2012 Report

TETRA TECH

Boardman to Hemingway Transmission Line Project

2012 Terrestrial Visual Encounter Surveys

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January 2013

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Boardman to Hemingway Transmission Line Project

2012 Terrestrial Visual Encounter Surveys

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All appendices are contained on a CD that is attached to this document

ABBREVIATIONS AND ACRONYMS

BLM	Bureau of Land Management
BSWP	Revised Final Biological Survey Work Plan, Volume 1
EFSC	Energy Facility Siting Council
GIS	Geographic Information System
GPS	Global Positioning System
IDFG	Idaho Department of Fish and Game
IFWIS	Idaho Fish and Wildlife Information System
IPC	Idaho Power Company
kV	kilovolt
MIS	Management Indicator Species
MP	milepost
MSIM	Multiple Species Inventory and Monitoring
ODFW	Oregon Department of Fish and Wildlife
ODOE	Oregon Department of Energy
ORBIC	Oregon Biodiversity Information Center
PIF	Partners in Flight
QC	data quality control
ReGAP	Regional Gap Analysis Project
TVES	Terrestrial Visual Encounter Surveys
USFS	U.S. Department of Agriculture Forest Service
USGS	U.S. Geological Survey
USFWS	U.S. Fish and Wildlife Service
VES	Visual Encounter Survey

1.0 INTRODUCTION

Idaho Power Company (IPC) has proposed to construct and operate a new, approximately 300-mile long, single-circuit 500 kilovolt (kV) electric transmission line between northeast Oregon and southwest Idaho called the Boardman to Hemingway Transmission Project (hereinafter referred to as the Project). The overhead, 500-kV transmission line will carry energy bi-directionally between a Portland General Electric proposed substation (Grassland Substation) adjacent to the existing Boardman Generating Plant, near Boardman in Morrow County, Oregon, and Idaho Power's existing Hemingway Substation, located near Melba in Owyhee County, Idaho. The Project will traverse federal, state, and private lands in 5 counties in Oregon (Morrow, Umatilla, Union, Baker, and Malheur) and 1 county in Idaho (Owyhee) (Figure 1-1).

The Project would result in disturbances related to the construction of permanent facilities such as transmission tower pads, substations, communication sites, and permanent access roads, as well as temporary disturbances related to multiuse areas, tensioning sites, and temporary access roads. In addition, the Project would include the initial construction clearing and continued maintenance of tree heights located near the transmission line, resulting in permanent impacts to some forested areas. To help determine the species that could be impacted by the construction of these Project components, federal and state-listed species designated as Sensitive by the Bureau of Land Management (BLM) and USDA Forest Service (USFS), as well as the USFS Management Indicator Species (MIS), collectively referred to here as wildlife special status species, within the proposed Project right-of-way (ROW) were required to be evaluated.

The Project, as proposed, would cross both private and public lands. Public lands that would be crossed are managed, in part, with the intent of conserving and improving wildlife populations, and public land managers have gathered data on lands they manage over the years. Data for private lands, with the exception of some statewide data gathered by state wildlife management agencies, are largely unavailable. This means that existing databases could not always be used to determine the locations of special status species that could be impacted by the Project consistently across jurisdictions. Therefore, the Terrestrial Visual Encounter Survey (TVES) method was implemented to supplement existing data.

This technical report describes the new survey area (as of April 2012) and the protocols used to conduct the TVES. The primary goal of the 2012 survey effort was to identify unknown locations or habitat for special status species for all proposed route realignments, route/road width increases, new route alternatives, and new access roads (as of April 2012) to assist in the overall Project siting process. The April 2012 proposed Project route included 7 alternatives: Longhorn, Horn Butte, Glass Hill, Flagstaff, Willow Creek, Malheur S, and Double Mountain (Figure 1-1).

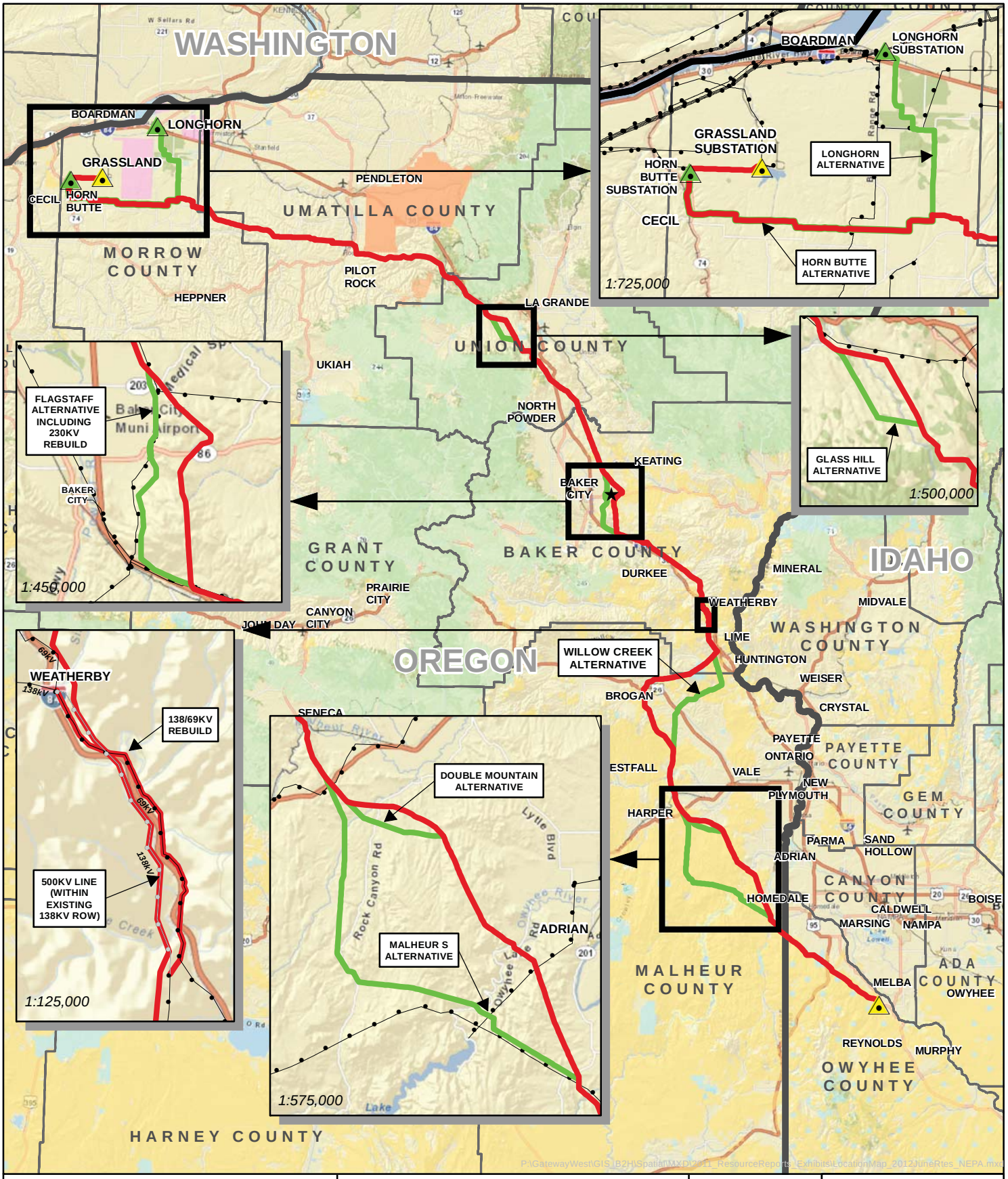


FIGURE 1-1
PROJECT OVERVIEW

2012 TERRESTRIAL VISUAL ENCOUNTER SURVEY

BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT
OREGON-IDAHO

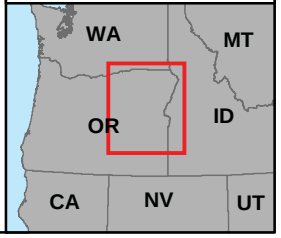
JANUARY 2013

IDAHO POWER
An IDACORP Company

- National Historic Oregon Trail Interpretive Center
- Proposed Substation
- Alternate Substation
- Proposed Route 20120301
- IPC Alternative 20120301
- Proposed Rebuild 20120301
- State Boundary
- County Boundary
- Bureau of Land Management
- Bureau of Reclamation
- Department of Defense
- Forest Service
- CTUIR Lands
- State

0 10 20
Miles

LOCATION MAP



2.0 SURVEY AREA

The 2012 survey area was 20,071 total acres, which included IPC's updated Proposed Route and most of the route alternatives, including permanent project features, such as transmission tower pads, substations, communication stations, and access roads, as well as temporary disturbances related to fly yards, lay down areas, tensioning sites, and access roads. The survey route started at the proposed Grassland Substation near Boardman, Oregon and ended at the Hemingway Substation near Melba, Idaho.

Under the Oregon Department of Energy's (ODOE) Energy Facility Siting Council (EFSC) process, IPC described a site boundary within which the Department of Energy facility would permit the Project. The site boundary consists of all the Project features buffered by varying distances. The buffers depend on the level of disturbance expected from construction of those features or the amount of flexibility that IPC needs to allow for micro-siting of features to avoid sensitive resources. The site boundary is a 250-foot buffer (500-foot width) of the centerline of the Proposed and Alternative routes, a 30-foot buffer (60-foot width) of existing roads that may need improvement, a 50-foot buffer (100-foot width) of existing roads that require improvement, a 100-foot buffer (200-foot width) of new roads, and the footprint of all other Project features that occur outside of these buffers. The 2012 TVES survey area was the site boundary.

In 2012, the survey area consisted of approximately 118 miles of proposed transmission line corridor (including 5 miles of rebuild), 105 miles of alternatives, 398 miles of associated access roads associated with the proposed route and 270 miles of associated access roads associated with the alternatives. The survey area were surveyed to help support the evaluation of potential impacts and to demonstrate compliance with ODOE-EFSC standards.

Landowner permission was required prior to surveying private lands; many private landowners either declined access or did not acknowledge requests for access to their lands for surveys. Therefore, field surveys could not be conducted along the entire length of the Project on private lands and on public lands where only private access existed (i.e., public lands between mile post 161 and 162 could not be surveyed due to surrounding private access restrictions).

3.0 METHODS

The TVES is a general wildlife and vegetation survey aimed to gather baseline data for both wildlife and vegetation, with some of these data being utilized for further and more detailed data analysis. To conduct TVES, 3 observers systematically surveyed for wildlife, wildlife sign, unique wildlife habitat (i.e. snags, cliffs, rock outcrops, ponds), and documented noxious weeds, potential wetlands, stream crossings, and vegetative habitats by traversing the survey area along evenly spaced meandering transects. One observer walked the centerline while the other 2 observers walked at a distance of 150 feet to 175 feet from either side of the centerline. This allowed the observers to cover the entire corridor in one pass. The center observer focused on vegetation; recording habitats and habitat categories, noxious weed populations, potential wetlands, and areas where existing and proposed roads cross streams or drainages. If special status plants and their habitats were identified, they were recorded, although protocol level surveys were also conducted for special status plants (Tetra Tech 2012g). The 2 outside observers focused on recording wildlife, wildlife sign, and unique wildlife habitat. Only 2 observers (1 biologist and 1 botanist) were required to survey Project roads, as the survey area narrows around these features.

3.1 Pre Field Survey Data Collection and Training

Existing data were collected prior to conducting field surveys. A significant portion of existing data were in Geographic Information System (GIS) format, which contains information such as species observations, species distribution, wildlife habitat models, vegetation and land cover

data, hydrology, aerial photography, land ownership, and political and municipal data. Table 3-1 lists the spatial data that was collected and utilized in support of the TVES.

Table 3-1. Flora and Fauna Occurrence and Habitat Data Acquired

Data Name/Type	Data Source
Aerial Photos	National Agriculture Imagery Program 2011, Environmental Sciences Research Institute 2012
Current land use	Northwest Regional Gap Analysis Project (ReGAP) (OSU 2007)
Existing roads	Oregon Department of Transportation 2007
	Idaho Transportation Department 2007
	Environmental Sciences Research Institute 2010
Existing canals, rivers, streams, and water bodies	National Hydrologic Dataset 2011
Existing wetlands	National Wetlands Inventory 2006 (downloaded 2010), The Oregon Wetlands Cover 10/2009
Wildlife occurrence and habitat data	ODFW 06/2011
	Oregon Biodiversity Information Center (ORBIC 01/2011)
	Idaho Fish and Wildlife Information System (IFWIS) 08/2012
	BLM (GeoBOB) 10/2012
	StreamNet 2009

Historic and current sightings of special status wildlife and botanical species were overlaid on the Project route map. This mapping exercise helped alert field staff to the increased potential of encountering a listed species in a particular area along the route. The ORBIC, GeoBOB, and IFWIS data sets provide generalized past and present locations of species occurrences, but they do not substitute for data obtained by protocol-level species-specific surveys. The Northwest Regional Gap Analysis Project (ReGAP) (OSU 2007), which is the most current and accurate spatial land cover dataset that encompasses the entire survey area, was utilized to map the existing land cover and vegetation classification systems. The vegetation classification system used by ReGAP are ecological systems, as defined under the National Vegetation Classification System, which are a regionally consistent medium-scaled land cover classification.

In 2011, the TVES crew met with Bruce Schoeberl, a wildlife biologist from the BLM Bruneau Field Office at an active pygmy rabbit colony near Grandview, Idaho. Bruce showed the crew a multitude of burrows and pellets, and discussed the indicative characteristics of pygmy rabbit sign. No additional pygmy rabbit habitat training was done in 2012 with the BLM, as 1 to 2 of the biologists on each crew had done the training the previous spring. Written descriptions from Ulmschneider (2004; revised 2008) were provided to all biologists again in 2012. The Vale BLM District had concerns that areas of sparser big sagebrush cover (>5%) may contain active pygmy rabbit burrow systems in their district; however, the local biologist was not available to show TVES crews active pygmy rabbit burrows in this more uncommon habitat scenario during the 2012 field season.

In 2012, all field crew observers participated in a 1-day training near Boardman, Oregon. Field crew members learned how to use the new Juniper Systems Mesa tablet Global Positioning System (GPS) units, identified species together in small groups, practiced estimating distance, and became familiar with field survey protocols before being deployed to the field. Wildlife and

plant field guides were made available to all field crewmembers to assist in field identifications throughout the field season. In addition, of the 7 core observers working on the TVES crews, 5 were repeat observers from last year, improving the consistency and data quality from year to year.

The wildlife and vegetation methodology are broken out in the sections below, however each is integral to the other in that vegetation data collection was used for initial wildlife habitat identification.

3.2 Wildlife

The TVES methods utilized for this study were adapted from the TVES methods described in the USFS Multiple Species Inventory and Monitoring (MSIM) Technical Guide (Manley et al. 2006). The MSIM protocol is intended to serve as a consistent and efficient method for obtaining basic presence/absence data and associated habitat condition data for a large number of individual species at sites that represent a probabilistic sample. The principal purpose of the MSIM protocol is to inventory and/or monitor species of concern and interest, and overall biological diversity across individual and/or multiple forests to meet agency information needs and legal requirements for inventory and monitoring. The large number of species detected by the MSIM protocol results in data on species richness, species diversity, species distribution, ecologically significant species, and non-desirable invasives (Manley et al. 2006).

The TVES is a walking survey that identifies species presence through direct observation and auditory confirmation, as well as evidence of sign such as tracks, scat, burrows, nests, feathers, regurgitated pellets, food caches, and territory marks. The focus of the TVES is on special status species and their habitat; however, all species encountered are identified to the extent practical.

The TVES is designed as a companion to taxon-specific core studies; recording terrestrial birds, mammals, amphibians, and reptiles along the Project route that other taxon-specific surveys may have missed. Taxon-specific surveys that were conducted include surveys for northern goshawks, three-toed woodpeckers, great grey owls, flammulated owls, raptor nests, sage-grouse leks, and Washington ground squirrels (Tetra Tech 2012a, Tetra Tech 2012b, Tetra Tech 2012c, Tetra Tech 2012d, and Tetra Tech 2012e). Although detection rates can be low for many species, this passive sampling technique is simple, efficient, and useful for a wide variety of habitats and species that are difficult to detect reliably with other multiple species methods.

The following information was recorded for each wildlife detection: latitude/longitude, observer, time, species, detection type (e.g., visual, auditory, sign), quantity, estimated distance to centerline, general habitat type (e.g., grassland, sagebrush steppe, desert shrub, mountain shrub, forest, riparian, agriculture, developed), and unique wildlife habitat features (e.g. snags, cliffs, rock outcrops). The gender and age class of individuals was also recorded if known. Recorded wildlife sign included tracks, scat, whitewash, regurgitated pellets, nests, feathers, burrows, foraging marks, territory marks, prey remains, and food caches. All unusual or unknown wildlife sign was collected and/or photographed to illustrate any diagnostic characteristics that could later be used to positively identify the species. Photographs were also taken of special status wildlife species when possible to enhance the accuracy of species identification. The survey crew used GPS technology for data collection activities. A Juniper Mesa tablet loaded with ArcPad software was used for navigation within the survey area and recording observations. Corresponding general wildlife sign notes were written on field maps.

An updated special status species table (Table 3-2) has been created to reflect any changes in agency lists since the table provided in the 2011 Revised Final Biological Survey Work Plan, Volume 1 (BSWP) (Appendix E). Special status species listed in Table 3-2 have the potential of occurring within the survey area and include:

- U.S. Fish and Wildlife Service (USFWS) threatened, endangered, or candidate species;

- Oregon BLM Type 1-4 special status animal species that are documented or suspected to occur within the Vale Field Offices;
- Idaho BLM Type 1-4 special status animal species that are documented or suspected to occur within the Owyhee Field Office;
- USFS Region 6 special status species, including Management Indicator Species found within the Wallowa-Whitman National Forest (Oregon);
- ODFW wildlife species considered critical or vulnerable; and
- Species identified in the Idaho Comprehensive Wildlife Conservation Strategy (IDFG 2005) as species of greatest conservation need.

Table 3-2. 2012 B2H Special Status Wildlife Species

Species	USFWS	BLM Idaho District	BLM Oregon District	USFS R6	ODFW	Idaho Species of Greatest Conservation Need
MAMMALS						
Fringed myotis (Myotis thysanodes)			VALE	WAW	SV	S2
Spotted bat (Euderma maculatum)		OWFO	VALE	WAW	SV	S2
Townsend's big-eared bat (Corynorhinus townsendii)		OWFO	VALE	WAW	SC	S3
Pallid bat (Antrozous pallidus)			VALE		SV	
Washington ground squirrel (Spermophilus washingtoni)	C		VALE		LE	
Merriam's ground squirrel (Spermophilus canus)		OWFO				
Pygmy rabbit (Brachylagus idahoensis)		OWFO	VALE		SV	S2
White-tailed jack rabbit (Lepus townsendii)					SV	
Fisher (Martes pennanti)					SC	S1
American marten (Martes americana)				WAW (MIS)	SV	
Wolverine (Gulo gulo luscus)	C		VALE	WAW	LT	S2
Canada lynx (Lynx canadensis)	T		VALE	WAW		S1
Gray wolf (Canis lupus) -Populations east of Hwy 395 were delisted in 2011 -Populations west of Hwy 395 in Oregon are Endangered	E or Delisted			WAW		S3
Kit fox (Vulpes macrotis)		OWFO			LT	S1

Table 3-2. 2012 B2H Special Status Wildlife Species

Species	USFWS	BLM Idaho District	BLM Oregon District	USFS R6	ODFW	Idaho Species of Greatest Conservation Need
Elk (Cervus Canadensis)				WAW (MIS)		
AVIAN						
American white pelican (Pelecanus erythrorhynchos)			VALE		SV	S1B
Trumpeter swan (Cygnus buccinator)			VALE			S1B, S2N
Bufflehead (Bucephala albeola)				WAW		
Bald eagle (Haliaeetus leucocephalus)	Delisted in 2007	OWFO	VALE	WAW	LT	S3B,S4N
Peregrine falcon (Falco peregrinus anatum)		OWFO	VALE	WAW	SV	S2B
Prairie falcon (Falco mexicanus)		OWFO				
Northern goshawk (Accipiter gentilis)		OWFO		WAW (MIS)	SV	
Ferruginous hawk (Buteo regalis)		OWFO			SC/SV	S3B
Swainson's hawk (Buteo swainsoni)					SV	S3B
Greater sage-grouse (Centrocercus urophasianus)	C	OWFO	VALE	WAW	SV	S2B,S3N
Columbian sharp-tailed grouse (Tympanuchus phasianellus columbianus)		OWFO	VALE	WAW	SC	S2
Mountain quail (Oreortyx pictus)		OWFO			SV	S1
Long-billed curlew (Numenius americanus)					SV	S2B
Upland sandpiper (Bartramia longicauda)				WAW	SC	
Frankllin's gull (Larus pipixcan)			VALE		SV	S2B
Yellow-billed cuckoo (Coccyzus americanus)	C	OWFO	VALE		SC	S2B
Flammulated owl (Otus flammeoulus)					SV	S3B
Great gray owl (Strix nebulosa)					SV	
Western burrowing owl (Athene cunicularia hypugaea)					SC/SV	S2B
Common nighthawk (Chordeiles minor)					SC	

Table 3-2. 2012 B2H Special Status Wildlife Species

Species	USFWS	BLM Idaho District	BLM Oregon District	USFS R6	ODFW	Idaho Species of Greatest Conservation Need
Black swift (Cypseloides niger)				WAW		S1B
American three-toed woodpecker (Picoides dorsalis)				WAW (MIS)	SV	S2
Lewis' woodpecker (Melanerpes lewis)		OWFO	VALE	WAW (MIS)	SC	S3B
White-headed woodpecker (Picoides albolarvatus)			VALE	WAW (MIS)	SC	S2
Black-backed woodpecker (Picoides arcticus)				WAW (MIS)	SV	
Hairy woodpecker (Picoides villosus)				WAW (MIS)		
Downy woodpecker (Picoides pubescens)				WAW (MIS)		
Pileated woodpecker (Dryocopus pileatus)				WAW (MIS)	SV	
Williamson's sapsucker (Sphyrapicus thyroideus)				WAW (MIS)		
Yellow-bellied sapsucker (Sphyrapicus varius)				WAW (MIS)		
Northern flicker (Colaptes auratus)				WAW (MIS)		
Mountain chickadee (Poecile gambeli)				WAW (MIS)		
Black-capped chickadee (Poecile atricapillus)				WAW (MIS)		
White-breasted nuthatch (Sitta carolinensis)				WAW (MIS)		
Red-breasted nuthatch (Sitta canadensis)				WAW (MIS)		
Pygmy nuthatch (Sitta pygmaea)				WAW (MIS)		S1
Willow flycatcher (Empidonax traillii)		OWFO			SV	
Hammond's flycatcher (Empidonax hammondii)		OWFO				
Olive-sided flycatcher (Contopus cooperi)					SV	
Loggerhead shrike (Lanius ludovicianus)		OWFO			SV	
Western bluebird (Sialia mexicana)					SV	
Yellow breasted chat (Icteria virens)					SC	

Table 3-2. 2012 B2H Special Status Wildlife Species

Species	USFWS	BLM Idaho District	BLM Oregon District	USFS R6	ODFW	Idaho Species of Greatest Conservation Need
Sage sparrow (Artemisiospiza belli)		OWFO			SC	
Black-throated sparrow (Amphispiza bilineata)		OWFO				
Brewer's sparrow (Spizella breweri)		OWFO				S3B
Grasshopper sparrow (Ammodramus savannarum)			VALE		SV	S2B
Bobolink (Dolichonyx oryzivorus)			VALE		SV	
REPTILES AND AMPHIBIANS						
Columbia spotted frog (Rana luteiventris)	C	OWFO	VALE	WAW	SC/SV	S2
Oregon spotted frog (Rana pretiosa)					SC	
Northern leopard frog (Rana pipiens)		OWFO	VALE			S2
Rocky mountain tailed frog (Ascaphus montanus)			VALE	WAW	SV	
Western toad (Bufo boreas)		OWFO			SV	
Woodhouse toad (Bufo woodhousii)		OWFO	VALE			S2
Mojave black-collared lizard (Crotaphytus bicinctores)		OWFO				S1
Sagebrush lizard (Sceloporus graciosus)					SV	
Longnose snake (Rhinocheilus lecontei)		OWFO				S2
Western ground snake (Sonora semiannulata)		OWFO				S2
Common garter snake (Thamnophis sirtalis)		OWFO				
Painted turtle (Chrysemys picta)			VALE		SC	

TABLE 3-2 Definitions: USFWS – E= endangered, T= threatened, C= candidate (as of October 2012), BLM Boise District- OWFO= Owyhee Field Office (BLM 2003, BLM 2009), BLM Oregon District- VALE= Vale district (BLM/USFS 2011), USFS R6 - MIS= Management Indicator Species from Wallowa-Whitman Forest Plan (USFS 1990), WAW= special status species found in the Wallowa-Whitman National Forest (BLM/USFS 2011), ODFW- SC= sensitive species-critical are imperiled with extirpation from a specific geographic area of the state because of small population sizes, habitat loss or degradation, and/or immediate threats. Critical species may decline to point of qualifying for threatened or endangered status if conservation actions are not taken. SV= sensitive species-vulnerable are facing one or more threats to their populations and/or habitats. Vulnerable species are not currently imperiled with extirpation from a specific geographic area or the state but could become so with continued or increased threats to populations and/or habitats. LT= Listed threatened (ORBIC 2012), and Idaho Species of Greatest Conservation Need- G= condition of the species rangewide. S= condition of the species statewide. G1 or S1= Critically imperiled: at high risk because of extreme rarity (often 5 or fewer occurrences), rapidly declining numbers, or other factors that make it particularly vulnerable to rangewide extinction or extirpation. G2 or S2= Imperiled: at risk because of restricted range, few populations (often 20 or fewer), rapidly declining numbers, or other factors that make it vulnerable to rangewide extinction or extirpation. G3 or S3= Vulnerable: at moderate risk because of restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors that make it

vulnerable to rangewide extinction or extirpation. G4 or S4= Apparently secure: uncommon but not rare; some cause for long–term concern due to declines or other factors. B= breeding population of the species. N= non-breeding population of the species. T= Infraspecific taxa (subspecies or varieties) are indicated by a "T–rank" following the species' global rank. (IDFG 2005)

Origins of the Project TVES Method

There are some differences between TVES protocol outlined in the MSIM guide and the TVES used for this project. In Manley et al. (2006) the sample design uses a 10-hectare sampling hexagon with observer spacing of 50 meters (approximately 164 feet), for total transect lengths of 2,400 meters (7,874 feet). The Project sampling design needed to cover a long linear distance, spanning almost 306 miles of Proposed Route (including proposed rebuilds), 280 miles of alternate routes, and 1,933 miles of associated proposed roads (new and existing). The transmission line corridor widths for all of the 2012 routes were 500-foot wide, utilizing 3 observers spaced 150 to 175 feet apart. The survey corridor widths of roads ranged from 60 to 200 feet, needing only 2 observers to adequately cover the more narrow survey corridor. The MSIM also uses two repeat survey visits, due to the large survey area needing covered for the Project, only one survey visit between April 1 and June 30 was used. The Manley el al. method only records the “less common species or those poorly detected with other core or primary methods.” TVES recorded all species and/or sign identified during the survey. Manley et al. advises, “Observers search surfaces, vegetation, turn over objects such as logs and rocks, and look in crevices in rocks and bark, replacing all surface objects after examining the ground beneath.” Again, due to the size of the survey area, observers did not have the liberty to search for wildlife with this intensity. Observers did focus attention on habitat features that were more likely to support secretive species, such as snags, cliffs, rock outcrops, talus slopes, etc.

MSIM protocol did not address survey of aquatic habitats, such as lakes, ponds, streams, and bogs, located within the sample area. However, observers surveyed water bodies, using the visual encounter survey method outlined in the 2011 BSWP within the survey area; observers recorded water birds and searched for amphibians, specifically the Columbia spotted frog. Fish surveys were not conducted during TVES or any other survey for this project.

TVES Assumptions and Limitations

The following assumptions and limitations to consider when using the TVES method includes missing smaller, more secretive, nocturnal, subterranean, and/or quiet species. The TVES collects wildlife detections over a very large survey area, during all weather conditions, and times of day; therefore, it is not meant to capture every species over the entire project. Detection probability varies among species based on weather, time of day, date, species size, gregariousness, vocalizations, habitat conditions, and uniqueness of their sign. Most birds will have a higher detection probability before 11:00am each day, during days of no or light wind and rain, and during the height of their breeding season which changes based on elevation and species. Reptiles would be a good example of a species with a lower detection rate because they would not be out during periods of rain, cold or hot weather, and are small and more secretive. Another example would be rodents that may not be detected because they are secretive and underground during much of the daylight hours. Therefore, the lack of detecting a species during the TVES does not infer lack of species presence. Detection rates will be higher for more visible and vocal species than for species that are more secretive and/or non-verbal. The probability of detecting species presence only from their sign is highest when species are large, individuals live in groups, or individuals habituate to particular locations for roosting, feeding, or travel. Detections based only on sign will not always be sufficient to identify species, in which case detections are identified to the lowest taxonomic level possible.

Western Burrowing Owls

When burrowing owls or evidence of this species was recorded during the TVES, a protocol-level survey, using the broadcast acoustical survey method (Tetra Tech 2011a, App B-10), was later conducted. Acoustical surveys consisted of broadcasting recorded burrowing owl calls along roads or transects to elicit responses from territorial burrowing owls. The survey period is between March 15 and July 1. The survey protocol provided in Appendix B-10 of the 2011 BSWP involves 2 surveys, the first one between March 15th – May 15th and the second between May 15th – July 1st. For the TVES, the first survey was considered the first time the burrowing owl was detected during the TVES, which may have been as late as July. If a combination of locating an active burrow with whitewash, pellets, and prey remains and at least 1 vocal adult and/or young owls were present at the burrow, no further survey was necessary as the territory was considered active. The second survey was conducted later in the field season using the acoustical callback equipment to elicit responses from breeding adults and to search for the active burrow(s).

Burrowing owls are active throughout the day and can be surveyed between sunrise and sunset. Survey methods recommend surveying when temperatures are at least 68° F (20° C) and winds are less than 7.5 mph (12 kilometer/hour). However, given the constraints of the survey area and survey timeframe, burrowing owl surveys were conducted when temperatures were above 50° F (10° C) and winds were less than 10 mph (16 kilometer/hour). Three call stations were used for this protocol; 1 call station where the suspected burrow or the owl(s) was recorded during the TVES, and 2 call stations 0.25 to 0.5 mile (400-800 meters) on either side of that station where the best view of the landscape occurs. After arriving at each call station, the surveyor(s) watched and listened silently for 3 minutes, followed by a 3-minute call-broadcast segment. Calls were broadcast at 80 decibels, measured 3 feet (1 meter) from the speaker. The 3-minute call-broadcast segment consisted of 30 seconds of calls followed by 30 seconds of silence, with this pattern repeated 3 times. The first 2 30-second call periods consisted of the primary song of male burrowing owls and the final 30-second call period consisted of the alarm call. A GPS point was taken at each calling station, no matter whether a burrowing owl was seen or not. The number of individuals seen and heard were recorded, and age provided when possible. Observers would also take a compass bearing of the observation from their GPS point. If multiple individuals were observed in different locations, a compass bearing was taken of the observation most likely representing the burrow location. Also, distance of the observation from the GPS point was noted.

Pygmy Rabbits

Protocol-level surveys for pygmy rabbits were conducted during the TVES when observers encountered potential pygmy rabbit habitat. During the protocol-level surveys the biologist(s) zigzagged through the survey corridor concentrating on surveying for pygmy rabbit sign (i.e. burrows and pellets). If evidence of pygmy rabbits existed, data sheets were filled out following the protocol outlined in Appendix B-11 of the BSWP (Tetra Tech 2011a). In a west-wide guide to surveying for pygmy rabbits, Ulmschneider (2004; revised 2008) described pygmy rabbit habitat as having two main features: relatively taller and denser big sagebrush (*Artemisia tridentata)* and deep soils. The following provides more detailed habitat descriptions found in Idaho and Oregon taken directly from Ulmschneider (2004; revised 2008):

Sagebrush Habitat

Usually burrows are found in the taller and denser big sagebrush in an area. The height of the sagebrush can vary enormously, from about 1 ½ to 7 feet. Density can also vary, but commonly the sagebrush is so dense right at burrows that it is difficult to walk through. This means > 30% cover. Various subspecies of sagebrush are used, including Wyoming (*A. t. wyomingensis*), mountain (*A. t. vaseyana*), and Great Basin (*A. t. tridentata*). Other shrub species may be present, including bitterbrush (*Purshia tridentata*), rabbitbrush (*Chrysothamnus spp.*),

greasewood (*Sarcobatus vermiculatus*), snowberry (*Symphoricarpos spp.*), and juniper (*Juniperus spp.*).

Soils
Generally, pygmy rabbits burrow in loamy soils deeper than 20 inches. Soil composition needs to be able to support a burrow system with numerous entrances, but also must be soft enough for digging. A habitat model from the University of Idaho used a clay content of 13 to 30%, but models from Idaho State University used <13.5 % clay. In southwest Idaho, they occur in areas with soils classified as stony sandy loam, and sandy loam over sandy clay and clay loam.

At the Landscape Scale
Pygmy rabbits are found in alluvial fans, swales in a rolling landscape, large flat valleys, at the foot of mountains, along creek and drainage bottoms, in basins in the mountains, or other landscape features where soil may have accumulated to greater depths. They are generally on flatter ground, sometimes on moderate slopes, and not on steep ground.

At the Patch Scale
Look for relatively taller, denser big sagebrush (not low sage) and areas where there appears to be a non-uniform distribution of sage, in other words, where the texture of the sagebrush stand is uneven, or “lumpy”, in both height and density. When scanning across a valley these clumps stand out as taller, or as having a different color. It is fairly effective to go directly to these areas to begin a search. Also look for signs of digging, and for soil surface that is not flat and level. The rabbits tend to mound up the soil where they have been burrowing over the years. Drainage bottoms and sagebrush draws with a relatively uniform coverage of sagebrush are also often used by pygmy rabbits.

In Idaho:
Areas with mounded topography – ‘mima mounds’ – are prime areas to target for surveys. In the Salmon, Idaho area, alluvial plains where rabbits are found are dotted with mounds about 2,030 feet in diameter, 1 to 2 feet tall, several hundred feet or yards apart, where the sagebrush is taller than in the surrounding intermound spaces. On 1:24,000 aerial photos, these mounds can be seen as a pattern of darker dots, extending over many miles of landscape; and from the ground, the mounds appear as lenses of darker and taller sage. The mounds are where the pygmy rabbits burrow. In southwest Idaho, a similar habitat is big sagebrush islands intermingled with low sagebrush (*Artemisia arbuscula*).

In the mahogany (*Cercocarpus ledifolius*) savannah in the Owyhee Mountains of southwest Idaho, the rabbits are found in swales of taller sagebrush. Mounding of the soil is present, but does not form distinctive mima mounds. A dotted pattern is usually not visible on 1:24,000 aerial photographs, although careful examination can show subtle and dim dotting. The soil does end up mounded where the pygmy rabbits have been digging their burrows and maintaining them over time.

Another major habitat in the Bruneau plateau country is the bottoms and lower slopes of small drainages where the sagebrush is denser and taller, indicating deeper soils.

In Oregon:
Habitats in Oregon are very similar to those in Idaho. Most habitat is comprised of areas where big sagebrush inclusions are mixed with low sagebrush, rabbit brush, or shorter stature big sagebrush. Mounding similar to ‘mima mounding’ occurs in most of these sites. Sagebrush on the mounds is usually 1 to 3 feet taller than that of the surrounding area. These mounds or clumps of big sagebrush can be spaced from a few feet to hundreds of feet apart.

The second most common type of habitat in Oregon is small draw bottoms where deeper soils have collected. Most of these sites are vegetated with basin big sagebrush in the drainage bottom, surrounded by Wyoming big sagebrush, low sagebrush, or mountain big sagebrush in

the surrounding uplands. Some mounding can occur in these areas, but it is absent or very subtle. Burrows in these areas seem to be restricted to the very bottom of the drainages or the lower inside slopes of the drainage itself. Some areas with rabbits are dominated by rabbitbrush.

Hagar and Lienkaemper conducted pygmy rabbit surveys on state lands in Oregon to identify areas currently occupied by pygmy rabbits and potential suitable habitats (2007). They described marginal habitat for pygmy rabbits in Oregon as shrub cover of 20-40% and more than 40% cover provides suitable habitat. Hagar and Lienkaemper also showed that shrub height was an important habitat feature for pygmy rabbits, and is positively associated with habitat suitability. During their study, average shrub heights reported for occupied sites and burrow locations were typically greater than 65 cm.

Columbia Spotted Frog

The Visual Encounter Survey (VES) method was used to identify any amphibians in riparian areas within the survey area (Tetra Tech 2011a, App. B-8). VES are used to document the presence of amphibians and are effective in most habitats and for most species that breed in lentic (non-flowing) water. Data collected yields information on the presence of a species but does not establish absence, nor does it give reliable estimates of abundance. There were a number of assumptions inherent in VES considered, including:

1) equal observability among species and among individuals,
2) no between-sampling visit effects e.g. there is an equal likelihood of being observed for each species for each sampling visit,
3) individuals are recorded only once per survey, and
4) no observer related effects.

VES were conducted concurrently with the TVES; when ponds, streams, or other water bodies intersected with the survey area, field staff walked those riparian perimeters searching for amphibians. Data collected included species, quantity encountered, life stage, habitat description, date, and search time.

3.3 Vegetation

The purpose of the vegetation portion of these surveys was to identify and map habitat types, categorize habitats based on condition, identify and map unique habitats including potential wetlands and potential special status plant habitat, identify and map noxious weed presence within the survey area, and document streambank characteristics at proposed Project stream and drainage crossings. All components were conducted concurrently during the vegetation portion of this survey.

The survey crew used GPS technology for data collection activities. A Juniper Mesa tablet loaded with ArcPad software was used for navigation within the survey area and recording observations. Methodologies for each portion of the vegetation survey are described in more detail in the following sections.

3.3.1 Ecological Systems and Habitat Types

The objective of the ecological system and habitat type portion of the TVES was to categorize habitat types for use in the wildlife habitat categorization process, driven by OAR 635-415-0025 and the Fish and Wildlife Habitat Mitigation Policy. The Policy provides a framework for assigning one of six category types to habitats based on the relative importance of these habitats to fish and wildlife species. To help categorize habitat types, data from the Regional Gap Analysis Project (ReGAP; OSU 2007) were used as the base layer for the effort. ReGAP was queried using GIS to identify the range of habitats surveyors anticipated encountering in the field. Ecological systems identified from ReGAP were then grouped into a broad general vegetation type (agriculture/developed, bare ground, open water/unvegetated wetland, forest/woodland,

shrub/grass, and wetland) and then broken out into a habitat type, as described in the habitat categorization matrix (Appendix A).

Habitat type information collected in the field were part of the Phase 2 Habitat Surveys (Tetra Tech 2011a, Section 3.4). This data will be incorporated into the final preparation of habitat category maps to be submitted to the Oregon Department of Fish and Wildlife (ODFW) in support of Fish and Wildlife Habitat Mitigation Policy (OAR 635-415-0025).

Regional ecological systems descriptions, general vegetation types, and habitat types were utilized to help categorize habitats in the field. Surveyors neither confirmed nor denied a ReGAP ecological systems presence at a particular location. Rather, surveyors documented existing habitat type and condition based on the habitat categorization matrix (Appendix A).

During the field survey, at each change in habitat type or habitat category, the plant biologist took a photograph, recorded dominant tree, shrub and herbaceous plant species and their percent aerial cover composition. The habitat category of the habitat was also recorded, using the habitat categorization metric presented in Appendix A. Noxious weeds, unique habitats, potential wetlands, and locations where existing and proposed access roads cross streams were also recorded. A photograph was taken of each habitat type, unique habitat type, potential wetland, stream crossing, and special status plant observation.

3 BLM cover species dominance worksheets were completed per day in the field to further document habitat type identified. 2012 cover sheets were collected in an electronic format in the GPS unit. The cover dominance worksheet is divided into two sections: The life forms section, where canopy cover is estimated for important life forms (e.g., grass, forb, shrub, tree, succulents, and biological crusts) and the ground cover section, where the amount (canopy cover) of total vascular plant cover, standing dead vegetation, litter, biological crust, rock/gravel, and bare ground are estimated. Dominant species, invasive species, and noxious weeds were also recorded.

Canopy cover is the estimated cover class percentage of ground covered by plant foliage at the time the TVES was conducted. Cover classes range from 0, 0-1, 2-5, 6-15, 16-30, 31-50, 51-75, and 76-100 percent. Species canopy cover is important for determining dominant species, which relate directly to differences in habitats. Additionally, percent cover of native plants versus non-native plants was used to decipher between habitat categories in some cases. The life forms section includes cover estimates of each life form separately, thus recording the overlapping life form canopies. For example, the cover of both a grass beneath a shrub canopy and the canopy cover of the shrub are both estimated individually and recorded on the worksheet in the appropriate categories.

The ground cover section represents the proportion of the soil that is protected from being hit directly by a raindrop. Ground cover is the percentage of material (e.g. total vascular plant cover, standing dead vegetation, litter, biological crust, rock/gravel, and bare ground) covering the land surface. In contrast with the life forms section, overlapping life form cover classes are not estimated. Ground cover is estimated by recording cover estimates of the first contact (i.e., highest contact above soil surface) with live vascular plants, standing dead vegetation, litter, biological crust, rock/gravel, and bare ground. The sum of these six cover categories should roughly total 100 percent, given the use of ranges of cover instead of discrete cover values on the form.

3.3.2 Unique Habitats

The objective of the unique habitats portion of this survey was to identify, document, and record unique habitats including potential wetlands, areas where existing and proposed roads cross streams or drainages, and potential special status plant habitat that may require further protocol level survey.

3.3.3 Noxious Weeds

The objective of the noxious weed survey was to identify and map the distribution of Oregon and Idaho-listed noxious weeds (Oregon Department of Agriculture 2012a, Idaho State Department of Agriculture 2012) within the survey area (Appendix B). Biologists estimated the population size based on the following categories: individuals, less than 1 acre, 1-5 acres, greater than 5 acres, or scattered throughout. In addition, biologists identified adjacent land uses that have the potential to contribute to noxious weed proliferation and establishment. There are some limitations when surveying for and detecting noxious weed locations. Plant phenology varies through the growing season, with every noxious weed not being detectable at any given time. As a result, we acknowledge that some noxious weeds may have been overlooked during these surveys. To help fill in potential gaps in noxious weed detection during these surveys, BLM noxious weed location data can be utilized. For purposes of this report, only noxious weed locations observed and mapped during this survey are reported. Noxious weed nomenclature in this report first follows the Oregon State Noxious Weed List (Oregon Department of Agriculture. 2012a), followed by the Idaho State Noxious Weed List (Idaho State Department of Agriculture 2012).

4.0 RESULTS

The following assumptions and limitations should be considered when reviewing the results. Surveys have assumed that all wildlife and vegetation identifications have been correctly classified. Due to the nature of data collected by this protocol, data quality control (QC) is difficult. Examination of collected data will not reveal missed detections or misidentifications of data collected by observation without a photo record. GIS staff reviewed field data on a daily basis to find missing fields, errors, or follow up with notes field staff made about questions on species identification. This front-end data QC process greatly helped create a higher quality data set. Field staff was then able to address any data gaps or identification questions immediately following that day's survey.

This year the TVES covered 13,435 acres of the 20,071 total acres needing surveyed for 2012. Surveys occurred from April 17, 2012 through July 18, 2012. When this surveyed acreage is broken down into mileage; 74 miles of the Proposed Route (including 3.2 miles of rebuild), 64 miles of alternative routes, 297 miles of roads associated with the Proposed Route (including 4.4 mile of rebuild), and 190 miles of roads associated with the alternative routes were surveyed. Most of the Proposed Route, the Glass Hill Alternative, and the Double Mountain Alternative were surveyed in 2011. A substantial amount of existing roads requiring improvement and new proposed roads were added to the design layout in 2012. Additional changes between the 2011 Site Boundary and the 2012 Site Boundary added to the TVES survey for 2012.

When the 2011 TVES survey area was overlaid with the 2012 TVES survey area, small polygons developed along the alignment due to slight changes in the Site Boundary. This created small, isolated polygons that were not surveyed in 2011 but are surrounded by areas surveyed in 2011. Polygons smaller than ¼ acre in size or isolated to the point that it would take a field crew more than half a day to survey it and return to their point of origin were not surveyed. Buffers on roads or the alignment that were less than 50-feet wide were also not surveyed. The rationale behind this decision was that if these areas were surveyed in 2011, field crews would have recorded the same number and variety of species at those locations and the general habitat recorded would have been the same as the surrounding areas where surveys were completed.

Most of the areas not surveyed in 2012 were due to private landowner access restrictions. These landowners either denied survey access or did not reply to access requests. Other constraints that limited field crews from completing small sections of the survey area included cliffs, steep scree-covered slopes, canals, and rivers; when these barriers were encountered, observers

surveyed to the furthest extent possible and then resumed on the other side when access allowed. Some of these examples include:

- Milepost (MP) 136 to 136.1 of the Proposed Route was not surveyed because it was too steep to safely traverse;
- MP 238.3 to 237.8 of the Proposed Route was not surveyed because crews reported that north of the canal looked inaccessible and very steep, mainly scree with cliffs at the top; and
- MP 23.5 to 24 (Malheur S Alternative) due to steep scree-covered slopes down to river.

Figure results are presented in Appendix C by MP starting at the Grassland Substation in Oregon and ending at the Hemingway Substation in Idaho, alternatives follow at the end of map book. Sections of the survey area where no special status wildlife species were recorded were not included in Appendix C.

4.1 Wildlife

4.1.1 Special Status Wildlife Species

There were 34 special status wildlife species (2 mammal, 30 avian, and 2 reptile) recorded during the 2012 TVES. Table 4-1 provides a summary of the species recorded and the total number of individuals occurring near the survey area. Observations of species adjacent to, but outside of, the survey area were recorded. The close proximity indicates the species likely utilized habitats within the survey area. These numbers do not infer any kind of a population estimate, but rather gives a rough relative abundance. It may be helpful for land managers to know whether 1 or 91 black-throated sparrows were recorded, and possibly the habitat areas associated with higher numbers of observations may be more important to preserve. Locations of each recorded special status species and what areas were surveyed in 2012 has been mapped in Appendix C. During the 2012 TVES 12 of these special status wildlife species were photographed and are presented in Appendix D.

Table 4-1. Special Status Wildlife Species Summary for 2012 TVES

Special Status Wildlife Species	Bird Code	Total Recorded
MAMMALS		
Elk		13
White-tailed jackrabbit		1
AVIAN		
American white pelican	AWPE	29
Black-capped chickadee	BCCH	22
Black-throated sparrow	BTSP	91
Brewer’s sparrow	BRSP	982
Western burrowing owl	BUOW	29
Common nighthawk	CONI	34
Downy woodpecker	DOWO	7
Ferruginous hawk	FEHA	13
Franklin’s gull	FRGU	7
Greater sage grouse	GRSG	3
Grasshopper sparrow	GRSP	172
Hairy woodpecker	HAWO	5
Long-billed curlew	LBCU	151

Table 4-1. Special Status Wildlife Species Summary for 2012 TVES

Special Status Wildlife Species	Bird Code	Total Recorded
Lewis' woodpecker	LEWO	3
Loggerhead shrike	LOSH	37
Mountain chickadee	MOCH	75
Northern flicker	NOFL	63
Northern goshawk	NOGO	1
Olive-sided flycatcher	OSFL	7
Peregrine falcon	PEFA	1
Prairie falcon	PRFA	31
Pygmy nuthatch	PYNU	7
Red-breasted nuthatch	RBNU	48
Sage sparrow	SAGS	51
Swainson's hawk	SWHA	21
White-breasted nuthatch	WBNU	3
Western bluebird	WEBL	5
Williamson's sapsucker	WISA	7
Willow flycatcher	WIFL	7
Yellow-breasted chat	YBCH	1
REPTILES		
Mojave black-collared lizard		6
Sagebrush lizard		1

Areas with a higher abundance of special status wildlife may indicate unique and/or highly productive habitats; this information can assist Project planners in their efforts to minimize or mitigate impacts to these areas. The following discussion highlights some of the special status wildlife species found in the survey area, starting in Morrow County. There were 2 possible Washington ground squirrel detections in Morrow County near a proposed road perpendicular to MP 46 and MP 46.5. Both detections were auditory observations by a crew member who had conducted protocol-level surveys for Washington ground squirrels earlier that spring. Possible detections were not near mapped ORBIC occurrence data for that species. There were many long-billed curlews and grasshopper sparrows recorded in Morrow County. In a 1-mile stretch of existing roads surveyed near MP 45.5-46.5 field staff recorded 6 long-billed curlews and 10 grasshopper sparrows. At the southern end of the Long Horn Alternative (approximately between MP 15.5 and 18.4), a total of 24 long-billed curlews were recorded in this 3-mile stretch along both the route corridor and associated roads.

In Umatilla County, 1 northern goshawk was recorded near MP 120.5. Separate protocol level surveys were conducted for northern goshawks in the forested habitats of the Project; see the 2012 Northern Goshawk and Three-toed Woodpecker Surveys Report (Tetra Tech 2012a) for more information. Most of the forested habitat surveyed this year during the TVES resulted from changes to the Site Boundary resulting from more accurate indicative engineering of roads in the area.

In Union County, starting near MP 127, large numbers of Brewer's sparrows were recorded and continued through MP 289. A total of 982 Brewer's sparrows were recorded during the 2012 TVES. The number of Brewer's sparrows recorded greatly outnumbered any other special status species recorded that year. This species was added to the updated special status species list in

2012 due to it being listed as an Idaho Species of Greatest Conservation Need, with its breeding populations being at moderate risk because of a restricted range and relatively few populations; it is also listed in the BLM Owyhee Field Office as a Type 3 special status species that is regionally/state imperiled.

Greater sage-grouse were recorded near the Baker-Malheur County border. This included 2 sage-grouse documented near MP 202 of the Proposed Route, in Baker County, and 1 was recorded near MP 4 on the Willow Creek Alternative, in Malheur County. In 2011, there were 2 small groups of sage-grouse recorded between MP 199.3 to 200.4 of the Proposed Route. Although no active leks were recorded near these locations during the protocol level sage-grouse surveys conducted in 2011 (Tetra Tech 2011b) or 2012 (Tetra Tech 2012d) for the Project. ODFW has documented active leks within approximately 2 miles of these sightings and sage-grouse were recorded in the vicinity during the protocol level sage-grouse surveys. In addition, two areas located near the Baker-Malheur County border recorded a large number of grasshopper sparrows; 43 grasshopper sparrows were documented near MP 1.5 to 5.5 of the Willow Creek Alternative and 15 grasshopper sparrows were recorded over between MP 130.5 to 132.

In Malheur County, 14 grasshopper sparrows were recorded between MP 222 to 224.5 of the Proposed Route. The only yellow-breasted chat recorded was in a riparian area near MP 212 of the Proposed Route, and the only sagebrush lizard documented was found near MP 14 of the Malheur S Alternative.

In Owyhee County, 10 long-billed curlews were recorded near MP 275.4 of the Proposed Route. In addition, 10 black-throated sparrows were recorded in a less than a mile near MP 297.5 of the Proposed Route.

4.1.2 Partners in Flight Watch List Species

Partners in Flight (PIF) is a cooperative venture of federal, state, provincial, and territorial agencies, industry, non-governmental organizations, researchers, and many others whose common goal is the conservation of North American birds. While PIF is concerned primarily with landbirds, it works in conjunction with other bird partners to promote coordinated conservation of all birds. The PIF has a watch list of high priority species. The Continental Watch List Species are those that are most vulnerable at the continental scale, due to a combination of small and declining populations, limited distributions, and high threats throughout their ranges. Some of these species are already recognized as threatened or endangered at federal levels (Panjabi et al. 2005).

The following “watch list” species from PIF were recorded during the 2012 TVES; greater sage-grouse (3), Swainson’s hawk (21), willow flycatcher (7), olive-sided flycatcher (7), Lewis’ woodpecker (3), Brewer’s sparrow (432), and white-throated swift (1). The white-throated swift is the only species listed on PIF’s watch list, but not included in the agencies’ special status lists. PIF classifies Lewis’ woodpecker as a “species with restricted distribution or low population size”, while the remaining watch list species “are moderately abundant or widespread with declines or high threats” (Ruth 2006).

Western shrublands are listed as the habitat associated with the highest number of species of continental importance in the PIF North American Landbird Conservation Plan. Conversion of this habitat for agriculture, invasion of nonnative grasses, overgrazing of grasses and forbs, development, sagebrush eradication, and changes in fire regimes have caused considerable loss and degradation of habitat, with subsequent declines of associated bird populations. Cheatgrass has invaded about half of the existing sagebrush habitat. Shrubsteppe was identified as the highest priority habitat for conservation based on trends in bird populations and habitat in the Interior Columbia Basin (Rich et al. 2004). Species of continental importance in shrubsteppe

habitat identified during the 2012 TVES included; greater sage-grouse, sage sparrow, sage thrasher, Brewer's sparrow, and green-tailed towhee.

There were no positive identifications made for Merriam's ground squirrel. The similar visual identification and overlapping range and habitats used by Belding's and Merriam's ground squirrels makes it difficult to positively identify them (Yensen and Sherman 2003). Unknown ground squirrel species were recorded by an alarm call and/or an unidentifiable view of the species; 210 were recorded during the 2012 TVES. A local ground squirrel expert, Eric Yensen, provided a positive identification on a couple Belding's ground squirrels using quality photos taken in the field. Another positive identification for Belding's ground squirrels was made by identifying a roadside carcass.

4.1.3 Pygmy Rabbits

During the 2012 field season, no Pygmy rabbits were recorded. Surveys were conducted for pygmy rabbits if surveyors entered into potential pygmy rabbit habitat. Ulmschneider (2004, revised 2008) listed the 2 most common pygmy rabbit habitats in Oregon as comprised of areas where big sagebrush inclusions are mixed with low sagebrush, rabbit brush, or shorter stature big sagebrush. Mounding similar to 'mima mounding' occurs in most of these sites. Sagebrush on the mounds is usually 1-3 feet taller than that of the surrounding area. The second most common type of pygmy rabbit habitat in Oregon is small draw bottoms where deeper soils have collected. Most of these sites are vegetated with basin big sagebrush in the drainage bottom, surrounded by Wyoming big sagebrush, low sagebrush, or mountain big sagebrush in the surrounding uplands. Some subtle mounding can occur in these areas. Burrows in these areas tend to be restricted to the very bottom of the drainages or the lower inside slopes of the drainage itself. Some areas may also be dominated by rabbitbrush.

Potential pygmy rabbit habitat was mapped within the current survey area incorporating the historic and current range of the pygmy rabbit (Appendix E). All potential pygmy rabbit habitat was mapped based on 2011 and 2012 vegetation data collected in the field. Where land access was not granted, a GIS exercise using aerial imagery and the surrounding known habitat was used to infer big sagebrush canopy cover. Potential habitat included all areas where >5% big sagebrush species was recorded. Sparser sagebrush habitat was included because the Vale BLM district requested these habitats be surveyed due to local populations previously found in those habitat types. The historic and current pygmy rabbit range does not include Morrow, Umatilla, or Union counties (National Archives and Records Administration 2012); therefore, those counties were omitted from Appendix E. Baker County roughly had 1,169 acres of potential pygmy rabbit habitat (>5% big sagebrush species), Malheur had 2,821 acres, and Owyhee County had 549 acres. In a 2009 GIS research study by Lennox and Jones, most of the suitable pygmy rabbit habitat patches in Oregon are found in the southeast corner of the state, based on elevation and slope constraints, vegetation and soil attributes, and urban area and highway disturbances (Figure 4-1).

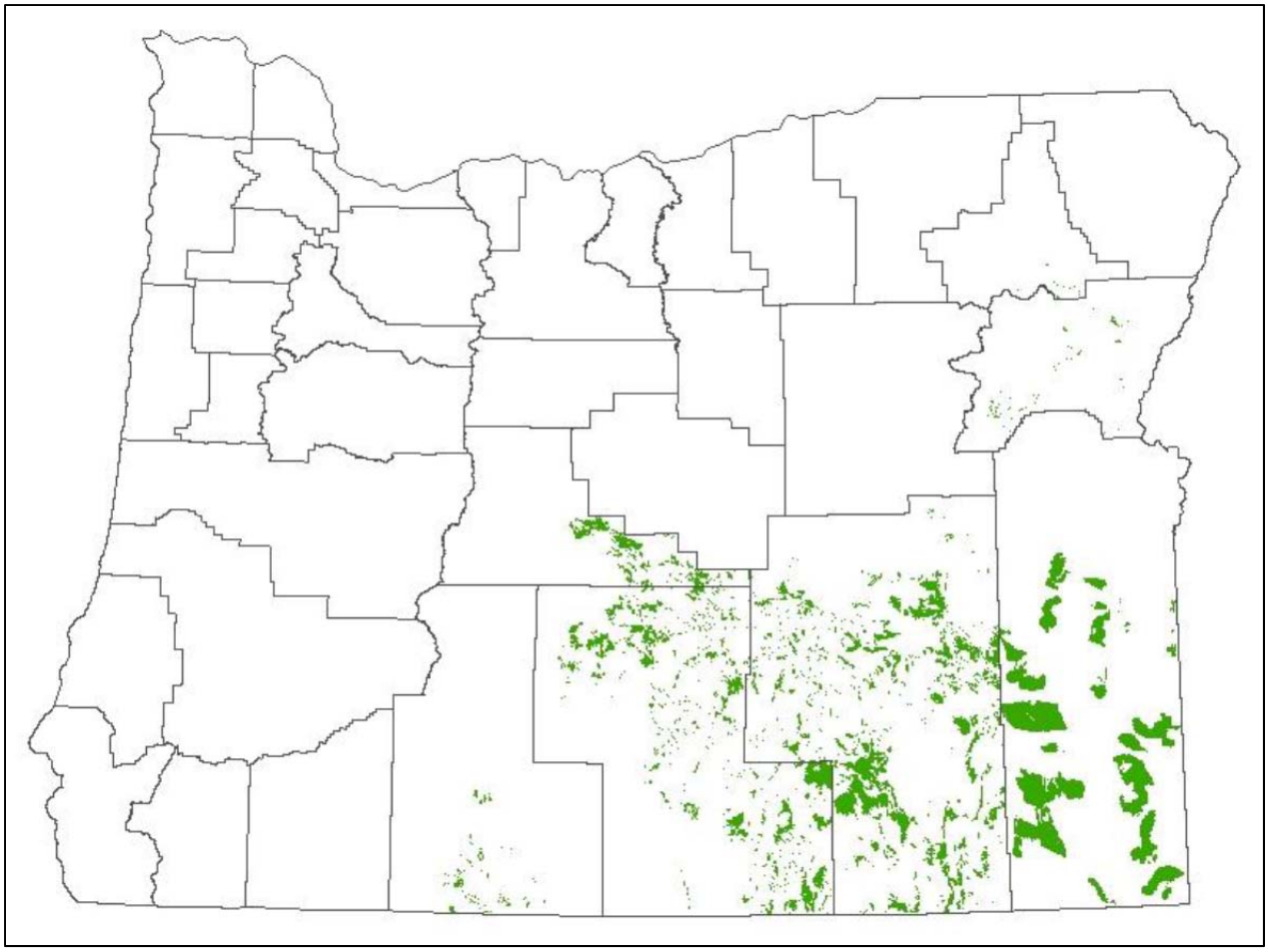


FIGURE 4-1. **Pygmy Rabbit Habitat Suitability in Oregon (Lennox and Jones 2009)**

Based on the Lennox and Jones (2009) habitat suitability model above, recording evidence of pygmy rabbit was not anticipated along the Project's Proposed Route in Oregon. There are some small suitable habitat patches in Baker County and Union County, although there were no historic records in those counties (ORBIC 2012). The Malheur S Alternative may be close to some of the northern-most suitable habitat patches in Malheur County. Based on Lennox and Jones habitat suitability model we did not expect to find any pygmy rabbit habitat in Baker County. However, during the 2012 TVES 1 suspected inactive pygmy rabbit burrow system was recorded in Baker County, Oregon. A Pygmy Rabbit Survey Form was completed and photos taken (Appendix F). Areas of potential pygmy rabbit habitat were recorded with a GPS point and some areas were photographed; these photos are also presented in Appendix F.

4.1.4 Burrowing Owls

During the 2012 TVES, 12 active burrows were confirmed by either seeing young at the burrow, or a pair of burrowing owls using a burrow/set of burrows with prey remains, pellets, and whitewash at the entrance. Due to the lack of substantial evidence found at the burrow(s) and the survey window closing before the 2nd surveys were able to be conducted, 6 areas need additional protocol-level surveys in 2013 to verify if burrows/territories are active within the survey corridor. The majority of the burrowing owl sightings occurred from MP 4 of the Malheur S Alternative to MP 295 of the Proposed Route. There were two adults confirmed in Baker County displaying breeding territory behavior, but no burrow was identified (Figure 4-2). Appendix G includes photos of burrows, owls, and sign, and a table that includes active burrows identified during the 2012 TVES and what potential areas need surveyed again in 2013 to confirm presence of a breeding territory.

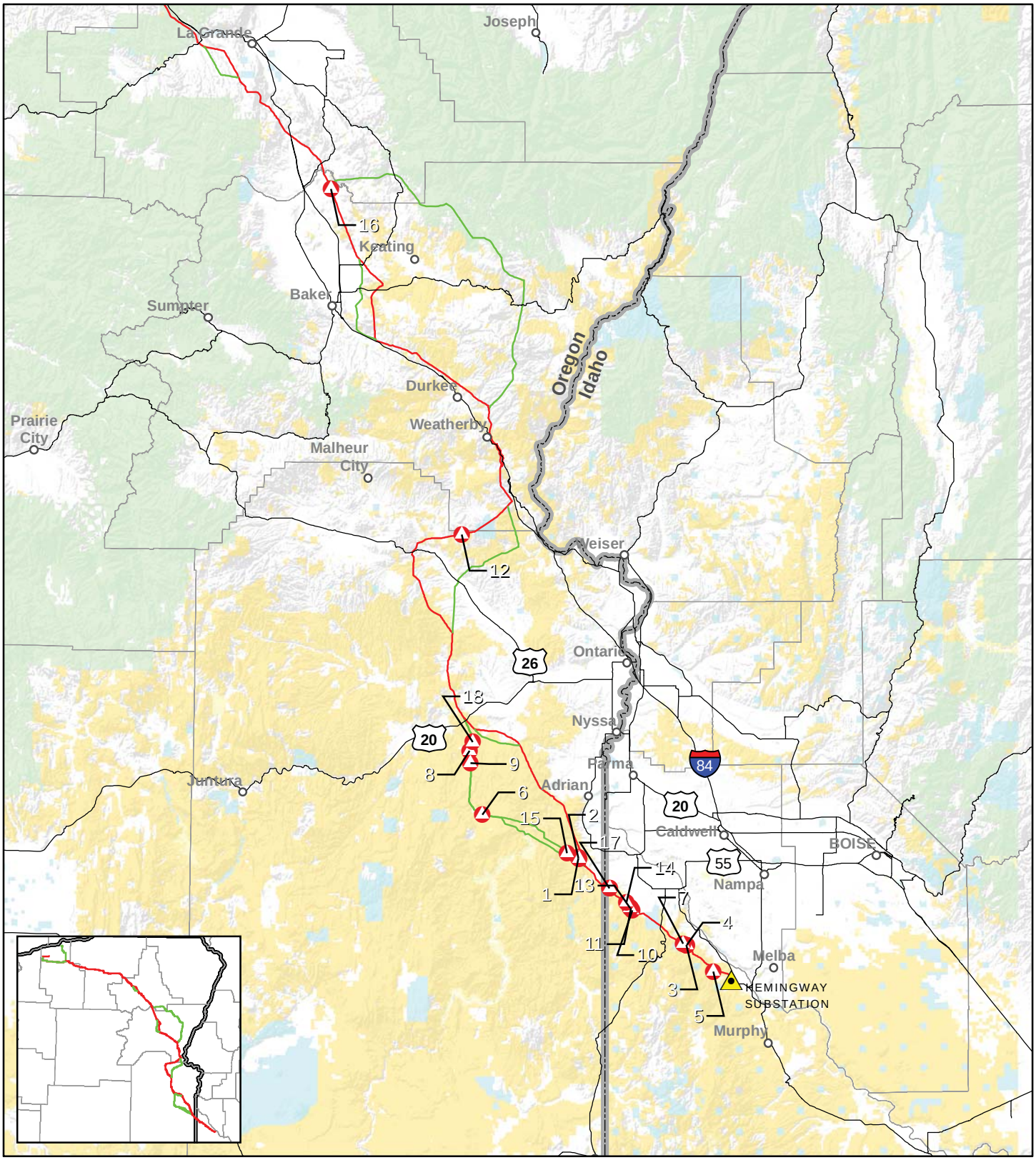


FIGURE 4-2
ACTIVE BURROWING OWL BURROWS

IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY TRANSMISSION LINE PROJECT

JANUARY 2013

4.1.5 Nests

Many nests were documented during the 2012 TVES. All special status species nests were documented in Appendix C. There were a few species that preferred to nest on the metal transmission line towers and within the wood poles; 4 western kingbirds, 3 red-tailed hawks, and 4 common ravens were found nesting on and within these structures. Nests were also recorded in cliff habitat; 1 ferruginous hawk, 1 golden eagle, and 1 barn owl were nesting in cliffs. One (1) Lewis' woodpecker was found nesting in a cottonwood tree.

Many sparrow nests were found as observers walked by sagebrush and flushed birds next to them; 11 Brewer's sparrow and 5 vesper sparrow nests were recorded in mid-June. In a few events, adult birds flushed the nest too quickly to positively identify the bird to species; if chicks were in the nest, it was too difficult to identify them to species without the eggs. Active raptor nests recorded within the survey corridor could be within the future construction disturbance footprint: 1 prairie falcon nest near MP 21.5, 1 ferruginous hawk nest near MP 7 of the Malheur S Alternative, 2 red-tailed hawk nests near MP 275.5 and MP 50.5, 1 Lewis' woodpecker near MP 192, 1 barn owl nest near MP 289, and 1 great horned owl nest near MP 205.5. A selection of nest photos are provided below.

Nests Recorded During 2012 TVES:

4.1.6 Columbia Spotted Frog

During the 2012 TVES, no Columbia spotted frogs were recorded. All water bodies intersecting the survey area were surveyed using the VES; surveyed water bodies included ponds, creeks, and rivers. The only amphibians recorded this year were pacific tree frogs and long-toed salamanders in adult and sub-adult forms.

4.1.7 General Wildlife

A list of all recorded wildlife species is presented below in Table 4-2. All data for recorded wildlife species are contained in Appendix H. During the 2012 TVES 142 avian, 13 reptile/amphibian, and 31 mammal species were recorded. Information covering general wildlife use and sign (i.e. tracks, scat, and burrows) was normally written on the survey maps rather than recording points for each set of tracks seen. A summary of these wildlife field notes can be found in Appendix I.

Table 4-2. Wildlife Species Identified During 2012 TVES

Birds		
AMCO	American coot	*Fulica americana*
AMCR	American crow	*Corvus brachyrhynchos*
AMDI	American dipper	*Cinclus mexicanus*
AMGO	American goldfinch	*Spinus tristis*
AMKE	American kestrel	*Falco sparverius*
AMRO	American robin	*Turdus migratorius*
AWPE	American white pelican	*Pelecanus erythrorhynchos*
BANS	Bank swallow	*Riparia riparia*
BAOW	Barn owl	*Tyto alba*
BARS	Barn swallow	*Hirundo rustica*
BBMA	Black-billed magpie	*Pica hudsonia*
BCCH	Black-capped chickadee	*Poecile atricapillus*
BCHU	Black-chinned hummingbird	*Archilochus alexandri*
BHGR	Black-headed grosbeak	*Pheucticus melanocephalus*
BTSP	Black-throated sparrow	*Amphispiza bilineata*
BGGN	Blue-gray gnatcatcher	*Polioptila caerulea*
BRBL	Brewer's blackbird	*Euphagus cyanocephalus*
BRSP	Brewer's sparrow	*Spizella breweri*
BRCR	Brown creeper	*Certhia americana*
BHCO	Brown-headed cowbird	*Molothrus ater*
BUOR	Bullock's oriole	*Icterus bullockii*
BUOW	Western burrowing owl	*Athene cunicularia hypugaea*
BUSH	Bushtit	*Psaltriparus minimus*
CAGU	California gull	*Larus californicus*
CAQU	California quail	*Callipepla californica*
CANG	Canada goose	*Branta canadensis*
CANW	Canyon wren	*Catherpes mexicanus*
CAFI	Cassin's finch	*Carpodacus cassinii*
CATE	Caspian tern	*Hydroprogne caspia*
CAVI	Cassin's vireo	*Vireo cassinii*
CEDW	Cedar waxwing	*Bombycilla cedrorum*
CBCH	Chestnut-backed chickadee	*Poecile rufescens*
CHSP	Chipping sparrow	*Spizella passerina*
CHUK	Chukar	*Alectoris chukar*
CITE	Cinnamon teal	*Anas cyanoptera*
CLNU	Clark's nutcracker	*Nucifraga columbiana*
CLSW	Cliff swallow	*Petrochelidon pyrrhonota*
CONI	Common nighhawk	*Chordeiles minor*
CORA	Common raven	*Corvus corax*
COHA	Cooper's hawk	*Accipiter cooperii*
DEJU	Dark-eyed junco	*Junco hyemalis*

Table 4-2. Wildlife Species Identified During 2012 TVES

DCCO	Double-crested cormorant	*Phalacrocorax auritus*
DOWO	Downy woodpecker	*Picoides pubescens*
DUFL	Dusky flycatcher	*Empidonax oberholseri*
DUGR	Dusky grouse	*Dendragapus obscurus*
EAKI	Eastern kingbird	*Tyrannus tyrannus*
EUCD	Eurasian collared-dove	*Streptopelia decaocto*
EUST	European starling	*Sturnus vulgaris*
FEHA	Ferruginous hawk	*Buteo regalis*
FOSP	Fox sparrow	*Passerella iliaca*
FRGU	Franklin's gull	*Leucophaeus pipixcan*
GADW	Gadwall	*Anas strepera*
GOEA	Golden eagle	*Aquila chrysaetos*
GCKI	Golden-crowned kinglet	*Regulus satrapa*
GCSP	Golden-crowned sparrow	*Zonotrichia atricapilla*
GRSP	Grasshopper sparrow	*Ammodramus savannarum*
GRCA	Gray catbird	*Dumetella carolinensis*
GRFL	Gray flycatcher	*Empidonax wrightii*
GRJA	Gray jay	*Perisoreus canadensis*
GRAP	Gray partridge	*Perdix perdix*
GBHE	Great blue heron	*Ardea herodias*
GREG	Great egret	*Ardea alba*
GHOW	Great horned owl	*Bubo virginianus*
GRSG	Greater sage-grouse	*Centrocercus urophasianus*
GTTO	Green-tailed towhee	*Pipilo chlorurus*
GWTE	Green-winged teal	*Anas crecca*
HAWO	Hairy woodpecker	*Picoides villosus*
HETH	Hermit thrush	*Catharus guttatus*
HOLA	Horned lark	*Eremophila alpestris*
HOFI	House finch	*Carpodacus mexicanus*
HOSP	House sparrow	*Passer domesticus*
HOWR	House wren	*Troglodytes aedon*
KILL	Killdeer	*Charadrius vociferus*
LASP	Lark sparrow	*Chondestes grammacus*
LAZB	Lazuli bunting	*Passerina amoena*
LEWO	Lewis' woodpecker	*Melanerpes lewis*
LISP	Lincoln sparrow	*Melospiza lincolnii*
LOSH	Loggerhead shrike	*Lanius ludovicianus*
LBCU	Long-billed curlew	*Numenius americanus*
MGWA	MacGillivray's warbler	*Oporornis tolmiei*
MALL	Mallard	*Anas platyrhynchos*
MOBL	Mountain bluebird	*Sialia currucoides*
MOCH	Mountain chickadee	*Poecile gambeli*
MODO	Mourning dove	*Zenaida macroura*
NOFL	Northern flicker	*Colaptes auratus*
NOGO	Northern goshawk	*Accipiter gentilis*
NOHA	Northern harrier	*Circus cyaneus*
NRWS	Northern rough-winged swallow	*Stelgidopteryx serripennis*
OSFL	Olive-sided flycatcher	*Contopus cooperi*
OCWA	Orange-crowned warbler	*Oreothlypis celata*
OSPR	Osprey	*Pandion haliaetus*

Table 4-2. Wildlife Species Identified During 2012 TVES

PEFA	Peregrine falcon	*Falco peregrinus*
PISI	Pine siskin	*Spinus pinus*
PRFA	Prairie falcon	*Falco mexicanus*
PYNU	Pygmy nuthatch	*Sitta pygmaea*
RECR	Red Crossbill	*Loxia curvirostra*
RBNU	Red-breasted nuthatch	*Sitta canadensis*
RBGU	Ring-billed gull	*Larus delawarensis*
RTHA	Red-tailed hawk	*Buteo jamaicensis*
RWBL	Red-winged blackbird	*Agelaius phoeniceus*
RNEP	Ring-necked pheasant	*Phasianus colchicus*
ROPI	Rock pigeon	*Columba livia*
ROWR	Rock wren	*Salpinctes obsoletus*
RLHA	Rough-legged hawk	*Buteo lagopus*
RCKI	Ruby-crowned kinglet	*Regulus calendula*
RUHU	Rufous hummingbird	*Selasphorous rufus*
SAGS	Sage sparrow	*Artemisiospiza belli*
SATH	Sage thrasher	*Oreoscoptes montanus*
SACR	Sandhill crane	*Grus canadensis*
SAVS	Savannah sparrow	*Passerculus sandwichensis*
SAPH	Say's phoebe	*Sayornis saya*
SSHA	Sharp-shinned hawk	*Accipiter striatus*
SEOW	Short-eared owl	*Asio flammeus*
SOSP	Song sparrow	*Melospiza melodia*
SPSA	Spotted sandpiper	*Actitis macularius*
SPTO	Spotted towhee	*Pipilo maculatus*
STJA	Stellar's jay	*Cyanocitta stelleri*
SWHA	Swainson's hawk	*Buteo swainsoni*
SWTH	Swainson’s thrush	*Catharus ustulatus*
TOSO	Townsend’s solitaire	*Myadestes townsendi*
TOWA	Townsend's warbler	*Dendroica townsendi*
TUVU	Turkey vulture	*Cathartes aura*
VESP	Vesper sparrow	*Pooecetes gramineus*
VGSW	Violet-green swallow	*Tachycineta thalassina*
WAVI	Warbling vireo	*Vireo gilvus*
WEBL	Western bluebird	*Sialia mexicana*
WEKI	Western kingbird	*Tyrannus verticalis*
WEME	Western meadowlark	*Sturnella neglecta*
WETA	Western tanager	*Piranga ludoviciana*
WEWP	Western wood-pewee	*Contopus sordidulus*
WBNU	White-breasted nuthatch	*Sitta carolinensis*
WCSP	White-crowned sparrow	*Zonotrichia leucophrys*
WTSW	White-throated swift	*Aeronautes saxatalis*
WITU	Wild turkey	*Melea gris gallopavo*
WISA	Williamson's sapsucker	*Sphyrapicus thyroideus*
WIFL	Willow flycatcher	*Empidonax traillii*
WIPH	Wilson’s phalarope	*Phalaropus tricolor*
WISN	Wilson's snipe	*Gallinago delicata*
WIWA	Wilson's warbler	*Wilsonia pusilla*
YWAR	Yellow warbler	*Dendroica petechia*
YBCH	Yellow-breasted chat	*Icteria virens*

Table 4-2. Wildlife Species Identified During 2012 TVES

YRWA	Yellow-rumped warbler	*Dendroica coronata*
Reptiles/Amphibians		
Desert horned lizard		*Phrynosoma platyrhinos*
Gopher snake		*Pituophis catenifer*
Long-nosed leopard lizard		*Gambelia wislizenii*
Long-toed salamander		*Ambystoma macrodactylum*
Mojave black-collared lizard		*Crotaphytus bicinctores*
Pacific tree frog		*Pseudacris regilla*
Pygmy short-horned lizard		*Phrynosoma douglassi*
Racer		*Coluber constrictor*
Sagebrush lizard		*Sceloporus graciosus*
Side-blotched lizard		*Uta stansburiana*
Western fence lizard		*Sceloporus occidentalis*
Western rattlesnake		*Crotalus viridis*
Western whiptail		*Cnemidophorus tigris*
Mammals		
Badger		*Taxidea taxus*
Belding's ground squirrel		*Urocitellus beldingi*
Black bear		*Ursus americanus*
Black-tailed jackrabbit		*Lepus californicus*
Chipmunk species		*Neotamias species*
Columbian ground squirrel		Urocitellus columbianus
Cougar		*Felis concolor*
Coyote		*Canis latrans*
Deer mouse		*Peromyscus maniculatus*
Douglas' squirrel		*Tamiasciurus douglasii*
Elk		*Cervus canadensis*
Golden-mantled ground squirrel		*Callospermophilus lateralis*
Ground squirrel species		*Urocitellus species*
Least chipmunk		*Neotamias minimus*
Long-tailed weasel		*Mustela frenata*
Mountain cottontail		*Sylvilagus nuttallii*
Mule deer		*Odocoileus hemionus*
Porcupine		*Erethizon dorsatum*
Pronghorn antelope		*Antilocapra americana*
Raccoon		*Procyon lotor*
Red squirrel		*Tamiasciurus hudsonicus*
Snowshoe hare		*Lepus americanus*
Vole spp.		*Cricetidae (family)*
White-tailed antelope squirrel		*Ammospermophilus leucurus*
White-tailed deer		*Odocoileus virginianus*
White-tailed jackrabbit		*Lepus townsendii*
Wild burro		*Equus asinus*
Wild horse		*Equus ferus caballus*
Woodrat species		*Neotoma species*
Yellow-bellied marmot		*Marmota flaviventris*
Yellow-pine chipmunk		*Neotamias amoenus*

4.1.8 Incidental Observations from Other Surveys

Separate protocol level helicopter surveys for raptor nests were conducted during the 2012 field season along all new proposed and alternative routes (Tetra Tech 2012c). During these aerial raptor surveys, biologists also recorded other wildlife species when encountered. The only special status species recorded within the TVES survey area included 3 long-billed curlews (2 between MP 17-18 of the Proposed Route and 1 between MP 21-22 of the Willow Creek Alternative). These data records were kept separate from the TVES data to avoid double counting. Records of active raptor nests recorded during the TVES were not included in the Raptor Nest Aerial Surveys report this year. The TVES identified 1 barn owl, 12-18 burrowing owl, 3 ferruginous hawk, 1 golden eagle, 1 possible great horned owl, 1 osprey, 1 prairie falcon, and up to 7 red-tailed hawk active nests.

During the rare plant surveys, some special status wildlife species were also recorded as incidentals. Observers identified 2 Mojave black-collared lizards were recorded near MP 297 on the Proposed Route, 2 golden eagles (both on Malheur S Alternative, in the vicinity of MP 7), and 2 prairie falcons (both on Malheur S Alternative, 1 near MP 7 and 1 with a nest near MP 20.3).

4.1.9 Unique Habitats

Part of the TVES protocol was to record unique wildlife habitats (e.g., snags, cliffs, mines, caves, and rock outcrops). In total, 97 unique wildlife habitats where identified during the survey. This includes 46 rock outcrops, 35 cliffs, 14 snags, 1 vertical mine shaft (outside the survey area), and 1 boulder pile housing a yellow-bellied marmot family. Rock outcrops, mine shafts, and snags provide potential bat habitat; although bats were not specifically surveyed for, based on the presence of some of these unique habitat types, there is potential that roosting (both hibernacula and maternity colonies) occurs within the survey area. Examples of unique habitats identified during the 2012 TVES are shown below.

Unique Habitats Recorded During 2012 TVES:

4.2 Vegetation

4.2.1 Ecological Systems and Habitat Types

OAR 635-415-0025 defines the Fish and Wildlife Habitat Mitigation Policy and provides a framework for assigning one of six category types to habitats based on the relative importance of these habitats to fish and wildlife species. The definition of each category type, as well as the initial category types are described in Appendix F of the 2011 BioSurvey Work Plan. Habitats located within the survey areas were classified into these six category types in accordance with OAR 635-415-0025.

Tetra Tech biologists identified and mapped ecological systems, which were rolled up into general vegetation types and habitat types within the survey area following the habitat categorization matrix (Appendix A). General vegetation types and habitat types are summarized

in this section. Habitat categories will be summarized in Exhibit P of the Preliminary Application for Site Certificate for the Boardman to Hemingway Transmission Line (IPC 2013a).

6 broad general vegetation types were identified and mapped within the 2012 survey area; 19 more specific habitat types are listed in Table 4-3. Shrub/grass was the most common general vegetation type (85 % of total survey area), followed by agriculture/developed (11% of total survey area), then forest/woodland (4%). Other general vegetation types made up less than 1 percent of the total survey area. Within the shrub/grass general vegetation type, shrub-steppe with big sagebrush was the most common habitat type with approximately 6,300 acres (47% of total survey area), followed by other, with approximately 2,800 acres (21%). The most common ecological system identified within the other habitat type under shrub/grass was introduced upland vegetation-annual grassland. Native grasslands and agriculture made up about 10 percent of the survey area. Less common habitat types composed less than 10 percent of the survey area (Table 4-3). Figures presenting habitat types are presented in Appendix J.

304 cover worksheets were completed during the 2012 TVES representing 63 percent of the habitat types identified (Table 4-3). Vegetation field data are contained in Appendix K and photographs of habitat types are presented in Appendix L.

Table 4-3. Summary of Habitat Types and Number of Cover Worksheets Completed during 2012 TVES

General Vegetation Types	Habitat Type	Acres	Percent of Survey Area	Number of Cover Worksheets Recorded	Percent of Cover Worksheets Recorded
Shrub/Grass	Shrub-Steppe with Big Sage	6,320	47%	182	60%
	Other	2,770	21%	41	13%
	Native Grasslands	1,292	10%	23	8%
	Desert Shrub	684	5%	20	7%
	Shrub-Steppe without Big Sage	222	2%	9	3%
Total Shrub/Grass		**11,288**	**85%**	**275**	**90%**
Agriculture/Developed	Agriculture	1,367	10%	9	3%
	Developed/Disturbed	106	1%	0	0%
Total Agriculture/Developed		**1,473**	**11%**	**9**	**3%**
Forest/Woodland	Mixed Grand Fir/Douglas Fir	283	2%	6	2%
	Ponderosa Pine	147	1%	6	2%
	Western Juniper/Mountain Mahogany Woodland	43	<1%	4	1%
	Forested-Other	7	<1%	0	0%
	Lodgepole Pine	1	<1%	1	<1%
Total Forest/Woodland		**481**	**4%**	**17**	**6%**
Wetland	Forested Wetland	38	<1%	0	0%
	Emergent Wetland	19	<1%	1	<1%
	Wetland-Other	<1	<1%	2	1%
	Scrub-Shrub Wetland	<1	<1%	0	0%

Table 4-3. Summary of Habitat Types and Number of Cover Worksheets Completed during 2012 TVES

General Vegetation Types	Habitat Type	Acres	Percent of Survey Area	Number of Cover Worksheets Recorded	Percent of Cover Worksheets Recorded
Total Wetland		**57**	**<1%**	**3**	**1%**
Bare Ground	Bare Ground Cliffs Talus	23	<1%	0	0%
Open Water/Unvegetated Wetland	Intermittent Streams	2	<1%	0	0%
	Ponds and Lakes	1	<1%	0	0%
Total Open Water/Unvegetated Wetland		**3**	**<1%**	**0**	**0%**
Grand Total		**13,325**	**100%**	**304**	**100%**

Habitat types within the wetland and open water/unvegetated wetland general vegetation groups (Table 4.3) include areas that were both identified and delineated as wetlands and areas that have yet to be visited and delineated as wetlands and are presented in Exhibit J (IPC 2013b) and the 2011 Wetland Delineation Reports (Tetra Tech 2012f). The habitat types that fall under these general vegetation groups (Appendix A) represent both riparian and wetland vegetation, but detailed vegetation and percent aerial cover are not included in this report. Many of these areas are not delineated wetlands, but instead represent riparian areas or corridors, and were mapped from aerial imagery based from unique feature points, as described in the unique habitats section below. For more details regarding wetlands, see the 2011 Wetland Delineation Reports (Tetra Tech 2012f).

4.2.2 Unique Habitats

Part of the TVES protocol was to identify, document, and record unique vegetation habitats including potential wetlands, areas where existing and proposed roads cross streams or drainages, and potential special status plant habitat. Stream crossing and potential wetland data points were utilized to help identify and map riparian and wetland vegetation types, as described in the Ecological Systems and Habitat section above.

Wetlands and stream systems are rare or limited habitat in the survey area. Wetlands and streams were surveyed in depth as part of the wetland delineation and Waters of the United States (Waters) reporting process, which is subject to review by the Oregon Division of State Lands (DSL) and the US Army Corps of Engineers (ACOE) (Tetra Tech 2012f). In support of the delineation and Waters identification process, biologists documented 444 stream and stream crossing features, including canals and ditches, that were either areas where proposed roads cross streams or drainages or areas where a National Hydrography Dataset features overlapped the survey area, but no stream or ephemeral feature was present. An additional 273 ephemeral drainages were marked and 95 potential wetlands and/or springs or seeps were marked. These features will be compared against wetland and Waters features from the delineation survey to ensure no features where overlooked by wetland and Waters field crews. These potential wetland and stream system points were also incorporated into the ecological system and habitat types data layer.

Potential wetlands and stream features were photographed and a GPS point was taken. Engineers will utilize these data to help place and select appropriate crossing locations and type. Photographs and estimates of bank width and depth are presented in Appendix L and Appendix K.

3 special status plant species were identified, mapped, and habitat information collected during the 2012 TVES. These species included Cronquist's stickseed (*Hackelia cronquistii*), Snake River goldenweed (*Pyrrocoma radiata*), and Douglas' clover (*Trifolium douglasii*). These species and their occurrence data are summarized in the 2012 Special Status Plant Species Surveys technical report (Tetra Tech 2012d). In addition, potential special status plant habitat was marked with a GPS point and data were supplied to the special status plant survey crew, who performed protocol surveys (Tetra Tech 2012d).

Other unique features documented with a GPS point and included; rock outcrops, talus slopes, areas with unique soils, including playas, small patches of unique habitats including scabland sagebrush (*Artemisia rigida*) outcrops, netleaf hackberry (*Celtis laevigata* var. *reticulata)* patches, curl-leaf mountain mahogany (*Cercocarpus ledifolius*) patches, and fenced mine shafts and areas of previous mining activities, and cattle ponds and troughs (Appendices K and L).

4.2.3 Noxious Weeds

All identified Oregon and Idaho noxious weeds were recorded and the size of infestation estimated during the TVES. The list of noxious weeds utilized during the 2012 survey, along with all Oregon and Idaho listed noxious weeds are listed in Appendix B. Noxious weeds are non-native, invasive species that threaten agriculture, rangelands, waterways, parks, wildlife, property values, public health and safety, and the general ecological health and diversity of native ecosystems. Noxious weeds are defined by the Oregon State Weed Board and Idaho State Statutes as plants that have the potential to cause injury to public health, agriculture, recreation, wildlife, livestock, land or other property, public or private property (Oregon Department of Agriculture 2012b, State of Idaho 2012).

A total of 22 noxious weed species were identified within the survey area during the 2012 TVES. Biologists estimated the size of each infestation based on the following categories: individuals, less than 1 acre, 1-5 acres, greater than 5 acres, or scattered throughout. For purposes of displaying estimated acres of each noxious weed identified, each category was converted to the following: individuals to 0.1 acre, less than 1 acre to 0.5 acre, 1-5 acres to 2 acres, greater than 5 acres to 5 acres, and scattered throughout to 10 acres.

All noxious weeds observed within the survey area are summarized in Table 4-4 by state and county, and include each state listing and category, along with its estimated number of acres. All noxious weed locations are displayed in the Habitat Type Mapbook (Appendix J).

Table 4-4. Noxious Weed Species Identified during 2012 TVES

County	Common Name	Latin Name	Noxious Weed Category	Number of Occurrences	Estimated Acres
Morrow County, OR	Diffuse Knapweed	*Centaurea diffusa*	List B	32	106
	Kochia	*Kochia scoparia*	List B	28	97
	Yellow Starthistle	*Centaurea solstitialis*	List B	21	84
	Scotch Thistle	*Onopordum acanthium*	List B	19	26
	Canada Thistle	*Cirsium arvense*	List B	5	14

Table 4-4. Noxious Weed Species Identified during 2012 TVES

County	Common Name	Latin Name	Noxious Weed Category	Number of Occurrences	Estimated Acres
	Russian Knapweed	*Acroptilon repens*	List B	4	10
	Perennial Pepperweed	*Lepidium latifolium*	List B	3	2
	Houndstongue	*Cynoglossum officinale*	List B	1	1
	Jointed Goatgrass	*Aegilops cylindrical*	List B	1	1
	Puncturevine	*Tribulus terrestris*	List B	1	1
Morrow County Total				**115**	**338**
Umatilla County, OR	St. Johnswort	*Hypericum perforatum*	List B	28	139
	Houndstongue	*Cynoglossum officinale*	List B	21	79
	Canada Thistle	*Cirsium arvense*	List B	19	19
	Medusahead rye	*Taeniatherum caput-medusae*	List B	12	64
	Scotch Thistle	*Onopordum acanthium*	List B	6	1
	Field Bindweed	*Convolvulus arvensis*	List B	4	21
	Yellow Starthistle	*Centaurea solstitialis*	List B	3	20
	Oxeye Daisy	*Leucanthemum vulgare*	Not listed	3	2
	Russian Knapweed	*Acroptilon repens*	List B	1	10
	Diffuse Knapweed	*Centaurea diffusa*	List B	1	0
Umatilla County Total				**98**	**353**
Union County, OR	Houndstongue	*Cynoglossum officinale*	List B	53	173
	Canada Thistle	*Cirsium arvense*	List B	33	59
	Scotch Thistle	*Onopordum acanthium*	List B	14	24
	St. Johnswort	*Hypericum perforatum*	List B	10	32
	Medusahead rye	*Taeniatherum caput-medusae*	List B	4	32

Table 4-4. Noxious Weed Species Identified during 2012 TVES

County	Common Name	Latin Name	Noxious Weed Category	Number of Occurrences	Estimated Acres
	Musk Thistle	*Carduus nutans*	List B	3	20
	Poison Hemlock	*Conium maculatum*	List B	2	<1
Union County Total				**119**	**340**
Baker County, OR	Hoary cress whitetop	*Lepidium draba (Cardaria)*		125	241
	Scotch Thistle	*Onopordum acanthium*	List B	98	175
	Medusahead rye	*Taeniatherum caput-medusae*	List B	87	309
	Field Bindweed	*Convolvulus arvensis*	List B	58	115
	Jointed Goatgrass	*Aegilops cylindrical*	List B	36	96
	Canada Thistle	*Cirsium arvense*	List B	10	5
	Kochia	*Kochia scoparia*	List B	8	16
	Poison Hemlock	*Conium maculatum*	List B	6	6
	Houndstongue	*Cynoglossum officinale*	List B	5	4
	Diffuse Knapweed	*Centaurea diffusa*	List B	4	2
	Musk Thistle	*Carduus nutans*	List B	1	2
	Russian Knapweed	*Acroptilon repens*	List B	1	1
Baker County Total				**439**	**971**
Malheur County, OR	Scotch Thistle	*Onopordum acanthium*	List B	127	200
	Medusahead rye	*Taeniatherum caput-medusae*	List B	82	329
	Hoary cress whitetop	*Lepidium draba (Cardaria)*		52	132
	Canada Thistle	*Cirsium arvense*	List B	39	242
	Field Bindweed	*Convolvulus arvensis*	List B	32	34
	Musk Thistle	*Carduus nutans*	List B	25	20

Table 4-4. Noxious Weed Species Identified during 2012 TVES

County	Common Name	Latin Name	Noxious Weed Category	Number of Occurrences	Estimated Acres
	Halogeton	*Halogeton glomeratus*	List B	5	30
	Scotch Broom	*Cytisus scoparius*	List B	3	3
	Kochia	*Kochia scoparia*	List B	2	3
	Perennial Pepperweed	*Lepidium latifolium*	List B	1	10
	Rush Skeletonweed	*Chondrilla juncea*	List B	1	<1
	Saltcedar	*Tamarix ramosissima*	List B	1	<1
Malheur County Total				**370**	**1003**
Owyhee County, ID	Halogeton	*Halogeton glomeratus*	Not listed	8	50
	Kochia	*Kochia scoparia*	Not listed	5	33
	Medusahead rye	*Taeniatherum caput-medusae*	Not listed	4	1
	Scotch Thistle	*Onopordum acanthium*	Statewide Containment List	3	1
	Canada Thistle	*Cirsium arvense*	Statewide Containment List	2	1
	Musk Thistle	*Carduus nutans*	Statewide Control	2	<1
	Whitetop	*Cardaria draba*	Statewide Containment List	1	10
Owyhee County Total				**25**	**96**
Total				**1166**	**3102**

Scotch thistle had the greatest number of occurrences identified during 2012 surveys, with 267 mapped, followed by Medusahead rye, whitetop, and Canada thistle (Table 4-4). Medusahead rye had the most total estimated acreage, with approximately 740 acres, followed by scotch thistle (430 acres), whitetop (380 acres), Canada thistle (340 acres), and houndstongue (220 acres, Table 4-4). Adjacent land use and disturbances that have likely contributed to the introduction of noxious weeds in the survey area predominantly included grazing, roads, and fire, with agriculture, logging, wildlife and recreation disturbances being less frequent.

5.0 CONCLUSION

The TVES provided an effective passive sampling technique for detecting mammals, birds, reptiles, and amphibians. There were 186 wildlife species recorded during the 2012 TVES (31 mammal, 142 avian, and 13 reptile/amphibian species); 7 of the recorded bird species were also listed on PIF's watch list. Of the 186 recorded species, 34 were special status wildlife species (2 mammal, 30 avian, and 2 reptile). The TVES results offered a snapshot for the potential of locating a particular species, although the lack of detecting a species does not infer absence of that species due to the limitations existing with this survey technique.

Other wildlife species and wildlife resources recorded during the 2012 TVES:

- 12 active burrowing owl burrows were recorded, 6 additional areas within the survey area need protocol-level surveys in 2013 to verify if burrows/territories are active;
- 1 possible inactive pygmy rabbit burrow system found in Baker County. Potential pygmy rabbit habitat, consisting of >5% big sage-brush species, was mapped for 4,539 acres from Baker County, Oregon to Owyhee County, Idaho. There were only 855 acres of potential habitat in the more commonly preferred habitat category of >30% big sage-brush species;
- 56 nests identified from 24 different species, excluding burrowing owl burrows;
- No Columbia spotted frogs recorded, although Pacific tree frogs and long-toed salamanders in adult and sub-adult stages observed; and
- 97 unique wildlife habitats where identified during the survey, including 46 rock outcrops, 35 cliffs, 14 snags, 1 vertical mine shaft, and 1 boulder pile.

Although not all species could be detected using this sampling technique, the TVES method was used to cover a large survey area within a limited survey window. The TVES helped determine general wildlife species diversity (what species are present and how many of each there are within a specified area and time) and what areas each special status wildlife species were selecting. The TVES method proved to be an efficient way to concurrently survey for wildlife, map habitat types, record noxious weed infestations, and identify potential wetlands, stream crossings, and potential special status plant habitat that may require further protocol level survey throughout the survey area.

Furthermore, the TVES contributed information necessary to refine ODFW's habitat categorization process, a process designed to determine the appropriate mitigation values for loss of or damage to wildlife habitat during Project construction and operation. Habitat categories will be summarized in Exhibit P (IPC 2013a). During 2012 surveys, 19 habitat types, three special status plant species, and 22 noxious weed species were identified and mapped within the survey area. The most common habitat type was shrub-steppe with big sagebrush. In addition, unique habitats such as potential wetlands, streams, and potential special status plant habitat were identified and mapped.

Additional TVES will be conducted to close data gaps where access to private property was denied or changes to the Project Site Boundary are proposed. This will ensure that necessary data on special status species, habitat types, and wetlands and stream crossings are collected prior to ground-disturbing activities. The results from the TVES will give land/resource management agencies specific information on wildlife and plant species and their occurrence within the Project Site Boundary. TVES will be used to assist with final siting of the proposed transmission line and related and supporting facilities, evaluate the potential impacts of construction, operations, and maintenance of the project, provide the basis for environmental protection measures, and inform mitigation plans.

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APPENDICES

In an effort to conserve resources all appendices have been included on a CD.

Appendix A	Habitat Categorization Matrix
Appendix B	Oregon and Idaho State Listed Noxious Weeds
Appendix C	Special Status Wildlife Species Mapbook
Appendix D	Special Status Wildlife Species Photos
Appendix E	Potential Pygmy Rabbit Habitat Mapbook
Appendix F	Pygmy Rabbit Survey Results
Appendix G	Burrowing Owl Survey Results
Appendix H	Wildlife Data
Appendix I	Wildlife Field Note Summary
Appendix J	Habitat Types Mapbook
Appendix K	Vegetation Data Tables
Appendix L	Vegetation Photos