

Oregon Department of Transportation



Peregrine Falcon Management Plan 2002-2007



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TABLE OF CONTENTS

	Page
1.0 INTRODUCTION.....	1
1.1 OVERVIEW.....	1
1.2 STATUS OF PEREGRINE FALCON.....	1
1.3 PURPOSE OF THIS MANAGEMENT PLAN.....	2
1.4 MANAGEMENT PLAN OBJECTIVES.....	4
1.5 MANAGEMENT PLAN DEVELOPMENT.....	5
2.0 PEREGRINE FALCON ECOLOGY.....	6
2.1 LIFE HISTORY.....	6
2.2 NESTING CHRONOLOGY.....	7
2.3 URBAN HABITAT.....	8
2.4 DISTURBANCE IMPACTS.....	11
3.0 CONSERVATION METHODS.....	12
3.1 PAST CONSERVATION MEASURES.....	12
3.2 MANAGEMENT ZONES.....	13
3.3 GENERAL BEST MANAGEMENT PRACTICES.....	15
4.0 IMPLEMENTATION PLAN.....	19
4.1 COMMUNICATION.....	19
4.2 MONITORING.....	19
4.3 REPORTING AND ADAPTIVE MANAGEMENT.....	20
4.4 INTERNAL REVIEWS AND TRAINING.....	21
5.0 SITE-SPECIFIC MANAGEMENT.....	21
5.1 FREMONT BRIDGE.....	22
5.1.1 Baseline Conditions.....	22
5.1.2 Management Zones for Fremont Bridge.....	23
5.1.3 Past Disturbances at the Fremont Bridge.....	23
5.1.4 Potential Impacts from Maintenance and Construction Activities.....	23
5.1.5 Monitoring at the Fremont Bridge.....	24
5.2 ST. JOHNS BRIDGE.....	25
5.2.1 Baseline Conditions.....	25
5.2.2 Management Zones for St. Johns Bridge.....	26
5.2.3 Past Disturbances at the St. Johns Bridge.....	26
5.2.4 Potential Impacts from Future Maintenance Activities.....	26
5.2.5 Potential Impacts from Future Construction Activities.....	27
5.2.6 Monitoring at the St. Johns Bridge.....	28
5.3 I-205 (ABERNETHY) BRIDGE.....	28
5.3.1 Baseline Conditions.....	28
5.3.2 Management Zones for Abernethy Bridge.....	29
5.3.3 Past Disturbance at the Abernethy Bridge.....	29
5.3.4 Potential Impacts from Maintenance Activities.....	30
5.3.5 Potential Impacts From Future Construction Activities.....	31
5.3.6 Monitoring at the Abernethy Bridge.....	31
5.4 INTERSTATE (COLUMBIA RIVER) BRIDGE.....	32
5.4.1 Baseline Conditions.....	32
5.4.2 Management Zones for Interstate Bridge.....	33
5.4.3 Past Disturbance at the Interstate Bridge.....	33
5.4.4 Potential Impacts from Maintenance Activities.....	34
5.4.5 Potential Impacts from Future Construction Activities.....	35
5.4.6 Monitoring at the Interstate Bridge.....	36

6.0	OVERALL IMPACTS	36
7.0	NEST MANAGEMENT.....	37
7.1	NEST EXCLUSION.....	38
7.2	NEST MANIPULATION	38
8.0	REFERENCES	39

LIST OF FIGURES

	Page
Figure 1. Portland Area Bridges Managed by ODOT with Peregrine Falcon Nests	Not Included
Figure 2. Photographs of Peregrine Falcons	Not Included
Figure 3. Implementation of Best Management Practices and Coordination.....	18

LIST OF TABLES

	Page
Table 1. Ownership of Columbia River Bridges.....	3
Table 2. General Nest Chronology for Peregrine Falcons in the Portland Metropolitan Area.....	7
Table 3. Summary of Productivity of Portland Bridges Peregrine Nesting Sites Since 1994.	10

Cover Photographs:

Historic Columbia River Highway by Kevin Bracy, ODOT Project Leader
Peregrine falcon on the St. Johns Bridge by Bob Sallinger
St. Johns Bridge by Robert Hadlow, ODOT Historian

This is an abbreviated version of ODOT's Peregrine Falcon Management Plan (December, 2000). Specific details on nest locations and site-specific management practices have been omitted.

This document was prepared by Mason, Bruce and Girard, Inc. (707 SW Washington St., Suite 1300, Portland, OR 97205) and revised by ODOT.

1.0 INTRODUCTION

1.1 OVERVIEW

This Management Plan has been prepared pursuant to Oregon State Administrative Rules (OAR) 635-100-0140, which directs certain state agencies to prepare plans to protect state-listed endangered species which occur on property managed by the state agency. The Oregon Department of Transportation (ODOT) owns and maintains facilities that have or are located near nesting territories for the American peregrine falcon (*Falco peregrinus anatum*), which is listed as endangered in Oregon. This document will serve as internal guidance for ODOT to maintain species productivity and to minimize the effects on nesting peregrines from maintenance, construction, and other ODOT permitted activities on ODOT bridges, highways and facilities near peregrine falcon nesting territories. Peregrine falcons have nested on the following bridges that are owned and managed by ODOT: Fremont, St. Johns, I-205 (Abernethy), Interstate (Columbia River), Astoria-Megler (Columbia River), and Highway 26 (New Youngs Bay). The first four of these bridges are in the Portland area. Peregrine falcon nests are also located on cliffs above state-managed highways, including I-84 and the Historic Columbia River Highway in the Columbia River Gorge and Highway 101 along the Pacific Coast. Suitable habitat for peregrine falcons occurs throughout the state and nesting territories may be found on or near other ODOT bridges, quarries, and highways in the future, particularly along the coast and in the Cascade and Klamath Mountains.

There are a variety of highway construction and maintenance activities that have the potential to disturb nesting falcons, depending on the nature of the work, proximity of the activity to the nest, timing with respect to nesting chronology, and level of tolerance by the nesting pair to anthropogenic disturbances. For nest sites near highways, typical activities that have the potential to disturb nesting include rockfall correction, pavement grinding, guardrail installation and other major construction projects. ODOT also owns quarries throughout the state. Peregrine falcons have been reported to use quarries for nesting, although currently there are no known peregrine nesting territories in or near ODOT quarries. However, if a nesting pair occupies a quarry, ODOT activities such as material extraction and grinding have the potential to impact nesting, particularly if the facility is new or was inactive. There are many construction and maintenance activities on bridges that have the potential to impact falcon nesting, especially because the work may occur in much closer proximity to the nest than average daily bridge activities. For example, falcons nesting on the top of a bridge are not likely to be affected by traffic on the deck below, but may be disturbed by maintenance activities such as changing flags or structural repairs.

1.2 STATUS OF PEREGRINE FALCON

The American peregrine falcon occurs throughout North America. However, it is classified as an endangered species in most Pacific States. It was believed to be extirpated in Oregon by the mid 1970's. Since that time, the population has resurged to 88 locations where peregrines have nested at least once between 1975 and 2000. Nest sites in Oregon are mainly on tall cliffs in the Cascade

and Klamath mountains, although nesting also occurs along the Oregon coast and Columbia River Gorge. The peregrine falcon also nests in Oregon on cliffs within the Cascade Mountains, in the Grande Ronde River valley, and in the Portland metropolitan area. Presently there are five known urban nest sites in the Portland area, four on bridges and one on public property. ODOT owns and manages each of these bridges. The first year that peregrines were known to successfully nest on a Portland bridge was in 1994.

Due to the rapid population decline of the species from the 1950's through the 1970's, the American peregrine falcon was listed as endangered by the U.S. Fish and Wildlife Service (USFWS) in October 1970. The subspecies recovered rapidly at a national level and was federally de-listed on August 25, 1999 (Fed. Reg. August 25, 1999, 64(164) 46541-46558). Although peregrine populations are recovering, reproductive success of the subspecies in the Pacific Northwest is still being impacted by residual organochlorines. The American peregrine falcon is currently listed as endangered by the Oregon Fish and Wildlife Commission under the Oregon Endangered Species Act (ESA). This subspecies is also listed as endangered in the State of California, but was recently downlisted in the State of Washington (WDFW 2002). The Arctic peregrine falcon (*F. p. tundrius*) is also listed as endangered in Oregon. It does not nest in Oregon, but may roost or forage in the state during fall and winter migration (Holly Michael, pers. comm. 2002). Both falcons are also protected under the Federal Migratory Bird Treaty Act (MBTA) of 1918 (amended 1989) and state wildlife and migratory bird regulations (OAR 635-044-0130 and OAR 635-043-0051).

1.3 PURPOSE OF THIS MANAGEMENT PLAN

This Management Plan is intended to serve as a tool for coordinating activities between ODOT, which is responsible for maintaining state-owned bridges, and the Oregon Department of Fish and Wildlife (ODFW), which administers the state ESA for fish and wildlife. The Oregon ESA prohibits "take" of state-listed species without appropriate scientific collecting permits or an Incidental Take Permit (ITP). The state definition of take encompasses possessing, hunting, or killing adults or offspring of a listed species, including eggs. ODOT will use this Management Plan to support project-specific ITPs. Projects will be developed to follow the guidelines in this Plan. Specific ITP applications will therefore be streamlined, providing project specific construction and nest management information. Statewide implementation of this Plan will provide ODOT personnel with specific guidelines to avoid take of peregrine falcons that nest on ODOT bridges and facilities. However, incidental take may not be completely avoidable when a maintenance or construction activity which is necessary to keep the structure safe for the travelling public is in direct conflict with nesting peregrine falcons. This Management Plan not only describes how ODOT intends to avoid take, but also proposes actions that will minimize take in the event that avoidance is not possible. Additional measures to avoid and minimize take will be developed on a case-by-case basis, and presented in ITP applications.

Due to the Federal de-listing, ODOT is no longer required to conduct ESA consultation with the USFWS for projects or activities that may adversely affect peregrines. However, the USFWS administers the MBTA, which restricts actions that could cause mortality to migratory nesting birds including peregrine falcons. Migratory birds include most birds in Oregon except European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*) and rock dove (AKA non-native

pigeon) (*Columba livia*). This Plan describes ODOT’s intention and proposed methods to avoid take under the MBTA as well as the state ESA. ODOT will provide the USFWS with copies of this Management Plan and annual monitoring reports.

Peregrine falcons nest on some of the bridges that cross the Columbia River, spanning Oregon and Washington states. Ownership and maintenance responsibilities of multi-state bridges vary (Table 1). Both Washington and Oregon agencies have regulatory authority in the Columbia River, regardless of ownership or location of the nest site with respect to the state line (McEwan, pers. comm. 2002). As such, ODOT may be required to obtain wildlife-related permits for impacts to peregrine falcons from Washington Department of Fish and Wildlife (WDFW) as well as ODFW on ODOT-owned Columbia River structures. Likewise, ODOT may need to coordinate with Idaho Department of Fish and Game for impacts to peregrine falcons on ODOT-owned facilities that cross the Idaho-Oregon state line (i.e., bridges across the Snake River), although at this time, there are no known nest sites in these locations.

Table 1: Ownership of Columbia River Bridges

Bridge Name	Highway	Oregon County	Washington County	Owner
Astoria-Megler	US 101	Clatsop	Pacific	ODOT
Lewis & Clark (Longview)	SR 433	Columbia	Cowlitz	WSDOT
Interstate	I-5	Multnomah	Clark	ODOT
Glenn Jackson	I-205	Multnomah	Clark	ODOT
Bridge of the Gods	local	Hood River	Skamania	Port of Cascade Locks
Hood River Bridge	local	Hood River	Klickitat	Port of Hood River
The Dalles Bridge	US 197	Wasco	Klickitat	ODOT
Biggs Rapids-Sam Hill	US 97	Sherman	Klickitat	WSDOT
Umatilla	I-82	Umatilla	Benton	WSDOT

Through the guidelines outlined in this plan, ODOT will be able to minimize adverse effects on nesting peregrine falcons from ODOT activities and ODOT permitted activities (such as special events and utilities). These guidelines entail the use of spatial and temporal (also known as seasonal) management strategies to preserve the nest site and promote a relatively secluded environment for nesting during the nesting season. To safeguard long-term occupied nest sites, the nest management zone concepts utilized by the United States Forest Service (USFS) for their peregrine falcon management plans have been adapted to the urban bridge environment for this plan (Pagel 2001a, USFS 2000, WSDOT 1998). Specific management zones (i.e. Nest Zone, Restricted Zone, and Sensitive Zone) have been delineated for known peregrine falcon nest sites on the four Portland area bridges for the purpose of assisting ODOT personnel to avoid and minimize impacts to nesting falcons. Heavy traffic levels on Portland area bridges necessitate higher levels of maintenance and other permitted uses than other less urbanized structures that may have nesting peregrine falcons in the future. ODOT will implement more generalized management zones on other bridges or facilities throughout the state when new nest sites are discovered (see Section 3.2).

All foreseeable ODOT activities that may affect nesting peregrine falcons are included in this plan. These activities include routine bridge and roadway maintenance, general construction, work in quarries, emergency maintenance actions and special uses permitted by ODOT (e.g., new utilities, filming productions, races, and associated activities). ODOT provides permits for private entities such as utility companies, non-profit organizations or private citizens that wish to hold events on the ODOT right-of-way, work within the right-of-way, or add structures to ODOT facilities. The management guidelines in this plan apply to all activities that ODOT has permit authority over, throughout the state. Although the urban nest sites are subject to various human activities that may be potentially disturbing to peregrines, this Management Plan only addresses activities permitted or conducted by ODOT, as those are the only activities which ODOT can control. ODOT is not responsible for potential impacts to nesting peregrine falcons on ODOT structures that are caused or permitted by private citizens or other government agencies, including those activities conducted by local city authorities.

This Management Plan is effective for five years, through December 31, 2007, or until the American peregrine falcon is de-listed from the state ESA. If, and when, the peregrine falcon is de-listed from the state ESA, it will still be protected under the MBTA. ODOT will continue to minimize impacts to peregrine falcons even after de-listing, particularly during nesting, as ODOT does for all migratory birds protected under the MBTA. However, Management Plans such as this are not required for non-listed species. Although ODOT will continue to follow many of the guidelines in this Plan that avoid take and maintain compliance with other state wildlife laws and the MBTA, after the falcons are de-listed ODOT will no longer be responsible for the detailed level of monitoring, reporting, and coordination as outlined in this Plan. If the peregrine falcon continues to be a state-listed species in 2008, this Plan will be revised and updated to include new information, maintenance activities and practices. The Management Plan will also be revised as needed during the five-year time frame of this plan when new peregrine nest sites are discovered on ODOT structures, or for reasons as stated in Section 4.3.

1.4 MANAGEMENT PLAN OBJECTIVES

The main purpose of this Management Plan is to comply with the state ESA. However, the scope and objectives of this plan are far more comprehensive. This plan has been developed to meet the following principal objectives:

1. Promote recovery of the subspecies throughout Oregon, by continuing protection of existing peregrine falcon nest sites on ODOT bridges.
2. Provide guidelines for ODOT personnel to avoid and minimize impacts to existing and new possible peregrine falcon nest sites on ODOT bridges and near other ODOT facilities such as highways and quarries.
3. Identify specific maintenance and construction activities that are expected to occur on the four ODOT Portland area bridges, evaluate potential impacts to nesting peregrine falcons, and provide specific Best Management Practices (BMPs) to avoid and minimize impacts during each specific activity.

4. Streamline the ODFW Incidental Take Permit (ITP) process by using this Plan to support project-specific ITPs for ODOT activities.
5. Provide a mechanism for protecting newly discovered nest sites on other ODOT bridges and facilities throughout the state.
6. Provide a mechanism for modifying the Management Plan based on new information or additional maintenance or construction needs.

1.5 MANAGEMENT PLAN DEVELOPMENT

This Management Plan is the result of an extensive effort by ODOT to collaborate not only internally, but with other agencies and peregrine falcon specialists to develop general and site-specific BMPs. Extensive literature reviews were conducted to develop the general life history and ecology of peregrine falcons (Section 2.0). Information and recommendations for site-specific management were developed from information provided by United States Forest Service (USFS) Peregrine Falcon Specialist Joel Pagel, Bob Sallinger of the Audubon Society of Portland (ASP), ODOT Biologists and Maintenance Managers, ODFW, and Brian Walton of the Santa Cruz Predatory Bird Research Group (SCPBRG).

In 2001, ODOT contracted with Mason, Bruce, & Girard (MB&G) and their subconsultant ASP to monitor the occupancy, nesting chronology and reproductive success of the Fremont Bridge, St. Johns Bridge, I-205 (Abernethy) Bridge, and Interstate (Columbia River) Bridge using the protocol described in Pagel (1992) (see Section 3.1). In addition, the contract included documenting the behavior patterns of the St. Johns Bridge pair with specific focus on their use of the bridge structure and the pair's sensitivity to anthropogenic disturbance. This contract was later to be expanded to document the response of the nesting falcons to construction activities on the Abernethy and Interstate bridges. To meet these additional objectives, monitoring was increased to several times a week at each of the bridges throughout the nesting season. Falcon reactions to potentially disturbing activities were recorded at these sites (Sallinger 2001). The 2001 monitoring results were compiled in "Final Report on Peregrine Falcon Monitoring Activities at the Fremont, Saint Johns, Interstate and Abernethy Bridges" (Sallinger 2001).

In February 2001, a meeting was conducted between ODOT environmental and maintenance staff and managers, Holly Michael (ODFW), Bob Sallinger (ASP) and Joel Pagel (USFS). The objective of this meeting was to evaluate each of the four Portland area bridges required and anticipated maintenance activities, possible impacts to known peregrine nest sites, and recommendations to avoid impacts (such as spatial and temporal restrictions). The results of this meeting were fundamental in developing the General Best Management Practices (BMPs) (Section 3.3) and Site-Specific BMPs (not included in this Abbreviated Plan).

Specific management zones were designed for each known nest site on the four Portland bridges. The concept of management zones and the temporal restrictions of certain activities were developed from Joel Pagel's "Draft Peregrine Falcon (*Falco peregrinus anatum*) Nest Site and Habitat Management Plan" (Pagel 2001a). Management zones were further refined based on the results of the 2001 monitoring and the recommendations provided by Sallinger (2001).

This Management Plan has also undergone extensive review. A draft Management Plan was submitted for review on February 7, 2002 to ODFW, ODOT Biologists, ODOT Region 1 maintenance managers, Bob Sallinger (ASP), Joel Pagel (USFS) and Brian Walton (SCPBRG). In addition, a peregrine falcon monitoring training program was presented by Brian Walton of SCPBRG on February 7, 2002, for biologists with ODOT, (WSDOT), ODFW, MB&G, and ASP. The training provided further information on nest management strategies for avoiding impacts during future construction activities, which were incorporated into the Management Plan.

This Management Plan was developed from existing knowledge about the current peregrine falcon pairs' tolerance to disturbance at known nest locations. ODOT recognizes that peregrine falcon tolerance to disturbance is specific to the individual falcon pair and the nest site location, both of which can vary from year to year. Therefore, ODOT will revise this Management Plan each year, as needed, to incorporate different behavioral responses by new nesting pairs and to include newly occupied sites. Other revisions would consist of revising BMPs, adding or revising construction or maintenance activities, modifying nest management alternatives, and updating the implementation plan.

2.0 PEREGRINE FALCON ECOLOGY

2.1 LIFE HISTORY

The following information provides a summary of the life history of the American peregrine falcon. A more detailed account of the status and life history of the American peregrine falcon in the Pacific Northwest can be found in the final Peregrine Falcon Status Report (WDFW 2002b). The American peregrine falcon is a small raven-sized bird known for its fast and powerful flight (Figure 2). Peregrines are often found in open habitat near a water source with available cliff faces or inaccessible ledges for nesting (Csuti et al. 1997). Peregrines are skilled hunters specializing in taking other avian species in flight. Having a water source available is the major attractant for their preferred prey consisting of other avian species that can range in size from a hummingbird to an Aleutian Canada goose (Sallinger 2002). The preferred prey items in urban areas are the rock dove and European starling (USFWS 1999).

Peregrine falcon nests, referred to as eyries, are usually located on a small scrape on a ledge of a cliff face, or a man-made structure. A suitable cliff face or structure is typically between 23 m to 610 m (75 to 2,000 ft) tall and within 0.4 km (0.25 mi) to 0.8 km (0.50 mi) of riparian, lacustrine, or marine habitat. The nest is located above the ground at approximately 40-80 percent of the total cliff height and is inaccessible to mammalian predators (Pagel 1992). The nest may consist of a small scrape, decomposed rock, or gravel. Peregrines may occasionally use abandoned nests of eagles, hawks or ravens (Terres 1980). These are the general attributes of peregrine nest sites; however, peregrine have nested in a variety of locations and have even been known to nest on the ground. A pair of peregrines may favor a particular cliff and return each year to breed. One or two alternate nest sites along an escarpment are common (Palmer and White 1988). In wild sites, peregrines defend an area that may extend 200 to 300 m (660 to 990 ft) around an eyrie.

Territories around urban sites appear to be smaller, but presently there is not enough data to estimate a territory size.

The current peregrine falcon population within the continental United States is below historic levels. This decline is attributed to eggshell thinning and associated reproductive failure (Pacific Coast American Peregrine Falcon Recovery Team 1982, Aulman 1992) correlated with widespread use of organochlorine contaminants (Pagel and Jarman 1991). Other pollutants, disturbance, loss of nesting and foraging habitats, shooting, and collisions with transmission lines and their supporting structures have also contributed to the reduction in peregrine falcon numbers (Pacific Coast American Peregrine Falcon Recovery Team 1982).

Blasting, road construction, low-flying aircraft, and recreational activities (i.e., photographers, bird watchers, hikers, and rock climbers) may disturb nesting peregrines. Disturbance may result in nest or territory abandonment or desertion; exposure of eggs and/or young; egg breakage, ejecting eggs or young from the nest by a frightened or flushing adult; missed feedings of the young; and premature fledging of the young, resulting in injury or death (e.g., due to critical injury, exposure, or predation) (Fyfe and Olendorff 1976, Olsen and Olsen 1978, Pacific Coast American Peregrine Falcon Recovery Team 1982). Peregrines are most susceptible to human disturbance during courtship and incubation; nest tenacity by adults increases as incubation progresses and hatching occurs.

2.2 NESTING CHRONOLOGY

Peregrine falcon courtship begins in January and continues through March; however, some behaviors, such as copulation, can occur during every month of the year. Timing is variable depending on elevation, weather, and the geographic location of the nesting territory (Table 1). Peregrines within the Portland area have been observed exhibiting courtship behavior as early as January 17 (Sallinger 2001). Courtship activities normally last 6-8 weeks (Pagel 1992). There are eight distinct phases in the pre-incubation activity of peregrines: (1) the attraction of mates to one another, (2) mutual roosting on a ledge or cliff, (3) cooperative hunting excursions, (4) courtship flights, (5) courtship behavior on ledge or cliff, (6) courtship feeding, (7) copulation, and (8) nest scraping (Cade 1960). The courtship flights are a display of modified hunting skills and territorial defense tactics. The flights include high-circling, undulating flights, and figure-eights, usually performed by one bird alone; or high-circling, and flight-play usually performed by a pair (Cade 1982).

Table 2: General Nest Chronology For Peregrine Falcons in the Portland Metropolitan Area

Activity	January	February	March	April	May	June
Courtship (6- 8 weeks)	Jan 1 to March 15					
Laying eggs (2-8 days)			March 15 to May 31			
Incubation (30-35 days)			March 15 to May 31			
Recycle (14 days)			March 15 to April 30			
Hatching (31-33 days)				April 1 to June 30		
Nestling (35-54 days)				April to June 30		
Fledge (14 days)					May 1 to June 30	
	Nesting Seasonal Restriction is January 1 to July 1					

With the onset of ledge ceremonies, cooperative hunting transitions into courtship feeding in which the male presents food to the female (Ratcliffe 1993). Following this stage in the breeding cycle, the pair roosts together on a ledge and begins searching for possible eyrie ledges. Selection of ledges involves ritualized behavior that includes mutual ledge displays at the scrape. As the male's interest in nesting ledges declines, that of the female's increases, and she continues to explore ledge sites and develop scrapes (Ratcliffe 1993). Copulation begins about eight weeks after the onset of courtship and about three weeks prior to egg laying.

The peregrine falcon generally lays an average of four eggs over a course of 2 to 8 days with each egg being laid at 2 to 3 day intervals. Egg laying may begin as early as mid-March and as late as the end of May. Incubation of the eggs generally begins after the laying of the second to last egg (Nelson 1972). The eggs are incubated for 31 to 33 days, generally in the months of April and May. Both sexes participate in the incubation, although the female does most of the incubation. The male feeds the female during the incubation and early brooding period. Peregrines incubate their clutch of eggs and eyases (peregrine chicks) with their feet beneath and between the eggs.

Peregrines that lose their eggs before or about the tenth day of incubation period usually produce a second clutch (Newton 1979, Ratcliffe 1993). Recycling (a second nesting attempt) will occur in approximately 14 days after the first nesting attempt fails and it may include moving the nest site to an alternate ledge (Cade et al. 1996a). The peregrines of Portland have been documented to begin incubation as early as the last week of March or the first week of April. Thus, egg laying begins as early as March 20 in any given year (Sallinger 2001). With recycling, egg laying can continue into June.

As the young are developing, they are helpless and remain on the ledge while being fed and protected by both adults. Brooding is conducted mainly by the female and is nearly continuous for the first three days and then gradually decreases to where very little brooding occurs after 10 to 20 days (Hovis et al. 1985, Carlier 1993, Cade et al. 1996a). Fledging occurs when the nestlings are 35-45 days old, but they remain dependent on the adults for protection and food until their hunting skills have developed (Thelander 1978, Palmer and White 1988). As the nestlings prepare for fledging, they will gradually become more mobile and begin exercising their wings, often hopping among ledges near the nest site (Sherrod 1983). The fledgling peregrines disperse as early as 3 weeks after fledging and as late as 3 months. Peregrines have never been known to return to their natal nest for future nesting (Brian Walton, pers. comm. 2002). They typically disperse up to hundreds of miles away from the nest, although some urban birds have been known to nest within 10 miles of their natal nest.

2.3 URBAN HABITAT

The number of peregrines using urban nest sites has been increasing as the population has increased. The most obvious attractant to urban nest sites is the abundant food supply and availability of structures providing suitable nest sites. Urban nest sites are comprised of buildings and power plants (61 percent), bridges and overpasses (30 percent), and other structures (9 percent). Other structures include water tanks, grain silos and elevated railroad bridges (Cade et

al. 1996b). Bridges are the most typical highway facility utilized by nesting peregrines. However, peregrines may also nest on other transportation facilities, such as quarries and buildings, or cliffs adjacent to highways.

Urban nest sites contain many hazards for both adult and fledging peregrines. Hazards include secondary poisoning from consuming poisoned prey, exposure to diseases acquired from prey, and shooting by pigeon breeders. Hazards to flying birds include collisions with plate glass windows or tinted windows, vehicles, airplanes, powerlines, and combat with other birds of prey (Cade and Bird 1990). Unexpected wind shears may cause peregrines to collide with buildings or other structures. Young birds may fall into open chimneys and/or air vents. Birds fledging from buildings often face a sheer drop-off from the nest ledge to the ground. Many nestlings flutter out of the nest before they are ready to fly and end up on the ground. Once on the ground, they face traffic, predators, people and starvation if the adult fails to find and feed them (Cade and Bird 1990).

Bridge nest sites pose even more hazards for peregrines than buildings nest sites. Bridges lack the strong updrafts that are associated with cliffs and buildings. Updrafts are important in keeping young birds aloft when they are just learning to fly. Fledglings on bridge sites may end up on the underlying roadways where they are struck by a passing vehicle. If the bridge is over water, fledglings may fall in the water and drown. Bridges are considered to have poor fledgling success due to these hazards. In New York City, Frank (1994) reported that peregrines breeding on bridges successfully fledged an average of 1.1 chicks per brood versus 2.5 chicks per brood for birds nesting on buildings. The dangers of bridge sites to fledgling peregrines can be demonstrated by the peregrines nesting on the Fremont Bridge in Portland. For example, this site produced two fledglings in 1997, one of which drowned while the other was hit by a car (Sallinger 2001).

Regardless of the hazards at urban nest sites, the Portland bridges have had comparable productivity to wild nest sites. Portland bridges have hatched 32 chicks and successfully fledged 21 of those 32 chicks. This is a 66 percent fledging success rate (Sallinger 2001) (Table 2). Wild sites in Oregon average similar fledging success (Joel Pagel, pers. comm, 2001b). Portland bridges represent 6 percent of the active nest sites in Oregon (Sallinger 2001). This high success rate can be partly attributed to the many hours of volunteer observation and rescue of fledglings provided by ASP since 1994.

Many urban sites require intensive management. Management includes installing nest boxes and ledges, banding, monitoring, treating nestlings for diseases, and rescuing fledglings. Fledglings often require rescuing and protection (such as crowd control, predator control, and constructing barriers) as the fledglings learn to fly from the ground, especially if they leave the nest early or fail to land in safe spot during their early flights. These intensive management activities are conducted by volunteers, such as ASP, and are not the responsibility of ODOT. Fledglings on bridges often cannot be rescued due to the water, and these birds often drown.

Table 3: Summary of Productivity of Portland Bridges Peregrine Nesting Sites Since 1994

Year	Fremont Bridge		St. Johns Bridge		Abernethy Bridge		Interstate	
	Number of Young	Number Survived	Number of Young	Number Survived	Number of Young	Number Survived	Number of young	Number Survived
1994	1	1	--	--	--	--	--	--
1995	1	1	--	--	--	--	--	--
1996	3	2	*	--	--	--	--	--
1997	2	0	*	--	--	--	--	--
1998	4	4	--	--	--	--	--	--
1999	4	2	--	--	--	--	--	--
2000	3	1	3	3	--	--	--	--
2001	4	1	4	4	1	1**	2	1
2002	4	2	3	3	--	--	0***	0***
Total	26	14	10	10	1	**	2	1
Percent Survival	54%		100%		**		50%	
Average number of young fledged per year	1.5		3.3		**		1	

Source: Sallinger 2001 (and updated by ODOT with 2002 data)

* Falcons attempted to nest but abandoned eggs prior to hatching

** Single viable egg was removed from site during 2001. Egg was incubated and hatched in captivity and juvenile falcon was fostered in a wild nest site.

*** 1st nesting attempt failed. 2 eggs were removed from site during 2nd nesting attempt in 2002 and incubated in captivity. Viability of the eggs are currently unknown.

The poor fledgling success on bridge sites has lead the SCPBRG to remove eggs and/or chicks from birds nesting on bridges in California (Bell et al. 1996). These chicks have been fostered or hacked out to increase their chances for survival. There are mixed feelings in the regulatory agencies over the appropriateness of removing eggs and/or chicks from bridge sites. While these intensively managed sites encourage public interest and support wildlife, they may also lead the public to expect active management of these sites in the form of rescuing every fledgling. Intensive management can be a prohibitively expensive proposition for an agency if the work is not completed by volunteers, and many urban peregrines don't have the benefit of volunteer assistance (Walton 2002b). If fledglings are not rescued, then the overall reproductive success for some sites declines and the bridges may become reproductive sinks for those peregrines (WSDOT 1998). However, this intense level of management may not be required for every bridge nest site and some bridges are capable of successfully fledging young each year without intervention (Sallinger 2002).

In addition to being used as nest sites, bridges and urban areas also appear to be used as wintering areas by peregrines. Birds utilizing bridges in the winter may be resident peregrines that remain in the territory throughout the year, or migratory peregrines that will return to wild sites for nesting. The Fremont Bridge pair has been observed every month of the year and is believed to remain in close proximity of the nest site year round (Sallinger 2002). Both migratory and overwintering birds appear to be attracted to the urban habitat's abundance of prey species.

2.4 DISTURBANCE IMPACTS

The level of impact that a certain disturbance factor may have on peregrine falcons depends upon the familiarity of an individual or nesting pair to that particular disturbance (Olsen and Olsen 1978). If peregrines are accustomed to a certain disturbance as a normal or routine occurrence, and the disturbance offers no known direct threat, then the peregrines will ignore it. If the disturbance is new, intermittent, or unexpected within their nesting territory (the defended portion of their home range), then the peregrines will be less tolerant of that disturbance. For example, when peregrines are accustomed to vehicle traffic, hikers, or distant climbers, and they receive no potential threat to their eyrie from the activities, then observed peregrine falcon behavior patterns around the eyrie are “normal”. When peregrines have not experienced a human disturbance, or the activity is intermittent (e.g. log skidding, aircraft, or distant rockfall) then they can become noticeably concerned (ranging from curiosity fly-overs to intense territorial defense) (Pagel 2001a).

Background levels of disturbances are high around urban nest sites, and most urban peregrines have become acclimated to levels of disturbance that would otherwise significantly disrupt a wild peregrine. Extremely loud and sudden activities (such as blasting and helicopters) are expected to disturb falcon nesting even in urban settings because they tend not to occur on a daily basis and may startle incubating adults or chicks. As theorized by Olsen and Olsen (1978), falcons at Portland bridges rarely demonstrated any response to regularly occurring disturbances, such as speed boats, trains, low flying aircraft, sirens, car crashes, etc. (Sallinger 2001). During behavioral monitoring at the St. Johns and Abernethy bridges in 2001, Sallinger (2001) noted that the most regularly occurring source of disturbance to the peregrines was not anthropogenic, but rather threat of presence of other birds of prey in close proximity to a nest site.

In urban settings, the following types of activities are anticipated to potentially adversely affect nesting falcons if they occur near the nest ledge: (1) louder than ambient noise levels (10 dBA or higher), (2) require equipment larger than a few pick-up trucks or vans, (3) will take longer than one day in duration, or (4) alter nest ledges (except nest enhancements). The level of disturbance depends on proximity to the nest, stage of the nesting cycle, and relative tolerance of the falcons to existing background levels of disturbance.

Peregrines may be disturbed by both audible and visual “random” human activities when they occur during the nesting season, although disturbance is dependent on the peregrine’s relative tolerance to background noise levels and routine visual occurrences. For the Portland bridge peregrines, the nesting season is January 1 to July 1. The potential effects of disturbance will depend upon what stage of the reproductive cycle the peregrines are in when the disturbance occurs. Disturbance occurring during the courtship phase (January 1 to March 15) may cause peregrines to select an alternative and possibly more hazardous nest sites or not to nest at all. During incubation (March 15 to May 31), disturbance could drive the incubating bird off the nest, resulting in chilled eggs. When chilled for extended periods, eggs will fail to hatch (WSDOT 1998). In addition, the adult peregrine can be startled, or induced to bolt from the incubating eggs. If the peregrine reacts to the disturbance with rough and swift position changes, then eggs can be punctured or broken, or eggs/young could be accidentally pushed from the nest scrape by the departing adult (USFS 2000).

During brooding, the chicks are unable to thermoregulate and are dependent upon an adult to maintain their body temperature. Disturbances at this time could cause the adults to leave the nest, and allow the chicks to become cold or hyperthermic (heat stressed) if exposed to direct sunlight. Nighttime disturbance could result in the chicks being left unbrooded overnight, leaving them vulnerable to predation, or prevent the adults from accessing the nest to feed the chicks first thing in the morning. However, falcons at urban nest sites may be less prone to disturbance, because of their relative tolerance to high ambient noises.

Once the young birds are approaching the fledgling stage disturbance could cause them to leave the nest sooner than they are ready (Olsen and Olsen 1978). Chicks that leave too soon have a poor chance of completing a successful flight, and may drown if they land near water. Once fledging is complete, the young birds will require approximately two weeks to practice their flying skills (Sherrod 1983). During this time, they stay close to the nest site and are fed by their parents. Disturbance during this time could result in the youngsters not being fed, predation, drowning, and possibly unfortunate interactions with humans.

3.0 CONSERVATION METHODS

To assure compliance with the Oregon ESA and Federal MBTA, ODOT will first consider measures to avoid “take” of peregrine falcons. The state ESA definition of take is “to kill or obtain possession of or control of any species on the state list” (OAR 635-100-0080). The MBTA has a similar definition of take. Disturbance to an active peregrine falcon nest site as a result of an ODOT activity could potentially be considered a take if it results in direct mortality of an egg, youngster or adult, or if it causes adults to abandon eggs or dependent chicks.

ODOT is required to perform routine and emergency bridge maintenance activities, as well as scheduled construction projects. Many of these activities and projects have the potential to cause adverse impacts to peregrines as a result of disturbance. ODOT has developed broad conservation methods based on peregrine nesting chronology and general biology to avoid or minimize disturbances to any peregrine falcon nest site on an ODOT facility. Specific BMPs (not included in this Abbreviated Plan) have been developed for the Portland area bridges currently known to have nesting peregrines. They strongly reflect the relative tolerance of urban peregrines to anthropogenic disturbances. Due to the large amount of human activity within the areas surrounding urban nest sites, it is likely that nesting peregrines may experience disturbances from sources other than ODOT activities. Disturbances resulting from these non-ODOT related activities are not addressed in this Management Plan, as they are outside of ODOT’s control and beyond the scope of this plan.

3.1 PAST CONSERVATION MEASURES

Prior to 2001, the ASP and USFS Peregrine Falcon Specialist, Joel Pagel, had been monitoring the nest chronology and reproductive success, and performing fledgling banding of the Fremont Bridge and St. Johns Bridge peregrine falcons since their existence was discovered. In 2001, ODOT contracted with Mason, Bruce, & Girard (MB&G) and their subconsultant ASP to

monitor the nesting chronology of both the Fremont Bridge and St. Johns Bridge peregrine falcons, as well as potential nest sites at the Abernethy Bridge. In addition, the contract included documenting the behavior patterns of the St. Johns Bridge pair with specific focus on their use of the bridge structure and the pair's sensitivity to anthropogenic disturbance.

Once the Abernethy Bridge was confirmed as an active nest site in 2001, additional monitoring occurred to document the behavior of peregrines during the ongoing bridge seismic retrofit construction work. To avoid potential lethal take of peregrine eggs or chicks due to construction disturbances, the nest was manipulated by Peregrine Falcon Specialist, Joel Pagel. The real egg was removed and "dummy" eggs were replaced on the nest ledge (bridge pier cap). Monitoring continued, observing the response of the incubating parents to construction disturbances and evaluating their sensitivity to the proximal construction activity. The MB&G/ASP monitoring contract was expanded in the spring of 2001 to include the Interstate Bridge when peregrines were discovered to be using that bridge and maintenance activities were required to occur in the vicinity of the nest ledge. The 2001 Interstate Bridge falcon monitoring began after the incubation of eggs was complete. Therefore, the objective was to document peregrine sensitivity to the proximal maintenance work and the site potential for fledgling success (Sallinger 2001). The construction and maintenance activities on the Abernethy and Interstate Bridges were ongoing prior to establishment of the peregrine's nest sites at those locations; therefore, ODOT continued their construction activities while avoiding the immediate vicinity of the nest sites as much as possible.

In 2002, monitoring continued on the Abernethy, Interstate, and St. Johns bridges, but mainly just to determine occupancy and nesting chronology. However, monitoring was increased on the Interstate Bridge due to the need for maintenance work in the vicinity of the nest site. Nest manipulation was conducted by SCPBRG biologist Glenn Stewart, to avoid potential lethal take of peregrine eggs or chicks during upcoming maintenance and construction work. The real eggs were removed and dummy eggs were replaced.

The 2001 and 2002 monitoring provided ODOT with further insight into nesting chronology, tolerance of disturbance, and general behavior of urban bridge peregrine falcons. Overall, the monitoring found that peregrines at each bridge nest site are relatively tolerant to disturbances throughout the observed nesting season. Although some documented disturbances were due to construction activity in very close proximity, the most frequent disturbance documented was other raptors coming in close proximity of the nest site.

3.2 MANAGEMENT ZONES

Management zones are defined as spatial boundaries around a particular nest site where the majority of hunting, perching, and feeding activities occur during nesting. The management zones concept has been widely accepted for non-urban peregrine nest sites (Pagel 2001a, USFS 2000, WSDOT 1998). For this plan, three zones have been established, reflecting relative levels of peregrine activity, and include the Nest Zone, Restricted Zone, and Sensitive Zone. All of the management zones are 3-dimensional, radiating in all directions from the nest ledge, and includes all portions of the roadway, facility or bridge that are owned and managed by ODOT. The management zone concept also encompasses temporal (also known as seasonal) boundaries,

coinciding with anticipated nesting chronology at the site. The temporal boundaries for all of the ODOT management zones include the entire nesting season (January 1 to July 1). The objective of each management zone is to provide the ODOT Maintenance Crews, Permits Specialists, and Construction Managers with spatial and temporal boundaries for conducting specific activities.

Management zones at the Portland bridges have been determined from past monitoring efforts, the design of the bridge, line of sight from the nest site to the activity, and recommendations from Bob Sallinger and Joel Pagel. Such detailed information is currently not available for other ODOT bridges where peregrine falcons may be nesting or where they may nest in the future. Therefore, ODOT will implement interim management zones for all newly occupied nest sites. Specific management zones may be developed on a case-by-case basis as more information on relative level of background disturbances and peregrine behavior becomes available (such as through monitoring) and if requested by ODOT maintenance or construction managers. The interim management zones presented here are modeled after the management zones utilized by the U.S. Forest Service (Pagel 1999), but take into consideration that the nest site is on or near a highway facility with higher levels of background disturbances than most wild sites.

Peregrine Falcons do not necessarily nest in the same site each year. Therefore, if a new nest site is discovered, the management zones will be revised accordingly, or interim management zones will be implemented until the exact nest location has been determined and sufficient information is available to better refine the zones.

The **Nest Zone** includes the nest site and the area along the structure immediately surrounding the nest site. The interim Nest Zone extends 200 m (0.125 mi) from the active or predicted nest site. This may cover the entire bridge for short span bridges. The objective in the Nest Zone is to avoid, if possible, or to minimize ODOT activities, visual changes and noises to levels equal to or less severe than normal daily conditions.

The **Restricted Zone** is the area adjacent to the Nest Zone, and is generally considered to be a high use area for the peregrines for foraging and roosting. For bridges, the interim Restricted Zone includes the remaining portions of the structure outside of the Nest Zone. For other ODOT facilities, the Restricted Zone extends approximately 400 m (0.25 mi.) away from the nest. Interim Restricted Zones may not be present on short span bridges. If the exact location of the nest site on the facility is unknown, the Restricted Zone will be treated as a Nest Zone. The objective of this area is to limit drastic visual changes to the facility and to minimize loud noises excessively greater than ambient conditions for activities conducted or permitted by ODOT.

The **Sensitive Zone** generally includes the adjacent highway structures that may be moderate use areas for the peregrines. This zone is generally beyond the direct line-of-sight to the nest but is within visual/auditory range of other areas of peregrine activities such as roosting and foraging. Human activities in this zone have less potential to cause noise disturbance because of the distance to the nest site. The interim Sensitive Zone extends up to 800 m (0.5 mi) from the nest ledge. The objective in this area is to avoid ODOT activities with extremely loud noise production (such as blasting) or to limit permitted activities that could result in helicopter use within the Sensitive Zone.

3.3 GENERAL BEST MANAGEMENT PRACTICES

ODOT has developed the following general Best Management Practices (BMPs) as a guide for maintenance, project development, and project construction personnel to avoid and minimize impacts to state-listed peregrine falcons. Figure 3 depicts the decision process for ODOT personnel when implementing the BMPs. These BMPs apply to all of the structures owned and managed by ODOT where peregrine falcons have active or historic nest sites or when an ODOT activity occurs within 800 m (0.5 mi) of a peregrine nest. These BMPs will also be applied to newly occupied nest sites on ODOT facilities. Unless otherwise indicated, the spatial boundary for each BMP includes the entire Management Area, while the seasonal boundary includes the entire nesting season (January 1 to July 1). The BMPs will be followed while falcons are state listed as threatened or endangered. If they are de-listed, ODOT will continue to try to avoid disturbing nesting activities but without the level of monitoring, reporting and coordination described below and elsewhere in the Management Plan.

1. When feasible, follow the bridge-specific BMPs (not included in this Abbreviated Plan) and special provisions for construction projects (to be developed on a case-by-case basis) when any maintenance or construction activities are planned to occur on ODOT facilities or within 800 m (0.5 mi) of a peregrine falcon nest during the nesting season (January 1 to July 1). Specific BMPs may be developed for newly occupied highway facilities on a case-by-case basis.
2. When feasible, avoid conducting or permitting activities within the Nest and Restricted Zones of Portland area bridges or within 400 m (0.25 mi) of other peregrine nests that may adversely affect nesting falcons (at least 10 dBA louder than ambient noise levels, require equipment larger than a few pick-up trucks or vans, will take longer than one day in duration, or alter known nest ledge).
3. Avoid conducting or permitting activities within 800 m (0.5 mi) of a peregrine falcon nest that are extremely loud, such as blasting, impact pile driving, or activities that may involve use of helicopters.
4. If an activity that has the potential to adversely impact nesting falcons and cannot be avoided during the nesting season, the project proponent (such as Maintenance Managers, Team Leaders, Permits Specialists, Bridge Supervisors, and Construction Managers) will contact the Regional Environmental Coordinator (REC) prior to conducting work (or as soon as possible for emergency work). The REC will coordinate with the ODOT biologist and/or ODFW to evaluate potential impacts and provide additional management recommendations to the project proponent.
5. The REC and/or Biologist will coordinate monitoring of known peregrine nest sites to identify the nest location and general nest chronology when an ODOT construction or maintenance action has been evaluated by the Biologist as likely to adversely affect nesting peregrines during the nesting season.

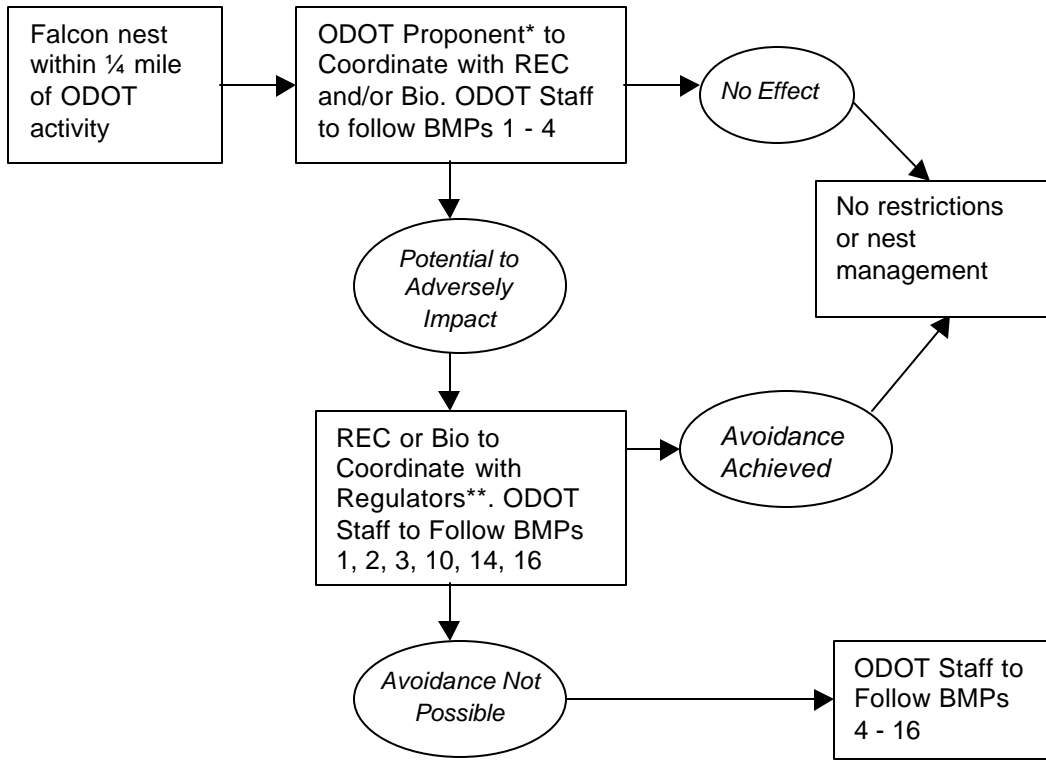
6. The REC and/or Biologist will contact the appropriate maintenance and construction personnel to notify them of the locations of the nest and management zones prior to construction (for example, during pre-construction meetings).
7. If avoidance during the nesting season is not possible, ODOT will coordinate with ODFW to minimize take, determine if an Incidental Take Permit is warranted, and possibly implement one or more of the nest management alternatives described in Section 7.0.
8. If avoidance is not possible, minimize the duration of time spent on work activities that must be conducted during the nesting season by evaluating cost effective work shift alternatives.
9. If avoidance is not possible, minimize the number of separate activities within one short time period (i.e., within the same week) within 400 m (0.25 mi) of peregrine falcon nest during the nesting season.
10. The Construction or Maintenance Manager will coordinate with the REC and Biologist to evaluate potential impacts to nesting peregrine falcons for additional activities that have not been previously evaluated in this Management Plan.
11. If a nest location has not been confirmed and an activity is occurring during the nesting season, then general and specific BMPs will proceed by assuming that all the known historic nest sites are active Nest Zones.
12. If ODOT receives information that a historic nest site is not occupied by breeding peregrines, then maintenance and construction activities will be considered to have no effect and may proceed with no restrictions that year.
13. No modifications or alteration of known Nest Zones will occur regardless of the time of year, without prior coordination of the REC and Biologist, except during an emergency.
14. When new nest sites are discovered within 800 m (0.5 mi) of an ODOT facility, ODOT will coordinate within the agency (among the REC, Biologist, Maintenance Manager, and applicable project proponent) and with ODFW to minimize impacts to nesting falcons. Interim management zones will be applied until specific management zones are developed.
15. ODOT will coordinate monitoring for one nesting season prior to conducting large-scale construction on ODOT facilities with a high potential of supporting nesting peregrines. The monitoring objective will be to determine presence of nesting peregrines, nest location, and general nesting chronology, and to develop measures to avoid and minimize impacts during the construction project.
16. ODOT will not permit third-party activities (such as special events and utilities) during the nesting season (January 1 to July 1) on a bridge with a known peregrine falcon nest site without review by an ODOT Biologist for potential impacts and addition of specific avoidance measures in the permit if applicable.

17. The following types of maintenance or construction activities¹ are expected to have No Effect on nesting peregrine falcons and may be conducted on any ODOT structure within known or suspected peregrine falcon nesting territories at any time of the year without any restrictions. Effects of other activities need to be evaluated on a case-by-case basis by the ODOT REC and/or Biologist.

- In-stream drift removal
- Inspections (except with helicopter)
- Minor culvert maintenance (no large or loud equipment¹)
- Minor structural or road surface repairs (on the roadway or shoulder or bridge deck, without snooper cranes and/or large or loud equipment¹)
- Minor vegetation management (no tree cutting)
- Sign replacement, repairs, and cleaning
- Snow and ice removal and sanding
- Special events, pedestrian (e.g., bridge pedal, foot races, walkathons, etc.)
- Striping retrace
- Sweeping
- Work outside of the nesting season that does not alter a known nest ledge (other than enhancements)

¹ Only pertains to maintenance activities that occur on the level of the roadway or bridge traffic deck (not over the sides, underneath, or above the level of the rails of the deck). It also includes only minor repairs to the roadway, road shoulder, sidewalk, bridge traffic deck, or rails that do not involve equipment that is louder than ambient noise levels (i.e., impact pile drivers, jackhammers, pneumatic wrenches, etc.) or do not involve large construction vehicles (i.e., tractors, backhoes, graders, scrapers, pavers, concrete mixers, etc.). Any work that includes use of a helicopter, lift crane, or snooper crane is not included.

**Figure 3.
Implementation of Best Management Practices and Coordination**



* Proponent includes Maintenance Managers, Team Leaders, Permits Specialists, Bridge Supervisors, and Construction Managers

** Regulators include ODFW and possibly USFWS, WDFW, and IDFG

4.0 IMPLEMENTATION PLAN

4.1 COMMUNICATION

The General BMPs (Section 3.3) and the bridge-specific BMPs (not included in this Abbreviated Plan) describe several scenarios in which ODOT will coordinate internally or with ODFW. A project or activity that is not expected to adversely impact peregrine falcons will proceed without further coordination or communication. This includes any work that is: (1) outside of the falcon nesting season (January 1 to July 1), (2) outside of a management zone, or (3) identified as having No Effect (such as sweeping). The general mode of communication will be from a project proponent (such as Maintenance Managers, Team Leaders, Permits Specialists, Bridge Supervisors, and Construction Managers) to the ODOT Environmental staff (REC and/or Biologist) to ODFW and other regulators (see Figure 3).

The ODOT project proponent will contact the ODOT Region Environmental Coordinator (REC) for projects or activities within 800 m (0.5 mi) of known peregrine nests, particularly when the activity is not already identified in this report as No Effect or cannot be scheduled to occur outside the nesting season. The REC will contact an ODOT Biologist to evaluate the potential impact of the activity to nesting peregrine falcons and to provide management recommendations. If it is an emergency, or they cannot reach a biologist, the REC will contact the ODOT/ODFW liaison for recommendations. ODOT will coordinate with ODFW, USFWS, WDFW, and IDFG on a case-by-case basis to assist with evaluating potential impacts and developing additional management recommendations.

The REC and/or ODOT Biologist will provide recommendations to ODOT managers to avoid adversely impacting nesting falcons. If avoidance is not feasible (such as during a major construction activity, an emergency, or for safety reasons), the ODOT Biologist will recommend one or more of the management alternatives in Section 7.0. The ODOT Biologist will coordinate with ODFW prior to implementing a nest management alternative.

Copies of the Management Plan will be distributed to all applicable ODOT personnel who have direct involvement with the four bridges in this plan or who would be alerted to new potential nest sites (such as RECs and Bridge Supervisors in other regions). Each ODOT Region Biologist will work with Maintenance Managers, Bridge Supervisors, Project Team Leaders, Construction Project Managers and Permits Coordinators to be alert for new peregrine nest sites each year. ODOT Biologists will inform managers of the existing Management Plan and opportunities to include new sites to the plan as needed.

4.2 MONITORING

The ODOT Biologist will provide for monitoring of all sites with known or proposed activities that may adversely affect nesting falcons. The REC and/or biologist will complete a Peregrine Falcon Report (PFR) form for any project or activity with peregrine falcon monitoring. Specific

nest management recommendations by the ODOT Biologist and ODFW will be recorded on the PFR form. Monitoring of the proposed activity will be conducted during the nesting season (January 1 to July 1) by an ODOT Biologist or a consultant qualified to identify peregrine falcons and interpret nesting behavior. Unless otherwise specified in an Incidental Take Permit (ITP), ODOT will not provide for monitoring of a site unless a project or maintenance activity has been identified that requires knowledge of the nest location, management zones, or nesting chronology.

ODOT will provide monitoring during construction of the St. Johns Bridge rehabilitation project and the Interstate Bridge electrical upgrade project during the 2003 through 2004 nesting seasons, as outlined in individual ITPs. Joel Pagel (USFS peregrine falcon specialist) or other peregrine falcon specialists may continue to band the fledglings at the bridge nest sites; however, this effort will be completely independent of ODOT.

4.3 REPORTING AND ADAPTIVE MANAGEMENT

ODOT will submit an annual report to ODFW describing the status of peregrine falcon nesting on ODOT facilities where monitoring was conducted during the previous breeding season. The monitoring report will include locations of peregrine nest sites, a summary of maintenance or construction activities that had the potential to adversely affect nesting falcons, results of monitoring efforts, recommendations for adaptive management, PFR forms, and any other pertinent information available from ODFW, ASP, or other sources. The report will also include descriptions of activities that resulted in adverse impacts to nesting falcons. In addition, the report will describe associated nest management alternative that was implemented (including the coordination among ODOT staff, peregrine falcon experts, ODFW, and other regulators to determine which nest management alternative was selected), the type and extent of adverse impacts, and results of nest management efforts. The annual report will be submitted by October 1 of each year. ODOT will provide copies of the annual report to appropriate Maintenance Managers, RECs, the USFWS, and other regulators (if pertinent) for use in state and federal management efforts.

ODOT recognizes that peregrine falcon tolerance to disturbance is specific to the individual falcon, nesting chronology, and nest site location, all of which can vary from year to year. This Management Plan was developed from existing knowledge about the current falcon pairs' tolerance to disturbance, nesting chronology, and known nest locations. Therefore, ODOT will revise this Management Plan each year, as needed, to incorporate different behavioral responses by new nesting pairs and to include newly-occupied sites. Subsequently, tiered ITPs may also be amended as appropriate. Other revisions would consist of revising BMPs, adding or revising construction or maintenance activities, modifying nest management alternatives, and updating the implementation plan. ODOT will coordinate with ODFW to determine if new or revised BMPs or nest management alternatives are recommended.

The MBTA "prohibits taking of any migratory birds and their nests and/or eggs, except for scientific or propagating purposes under permits" (Erlich et al. 1988). Implementation of this Management Plan indicates ODOT's intention to avoid take of migratory birds, and to be in compliance with the MBTA. The USFWS will be provided with a copy of this Management Plan

for information purposes. If a peregrine falcon mortality occurs as a direct result of an ODOT activity or permitted activity, or a nest management alternative is implemented and includes removing eggs or chicks from the nest for captive rearing and future release, then the USFWS as well as ODFW (and WDFW or IDFG if applicable) will be notified. WDFW or IDFG will be notified if take is anticipated by an ODOT activity on any multi-state structure. Removal of eggs or chicks from a nest will only be conducted by a peregrine falcon specialist with the appropriate state and federal permits.

4.4 INTERNAL REVIEWS AND TRAINING

Several ODOT employees have participated in the development of this Management Plan, including Portland area Maintenance Managers, Supervisors, Construction Managers, Project Team Leaders, Biologists, RECs, and Maintenance Staff Members. In addition, meetings have been held to discuss the maintenance and construction activities at each bridge. MB&G and ODOT have also coordinated with ODFW, Bob Sallinger of the ASP, and Joel Pagel to develop project-specific measures designed to minimize impacts to nesting peregrine falcons. This Management Plan incorporates many of their recommendations. Several Region 1 Maintenance Managers, Permits Specialists, Project Team Leaders, and Construction Managers have reviewed and approved the BMPs, management alternatives, and communication protocols in this plan.

Copies of this Management Plan will be maintained at each of the following offices in the Portland area: Construction Managers, Permits Specialist, District Maintenance Managers, and Bridge Supervisors. Additional copies of the plan will be provided to ODOT Environmental Project Managers, RECs and Biologists throughout the state. The ODOT Biologists will discuss this Management Plan at relevant staff meetings, district maintenance meetings, and ESA training opportunities.

Several ODOT Biologists and consultants attended peregrine falcon monitoring training provided by the SCPBRG on February 7, 2002. The training focused on identifying peregrine behavioral sign during various phases of the breeding season. The purpose of this training was to provide ODOT Biologists and Monitors with information to help characterize nesting chronology and evaluate potential project impacts. Anyone monitoring nesting chronology of peregrine falcons on behalf of ODOT will be required to have a degree in wildlife biology or equivalent work experience, knowledge of peregrine falcon life history, ecology, behaviors, and monitoring protocols, and at least one-day of peregrine falcon monitoring training. Behavioral monitoring will require more experience and training.

5.0 SITE-SPECIFIC MANAGEMENT

The BMPs discussed in Section 3.3 are general management practices that will be applied to all ODOT structures actively occupied by a peregrine falcon nest. Bridges are unique structures because each bridge requires specific maintenance based on its function, location, design, and structural condition. The Portland area bridges require high levels of maintenance due to heavy traffic volumes. The Portland area bridges have many different crews that are involved with

bridge construction planning, maintenance and permitting. Site-specific BMPs have been developed for the Portland bridges with known peregrine falcon nesting to assist the various crews avoid and minimize impacts to nesting falcons (but have been omitted from this Abbreviated Plan). The BMPs listed in Section 3.3 will be implemented for all other bridges that may have peregrine falcon nests in the future (including Astoria bridges). Site-specific management guidelines will be prepared for other bridges on a case-by-case basis, if the general BMPs are not sufficient for meeting the objectives of this Management Plan.

5.1 FREMONT BRIDGE

5.1.1 Baseline Conditions

The Fremont Bridge is the longest main span bridge in the State of Oregon and the longest tier bridge in the world (ODOT 2001a). The Fremont Bridge is the Interstate 405 bridge over the Willamette River immediately north of downtown Portland. The junction of Interstate 405 and Interstate 5 is at the east end of the bridge.

The Fremont Bridge is a highly impacted urban nest site because it is within downtown Portland and large industrial areas. Beneath the approach ramps on the east end is an industrial park and the Albina Railroad Yard. Beneath the approach ramps on the west end is another large railroad yard, an industrial park, and the Pearl District. The Pearl District is a community of newly-constructed or renovated condominiums and industrial warehouses. This is a growing area in Portland that is subject to repeated construction activities.

The Willamette River beneath the Fremont Bridge is confined by concrete floodwalls and shipyards for large cargo ships. Riparian vegetation within the vicinity of the Fremont Bridge consists of isolated trees in city parks and waterfront condominium landscapes. The limited vegetation does not appear to limit perch sites for the peregrines. The peregrines have been mostly observed perching on the bridge and some adjacent structures. One of the primary perch sites, a blue water tower located near the bridge on west river bank, has recently been torn down. Peregrines have also been observed perching on the Lloyd Towers (southeast of the Fremont Bridge).

The Fremont Bridge urban habitat has very high ambient noise conditions. The bridge has two traffic decks, each with four traffic lanes and an 1998 Average Daily Traffic (ADT) of 106,907 for both commuter and commercial traffic (ODOT 2002). There is frequent helicopter traffic from the adjacent hospital's Life Flight and local television news and traffic teams. The area beneath both approach ramps of the bridge and the surrounding area is subject to frequent construction. The Willamette River beneath the bridge has frequent boat traffic that includes navy fleets, cargo ships, and recreational boats. There is constant human activity from pedestrians, concerts, and a homeless camp established under the west end of the bridge. The noise conditions at the nest site are only intensified by hard site conditions (surrounding concrete structures, a large body of water, and the lack of a vegetated buffer).

Peregrines were first observed at the bridge in 1993, and reproductive success was first documented in 1994 (Sallinger 2001). Since 1994, the peregrines have nested at three locations on the bridge. Specific nest locations are not included in this Abbreviated Plan.

All nest sites on this bridge have proven to be hazardous to the fledgling process. Historically, the fledglings have had a tendency to leave the nest early. As a result, the fledglings have drowned, been struck by vehicles or preyed upon. Preventing fledgling mortality has been a labor-intensive process by ASP volunteers, requiring monitoring from dawn and dark typically over a period of 6 to 9 days. Twelve falcons have been successfully produced at this site, nine of which were assisted by ASP volunteers (Sallinger 2001). Observations of the Fremont Bridge pair throughout the years of 1999 and 2000 indicate that they are year round residents.

5.1.2 Management Zones for Fremont Bridge

The designated ODOT management zones for the Fremont Bridge have been omitted from this Abbreviated Plan.

5.1.3 Past Disturbances at the Fremont Bridge

Documented disturbances to nesting peregrine falcons at the Fremont Bridge have been minimal. Peregrines appear to be tolerant of most ODOT maintenance activities. Despite the high level of sporadic and ongoing potential disturbance factors which have been documented by ASP at the Fremont Bridge between 1994 and 2001, the fact remains that there has never been a nest failure at this site and all juvenile mortalities have occurred during or after fledging (Sallinger 2001). The 2001 monitoring efforts documented that, with the exception of the fledging period, the peregrines at this site are not easily disturbed by a wide range of ground activity including sirens, horns, boat, car and train traffic, noise from rock concerts and drum circles, people standing beneath the nest site, and minor construction activity greater than 90 m (300 ft) from the nest site (Sallinger 2001). The falcons were observed on several occasions defending their territory from red-tailed hawks (Sallinger 2001). Life Flight helicopter traffic from an adjacent hospital has not been problematic for the falcons because of its fast and direct flight pattern. Because television news helicopters attempting to film commercials, news, and the falcons themselves have a tendency to hover near the nest site, there is high potential to cause disturbance, which was observed on one occasion in the mid-1990's (Sallinger, 2001).

5.1.4 Potential Impacts from Maintenance and Construction Activities

The Fremont Bridge is subject to routine maintenance activities by ODOT, most of which are not expected to adversely impact the nesting peregrines. Most of the maintenance activities that may affect or are likely to adversely affect nesting falcons can be conducted outside of the nesting season within the Nest Zone, except during an emergency situation, such as imminent structural failures or harsh storms. As such, take of nesting peregrine falcons is not expected to occur due to routine maintenance activities on the Fremont Bridge, except during an emergency. ODOT will coordinate with the REC, ODOT Biologist, and ODFW prior to any maintenance situations that have the potential to adversely affect nesting peregrine falcons, as described below and in Section 4.1.

At this time, ODOT has no major construction projects scheduled for the Fremont Bridge. However, if construction is needed, the BMPs and management zones presented in this Management Plan will be utilized for any new construction project. This Management Plan will be revised if any new construction activities are to occur and if additional or revised BMPs are required.

The activities listed below will have No Effect on nesting peregrine falcons in any of the management zones, nest locations (or certain nest locations when specified), or at any time of the nesting season. There will be **no restrictions** on conducting these activities and no additional BMPs. The maintenance activities on bridge rails or utilities are expected to have no effect if the works does not involve equipment that is louder than ambient noise levels (i.e., impact pile drivers, jackhammers, pneumatic wrenches, etc.) or large construction vehicles (i.e., cranes, tractors, backhoes, graders, scrapers, pavers, concrete mixers, etc.).

- Attenuator repairs
- Drain cleaning
- Drift removal
- Fence repairs
- Fireline charging
- Flag changing (East and West nest sites only)
- Inspections (underwater)
- Joint cleaning (Upper nest site)
- Joint Repair (Upper nest site only)
- Lighting (aviation and sidewalk) replacements/repairs (West and East nest sites only)
- Minor rail repair (no large or loud equipment)
- Pier scour repairs
- Sign replacement, repairs and cleaning
- Snow and ice removal
- Special events permitted by ODOT, pedestrian (e.g., bridge pedal, foot races etc.)
- Striping retrace
- Sweeping
- Minor utility repairs (no large or loud equipment)

If the No Effect determination is only for certain nest specified locations, the same activity may result in an adverse effect at the other nest locations. All other maintenance activities on the Fremont Bridge have the potential to result in adverse impacts to nesting peregrine falcons. Specific activities, measures to avoid and minimize impacts, and other conservation measures are not included in this Abbreviated Plan.

5.1.5 Monitoring at the Fremont Bridge

A qualified ODOT Biologist or consultant may monitor nesting on the Fremont Bridge when an ODOT activity may occur that has the potential to adversely impact falcons in the Nest and Restricted Zones. At this time, ODOT has identified no need for monitoring, but will implement monitoring if the need arises. All surveys will be conducted according to accepted protocol (Pagel 1992). The ODOT Biologist will evaluate the need for monitoring on a case-by-case basis.

Monitoring will be conducted as necessary for maintenance actions that cannot be delayed until after the nesting season and are anticipated to result in disturbance to peregrine falcons. The level of monitoring for maintenance actions will depend on the type and location of work to be performed. In most cases, the monitoring will determine the nest location and general nesting chronology so that the applicable management zones can be established and BMPs implemented. Additional monitoring to refine the nesting chronology and observe the falcons' responses to maintenance activities will be conducted if the work will occur within the Nest Zone and is likely to adversely impact nesting. ODOT would coordinate with ODFW on a case-by-case basis to define the most appropriate level of monitoring.

5.2 ST. JOHNS BRIDGE

5.2.1 Baseline Conditions

The St. Johns Bridge, completed in 1931, is the only large, steel suspension bridge in the State of Oregon (ODOT 2001a). The St. Johns Bridge span is 900m (2,952 ft) from end to end and the distance spanning the Willamette River between the two cable support towers is 368 m (1,207 ft). The bridge carries the U.S. Route 30 Bypass, which connects the NW Portland Willamette riverfront industrial area with the North Portland peninsula community of St. Johns. The St. Johns Bridge is an important link between the North Portland peninsula, and downtown and northwest Portland. It is used by both commuter and commercial traffic and carries over 23,000 vehicles per day (ODOT 2002).

The bridge habitat is an urban landscape mixed with neighborhoods, industrial parks and forest. The east end of the bridge is comprised mainly of single-family homes, neighborhood parks, and industrial riverfront. Directly beneath the east end of the bridge is Cathedral Park, a 7-hectare (18-acre) park comprised mostly of maintained lawn with scattered trees. On the west end of the bridge, the slope rises steeply and is heavily forested with exposed rock faces. Between State Highway 30 and the riverfront there is an industrial area and a few isolated homes. West of State Highway 30 is Forest Park, a 2023-hectare (5000-acre) nature reserve of second growth forest.

The west side of the Willamette River beneath the St. Johns Bridge is confined to a concrete floodwall with docks for shipyards and marinas. The east side shoreline is a combination of rip rap, gravel and sand shoreline. The riparian vegetation within the vicinity of the St. Johns Bridge consists mostly of isolated trees or small clusters of trees. Although the vegetation is limited, it does provide large trees for peregrines to perch and roost. Trees are also available within the St. Johns neighborhood and Forest Park. However, the 2001 monitoring by ASP noted the peregrines perching mostly on the bridge, or flying into St. Johns and areas north of the bridge to other possible roosting and foraging areas (Sallinger 2001).

Ambient noise conditions for this nest site are high because of the urban habitat, but moderate when compared to the Fremont and Interstate Bridge nest sites. The bridge serves as a major route from the North Portland Peninsula to downtown and the northwest Portland industrial area. As such, it is subject to high traffic. The bridge has frequent boat traffic of both recreational and large cargo ships often passing within 15 m (50 ft) of the nest. Aircraft are less frequent than at

the other nest sites, but helicopters have been observed within 91 m (300 ft) of the nest (Sallinger 2001). There is extensive human activity from pedestrians on the sidewalks and activities in Cathedral Park. In addition, the bridge's unique architecture and scenic beauty has made it popular for movies and other filming productions. The noise conditions at the nest site are only intensified by hard site conditions (surrounding concrete structures, exposed rock faces on the west end, a large body of water, and the lack of a vegetated buffer).

Peregrines were first observed at the bridge in 1996. Specific nest locations are not described in this Abbreviated Plan. The first nesting attempt was in 1997 but the nesting attempt failed. In 1998, a single male peregrine was observed at the St. Johns Bridge. In 1999, a pair of falcons attempted to nest and also failed. A new pair began nesting on the bridge in 2000. ASP has monitored this bridge since the discovery of peregrines occupying the bridge in 1996.

5.2.2 Management Zones for St. Johns Bridge

The designated ODOT management zones for the St. Johns Bridge have been omitted from this Abbreviated Plan.

5.2.3 Past Disturbances at the St. Johns Bridge

Potential disturbance impacts to the St. Johns Bridge peregrines have been documented in 2000 through 2002. The pair clearly displays a high level of tolerance for ongoing and regular sources of potential disturbance such as vehicles, boats, trains, human activity on the bridge deck, and human activity on the ground beneath the bridge. The birds successfully fledged three young in 2000 despite the high level of disturbance caused by construction, utilization, and removal of a movie scaffold less than 45 feet from the nest site during a critical stage of the nesting process. Observations of that pair's response to the movie scaffold and human activity within 15 m (50 ft) of the nest site suggest that activities that encroach on the nest ledge or the airspace surrounding the active nest has the potential to cause severe disturbance and possible nest failure (Sallinger 2001). During the 2001 monitoring efforts, the greatest disturbance to the peregrines that was observed was the presence of other birds of prey.

During the 2002 nesting season, a major accident occurred during the evening within 400 m (0.25 mi) of the nest, at a time when chicks were approximately 10 days old. A large semi-truck carrying toxic materials overturned. Fire trucks, safety crews, hazardous materials crews, and news helicopters swarmed the west half of the bridge for at least 12 hours during the accident response. ODOT provided monitoring the day after the accident, and observed normal nesting behavior.

5.2.4 Potential Impacts from Future Maintenance Activities

The St. Johns Bridge is subject to routine maintenance activities by ODOT, most of which are not expected to adversely impact the nesting peregrines in any of the management zones. The following information provide more details on the types of potential effects and the methods to avoid or minimize impacts.

Most of the maintenance activities that may affect or are likely to adversely affect nesting falcons can be conducted outside of the nesting season within the management zones, except during an emergency situation, such as imminent structural failures or harsh storms. As such, take of nesting peregrine falcons is not expected to occur due to routine maintenance activities on the St. Johns Bridge, except during an emergency. ODOT will coordinate with the REC, ODOT Biologist, and ODFW during any maintenance situations that have the potential to adversely affect nesting peregrine falcons, as described below and in Section 4.1.

The activities listed below will have No Effect on nesting peregrine falcons in any of the management zones, nest sites, or at any time during the nesting season. Therefore, there will be **no restrictions** on conducting these activities and no requirement for BMP implementation. The maintenance activities on bridge rails or utilities are expected to have no effect if the works does not involve equipment that is louder than ambient noise levels (i.e., impact pile drivers, jackhammers, pneumatic wrenches, etc.) or large construction vehicles (i.e., cranes, tractors, backhoes, graders, scrapers, pavers, concrete mixers, etc.).

- Drift removal
- Inspections (underwater)
- Inspections (above water, if no large or loud equipment)
- Pier scour repairs
- Minor rail (no snooper cranes and/or large or loud equipment)
- Sign replacement, repairs, and cleaning
- Snow and ice removal
- Special events, pedestrian (e.g., bridge pedal, foot races, walkathons, etc.)
- Striping retrace
- Sweeping
- Minor utility repairs (no large or loud equipment)

All other maintenance activities on the St. Johns Bridge have the potential to result in adverse impacts to nesting peregrine falcons. Specific activities, measures to avoid and minimize impacts, and other conservation measures are not included in this Abbreviated Plan.

5.2.5 Potential Impacts from Future Construction Activities

ODOT has scheduled a construction project for the St. Johns Bridge to occur between approximately January 2003 and December 2004. The St. Johns Bridge rehabilitation project includes replacing the entire bridge deck, sidewalks and railing, repaving the roadway approaches (including Bridge Avenue), upgrading the deck and west approach drainage, replacing electrical conduits and sidewalk lights, and painting the trusses, rails, chords, cables, stringers and towers. The project is extremely complex. The different components must be timed for traffic staging as well as constructability. For example, the rail must be replaced before it can be painted, but it cannot be replaced until the adjacent deck and sidewalks are being worked on). A four part staging plan has been developed for bridge deck construction activities, which provide for constructability and minimal traffic closures. Full-time closures are strongly discouraged because the citizens of St. Johns and Linnton rely on the bridge for commuting and services.

ODOT evaluated numerous changes to project staging and the construction schedule to determine if there would be a way to conduct the work and avoid impacting nesting peregrine falcons. In fact there are several schedule changes and work restrictions that will be required of the Contractor that will minimize direct impacts in the Nest Zone. However, there is no feasible way to completely avoid working during the nesting season, particularly in 2003 with the deck work. This means that there will be times when major deck work will occur in the Nest Zone, and possibly even a time when the deck directly above the nest ledge will be removed during the critical nesting period. ODOT has been coordinating with ODFW to develop measures to minimize the chances for lethal take of a peregrine falcon, chick, or egg. Specific construction impacts, management practices, monitoring plans, adaptive management, and nest management measures will be described in an ITP application with ODFW for the project.

5.2.6 Monitoring at the St. Johns Bridge

A qualified ODOT Biologist or consultant may monitor nesting at the St. Johns Bridge when an ODOT activity may occur that has the potential to adversely impact falcons in the Nest and Restricted Zones. Monitoring will be occurring before, during and after the bridge rehabilitation project, and will take place in 2002, 2003, 2004, and 2005. Additional monitoring in 2006 will be implemented if the bridge rehabilitation project is delayed or if a maintenance action that may affect nesting falcons will occur that year. At that time, the ODOT Biologist will evaluate the need for monitoring on a case-by-case basis. All surveys will be conducted according to accepted protocol (Pagel 1992). The main objectives of monitoring will be to determine the nest location and general nesting chronology so that the applicable management zones can be established and BMPs implemented.

5.3 I-205 (ABERNETHY) BRIDGE

5.3.1 Baseline Conditions

The I-205 (Abernethy) Bridge is the Interstate 205 bridge spanning the Willamette River located southeast of Portland. The bridge connects the City of West Linn on the west end and City of Oregon City on the east end of the bridge. Although the nest site is urban habitat, development in this area is moderate, especially compared to Fremont and Interstate bridges. West Linn is a suburb of Portland and is comprised of neighborhoods with single-family homes, many on larger than average lots and heavily wooded. On the east side of the bridge is the downtown area of Oregon City. It is comprised of several multi-story buildings, the Blue Heron Paper Mill on the Willamette Falls, and marina operations.

The riparian habitat is relatively intact for an urban site. The Abernethy Bridge is within 1.6 km (1.0 mi.) of the confluence of the Clackamas and Willamette Rivers. The western shoreline of the Willamette River is either riverfront homes with maintained lawns and mature trees or natural riparian vegetation. The lower Willamette riparian corridor consists of deciduous trees such as red alder, black cottonwood, bigleaf maple, and willow mixed with coniferous trees such as western redcedar and Douglas-fir (ODFW 1992). Where native vegetation has been disturbed or removed, the riparian vegetation consists of grasses, Himalayan blackberries, ivy, morning glory and other species. These non-native species are dominant in the area under the West Linn end of

the Abernethy Bridge. The eastern shoreline is comprised of a two lane road and rip rap. The road provides access to a marina, hotel, and restaurant.

The peregrines have several sites to use for perching. In 2001, the peregrines were sighted roosting in some of the mature trees within close proximity of the nest site (Sallinger 2001). There are two additional bridges 2.4 km (1.5 mi.) from the nest site. These bridges include the Oregon City Bridge over the Willamette River and the Highway 99E Bridge over the Clackamas River. Several taller buildings within Oregon City may also provide roost sites.

The Abernethy Bridge ambient noise levels are comprised mostly of vehicular and boat traffic. Interstate 205 is a heavily used highway within Clackamas County and functions as a bypass route around Portland. The ADT in 1998 was 94,000 vehicles, including both commercial and commuter traffic (ODOT 2002). Clackamette Park, located northeast of the bridge, is one of the few free public boat launches on the lower Willamette River. As such, recreational boats, including speed boats and jet skis, are abundant near the bridge. There is also public access to the west bank of the river beneath the bridge. People can drive onto to the upper terrace and walk down to the river bank directly below the 2001 nest site. The noise conditions at the nest site are only intensified by the a large body of water, and the lack of a vegetated buffer.

Peregrines were first sighted in the spring of 2000, but nesting status was undetermined in that year. The ASP began monitoring a pair of peregrines at the Abernethy Bridge in 2001. No nesting was observed on the Abernethy Bridge in 2002. The potential still exists that this bridge will be used for peregrine nesting in the future. Specific nest locations are not described in this Abbreviated Plan.

The Abernethy Bridge has been undergoing a seismic retrofit construction project, which began in the summer of 2000 and is scheduled for completion in February 2003. The falcons nested after construction had started and adjacent to a heavily utilized equipment storage area. The original objectives of monitoring was to determine nest location and to observe the peregrine's response to the construction activities. Due to the high probability of disturbance to the nesting falcons as a result of construction, ODOT decided to remove the egg from the nest site, based upon recommendations by USFS Peregrine Falcon Specialist Joel Pagel. The removal of the egg was conducted under an ITP from ODFW.

5.3.2 Management Zones for Abernethy Bridge

The designated ODOT management zones for the Abernethy Bridge have been omitted from this Abbreviated Plan.

5.3.3 Past Disturbance at the Abernethy Bridge

The Abernethy Bridge nest site is subjected to both ongoing and sudden, unexpected sources of potential disturbance to the nesting peregrines. The peregrines at this site; however, displayed a high level of tolerance to both visual and auditory sources of potential anthropogenic disturbance. With the exception of the arrival of an extra peregrine falcon at the nest site and direct human disturbance of the nest site (egg removal, construction activity within 9 m (30 ft) of

the nest, dummy egg removal), the peregrines demonstrated no visible sign of disturbance or territoriality toward natural or anthropogenic activity proximal to the nest site (Sallinger 2001).

5.3.4 Potential Impacts from Maintenance Activities

The Abernethy Bridge is subject to routine maintenance activities by ODOT, most of which are not expected to adversely impact the nesting peregrines in any of the management zones. Only certain activities occurring below deck and within the Nest Zone are considered to have an adverse impact on nesting falcons. This includes use of a snooper crane stationed on the bridge deck extending over the side of the bridge and underneath the deck. Maintenance activities that occur on the ground or within the waterline walkway and do not require large equipment are not included. However, any work on the pier caps or on the spans between the piers within the Nest Zone have the potential to adversely impact nesting peregrine falcons. The following section provides more details on the types of potential effects and the methods to avoid or minimize impacts.

Most of the maintenance activities that may affect or are likely to adversely affect nesting falcons can be conducted outside of the nesting season within the management zones, except during an emergency situation, such as imminent structural failures or harsh storms. As such, take of nesting peregrine falcons is not expected to occur due to routine maintenance activities on the Abernethy Bridge, except during an emergency. ODOT will coordinate with the REC, ODOT Biologist, and ODFW during any maintenance situations that have the potential to adversely affect nesting peregrine falcons, as described below and in Section 4.1.

The activities listed below are expected to have No Effect on nesting peregrine falcons in any of the management zones, nest site, or at any time during the nesting season. Therefore, there will be **no restrictions** on conducting these activities and no requirement for BMP implementation. The maintenance activities on bridge rails or utilities are expected to have no effect if the works does not involve equipment that is louder than ambient noise levels (i.e., impact pile drivers, jackhammers, pneumatic wrenches, etc.) or large construction vehicles (i.e., cranes, tractors, backhoes, graders, scrapers, pavers, concrete mixers, etc.).

- Attenuator
- Drift removal
- Inspections, underwater
- Maintaining roadway lighting
- Minor rail repairs (no large or loud equipment)
- Snow and ice removal
- Special events permitted by ODOT, pedestrian (e.g., bridge pedal, foot races, etc.)
- Striping retrace
- Sweeping
- Waterline or waterline walkway repairs
- Minor utility repairs (no large or loud equipment)

All other maintenance activities on the St. Johns Bridge have the potential to result in adverse impacts to nesting peregrine falcons. Specific activities, measures to avoid and minimize impacts, and other conservation measures are not included in this Abbreviated Plan.

5.3.5 Potential Impacts From Future Construction Activities

The I-205 (Willamette River) (Abernethy) Bridge Seismic Retrofit Project is currently under construction. Work that was completed in 2000 through 2002 includes installing a maintenance walkway the entire length of the bridge, installing maintenance platforms around each pier cap, and retrofitting the bearings and girders on many piers, and repairing a municipal waterline located below the bridge deck. The construction is scheduled to be completed in February of 2003. Specific construction impacts, management practices, monitoring plans, adaptive management, and nest management measures were described in specific ITPs with ODFW for the project.

Based on the high level of tolerance by the nesting falcons in 2001, ODOT did not anticipate that construction disturbances would cause the falcons to abandon nesting in 2002. ODOT provided monitoring for the entire nesting season in 2002. Peregrine falcon nesting did not occur on the bridge. Occasionally a falcon was observed flying over the bridge, heading towards Willamette Falls, but when we also monitored that area, no nest sites were discovered. We do not have any evidence that nest avoidance was due to the seismic retrofit construction activities. There are many possible reasons why peregrine falcons did not nest on the bridge in 2002, including natural. Lack of nesting one season does not preclude the chance that they will nest on the bridge in the future.

5.3.6 Monitoring at the Abernethy Bridge

A qualified ODOT Biologist or consultant will continue to monitor the Abernethy Bridge for occupancy and nest location for the duration of the seismic retrofit construction project if it extends into the 2003 nesting season. All surveys will be conducted according to accepted protocol (Pagel 1992). Monitoring may be conducted in 2003 through 2006 as necessary for maintenance actions that cannot be delayed until after the nesting season. The ODOT Biologist will evaluate the need for monitoring on a case-by-case basis. The level of monitoring for maintenance actions will depend on the type and location of work to be performed. In most cases, the monitoring will be to determine the nest location and general nesting chronology so that the applicable management zones can be established and BMPs implemented. Additional monitoring to refine the nesting chronology and to observe the falcons' responses to maintenance activities will be conducted if the work will occur within the Nest Zone and may affect nesting. ODOT would coordinate with ODFW on a case-by-case basis to define the most appropriate level of monitoring.

5.4 INTERSTATE (COLUMBIA RIVER) BRIDGE

5.4.1 Baseline Conditions

The Interstate (Columbia River) Bridge is a steel through truss vertical lift span bridge that carries Interstate 5 over the Columbia River between Portland, Oregon and Vancouver, Washington. It is actually co-owned by ODOT and WSDOT, although ODOT conducts the maintenance activities and runs the lift operations. The lift portion of the bridge is located in the State of Washington.

The Interstate Bridge actually consists of two parallel bridges for north and south bound lanes. The west bridge carries southbound traffic and the east bridge carries northbound traffic. The northern end of both bridges has a lift span, each of which can be independently raised and lowered for boating traffic or for maintenance work. Both spans are lifted as needed for passage of large boats, at any time of the day or night, at an average of once per day. A loud air horn is blasted twice each time the spans are raised. The spans are moved by a pulley system connected to 750,000 kg (3,402,000 lb.) counter weights. The counter weights are suspended from 61 m (200 ft) tall towers located at either end of each lift span. The pulley system consists of a series of wire ropes that wrap around large sheaves (wheels) located on the top of each side of the counter weights. Ball bearings and rollers guide the counter weights along the tower frame as the span moves. The pulley system requires continued maintenance throughout the year to keep the lifts working properly and safely.

The Interstate Bridge is an urban habitat with a high density of structures and human activity. The north side of the bridge is adjacent to downtown Vancouver with numerous multi-story buildings, large hotels and restaurants along the riverfront, and immediately adjacent to the bridge. The Port of Vancouver railroad terminal and Pearson Airport are within 0.85 km (0.5 mi.) of the Interstate Bridge. South of the Interstate Bridge is the Portland Community of Jantzen Beach. This is comprised of several hotels, marinas, malls, condominiums, and large city parks. The Oregon side of the bridge also has several golf courses, Smith and Bybee Lakes, Delta Park, and the west end of Hayden Island to provide large wide open spaces within 1.6 km (1.0 mi) of the bridge.

The riparian conditions of the river consist of either rip-rap or concrete flood wall with several large hotels and restaurants along the riverfront. There are also several marinas and moorages for houseboats. The riparian corridor vegetation is limited to a few mature trees that have been retained in the hotel and restaurant landscaping. This marginal riparian vegetation does not appear to affect available perch sites for peregrines. Perching locations for peregrines have mainly been reported on the bridge structure, but other possible locations include the adjacent hotels and larger buildings, especially in Vancouver. Perching has been observed on the Smith Tower in Vancouver (Pagel, pers. comm., 2001b). Radio towers and larger trees are available for perching at Smith and Bybee Lakes, Delta Park, and Hayden Island.

This site has extremely high ambient noise conditions. The ADT for the bridge in 1998 was 119,800 vehicles for both commercial and commuter traffic (ODOT 2002). The adjacent hotels and restaurants host conventions and receptions that include intermittent large crowds and loud

music within 305 m (1000 ft) of the nest site. The Vancouver Pearson Airport and the Portland International Airport are within close proximity of the nest site. Both airport's runways are aligned with the nesting towers of the bridge, therefore, large and small planes, helicopters, and fighter jets frequently pass within 153m (500 ft) of the nest site. In addition to large cargo ships, the Columbia River has many recreational boats and fisherman. The noise conditions at the nest site are only intensified by hard site conditions (surrounding concrete structures, a large body of water, and the lack of a vegetated buffer).

Peregrines were first confirmed to be occupying the Interstate Bridge on April 27, 2001, during a maintenance inspection. The 2001 nest site successfully produced two juveniles despite the proximal emergency work, although one juvenile died in the fledging process several days after the emergency work was completed. In 2002, peregrine falcons nested twice on Interstate Bridge. Specific nest locations are not described in this Abbreviated Plan. The first nest failed and the second nest was manipulated due to the need for maintenance work in the Nest Zone during the summer of 2002. Additional details on ODOT activities and peregrine falcon behavioral responses on this bridge are provided in Section 5.4.3.

5.4.2 Management Zones for Interstate Bridge

The designated ODOT management zones for the Interstate Bridge have been omitted from this Abbreviated Plan.

5.4.3 Past Disturbance at the Interstate Bridge

The Interstate Bridge nest site can be described as a highly impacted urban nest site. Ongoing automobile, boat, train, airplane and helicopter activity regularly occurs in close proximity to the nest site. Human activity regularly occurs on the bridge deck. Finally, bridge lifts are within close proximity to the nest site. The Interstate Bridge peregrine pair demonstrated a very high level of tolerance for almost all sources of potential anthropogenic disturbance. The only anthropogenic activity to generate any sort of territorial display or defense was human intrusion in the Nest Zone, although the responses have varied, and most of the time peregrines are tolerant of human activities.

The adults and youngsters displayed very little reactions to emergency maintenance work that occurred between June 18 and June 20, 2001. ODOT coordinated with ODFW, ASP, and Joel Pagel to minimize impacts to nesting falcons during the work by reducing the total number of lifts for the work and the total number of days of work. ODOT obtained an Incidental Take Permit (ITP) from ODFW in the event that the work caused nesting failure. Bob Sallinger and Joel Pagel monitored the site for baseline data and the peregrine's response to the proximal maintenance work (Sallinger 2001). The work was conducted during the evenings, and included lane closures and multiple lifts to access the work areas. Loud air horns were blasted each time the span was raised. Construction equipment and activities included flood lights, large trucks with rotating lights, hammering, use of a blow torch, movement of heavy machinery, movement of large cement blocks on top of the counter weights, and activities involving up to seven workers on the lift span at one time. Much of this activity occurred less than 23 m (75 ft) from the nest site. The adult falcons were observed watching the construction activities, but showed no adverse reactions to the work. Juvenile falcons were also observed during the emergency work,

walking along the girders adjacent to the nest site in the early evenings of June 19 and 20. This was considered normal behavior. The only negative responses recorded were minor cacking and fly-over displays from the adults directed at monitors at the beginning of the first night of monitoring. The 2001 nest site successfully produced two juveniles despite the emergency work. However, one juvenile died in the fledging process several days after the emergency work was completed.

Likewise, in 2002, the adults were extremely tolerant of human presence. Prior to incubation, one of the falcons was even observed perched on the hood of one of the ODOT maintenance trucks, approximately 800 m (0.5 mi) from the Nest Zone. Due to the high level of routine maintenance required on this bridge, ODOT obtained an ITP from ODFW for 2002. The falcons nested twice on the bridge in 2002, but both attempts failed. ODOT provided monitoring and endeavored to avoid maintenance work in the Nest Zone as much as possible. However, after the second nesting attempt, ODFW approved nest manipulation so that ODOT could conduct necessary maintenance work on the bridge that summer. Eggs were removed from the bridge on by a SCPBRG biologists and transported to California to be raised and released at the Vandenberg Air Force Base hack facility. The eggs were tested by SCPBRG biologists and determined addled (e.g., not viable).

The falcons displayed high tolerance of human presence during the 2002 nest entry and nest manipulation. There was no territorial defense behavior until the biologist was actually on top of the nest ledge. The falcons resumed incubating on the dummy eggs within two minutes of completion of the nest manipulation.

5.4.4 Potential Impacts from Maintenance Activities

The Interstate Bridge requires a higher level of maintenance than non-lift bridges, and there are many activities that cannot be delayed until after nesting is completed. ODOT coordinated with ODFW and Joel Pagel to determine if, and how, to exclude nesting from the towers. ODFW and Joel Pagel were agreeable with attempting nest exclusions because of all of the dangers to nestlings and fledglings on this bridge, but only if ODOT could enhance alternative nest sites elsewhere in the area. There is a high level of human activity due to all of the maintenance work required on bridge, and eggs and youngsters could easily fall down to the busy bridge deck or into the river and be killed, either by the impact, drowning or being run over by passing vehicles. ODOT coordinated with Joel Pagel, private land owners, and the Washington Department of Fish and Wildlife (WDFW) to create alternative nesting sites in the Vancouver area within 800 m (0.5 mile) of the 2001 nest site. However, monitoring has shown that the peregrines have a high affinity for the Interstate Bridge, and are expected to continue to nest on the bridge despite proximal nest enhancements.

Based on the high level of tolerance to disturbance during 2001 and 2002 maintenance work, there are many routine maintenance activities that are not expected to adversely impact the nesting peregrines in any of the management zones. This section provides more details on types of potential effects and methods to avoid or minimize impacts should nesting continue on the bridge. Many of the maintenance activities that may affect or are likely to adversely affect nesting falcons cannot be conducted outside of the nesting season. There is a higher possibility of take of nesting peregrine falcons on this bridge than any other ODOT structure with nesting

peregrine falcons. ODOT will coordinate with the REC, ODOT Biologist, and ODFW during any maintenance situations that have the potential to adversely affect nesting peregrine falcons, as described below and in Section 4.1.

The activities listed below will have No Effect on nesting peregrine falcons in any of the management zones (or as specified below), nest sites, or at any time during the nesting season. Therefore, there will be **no restrictions** on conducting these activities and no requirement for BMP implementation.

- Attenuator repair
- Camera repair and maintenance (outside Nest Zone)
- Drain cleaning
- Drift removal
- Inspections (underwater, all Zones, or above water, outside Nest Zone only)
- Inspecting aerial cables (without repairs)
- Joint washing (outside Nest Zone)
- Painting (minor, spot painting)
- Pier scour repair
- Power washing (outside Nest Zone)
- Minor rail repair (no snooper cranes and/or large or loud equipment)
- Replacing/repairing signs
- Resurfacing asphalt deck (outside Nest Zone)
- Repairing and replacing sidewalk and roadway lighting (outside Nest Zone)
- Snow and ice removal, sweeping
- Striping repairs
- Minor utility repairs (outside of Nest Zone)

All other maintenance activities on the Interstate Bridge have the potential to result in adverse impacts to nesting peregrine falcons. Specific activities, measures to avoid and minimize impacts, and other conservation measures are not included in this Abbreviated Plan.

5.4.5 Potential Impacts from Future Construction Activities

ODOT is planning an electrical system rehabilitation project on the north and southbound Interstate Bridges. The project is scheduled to occur in 2003 or 2004. The majority of the work will occur in the Operator Building, on the lift spans, and on the towers. Construction activities on the lift spans consists of removing and replacing the electric motors, electrical conduits and wiring, and the flexible cables between the tops of the towers. Also, the entire Operator Building will be renovated. Work on the towers consists of removing and replacing the electrical conduits and wiring. There will also be some other conduit work at the deck level, replacing conduits and wiring for traffic signals and barricades. The project is in the preliminary planning stages at this time. Specific designs and the construction schedule have yet to be completed. Potential impacts to nesting peregrine falcons will be evaluated prior to construction. Monitoring will be conducted each year prior to and during the construction project to determine the status of the nesting pair, as described in Section 5.4.6.

ODOT will coordinate with ODFW to develop measures to minimize the chances for lethal take of a peregrine falcon, chick, or egg. Specific construction impacts, management practices, monitoring plans, adaptive management, and nest management measures will be described in an ITP application with ODFW for the project.

5.4.6 Monitoring at the Interstate Bridge

A qualified ODOT Biologist or consultant will continue monitor the Interstate Bridge during the 2003 and 2004 nesting seasons during the upcoming construction project. The level of monitoring will depend on presence of nesting, as well as the construction activities and schedule during the nesting seasons. Specific monitoring activities for the construction project will be determined prior to the project, and will be described in the ITP application.

Additional monitoring may be conducted in 2005 through 2007, as necessary, for maintenance actions that cannot be delayed until after the nesting season. The ODOT Biologist will evaluate the need for monitoring on a case-by-case basis. The level of monitoring for maintenance actions occurring during the nesting season will depend on the type and location of work to be performed. The maintenance monitoring will be conducted to refine the nesting chronology and to observe the falcons' responses to maintenance activities if the work will occur within the Nest or Restricted Zones and may effect nesting. In addition, the ODOT Bridge Operator's will record peregrine observations with location, time, and date. ODOT would coordinate with ODFW on a case-by-case basis to define the most appropriate level of monitoring. All surveys will be conducted according to accepted protocol (Pagel 1992).

6.0 OVERALL IMPACTS

At this time, the only confirmed nesting of peregrine falcons on ODOT structures is the four Portland area bridges and the Youngs Bay Bridge in Astoria. Peregrine territories have also been confirmed at several locations throughout the state within 400 m (0.25 mi) of ODOT highways. Peregrine falcons that nest in urban settings such as the Portland area bridges are generally subjected to far greater disturbances than non-urban falcons, although truck and train traffic noises can be high in many rural setting near state highways. ODOT's construction and maintenance activities are just one source of anthropogenic disturbances. Peregrine falcons also subsist among intermittent construction work and traffic on nearby roads and structures, with abundant human activity, noisy trucks, airplanes and boating traffic. Each of the Portland area bridges occurs within an urbanized setting with routine and repeated disturbances that would probably cause non-urban falcons to abandon the nest.

The Fremont Bridge is a busy two-story freeway and is located in downtown Portland, adjacent to private and public industrial and commercial properties. The Fremont, St. Johns, and Interstate Bridges are each located within 0.8 km (0.5 mi) of large shipping ports that utilize massive cranes to load supplies onto international freighter ships. These ships travel directly under the bridges, often within 30 m (50 ft) of the nest sites. The Abernethy Bridge is located near one of only a few public boat ramps along the lower Willamette River. The use of loud jet skis and jet boats is a common occurrence, particularly in the early summer during fledging. The Interstate

Bridge is located within a 1.6 km (1.0 mile) of the Portland International Airport; therefore, jet airplanes are frequently passing over the nest within 152 m (500 ft) of the nest site (Sallinger 2001).

Many of these loud and visually obtrusive activities occur within the air space of Nest Zones on the Portland area bridges, and intermittently throughout the nesting period. ODOT's construction and maintenance activities are often less obtrusive than the other activities (particularly helicopters and jet boats). The main difference is that some of ODOT's activities are closer in proximity to nest sites than other activities. For example, the seismic retrofit activities on the Abernethy Bridge took place directly adjacent to the nest site. The primary cumulative impact to nesting peregrine falcons on Portland area bridges is the combination of anthropogenic disturbances that could result in nest failure. However, despite the high level of disturbances, Portland area peregrine falcons have had similar productivity as compared to non-urban peregrines. It is difficult to predict potential productivity on structures that do not have the intensive volunteer efforts to monitor nest sites and to protect fledglings that the Portland area bridges have.

This Management Plan has been developed to avoid take of peregrine falcons. However, even with proper implementation of the BMPs and nest management measures in this plan, there is still a chance that an ODOT activity could result in some form of take. Imminent structural failures, traffic accidents, or harsh storms could result in an emergency maintenance activity within a Nest Zone. Certain activities, such as structural repairs, may be loud or visually intrusive enough to cause incubating falcons to rapidly flee and knock an egg off of the nest ledge, or abandon dependent youngsters. There is also a chance for mortality during nest manipulation, even though Brian Walton (Coordinator of the SCPBRG and peregrine falcon expert) reported that they have had no mortalities during their numerous nest manipulations for the California Department of Transportation over the past few years (Walton, pers. comm., 2002a).

7.0 NEST MANAGEMENT

The nest management measures in Sections 7.1 and 7.2 have been developed in the event that a maintenance activity or construction project cannot be delayed and is anticipated to adversely impact nesting peregrine falcons. They will only be implemented on a case-by-case basis. The Best Management Practices and these measures have been developed with the objective of avoiding take. However, as described in Section 6.0, take is still possible, particularly during an emergency. ODOT will coordinate with ODFW (and other state regulators if relevant) if an ODOT construction or maintenance activity is anticipated to result in take or harm to a peregrine falcon adult, chick, or egg and if one or more of the following nest management practices will take place. ODOT will apply for an ITP or any other relevant state or federal permits if take is anticipated, on a case-by-case basis. Mitigation for take will be proposed in each ITP application since the mitigation will depend on a number of case-specific factors. Options for mitigation may include nest enhancement, off-site monitoring, or providing funds to ODFW or another organization specifically for the benefit of peregrine falcons.

7.1 NEST EXCLUSION

Nest exclusion involves blocking off a potential nest sites prior to egg laying. The purpose of nest exclusion is to prevent nesting on a particular part of the structure, with the understanding that nesting will probably still occur elsewhere on the structure or in the vicinity. It is most effective when exclusions are in-place prior to the nest site selection in the early part of the nesting season (January 1 to March 1), but may potentially be successful prior to egg laying. It is also more effective when alternative nest sites in the vicinity have been enhanced (like with nest boxes). Exclusion may be implemented if the following conditions have been met:

- The nest site can be effectively blocked or screened and a suitable alternative nest site can be enhanced prior to egg laying.
- ODOT will provide monitoring to determine if the exclusion is effective, if additional exclusions are necessary, or if nesting occurs anyway and alternative nest management is recommended.
- There will be no direct contact with a peregrine falcon (adult, chick, or egg).

7.2 NEST MANIPULATION

Nest manipulation may be conducted if the disturbance occurs after eggs have been laid, the falcon monitor determines that a particular activity may cause take, and the construction or maintenance supervisor indicates that avoidance is not possible. Nest manipulation involves removing live eggs or chicks from an active nest site and excluding the site, or providing dummy eggs in the nest to prevent recycling. Nest entry and peregrine handling would only be conducted by an expert peregrine falcon biologist. If eggs are collected, they would be transported to an incubation or rearing facility with experience raising peregrine falcons. Once eggs have been hatched and are ready for transport, they would be moved to a hack facility, as coordinated with ODFW. If chicks are collected during the nest manipulation, they too would be transported to a peregrine rearing or hack facility.

Nest manipulations would only be implemented if the following conditions are met:

- Lethal take of chicks or eggs are anticipated by the peregrine falcon monitor.
- Construction activities that could cause potential take cannot be avoided.
- Monitoring confirms the exact nest location and nesting chronology within one-week accuracy.
- ODOT has coordinated with ODFW (and other state agencies if appropriate) and obtained an ITP and/or appropriate state or federal permits.
- Any biologist who handles a peregrine falcon has current appropriate state and federal scientific research permits.

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