st at Leslie on
- Leslie at 25'''
- on Gallatin at 15th

There is also a flashing yellow light on 19th and Yellowstone.

Roadways within the site are traveled by company trucks, outside contractor vehicles,

and employee private vehicles. Employee private vehicle traffic is generally limited to movement from entrance gates to their respective office or work buildings. The roadways within the site are asphalt paved.

Generated regulated materials are removed and taken to a licensed HWMF. Below is the anticipated route to be taken to get to 1-15.

1. The transporter will load the hazardous material and if travel is required through the site, the safest route will be taken to the main gate.
2. Once at the main gate, the transporter will turn right (west) out through the main gate and onto 23rd Street.
3. The railroad tracks will be crossed to get to the Yellowstone Avenue intersection.
4. A left turn (south) will be made onto South Yellowstone Avenue.
5. The transporter will travel approximately 0.7 miles to W Sunnyside Rd
6. A right turn (west) will be made onto W Sunnyside Rd.
7. The transporter will travel 1.5 miles to the 1-15 southbound entrance ramp at exit 116 and will then proceed to the designated HWMF.

2.11 FACILITY LOCATION INFORMATION

2.11.1 Seismic Considerations

The PacifiCorp HWMF is located in Bonneville County, Idaho, which is a political jurisdiction listed in Appendix VI of 40 CFR 264. Facilities which are located in an area listed in Appendix VI must comply with the seismic standards of 40 CFR 264.18(a).

The following section describes the work completed by Dames and Moore and reported in the 1998 Post Closure Reapplication for the site.

Dames and Moore reviewed published geologic studies and analyzed aerial photographs and no faults were identified within 3,000 feet of the facility. Aerial photographs, which were analyzed for possible fault evidence, included the following:

1. United States Department of Agriculture (USDA) aerial photographs dated August 6, 1941, with a scale of 1:20,000 (Project CXO line lB frames 71, 72 and 73).
2. USDA aerial photographs dated August 4, 1978, with a scale of 1:40,000 (Project 16019 line 178 frames 153 and 154).
3. Aerographics, Inc. of Salt Lake City aerial photographs dated October 4. 1984, with scales of 1:12,000 and 1:6,000 (Project Idaho Falls line 100 frames 03-08 (1:6000), 09 and 10 (1:12,000).

According to Dames and Moore, published geologic mapping in the Idaho Falls region indicate that the closest fault to the site is approximately 16 miles to the northwest (La Point, 1977). This fault is identified as a lineation, which may represent a fault in basalt of Pleistocene age (probably about 500,000 years old).

The nearest fault cutting surficial deposits is located about 20 miles northeast of the site (Scott, 1982) and is shown on Figure 2.17. This fault provides the contact between deposits of the modem flood plain of the Snake River and the deposits of the most recent glacial period; consequently, the fault appears to displace Holocene materials (less than 10,000 years old).

The absence of faults near the site on Scott's (1982) map is significant because he has been involved in a number of fault investigations and is sensitive to the subtle features of Holocene fault displacements.

Kuntz (1978) has identified several northwest-trending volcanic rift zones in the Snake River Plain to the west of the site. He has noted that nearly all Quaternary volcanoes in the eastern Snake River Plain represent rift- or fissure-controlled eruptions. The closest of

these rifts to Idaho Falls is the Circular Butte-Kettle Butte rift zone, which projects two to four miles southwest of the site.

Review of aerial photographs and geologic maps of the site area reveals no evidence of faults, which have had displacement neither in Holocene time nor of lineations which suggest the presence of a fault within 3,000 feet of the facility. MWH contacted Mr. Bill Phillips the Idaho Geologic Survey (Geohazards Section) on April 11, 2008. Mr. Phillips indicated that he was not aware of any newly identified faults in the subject area.

Based on the 2006 International Building Code (IBC), the Idaho Falls Pole Yard falls into Seismic Design Category D. The selection of Category D is based on an occupancy category of III and ground motion values S_{DS} and S_{D1} of 0.47 and 0.24, respectively. The seismic design categories, occupancy categories, and ground motion values are defined in Section 1613 of the IBC.

2.11.2 Flood Plain Considerations

The facility is located within 3,000 feet of the Snake River, which is one of the principal rivers of Idaho. The Federal Emergency Management Agency (FEMA) 100-year flood plain information for the Snake River and the flood map indicates that the HWMF is not located within the 100-year flood plain. A copy of the FEMA flood map as referenced in the 100-year flood plain is delineated on Figure 2.18.

The elevation of the 100-year flood plain averages 4,678 feet (MSL) adjacent to the site area. The HWMF has a minimum surface elevation of 4,690 feet, which is at least 12 feet above the 100-year flood plain.

2.11.3 Current Conditions of the Facility

Currently there are five buildings located within the boundaries of the HWMF. The buildings are identified on Figure 2.3A and the current operations at each are described below.

The water treatment building contains the granular activated carbon systems needed to remove creosote from the extracted groundwater. Currently, water is pumped from eight wells (A-1, A-2, B-1, C-1, MW-9, R-2, R-6, and R-7) through above ground piping to the treatment building. Once inside the building, water flows through a series of weir boxes before being delivered to a wet well positioned near the center of the building. Water is then pumped from the wet well, through a series of granular activated carbon vessels before exiting the treatment building. The discharged water is then transported via above ground pipeline for approximately 300 feet. At that point, the discharge line transitions to a buried pipeline that extends to the Snake River.

The Boiler Building shown on Figure 2.3A was historically used to heat creosote. The creosote was heated before being delivered via a historical buried pipeline to a treatment vat. Poles were dipped into the vat filled with creosote and allowed to become saturated. All heating equipment within the Boiler Building was removed in the 1980s along with the treatment vat and the interconnecting piping. Currently the Boiler Building is not in use at the facility.

The two small buildings labeled as the office and the lunch room are currently used for file and document storage only. The original name given to the "lunch room" building apparently goes back to the time when the pole yard was in operation and site workers would get lunches from this building.

The Framing Building located on the eastern side of the HWMF property is currently used to store clean granular activated carbon. The carbon is used, as needed, to replace spent granular activated carbon in the treatment building.

2.12 PERSONNEL TRAINING PROGRAM

All employees that will be onsite at any time will be adequately trained as specified in Volume I Chapter 7.0 of this permit application.

For all work areas where there is a potential for emergencies, responsible persons shall take all necessary steps to ensure that employees are instructed in, and follow, the procedures for personnel safety as well as any other procedures appropriate to the specific operation or process.

Personnel who are assigned to containment or cleanup crews will have received training in these procedures.

Only personnel trained in the emergency containment and cleanup procedures and protected against the attendant hazards, shall shut off sources of contaminated ground water, control and repair leaks, cleanup spills and fight fires in these areas.

All other personnel training are detailed in Volume I Chapter 7.0 of this application.

2.13 CLOSURE COST ESTIMATE AND FINANCIAL ASSURANCE

The projected costs and Certification of Financial Assurance associated with closure are summarized in Volume I Chapter 8. Detailed estimates of Post-Closure costs and letters documenting financial assurance are provided in Volume II Chapter 9.

2.14 LIABILITY REQUIREMENTS

Adequate liability coverage is maintained by PacifiCorp which satisfies the requirements of 40 CFR 264.147. The letter in Volume II Chapter 9 provides documentation for PacifiCorp's liability coverage.

2.15 COVERAGE BY STATE FINANCIAL MECHANISMS

Financial responsibility for compliance with state and federal regulations is being managed by PacifiCorp and therefore this requirement is not applicable to the facility.

2.16 MAPPING REQUIREMENTS

A topographic map was developed at a scale of one inch equals 200 feet with 2-foot contour intervals to satisfy the requirements of 40 CFR 270.14(b)(19). The topography has been presented on an orthophotographic base (Figure 2.3) and includes the 100-year flood plain, wind rose, a distance of at least 1,000 feet around the facility and the property boundaries of the HWMF. As required under 40 CFR 264.97, the location of the negotiated "points of compliance" and monitoring well locations for the site are presented in Volume I Chapter 4 (see Figures 4.1 and 4.2).

The following paragraphs provide additional details concerning the mapping requirements. Outlines of each of the areas described below are graphically presented on Figure 2.1.

A legal description of the boundaries of the HWMF boundary is as follows:

> *A tract of land located in the east half of the NE1/4 of Section 25, Township 2N, Range 37E, described as follows:*
>
> *Beginning at a point located 18 feet west and 2 feet south of BM#5: thence south 89°55' west 630 feet; thence north 0°0' 463 feet; thence north 89°55' east 391.6 feet; thence south 29°15' west 509.5 feet; thence south 0°0' 26.97 feet to the point of beginning, being about 5.4 acres.*

The legal description of the boundaries of the HWMF Land Disposal Unit (the creosote release area) as proposed in this Part B Application are as follows:

> *A tract of land located in the east half of the NE1/4 of Section 25, Township 2N., Range 37 E., described as follows:*
>
> *Beginning at a point located 207 feet north and 207 feet east of BM#5: thence east 180 feet; thence north 160 feet; thence west 180 feet; thence south 160 feet to the point of beginning, being about 0.66 acres.*

The wind rose was developed from wind measurements performed at the Idaho Falls airport, which is approximately two miles from the PacifiCorp HWMF. Wind data was provided by the National Climatic Data Center in Asheville, North Carolina.

Land uses within a 1,000-foot radius of the HWMF include commercial, industrial and manufacturing facilities.

There are no wells within the 1,000-foot radius of the HWMF which are considered on-site or off-site injection or withdrawal wells. There are, however, numerous on-site monitor wells installed as part of the corrective action ground water monitoring program and remediation wells used to extract and treat groundwater as required for the site.

2.17 REFERENCES

Bruce, Lawrence, City of Idaho, Public Works Division, November 8, 1984, personal communication.

City of Idaho Falls Fire Department, November 15, 1984, personal communication.

Dames and Moore, 1998, RCRA Post Closure Care Permit Reapplication, Idaho Falls Pole Yard, Idaho Falls Idaho.

Federal Emergency Management Agency (FEMA), 1982, Flood Insurance Study, City of Idaho Falls, Idaho.

Federal Insurance Administration (FIA), 1982, Flood Insurance Rate Map, City of Idaho Falls, Idaho, Bonneville County, Community Panel Number 160029 0005 B

International Conference of Building Officials, 1982, Uniform Building Code, 1982 Edition, 780 p.

Kuntz, M.A., 1978, Geology of the Arco-Big Southern Butte area, eastern Snake River Plain and potential volcanic hazards to the Radioactive Waste Management Complex, and other waste storage and reactor facilities at the Idaho National Engineering Laboratory, Idaho: U.S. Geological Survey Open-File Report 78-691, 70 p.

La Point, P.J.I., 1977, Preliminary photogeologic map of the eastern Snake River Plain, Idaho U.S. Geological Survey Miscellaneous Field Studies Map MF-850.

Nestler, F.H. Max, 1974, The Characterization of Wood-Preserving Creosote by Physical and Chemical Methods of Analysis, U.S. Department of Agriculture, Forest Service Research Paper, FPL 195.

Phillips, B., April 11, 2008, Idaho Geologic Survey – Geohazards Group, phone and email communication regarding faults in the Idaho Falls Area.

Scott, William E., 1982, Surficial Geologic Map of the Eastern Snake River Plain and Adjacent Areas, 111° to 115° W., Idaho and Wyoming: U.S. Geological Survey Miscellaneous Field Studies Map 1-1372.

Steams, H.T., Crandall, L. and Steward, W.G., 1938, Geology and Ground Water Resources of the Snake River Plain in southeastern Idaho: U.S. Geological Survey Water-Supply Paper 774, 268 p.

Witkind, I.J., *1975*, Preliminary map showing known and suspected active faults in Idaho: U.S. Geological Survey Open-File Report 75-278, 71 p., Scale 1:500,000.

VOLUME 1 CHAPTER 3

3.0 WASTE ANALYSIS/CHARACTERIZATION AND WASTE DISPOSAL PLAN

3.1 GENERAL FACILITY INFORMATION

3.1.1 Site Location

The PacifiCorp Idaho Falls Hazardous Waste Management Facility (HWMF) is located in the NE $^{1}/4$ of Section 25, T 2 N, R 37 E in Bonneville County, Idaho. The site is a trapezoidal-shaped area of 8.2 acres, which is located between 20th and 23rd Streets and Leslie and Yellowstone Avenues in Idaho Falls, Idaho.

3.1.2 Creosote Treatment Facility

The PacifiCorp Idaho Falls HWMF was a facility for non-pressurized creosote treatment of wooden electrical power poles. The poles were dipped into a treatment vat containing creosote until take up of creosote was completed, and then removed and suspended over the tank to allow excess creosote to run off. The poles were then transferred to other areas of the site where they were left to cure and stored until needed.

In July 1983, a leak in the creosote line was discovered in the underground piping connecting the treatment vat to the creosote boiler building. Because creosote is listed as a hazardous substance (40 CFR § 261.33 (f)), EPA designated the area of the leak as a hazardous waste management facility pursuant to the Resource Conservation and Recovery Act (RCRA). The boiler within the HWMF was decontaminated. The remaining creosote pole treating facilities within the HWMF were decommissioned and disposed of at an offsite hazardous waste disposal facility. All of the reasonably excavatable contaminated materials within the HWMF were removed and disposed of offsite at a hazardous waste disposal facility. However, creosote and/or creosote constituents remain within the unsaturated bedrock and the bedrock aquifer below the HWMF area. The current remedial activities are directed toward removing these

contaminants and/or containing them within the boundaries of the HWMF. This is done by pumping impacted groundwater and treating the water on site before it is discharged into the Snake River through the general NPDES discharge permit [ID-G91-0000].

Several mechanical and instrumentation improvements to the existing wastewater treatment system at the former Pole Treatment Yard in Idaho Falls, Idaho are planned. The completed system will enable the site to be operated remotely and reduce the amount of time that an operator works on the site. Details of the proposed system automations are discussed in Volume II Chapter 1 of this permit reapplication.

3.2 ANALYSIS OF CREOSOTE

Creosote is a listed hazardous substance with an assigned hazardous waste number of U051 (40 CFR § 261.33 (f)). Creosote consists of an oily, translucent distillate of coal tar whose properties vary depending upon the source of the tar. Over 400 individual compounds have been identified. The majority of these compounds are present only in small quantities with major constituents comprising 21 compounds listed in Table 3.1. Major components are polynuclear aromatic hydrocarbons (PAH), phenols, and cresols. Creosote is heavier than water, having a specific gravity of 1.05 to 1.09 (at 15° C), but may sink or float on water depending upon its composition. Coal-tar creosote as a whole is considered practically insoluble.

Wood-preserving creosote is a distillate from coal tar made by high-temperature carbonization of bituminous coal; the typical boiling range of creosote is 175° C to about 450° C. Differences between coal-tar creosotes result from the relative amounts and distribution of types of chemical compounds but not the nature of the compounds. Although numerous individual compounds have been identified in creosote, the components belong to a relatively small number of chemical classes. One of these, the PAH, generally accounts for 90 percent of the constituents in creosote and the major members of this class contain no substituent groups. See Tables 3.1 and 3.2.

All high-temperature coal-tar creosotes are similar to the extent that they contain varying quantities of the same restricted number of chemical classes. Because of the high distillation temperature, no significant amounts of volatile organic compounds would be expected. Chlorinated organics would also not be expected.

3.3 WASTE DISPOSAL PLAN

Disposal of the various waste streams at the HWMF shall be as follows

Groundwater pumped to the surface from wells

- Packaged as a sample for laboratory analysis, or
- Treated at the plant, or
- Properly containerized and shipped off site to an appropriate disposal facility.

Spent activated carbon

- Will be sent for regeneration to permitted facility or properly containerized and shipped off site to an appropriate disposal facility.

Plant effluent

- Discharged to the Snake River through under NPDES permit ID-G91-0000.

All other waste materials characterized

- Properly containerized and shipped off site to an appropriate disposal facility.

This Disposal Plan will be updated if and when new waste streams are identified. To the extent that new waste streams are identified as a result of proposed new activities at the site, this Disposal Plan will be supplemented to address those new waste streams before implementation of the proposed new activities.

FILE *Fig2.3A_Topographic_2008.mxd 1/7/09 SLC*

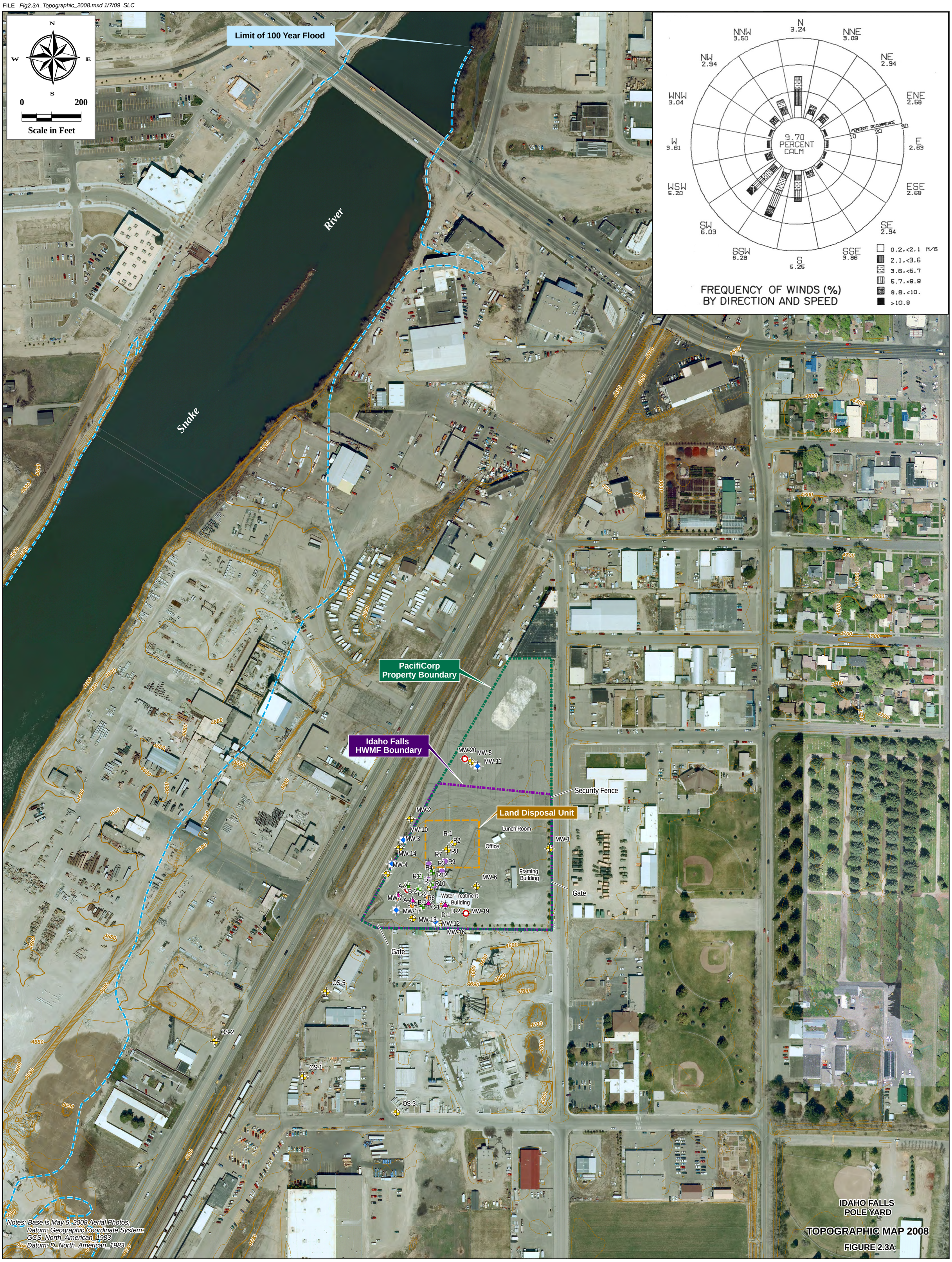

TABLE 3.1

TYPICAL CREOSOTE COMPOUNDS
(Page 1 of 2)

Coumarone
1,2,3-Trimethylbenzene
Cymene
Hydrindene
Phenol*
Indene
Aniline
3,4-Dimethylethylbenzene
Ammonium thiocyanate
6-Methylcoumarone
o-Cresol
Benzonitrile
3 or 5-Methylcoumarone
n-Undecane
Durene (1,2,4,5-tetramethylbenzene)
4-Methylcoumarone
Isodurene
(1,2,4,3-tetramethylbenzene)
p-Toluidine
o-Toluidine
p-Cresol
Acetophenone
m-Cresol
m-Toluidine
4-Methylindene
Tetrahydronaphthalene
2,4-Xylenol
2,6-Xylenol
2,5-Xylenol
2,4-Xylidine
3,6-Dimethylcoumarone
4,5-Dimethylcoumarone
4,6-Dimethylcoumarone
Thinophthene
2,3-Xylidine
3,4-Xylenol
Dimethylindene
Pseudocumenol
(2,4,5-trimethylphenol)
3-Ethyl-5-methylphenole
7-Hydroxycoumarone
Methylthionaphthene
2-Methylnaphthalene
Isoquinoline
1-Methylnaphthalene
4-Hydroxyhyrindene
2-Methylquinoline
8-Methylquinoline
3,4,5-Trimethylphenol
Durenol (2,3,5,6-tetra-
methylphenol)
Benzoic acid
5-Hydroxyhydrindene
2-Ethylnaphthalene
3-Methylisoquinoline
Indole
Diphenyl
1-Methylisoquinoline
2,8-Dimethylquinoline
7-Methylquinoline
6-Methylquinoline
3-Methylquinoline
2,6-Dimethylnaphthalene
2,7-Dimethylnaphthalene
1,7-Dimethylnaphthalene
1,3-Dimethylisoquinoline
1,6-Dimethylnaphthalene
5-Methylquinoline
4-Methylquinoline
5- or 7-Methylisoquinoline
(probable)
3-Methylindole (skatole)
1,5-Dimethylnaphthalene
6-Methylisoquinoline (Probable)
7-Methylindole
2,3-Dimethylnaphthalene
1,2-Dimethylnaphthalene
4-Methylindole
5-Methylindole
3-Methyldiphenyl

TABLE 3.1

TYPICAL CREOSOTE COMPOUNDS
(Page 2 of 2)

2,3,4,5-Tetramethylpyridine
Isopseudocumenol (2,3,5-trimethyphenol)
Quinoline (leucoline)
1,3,7-Trimethylnaphthalene
a-Naphthol
Acenaphthene*
a-Naphthofurane
b-Naphthofurane
2,3,5-Trimethylnaphthalene
2,3,6-Trimethylnaphthalene
B-Naphthol
Diphenylene oxide
2,4,6-Trimethylquinoline
3,4-Dimethyldiphenyl
4,4-Dimethyldiphenyl
g-Diphenylenemethane
4,5-Benzindan
1-Naphthonitrile (1-cyano-
Methyldiphenylene oxide
Fluorene*
Hydroacridine
1-Naphthylamine
2-Methyldiphenylene oxide
2-Naphthonitrile (2-cyano-naphthalene)
2-Naphthylamine
Paraffin (octadetane)
5,8-Diemthylquinoline
4-Methyldiphenyl
2-Methylindole
o-Phenylphenol
Phenanthridine
3-Methylphenanthrene
Carbazole
2-Hydroxyfluorene
4,5-Phenanthrylenemethane
9-Methylphenanthrene
1-Methylphenanthrene
2-Phenylnaphthalene
Hydroxyanthracene
Naphthacene
2-Methylanthracene
2,7-Dimethylanthracene
2-Methylcarbazole
1,2,3,4-Tetrahydrofluor-anthene
3-Methylcarbazole
Fluoranthene*
2,3,5,6-Dibenzocourarone
Pyrene*
1,9-Benzoxanthene
2-Hydroxyphenanthrene (2-phenanthrol)
Reten (8-methyl-30 isopropylphenanthrene)

TABLE 3.2

MAJOR COMPONENTS OF CREOSOTE*

Naphthalene**

2-Methylnaphthalene**

1-Methylnaphthalene**

Biphenyl**

Dimethylnaphthalenes**

Acenaphthene**

Dibenzofuran**

Fluorene

9,10-pihydroanthracene

Methylfluorene

Phenanthrene**

Anthracene

Acridine

Carbazole**

Methylphenanthrenes

2-Phenylnaphthalene

Methylanthracenes

Pyrene**

Benzofluorenes

Chrysene**

9,10-Benzophenanthrene