



**Portland General Electric Company**  
*Trojan ISFSI*  
71760 Columbia River Hwy  
Rainier OR 97048

August 29, 2006

VPN-008-2006

Docket 72-017  
License SNM-2509

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

**Transmittal of Revision 7 to the Trojan Independent Spent Fuel  
Storage Installation (ISFSI) Emergency Plan, PGE-1075**

This letter transmits Revision 7 to Portland General Electric Company's Emergency Plan for the Trojan ISFSI. Changes incorporated into Revision 7 are described in the attachment to this letter.

Any questions may be directed to Mr. Jay Fischer at (503) 556-7030.

Sincerely,

Stephen M. Quennoz  
Vice President, Power Supply/Generation

Attachment

Enclosure

c: Director, NRC, Region IV, DNMS  
C. M. Regan, NRC, NMSS, SFPO  
Thomas M Stoops, ODOE

NMSS01  
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**Changes Incorporated into Revision 7 to the Trojan ISFSI Emergency Plan, PGE-1075**

Changes incorporated into Revision 7 are made in accordance with 10 CFR 72.48, and determination was made that the changes do not require prior Nuclear Regulatory Commission approval. Pursuant to 10 CFR 72.44(f), the changes do not decrease the effectiveness of the Emergency Plan.

The changes are listed by Licensing Document Change Request (LDCR) numbers.

**LDCR 2006-0002**

In Amendment 6 to license SNM-2509, NRC approved a change in the Safety Analysis Report methodology for determining the Controlled Area Boundary (CAB). This change in methodology resulted in decreasing the CAB from 300 to 200 meters from the edge of the ISFSI storage pad. The Emergency Plan is revised to reflect the new CAB, and to correct a position title as follows:

1. Section 1.2 - Changed 300 meters to 200 meters, and deleted the reference to Portland and Western Railroad right of way, as the railroad track is no longer within the CAB.
2. Section 2.2 - Changed position title "Shift Manager" to "ISFSI Manager".
3. Section 4.4 - Deleted the references to Portland & Western Railroad right of way and rail traffic control.
4. Appendix – Agreements. Deleted agreement with Portland & Western Railroad, Inc.
5. Figure 1-2, "Location of the Trojan ISFSI at the PGE Site," changed to show 200 meter CAB line.
6. Figure 1-3, "ISFSI Controlled Area Boundary," changed to show 200 meter boundary line.

**LDCR 2006-0003**

The following editorial changes are made to reflect that the Trojan Cooling Tower no longer exists:

1. Deleted references to the cooling tower in Section 1.2, Section 1.4.3, and Figure 1-3, "ISFSI Controlled Area Boundary."
2. Deleted entire Section 1.4.3.5, Cooling Tower Collapse.
3. Deleted entire Section 2.1.2.10, Cooling Tower Collapse.

**Revision 7**

**Trojan Independent Spent Fuel Storage Installation (ISFSI) Emergency Plan, PGE-1075**

Revised pages are to be replaced as follows:

**REMOVE**

**INSERT**

**Table of Contents**

Page iv

Page iv

**Section 1**

Page 1-2

Page 1-2

Page 1-7

Page 1-7

Page 1-9

Page 1-9

Figure 1-2

Figure 1-2

Figure 1-3

Figure 1-3

**Section 2**

Pages 2-8 through 2-10

Pages 2-8 and 2-9

**Section 4**

Page 4-3

Page 4-3

**Appendix**

Page A-1

Page A-1



LIST OF EFFECTIVE PAGES

INDEPENDENT SPENT FUEL STORAGE INSTALLATION

EMERGENCY PLAN

<u>Page Number</u>	<u>Revision</u>
i	Revision 4
ii	Revision 6
iii	Revision 4
iv	Revision 7
1-1	Revision 6
1-2	Revision 7
1-3 through 1-6	Revision 4
1-7	Revision 7
1-8	Revision 4
1-9	Revision 7
Figure 1-1	Revision 4
Figures 1-2 and 1-3	Revision 7
2-1	Revision 5
2-2 and 2-3	Revision 3
2-4	Revision 5
2-5 and 2-6	Revision 3
2-7	Revision 5
2-8 and 2-9	Revision 7
3-1	Revision 0
Table 3-1	Revision 3
4-1 and 4-2	Revision 6
4-3	Revision 7
Figure 4-1	Revision 6
5-1 and 5-2	Revision 4
6-1	Revision 4
7-1	Revision 4
7-2	Revision 3
Table 7-1	Revision 0
8-1	Revision 4
Appendix A-1	Revision 7



## 1.2 SITE AND FACILITY DESCRIPTION

The Trojan ISFSI site is located in Columbia County, Oregon, along the west bank of the Columbia River approximately 42 miles north of Portland, Oregon. Figures 1-1 and 1-2 show the location of the Trojan ISFSI.

The ISFSI reinforced concrete pad, which is approximately 105 feet by 170 feet, is located inside the ISFSI Protected Area fence. The ISFSI Protected Area fence is within the boundary of the controlled access area fence which defines the ISFSI "site" within which ISFSI activities are licensed and occur. No activities unrelated to ISFSI operation are performed within the ISFSI controlled access area boundary.

The Controlled Area, as defined in 10 CFR 72.106, immediately surrounds the ISFSI and extends out to 200 meters from the edge of the storage pad (Figure 1-3). The Controlled Area lies entirely on PGE property with the exception of a portion of the Controlled Area that extends over the Columbia River. U.S. Highway 30 is not within the Controlled Area.

Other than the Columbia River and tributaries, there are no natural geographic features of prominence at the site. The Kalama River joins the Columbia at River Mile 73.1, about 1/2 mile upstream on the bank opposite the site. Similarly, the confluence of the Cowlitz and Columbia Rivers is about 4-1/2 miles downstream at River Mile 68. Manmade features include an approximately 26-acre man-made reflecting lake and an approximately 28-acre recreational lake. 230kV overhead transmission lines terminate in a switchyard approximately 1000 feet from the ISFSI. The switchyard supplies power to the ISFSI site.

Several major physical facilities, which were used during Trojan Plant operation, are grouped to the south and west of the ISFSI site. These facilities are outside the ISFSI controlled access area and are intended to be made available for commercial activities upon their release for unrestricted use. Leases issued to commercial users of these facilities will limit activities to ensure that postulated events and accident analyses remain bounding. Access to these facilities will not afford access to the ISFSI.

Recreational uses within the PGE property boundaries include hiking, picnicking, swimming, fishing, and nature observation. In the event of an emergency that could result in a hazard to the general public, members of the general public making recreational or other casual use of the nonrestricted portions of the PGE property or making commercial use of the buildings on the PGE property can be removed or excluded.



### 1.4.3 Potential Accidents

Potential accidents considered include explosions of chemicals, flammable (including natural) gases or munitions; industrial and forest fires; and accidental releases of toxic gases. The risk to the operation of the ISFSI resulting from these activities is shown to be minimal.

#### 1.4.3.1 Explosions

Shipments of commercial cargo past the site create the possibility of nearby explosions. For the most part, the rugged construction of the Concrete Casks would protect the spent nuclear fuel from such explosions. In addition, the ISFSI would be shielded from the direct force of these explosions by the earthen berms on the north and east and by the manmade structures and buildings to the south and west.

Explosions unrelated to transportation are not considered significant. The quarry operations south of the site are located in the hills west of the Columbia River. Presently, there is no storage of explosives at the operating quarry, which is 2 miles from the site. The quarry is not a large operation and only a limited amount of explosives are used. Because of the distance from the site and the protection afforded by the hillside and ridge between the quarry and the site, the quarry operation does not present a hazard to the safety of the ISFSI. The natural gas main runs along the hillside west of the site, approximately 1-1/2 miles from the site. The operation of this line will not present a hazard to the ISFSI from explosion because of the relatively low explosive capacity of the gas and the distance from the ISFSI.

Explosions related to transportation were extensively analyzed for siting of the Trojan Nuclear Plant (same location as the ISFSI). The explosion analysis, which addressed rail, ship, and highway transportation, was described in detail in the Trojan Final Safety Analysis Report (FSAR).

#### 1.4.3.2 Toxic Chemicals

The effects of toxic chemicals on human habitability were extensively analyzed for operation of the Trojan Nuclear Plant and addressed in detail in the FSAR. These analyses were predicated on maintaining control room habitability during a toxic gas event. Continuous manning of the ISFSI for operational reasons is not required as in the case for an operating nuclear plant. There are no off-normal events or credible accidents for the ISFSI that require operator action within a prescribed amount of time.

Therefore, a toxic gas event would not affect the safe storage of spent nuclear fuel.



The consequences of a forklift fuel (propane) tank explosion and fire are bounded by the diesel fuel oil spill scenario.

Therefore, fires would not affect the safe storage of spent nuclear fuel.

#### 1.4.3.4 Aircraft Impacts

An analysis performed demonstrated that the probability of aircraft impacting the ISFSI is less than  $10^{-7}$  per year and specific analysis of aircraft impacts are not analyzed as a design basis event.

### 1.5 REGULATORY REQUIREMENTS

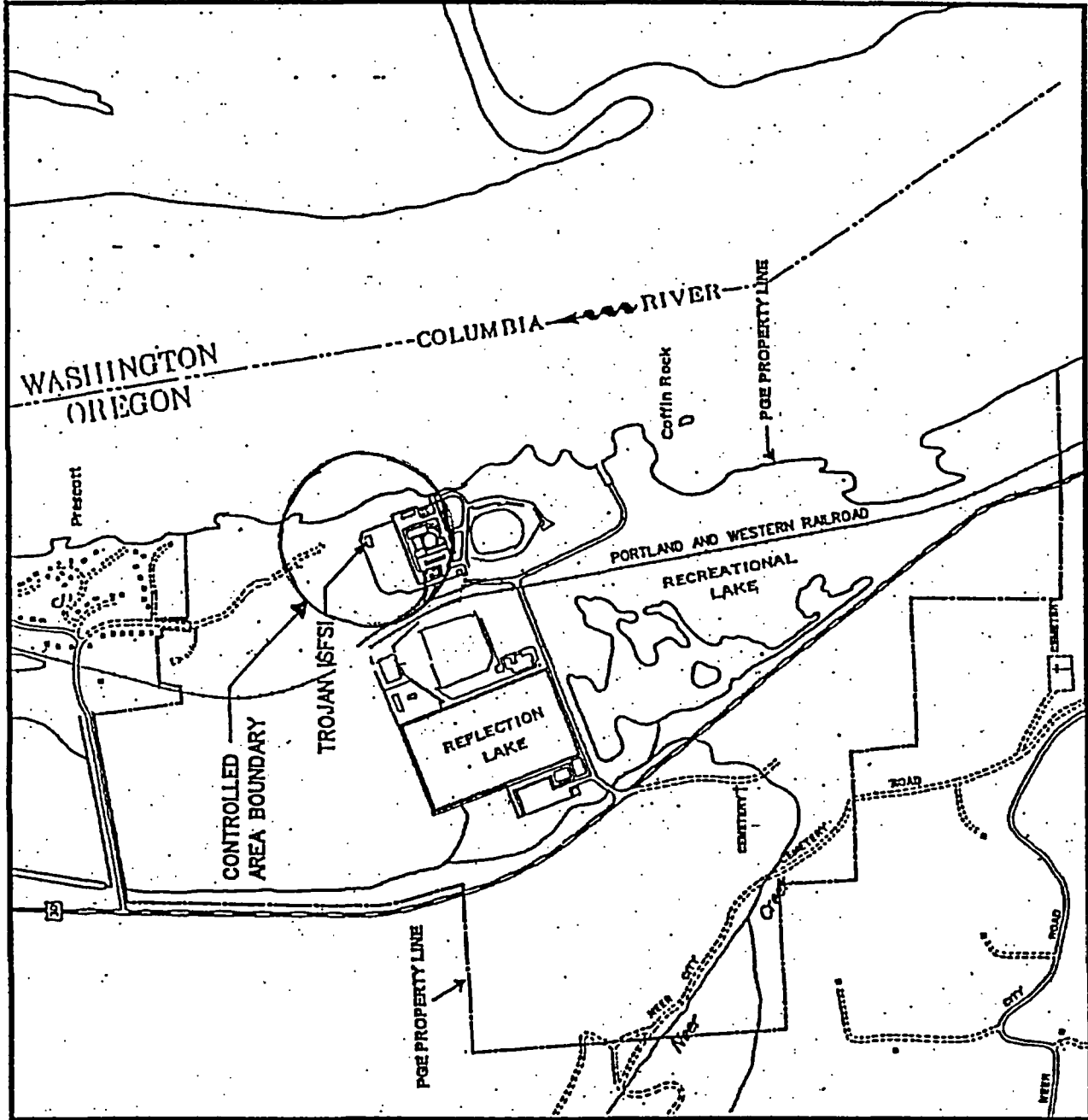
This plan meets the ISFSI emergency planning requirements established by and described in Title 10 of the Code of Federal Regulations, Part 72, Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater Than Class C Waste, Section 32(a). As part of regulatory requirements, PGE meets its responsibilities under the Emergency Planning and Community Right-to-Know Act of 1986, Title III, Public Law 99-499, with respect to hazardous materials at the ISFSI.

### 1.6 PLANNING BASIS

The operation of the Trojan ISFSI does not present the same degree of hazard (by orders of magnitude) as the nuclear reactor presented during Trojan reactor operations. An analysis of the potential radiological impact of off-normal and postulated accident conditions at the Trojan ISFSI has been conducted. Based on this analysis, any potential radiological release beyond the ISFSI Controlled Area is not expected to exceed the U.S. Environmental Protection Agency (EPA) Protective Action Guide (PAG) exposure levels, as detailed in EPA-400-R-92-001, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents." EPA PAG exposure levels are the levels of radiation exposure at which protective measures for the general public should be considered.



**FIGURE 1-2**  
**LOCATION OF THE TROJAN ISFSI AT THE PGE SITE**

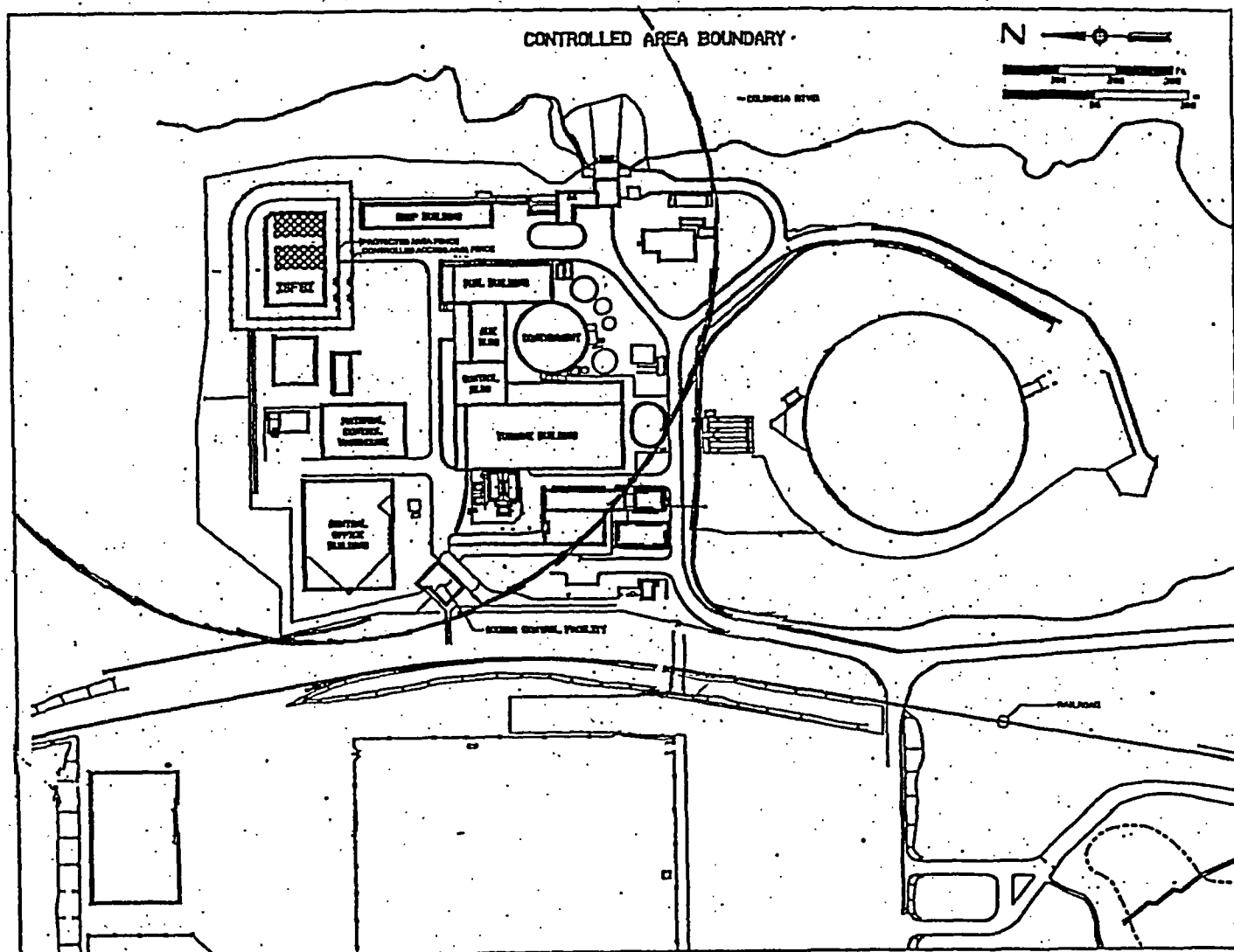


site/figures\_pge-075\_emergency\_plan/L1-202.dgn  
site/figures\_pge-075\_emergency\_plan/L1-202.cpl





**FIGURE 1-3**  
**ISFSI CONTROLLED AREA BOUNDARY**





#### 2.1.2.10 Volcanism

Four volcanoes are located in the general area, the closest one being 34 miles from the site. The potential eruptions pose a minimal risk to the plant. Nevertheless, the effects that are believed to be of concern are ash fall, mud flow, and flooding. A maximum ash fall depth at the ISFSI site was determined to not be sufficient to block the Concrete Cask air inlets. The effects of volcanically generated mud flow and flooding at the ISFSI site are minimal and would not pose a hazard to the ISFSI.

The effects of volcanically-induced hazards pose a negligible risk to the ISFSI, and no radiological consequences are anticipated from this event.

#### 2.1.2.11 Lightning

This event would be caused by meteorological conditions at the site. Lightning striking one of the Concrete Casks is not a likely event, because the ISFSI Storage Pad is surrounded on two sides by an earthen berm and some lightning protection will be afforded by the lighting towers that will be located around the Storage Pad.

Even if the Concrete Cask were to be hit by lightning, the likely path to ground would be from the steel Concrete Cask lid to the steel base plate via the steel cask liner and the steel air inlet ducts. The MPC is surrounded by these steel structures and would not provide a likely ground path. Therefore, a lightning strike would not affect MPC integrity. The heat absorbed would be insignificant from the standpoint of MPC cooling due to a very short duration of the event. If the lightning entered or exited the Concrete Cask via the concrete shell, some local spalling of concrete may occur. A significant loss of concrete shielding would not be expected. Concrete Cask operation would not be adversely affected.

Based on the evaluation above, the radiological consequences of this accident would be similar or less than those for a localized loss of concrete shielding following a tornado missile strike.

#### 2.1.2.12 MPC Handling Events

This event occurs when the MPC catches on the Concrete Cask edge or side while being lowered into a Concrete Cask or Transport Cask. The cause is operator error for failing to assure adequate clearance and/or alignment.

There are no radiological releases or adverse radiological consequences from this event. To recover from this event the operator would immediately halt lowering the MPC, inspect the area for interference, and return the MPC to its original position.



## 2.2 DETECTION OF ACCIDENTS OR OFF-NORMAL EVENTS

Due to the relative passive status of the ISFSI, many activities which could result in an accident or off-normal event occur only when being performed by workers associated with the activity. These include ISFSI surveillance and maintenance activities. For these activities, the detection of abnormal conditions or events occurs early by workers involved in and around the tasks being performed. An event involving the release of radioactive particulate material from the MPC or the MPC's exterior surfaces may be identified during radiological contamination surveys. Visual surveillance or the monitoring of Concrete Cask air outlet temperatures by an ISFSI Specialist may detect an event due to obstructed air flow because of blockage of air inlets. An MPC off-normal handling event may be detected by observation of personnel monitoring Concrete Cask movement operations or Concrete Cask loading operations.

Where workers are not present, such as at unattended work sites, unattended activities in progress, or external occurrences, abnormal conditions can also be detected by ISFSI Specialists, other persons performing routine tours or surveillances in the area, or nearby workers.

The detection of off-normal conditions or precursor events is primarily based on visual, audible, and other sensory observations by persons in the area. An example is an MPC handling event which would be detected by an audible noise emitted by the MPC as it contacts the Concrete Cask or by a slackening of the lifting slings which connect the MPC to the crane hook. Instrumentation, such as radiation detection and temperature monitoring equipment, is also used to detect abnormal conditions associated with parameters such as radiation and contamination levels and Concrete Cask temperatures.

Abnormal conditions or events are detected by or reported to the on-shift ISFSI Specialist or the ISFSI Manager and are classified as described in Section 3.0. The person detecting the accident or abnormal condition can notify those in the immediate area.



A minimum of two augmented responders with repair expertise are trained and capable of taking actions to mitigate or correct the event and to restore the ISFSI to a safe condition after the event under the direction of the Incident Coordinator. They are trained in ISFSI maintenance and operations.

#### 4.3 COMPANY SUPPORT

The Incident Coordinator may request support from other areas of the Company as needed to respond to the emergency. Support may include notifying offsite agencies, arranging local offsite agency assistance, preparing public information news releases, and providing other communications and logistical support if available ISFSI personnel and equipment are not sufficient.

#### 4.4 LOCAL OFFSITE AGENCY ASSISTANCE

The Incident Coordinator may request local offsite agency assistance in providing fire, medical, and law enforcement support, and river traffic control in response to an ISFSI emergency. Columbia River Fire and Rescue provides the Trojan ISFSI site with fire support and transportation of contaminated and non-contaminated injured persons who require hospital treatment. Medical care and treatment for contaminated and non-contaminated injured persons requiring hospital treatment will be provided by one of the local area hospitals. Law enforcement support for the Trojan ISFSI is described and provided in accordance with the Trojan ISFSI Security Plan. The U.S. Coast Guard provides river traffic control for the portion of the ISFSI Controlled Area which is on the Columbia River.

A listing of the agreements entered into with local offsite agencies is given in the appendix to this plan.

#### 4.5 STATE AND LOCAL GOVERNMENT AGENCY RESPONSE

As a result of the passive design of the ISFSI, a radiological release to the environment from the ISFSI is not expected to require action by state and local government agencies to protect persons in areas beyond the ISFSI Controlled Area.

Other than that outlined in the previous section, there is no assistance expected from state and local government agencies. In most situations, state and local government agency response is expected to be limited to recording the notification of the emergency and periodically receiving updated information on the emergency.



## APPENDIX - AGREEMENTS

Agreements with the following agencies are maintained in support of this plan:

- (1) Oregon State Land Board (regarding control of state land within the ISFSI Controlled Area)
- (2) U.S. Coast Guard (regarding control of river traffic within that portion of the ISFSI Controlled Area on the Columbia River)

Fire support and medical transport services are provided by Columbia River Fire and Rescue. Since the Trojan ISFSI site has been annexed into the district covered by Columbia River Fire and Rescue, no agreement is maintained.