

## Chapter 5: Proposed Recreation Plans

Section V, “Proposed Recreation Plans,” provides a written and graphic illustration of conceptual design plans for recreation and trail development within the planning area. Site and trail design alternatives correspond with the general goal and intent of management themes described by alternative in Chapter 2. The implementation of a selected action for both trail and facility development would be subject to additional NEPA planning prior to implementation.

### 5.1 Recreation Planning Process

Conceptual trail and site design planning included stakeholder, agency and private landowner input through a series of public open houses, focus groups meetings, and a community based design charette. Public input was used to identify appropriate upland and river access points and potential facility locations. Site designs have been created to effectively balance public use with resource protection.

### 5.2 Trail Design Alternatives

Alternative trail design plans reflect a range of proposed locations within identified experience zones. Alternatives differ by proposed trail miles and location. The SRBIMP planning team of interdisciplinary specialists, recreation planners, and professional trail planners and designers, spent 10 weeks in the field identifying appropriate locations for proposed trail opportunities.

Areas that could potentially facilitate connectivity with Basin wide trail planning efforts were identified and designed accordingly. Placement of proposed trails that would ultimately lead to the highest quality user experience and associated benefits were selected

**Trail Design Specifications:** The following are guidelines for the design and construction of trails within the Sandy River Basin planning area. The natural environment is dynamic and unpredictable. The nature of recreation trails, the desired user experience, and the constant forces acting upon natural surface trails make rigid standards untenable and undesirable. As such, the guidelines below are simply that: best management practices and should be followed within environmental constraints (cross slope, trail grade, soil type). For trail building specifications refer to the Forest Service Trails Management Handbook (FSH 2309.18).

**Sustainable trail design:** Trail design in the Sandy River Basin will allow for a high quality trail experience for users, while protecting sensitive cultural and natural resources. A sustainable trail balances many elements, addressing both environmental and social impacts. It has very little impact on the environment, resists erosion through proper design, construction, and maintenance, and blends in with the surrounding area.

A sustainable trail also appeals to and serves a variety of users, adding an important element of recreation to the community. It is designed to provide enjoyable and challenging experiences for visitors by managing their expectations and their use effectively. All trails are not created equal. Ideally, each trail is designed, constructed, and maintained to meet certain specifications.

These specifications are based on the recreational activities the trail is intended to provide, the amount of use, and the physical characteristics of the land. Proposed trails within the planning area have been designed for multiple use (equestrian, biking, hiking), not motorized users.

Trail layout was determined by the steepness of the hillside. The steeper the hillside, the more excavation will be needed to cut in a stable back slope. Hillside cross slope also dictates running trail grade, and can have a direct bearing on how much design, construction, and maintenance work will be needed to establish and keep a solid trail tread.

Grades range from 1 percent for wheelchair access to 15 percent or greater for routes located in the primitive zone. Trails located in the developed and front country zones in the Sandy were laid out to be constructed with an average trail grade of 5 to 10%. Trails of greater difficulty can be built at grades approaching 15 percent if solid rock is available. Trails steeper than 20 percent become difficult to maintain in the original location without resorting to steps or hardened surfaces. Trails steeper than 20 percent have been kept to a minimum within the planning area.

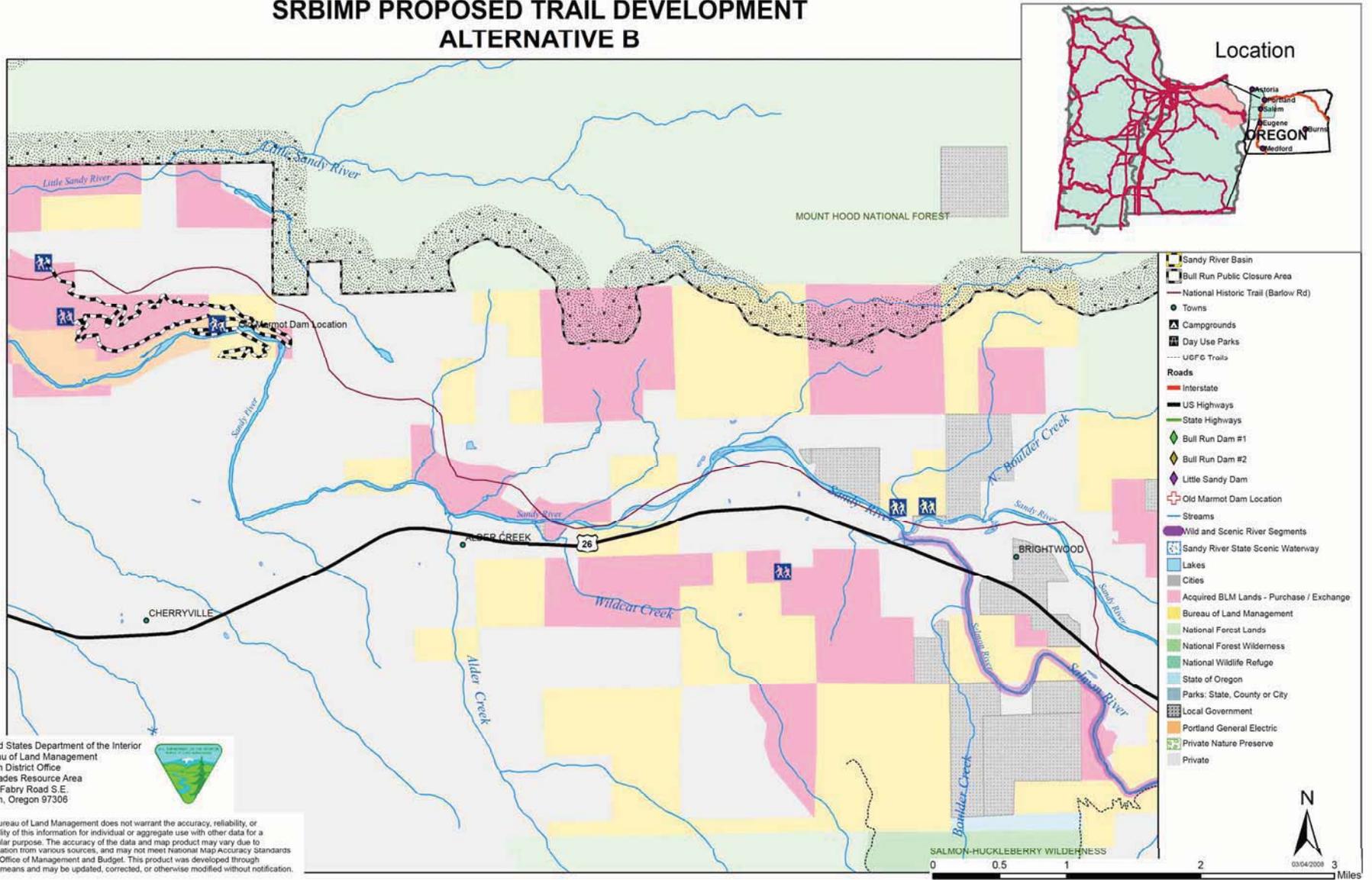
**Proposed trail corridors:** Proposed trail alignments provide corridors within which a trail can be constructed. Corridors were designed with sufficient width to accommodate minor alignment adjustments to facilitate construction and meet experience goals within environmental constraints. It should be assumed that trail corridors, as shown on Proposed Trail Development Maps B, C and D and represented through GIS information, are 50ft in width from either side of the center alignment of the flagged route.

***Proposed Homestead Rd. Trail System:*** Approximately 20 miles of multiple use-non motorized trails were designed to the West of Forest Rd. 14, and to the Southern most boundary of the Little Sandy River Watershed boundary. To minimize trespass into the Little Sandy River watershed, extra care and consideration was given to trail design and layout in the area. As a trail design objective, a minimum buffer of 300 feet was established between proposed trail corridors and this boundary. Additionally, topographical features that would naturally detour from cross country travel were utilized to minimize trespass concerns.

Trail design objectives include:

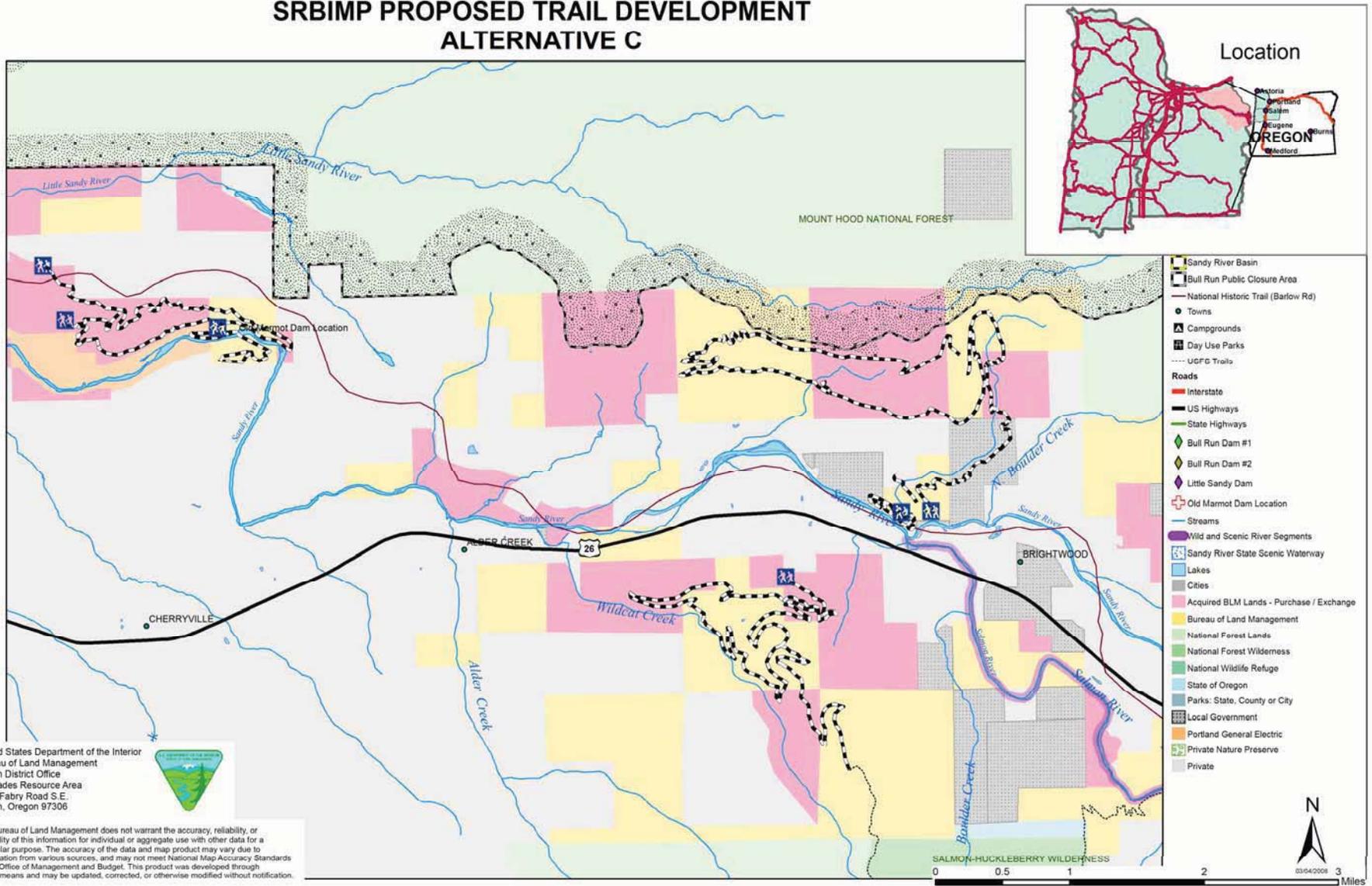
- ***10 percent average trail grade guideline:*** Average trail grade will not exceed 10%.
- ***Maximum sustainable grade established by experience zone:*** Each experience zone will provide a different trail experience. Developed zone will maintain a maximum trail grade as to not exceed 5%. Front country zone will maintain a maximum trail grade as to not exceed 10%. Primitive zone will maintain a maximum trail grade as to not exceed 17%.
- ***Half rule guideline:*** Trail grade or steepness will not exceed half the grade or steepness of the hillside.
- ***Design appropriately placed trail out slope and grade reversals:*** The planning area includes appropriately designed grade reversals to minimize trail tread erosion. Trail out slope of 10% or greater will be implemented to facilitate proper drainage.
- ***Minimum Vegetation Removal:*** Trail design will minimize vegetation removal through route designation. No vegetation over 12 inches in diameter will be removed as part of the trail construction process.

## SRBIMP PROPOSED TRAIL DEVELOPMENT ALTERNATIVE B



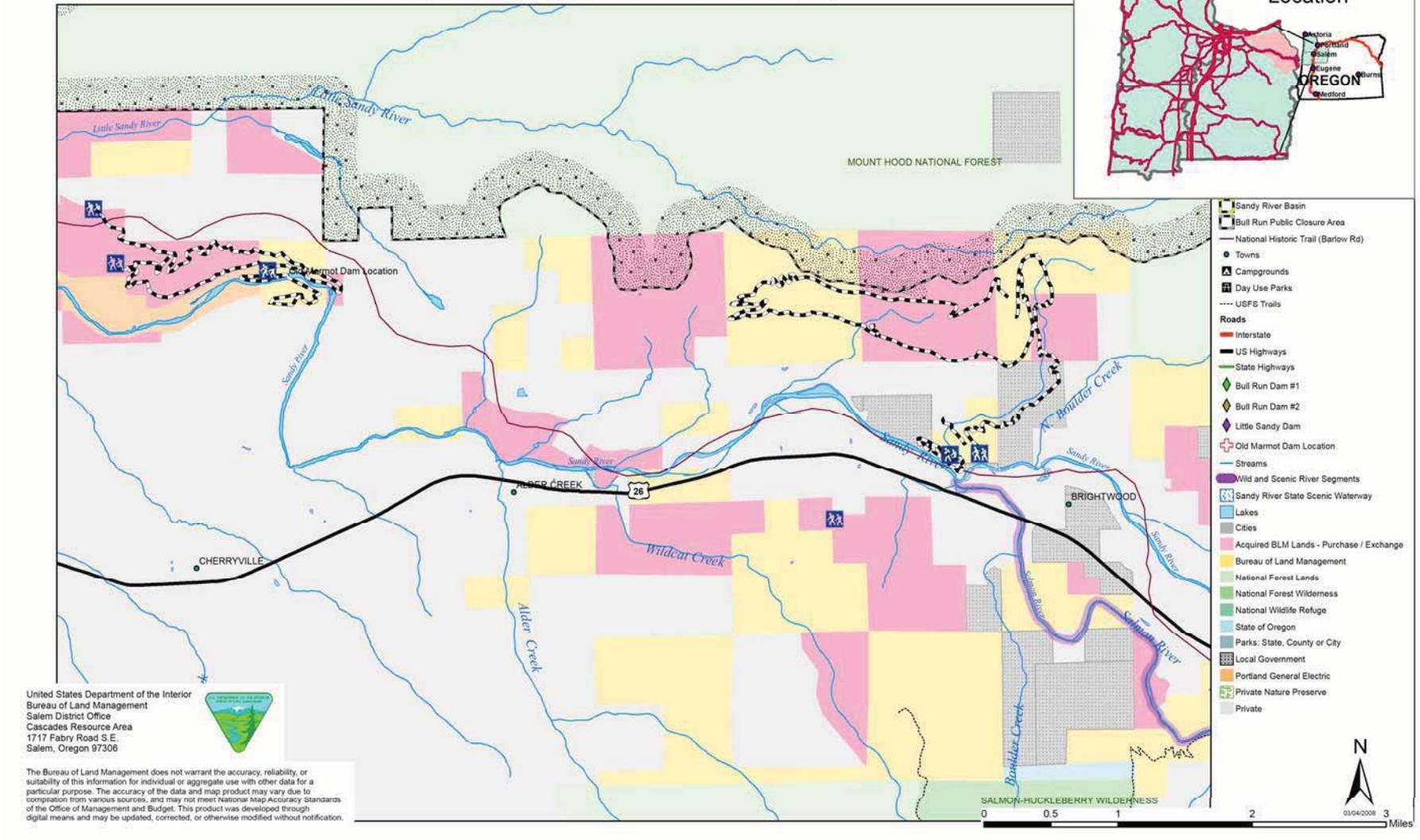
**Map 2: Proposed Trail Development: Alternative B**

# SRBIMP PROPOSED TRAIL DEVELOPMENT ALTERNATIVE C



Map 3: Proposed Trail Development: Alternative C

## SRBIMP PROPOSED TRAIL DEVELOPMENT ALTERNATIVE D (INTEGRATED DESIGN)



**Map 4: Proposed Trail Development: Preferred Alternative**

### 5.3 Marmot Dam Site Design Alternatives

A comprehensive Revegetation plan for the Marmot dam site was created through collaboration with Lando and associates landscape architecture and Portland General Electric. This plan outlined specific goals and objectives for on-site restoration and Revegetation opportunities to enhance aquatic, terrestrial, and visual resources while providing complementary public access. Site design alternatives (B, C, and D) reflect strategically developed public access plans for river and trail users.

The Marmot dam site offers the public a broad range of opportunities that complement other recreation resources within the planning area. Site design alternatives range in scope, carrying capacities, and level of on-site amenities. The BLM worked with agency representatives, private landowners, and recreation user groups to establish goals and objectives for site restoration, rehabilitation, and site development.

To complement the Restoration plan that was developed, three site design alternatives were created. Alternatives were created through a public design charrette that was held on April 20, 2008. Two separate design scenarios were presented that outlined a high (Alternative B), and a low (Alternative C) design program. The end result of this day long effort was the creation of two distinct site designs corresponding with the goal and intent of the representative management alternatives identified in Chapter 2.

**Marmot Dam Conceptual Plan: Alternative B (Map 5):** This site plan provides a park design that maintains a natural, largely undeveloped; feel throughout the park. The design focuses on day use visitation only with no overnight facilities. Careful consideration was given to the existing natural areas such as the river, riparian vegetation and forests. Restoration and enhancement of these features was considered whenever possible while providing recreation opportunities to well defined programmed spaces.

**Marmot Dam Conceptual Plan: Alternative C (Map 6):** This site plan provides a park design that serves a multi-day visitor experience while protecting and enhancing the natural environment; and interpreting the cultural and land use history of the site. Overnight camping, and the facilities to support this use are provided for under this alternative. Appropriate levels of development were taken into consideration in order to minimize the impact that it will have on the natural areas

**Marmot Dam Conceptual Plan: Preferred Alternative D (Map 7):** This site plan provides a park design that integrates the programmatic elements of the design plans for alternatives B and C. This alternative maintains a natural, largely undeveloped; feel throughout the site. The design focuses on day use visitation only with no overnight facilities. While there are no overnight facilities, infrastructure was sited to support reserved group areas for picnicking, weddings, and river users.

# MARMOT DAM SITE LOW LEVEL DEVELOPMENT DESIGN PROCESS

This scenario produced a park design that maintains a natural, largely undeveloped, feel throughout the park. The design focuses on day-use visitation only with no overnight facilities.

Careful consideration was given to the existing natural areas such as the river, riparian vegetation and forests. Restoration and enhancement of these features was considered whenever possible while providing access to well defined programmed spaces.

The spaces were looked at as opportunities for enhancing views, providing access to the river, and locating day use activities such as picnic area, interpretive trails and educational programs.

While facilities will be kept to a minimum, they relate directly to regional geography, geology, cultural history and land uses including the Dam removal process.

Interpretation of these themes can be determined through the use of art interventions linked to active and passive programmed activities. Stories that celebrate the history of the people of the area and their connections to the landscape are reflected in the design of the spaces.



Map 5: Marmot Dam Conceptual Plan: Alternative B

# MARMOT DAM SITE HIGH LEVEL DEVELOPMENT

## DESIGN PROCESS

The goal of this scenario was to provide a park design that serves a multi-day visitor experience while protecting and enhancing the natural environment; and interpreting the cultural and land use history of the site.

While seeking to preserve a natural environment within part of the park, particular attention was given to incorporating a variety of features that enable sports activities, environmental education, and community events in a way that seeks a balance between the developed and natural portions of the park.

Appropriate levels of development were taken into consideration and the impact that it will have on the natural and cultural areas. Facilities account for carrying capacity and architecture will work to highlight of the Pacific Northwest Regional landscape vernacular. Careful consideration was also given to the types of facilities needed for overnight and day use and how to keep these areas safe and separated.



Map 6: Marmot Dam Conceptual Plan: Alternative C

# MARMOT DAM SITE INTEGRATED DEVELOPMENT

## DESIGN PROCESS

This scenario produced a park design that integrated the programmatic elements of Scenarios A and B. The preferred alternative (scenario C) maintains a natural, largely undeveloped, feel throughout the park. The design focuses on day-use visitation only with no overnight facilities.

Careful consideration was given to the existing natural areas such as the river, riparian vegetation and forests. Restoration and enhancement of these features was considered whenever possible while providing access to well defined programmed areas. The spaces were looked at as opportunities for enhancing views, providing access to the river, and locating day use activities such as picnic areas, interpretive trails and educational programs.

The architectural elements will reflect the regional geography/geology, cultural history, land uses including the Dam removal process. Interpretation of these themes will be determined through the use of art interventions linked to active and passive programmed activities. Stories that celebrate the history of the people of the area and their connections to the landscape of the area are reflected in the design of the spaces.

While there are no overnight facilities, infrastructure was able to support reserved group areas for picnicking, weddings, guide groups and raft outfitters. The site will support its own power generation through the use of micro hydro-electrical systems, the use of composting toilets and stormwater will be collected off roof tops, hard surface trails, and roads and directed to planted stormwater infiltration facilities.



**Map 7: Marmot Dam Conceptual Plan: Alternative D (Preferred Alternative)**

## 5.4 Sandy-Salmon Confluence Site Design Alternatives

The Sandy/Salmon confluence site offers the public a safe alternative to accessing the Sandy River fitting an identified niche within the basin. As part of the scoping undertaken during the Sandy River Basin planning process, two focus group workshops were held; one of these meetings focused river-based recreation. The meeting allowed planning team members to sit down with local river users, businesses operators, agency representatives and private landowners in order identify where current recreation resources were inadequate to meet demand.

A key concern among those involved during both focus groups workshop centered on access to the Sandy River. Participants identified that there weren't enough safe river access points along the middle and upper portions of the Sandy River, and those that existed were problematic. Users were utilizing bridge right of ways and other informal access points to enter the river, giving rise to concerns about safety and private property trespass.

After examining the planning area, participants realized a few sites along the Sandy presented good opportunities for remedying these concerns and shortcomings. One of these sites was at the confluence of the Salmon and Sandy Rivers. Located at river mile 38 (eight miles upstream from the former site of Marmot Dam).

The location of the site, working in conjunction with a proposed access point at the Marmot Dam site and other existing access points downstream, makes it a good fit for the needs of river recreationists. Additionally, Clackamas County is in the process of developing the Barlow Wayside Park located to the west of the proposed Sandy-Salmon confluence site. The BLM has been working with Clackamas Country to establish a memorandum of understanding to collaboratively design, develop and manage this area.

Utilizing the input received during the scoping process, three alternative conceptual site designs were formulated. Each varies in their level of development, but all three designs provide parking, access to the Sandy River and access to the proposed Homestead trail system. The following design alternatives for the Sandy-Salmon confluence site were based on input received during the scoping process, BLM interdisciplinary planning team members and professional landscape architects.

**Sandy/Salmon Confluence Development Alternative B (Map 8):** This site plan provides a park design that maintains a natural, largely undeveloped; feel throughout the park. The design focuses on day use visitation only. Careful consideration was given to the existing natural areas such as the river, riparian vegetation and forests. Restoration and enhancement of these features was considered whenever possible while providing access to well defined programmed spaces. The design focused on opportunities for making trail connections, providing access to the river, and locating day use facilities such as picnic area, parking, safe pedestrian crossing and educational programs.

**Sandy/Salmon Confluence Development Alternative C (Map 9):** This site plan provides a park design that serves for day use visitation experiences while protecting and enhancing the natural environment.

While seeking to preserve a natural environment within the park, particular attention was given to incorporating a variety of features that enable interpretive activities, environmental education, and community events in a way that seeks a balance between the developed and natural portions of the site.

**Sandy/Salmon Confluence Preferred Development Alternative D (Map 10):** This site plan provides a park design that integrates the programmatic elements of the proposed designs in alternatives B and C, maintaining a natural feel throughout the park and focusing on day use visitation only. Appropriate levels of development including carrying capacity were taken into consideration to support non-motorized trail and river users, interpretive activities, and environmental education in a way that seeks a balance between the developed and natural portions of the site.

# SALMON & SANDY RIVER CONFLUENCE LOW LEVEL DEVELOPMENT

## DESIGN PROCESS

This scenario produced a park design that maintains a natural, largely undeveloped, feel throughout the park. The design focuses on day use activities only.

Careful consideration was given to the existing natural areas such as the river, riparian vegetation and forests. Restoration and enhancement of these features was considered whenever possible while providing access to well defined programmed spaces. The design focused on opportunities for making trail connections, providing access to the river, and locating day use facilities such as picnic areas, parking, safe pedestrian crossing and educational programs.

While facilities will be kept to a minimum, they relate directly to the Pacific Northwest character exhibited by the BLM at their Wildwood Site. Maintenance, carrying capacity and safety were examined to provide site appropriate facilities.

Interpretation of design themes can be determined through the use of art interventions linked to active and passive programmed activities. Stories that celebrate the history of the people of the area and their connections to the landscape are reflected in the design of the spaces.



**Map 8: Sandy/Salmon Confluence Conceptual Plan: Alternative B**

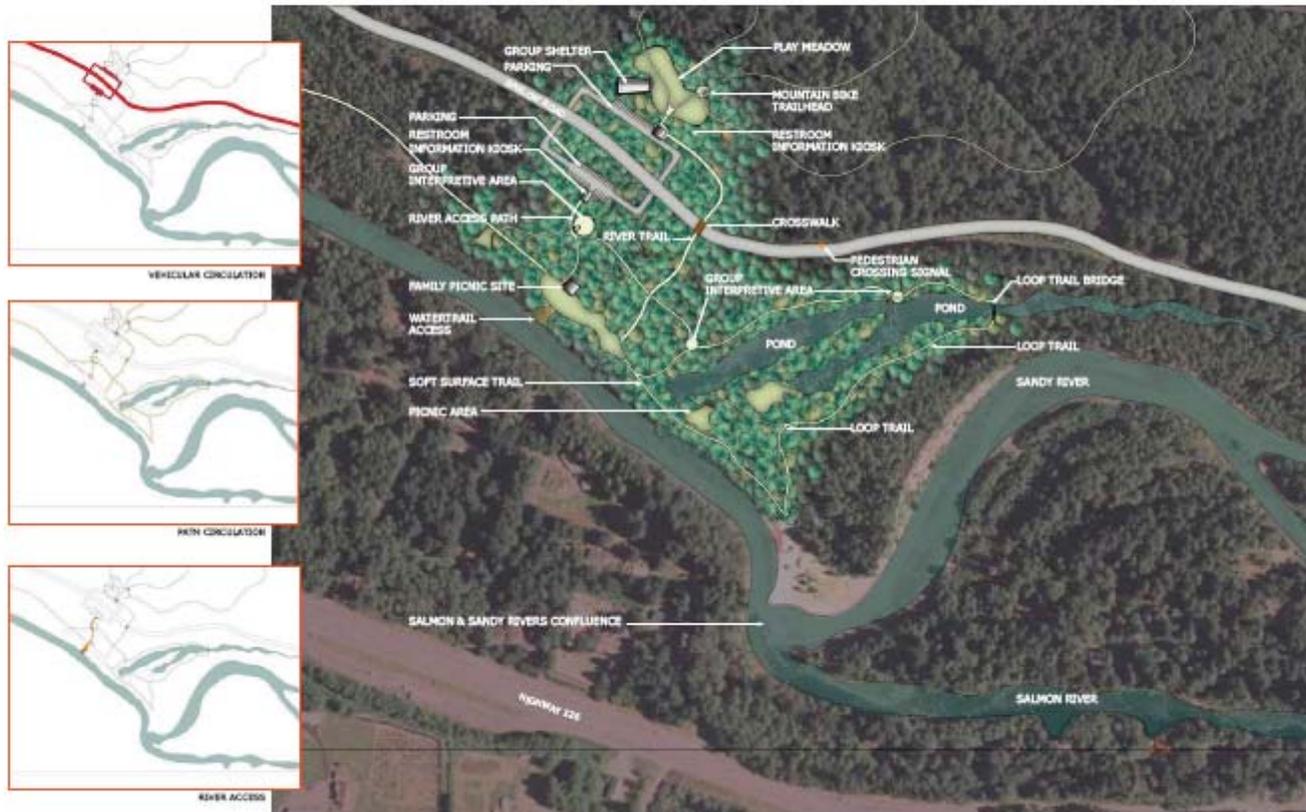
# SALMON & SANDY RIVER CONFLUENCE HIGH LEVEL DEVELOPMENT

## DESIGN PROCESS

The goal of this scenario was to provide a park design that serves for day use activities experiences while protecting and enhancing the natural environment; and interpreting the cultural and land use history of the site.

While seeking to preserve a natural environment within the park, particular attention was given to incorporating a variety of features that enable interpretive activities, environmental education, and community events in a way that seeks a balance between the developed and natural portions of the park.

Appropriate levels of development including expanded carrying capacity were taken into consideration to support mountain bike users, kayak and rafting river access, and interpretive trails and trail connectors. Facilities account for carrying capacity and architecture will correspond to the SLH Wildwood facility.



Map 9: Sandy/Salmon Confluence Conceptual Plan: Alternative C

# SALMON & SANDY RIVER CONFLUENCE INTEGRATED DEVELOPMENT

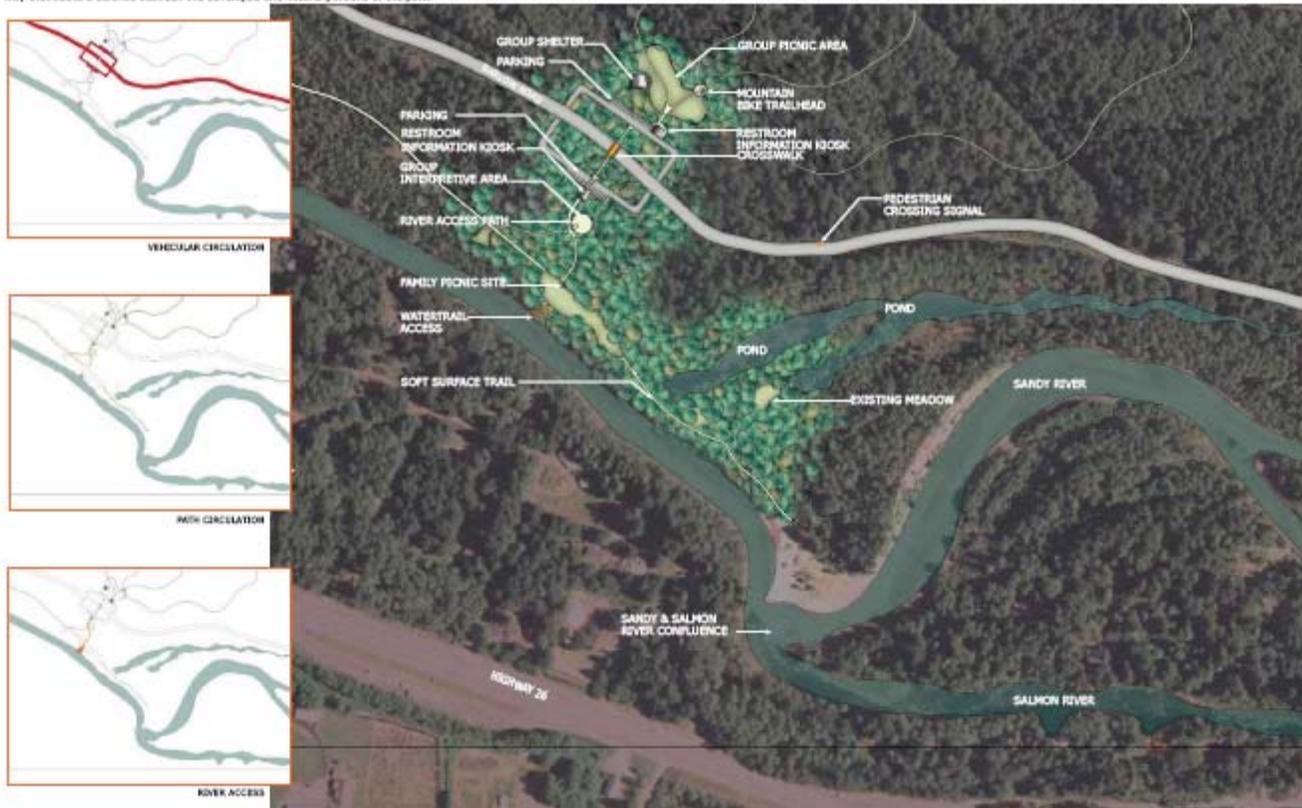
## DESIGN PROCESS

This scenario produced a park design that integrated the programmatic elements of Scenarios A and B. The preferred alternative (scenario C) maintains a natural, largely undeveloped, feel throughout the park. The design focuses on day use visitation only, with no overnight facilities.

Careful consideration was given to the existing natural areas such as the river, riparian vegetation and forests. Restoration and enhancement of these features was considered whenever possible while providing access to well defined programmed spaces. The spaces were looked at as opportunities for enhancing views, providing access to the river, and locating day use activities such as picnic area, interpretive trails and educational programs.

Appropriate levels of development including carrying capacity were taken into consideration to support mountain bike users, kayak and river rafting river access, and interpretive trails and trail connectors. Facilities account for carrying capacity and architecture will correspond to the BLM Wildwood facility.

While seeking to preserve a natural environment within the park, particular attention was given to incorporating a variety of features that enable interpretive activities, environmental education, and community events in a way that seeks a balance between the developed and natural portions of the park.



Map 10: Sandy/Salmon Confluence Conceptual Plan: Preferred Alternative

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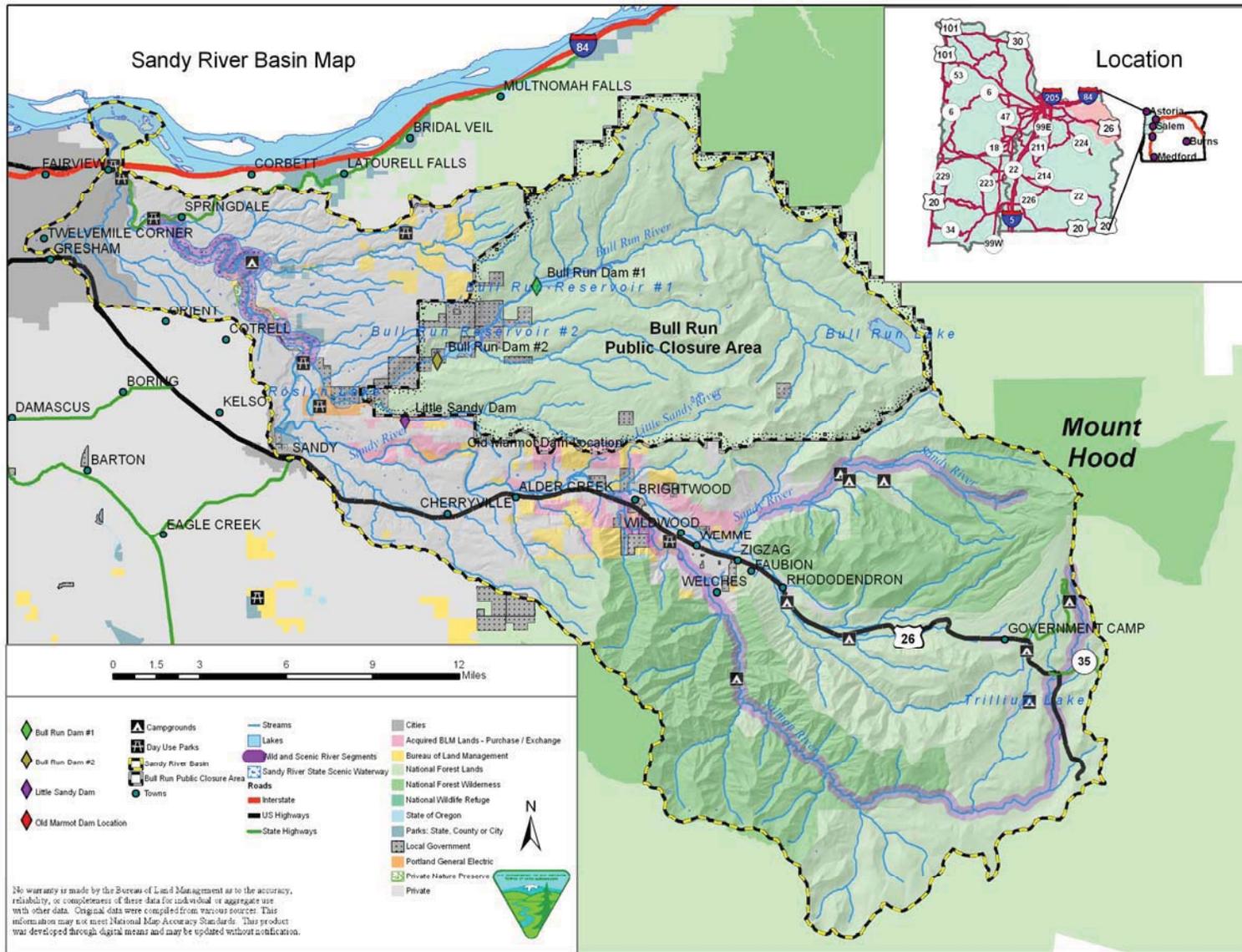
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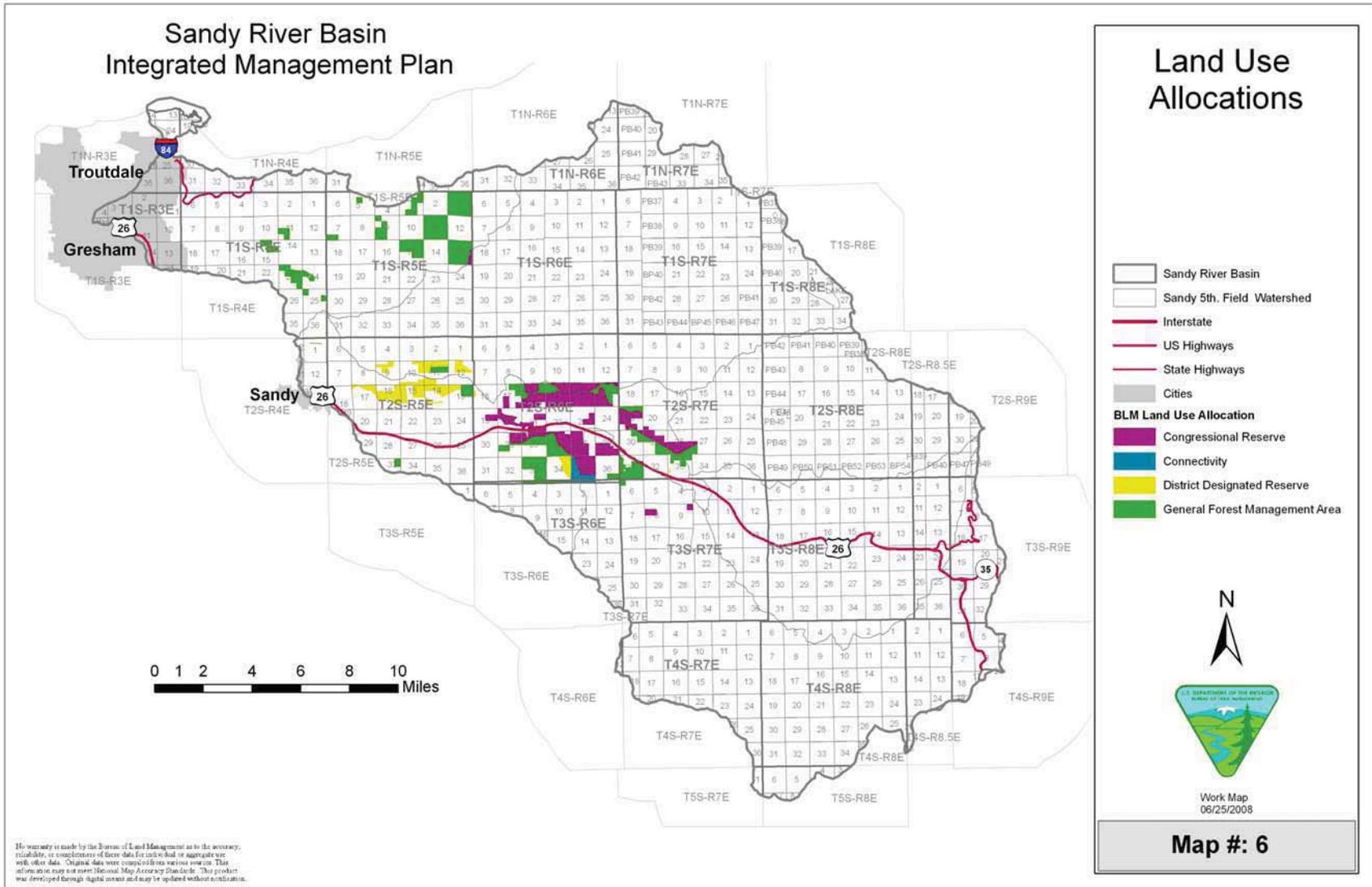
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# Appendix A: Sandy River Basin Planning Area Map



## Appendix B: Land Use Allocation Map



Appendix C: Special Status/Survey and Manage Wildlife Species, (T&E, BS, BA and S&M species)

OCCURRENCE	SPECIES & STATUS	HABITAT DESCRIPTION
(Project Area)	<b>INVERTEBRATES</b>	
S	CRYPTOMASTIX DEVIA BS / S&M Cat. A Puget Oregonian (snail)	Multnomah County in mature and old growth forests, typically under hardwood logs and leaf litter, rocks and talus, in litter under sword ferns growing under hardwood trees and shrubs, and under moss growing on big leaf maple trunks.
D	DEROCERUS HESPERIUM BS / S&M Cat. B evening fieldslug	Occurs in wet meadows in forested situations in a variety of low vegetation, litter, debris and rocks. Has been found in the Sandy Basin at Wildwood Wetlands.
N	DRILOLEIRUS MACELFRESHI BS Oregon giant earthworm	Deep, moist, undisturbed soils of Willamette Valley floor riparian forests. Records are primarily from the mid Willamette Valley.
N	JUGA [OREOBASIS] n. sp. 2 S&M Cat. A Basalt Juga	A Columbia Gorge endemic, found sporadically in springs on the Oregon side only in Hood River and Wasco counties, including sites in Mount Hood National Forest and sites in Columbia Gorge National Scenic Area. The Sandy Basin is south and west of the species' known range.
D	LYOGRYRUS new species 1 S&M Cat. A Columbia Dusksnail	A Columbia Gorge endemic, found on both sides from east and south of Portland to Hood River, Oregon. Known sites are located in the Gorge tributaries and in drainages originating from near Mount Hood, Oregon, to Mount St. Helens, Washington. Likely to be found only in cold, pure, well-oxygenated springs Clackamas and Multnomah Counties. Has been found in Gordon Creek Watershed.
N	GLIABATES OREGONIUS BS salamander or axe-tailed slug	Type locality is in leaf litter under bushes in mature conifer forest at elevation of 600' on the east side of the Oregon Coast Range. Has been found at 11 sites in the Cascades Resource Area, ranging from unharvested or unthinned late-successional forest, to a 45 year old stand that originated after regeneration harvest. There are no known sites in the Sandy Basin.
N	PRISTILOMA ARCITCUM CRATERIS BS / S&M Cat. A Crater Lake tightcoil (snail)	Areas in moist higher elevation conifer forests which generally remain under snow for long periods of winter. Found among mosses and other vegetation near wetlands, springs, seeps, and riparian areas.

<b>HERPETOFAUNA</b>		
D	BATRACHOSEPS WRIGHTORUM BS/SU Oregon slender salamander	West slope of the Oregon Cascades. Prefers down logs and woody material in more advanced stages of decay in conifer forests in all stages of succession. Most common in mature and old-growth conifer forests. Known to occur in the Sandy Basin.
N	CHRYSEMYS PICTA BS/SC painted turtle	Marshes, ponds, lakes, slow rivers and streams, usually with an abundance of aquatic vegetation and emergent logs or boulders for basking. Associated with Willamette Valley. Has been observed at the Sandy River Delta.
N	CLEMMYS MARMORATA BS/SC western pond turtle	Marshes, ponds, lakes, slow rivers and streams, usually with an abundance of aquatic vegetation and emergent logs or boulders for basking. Associated with Willamette Valley. May have occurred in the past, but no recent records known.
D	DICAMPTODON COPEI BA/SU Cope's giant salamander	Known only from limited locations in W Washington and NW Oregon. Larvae are generally found in streams from sea level to 3,500 feet. Suspected to occur in Sandy River sub-basins. Known to occur in Gordon Creek Watershed.
N	PLETHODON LARSELII S&M Cat. A/BA/SV Larch Mountain salamander	Moist, shaded talus areas usually associated with steep slopes and coarse woody debris in older forests in the Columbia River Gorge and southern Washington Cascades. There are no known sites on Salem BLM. Larch Mountain Salamander is not suspected to occur on BLM lands in the Sandy River Basin.
D	RANA AURORA BT/SV Red-legged frog	Species is of concern in the Willamette Valley. Occurs in wetlands, marshes, swamps, ponds and high water areas with little or no flow, up to about 3,000 feet elevation. Red-legged frogs have been observed in the Sandy River Delta and Gorge.
N	RANA BOYLEI BA/SV foothill yellow-legged frog	Permanent streams and vicinity, with rocky, gravelly and sandy substrates in the south half of the Resource Area.
D	RHYACOTRITON CASCADAE BA/SV Cascade torrent salamander	Headwater seeps and springs with low-volume flow, often at the source, and deep, well-aerated gravels lacking silt impaction. Documented to occur in the Sandy Basin.

	<b>BIRDS</b>	
S	ACCIPITER GENTILIS BS/SC northern goshawk	Rare Summer resident in Western Oregon Cascades. Prefers mature or old-growth forests with dense canopy cover at higher elevations. Suspected to occur in the high elevations of the Bull Run, middle and Upper Sandy. Winters at lower elevations.
S	CHOREILES MINOR BS/SC common nighthawk (Willamette Valley)	Open habitats on the Willamette Valley floor and the Western Oregon Cascades. Species is of concern in the Willamette Valley. Suspected to occur in the Sandy Basin.
D	FALCO PEREGRINUS ANATUM BS/SE (subspecies anatum and tundarius) peregrine falcon	Rare during the nesting season. Usually occurs as a transient/migrant and winter visitor. Found in a variety of open habitats near cliffs or mountains. Prefers areas near larger bodies of water and rivers. Peregrines have been documented to occur in the Sandy River Gorge during the breeding season.
D	HALIAEETUS LEUCOCEPHALUS BS/ST bald eagle	Rare summer resident in Cascades. Uncommon winter resident in Willamette Valley. For nesting and perching, prefers large old-growth trees near major bodies of water and rivers. There are nest sites in the Bull Run and Lower Sandy, and several in the vicinity of the Sandy River Delta.
D	HISTRIONICUS HISTRIONICUS BA/SU harlequin duck	An uncommon summer resident found in whitewater mountain rivers and larger order streams during nesting season. Winters on rocky coasts. Known to use the Sandy as a migration flyway and known to nest in the Upper Sandy.
N	ICTERIA VIRENS BS/SC yellow-breasted chat (Willamette Valley)	Formerly common in dense riparian thickets along the Willamette Valley floor. Will use brushy young stands after regeneration harvest, blackberry thickets, and dense scotch broom stands. Possible in any very young, brushy valley-edge elevation stand. Has been observed at the Sandy River Delta.
S	MELANERPES LEWIS BS/SC Lewis' woodpecker	Formerly a common summer resident and uncommon winter visitor in the Willamette Valley. Oak woodlands and hardwood forests. Transient on Salem District in fall along high divides. Has been observed at the Sandy River Delta and it suspected as a transient in the Sandy Basin.
N	PICOIDES ARCTICUS BS/SC black-backed woodpecker	Primarily an eastside species. On the westside, it's uncommon in mature/older forests with abundant snags at high elevations. Suspected to occur at higher elevations in the Upper Sandy.

N	PICOIDES TRIDACTYLUS BS/SC northern three-toed woodpecker	An eastside species. Very rare on the Westside in high elevation mature/older forests with abundant snags. Not suspected to occur in the Sandy Basin.
N	POOECETES GRAMINEUS BS/SC Oregon vesper sparrow	Rare and local summer resident in Willamette Valley. Very rare in winter. Dry, grassy areas. Western Oregon interior valley breeding population is of concern.
S	PROGNE SUBIS BS/SC purple martin	Rare summer resident. Typically occurs along rivers and other water bodies. Nests colonially in cavities in old buildings, abandoned woodpecker holes, and nest boxes. Purple martins have been seen in the vicinity of the Sandy River Delta and could occur further upstream.
N	STRIX NEBULA S&M Cat. A / BT Great Gray Owl	Primarily an eastside species. Suitable habitat in the Western Oregon Cascades include large diameter nest trees, forest for roosting cover, and proximity to meadows and openings that could be used as foraging areas. Not known or suspected to occur within the Sandy Basin.
D	STRIX OCCIDENTALIS CAURINA LT/ST northern spotted owl	Permanent resident. Prefers mature and old-growth conifer forests with large down logs, standing snags in various stages of decay, high canopy closure and a high degree of vertical stand structure. Has been documented to occur on BLM lands in the Middle Sandy.
	<b>MAMMALS</b>	
N	ANTROZUS PALLIDUS BA/SV Pallid bat	Occurs sporadically in w. Oregon. Associated with arid habitats, generally drier interior valleys of Southwestern Oregon. Found in caves, under bridges, cracks in rocks, hollow trees, old buildings, other secluded and protected places. Not suspected to occur in the Sandy Basin.
S	CORYNORHINUS TOWNSENDII BS/SC pacific western big-eared bat	Feeds on flying insects in a variety of habitats in forested areas. Primary habitat is caves, rock outcrops, buildings and abandoned mines. Not documented to occur in the Sandy Basin, but could be present.
S	MYOTIS THYSANODES BA/SV fringed myotis	Associated with buildings, mines and cliff/cave habitat. Likely in the north half of the Cascades Resource Area, at lower elevations closer to the Willamette Valley including the Sandy Basin. Forages over water and riparian areas.

S	ARBORIMUS LONGICAUDUS S&M Cat. C / BT Oregon red tree vole	An arboreal canopy species thought to be associated with late seral/old-growth Douglas-fir stands. Has been found in mid to late seral stages in adjacent watersheds. Suspected to occur on BLM lands in the Bull Run, Gordon Creek, and the Middle and Upper Sandy to about 5,000 feet elevation.
N	GULO GULO LUTEUS BS/ST California Wolverine	Undisturbed high elevation areas in a variety of forest and non-forest habitats. Not suspected to occur on BLM lands in the Sandy Basin.

**KEY**

Occurrence:

D = Documented to occur

S = Suspected (highly likely to occur)

N = Not Expected to occur

Status:

LE = Federal Endangered

LT = Federal Threatened

SOC = Species of Concern & Bureau Sensitive

BS = Bureau Sensitive

BA = Bureau Assessment

BT=Bureau Tracking

S&M = Survey and Manage (+ Category)

SE = State Endangered

ST = State Threatened

SC = State Critical

SV = State Vulnerable

SU = State Uncertain

SP = State Peripheral

## Appendix D: Special Status Botanical Species

### Vascular Plant Habitat Descriptions for Documented Special Status Species

#### ***Calamagrotis breweri* var. *brewerii*, brewer's reedgrass**

This small blue-green subalpine grass is found in moist mountain meadows with two populations known from within the watershed on Mt. Hood. The Mt. Hood populations are disjunct from related populations in the Klamath Mountains. These northern populations are genetically distinct from the southern populations of the Sierra Nevada's and for this reason are recognized as "var. *breweri*".

#### ***Carex livida*, pale sedge**

This sedge forms distinctive blue-green patches along the edges of small stream channels and wetlands. Though its range is circumboreal, pale sedge is rare in Oregon with only two locations known from within the watershed.

#### ***Corydalis aquae-gelidae*, cold-water corydalis**

This elegant plant with pink-flowers inhabitant the waters of cold clear stream, spring's and seeps in northwest Oregon and southwest Washington, with four populations known from within the watershed.

#### ***Streptopus streptopoides*, krushea**

This little lily is most common from northern Washington to Alaska. In Oregon the majority of known sites are located in the Bull Run Watershed. This species reaches the southern edge of its North American range in the middle elevations of the Sandy River Watershed. Important habitat characteristics include old-growth forests with 50-75% canopy cover, and a well-developed duff layer consisting of rotting wood and bark.

#### ***Sullivantia oregana*, Oregon sullivantia**

Regional endemic, this delicate, yellowish-green perennial spreading herb occurs on moist cliffs, especially near waterfalls in shallow pockets of basalt-derived soils from 250 to 1600 feet elevation.

### Lichen Habitat Descriptions for Documented Special Status Species

#### ***Cetrelia cetrarioides***

Sporadic in its distribution this species has a large range, although the populations are small and somewhat restricted to humid habitats and riparian areas. This lichen is known from many locations throughout the watershed.

#### ***Hypogymnia duplicata***

In the Cascades, this rare foliose lichen is typically found on the bark of conifer trees at middle elevations in cool, moist conifer stands with old-growth silver fir or mountain hemlock. Within the watershed this lichen is reported from three sites on the Mt. Hood National Forest.

#### ***Peltigera pacifica***

This foliose lichen grows on soil, moss, rocks, decaying logs, and at the base of trees. Although considered to be rare throughout most of its range, this lichen has been found in some abundance and with some regularity with nine sites reported on the Mt. Hood National Forest.

***Pseudocyphellaria rainierensis***

Known from British Columbia to Oregon, in the Cascades this rare foliose lichens habitat includes the canopy of very old, cool, moist forests between 1,200 and 3,200 feet. Within the watershed this lichen is reported from two sites on the Mt. Hood National Forest.

***Tholurna dissimilis***

Although this dwarf fruticose lichen is typically found on exposed subalpine ridges and peaks, it is occasionally found at middle to low elevations in cool moist forested sites. In the watershed this lichen is reported from one site on the Mt. Hood National Forest within the Mt. Hood Wilderness.

**Fungi Habitat Descriptions for Documented Special Status Species**

***Albatrellus caeruleoporus***

This terrestrial polypore is presumed to be a mycorrhiza associate with hemlock species in moist conifer forest. Within the watershed this fungus is known from a single site on BLM land.

***Bridgeoporus nobilissimus (Oxyporus nobilissimus)***

Endemic to Oregon and Washington this species is known only from the Pacific silver fir zone. In Oregon, habitat for this species includes large diameter Pacific silver fir and noble fir stumps, snags and green trees from 2800' to near 4500' elevation. Within the watershed this fungus is known from a single site on BLM land.

***Collybia racemosa***

Easily overlooked due to its small size, this mushroom is found in small groups on old decayed or blackened mushrooms and occasionally on conifer duff. Within the watershed this fungus is known from a single site on private land.

***Gomphus kauffmanii***

Solitary to scattered on the forest floor in conifer forests. Within the watershed this fungus is known from a single site on the Mt. Hood National Forest.

***Hydropus marginellus***

Scattered to gregarious, growing on the wood of conifers in moist true fir and pine forests. Within the watershed this fungus is known from a single site on private land.

***Leucogaster citrinus***

Found in the soil or duff of moist conifer forests. Within the watershed this fungus is known from a single site within the Mt. Hood Wilderness.

***Ramaria araiospora***

Solitary to scattered on the forest floor in conifer forests. Within the watershed this fungus is known from three sites on BLM land.

***Ramaria stuntzii***

Solitary to scattered on the forest floor in conifer forests. Within the watershed this fungus is known from two sites on BLM land.