

**Vegetation Resources and Wildlife Habitat Assessment
of the Proposed Parking Lot Developments and
Development of a New Park Maintenance and Ranger
Office Facility in Mt. Spokane State Park**



Pacific Biodiversity Institute

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September 2009

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Recommended Citation

Smith IV, H. S., 2009. Vegetation Resources and Wildlife Habitat Assessment of the Proposed Parking Lot Developments and Development of a New Park Maintenance and Ranger Office Facility in Mt. Spokane State Park. Pacific Biodiversity Institute, Winthrop, Washington. 42 pp.

Project Funding

This project was funded by the Washington State Parks and Recreation Commission through contract AE 709-191.

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Introduction

To assist master planning efforts taking place in Mt. Spokane State Park (MSSP), Pacific Biodiversity Institute conducted field inventories in the summer of 2009 on the vegetation and wildlife habitat resources within and near the proposed development footprints of 8 trails, 2 proposed parking lots, 1 proposed maintenance facility, and 1 proposed primitive campsite (Figure 1 – does not include the campsite location which is in the Mt. Kit Carson meadows). In addition we assessed environmental impacts to vegetation and wildlife resources likely to be brought by the proposed developments.

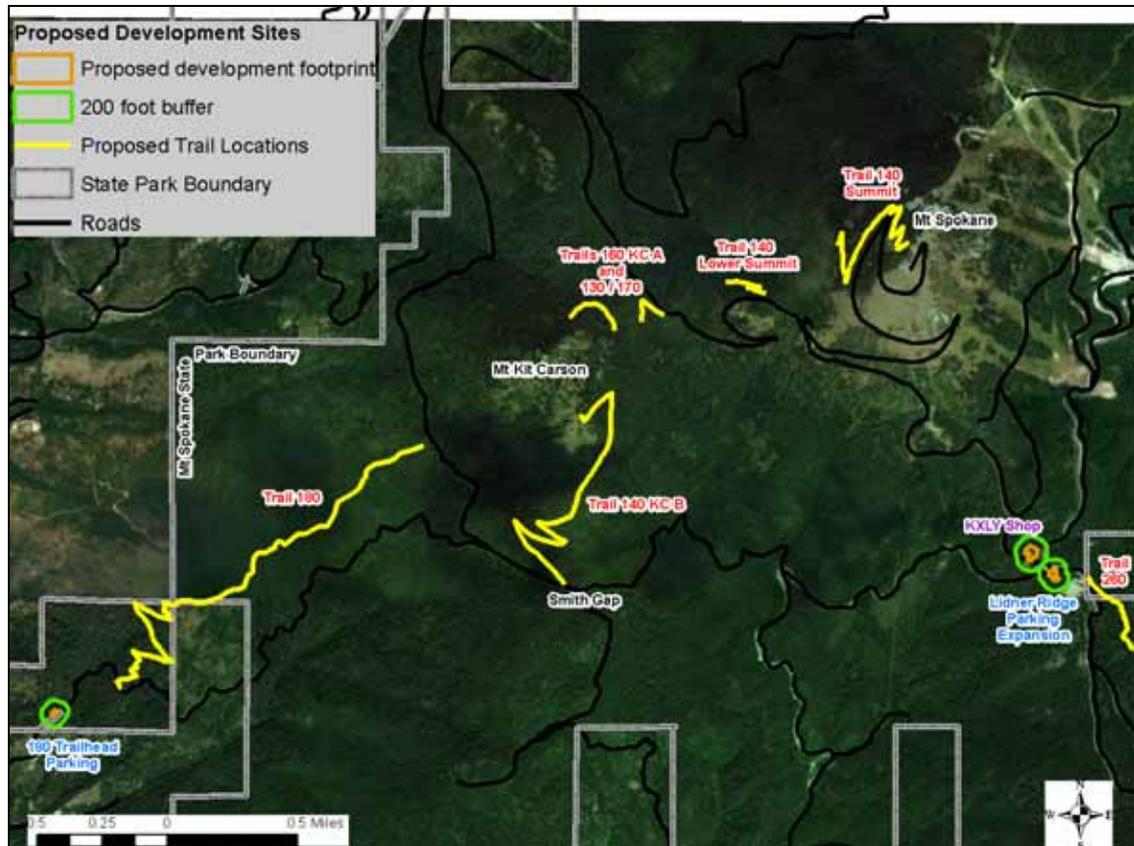


Figure 1. Map depicting the locations of the trail (names labeled in red), parking lot (names labeled in blue), and maintenance facility (name labeled in purple) developments proposed in the updated Mt Spokane Park Master Plan.

This report focuses on the assessment of impacts from the proposed parking lot and maintenance facility developments. The proposed trails and campsite are discussed in another group of reports titled Vegetation Impacts Assessment of Proposed Trail Additions in Mount Spokane State Park (Wooten et al. 2009), Wildlife Species and Habitat Assessment of Proposed Trails in Mount Spokane State Park (Romain-Bondi 2009), and Vegetation and Habitat Assessment of the Mount Kit Carson Meadows and Adjacent Habitats (Smith 2009). Additionally, Pacific Biodiversity Institute has produced a suite of deliverables derived from fieldwork, remote sensing analysis, and literature review from 2007 to the present that map, quantify, describe, and illustrate the

quantity and quality of vegetation resources and wildlife habitat within various regions of Mt. Spokane State Park (see References Section). These deliverables, in addition to the 2009 field surveys of the impact sites, have been drawn upon to produce the statements of environmental impact contained within this report.

Methods

The 2009 field surveys of proposed developments described within this report consisted of locating the footprints of the proposed developments on the ground, mapping these footprints using GPS and mobile GIS (ArcPad 8.0), identifying the field survey zone by buffering the outer edges of the proposed development footprints by 200 feet (as required in our work contract), and taking detailed notes on the existing vegetation communities, their ecological conditions, and the presence of any special status plant species (vascular plant species with federal or state protection) within the proposed development footprints and/or the greater survey zone. Notes were also taken on the presence and character of noxious weed invasions, important wildlife habitat elements and/or signs of occupancy (we focused these observations on the 21 wildlife species identified in the Habitat Elements and Life Stage Matrix [Romain-Bondi et al. 2009] – see Appendix A for the list of species), and other site specific details that might be environmentally sensitive and/or important to special status wildlife species.

Extensive review and some analysis of remote sensing and high resolution spatial data detailing resource conditions in the park and surrounding landscapes was also conducted after the completion of field surveys. Review of scientific and resource management literature relevant to the resource types encountered in the field was conducted as well.

Proposed 180 Trailhead Parking Lot

Description of Proposed Development

The developed area footprint of the Trail 180 trailhead parking lot is slightly less than 0.25 acres. The trailhead parking lot is to be cleared of all vegetation and surfaced with packed earth or gravel. The site currently has approximately 20% slope from its highest point down to the Day – Mt. Spokane Road. Excavation and grading is expected to occur to make the parking site adequate in size for use by pickup trucks pulling horse trailers. The parking area will be large enough to accommodate around 20 normal size vehicles at maximum capacity. Horse trailers will be able to safely access and maneuver within the parking area. Access to the proposed parking area will require that a short access road be constructed through the existing road bank. A pit toilet will be constructed within the parking area to accommodate users and control unwanted littering in the surrounding landscape.

The Trail 180 trailhead parking lot will be constructed along the western boundary of MSSP, just west and uphill of the existing park boundary gate along the Day – Mt. Spokane Road (Figures 2 and 3). This site is nearly 0.4 miles from where the proposed Trail 180 departs the Day – Mt. Spokane Road, and trailhead users will have to utilize the portion of the Day – Mt. Spokane Road not open to motorized vehicles (behind the gate) to access the beginning of the 180 trail from the proposed trailhead parking area.



Figure 2. Photo illustrating the location of the proposed parking lot in reference to the park access gate along the Day – Mt. Spokane Road (photo is taken from outside the park boundary looking Northeast into the proposed parking area in the red box on the left).

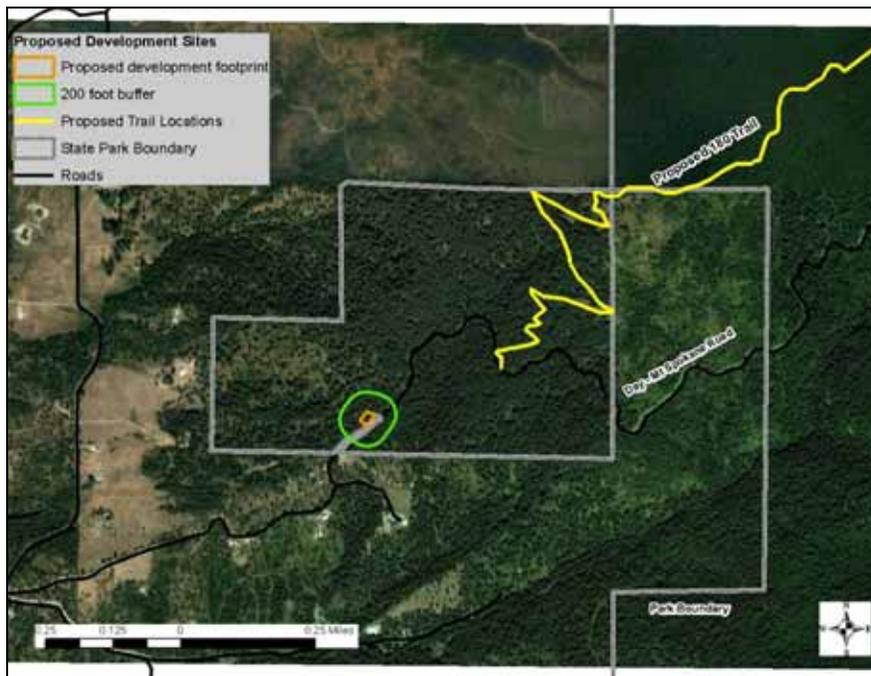


Figure 3. Map depicting the location of the proposed 180 trailhead parking lot footprint along the western boundary of MSSP.

Inventory Results

No special status vascular plants were found within the survey area.

The proposed parking area will occur on a site that is currently forested, although the site is very near the edge of the park where industrial forest activities and home site development have greatly altered the forest canopy and understory conditions (Figure 4). The site is located along the edge of a large, contiguous, and mostly even-aged secondary forest patch that exists within the park parcel that is detached from the rest of the park along the park's western boundary (Figure 3 on previous page). This forest patch runs from an elevation of 2800 feet in the southwest corner of the parcel, to nearly 3800 feet in the northeast corner. The proposed development footprint occurs at roughly 3100 feet in elevation on a gentle south facing slope. Along the slopes with more southern exposure in this area, 60 – 70 year old Douglas-fir and ponderosa pine dominate the forest canopy, with some areas containing young grand fir regeneration in the forest sub-canopy. The dominant vegetation community on these more southern facing slopes is the ponderosa pine - Douglas-fir / mallow ninebark forested plant association (*Pinus ponderosa* - *Pseudotsuga menziesii* / *Physocarpus malvaceus*, State imperiled (S2)). The grand fir / mallow ninebark forested plant association (*Abies grandis* / *Physocarpus malvaceus*, State imperiled – Globally rare (S2G3)) is also common in this area.

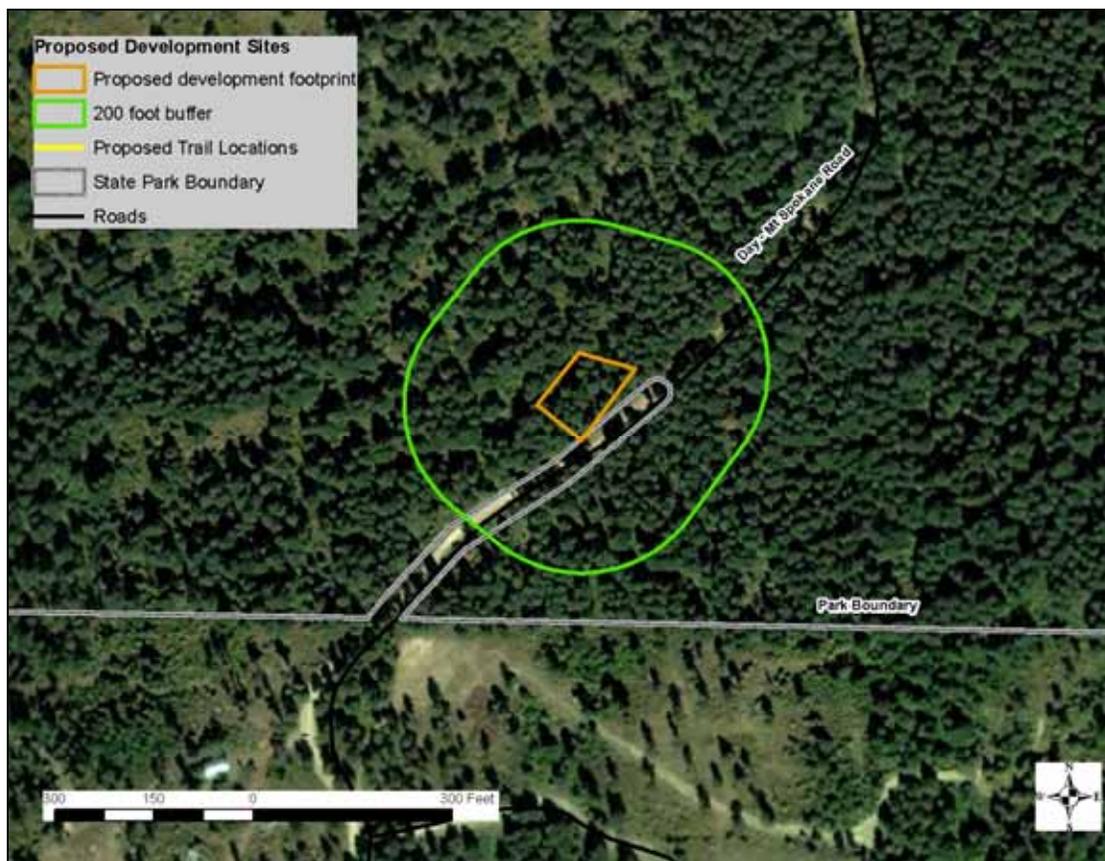


Figure 4. Map illustrating the nearness of the proposed development to other developments and human disturbed forests along the edge of the park boundary.

The footprint of the proposed parking area will occur within the ponderosa pine - Douglas-fir / mallow ninebark community, although the forest on the opposite side of the Day – Mt. Spokane Road is more representative of the grand fir / mallow ninebark community. The proposed forest clearing will occur on a site that is adjunct to the existing non-forested corridor that is the Day – Mt. Spokane Road. The width of the forest canopy separation due to the road in this area is nearly 20 to 30 feet. Removal of the trees for parking lot development would create a new rectangular forest canopy opening roughly 100 feet by 80 feet wide. Including the canopy opening caused by the existing road, the forest canopy opening in this area could reach up to 150 feet in width. Dimensions of understory vegetation loss would be nearly equivalent to forest canopy loss.

The forest where the proposed parking lot will occur consists mostly of native plants that have re-established themselves after the area was industrially logged 60 to 80 years ago. Old skid roads criss-cross the proposed development site, illustrating the history of human disturbance in the area. Figure 5 provides a very close-up view of the proposed development footprint, and the red lines in the figure illustrate the location of these skid roads relative to the development footprint. Figure 6 provides a photo of these features.



Figure 5. A close up view of the proposed development footprint overlaid an aerial photograph. The red lines represent the approximate locations of old skid roads through and near the proposed development footprint.



Figure 6. Old skid road that passes through the proposed development footprint.

Along the disturbed soils footprint of the Day – Mt Spokane road within the survey area, some noxious weeds occur in very small populations. These include Class B weeds such as Dalmatian toadflax (*Linaria dalmatica*) and spotted knapweed (*Centaurea stoebe*), and Class C weeds such as common St. Johnswort (*Hypericum perforatum*). Some small patches of common St. Johnswort were found within the proposed development footprint as well. These noxious weeds are effectively absent in the surrounding closed canopy forest landscape.

Trees within the proposed development footprint were typically 40 to 60 feet tall and ranged from 10 to 20 inches in diameter. Species composition was evenly split between ponderosa pine and Douglas-fir. Forest canopy closure was estimated at 60 to 70%. No large snags and very little coarse woody debris of significant size were located within or near the proposed development site. The amount and height of shrub cover varied throughout the survey area, but ranged around 15 to 20% ground cover and 1 to 8 feet tall. Mallow ninebark, oceanspray (*Holodiscus discolor*), and white spirea (*Spiraea betulifolia*) were the dominant shrubs. Pinegrass (*Calamagrostis rubescens*) was common in the understory. Infestations of dwarf mistletoe were apparent in some upper canopy trees to the south and west of the proposed development footprint. During construction of the new parking area it is likely that 15 to 20 trees will have to be removed to create the parking area.

Habitat conditions currently available in the proposed development area are suitable for many of the life stages of the 21 focal wildlife species; however the available habitat is not currently critical, of extreme high quality, nor limited within the area for these species. Table 1 lists the wildlife and life stages for which the habitat conditions are suitable within the proposed development survey area.

Table 1. The proposed development area provides potential habitat for these focal wildlife species' life stages.

Species	Life-Stage	Species	Life-Stage
Carnivores		Birds	
Gray wolf	dispersal	Northern goshawk	foraging
	summer foraging	Dusky grouse	breeding/nesting
	winter foraging		summer foraging
Canada lynx	dispersal	Brown creeper	foraging
	summer foraging	Winter wren	breeding/nesting, summer foraging
Wolverine	summer foraging	Olive-sided flycatcher	breeding/nesting
	winter foraging		foraging
American marten	non-winter cover, foraging	Small Mammals	
	winter cover, foraging	Pygmy shrew	breeding/parturition, foraging
Ungulates		Silver-haired bats	Breeding/parturition, roosting
Rocky Mountain elk	cover		foraging
	summer/fall foraging	Hoary bats	day roosting
	winter foraging		foraging
White-tailed deer	early/late winter foraging	Amphibians	
	mid-winter cover	Western toad	migration, foraging
Moose	cover		
	summer foraging		
	winter foraging		

The ponderosa pine – Douglas-fir forest series is typified by a high frequency - low intensity wildfire disturbance cycle. A dry forest stand such as is found on and surrounding the proposed development site probably had a historical low intensity fire return interval of 7 to 25 years (Cooper et al. 1991). No evidence on site suggests that a fire has occurred in this forest stand since the industrial logging activities took place 60 plus years ago. Live vegetation fuels such as small understory trees, deep pine needle litter, and abundant shrub cover are the principal fire risk agents currently building up on the site. Absence of fire and/or fuel treatments over the course of the next few decades may dramatically increase the risk of catastrophic wildfire throughout this forest patch.

Figures 7 – 9 provide some representative photos of the habitat and vegetation conditions within the proposed development area.



Figure 7. Representative photo of forest structure within the proposed development footprint.



Figure 8. Photo of the proposed development footprint taken from the Day – Mt. Spokane Road.



Figure 9. Photo taken from the proposed development footprint of the Day – Mt. Spokane Road and the developed/disturbed sites beyond it that occur outside of the park boundary.

Vegetation Impacts

Affected Environment

The proposed development occurs within a state imperiled vegetation community (ponderosa pine - Douglas-fir / mallow ninebark). This forest community is not common within the park given that it occurs at elevations below which most of the park encompasses. Within this area of the park the forests are in fair to good ecological condition, however the forest stands in this area are simplified second or third growth forests that have re-established from industrial logging activities in the 1940s, 50s, or 60s. These mid-successional forest stands are not known to provide high quality habitat to special status plant species in this area, and no special status plants have been identified in the impact region. The proposed development footprint is not placed near any sensitive or unique environmental features such as riparian areas or steep unstable slopes. It is very near to other highly to moderately disturbed sites such as private residences and recently logged industrial forest lands outside the nearby park boundary. The proposed development site is very near to the edge of a large contiguous forest patch which is artificially interrupted by human development and logging disturbances. The site occurs directly along side a wide road corridor devoid of vegetation. The site represents more of a forest edge system that has been and continues to be significantly influenced by human disturbance. Forests within the park in this area have missed one to two low intensity wildfire intervals, contributing to a build up of small fuels and thick undergrowth of woody shrubs and small trees.

Environmental Consequences

The primary issues associated with vegetation resources include: (1) effects of vegetation removal; (2) potential impacts on vegetation communities of statewide conservation significance; and (3) increased risk of human caused wildfire. Based on the lack of occurrence of designated critical habitat within the project area, no adverse effects to special status plant species would occur as a result of implementing either of the alternatives.

No Action

The no action alternative would not remove any existing vegetation within the proposed development site, therefore there would be no effects associated with vegetation removal. The impacts to a vegetation community of statewide conservation significance would be neutral, as a quarter acre of the ponderosa pine – Douglas-fir / mallow ninebark forest community would not be physically removed and prevented from re-establishing. Human caused wildfire risk will remain similar to current risk levels, which are moderately high given the proximity of the location to a publicly accessible road, a housing development, industrial forest lands, and given that a build up of fine fuels is occurring that would more readily carry a wildfire through the landscape.

Proposed Action

General effects

To convert the existing forest cover to a non-paved parking area, nearly a quarter acre of natural forest cover would be removed along the edge of a large contiguous forest patch that is 200 to 250 acres in size. The new canopy opening would only slightly increase the already significant edge effects caused by the nearby developed and industrial logging areas and the canopy clearing associated with the Day – Mt. Spokane Road.

Specific Effects

All vegetation and a large amount of topsoil will need to be removed from the proposed development site via mechanical equipment. The small access road and part of the parking area will need to be adequately graded and compacted to allow safe access of trucks towing horse trailers. Heavy equipment used in the vegetation clearing, soil excavation, and earth compaction processes can be kept within the disturbed corridor of the adjacent Day – Mt. Spokane Road while idle to minimize soil disturbances to adjacent natural vegetation communities during the construction process. If done correctly, all impacts to vegetation will occur solely within the proposed parking area footprint.

Within the footprint area, all native plant species will be removed. Vegetation cover will be bulldozed and loaded onto trucks for disposal off-site. Grading the parking lot and access road slope, and preparation of the site for constructing a pit toilet may require digging up to 10 feet down from the current soil surface in some areas.

Most native vegetation will likely not re-establish within the development footprint once the topsoil is removed and soil compaction is completed. Weedy annual species, including some noxious weeds will likely colonize portions of the parking area surface, but even this pioneering vegetation will likely be limited and controlled by parking lot maintenance and constantly being driven over.

A quarter acre of the state imperiled ponderosa pine - Douglas-fir / mallow ninebark forested plant association will be completely removed from the development footprint. Edge effects, including increased lighting of the forest understory and potential introduction of more disturbance dependent noxious species into the immediately adjacent ponderosa pine - Douglas-fir / mallow ninebark forest may occur, but will likely be minimal due to the already present edge effects of the existing roadway and nearby developments.

The probability of human caused wildfire affecting the site's surrounding vegetation will be increased. Currently the site has few visitors, thus the probability of point source ignition occurring at that specific location is low. The parking area will likely invite more users into the area, and concentrate vehicles and people onto the site, vastly increasing the probability of point source ignition there. If the parking area draws more park users into the area, the likelihood of human caused fire ignition throughout the recreational features accessed by the trailhead parking lot will increase as well.

Mitigation Measures

The following mitigation measures would apply to the Proposed Action.

- Drive, operate, and store heavy mechanical equipment necessary for parking lot construction only within the proposed development footprint and/or the disturbed corridor of the Day – Mt Spokane Road, so as to limit soil compaction and vegetation cover loss in the surrounding natural forest communities.
- Do not push bulldozed debris and excavated material from grading and excavation operations into the surrounding natural forest areas.
- Do not cut, harvest, bulldoze, or trim any vegetation, especially overstory trees, that occurs outside of the quarter acre proposed development footprint. Attempt to leave as much overstory forest canopy intact as possible to reduce the creation of new forest edges.
- Salvage as much of the live understory native vegetation in the cleared area, keep it watered and then replant it along the edges of the parking lot and in other areas that need revegetation and erosion prevention.
- Provide ash trays and informative signage informing users that the area is highly susceptible to human caused wildfire.
- Control exotic plant invasions by cleaning equipment prior to entering site; employing rapid restoration of disturbed areas using native and/or transitional vegetation; and conduct post-disturbance monitoring and treatment of weeds.

Wildlife Impacts

Affected Environment

The habitat conditions of the proposed development site and the surrounding forests within this area of the park are currently suitable for use by 16 of the 21 focal wildlife species. Due to the small size and proximity of the impact site to nearby human development, proximity to forest edge caused by the Day – Mt. Spokane Road, and the general abundance of very similar habitat conditions throughout the greater area of the park, it is highly unlikely that this site provides critical or sensitive habitat to any of the focal wildlife species.

Environmental Consequences

The primary issues associated with wildlife include; (1) loss of critical or important habitat due to forest and vegetation removal to any of the 21 focal wildlife species, or other species unduly influenced by this site; and (2) increasing the likelihood of wildlife stress and habitat abandonment due to increased human presence.

No Action

The no action alternative would preserve the habitat conditions currently found within the impact area. Increased park user presence in the area would be unlikely under the no action alternative, so the likelihood of wildlife stress and habitat abandonment due to human presence would not change from current conditions.

Proposed Action

General effects

Increased noise and human presence in the area could cause stress to wildlife and in some cases provoke site abandonment by species especially sensitive to human activity. This effect is likely to be minimal within the proposed development footprint, given its proximity to existing human dwellings which would provoke a similar response, be it from vehicle and/or human voice noise, visual encounters, or smells. However, if the new parking area causes a large volume increase in park users to this relatively unused portion of MSSP, the opportunity for increased wildlife stress and habitat abandonment will likely increase in both the parking area and surrounding areas accessed by park users further inside the park boundary. Species such as gray wolf, lynx, wolverine, goshawk, silver-haired bats, and hoary bats may be negatively affected by increased human presence in the area.

Specific Effects

A very small proportion of available habitat for wildlife species would be lost under this action. Important habitat elements that will be lost include live trees, native shrub and herbaceous cover, a closed forest canopy, a small amount of browse and forage, some coarse woody debris, and some small diameter snags. It is highly unlikely that any special status species will be directly impacted by the parking lot development. Most species utilizing this area are likely already adapted to human presence given the nearness of residences to the site. If development planning is followed correctly, the impacts to surrounding habitat conditions should be negligible.

Mitigation Measures

The following mitigation measures would apply to the Proposed Action.

- Drive, operate, and store heavy mechanical equipment necessary for parking lot construction only within the proposed development footprint and/or the disturbed corridor of the Day – Mt Spokane Road, so as to limit habitat impacts in the surrounding forest environment.
- Do not push bulldozed debris and excavated material from grading and digging operations into the surrounding natural forest areas.
- Do not cut, harvest, bulldoze, or trim any vegetation, especially overstory trees, that occur outside of the quarter acre proposed development footprint. Attempt to leave as much overstory forest canopy intact to reduce the creation of new forest edges.

Conversion of the KXLY Equipment Storage Site to a State Park Maintenance Facility

Description of Proposed Development

The KXLY equipment storage site (“the KXLY shop”) consists of an acre size clearing just northwest of the Selkirk Lodge in the Lidner Ridge area (Figure 10).

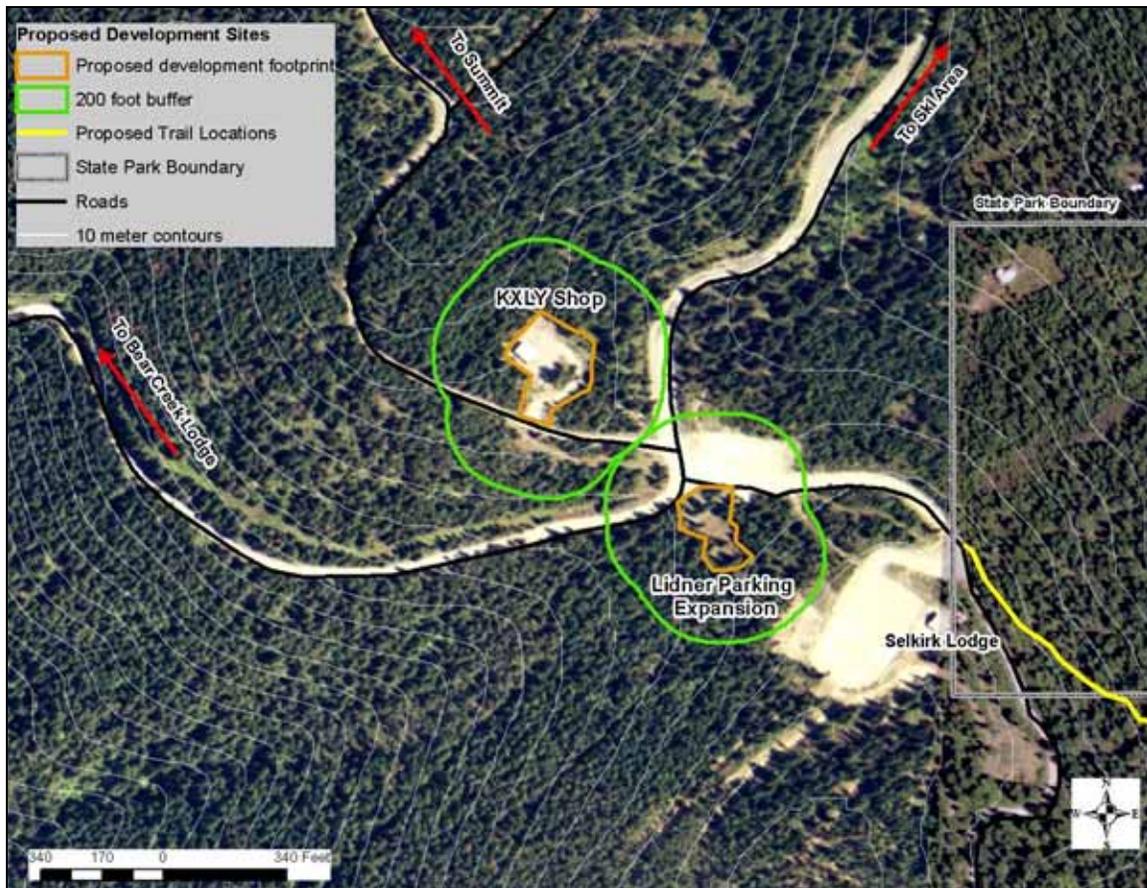


Figure 10. The existing KXLY shop footprint.

The site is currently utilized under a lease agreement with WSPRC by the KXLY radio station to store equipment relevant to their radio tower operations on the summit of Mt. Spokane. Under the proposed development scenario, usage of the KXLY shop area would be given over to WSPRC for relocation of their park maintenance and ranger’s office facility. The current MSSP ranger office and maintenance facility is located where highway 206 crosses the Burping Brook at the main entrance to the park. The current maintenance facility is within the floodplain of Burping Brook, and large water flow events threaten to cause further damage to the facility site. The current site is around 1/3 of an acre, so moving to the existing KXLY shop should provide three times as much space for maintenance and park office operations.

To create a maintenance and park office facility the existing KXLY shop site will not need to be changed radically, however the existing structures may need to be replaced and additional buildings may be added. From the Mt. Spokane Summit Road, the KXLY shop is accessed by a wide gravel road that climbs about 15 to 20 feet to the flat parking area and existing storage structure. Figures 11 and 12 illustrate the conditions of the existing road and the existing parking area and storage structure on the site.



Figure 11. Photo of the road used to access the KXLY shop.



Figure 12. Photo of the current KXLY shop parking area and storage structure.

Some clearing of native and non-native vegetation may be required to fit all new maintenance and park office structures and park vehicles onto the new site, however most of the proposed development should fit easily within the existing disturbed ground footprint.

Inventory Results

No special status vascular plants were found within the survey area.

The proposed development footprint occurs within a site that is already highly impacted by development, including the existing KXLY shop access road, parking area, and storage building. The site also has electrical hookups through an underground wire. The site is bordered by large developments such as the Mt. Spokane Summit Road, the alpine skiing access road, and the Lidner Ridge snowmobile parking area. An old road that is currently used as a trail crosses through the east to northern boundary of the development site. Figure 13 illustrates the location of the old road/trail in the development area. Also apparent in Figure 13 is the ephemeral stream drainage located to the north west of the proposed development site. The drainage occurs at approximately 200 feet from the existing disturbed area footprint. No surface water or obvious stream channel occurs at the base of the drainage, at least on the west side of the alpine ski area access road.

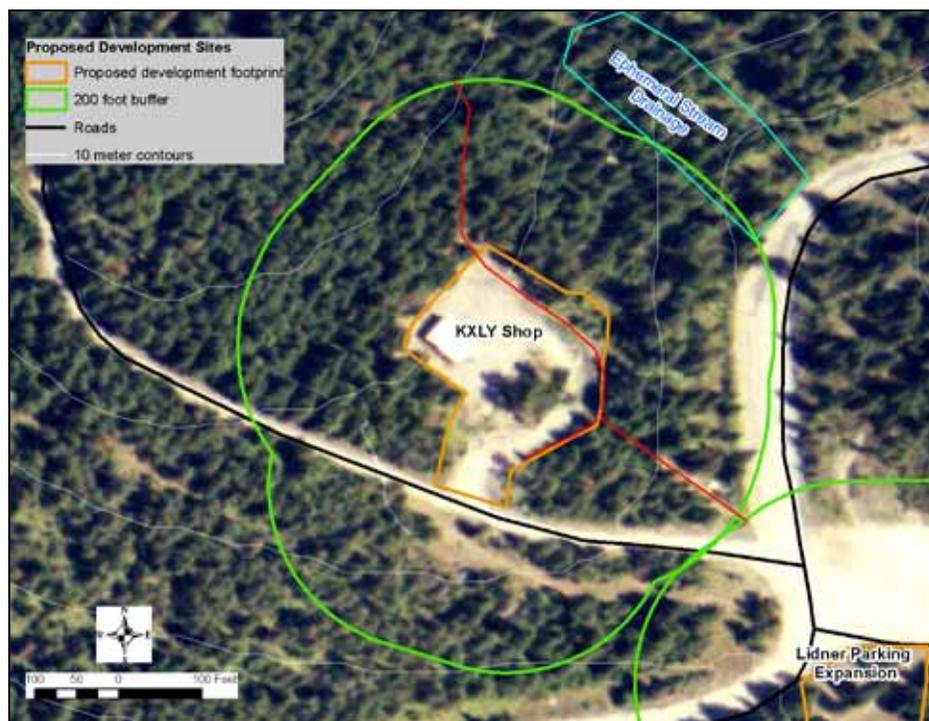


Figure 13. A close up view of the proposed development footprint overlaid an aerial photograph. The red lines represent the approximate locations of an old road (currently an active trail) through and near the proposed development footprint. The blue polygon in the upper right corner represents the location of an ephemeral stream drainage near the proposed development site.

The KXLY shop is almost completely surrounded by patches of natural forest cover. The site occurs at 4550 feet, along the ridgeline landform that connects the southeast flank of Mt. Spokane to the Lidner Ridge area. The forest conditions within the 200 foot perimeter around the development site vary from one side of the facility to the next, but all forests within this area are in a transition zone between western hemlock (*Tsuga heterophylla*) series forests and subalpine fir (*Abies lasiocarpa*) series forests.

West and north of the existing facility (north of the Mt. Spokane Summit Road) the forest is mostly composed of grand fir and subalpine fir with some western hemlock present. There is a sparse understory of beargrass (*Xerophyllum tenax*) and some thinleaf huckleberry (*Vaccinium membranaceum*). This is a mid-successional, single age class, closed canopy forest with trees between 10 to 20 inches diameter at breast height, and a forest canopy ranging around 60 to 80 feet tall. Remnant stumps of the previously logged stand indicate that this site contains a second or third growth forest that has regenerated after clearcut logging. This forest's natural successional trajectory is towards the western hemlock / thinleaf huckleberry / beargrass plant association, which is a state and globally imperiled plant community (S2G2). Figure 14 provides a representative photograph of this forest patch.



Figure 14. Representative photograph of the western hemlock / beargrass plant association occurring within the western and northern section of the proposed development survey area.

Northeast and east of the development site there is a forest patch that is confined to a narrow section of undisturbed soils between the KXLY shop development and the alpine skiing access road. This forest patch is highly influenced by edge effects and contains more western hemlock, as well as some Engelmann spruce (*Picea engelmannii*). The forest canopy is more open in this area, and there is a multi-age class canopy structure with many young trees filling in the open upper forest canopy gaps. Shrub cover is also more prevalent and there are more shrub species in this area, including Greene's mountain ash (*Sorbus scopulina*), Rocky Mountain maple (*Acer glabrum*), and Sitka alder (*Alnus viridis ssp. sinuata*). Figure 15 provides a representative photograph of this forest patch, which is also in the western hemlock / thinleaf huckleberry / beargrass plant association.



Figure 15. Representative photograph of the western hemlock / beargrass plant association occurring within the eastern and northeastern section of the proposed development survey area.

The roads around and leading into the KXLY site are highly used and maintained. Plowing, road clearing, exotic weed control, and other management activities prevent the establishment of most native plant species within the road disturbance corridor. The edges of the roads contain a mix of species, some native, some exotic - mostly all early successional. Some noxious weeds occur along the road edges, including Class B species Dalmatian toadflax and spotted knapweed, as well as Class C weeds common St.

Johnswort, bull thistle (*Cirsium vulgare*), and Canada thistle (*Cirsium arvense*). These species also occur with the existing parking area of the KXLY shop.

Erosion control via native species cover plantings and ground cover nets is being implemented alongside the Mt. Spokane Summit Road. Lodgepole pine (*Pinus contorta*) has been planted here recently, and this species has also begun to establish itself along the roadcut of the small access road leading up to the KXLY shop.

The developed area of the KXLY shop does not currently have much wildlife value within the devegetated areas of the access road and parking area themselves. The surrounding forests provide suitable habitat for the focal wildlife species' lifestages presented in Table 2. The existing habitat is not currently critical, of extreme high quality, nor limited within the area for these species. The nearness and amplitude of development and human use in the area preclude the nearby forest patches from being high quality wildlife habitat for most of these wildlife species (Snetsinger and White 2009).

Table 2. The proposed development area provides potential habitat for these focal wildlife species' life stages.

Species	Life-Stage	Species	Life-Stage
<i>Carnivores</i>		<i>Birds</i>	
Canada lynx	dispersal	Northern goshawk	foraging
	summer foraging	Boreal owl	foraging, roosting
	winter foraging	Pileated woodpecker	foraging roosting
Wolverine	summer foraging	Dusky grouse	summer foraging
	winter foraging	Brown creeper	breeding/nesting
American marten	non-winter cover, foraging		foraging
	winter cover, foraging	Winter wren	breeding/nesting, summer foraging
<i>Ungulates</i>		Olive-sided flycatcher	breeding/nesting foraging
Rocky Mountain elk	cover	<i>Small mammals</i>	
	summer/fall foraging	Pygmy shrew	breeding/parturition, foraging
White-tailed deer	early/late winter foraging	Silver-haired bats	Breeding/parturition, roosting foraging
Moose	cover		Hoary bats
	summer foraging		
<i>Other species</i>			
Western toad	migration, foraging		

Vegetation Impacts

Affected Environment

The proposed development occurs on a previously developed and highly disturbed site which is surrounded by some secondary natural forest communities, many of which themselves are surrounded by developed areas including heavily used roads and large parking areas. The proposed development footprint is just over one acre in size. The forests surrounding the development site are mid-successional conifer forests with a high amount of artificial edge influence in the western hemlock / thinleaf huckleberry / beargrass forested plant association, which is a state and globally imperiled plant community (S2G2). Similar condition forest patches of this plant association occur at this elevation band within other areas of the park. The site is currently poor habitat for potential special status plant species given the intensive logging history and presence of human development on the site. No special status plants have been identified in the impact region.

Approximately 200 feet to the north-northeast from the current development footprint, a small ephemeral stream drainage occurs. This drainage does not have perennial surface water or an obvious stream channel, but it is likely that water flows here during the early spring snow melt. The ephemeral stream drainage is located downhill of the proposed development site, and thus could be influenced by activities conducted on the development site.

Environmental Consequences

The primary issues associated with vegetation resources include: (1) effects of vegetation removal; (2) potential impacts on vegetation communities of statewide conservation significance; and (3) potential impacts on the vegetation and ecological integrity of an ephemeral stream drainage. Based on the lack of occurrence of designated critical habitat within the project area, no adverse effects to special status plant species would occur as a result of implementing either of the alternatives.

No Action

The no action alternative would not remove any existing vegetation within the proposed development site, therefore there would be no effects associated with vegetation removal. The impacts to a vegetation community of statewide conservation significance would be neutral, as none of the surrounding forest communities would be physically altered from existing conditions. No clear evidence exists to suggest that the current development site is directly impacting the vegetation and ecological integrity of the nearby ephemeral stream drainage, thus a no action alternative would not seem to impose additional impacts onto this environmental feature.

Proposed Action

General effects

The general effects of the proposed action should not have any negative impact on the vegetation resources present because the development would occur within the existing disturbed and developed footprint of the KXLY shop.

Specific Effects

Installation of water delivery and sewage disposal lines (potentially a septic tank) will be necessary (electric lines already exist) for the establishment of a maintenance and park office facility. Installation of such infrastructure will require soil disturbing development activities. Given the suitability of existing road and electrical power corridors to incorporate these infrastructure installations, these development activities should be able to be sited and conducted within existing disturbed areas and not cause impact to the surrounding natural forest communities. The new septic system should drain to the eastern or southern direction of the existing development site to prohibit groundwater contamination impacts to the nearby ephemeral stream drainage.

Development of new buildings, piping infrastructure, and other structures on the site may require removal of some of the small vegetation patches re-colonizing the disturbed edges of the existing KXLY shop parking lot and access road. These vegetation patches contain a mix of pioneering native and exotic plant species, including some noxious weeds. The removal of such vegetation should not have a significant impact to the surrounding natural forest communities and native vegetation resources, as long as removed vegetation is not bulldozed or dumped into the surrounding forest communities.

No specific impact to the state and globally imperiled western hemlock / thinleaf huckleberry / beargrass forest community is expected under this development plan.

Safe and conservative handling of toxic or polluting chemicals and materials used in maintenance operations will be taken to prevent runoff of such pollutants into the nearby ephemeral stream drainage. The existing park maintenance site occurs directly over a perennial stream, thus the same pollutant handling protocols used on that site will protect aquatic and riparian resources in the proposed development area.

Mitigation Measures

The following mitigation measures would apply to the Proposed Action.

- Drive, operate, and store heavy mechanical equipment necessary for any new construction or installation of piping infrastructure only within existing KXLY shop development footprint and/or the disturbed corridors of the surrounding roads, so as to limit soil compaction and vegetation cover loss in the surrounding natural forest communities.
- Do not push bulldozed debris and excavated material from grading and digging operations into the surrounding natural forest areas.
- Do not cut, harvest, bulldoze, or trim any vegetation, especially overstory trees (excepting trees at risk of failing and impacting persons or property), that occur outside of the existing development footprint. Attempt to leave as much overstory

forest canopy intact to reduce the creation of new forest edges, including the forested patch located between the access road and the KXLY shop parking area.

- Salvage as much of the live understory native vegetation in the cleared area, keep it watered and then replant it along the edges of the developed area and in other areas that need revegetation and erosion prevention.
- Prevent septic drainage from flowing in the direction of the nearby ephemeral stream drainage.
- Continue and expand into the edges of the proposed development the roadside erosion control and exotic plant management operations currently taking place on the nearby Mt. Spokane Summit Road.

Wildlife Impacts

Affected Environment

The existing 1 acre developed footprint of the KXLY shop provides only minimal quality habitat for wildlife. The surrounding natural forests provide adequate habitat conditions for use by many of the 21 focal wildlife species, but these areas are not sensitive or critical habitat areas for most of the life stages of these species, and the habitat they provide is not limited within the park. These forests do provide important cover habitat for wildlife species using the Lidner Ridge – Mt Spokane saddle landform to travel between higher quality habitats located on different sides of Mt. Spokane and Lidner Ridge. Species likely benefiting from the current forest conditions for use as cover include dusky grouse, boreal owl, northern goshawk, Canada lynx, wolverine, American marten, Rocky Mountain elk, white-tailed deer and moose. The cover provided by these remaining forest patches is very important to these wildlife species because human development in this specific area has dramatically fragmented the natural forest and vegetation cover, and created large non-vegetated openings which do not provide suitable cover habitat for these wildlife species. These forest patches also help to reduce wildlife stress in the surrounding higher quality wildlife habitats by dampening the “artificial” noise created by human activities within the developed sites and obscuring the visibility of human presence.

A large avian stick nest was observed 40 feet up a ~60 year old grand fir tree within the forest to the north of the existing KXLY shop parking area. This nest is not likely a goshawk nest given its proximity to actively used developments, however this nest site should be investigated further and mitigation measures employed if it proves to be occupied by goshawks.

Environmental Consequences

The primary issues associated with wildlife include; (1) loss of critical or important habitat due to forest and vegetation removal to any of the 21 focal wildlife species, or other species unduly influenced by this site; and (2) increasing the likelihood of wildlife stress and habitat abandonment due to increased human presence.

No Action

The no action alternative would preserve the habitat conditions currently found within the impact area. Increased park user presence in the area would be unlikely under the no action alternative, so the likelihood of wildlife stress and habitat abandonment due to human presence would not change from current conditions.

Proposed Action

General effects

Increased noise and human presence in the area could cause increased stress to wildlife and in some cases prevent species from utilizing the area, especially for species sensitive to increased human activity. This effect is less likely within the proposed development footprint, given its current actively developed status and proximity to nearby high use developments which would provoke a similar response, be it from vehicle and/or human noise, visual encounters, or smells. However, if the new maintenance facility and ranger office creates a large increase in human presence, noise, and smells, the opportunity for complete avoidance of the existing surrounding habitat could increase.

Specific Effects

If the proposed development stays within the existing development footprint, no adverse impact will occur to the compositional and structural elements of the surrounding forest habitat. No special status wildlife species, or any critical habitat they are dependent on will be directly impacted by this development plan.

Mitigation Measures

The following mitigation measures would apply to the Proposed Action.

- Drive, operate, and store heavy mechanical equipment necessary for any new construction or installation of piping infrastructure only within existing KXLY shop development footprint and/or the disturbed corridors of the surrounding roads, so as to limit loss of cover habitat elements in the surrounding natural forest communities.
- Do not push bulldozed debris and excavated material from grading and digging operations into the surrounding natural forest areas.
- Do not cut, harvest, bulldoze, or trim any vegetation, especially overstory trees, that occur outside of the existing development footprint, so as to limit loss of cover habitat elements in the surrounding natural forest communities. Attempt to leave as much overstory forest canopy intact to reduce the creation of new forest edges, including the forested patch located between the access road and the KXLY shop parking area.
- Continue and expand into the edges of the proposed development the roadside erosion control and exotic plant management operations currently taking place on the nearby Mt. Spokane Summit Road. More aggressively plant and propagate native cover vegetation to dampen the impacts of human caused noise, smells, and visibility into the surrounding wildlife habitat.

Expansion of the Lidner Ridge Parking Area

Description of Proposed Development

The Lidner parking expansion site consists of a proposed development footprint two thirds of an acre in size just northwest of the Selkirk Lodge in the Lidner Ridge area (Figure 16).

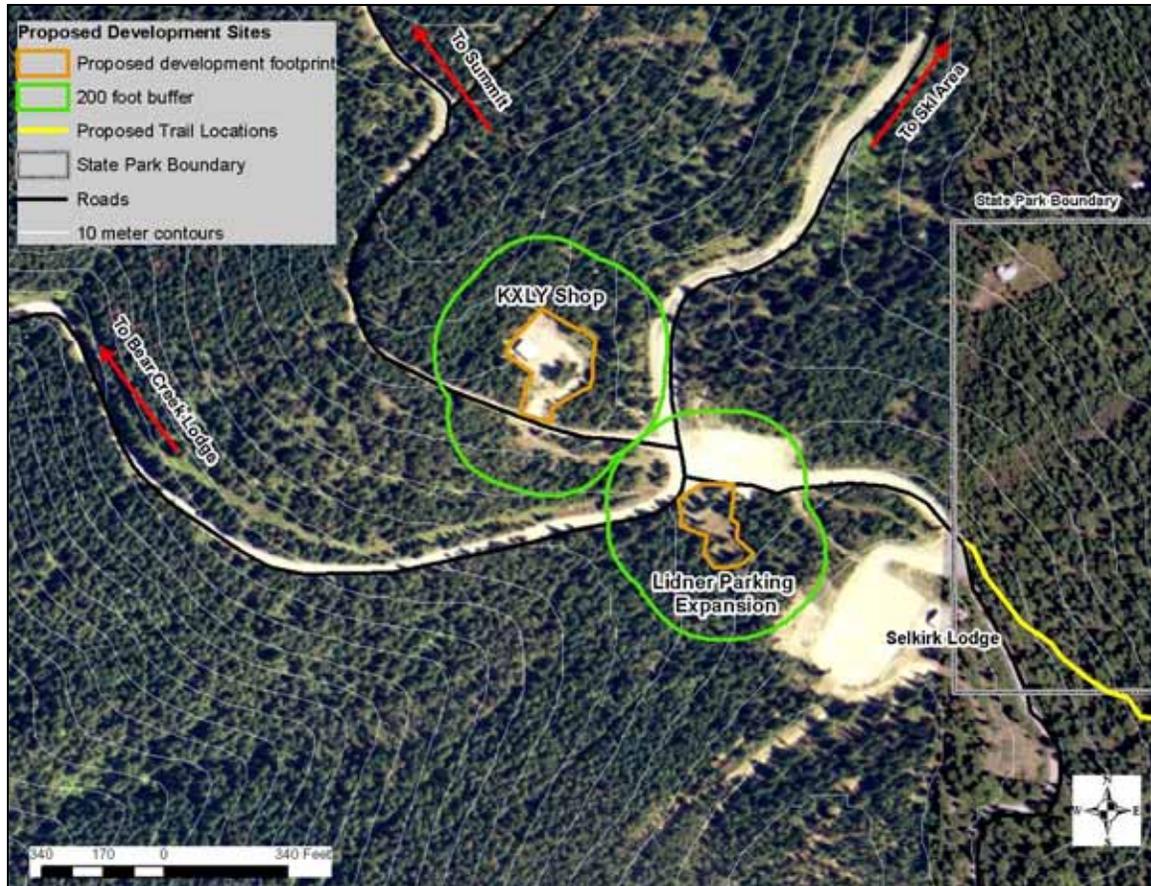


Figure 16. The proposed Lidner parking expansion site.

Development of the site will require the complete removal of all vegetation within the proposed development footprint, as well as removal of some top soil, and creating a parking lot surface of either compacted earth or gravel. The new parking area shall be constructed within an existing clearing created by previous human activities. The clearing is adjacent to (and south of) the Lidner Ridge snowmobile parking area, and is accessible by existing roads that are currently closed. A public toilet is already located next to the proposed development footprint, and the proposed development site is very near and just west of the existing Selkirk Lodge parking area. Figures 17 and 18 illustrate the area being proposed for development.



Figure 17. Photos of the closed roads that will be used to access the Lidner parking expansion.



Figure 18. Illustration of the existing clearing where the proposed parking lot would be developed.

Inventory Results

No special status vascular plants were found within the survey area.

The proposed development footprint occurs within a site that was highly impacted by past human disturbances, probably related to industrial logging and/or road and parking lot construction. The site is surrounded to the north by the large Lidner Ridge snowmobile gravel parking area and the paved Mt. Spokane Drive Road. The site is within approximately 200 feet of the western edge of the large Selkirk Lodge parking area. Approximately 400 feet to the northwest of the proposed development exists the KXLY shop. Old roads that are currently closed cross the proposed development site, and would provide access to the new parking area (Figure 19).

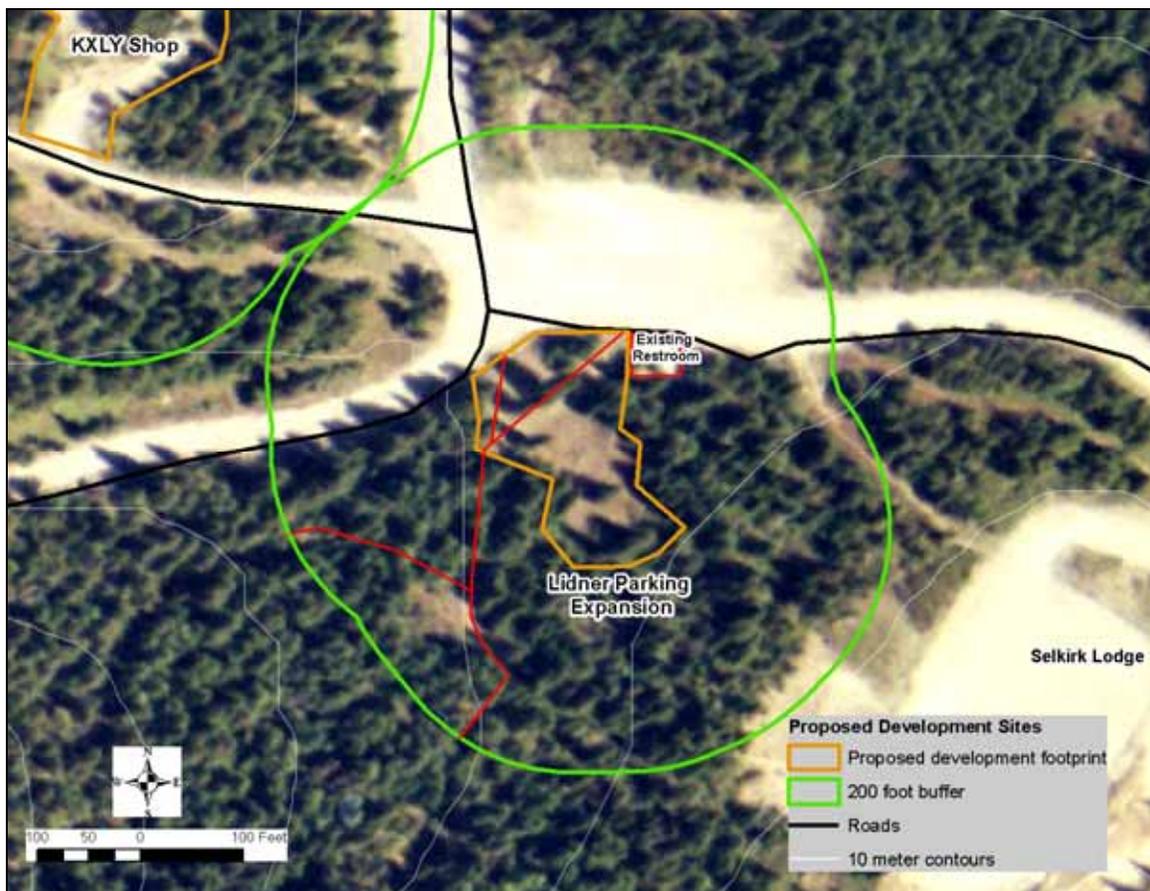


Figure 19. A close up view of the proposed development footprint overlaid an aerial photograph. The red lines represent the approximate locations of currently closed roads that cut through and near the proposed development footprint.

The proposed development site exists within saddle/ridgeline landform between the southeast flank of Mt. Spokane and Lidner Ridge. The site is approximately 4550 feet in elevation, and has a north-northwest facing aspect at approximately 10% slope. The proposed development footprint is surrounded from the east, south, and west by

secondary or third growth conifer forests. The forest conditions within the 200 foot perimeter around the development site vary from one side of the proposed development footprint to the next, but all forests within this area are in a transition zone between western hemlock series forests to subalpine fir series forests.

West to southwest of the proposed development site the forests are composed mostly of grand fir, with some western hemlock and subalpine fir present. There is a vegetated understory of beargrass and thinleaf huckleberry. This is a mid-successional, single age class, closed canopy forest with trees between 8 to 20 inches diameter at breast height, and a forest canopy ranging around 60 feet tall. Remnant stumps of the previously logged stand indicate that this site contains a second or third growth forest that has regenerated after clearcut logging. This forest's natural successional trajectory is towards the western hemlock / thinleaf huckleberry / beargrass plant association, which is a state and globally imperiled plant community (S2G2). Hand thinning and piling of smaller trees is taking place within this forest patch as a part of on-going forest health efforts in the park. Figure 20 provides a representative photograph of this forest patch.



Figure 20. Representative photograph of the western hemlock / beargrass plant association occurring within the western and northern section of the proposed development survey area.

South and east of the proposed development site there is a forest patch that is confined to a narrow section of undisturbed soils between the Selkirk Lodge parking area, the Lidner Ridge snowmobile parking area, and the old clearing where the proposed parking expansion is sighted. This forest patch is highly influenced by edge effects and has a more mixed tree species composition that includes grand fir, western hemlock, subalpine fir, western white pine (*Pinus monticola*), lodgepole pine, and Engelmann spruce. There are more forest canopy openings in this area (compared to the forest patches west to southwest of the proposed development site), and there is a multi-age class canopy structure with many young trees filling in the upper forest canopy gaps. Shrub cover is also more prevalent and there are more shrub species in this area, including Greene's mountain ash, rusty menziesia (*Menziesia ferruginea*), and Sitka alder. Figure 21 provides a representative photograph of this forest patch, which is also in the western hemlock / thinleaf huckleberry / beargrass plant association.



Figure 21. Representative photograph of the western hemlock / beargrass plant association occurring within the eastern and northeastern section of the proposed development survey area.

The active and closed roads, as well as the existing parking areas and the clearing where the proposed development is to occur all contain a mix of early pioneering species, some native and some exotic. Some noxious weeds occur on these sites, including Class B species spotted knapweed, as well as Class C weeds common St. Johnswort, bull thistle, and Canada thistle.

The existing clearing where the proposed development is to occur contains a high amount of cover of pioneering plant species, including common St. Johnswort, bracken fern (*Pteridium aquilinum*), western pearly everlasting (*Anaphalis margaritacea*), yarrow (*Achillea millefolium*), selfheal (*Prunella vulgaris*), woodland strawberry (*Fragaria vesca*), Canada thistle, and spotted knapweed. Within the center of the clearing there is a 40 – 50 foot tall grand fir. At the entrance (northern edge) of the clearing from Mt. Spokane Park Drive there are three tall subalpine firs. Around the eastern perimeter of the clearing the vegetation is composed of young conifers growing together in a thick patch. Along the south and western perimeter of the clearing tall deciduous shrub cover is present, mixed with young conifer trees. Figures 22 – 24 provide some representative photos of the clearing that is the footprint of the proposed development site.



Figure 22. Representative photograph of the early successional vegetation occurring in the old clearing that would be converted into the expanded parking lot.



Figure 23. A view of the tall deciduous shrub perimeter along the southwestern perimeter of the proposed development footprint.



Figure 24. A view of the old clearing and part of the thick young conifer perimeter on the west side of the proposed development.

The clearing onto which the proposed Lidner Ridge expanded parking lot would be constructed does not currently have high wildlife value due to the influence of the nearby parking lots and active roads. The surrounding forests provide suitable habitat for the focal wildlife species' lifestages presented in Table 3. The existing habitat is not currently critical, of extreme high quality, nor limited within the area for these species. The close proximity and magnitude of existing developments and human use in the area also preclude the nearby forest patches from being high quality wildlife habitat for most of these wildlife species.

Table 3. The proposed development area provides potential habitat for these focal wildlife species' life stages.

Species	Life-Stage	Species	Life-Stage
<i>Carnivores</i>		<i>Birds</i>	
Canada lynx	dispersal	Northern goshawk	foraging
	summer foraging	Boreal owl	foraging, roosting
	winter foraging	Pileated woodpecker	foraging roosting
Wolverine	summer foraging	Dusky grouse	summer foraging
	winter foraging	Brown creeper	breeding/nesting
American marten	non-winter cover, foraging		foraging
	winter cover/, foraging	Winter wren	breeding/nesting, summer foraging
<i>Ungulates</i>		Olive-sided flycatcher	breeding/nesting
Rocky Mountain elk	cover		foraging
	summer/fall foraging	<i>Small mammals</i>	
White-tailed deer	early/late winter foraging	Pygmy shrew	breeding/parturition, foraging
Moose	cover	Silver-haired bats	Breeding/parturition, roosting
	summer foraging		foraging
<i>Other species</i>		Hoary bats	day roosting
Western toad	migration, foraging		foraging

Vegetation Impacts

Affected Environment

The proposed development occurs on a previously disturbed site which is surrounded by some secondary natural forest communities, many of which themselves are surrounded by developed areas including heavily used roads and large parking areas. The previous disturbance was likely related to logging and/or road and facilities development activities in the Lidner Ridge area. The site is now being naturally re-vegetated by colonizing and early-successional native and exotic plant species. The proposed development footprint is nearly two-thirds of an acre in size. The forests surrounding the development site are mid to early successional conifer forests with a high amount of artificial edge influence in the western hemlock / thinleaf huckleberry / beargrass forested plant association, which is a state and globally imperiled plant community (S2G2). Similar condition forest patches of this plant association occur at this elevation band within other areas of the park. The site is currently poor habitat for potential special status plant species given the intensive logging history and presence of human development on the site. No special status plants have been identified in the impact region.

Environmental Consequences

The primary issues associated with vegetation resources include: (1) effects of vegetation removal; and (2) potential impacts on vegetation communities of statewide conservation significance. Based on the lack of occurrence of designated critical habitat within the project area, no adverse effects to special status plant species would occur as a result of implementing either of the alternatives.

No Action

The no action alternative would not remove any existing vegetation within the proposed development site, therefore there would be no effects associated with vegetation removal. The impacts to a vegetation community of statewide conservation significance would be neutral, as none of the surrounding forest communities would be physically altered from existing conditions.

Proposed Action

General effects

The general effects of the proposed action would be a slight loss of tree canopy cover in the area, and the loss of a patch of pioneering vegetation that includes native and exotic plant species.

Specific Effects

Nearly 0.64 acres of exotic and native early successional vegetation would be removed from the development footprint. Approximately four native overstory trees would be cut and removed from the site. All impacts to vegetation will occur solely within the proposed parking area footprint (excepting removal of high risk hazard trees). The surrounding natural forest communities will not be impacted.

Heavy equipment used in the vegetation clearing, soil digging, and earth compaction processes can be kept within the disturbed corridor of the adjacent roads and parking areas while idle to minimize soil disturbances to adjacent natural vegetation communities during the construction process. Grading of the parking lot may require digging up and removing from the site hundreds of cubic yards of topsoil.

Native vegetation will likely not re-establish within the development footprint once the topsoil is removed and soil compaction is completed. Weedy annual species, including some noxious weeds will likely colonize portions of the parking area surface, but even this pioneering vegetation will likely be limited and controlled by parking lot maintenance and constantly being driven over.

Mitigation Measures

The following mitigation measures would apply to the Proposed Action.

- Drive, operate, and store heavy mechanical equipment only within the proposed development footprint and/or the disturbed corridors of the surrounding roads and parking areas, so as to limit soil compaction and vegetation cover loss in the surrounding natural forest communities.
- Do not push bulldozed debris and excavated material from grading and digging operations into the surrounding natural forest areas. Also minimize fill placed atop the rooting zone of residual trees.
- Do not cut, harvest, bulldoze, or trim any vegetation, especially overstory trees, that occur outside of the existing development footprint. Attempt to leave as much overstory forest canopy intact to reduce the creation of new forest edges.
- Salvage as much of the live understory native vegetation in the cleared area, keep it watered and then replant it along the edges of the parking lot and in other areas that need revegetation and erosion prevention.

Wildlife Impacts

Affected Environment

The existing clearing onto which the 0.6 acre parking expansion development would be built provides only minimal quality habitat for wildlife due to the proximity and influence of adjacent developments. The surrounding natural forests provide adequate habitat conditions for use by many of the 21 focal wildlife species, but these areas are not sensitive or critical habitat areas for most of the life stages of these species, and the habitat they provide is not limited within the park. These forests do provide important cover habitat for wildlife species using the Lidner Ridge – Mt Spokane saddle landform to travel between higher quality habitats located on different sides of Mt. Spokane and Lidner Ridge. Species likely benefiting from the current forest conditions for use as cover include dusky grouse, boreal owl, northern goshawk, Canada lynx, wolverine, American marten, Rocky Mountain elk, white-tailed deer and moose. The cover provided by these remaining forest patches is very important to these wildlife species because human development in this specific area has dramatically fragmented the natural forest and vegetation cover, and created large non-vegetated openings which do not provide suitable cover habitat for these wildlife species. These forest patches also help to reduce wildlife stress in the surrounding higher quality wildlife habitats by dampening the artificial noise created by human activities within the developed sites and obscuring the visibility of human presence at a shorter distance away from the developments.

Environmental Consequences

The primary issues associated with wildlife include; (1) loss of critical or important habitat due to forest and vegetation removal to any of the 21 focal wildlife species, or other species unduly influenced by this site; and (2) increasing the likelihood of wildlife stress and habitat abandonment due to increased human presence.

No Action

The no action alternative would preserve the habitat conditions currently found within the impact area. Increased park user presence in the area would be unlikely under the no action alternative, so the likelihood of wildlife stress and habitat abandonment due to human presence would not change from current conditions.

Proposed Action

General effects

Increased noise and human presence in the area due to this parking area expansion will likely cause only a very minor increase in stress to wildlife and should not change species utilization of the area given this site's proximity to nearby high use developments which would already provoke a similar response, be it from vehicle and/or human noise, visual encounters, or smells.

Specific Effects

If the proposed development stays within the previously disturbed footprint, no adverse impacts should occur to the compositional and structural elements of the surrounding

forest habitat. A slight loss in cover habitat will occur within the parking lot footprint itself, however, no special status wildlife species, or any critical habitat they are dependent on will be directly impacted by this development plan.

Mitigation Measures

The following mitigation measures would apply to the Proposed Action.

- Drive, operate, and store heavy mechanical equipment only within the proposed development footprint and/or the disturbed corridors of the surrounding roads and parking areas, so as to limit loss of cover habitat elements in the surrounding natural forest communities.
- Do not push bulldozed debris and excavated material from grading and digging operations into the surrounding natural forest areas.
- Do not cut, harvest, bulldoze, or trim any vegetation, especially overstory trees, that occur outside of the existing development footprint, so as to limit loss of cover habitat elements in the surrounding natural forest communities. Attempt to leave as much overstory forest canopy intact to reduce the creation of new forest edges.

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Appendix A. The 21 focal wildlife species in MSSP.

Species	Scientific Name	WDFW Species of Concern	Federal Status
Carnivores			
Gray wolf	<i>Canis lupus</i>	Endangered	Recently delisted as Endangered – now under appeal
Canadian lynx	<i>Lynx canadensis</i>	Threatened	Threatened
Wolverine	<i>Gulo gulo</i>	Candidate	Species of Concern
American marten	<i>Martes americana</i>	None	None
Ungulates			
Rocky Mountain elk	<i>Cervus elaphus</i>	None	None
White-tailed deer	<i>Odocoileus virginianus ochrourus</i>	None	None
Moose	<i>Alces alces</i>	None	None
Birds			
Northern goshawk	<i>Picoides arcticus</i>	Candidate	Species of Concern
Boreal owl	<i>Aegolius funereus richardoni</i>	Monitor	None
Pileated woodpecker	<i>Dryocopus pileatus</i>	Candidate	None
Black-backed woodpecker	<i>Picoides arcticus</i>	Candidate	None
Dusky grouse	<i>Dendragapus obscurus pallidus</i>	None	None
Brown creeper	<i>Certhia americana</i>	None	None
Winter wren	<i>Troglodytes troglodytes</i>	None	None
Olive-sided flycatcher	<i>Contopus cooperi</i>	None	None
Small mammals			
Pika	<i>Ochotona princeps</i>	None	None
Pygmy shrew	<i>Sorex hoyi</i>	Monitor	None
Silver-haired bat	<i>Lasionycteris noctivagans</i>	None	None
Hoary bat	<i>Lasiurus cinereus</i>	None	None
Other species			
Western toad	<i>Bufo boreas</i>	Candidate	Species of Concern
Compton tortoiseshell butterfly	<i>Nymphalis vaualbum</i>	Monitor	None