

**START**  
AUG 18 1992

**ENGINEERING DATA TRANSMITTAL**

2. To: (Receiving Organization) <b>Distribution</b>	3. From: (Originating Organization) <b>Environmental Engineering</b>	4. Related EDT No.: <b>NA</b>
5. Proj./Prog./Dept./Div.: <b>ER</b>	6. Cog. Engr.: <b>J A Stegen</b>	7. Purchase Order No.: <b>NA</b>
8. Originator Remarks: <b>Release To File</b>		9. Equip./Component No.: <b>NA</b>
11. Receiver Remarks:		10. System/Bldg./Facility: <b>NA</b>
		12. Major Assm. Dwg. No.: <b>NA</b>
		13. Permit/Permit Application No.: <b>NA</b>
		14. Required Response Date: <b>8-7-92</b>



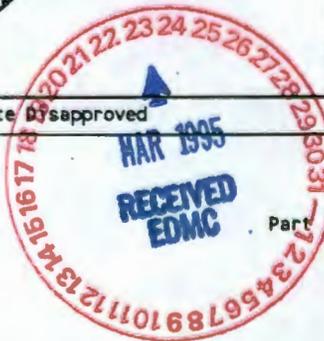
15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Impact Level	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	WHC-SD-EN-EE-009		0		4	2		

16. KEY		
Impact Level (F)	Reason for Transmittal (G)	Disposition (H) & (I)
1, 2, 3, or 4 (see MRP 5.43)	1. Approval 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION (See Impact Level for required signatures)											
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		Cog. Mgr. R P Henckel	<i>[Signature]</i>	8/3/92	H4-55						
		QA									
		Safety									
		Document Control			L8-04						
		IRA Clearance			H4-17						
		EDMC (2)			H4-22						

18. <i>[Signature]</i> Signature of EDT Originator Date: 8-3-92	19. _____ Authorized Representative for Receiving Organization Date: _____	20. <i>[Signature]</i> Cognizant/Project Engineer's Manager Date: 8-3-92	21. DOE APPROVAL (if required) Ltr. No. <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/comments <input type="checkbox"/> Disapproved w/comments
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SUPPORTING DOCUMENT		1. Total Pages 19
2. Title Biological Assessment for State Candidate and Monitor Wildlife Species Related to CERCLA	3. Number WHC-SD-EN-EE-009	4. Rev No. 0
5. Key Words Species, candidate, monitor, wildlife	6. Author Name: J.A. Stegen <i>J. Amanda Stegen</i> Signature Organization/Charge Code 81221/PH18A	
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			List attachments.		Date Release Required <b>8-7-92</b>		
Title <b>Biological Assessment for State Candidate and Monitor Wildlife Species Related to CERCLA</b>				Unclassified Category <b>UC-</b>	Impact Level <b>4</b>		
New or novel (patentable) subject matter? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If "Yes", has disclosure been submitted by WHC or other company? <input type="checkbox"/> No <input type="checkbox"/> Yes Disclosure No(s).			Information received from others in confidence, such as proprietary data, trade secrets, and/or inventions? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (Identify)				
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Title of Conference or Meeting <b>NA</b>			Group or Society Sponsoring <b>NA</b>				
Date(s) of Conference or Meeting <b>NA</b>		City/State <b>NA</b>		Will proceedings be published? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Will material be handed out? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Title of Journal <b>NA</b>							
CHECKLIST FOR SIGNATORIES							
Review Required per WHC-CM-3-4		Yes		No			
		[ ]		[X]			
Classification/Unclassified Controlled Nuclear Information		[ ]		[X]			
Patent - General Counsel		[X]		[ ]			
Legal - General Counsel		[X]		[ ]			
Applied Technology/Export Controlled Information or International Program		[ ]		[X]			
WHC Program/Project		[ ]		[X]			
Communications		[ ]		[X]			
RL Program/Project		[ ]		[X]			
Publication Services		[X]		[ ]			
Other Program/Project		[ ]		[X]			
Information conforms to all applicable requirements. The above information is certified to be correct.							
References Available to Intended Audience		Yes [X]		No [ ]			
Transmit to DOE-HQ/Office of Scientific and Technical Information		[ ]		[X]			
Author/Requestor (Printed/Signature)		Date					
<b>J A Stegen</b> <i>J Amade</i>		<b>8-3-92</b>					
Intended Audience		[ ] Internal [ ] Sponsor [X] External					
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			INFORMATION RELEASE ADMINISTRATION APPROVAL STAMP				
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## CONTENTS

1.0	INTRODUCTION . . . . .	1
2.0	CRITERIA FOR CANDIDATE AND MONITOR SPECIES . . . . .	2
3.0	SPECIES OF CONCERN . . . . .	6
3.1	NESTING BIRDS . . . . .	6
3.2	NON-NESTING BIRDS . . . . .	13
3.3	MAMMALS . . . . .	13
3.4	REPTILE, AMPHIBIAN, INVERTEBRATE, AND FISH SPECIES . . . . .	14
4.0	SPECIES SPECIAL HABITAT NEEDS AND CONCLUSION . . . . .	14
5.0	REFERENCES . . . . .	15
6.0	BIBLIOGRAPHY . . . . .	16

## FIGURES

1	Main Curlew Nesting Areas on the Hanford Site . . . . .	8
2	Great Blue Heron Nesting Areas on the Hanford Site . . . . .	10

## TABLES

1	Species Addressed in Threatened and Endangered Wildlife Biological Assessment . . . . .	2
2	State Candidate and Monitor Species on the Hanford Site . . . . .	3

## 1.0 INTRODUCTION

More than 1,500 waste sites have been identified on the Hanford Site and a waste characterization/cleanup project is currently under way. Characterization and cleanup activities may impact species of concern on the Hanford Site through possible habitat alterations and wildlife disturbance. *Environmental Compliance Manual*, Part X, "Consideration of Protected Wildlife, Endangered Species, and Introduction of Exotic Species" (WHC 1992) directs Westinghouse Hanford Company Project Managers to protect wildlife and plant species of special concern that may be affected during activities.

A biological assessment for threatened, endangered, and federal candidate wildlife species has been written in accordance with federal laws (Fitzner et al. 1992). Species addressed in Fitzner et al. (1992) are given in Table 1. A biological assessment for rare and endangered plants has been prepared as a separate document (Sackschewsky 1992). The proposals given to protect the threatened and endangered species must be adhered to if any projects or activities may affect them.

This report is intended to provide sufficient information to assist project managers in being aware of and minimizing negative impacts to additional species of concern when conducting environmental restoration activities on the Hanford Site. State species of concern that are also federal species of concern are addressed in Fitzner et al. (1992). This report contains a summary of state candidate and monitor wildlife species known to occur on the Hanford Site, species habitat and nesting needs, possible disturbances that may affect the presence of these species, and guidance for minimizing/mitigating impacts. Many of these species depend on the river, riparian areas, or undisturbed sagebrush. Because these critical habitats are being lost elsewhere in the state, protection at the Hanford Site is vital and a necessary part of each project. For example, a National Environmental Policy Act (NEPA) evaluation is required for protecting floodplain or wetlands (e.g., riparian areas) before work can begin. In addition, a floodplains/wetlands assessment must be conducted for the area.

The Westinghouse Hanford Environmental Protection Group must be contacted well in advance of any habitat-disturbing activities. This group can provide additional information on any recent changes to either state or federal classification and can arrange any necessary wildlife or plant surveys with the appropriate scientists.

Table 1. Species Addressed in Threatened and Endangered Wildlife Biological Assessment. (Fitzner et al. 1992)

Species	Status <sup>(a)</sup>
Peregrine falcon ( <i>Falco peregrinus</i> )	FE, SE
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	FT, ST
American white pelican ( <i>Pelecanus erythrorhynchos</i> )	SE
Sandhill crane ( <i>Grus canadensis</i> )	SE
Pygmy rabbit ( <i>Brachylagus idahoensis</i> )	FC2, ST
Ferruginous hawk ( <i>Buteo regalis</i> )	FC2, ST
Western sage grouse ( <i>Centrocercus urophasianus</i> )	FC2, SC
Loggerhead shrike ( <i>Lanius ludovicianus</i> )	FC2, SC
Northern goshawk ( <i>Accipiter gentilis</i> )	FC2, SC
Black tern ( <i>Chlidonias niger</i> )	FC2
Columbia pebblesnail ( <i>Fluminicola columbianus</i> )	FC2, SC
Pacific western big-eared bat ( <i>Plecotus townsendii</i> )	FC2, SC
(a) FT - Federal Threatened FE - Federal Endangered ST - State Threatened SE - State Endangered FC2 - Federal Candidate, Level 2 SC - State Candidate	

## 2.0 CRITERIA FOR CANDIDATE AND MONITOR SPECIES

Wildlife species native to the area, not classified as threatened or endangered, but still of special concern, are termed "candidate" or "monitor" species (Table 2). Candidate species are currently under review by either the U.S. Fish and Wildlife Service (federal listing) or the Washington State Department of Wildlife (state listing) for possible listing as endangered or threatened. Candidate species are of special concern because they are native to the area and are vulnerable or declining in number, and are likely to become endangered or threatened in a significant portion of their range without cooperative management or removal of threats (Washington Department of Wildlife 1991). State candidate species may also be listed concurrently as federal candidate species. Federal candidate species have been addressed in the threatened and endangered wildlife species biological assessment. State candidate species not concurrently listed as federal candidate species include eight bird, one mammal, one invertebrate, and one reptile species.

Table 2. State Candidate and Monitor Species on the Hanford Site. (sheet 1 of 3)	
State Candidate Species	Season of Use
SWAINSON'S HAWK <u>Buteo swainsoni</u>	S
BURROWING OWL <u>Athene cunicularia</u>	S
GOLDEN EAGLE <u>Aquila chrysaetos</u>	M
LEWIS' WOODPECKER <u>Melanerpes lewis</u>	M
COMMON LOON <u>Gavia immer</u>	W
SAGE THRASHER <u>Oreoscoptes montanus</u>	S
SAGE SPARROW <u>Amphispiza belli</u>	S
FLAMMULATED OWL <u>Otus flammeolus</u>	M
WESTERN BLUEBIRD <u>Sialia mexicana</u>	M
MERRIAM'S SHREW <u>Sorex merriami</u>	R
COLUMBIA RIVER TIGER BEETLE <u>Cicindela columbica</u>	R
STRIPED WHIPSNAKE <u>Masticophis taeniatus</u>	R
STATE MONITOR SPECIES	
GREAT BLUE HERON <u>Ardea herodias</u>	R
PRAIRIE FALCON <u>Falco mexicanus</u>	R
LONG-BILLED CURLEW <u>Numenius americanus</u>	S
BLACK-CROWNED NIGHT HERON <u>Nycticorax nycticorax</u>	R
HORNED GREBE <u>Podiceps auritus</u>	W
FORSTER'S TERN <u>Sterna forsteri</u>	S

Table 2. State Candidate and Monitor Species on the Hanford Site. (sheet 2 of 3)	
State Monitor Species (cont)	
WESTERN GREBE <u>Aechmophorus occidentalis</u>	W
OSPREY <u>Pandion haliaetus</u>	M
SNOWY OWL <u>Nyctea scandiaca</u>	W
CASPIAN TERN <u>Sterna caspia</u>	S
RED-NECKED GREBE <u>Podiceps grisegena</u>	M
MERLIN <u>Falco columbarius</u>	M
BLACK-NECKED STILT <u>Himantopus mexicanus</u>	M
GREAT EGRET <u>Casmerodius albus</u>	M
CLARK'S GREBE <u>Aechmophorus clarkii</u>	M
ARCTIC TERN <u>Sterna paradisaea</u>	M
GYRFALCON <u>Falco rusticolus</u>	W
TURKEY VULTURE <u>Cathartes aura</u>	M
ASH-THROATED FLYCATCHER <u>Myiarchus cinerascens</u>	M
BARRED OWL <u>Strix varia</u>	M
GRASSHOPPER SPARROW <u>Ammodramus savannarum</u>	S
PALLID BAT <u>Antrozous pallidus</u>	R
NORTHERN GRASSHOPPER MOUSE <u>Onychomys leucogaster</u>	R
SAGEBRUSH VOLE <u>Lagurus curtatus</u>	R
WOODHOUSE'S TOAD <u>Bufo woodhousei</u>	R

Table 2. State Candidate and Monitor Species on the Hanford Site. (sheet 3 of 3)	
State Monitor Species (cont)	
NIGHT SNAKE <i>Hypsiglena torquata</i>	R
MOUNTAIN SUCKER <i>Catostomus platyrhynchus</i>	R
SAND ROLLER <i>Percopsis transmontana</i>	R
PIUTE SCULPIN <i>Cottus beldingi</i>	R
RETICULATE SCULPIN <i>Cottus perplexus</i>	R

Seasonal occurrence:

- R - resident - present all year but abundance may vary seasonally  
 S - summer visitor (includes spring and fall)  
 W - winter visitor (includes spring and fall)  
 M - migrant

Monitor species, a Washington State designation, are of special concern for any one of a number of reasons:

- at one time the species was classified as endangered, threatened, or sensitive
- the species requires habitat that has limited availability during some portion of their life cycle
- the species is an indicator of environmental quality
- more field investigations are required to determine the species population status
- there are unresolved taxonomic problems that may bear upon the species status classification
- the species is competing with and impacting other species of concern
- the species has significant popular appeal.

The monitor species considered for the Hanford Site include 18 bird species, three mammals species, one amphibian species, one reptile species, one invertebrate species, and four fish species. Some of these are only of accidental occurrence on the site, such as, the barred owl, ash-throated flycatcher, and western bluebird.

### 3.0 SPECIES OF CONCERN

Twelve state candidate and 30 monitor species are known to occur on the Hanford Site. Destruction of critical habitat that is utilized by these species for foraging, resting, and breeding may severely disrupt their presence on the Hanford Site. These 42 species include 13 nesting and 17 non-nesting candidate and monitor bird species. Many of the non-nesters are migrants and may occur on the Hanford Site only at certain times of the year. A few of these species are far from their normal range and are considered accidental occurrences. There are four mammal species of concern that are year-round residents on the Hanford Site, three amphibian and one invertebrate species, as well as, four fish species. These species have been grouped together as:

- *nesting birds*
- *non-nesting birds*
- *mammals*
- *reptile, amphibian, invertebrate, and fish species.*

#### 3.1 NESTING BIRDS

Thirteen nesting bird species of special concern occur on the Hanford Site. The Swainson's hawk, prairie falcon, long-billed curlew, great blue heron, great egret, burrowing owl, black-crowned night heron, Caspian tern, Forster's tern, sage sparrow, sage thrasher, common loon, and grasshopper sparrow nest reside for at least part of the year on the Hanford Site. Activities that may disrupt habitat or disturb these nesting birds should be conducted with considerable care. Westinghouse Hanford Environmental Protection Group should be notified when coming in contact with nests or nesting birds. The appropriate action will be taken to protect these species.

##### 3.1.1 Swainson's Hawk - STATE CANDIDATE

The Swainson's hawk nests and forages on the Hanford Site from April to September. This bird can be easily distinguished from other hawks by its long, narrow wings. In the light phase, this hawk has a dark chest bib and whitish underparts. In the dark phase, the entire body is a dark brown with white undertail feathers. Swainson's hawks nest in living or dead trees 8 to 30 ft (2.4 - 9 m) tall, preferring the black locust, *Robinia pseudo-acacia*, and Siberian elm, *Ulmus pumila*. Nests are approximately 3 to 4 ft (.9 - 1.2 m) across and made of twigs, weeds, and grasses. The nests are flimsy, constructed below the crown on a side branch, and will be repaired and used year after year (Fitzner 1980). Nesting takes place from May through July, with incubation taking 28 days and the young flying 30 days after hatching (Terres 1977). In 1981, 15 to 18 pairs of Swainson's hawks were known to nest on the Hanford Site (Fitzner et al. 1981). In 1987, 36 to 38 pairs were found nesting on the Hanford Site (Fitzner and Newell, 1989). In the Columbia Basin, Swainson's hawk primary food source is snakes, with a small portion of their diet consisting of small mammals, birds, and insects.

**GUIDANCE** - The population of these birds on the Hanford Site and the exact nesting locations change from year to year. Thus, it is important to be aware that the Swainson's hawk may be seen anywhere onsite, particularly around trees. To protect these birds onsite, trees (dead or living) should not be removed without prior approval from Westinghouse Hanford Environmental Protection Group and continuous activity within .5 mi (800 m) of nest trees should be limited from April through July. Personnel activities, such as lunching, should be limited within 330 ft (100 m) of occupied nests.

### 3.1.2 Prairie Falcon - STATE MONITOR

Prairie falcons are foragers and nesters on the Hanford Site. These birds have a long tail, long pointed wings, and can be easily distinguished by a dark bar where the wing meets the body. The prairie falcon feeds on a variety of small mammals and birds, particularly pocket gophers, *Thomomys talpoides*, and young rabbits, *Lepus* and *Sylvilagus* sp. The principle nesting areas on the Hanford Site are Gable Mountain, Gable Butte, White Bluffs, and Rattlesnake Mountain. The birds nest in slight scrapes in the loose dirt on cliff ledges. Eggs are laid from March to June and incubation takes 29 to 31 days. The young leave the nest about 40 days after hatching (Terres 1977).

**GUIDANCE** - The lack of cliff nesting locations on the Hanford Site is a limiting factor for prairie falcons. Unless efforts are taken to ensure that the few cliff nesting sites are protected from human disturbance, this raptor may disappear from the Hanford Site (Fitzner et al. 1981). Activities should be limited near nesting areas from April to early September.

### 3.1.3 Long-billed Curlew - STATE MONITOR

Long-billed curlew are common nesters and summer residents throughout the Hanford Site. These birds are brown above, buff below, with a very long down-curved bill, 4 to 9 in. (10 to 22 cm) long. They can be easily distinguished in flight by the bright pink - cinnamon undersurface of the wings. In a 1980 study, Allen (1980) concluded the land west of the Columbia River, near 100-F Area, supported approximately 100 curlew. Sixty of these were breeding birds. Figure 1 shows areas of heaviest use, according to Allen (1980), but curlews can be found nesting outside all of these areas as well. Identification of past curlew nesting areas is meant to be an indicator to project managers of possible sensitive habitat. Curlew are not restricted to these areas and should be protected throughout the site. Allen (1980) found that curlew nest on level or nearly level ground dominated by cheatgrass, *Bromus tectorum*. Areas with a significant number of relatively tall plants 12 to 20 in. (30 to 50 cm), such as tumble mustard, *Sisymbrium altissimum*, or bluebunch wheatgrass, *Agropyron spicatum*, are not selected as nesting sites. Nesting curlew require wide open space with patches of dense vegetation without shrub cover.

**GUIDANCE** - For continued successful curlew nesting on the Hanford Site, off-road vehicles should be restricted to established roads in curlew nesting areas to avoid damaging nests. Activities around the curlew nesting areas should be limited from mid-March to August 1 to avoid disturbance of the birds. The Westinghouse Hanford Environmental Protection Group should be contacted to ensure protection guidelines are met if activities will be conducted in these areas.

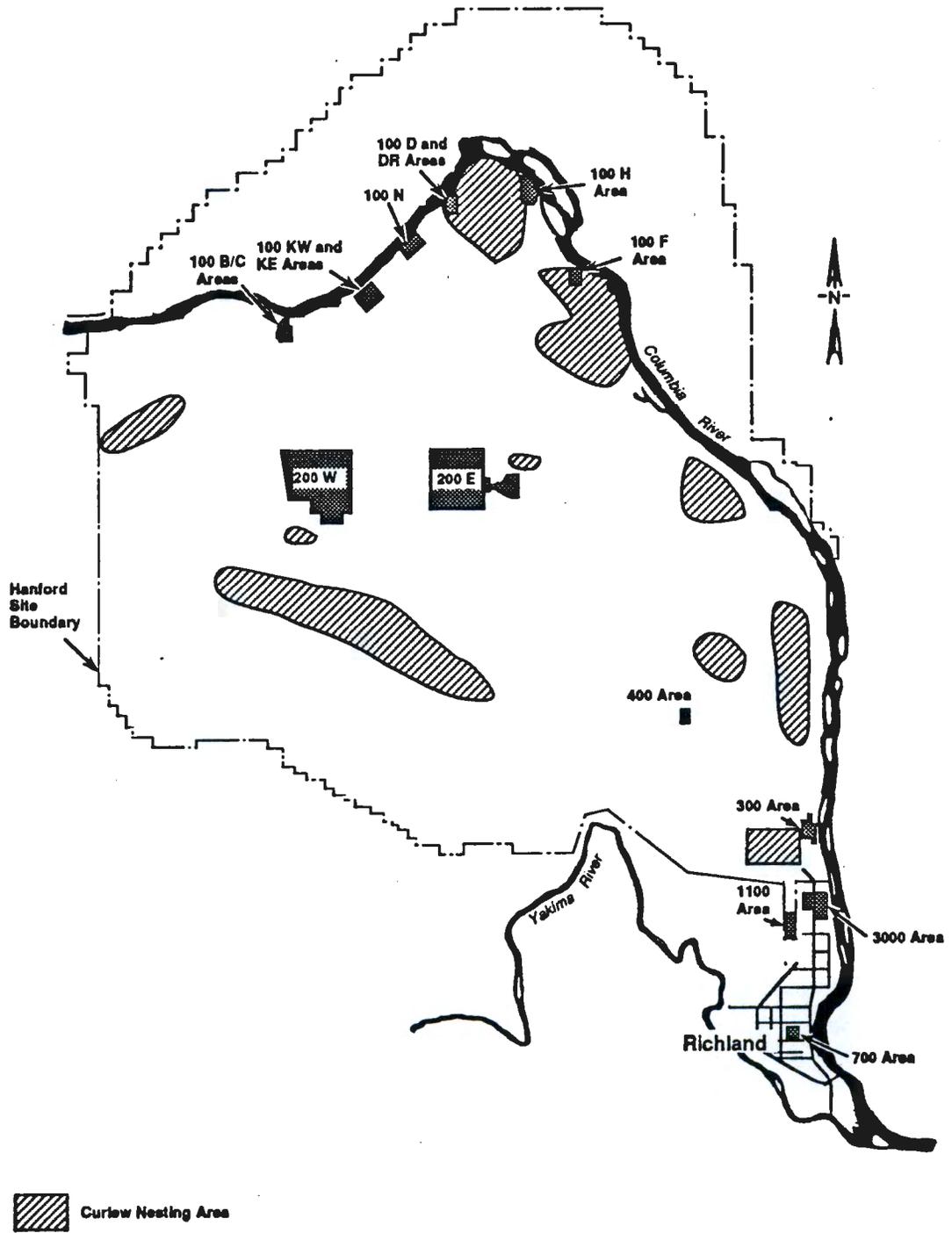


Figure 1. Main Curlew Nesting Areas on the Hanford Site. (Allen 1980)

### 3.1.4 Burrowing Owl - STATE CANDIDATE

The burrowing owl nests in sagebrush/grass habitats on the Hanford Site from March to September. This is a small ground owl with a short tail and distinguishing long legs. In 1981, 20 to 26 nesting pairs were known to occur onsite (Fitzner et al. 1981). The burrowing owl nests in colonies of abandoned small mammal burrows. A burrowing pair will use from one to 10 accessory burrows that are placed within 300 ft (90 m) of the main burrow. When the nest is not disturbed it will be used in subsequent years. Eggs are laid from March to July and incubation takes 28 days (Terres 1977). Burrowing owls feed primarily on insects and mammals. They require open areas with short vegetation and good horizontal visibility in order to find prey.

**GUIDANCE** - Burrowing owls may be seen throughout the Hanford Site and precise nesting locations vary from year to year. Human disturbance with .5 mi (800 m) of burrowing owl nests should be limited between mid-March and mid-August. Colonies of burrowing mammals should be preserved to ensure future nesting sites. To avoid damage to burrows and potential nests, off-road vehicles use should be limited. If owls or nests are seen near activity sites, Westinghouse Hanford Environmental Protection Group should be contacted to provide guidance.

### 3.1.5 Great Blue Heron - STATE MONITOR

Great blue herons nest and forage year-round along the Columbia River and can occasionally be seen at waste ponds. They are large birds, up to 4 ft (1.2 m) tall, with long legs and a long neck. This bird appears blue-grey except for the white feathers around its head. There are six known colonies of heron on and near the Hanford Site. One of the colonies, near the abandoned townsite of White Bluffs, has about 60 active nests. Another colony, upstream from the abandoned townsite of Hanford, has about 16 active nests (Figure 2). The herons are dependent on the large trees for nesting. Without these trees, nest sites for heron would be extremely limited. Dozens of nests, 3 to 4 ft (.9 - 1.2 m) across, lined with twigs and grasses, are built in and around the tops of partially dead or dead trees. Nests are repaired and re-used in following years. Herons feed on insects, fish, gophers, mice, and other small mammals. Eggs are laid from March to May and incubation is about 25 to 29 days. Young heron leave the nest about 60 days after hatching (Terres 1977).

**GUIDANCE** - For continued successful heron foraging and nesting, trees and habitat along the shoreline and on the islands must be preserved. Activity within .5 mi (800 m) of nest sites should be limited from April to July. Westinghouse Hanford Environmental Protection Group should be contacted, if there may be a threat to their nests or habitat from site activities.

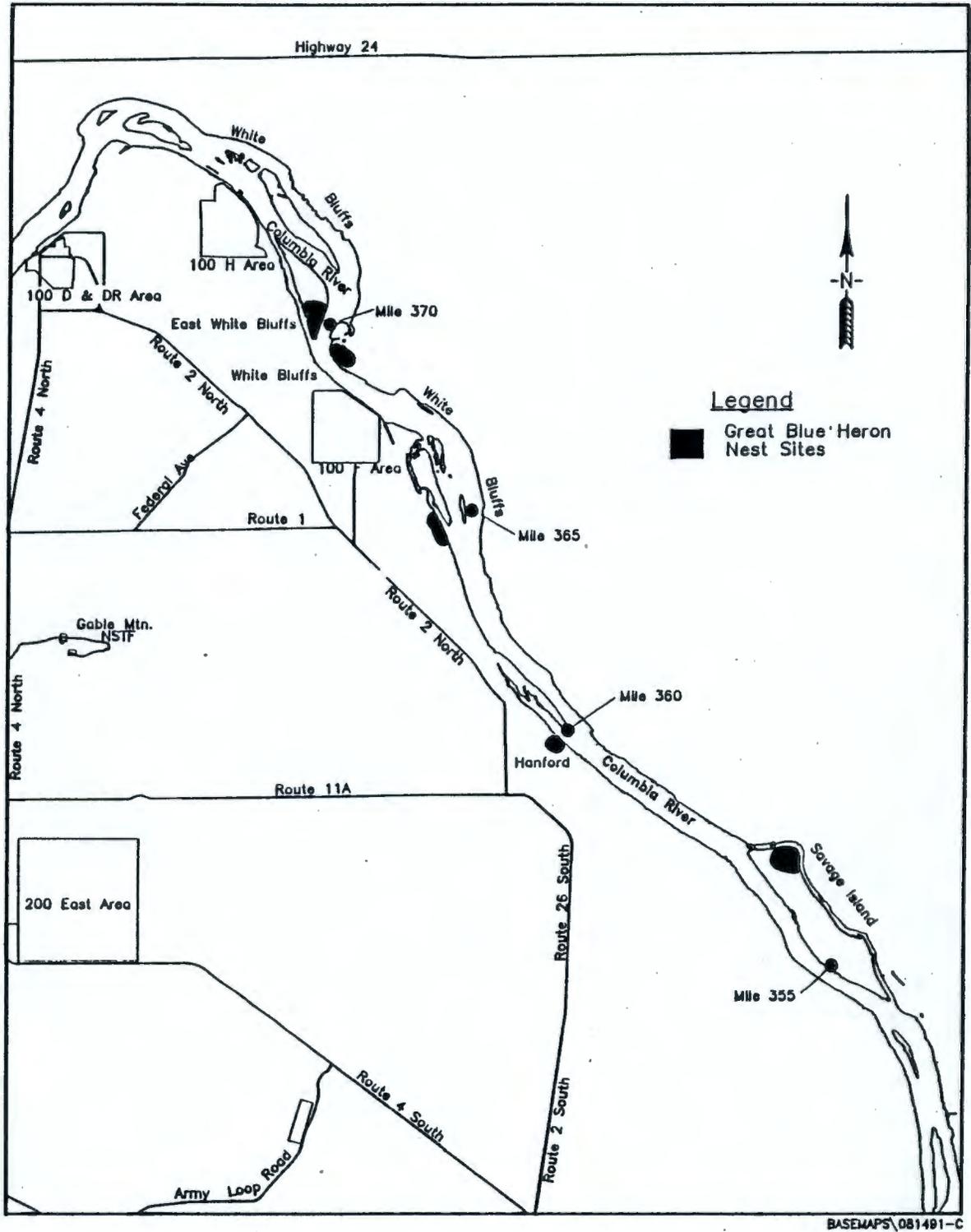


Figure 2. Great Blue Heron Nesting Areas of the Hanford Site.

### 3.1.6 Great Egret - STATE MONITOR

The great egret has infrequently been seen nesting with the great blue heron on the Hanford Site. The great egret's completely white body easily distinguishes it from the great blue heron. Nest platforms are built in medium trees, 20 to 40 ft (6 - 12 m) aboveground, using sticks and twigs with little or no lining. Great egrets feed on fish, frogs, snakes, and aquatic insects. Eggs are laid from April to July. Incubation takes 23 to 24 days and the young fly about 42 days after hatching (Terres 1977).

*GUIDANCE* - Similar guidelines should be followed for these birds as for the great blue heron.

### 3.1.7 Black-crowned Night Heron - STATE MONITOR

The black-crowned night heron occasionally nests and forages with the great blue heron along the Columbia River. This heron has short legs and a short thick neck. It has a black capped head, a black back, and white underparts. Nests of coarse twigs, reeds, and branches can be found from ground level to 160 ft (48 m) up in a tree. The nests are built of coarse twigs, reeds, or branches. Eggs are laid during April and May. Incubation takes 24 to 26 days and the young fly about 42 days after hatching (Terres 1977).

*GUIDANCE* - The same precautions should be taken with these birds that are taken with the great blue heron and the great egret.

### 3.1.8 Caspian Tern/Forster's Tern - STATE MONITOR

The Caspian and Forster's tern nest and forage along the Columbia River from April to September. Terns are small gull-like birds with slender pointed bills. The Caspian tern has black feet, a black-capped head, and a tail that is forked for about 1/4 of its length. The Forster's tern has a deeply forked tail, black-capped head, and orange feet. Both birds nest in loose colonies or singly near water. The Caspian tern nests in shallow scrapes on sandy islands; whereas, the Forster's tern nests on floating mats of dead vegetation or in depressions of mud. Both birds nest from May through July and incubation takes 20 to 23 days (Terres 1977).

*GUIDANCE* - The same precautions should be taken for these birds that are taken for the heron and egrets.

### 3.1.9 Sage Sparrow - STATE CANDIDATE

The sage sparrow nests and forages in pristine sagebrush communities on the Hanford Site. This bird has a dark spot in the middle of the breast, a narrow white eying and a white spot in front of each eye. The perching bird often flicks its tail upward, especially if alarmed. The sage sparrow is a specialist, closely associated with the presence of mature sagebrush shrubs. In a 1987 study conducted on the Hanford Site, it was found that sage sparrows do not nest in cheatgrass dominated communities (Rickard et al. 1987). The sage sparrow nests exclusively in and under sagebrush. The cuplike nests are made of twigs, grass and sagebrush bark, lined with grass, hair, wool, or fur.

Sage sparrows eat grasshoppers, bugs, beetles, ants, caterpillars, spiders, and seeds. Eggs are laid from May to July and incubation lasts about 2 weeks (Terres 1977).

**GUIDANCE** - Conservation of pristine sagebrush habitat on the Hanford Site is essential in the preservation of this species. The sage sparrow occupies such a restricted environmental niche that natural or man-made intrusions may have a severe impact on their survival in a given area (Ennor 1991). When conducting intrusive work that may disrupt a sagebrush community, contact Westinghouse Hanford Environmental Protection Group so appropriate action can be taken to protect this species.

### 3.1.10 Sage Thrasher - STATE CANDIDATE

Sage thrashers are rare migrants and uncommon breeders on the Hanford Site. This bird is brownish-gray above with a heavily streaked breast and two white wingbars. Its small size, short tail, short bill, and streaked breast distinguish it from other western thrashers. In 1989, one territorial pair was observed in a dense stand of sagebrush near Rattlesnake Springs. The thrasher was observed on a nest incubating three eggs (Fitzner and Gray, 1991). The thrasher lives almost exclusively where the abundant sage is *Artemisia tridentata*. Nests are built primarily in low bushes, especially sage and are made of twigs, sage bark, and weeds stems. Sage thrashers feed on grasshoppers, beetles, caterpillars, ants, and spiders. Eggs are laid from April to July and incubation is 15 days (Terres 1977).

**GUIDANCE** - The same guidelines should be followed for these birds that are followed for the sage sparrow.

### 3.1.11 Common Loon - STATE CANDIDATE

The common loon is a rare breeder and winter visitor on the Hanford Site. In breeding plumage, the neck and head are glossy greenish-black with a distinctive white necklace. Prior to 1978, no breeding records had been reported for southeastern Washington. An adult female and young loon were observed in 1978 by William Radke at White Bluffs slough. This pair would have had to nest at the Hanford Site because they were land locked from any other water bodies, and the young bird was downy, incapable of flight (Fitzner and Gray, 1991). Nests are roughly 3 to 4 ft (.9 - 1.2 m) from water, on bare soil in depressions. The nest is built of matted grasses, rushes, and twigs. The same nest is used in continuous years. Food consists of suckers, bass, snails, frogs, and aquatic insects. Eggs are laid from mid May to late June and incubation takes about 29 days (Terres 1977).

**GUIDANCE** - Shoreline habitat must be preserved for successful nesting. If there may be a threat to nesting or foraging areas from site activities, contact Westinghouse Hanford Environmental Protection Group to provide guidance.

### 3.1.12 Grasshopper Sparrow - STATE MONITOR

The grasshopper sparrow is an uncommon summer visitor to the Hanford Site. These birds have a yellow spot between the eye and bill and yellow at the bend of the wings. This sparrow has an unstreaked buff breast, which distinguishes it from most other sparrows found in similar habitat. These birds have been reported in weed fields or prairies along the Columbia River (Books 1985). The small grass nest is usually hidden at the base of tall grass. This sparrow eats primarily insects, especially grasshoppers. Eggs are laid from April through August and incubation takes 11 to 12 days. Young leave the nest after only 9 to 10 days (Terres 1977).

**GUIDANCE** - Similar guidelines should be followed for this bird as are followed for the common loon.

### 3.2 NON-NESTING BIRDS

In addition to the 13 nesting birds, there are 17 non-nesting bird species that are known to occur on the Hanford Site. Although historically they are not known to, some of these species may eventually nest onsite (e.g., Osprey). Migrants consist of two common and eight uncommon species. The osprey and golden eagle are common migrants. Uncommon migrants are the red-necked grebe, merlin, Lewis woodpecker, black-necked stilt, Clark's grebe, Arctic tern, barred owl, Western bluebird, Turkey vulture, and flammulated owl. Migrants can occur almost anywhere on the Hanford Site. Three winter visitors of special concern occur onsite. Wintering birds include the horned grebe, gyrfalcon, and snowy owl. The western grebe and ash-throated flycatcher are known to spend the winter and spring in the area.

**GUIDANCE** - If these species are suspected in an area where significant activity is taking place and species habitat and/or nests may be disturbed, Westinghouse Hanford Environmental Protection Group should be contacted to ensure the proper personnel are contacted and prompt action is taken. To ensure these species continue to use the Hanford Site, it is essential that habitat such as sagebrush, wetlands, and trees be protected.

### 3.3 MAMMALS

Four mammal species of concern, the Merriam's shrew, pallid bat, northern grasshopper mouse, and sagebrush vole occur on the Hanford Site. The Merriam's shrew is found mainly on Rattlesnake Mountain in elevations above 1,000 ft (305 m) (Fickeisen et al. 1980). A colony of pallid bats nests in old buildings near the 100-F Area (Fickeisen et al. 1980). Northern grasshopper mice are found near sand dunes. They are uncommon but widespread (Fickeisen et al. 1980). Sagebrush voles occur in the highest densities in pristine shrub-steppe habitat above 1,000 ft (305 m) on Rattlesnake Mountain. Sagebrush voles have also been trapped at Rattlesnake Springs (O'Farrell 1975), and one was caught near the B-C Cribs on the 200 Area plateau (Hedlund and Rogers 1976). Though more studies need to be conducted to determine the range of the sagebrush vole on the Hanford Site, Fickeisen et al (1980) determined these voles do not occur along the Columbia River.

**GUIDANCE** - Project managers must contact Westinghouse Hanford Environmental Protection Group before disturbing probable habitat or if any of these species are seen during activities, so that actions can be taken to ensure essential habitat is not destroyed.

### 3.4 REPTILE, AMPHIBIAN, INVERTEBRATE, AND FISH SPECIES

There are eight reptile, amphibian, invertebrate, and fish species of concern known to occur on and around the Hanford Site. The two reptile species are the night snake and striped whipsnake. The striped whipsnake is primarily found near antelope bitter-brush, *Purshia tridentata*, and big sagebrush, *Artemisia tridentata*. The night snake is found predominately around basalt outcroppings near Gable Mountain and Gable Butte.

**GUIDANCE** - Activities that alter the composition of native vegetation should be limited in native shrub habitat where night snakes and striped whipsnakes occur. Before disturbing probable habitat, Westinghouse Hanford Environmental Protection Group must be contacted.

The amphibian species of concern, the Woodhouse's toad, is common near the White Bluffs slough and shorelines from the 100-D Area to the Hanford Townsite.

**GUIDANCE** - Before work can begin in riparian areas, NEPA evaluations must be completed.

The invertebrate and fish of concern are the Columbia River tiger beetle, sand roller, mountain sucker, piute sculpin, and reticulate sculpin.

**GUIDANCE** - Activities that modify the habitat or bottom substrate in the Hanford Reach are not permitted without extensive regulatory notification and permits.

## 4.0 SPECIES SPECIAL HABITAT NEEDS AND CONCLUSION

Protection of wildlife not only includes protection of the actual species, but also protection of a species' critical habitat. Destruction of key habitat for species of concern needs to be avoided whenever possible to ensure continued presence of these species on the Hanford Site.

The Hanford Site has a number of different vegetation types that are important habitats for species of concern. Trees that were planted and irrigated on farms before 1943 today serve as nesting platforms for several species of birds, including hawks, owls, and heron.

Semipermanent artificial ponds were created by the release of water used as industrial process coolant streams at the Hanford Site facilities. Over the years cattails, reeds, and trees, especially willow, cottonwood, and Russian olive, have developed around the ponds. These sites and natural riparian areas are used by many animals, including species of concern, for breeding and feeding.

The Hanford Site contains one of the only remaining sizeable remnants of Washington steppe landscape that is still in a nearly pristine state (Rickard et al. 1987). Pristine sagebrush is essential for many wildlife species including sage grouse, sage sparrow, and sage thrasher. These wildlife species are specialists and rely heavily on the sagebrush communities for continued existence.

It is essential that these critical habitats for foraging, resting, and nesting not be destroyed if species of concern are going to continue to breed, forage and migrate through the Hanford Site. The Westinghouse Hanford Environmental Protection Group must be contacted well in advance of any habitat altering activities to protect all species of special concern. It is important to be aware of and consider the effects of activities that may jeopardize these species. This will help ensure that wildlife regulations and guidelines are met, and species and species habitat on the Hanford Site are protected.

## 5.0 REFERENCES

- Allen, J. N., 1980, *The Ecology and Behavior of the Long-Billed Curlew in Southeastern Washington*, Wildl. Monogr. No. 73, 67 pp.
- Ennor, H. R., 1991, *Birds of the Tri-Cities and Vicinity*, Lower Columbia Basin Autobahn Society, Richland, Washington.
- Fickelsen, D. H., R. E. Fitzner, R. H. Sauer, J. L. Warren, 1980, *Wildlife Usage, Threatened and Endangered Species and Habitat Studies of the Hanford Reach, Columbia River, Washington*, PNL-10228451, Pacific Northwest Laboratories, Richland, Washington.
- Fitzner, R. E., 1980, *Behavioral Ecology of the Swainson's Hawk (Buteo swainsonii) in Washington*, PNL-2754, Pacific Northwest Laboratory, Richland, Washington.
- Fitzner, R. E. and R. H. Gray, 1991, "The status, distribution, and ecology of wildlife on the DOE Hanford Site: A Historical Overview of Research Activities," *Environmental Monitoring and Assessment*, 18: 173-202.
- Fitzner, R. E., W. H. Rickard, L. L. Cadwell, and L. E. Rogers, 1981, *Raptors of the Hanford Site and Nearby Areas of Southcentral Washington*, PNL-3212, Pacific Northwest Laboratory, Richland, Washington.
- Fitzner, R. E. and R. L. Newell, 1989, *Ferruginous Hawk Nesting on the U.S. DOE Hanford Site: Case History of a Recent Invasion caused by transmission lines*, PNL-SA-16300, Pacific Northwest Laboratory, Richland, Washington.
- Fitzner, R. E., S. G. Weiss and J. A. Stegen, 1992, *Biological Assessment for Threatened and Endangered Wildlife Species*, WHC-EP-0513, Westinghouse Hanford Company, Richland, Washington.

- Hedlund, J. D. and L. E. Rogers, 1976, *Characterization of Small Mammal Populations Inhabiting the B-C Cribs Environs*, BNWL-2181, Pacific Northwest Laboratory, Richland, Washington.
- O'Farrell, T. P., R. J. Olson and R. O. Gilbert, 1975, *A Population of Great Basin Pocket Mice, Perognathus parvus, in the Shrub-steppe of south-central Washington*. Ecological Monographs 45: 1-28.
- Rickard, W. H., S. F. Liebetrau, L. E. Rogers, and B. E. Vaughan, 1987, *Balance and change in the shrub-Steppe: A Holistic View of a Semi-Arid Terrestrial Ecosystem*, PNL-6083, Pacific Northwest Laboratory, Richland, Washington.
- Sackschewsky, M. R. 1992, *Biological Assessment for Rare and Endangered Plant Species*, WHC-EP-0526, Westinghouse Hanford Company, Richland, Washington.
- Terres, J. K., 1977, *The Autobahn Society Encyclopedia Of North American Birds*, Alfred A. Knopf.
- Washington Department of Wildlife, 1991, *Species of Concern List*, Nongame Program, Olympia, Washington.
- WHC, 1988, *Environmental Compliance Manual*, WHC-CM-7-5, Part X, Rev. 2, Westinghouse Hanford Company, Richland, Washington.

## 6.0 BIBLIOGRAPHY

- Blair, C. L. and F. Schitoskey, 1982, *Breeding biology and diet of the ferruginous hawk in South Dakota*, Wilson Bull. 94:46-54.
- Books, G. G., 1985, *Avian Interactions with Mid-Columbia River Water Level Fluctuations*, Northwest Science, 59(4): 304-312.
- Cushing, C. E., 1991, *Hanford Site National Environmental Policy Act (NEPA) Characterization*, PNL-6415 Rev 4, Pacific Northwest Laboratory, Richland, Washington.
- Ennor, H. R., 1991, *Birds of the Tri-Cities and Vicinity*, Lower Columbia Basin Autobahn Society, Richland, Washington.
- Jamison, J. D., 1982, *Standardized input for Hanford Environmental impact statements Part II: Site Descriptions*, PNL-3509 PT2, Pacific Northwest Laboratories, Richland, Washington.
- Knight, R. L. and D. G. Smith, 1982, "Summer raptor populations of a Washington Coulee," *Northwest Science* 56: 303-309.
- Konrad, P. M. and D. S. Gilmer, 1986, "Post fledgling behavior of ferruginous hawks in North Dakota," *Raptor Research* 20: 35- 39.

- Landeem, D. S., A. R. Johnson, and R. M. Mitchell, 1992, *Status of Birds at the Hanford Site in Southeastern Washington*, WHC-EP-0402, Westinghouse Hanford Company, Richland, Washington.
- Natural Heritage Data System, Washington Department of Natural Resources and Department of Wildlife - Nongame Program, *Element Occurrence Summary - Special Animals*, Mail Stop EX-12 Olympia, Washington.
- Olendorff, R. R., 1973, *The ecology of nesting birds of prey in northeastern Colorado*, USIBP Grassland Biome Technical report No. 211.
- Rickard, W.H., 1988, *Natural Vegetation at the Proposed Reference Repository Location in Southeastern Washington*, PNL-6402, Pacific Northwest Laboratory, Richland, Washington.
- Richard, W. H. and R. H. Gray, 1991, *The Hanford Reservation: A refuge for native plants and animals*, PNL-SA-19223, Pacific Northwest Laboratory, Richland, Washington.
- Sackchewsky, M.R. and D.S. Landeen, 1992, *Fiscal Year 1991 100 Areas CERCLA Ecological Investigations*, WHC-EP-0448, Westinghouse Hanford Company, Richland, Washington.
- Schmutz, J. K., 1987, *The effect of agriculture on Ferruginous and Swainson's Hawks*. J. Range Man. 40: 438-440.
- Stebbins, R. C., 1966, *A Field Guide to Western Reptiles and Amphibians*, The Peterson Field Guide Series.
- Zarn, M., 1974, *Habitat management series for unique or endangered species*. USDI BLM report No. 11, Burrowing Owl.