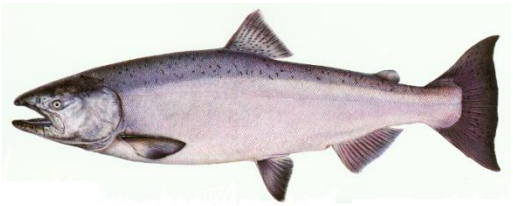


BLM Western Oregon Aquatic Restoration Strategy
5/20/15

Background: In many watersheds throughout Western Oregon, a legacy of past land management impacts exists. Past practices such as splash dam logging, riparian clear-cut harvesting, valley-bottom road construction, and stream clean-out all resulted in lasting and unforeseen impacts to fish and their habitats. These practices greatly simplified stream channels, and lowered overall aquatic productivity. Specific impacts included: Decreased riparian shade and sources of large wood, increased water temperatures, decreased pool habitats, decreased spawning substrates, increased fine sediments, reduced floodplain habitat, and channel widening.

While these issues are serious and challenging to overcome, it is important to note that these legacy impacts are primarily a result of land management practices that are no longer utilized on public lands. In addition, regional monitoring results (Lanigan, 2012) indicate that management of aquatic habitats on federally-managed lands has improved dramatically over the last 15 years. This monitoring shows that roughly 70% of watersheds with more than 25% Federally-managed lands show an improving aquatic habitat trend. Furthermore, many of the watersheds that displayed a declining habitat trend over this period did so as a result of large, natural fire events – not land management impacts. This improved management has allowed aquatic specialists to focus their efforts on reversing the legacy of issues remaining on the landscape through aquatic restoration.

The Need to Focus: As aquatic restoration funding becomes increasingly scarce, it becomes imperative to focus limited dollars in areas where they will have the largest biological benefit. To accomplish this, the BLM in Western Oregon developed a restoration strategy that uses a combination of habitat based intrinsic potential (IP) modeling and professional field knowledge to focus restoration efforts in areas deemed likely to have the highest production potential for fish species of interest.

Updated Annually: In order to be responsive to new fish listings or de-listings under the ESA, varying environmental conditions, and emerging restoration technologies - this strategy is intended to be updated annually. These annual updates will ensure that this strategy is able to track restoration progress made over time, incorporate new information pertinent to aquatic restoration efforts, and update BLM aquatic restoration priorities as appropriate.

General Approach: It is BLM policy to focus restoration actions on species listed under the Endangered Species Act (ESA), or species that are at risk of being listed under the ESA – otherwise known as Special Status Species (BLM 6840 Manual). Therefore, the approach used to develop this strategy emphasizes

implementation of aquatic restoration for ESA-listed or Special Status salmon and steelhead species. This approach also attempts to focus restoration activities even further, by prioritizing areas deemed to have a high density of High Intrinsic Potential (HIP) habitat – (as per Burnett et al., 2007), or in other areas known to be highly productive for those species (as per site-specific professional field knowledge).

It is worth noting that while this strategy targets ESA-listed and Special Status fish species, it is expected that restoration treatments focused on restoring key habitat components and aquatic processes would benefit the entire aquatic community within those watersheds.

Intrinsic Potential - The concept of "intrinsic potential" is simply defined as the set of habitat features that most influence whether that habitat is likely to be used or selected (or not) by an individual species. For example, Coho Salmon juveniles are typically found in greater numbers in small to mid-sized streams with wide valley bottoms and relatively low stream gradients, whereas steelhead juveniles are generally found more often in small to mid-sized streams in narrower valley bottoms, with steeper stream gradients.

The concept of using habitat-based "intrinsic potential" as a tool to help focus restoration is a relatively new approach. The potential validity of this approach was partially confirmed by results from relatively extensive juvenile salmonid trapping from 1995-2002 in the Umpqua basin. The data produced by this project suggested that watersheds with a large proportion of HIP habitat for coho salmon also had the largest number of outmigrating coho salmon smolts – when compared to the coho numbers for watersheds with small amounts of HIP. Similarly, areas with large proportions of HIP for steelhead had the largest number of outmigrating steelhead juveniles.

In considering use of IP, it is important to acknowledge that many of the factors that determine the intrinsic value of a given stream reach are physical attributes – such as gradient, channel width, and mean annual flow. These physical factors are relatively stable over time. While many stream reaches may meet the physical criteria to be considered HIP, there may also be a natural or past land management legacy that is currently limiting their fish production capacity. Past actions such as riparian clearcut harvesting, stream clean out, splash dam log drives, valley-bottom road construction, conversion of forested lands to agricultural or residential use, etc. may be resulting in current conditions that are preventing high fish production in HIP areas, hence the need for restoration.

Professional Field Knowledge*:* In addition to using intrinsic potential, this restoration strategy also placed heavy emphasis on areas where specific field knowledge indicated above-average levels of fish production, or other circumstances that may influence the practicality of conducting restoration work in a given area. This locally-specific information was important to calibrate the results of the HIP model – which may not work well in specific areas where a legacy of past management effects is present, or which may emphasize restoration in areas where it is not currently feasible to conduct that work – due to social, political, or other geographic constraints.

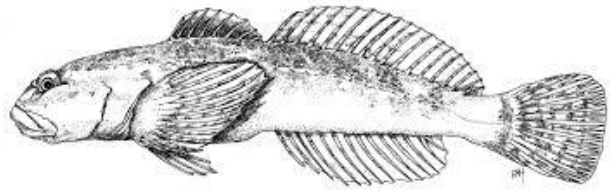
While it is BLM policy to focus management and restoration efforts on ESA-listed and Special Status Species, this strategy also incorporated IP information for other non ESA-listed and non Special-Status salmon and steelhead species, as well as local knowledge regarding important areas for these other fish species. By doing so, we were able to look for and prioritize areas of overlap, where certain watersheds provide important habitat for multiple species. This approach adopts the concepts expressed in the FEMAT document (1993), where the authors point out that a single-species approach to habitat management would be insufficient for protecting even the targeted species.

Detailed Methodology: In 2007, Earth Systems Institute was contracted by the BLM to model intrinsic habitat for Coho Salmon, Chinook Salmon, and Steelhead Trout in all of Western Oregon - as per the methods and habitat parameter curves described in Burnett et al., (2007). This modeling effort produced an intrinsic habitat value ranging between 0 and 1, for each species on each given segment of stream where they are found. Model values at or near 0 represent the least valuable habitat, whereas model values at or near 1 represent the highest value habitat for each respective species. For our purposes, any modeled IP values ≥0.75 were considered to be high intrinsic potential (HIP), and of high importance for that respective species.

For each of the 3 species in Western Oregon, the miles of HIP habitat in each sub-watershed were summed and then used to determine a HIP density - by dividing the total miles of HIP habitat by the sub-watershed area (in square miles). This process resulted in a species-specific HIP density for each sub-watershed, which produced relative values so that sub-watersheds that vary dramatically in size could be compared equally.

The HIP density information was then divided into value categories, in order to visually display and contrast areas with varying HIP density values. For each species, HIP density values of less than 0.1 mile/mi^2 were colored white. The white colored watersheds, therefore, represent areas with no HIP or very low amounts of HIP habitat. For each species, the remaining sub-watersheds with HIP density values >0.1, were evenly split into 3 groupings. These 3 groupings were then labeled as low, medium, and high HIP density areas, and colored with light gray, medium gray, and dark gray respectively, for display purposes. Figure 1 displays a snapshot of this HIP density information for Coho Salmon.

Based on this HIP density conceptual approach, areas shown in dark gray represent sub-watersheds of highest importance to Coho Salmon, and are therefore, potentially the most important areas to focus restorative actions for that species.



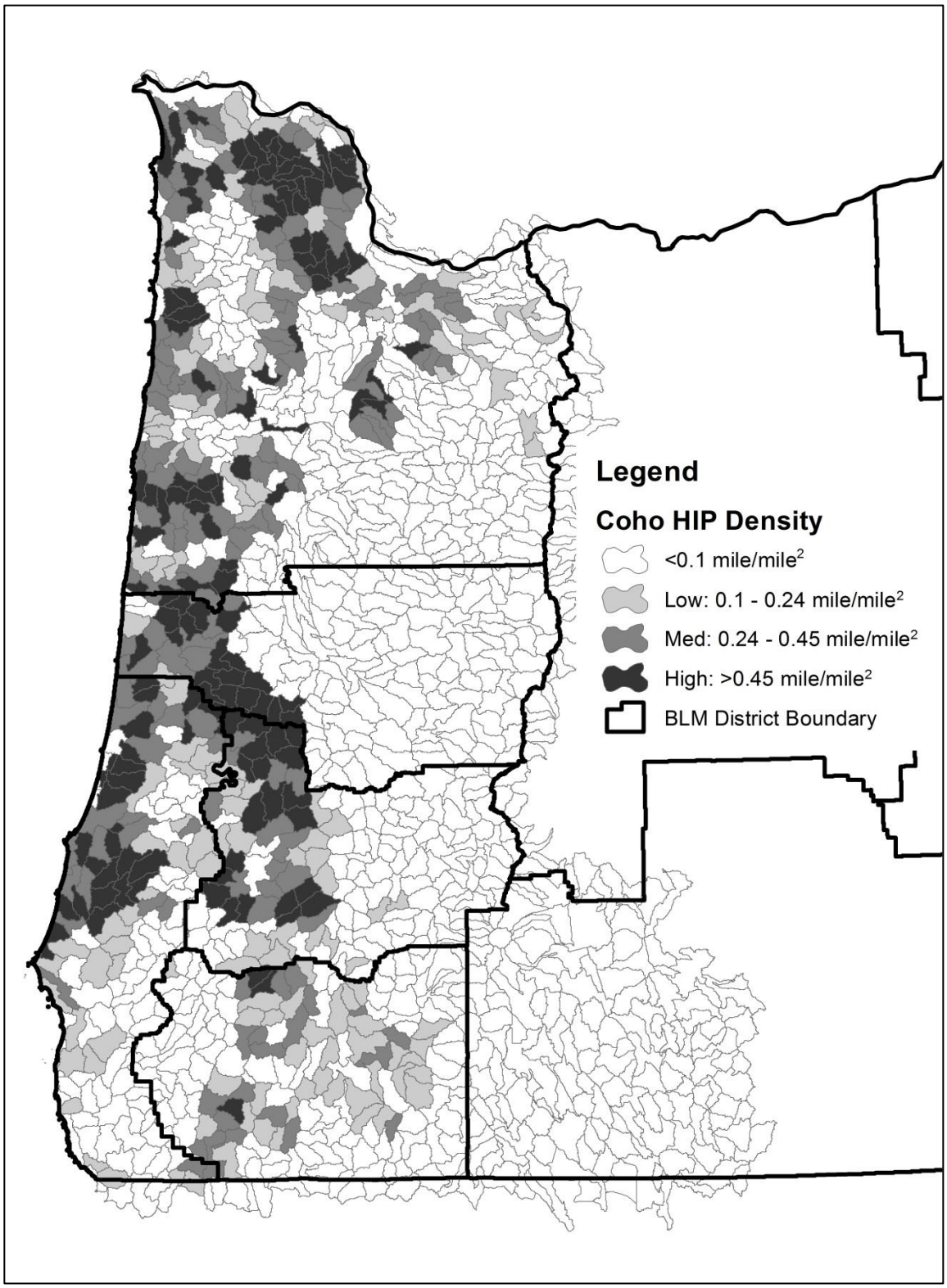
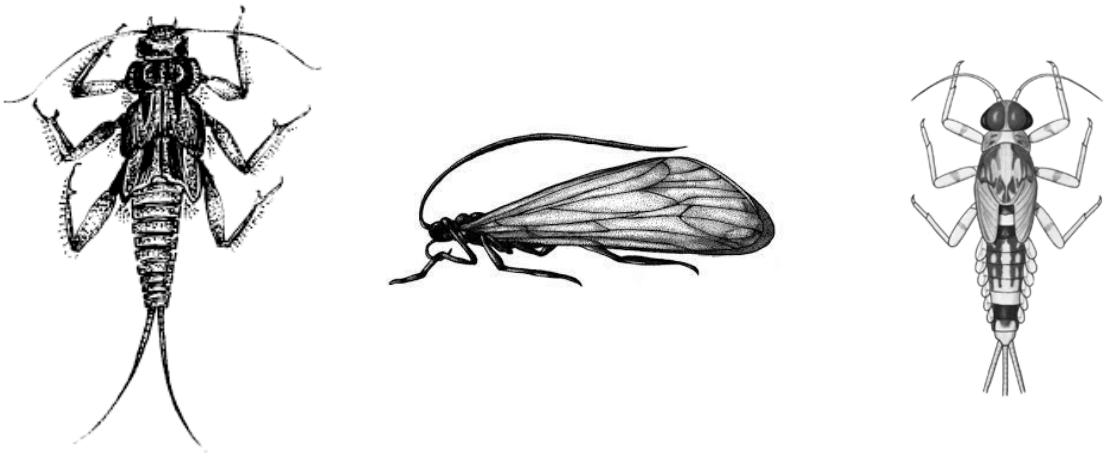


Figure 1 –Coho HIP Density in sub-watersheds of Western Oregon.

A BLM Focus: In order to make this model more relevant to BLM management actions, the low, medium, and high HIP density sub-watersheds were then investigated further in order to find concentrations of HIP habitat located on BLM-managed stream segments.

To accomplish this, we used an approach similar to the general HIP density mapping concept (i.e. low, medium, and high HIP classification). In this case, however, the total mileage of habitat considered as HIP for a given species on BLM-managed streams was summed for each sub-watershed. Sub-watersheds were then grouped into low, medium, or high importance areas, based on the total length of BLM-managed HIP habitat present. Sub-watersheds with <0.1 mile of BLM-managed stream segments that ranked as HIP were colored white. The remaining sub-watersheds were again broken into 3 groupings, but instead of a linear relationship among the groupings, they were grouped according to the number of BLM-managed HIP miles in the sub-watershed. Sub-watersheds with between 0.1 and 1.0 mile of BLM-managed HIP were colored light gray, those with between 1 and 5 miles were colored medium gray, and those with >5 miles of BLM-managed HIP were colored with a dark gray. Theoretically, BLM restoration actions would have the largest potential influence on fish habitat in the dark gray sub-watersheds. Figure 2 documents the results of this query for Coho Salmon HIP on BLM-managed streams.



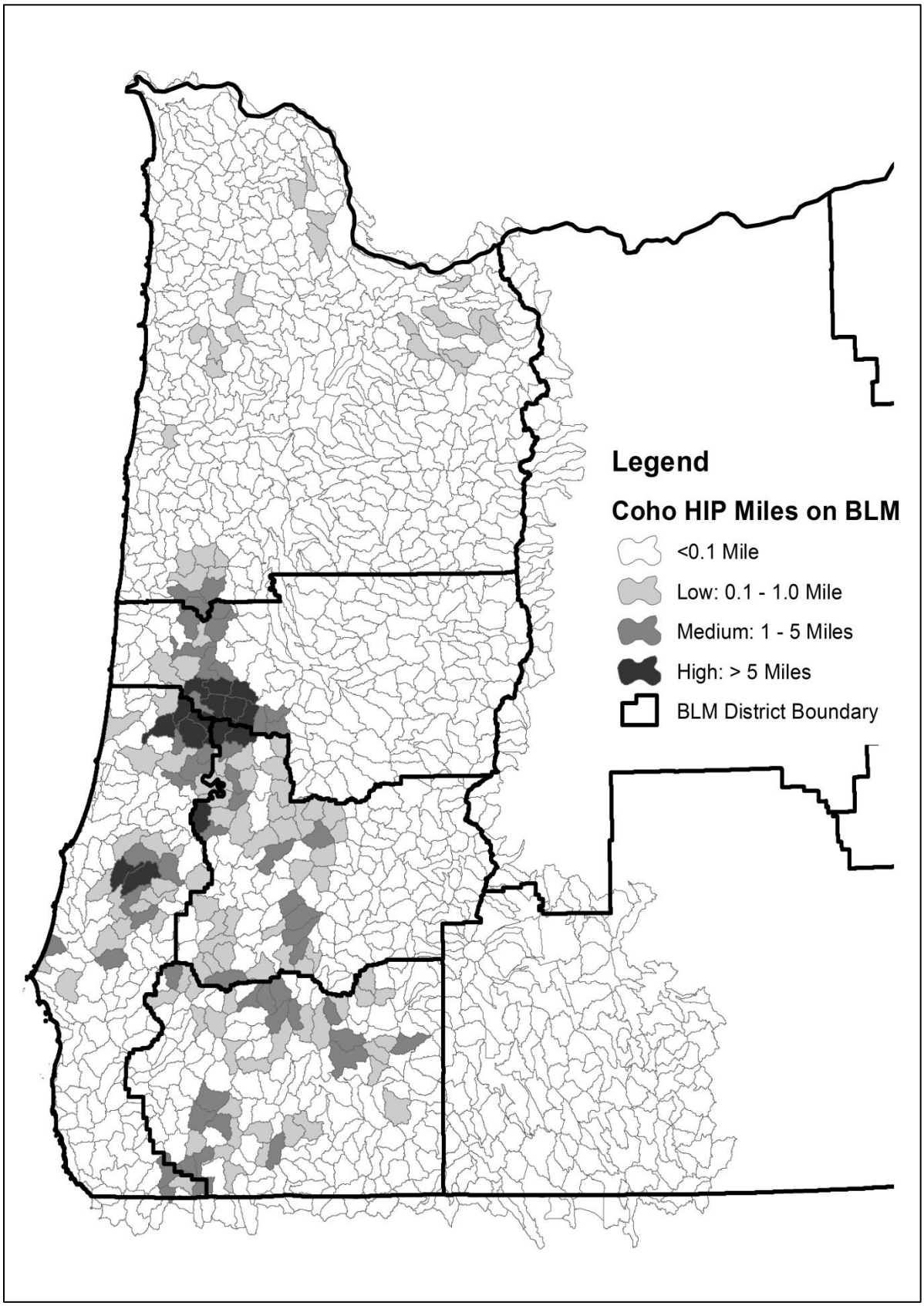


Figure 2 – Miles of Coho HIP on BLM-managed lands in sub-watersheds of Western Oregon.

The last step used to further focus BLM restoration efforts was to find overlap between areas of medium or high HIP density, and areas with 1 or more miles of BLM-managed stream segments considered as HIP. The result of this query would serve to highlight areas that are important to a given species, and where the BLM also had a substantial management influence.

This approach would allow the BLM, as an agency, to direct restoration funding to BLM-managed areas of highest biological importance to a given species. Figure 3 displays this query for Coho Salmon.

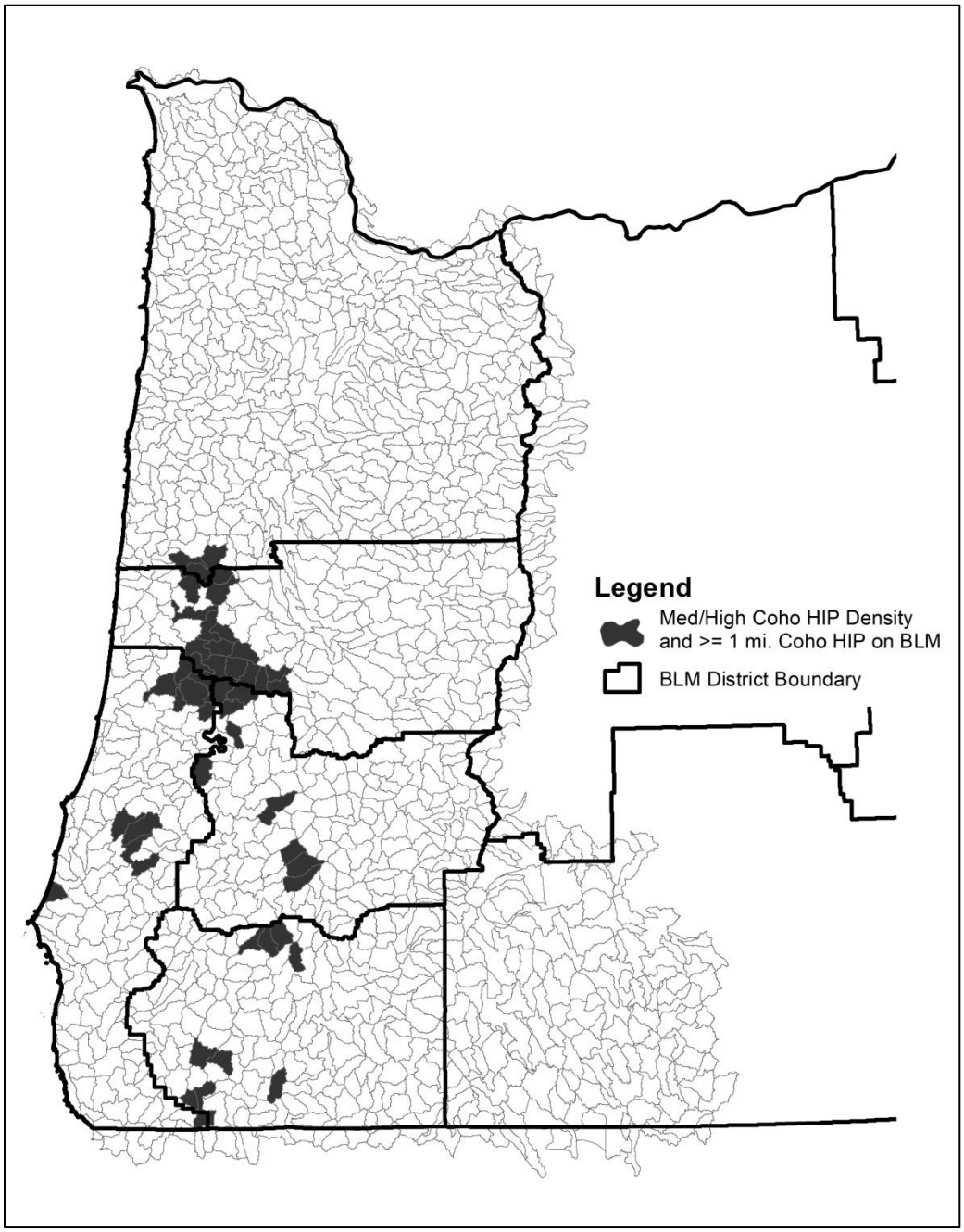


Figure 3 – Sub-watersheds with Medium/High Coho HIP Density, and >= 1 mile of BLM-managed HIP habitat for Coho Salmon.

A Multi-Species Approach: As discussed previously, the methods described above were carried out for Coho Salmon, Chinook Salmon, and steelhead trout. This information can then be grouped and queried in a similar fashion – for all 3 species. When sub-watersheds with medium and/or high HIP densities for these species are analyzed together, and coupled with medium and/or high amounts of BLM-managed HIP miles for these species, the suite of important sub-watersheds expands substantially. Figure 4 displays this combined information below.

Using this approach, each District is able to select sub-watersheds within their boundaries that are of high value for Chinook, Coho, and/or steelhead. In addition, Districts are now able to look for areas of overlap between important habitats for ESA-listed species, and important habitats for non-listed species – which may further maximize the biological benefit of BLM restoration actions.

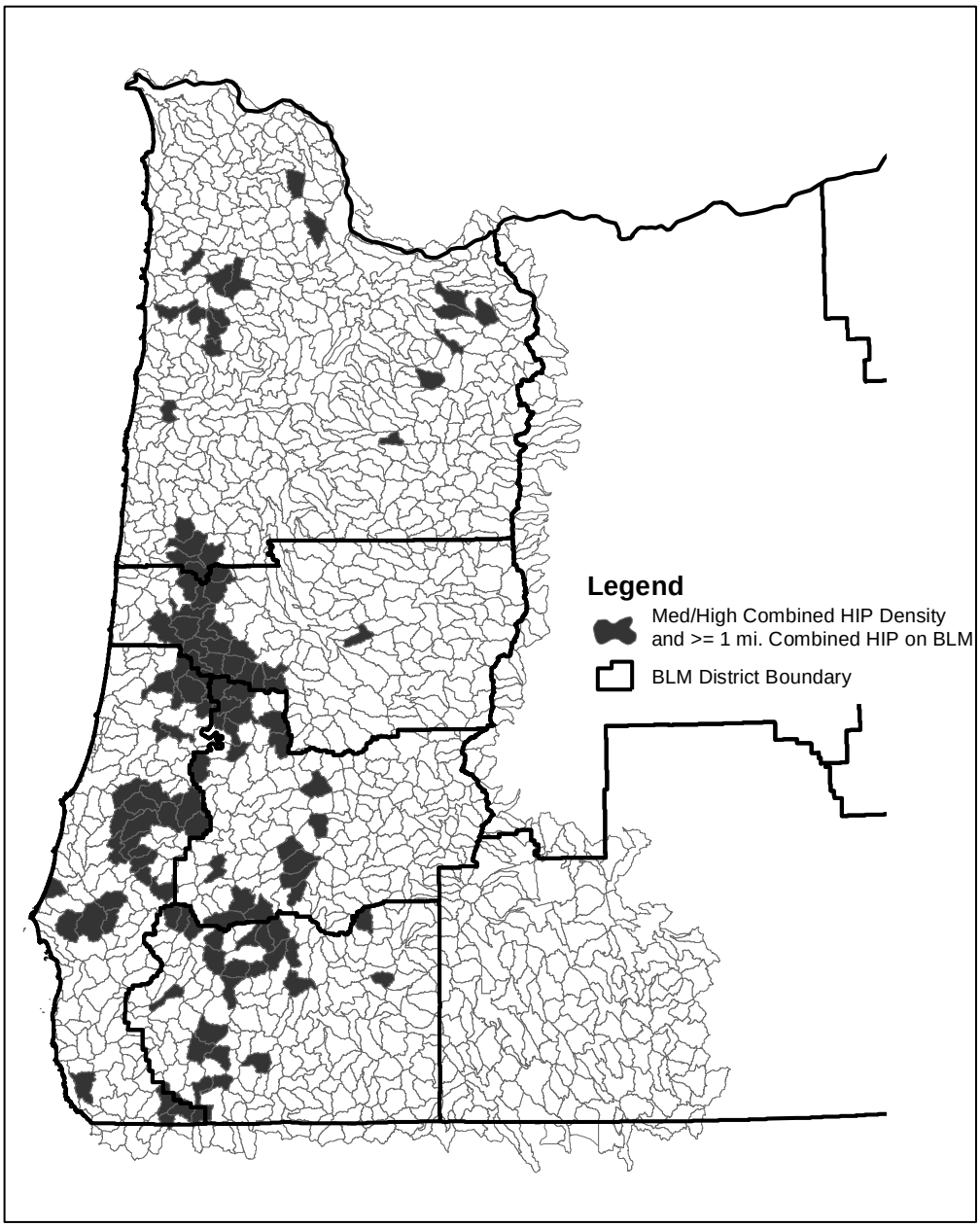


Figure 4 – Sub-watersheds with Medium/High Combined HIP Density, and >= 1 mile of BLM-managed HIP habitat.

A customizable approach: Each respective District now has the ability to customize a restoration prioritization approach that is tailored to benefit species of most interest to that particular unit. For example, a District may have BLM-managed HIP habitat for ESA-listed Steelhead and ESA-listed Chinook Salmon. Where this is the case, a model run that queries sub-watersheds with areas of Steelhead and Chinook HIP overlap would result in a strategy that may have the ability to maximize restoration efforts for both species.

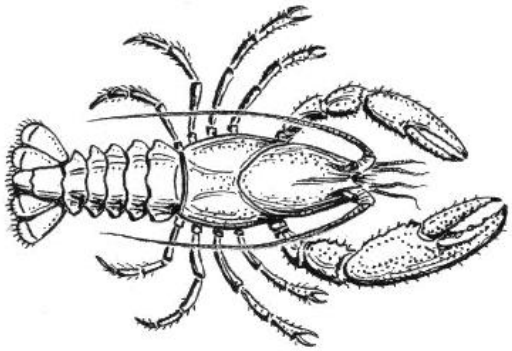
Professional Field Knowledge: While use of intrinsic potential emphasizes watersheds that were modeled as important to fish species, it is equally important to incorporate professional field knowledge into those considerations. This information is located in the collective field knowledge of the aquatic staff on each respective District, and represents decades of field observations, data collection, and practical insights that are critically important to this restoration approach. For example, a given-subwatershed may rank low based on the model, but may produce a large number of fish on a consistent basis for reasons other than the metrics evaluated by the IP model. Or, a watershed that ranks out as highly important for fish may have nearly insurmountable social constraints that limit practical restoration actions – such as a major dam, or a suburban housing development in important floodplain areas.

Sub-watersheds that were included or excluded in this strategy based on professional field knowledge will be described in the narrative text in the District-specific restoration appendix below.

Summary Overview: Using the process described above, a suite of important sub-watersheds on each District has been identified. Figure 5 below depicts the top 10 priority subwatersheds selected on each District. Each District also selected a subset of the highest priority subwaterseds from their respective top-10 pool of priority subwatersheds. Subwatersheds in this subset are referred to as Focus Subwatersheds, and represent the areas where each District intends to focus its restoration activities over the next 5 years.

Additional information on the Priority and Focus Watersheds selected on each District can be found in the attached Appendices.

GIS Project Location and Data Layers: The GIS information used to support this effort can be found at the following address within the BLM Citrix system: G:\oso\Fisheries\WestsideRestorationPrioritization



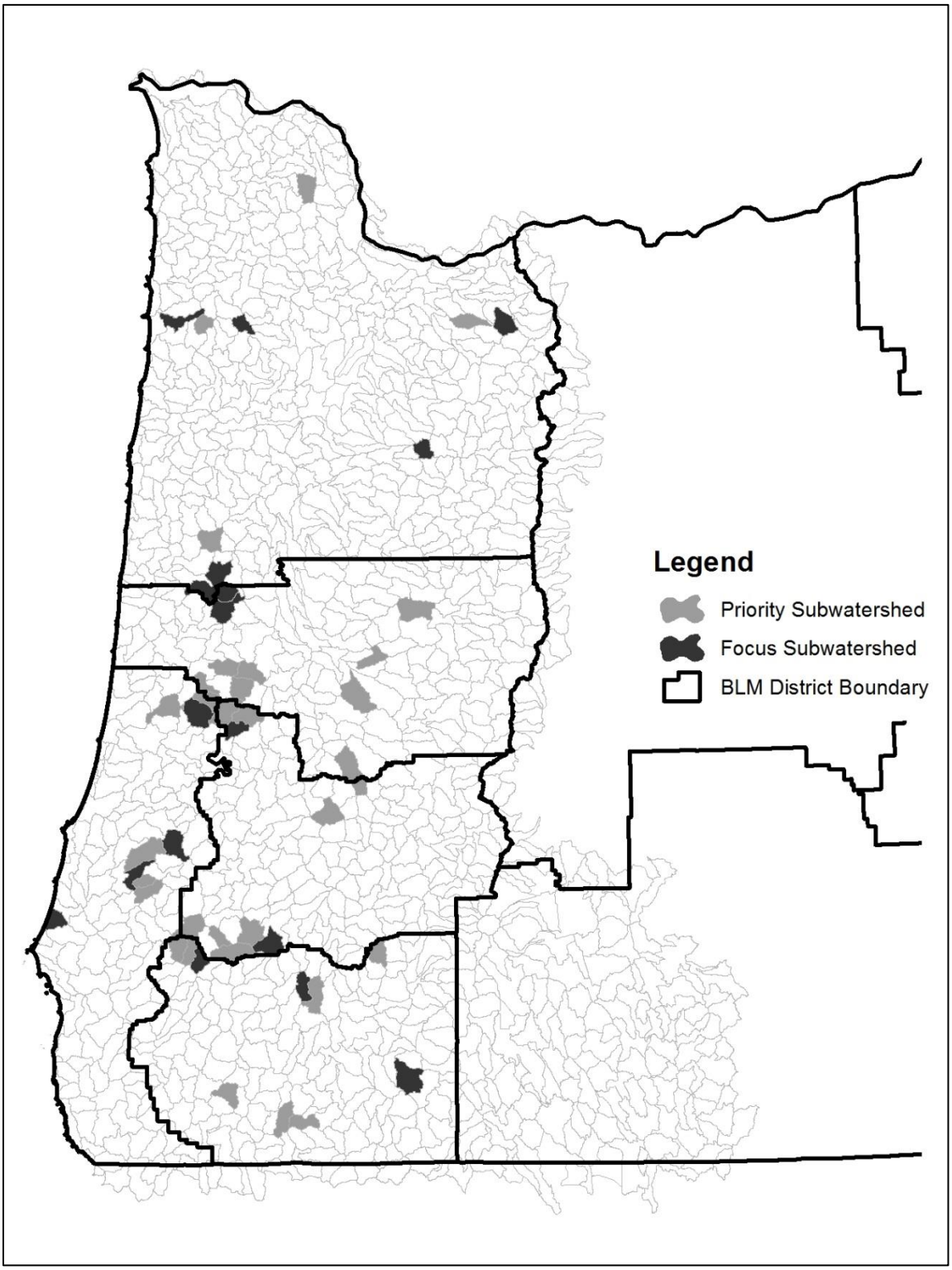


Figure 5 – BLM Priority and Focus sub-watersheds of Western Oregon.

Priority Actions Needed: Once the priority locations were identified on each District, it is important to prioritize the types of actions needed to address the legacy impacts. The list of potential restoration actions is listed below in relative priority order. These actions closely follow restoration priority recommendations found in Roni et al., 2002. While these actions have been placed in priority order, many of them are actually being implemented concurrently. Fish passage restoration and addition of habitat complexity were prioritized ahead of riparian and road treatments due to the relative speed and simplicity of implementation as well as the nearly instantaneous aquatic benefits. Riparian and road treatments are equally important, but will take a much longer and extensive effort to fully address.

1. **Aquatic Organism Passage Restoration –** This includes restoring access to historic main channel habitat, as well as historic side channel habitat where it was blocked by land management actions (road construction, plugging side channels, etc.). This is the most effective and instantaneous form of aquatic restoration we can undertake

2. **Habitat Complexity –** Addition of large wood and boulders to simplified aquatic habitat is a short-term, temporary approach to regain complexity. These actions would only be needed up to the point when riparian stands can again passively supply large wood to aquatic systems at levels approaching the historic potential.

3. **Riparian Thinning and Planting Treatments –** Prior to the 1990's, many riparian areas were clearcut harvested down to the edge of the stream, with no riparian buffers left standing. Riparian stands that were formerly characterized by a variety of conifer and hardwood species, in a wide array of sizes - are now dominated by single-species conifer stands that are extremely dense. In other areas where the ground was not replanted following harvest, the sites are now dominated by single-species hardwood stands. Both of these conditions are believed to be outside the range of natural variability expected in Western Oregon (Pollock et al., 2005; Tappeiner et al., 1997; Poage & Tappeiner, 2002). Neither of these conditions is conducive to the long-term development of healthy riparian stands, or healthy adjacent stream channels. Thinning and planting activities are necessary to get these artificial stands on a more natural and healthy trajectory, and return them to conditions more reflective of the natural range of variability. Where concerns over removal of future instream woody material exist, a portion of the thinned trees can be fallen directly in to the channel to mitigate for this concern, while still achieving the desired riparian stand benefits.

4. **Addressing long-term road infrastructure issues –** Many forest roads around the region were constructed more than 4 decades ago, and many were located in places that create the likelihood of aquatic impacts (i.e. in valley bottoms, on unstable mid-slope areas, etc). Specific impacts can include increased contribution of fine and coarse sediments, channel constriction, increased peak flows, increased stream temperatures and reduced large wood input potential. As these roads and their associated culverts continue to age, many are starting to fail catastrophically. Due to the checkerboard nature of BLM-managed lands in Western Oregon – our ability to close and fully decommission roads is greatly limited by legal access rights we share with our neighboring land owners. As a result, BLM road restoration actions will likely focus on measures that reduce or eliminate a roads connection with the aquatic system. These actions may include: relocating roads away from aquatic systems where possible, adding non-erosive surfacing, installing additional drainage culverts to reduce runoff interception and routing, and replacing aging stream crossing culverts to increase their flow capacities, and prevent catastrophic failures.

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Tappeiner, J. C., D. Huffman, D. Marshall, T. A. Spies and J. D. Bailey. 1997. Density, ages, and growth rates in old-growth and young-growth forests in coastal Oregon. Canadian Journal of Forest Research **27**: 638-648.

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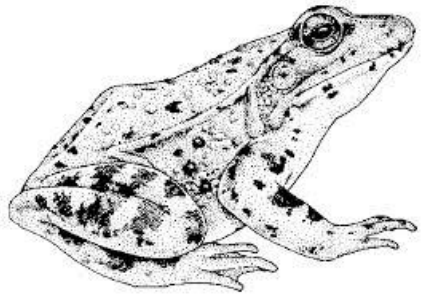


Appendix A – Salem District

The Salem District has a total of 34 sub-watersheds that ranked as Medium/High for HIP density for one or more species. There are 3 sub-watersheds that ranked Medium/High for coho salmon, 7 are high for chinook salmon, and 25 for steehead trout. There are 22 sub-watersheds that ranked Medium/High for a combination of species, mostly for chinook salmon and steelhead trout.

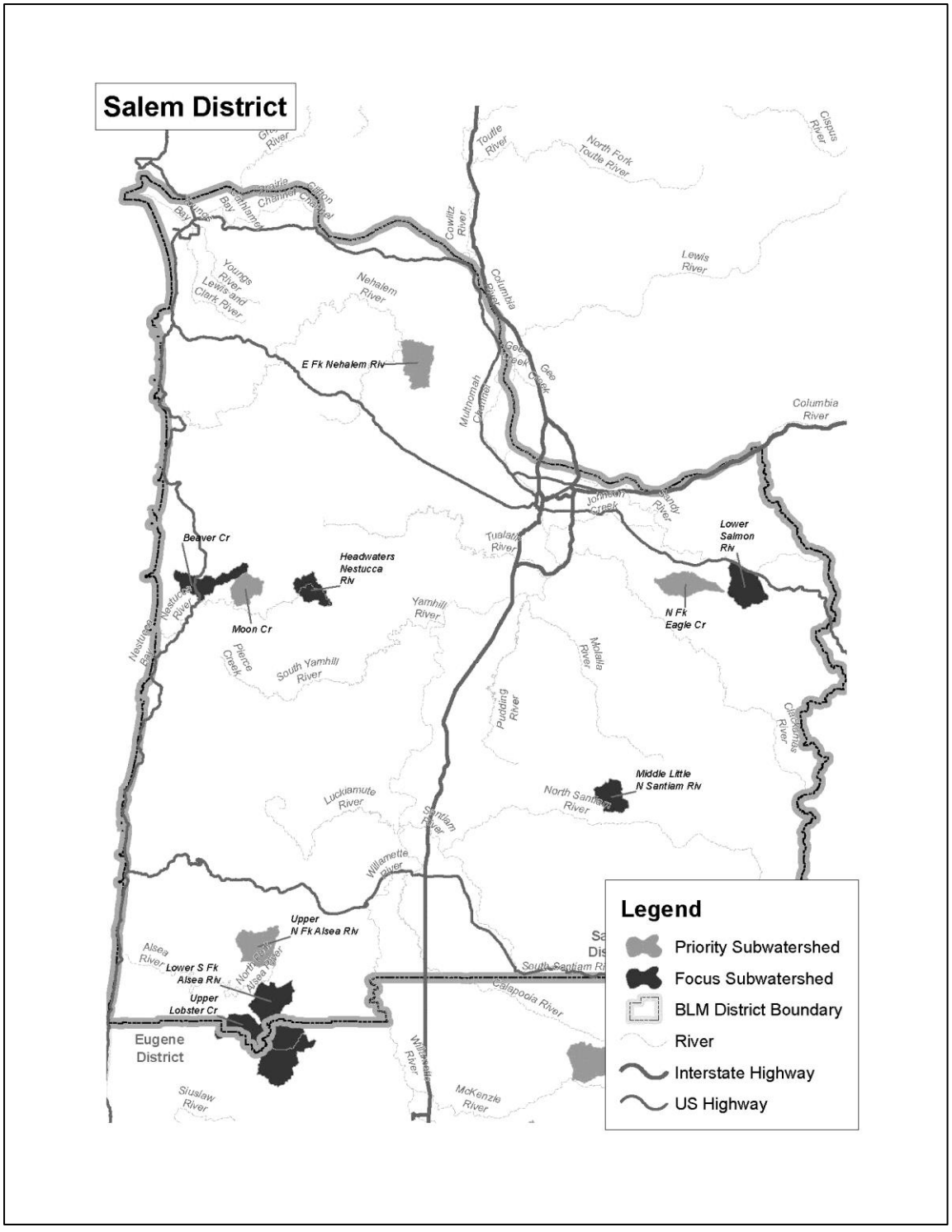
Of the 34 sub-watersheds, Salem identified 10 as priority sub-watersheds. Seven of the priority sub-watersheds are ranked as Medium/High for HIP density in the combination category. All of the priority sub-watersheds were selected due to the amount of BLM habitat available for potential restoration and because there are excellent opportunities for partnerships.

Three priority sub-watersheds (Middle Little North Santiam River, Headwaters Nestucca, and Upper North Fork Alsea) were selected based on professional judgement. These three sub-watersheds ranked as Medium/High for either chinook salmon and/or steelhead trout HIP density but were not included in the combination category. The Middle Little North Santiam River sub-watershed includes opportunities for partnerships for restoration on high priority stream reaches. The Headwaters Nestucca sub-watershed did not rank high by the metrics evaluated by the IP model for coho salmon yet surveys indicate that it supports some of the most productive coho salmon habitat in the Nestucca basin. The Upper North Fork Alsea sub-watershed is an important area for coho salmon and steelhead trout production, has good partnership opportunities and has a relatively high amount of BLM ownership.

Several sub-watersheds ranked as important in the Cascades and Tillamook Field Offices were not given further consideration because these sub-watersheds have little potential for restoration. The BLM ownership in these sub-watersheds consists primarily of confined, mainstem riverine habitat where high energy flows preclude the use of presently available restoration technology. Additionally, the Middle Fork of North Fork Trask River was considered, but deferred because the BLM has recently completed all if the identified restoration actions on BLM and adjacent lands in this sub-watershed.

6th Field Priority Sub-watersheds		
Salem District	HUC Number	**Estimated Completion Date**
***Lower Salmon River**	**170800010304**	**2016-2023**
North Fk Eagle Creek	170900110502	2016-2025
***Middle Little North Santiam River**	**170900050504**	**2016-2030**
East Fk Nehalem River	171002020108	2016-2020
***Beaver Creek**	**171002030207**	**2016-2019**
Moon Creek	171002030205	2016-2021
***Headwaters Nestucca River**	**171002030201**	**2016-2021**
Upper North Fk Alsea River	171002050103	2015-2017
***Lower South Fk Alsea River**	**171002050104**	**2017-2020**
***Upper Lobster Creek**	**171002050201**	**2015-2020**

* Focus sub-watersheds for each District.



Salem District Priority and Focus sub-watersheds

Salem District – Project Specific Information							
Lower Salmon River 6th Field Sub Watershed							
Project Name	Project Description and Location	Limiting Factors Addressed	Land Ownership	Scale (miles/ acres)	Potential Partners Involved	Timeline, starting and number of years	Estimated Cost and Potential Funding Sources
Salmon - Wildwood reach	Add large wood (log jams); boulder additions; reconnect 1+ side channels	Pool habitat - juvenile rearing; restore LW recruitment processes; increase gravel availability	BLM	1 mile	TFT; Sandy River Basin Partners	2016-2017	$300,000; (largely OWEB funds and other grants); ca. $75,000 from BLM
Sixes Creek I	Add large wood – for habitat complexity and floodplain connectivity	Juvenile rearing - scour pools and provide cover; floodplain roughness	BLM *Note-check restoration plan objectives*	0.25 mile	TFT; Sandy River Basin Partners	2018	$50,000 (100 trees); ca. $12,500 BLM funds
Sixes Creek II	Add large wood – for habitat complexity;	Juvenile rearing; scour pools and provide cover	Private	0.6 mile	TFT; Sandy River Basin Partners	2019	$0 – BLM in-kind contributions only; assume don't want the non-BLM funds
Boulder Creek	Add large wood - habitat complexity	Juvenile rearing habitat; scour pools; restore LW recruitment processes	BLM – newly acquired	ca. 1.5 mi	TFT; Sandy River Basin Partners	2019-2020	$50,000; ca. 60 LW pieces/mi; from USFS Rg.Nat.Var.; $12,500 BLM funds
Salmon – Resort on Mountain reach	Constructed riffle-pool sequences; log jams; upstream of Wildwood to Cheney Crk	Pool habitat and quality; juvenile rearing; adult cover and pools; gravel availability	Private	2.8 miles	TFT; Sandy River Basin Partners	2020-2023	$0 – BLM in-kind contributions only
Hierarchical restoration strategy: 1) reconnect isolated habitats; 2) restore long term river processes; 3) restore long term watershed and vegetation processes, ie. 3a) re-vegetate riparian areas , 3b) reduce road impacts; 4) in-stream habitat restoration actions							
Note: re: 1) no fish barriers in this 6th field, some side-channel connections remain; 2) most work proposed is to restore long-term river processes; 3a) TNC has replanted and treated all riparian areas with early seral CT's or invasive weeds in this 6th field; 3b) few opportunities to close and rehab roads – USFS lands in sub-basin almost all wilderness with no roads; BLM lands with few roads and ones that might close (MQ road, Boulder Crk road) have designated reciprocal rights or easements; most roads on private; 4) some actions listed additionally provide in-stream habitat benefits (improve juvenile rearing habitat and adult habitat)							

Salem District – Project Specific Information							
Middle Little North Santiam River 6th Field Sub Watershed							
Project Name	Project Description and Location	Limiting Factors Addressed	Land Ownership	Scale (miles/acres)	Potential Partners Involved	Timeline, starting and number of years	Estimated Cost and Potential Funding Sources
Sinker II	Add LW to existing key pieces; = log jam completion	Juvenile rearing; spawning gravel availability; pool habitat and quality	BLM	0.25 mile	None?	2016	$30,000; BLM funds
Sacred Island	Side channel connection and add large wood	Juvenile rearing; side channel habitat; thermal refugia?	BLM	0.25 mile	None?	2016	$30,000; BLM funds
Elkhorn Golf Course reach	Add large wood to restore river form, function and processes; restore side channel connections; restore floodplain tree CT's	Juvenile rearing; channel form and shape (reduce W:D ratio); thermal habitat restoration; riparian stand restoration	Private; soon 1.4 miles of main channel, and 0.9 mile of SC to be purchased by Western Rivers and managed by BLM	1.4 miles main channel; 0.6 mile side channel on BLM; 0.9 mile side-channel on private (currently); 140 acres of floodplain	TFT, NSWC, USFS	2020-2025?	See lines a. – d. below
a.	connect side channels: 5 lg. log jams			1000 trees			$750,000
b.	Add large wood to SC's			600 trees			$300,000
c.	Add log jams to existing river channel: 5 lg jams			650 trees			$525,000
d.	Plant trees on floodplain	LW recruitment; bank stability		Banks along 3 miles of channel			$75,000
Little Sinker Creek confluence	Add LW to lower Sinker creek; apex jam on LSinker side channel of LN Santiam	Juvenile rearing; side channel habitat;	Private	200 trees	NSWC	2025	$100,000
Hierarchical restoration strategy: 1) reconnect isolated habitats; 2) restore long term river processes; 3) restore long							

term watershed and vegetation processes, ie. 3a) re-vegetate riparian areas , 3b) reduce road impacts; 4) in-stream habitat restoration actions
Note: re: 1) major costs are reconnecting floodplain and side channels in glacial lake bed area of LN Santiam valley; 1 potential culvert barrier to steelhead use of a 2nd order tributary near Elkhorn Rec site; 2) restoring river processes and channel form will require lots of trees (or alternatively >100 yrs of time); 3a) floodplain surfaces near side channels and main channel require planting of conifer trees to restore long term processes; 3b) lots of roads in this watershed, evaluating potential reduction of road mileage requires more time than provided for this exercise 4) almost all jams in proposal are to first restore processes, but will also provide juvenile rearing habitat and adult cover

Salem District – Project Specific Information

North Fork Eagle Creek 6th Field Sub Watershed

Project Name	Project Description and Location	Limiting Factors Addressed	Land Ownership	Scale (miles/acres)	Potential Partners Involved	Timeline, starting and number of years	Estimated Cost and Potential Funding Sources
Bear Creek	Add large wood - habitat complexity	Juvenile rearing habitat; scour pools; restore LW recruitment processes, gravel availability	BLM	1.7 miles (80 trees/mile)	CRBWC	2025	$75,000
Bear Creek – re-vegetation	Treat riparian areas vegetated with blackberry	LW recruitment; stream shading	BLM	1-2 acres	CRBWC, TNC	2016	$10,000
Lower NF Eagle	Add large wood - habitat complexity	Juvenile rearing habitat; scour pools; restore LW recruitment processes, gravel availability	BLM	1 mile (150 trees/mile); note more potential sites for jams, thus more trees/mile	CRBWC	2025	$75,000
Middle NF Eagle	Add large wood - habitat complexity	Juvenile rearing habitat; scour pools; restore LW recruitment processes, gravel availability	BLM	1.1 miles (125 trees/mile); more confined than lower NF Eagle	CRBWC	2025	$70,000
Road 3-4E-14.1 (NF Eagle Cr Road)	Potentially rehab 450 m road on lower NF Eagle	Hydrologic processes; riparian tree stands; long term wood	BLM	450 m of roadbed; totally decommission after restoring	?	2030	$50,000

		delivery		channel?			
Upper NF Eagle	Add large wood - habitat complexity	Juvenile rearing habitat; scour pools; restore LW recruitment processes	Private (willing landowner – B. McCullough)	?; 80 trees/mile; helicopter delivery needed	landowner	?	$250,000
Hierarchical restoration strategy: 1) reconnect isolated habitats; 2) restore long term river processes; 3) restore long term watershed and vegetation processes, ie. 3a) re-vegetate riparian areas , 3b) reduce road impacts; 4) in-stream habitat restoration actions							
Note: re: 1) no barriers known in this 6th field; limited potential for side channel restoration on lower NF Eagle; 2) major work and costs associated with restoring LW recruitment processes; 3a) undoubtedly early seral stands on private lands with vegetation restoration needs, but amount unknown and willing landowners unknown; 3b) one short road on BLM could potentially be obliterated; most roads on Private lands; upper ¼ of watershed is on USFS lands, current status of roads on FS lands is unknown; 4) restoring LW processes also improves in-stream fish habitats							

Salem District – Project Specific Information							
Beaver Creek 6th Field Sub Watershed							
Project Name	Project Description and Location	Limiting Factors Addressed	Land Ownership	Scale (miles/ acres)	Potential Partners Involved	Timeline, starting and number of years	Estimated Cost and Potential Funding Sources
Road and bridge location / upgrade		Road stream interaction (Erosion problems)	Road multiple owners and rights	3-7 sites	ODFW – TEP- ODF- USFS- PVT timber	Survey and Recommen-dations in 2015 Implementation 2016-2020	$1,000,000
Fish habitat restoration / flood plain reconnect	Helicopter, Large wood, machine placement, etc.	Habitat complexity	PVT- USFS- BLM-ODF	6 miles	ODFW – TEP- ODF- USFS- PVT timber	2015-19	$180,000
Riparian Planting		Shade and future LWD		10 acres	ODFW – TEP- ODF- USFS- PVT timber	2015-2019	$30,000
Land Exchange					TEP- ODF- USFS- PVT timber		$100,000

Salem District – Project Specific Information							
East Fork Nehalem 6th Field Sub Watershed							
Project Name	Project Description and Location	Limiting Factors Addressed	Land Own-ership	Scale (miles/acres)	Potential Partners Involved	Timeline, starting and number of years	Estimated Cost and Potential Funding Sources

Road and bridge location / upgrade		Road stream interaction (Erosion problems)	Road multiple owners and rights	3-7 sites	ODFW – TEP- ODF- USFS- PVT timber	Survey and Recommendations in 2015 Implementation 2016-2020	$1,000,000
Fish habitat restoration/ flood plain reconnect	Helicopter, Large wood, machine placement, etc.	Habitat complexity	PVT- USFS- BLM- ODF	6 miles	ODFW – TEP- ODF- USFS- PVT timber	2015-19	$180,000
Riparian Planting		Shade and future LWD		10 acres	ODFW – TEP- ODF- USFS- PVT timber	2015-2019	$30,000
Land Exchange					TEP- ODF- USFS- PVT timber		$100,000

Salem District – Project Specific Information							
Moon Creek 6th Field Sub Watershed							
Project Name	Project Description and Location	Limiting Factors Addressed	Land Ownership	Scale (miles/ acres)	Potential Partners Involved	Timeline, starting and number of years	Estimated Cost and Potential Funding Sources
Road and bridge location / upgrade		Road stream interaction (Erosion problems)	Road multiple owners and rights	3-7 sites	ODFW – TEP- ODF- USFS- PVT timber	Survey and Recommen-dations in 2015 Implementation 2016-2020	$1,000,000
Fish habitat restoration/ flood plain reconnect	Helicopter, Large wood, machine placement, etc.	Habitat complexity	PVT- USFS- BLM- ODF	6 miles	ODFW – TEP- ODF- USFS- PVT timber	2015-19	$180,000
Riparian Planting		Shade and future LWD		10 acres	ODFW – TEP- ODF- USFS- PVT timber	2015-2019	$30,000
Land Exchange					TEP- ODF- USFS- PVT timber		$100,000

Salem District – Project Specific Information							
Headwaters Nestucca 6th Field Sub Watershed							
Project Name	Project Description and Location	Limiting Factors Addressed	Land Ownership	Scale (miles/acres)	Potential Partners Involved	Timeline, starting and number of years	Estimated Cost and Potential Funding Sources
Nestucca	Fish	Fish	BLM	10 sites	BLM	Site surveys	$4,500

Byway Culverts	Passage	passage and removal of an undersized culverts			Watershed Council (NNWC)	funded 2015 Implementation 2016-2021	$235,000 Min
Coho population Monitoring		Project and population monitoring	BLM	6 miles			$8,000 Year

Salem District – Project Specific Information							
Upper Lobster Creek 6th Field Sub Watershed							
Project Name	Project Description and Location	Limiting Factors Addressed	Land Ownership	Scale (miles/acres)	Potential Partners Involved	Timeline, starting and number of years	Estimated Cost and Potential Funding Sources
Bear Culvert	Replacement	Fish Passage Restoration	BLM	1.5 miles	N	2015, 2 yr	$150,000
SFk Lobster trib Culvert	Replacement	Fish Passage Restoration	BLM	0.5 miles	N	2017, 1 yr	$85,000
Lobster Trib culvert sec26	Replacement	Fish Passage Restoration	BLM	0.25 miles	N	2017, 1 yr	$85,000
Lobster Cr	Helicopter/GB Placement	Habitat Complexity	BLM	4 miles	N	2017, 5 yr	$200,000
EFk Lobster Cr	GB Placement	Habitat Complexity	BLM	1 mile	N	2017, 2 yr	$50,000
Lobster Thin	Conifer Release	Riparian Thinning/Planting	BLM	20 acres	N	2016, 2 yr	$20,000

Salem District – Project Specific Information							
Lower South Fork Alsea 6th Field Sub Watershed							
Project Name	Project Description and Location	Limiting Factors Addressed	Land Ownership	Scale (miles/ acres)	Potential Partners Involved	Timeline, starting and number of years	Estimated Cost and Potential Funding Sources
Trout Creek Culvert	Replacement	Fish Passage Restoration	Benton Cty	1.5 miles	Weyco, Benton Cty, AWC	2017, 1 yr	$75,000
S Fk Alsea LWD	Helicopter/ GB Placement	Habitat Complexity	BLM/ Weyerhaeuser	4 miles	ODFW	2019, 5 yr	$200,000
Tobe Creek	Helicopter/ GB Placement	Habitat Complexity	BLM	1.5 miles	ODFW	2019, 2 yr	$75,000
S Fk	Conifer	Riparian	BLM	50 acres	N	2020, 3	$50,000

Alsea Thin	Release	Thinning/ Planting				yr	

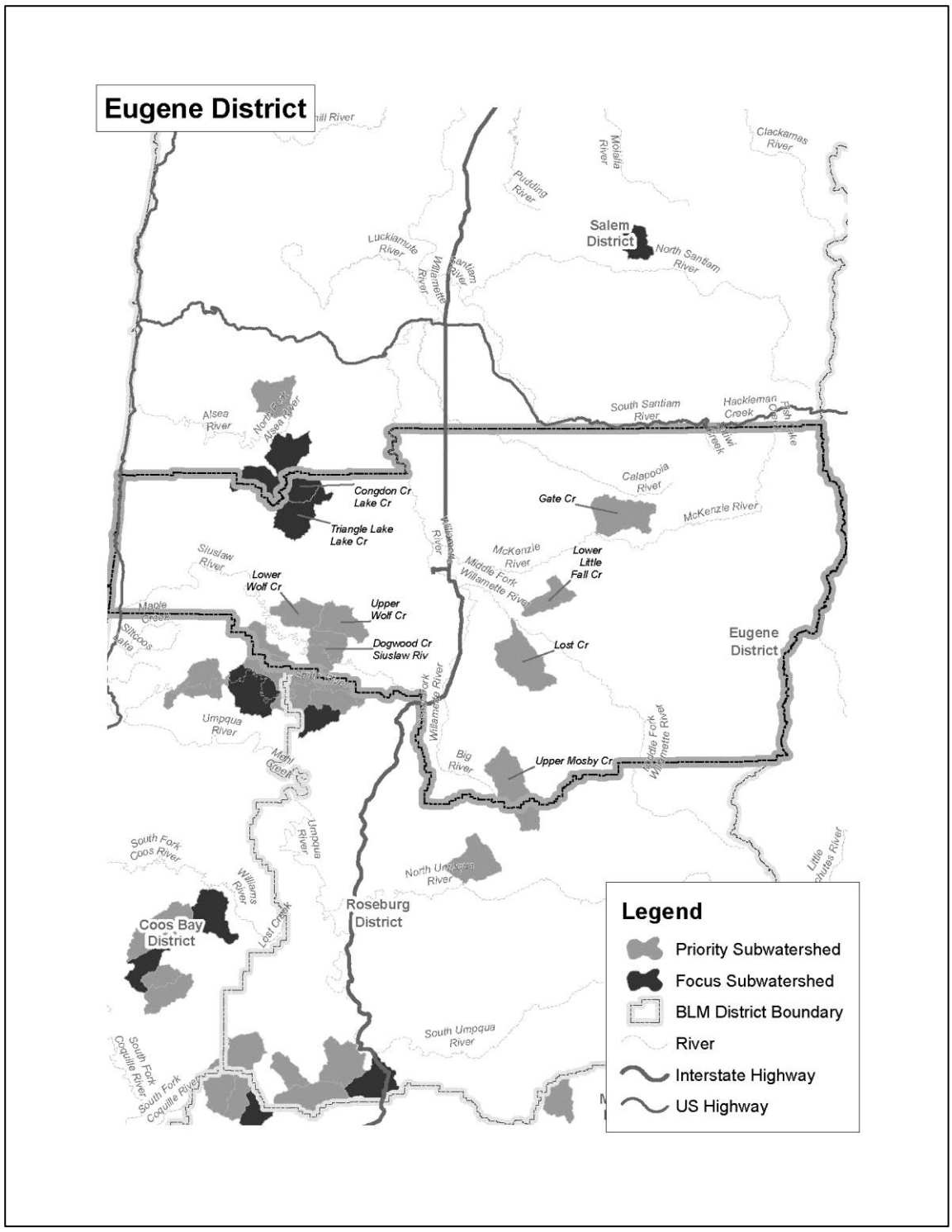
Salem District – Project Specific Information							
Upper North Fork Alsea 6th Field Sub Watershed							
Project Name	Project Description and Location	Limiting Factors Addressed	Land Ownership	Scale (miles/acres)	Potential Partners Involved	Timeline, starting and number of years	Estimated Cost and Potential Funding Sources
Starker Keyhole	Land Exchange or Acquisition	Habitat Complexity and Riparian Thinning	Starker/BLM	400 acres	Starker	2015, 5 years	$100,000 or $2,100,000
Trib Parker Culvert Retro	Culvert Repair	Fish Passage Restoration	BLM	1 mile	N	2020, 1 yr	$10,000
N Fk Alsea LWD	Helicopter/GB Placement	Habitat Complexity	BLM, Starker	4 miles	ODFW, AWC, Starker	2020, 5 yr	$200,000
Racks Cr Culverts	Replacement	Fish Passage Restoration	BLM	2 miles	Weyerhaueser	2020, 5 yr	$175,000

Appendix B – Eugene District

Eugene utilized the prioritization process as described in the summary report to select priority and select watersheds. Eugene selected focus watersheds based on HIP density which ended up all within the Siuslaw Resource Area. Using this process watersheds located in the Upper Willamette didn't rate high.

6th Field Priority Sub-watersheds		
Eugene	HUC Number	**Estimated Completion Date**
***Congdon Creek – Lake Creek**	**171002060601**	2016-2030
***Triangle Lake – Lake Creek**	**171002060602**	2016-2030
Esmond Creek – Upper Siuslaw River	171002060307	
Lower Wolf – Wolf Creek	171002060102	
Upper Wolf – Wolf Creek	171002060101	
Dogwood Creek – Siuslaw River	171002060305	
Lost Creek- Lost Creek	170900010702	
Upper Mosby Creek- Coast Fork Willamette	170900020101	
Gate Creek - McKenzie	170900040701	
Lower Little Fall Creek- Fall Creek	170900010802	

* Focus sub-watersheds for each District.



Eugene District Priority and Focus sub-watersheds

Eugene District – Project Specific Information							
Congdon Creek – Lake Creek 6th Field Sub Watershed							
Project Name	Project Description and Location	Limiting Factors Addressed	Land Ownership	Scale (miles/ acres)	Potential Partners Involved	Timeline, starting and number of years	Estimated Cost and Potential Funding Sources
Hult Dam Removal	Earthen Dam Removal	Passage Barrier, harbinger of invasive/predatory fish species	BLM		SWC, ODFW	2016-2025	$1,000,000
Hult Dam - Bridge	After dam removel build bridge in its place	None after dam removal	BLM		SWC, ODFW	2021-2026	$850,000
Hult Pond Restoration	After dam removal – restore stream channel, LWD, sediment control & riparian Restoration	Sediment control inchannel. Potential stream barriers	BLM		SWC, ODFW	2017-2026	$500,000
Prime Choice (Lake Cr. above Hult Pond dam removal	Riparian Conversion and in stream restoration (LWD & rock)	Rearing, spawning and cover habitat	BLM	0.5 miles	SWC, ODFW	2016-2026	$400,000
Prime Choice Reseed habitats with adult coho	Transport brooding coho to habitat for upper basin seeding (3 years)	Adult handling	BLM	0.5 miles	ODFW	2021-2026	$25,000
Lake Creek below Hult dam removal – Habitat Restoration	LWD and rock placement	Rearing, spawning and cover habitat	BLM	0.7 miles	SWC, ODFW	2017-2026	$200,000
Hult fish ladder removal	Option to remove existing structure, restore tributary directional flow	None	BLM	0.6 acres	SWC	2018 - 2027	$50,000
Congdon Creek	LWD Placements	Rearing and cover habitat	BLM, Private	2.0 miles	ODFW, WEYCO	2016-2025	$75,000

Restoration	, Sections 20, 28-29						
Congdon Culvert Replace-ment	Replace Undersized culvert with fish passage – Sect 33	Aquatic Species passage	BLM Easement/ Road control	1 Site – 0.65 miles above	NA	2017-2026	$100,000

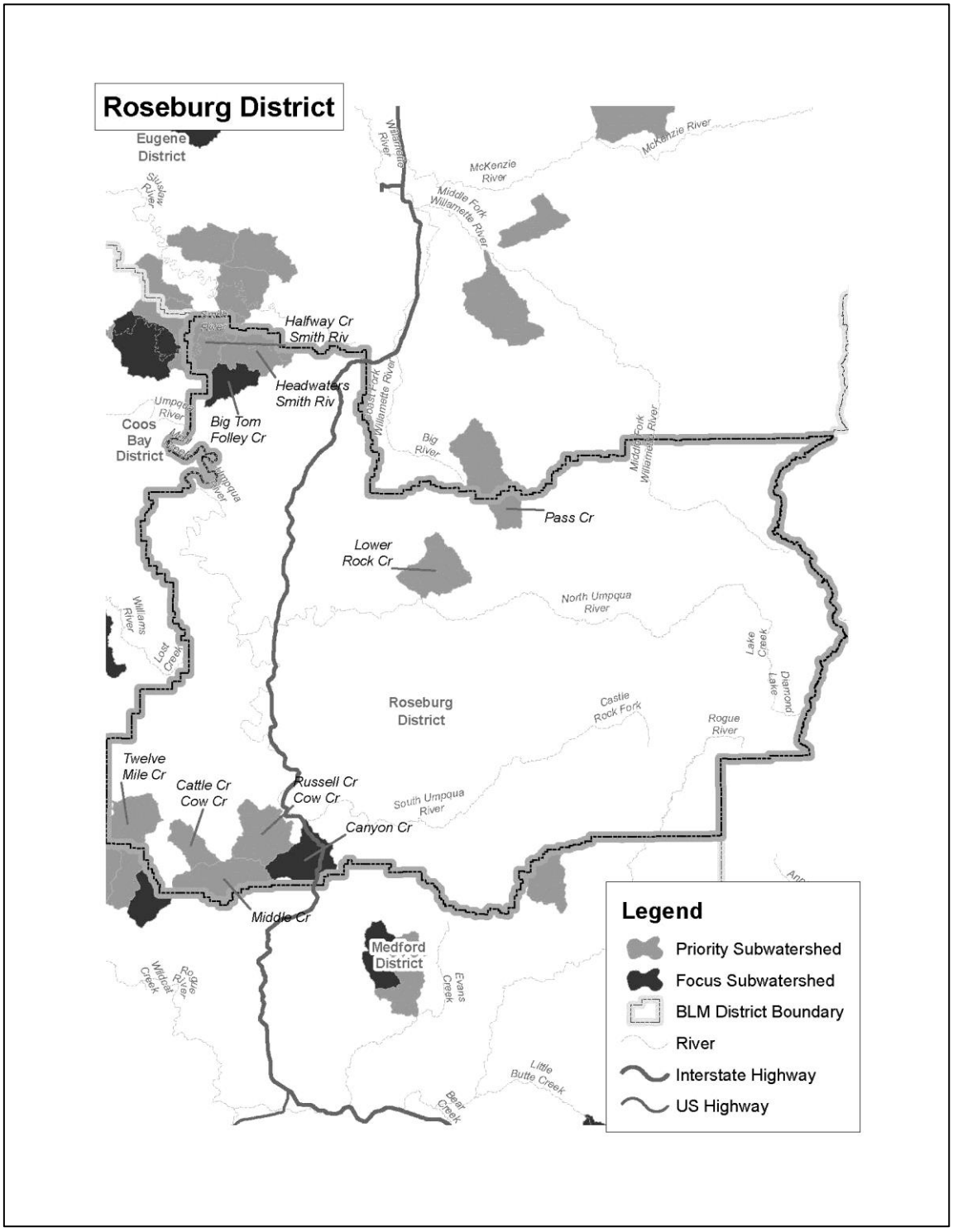
Eugene District – Project Specific Information							
Triangle Lake – Lake Creek 6th Field Sub Watershed							
Project Name	Project Description and Location	Limiting Factors Addressed	Land Owner-ship	Scale (miles/ acres)	Potential Partners Involved	Timeline, starting and number of years	Estimated Cost and Potential Funding Sources
Pontius Creek Culvert Replace-ment	Replace Undersized culvert with fish passage – Sect 7	Aquatic Species passage	BLM	1 Site - 1.0 miles habitat above	NA	2016-2025	$150,000
Swartz Creek Culvert Replace-ment	Replace Undersized/ Damaged culvert with bridge – Sect 31	Aquatic Species passage	BLM	1 Site – 3.0 0 miles habitat above	NA	2016 - 2025	$500,000
Conrad Creek – Culvert Complex replace-ment	Replace aquatic species barriers under BLM and State roads – Sect 11 (Highway 36, BLM Rd 16-7-11	Aquatic Species passage	BLM, WEYCO and State of Oregon (ODOT)	2 culvert replacements – Opens connectivity to two watersheds	BLM, SWC, ODFW, ODOT, NMFS, Private, WEYCO	2018 - 2028	$1,750,000
Triangle Lake Fish Ladder repair	Reposition Log weirs for better function	Aquatic Species passage	BLM	1 Site – 26 miles habitat above	BLM	2016 - 2026	$25,000
Fish Creek Restora-tion	LWD and Rock placement	Rearing, spawning and cover habitat – Sections 27,29,33	BLM	Multiple Sites – over 3 miles	BLM	2017 - 2027	$250,000

Appendix C – Roseburg District

Based on GIS layers (Med/High HIP Density, and >= 1 mile of HIP on BLM for coho, steelhead, chinook, and all combined) derived through the BLM Western Oregon Aquatic Restoration Strategy process, streams were prioritized for restoration on the Roseburg District first based on the amount of restoration completed (or not) in the basin. For instance, the Days Creek-HUC 6 sub-watershed is highly ranked using HIP and land ownership indicators alone. However, a significant amount of restoration has previously occurred in the Days Creek sub-watershed reducing its overall ranking as a current priority watershed for restoration within the Roseburg District. An additional ranking consideration involved knowledge of the willingness of adjacent private landowners to allow stream restoration (through project partners such as Partners for the Umpqua Rivers) to occur on their land, which when combined with BLM restoration in a particular watershed would increase the scope of work to a more desirable "whole watershed" approach. Professional judgment was used to further prioritize restoration and in some cases *add* or *remove* streams from the high priority list based on site specific characteristics such as a high proportion of natural barriers in a basin, a significant amount of existing high quality habitat underrepresented by HIP estimates alone, or other unique situations such as poor water quality due to past mining activity (i.e. Middle Creek-HUC 6). A final consideration was whether or not an existing funding source/mechanism had been identified for a specific watershed (i.e. US Forest Service mitigation fund, pipeline mitigation funding, etc) that would make restoration funding more readily available for the watershed and would therefore decrease the priority ranking of that watershed.

6th Field Priority Sub-watersheds		
Roseburg	HUC Number	**Estimated Completion Date**
***Big Tom Folley Creek-Elk Creek**	171003030309	**2018-2030**
***Canyon Creek -South Umpqua**	171003020507	**2018-2030**
Twelvemile Creek-Mid. Fork Coquille	171003050102	2018-2030
Lower Rock Creek-Rock Creek	171003010903	2018-2030
Middle Creek-Cow Creek	171003020901	2018-2030
Halfway Creek-Upper Smith River	171003030602	2018-2030
Smith River Headwaters	171003030601	2018-2030
Cattle Creek-Cow Creek	171003020903	2018-2030
Pass Creek-North Umpqua	171003010602	2018-2030
Russel Creek-Cow Creek	171003020905	2018-2030

* Focus sub-watersheds for each District.



Roseburg District Priority and Focus sub-watersheds

Roseburg District – Project Specific Information							
Big Tom Folley Creek – Elk Creek 6th Field Sub Watershed							
Project Name	Project Description and Location	Limiting Factors Addressed	Land Ownership	Scale (miles/acres)	Potential Partners Involved	Timeline, starting and number of years	Estimated Cost and Potential Funding Sources
Big Tom Tribs - Phase I	LW, LW/boulders	Overwintering, Spawning habitat	BLM, Seneca Jones	6.5 miles	PUR, ODFW, Seneca Jones	2016-2017	$380,000
Upper Big Tom – Phase II	LW, LW/boulders	Overwintering, Spawning habitat	BLM, Seneca Jones	5.0 miles	PUR, ODFW, Seneca Jones	2017-2018	$425,000
Mainstem Big Tom – Phase III	LW, LW/boulders, Oxbow reconnect	Overwintering, Spawning habitat	BLM, Seneca Jones	4.5 miles	PUR, ODFW, Seneca Jones	2018-2019	$550,000
Road sediment reduction	Add/replace cross drains, small stream crossings to pass 100 yr flows, pave high sediment areas	Riparian health and diversity, Temperature, Water Quality	BLM, Seneca Jones	7.0 miles	PUR, ODFW, Seneca Jones	2016-2020	$180,000
Noxious weed reduction and native plantings	Himilayan blackberry removal, native plantings	Sedimentation, Hydrologic connectivity	BLM, Seneca Jones	200 acres	PUR, ODFW, Seneca Jones	2016-2026	$200,000

Roseburg District – Project Specific Information							
West Fork Canyon Creek – Canyon Creek 6th Field Sub Watershed							
Project Name	Project Description and Location	Limiting Factors Addressed	Land Ownership	Scale (miles/acres)	Potential Partners Involved	Timeline, starting and number of years	Estimated Cost and Potential Funding Sources
W. Fork Canyon Instream	LW, LW/boulders	Overwintering, Spawning habitat	BLM, RRCo	5.5 miles	PUR, ODFW, RRCo	2016-2017	$350,000
W. Fork Canyon culvert replacement	Unnamed trib to West Fork Canyon Creek	Summer barrier and partial barrier in winter	BLM, RRCo	1 culvert	PUR, ODFW, RRCo	2018-2019	$125,000
Riparian plantings & Noxious weed reduction	Himalayan blackberry, scotch broom, periwinkle, etc. After removal of	Riparian health and diversity, Temperature, Water Quality	BLM, RRCo	50 acres	PUR, ODFW, RRCo	2016-2020	$50,000

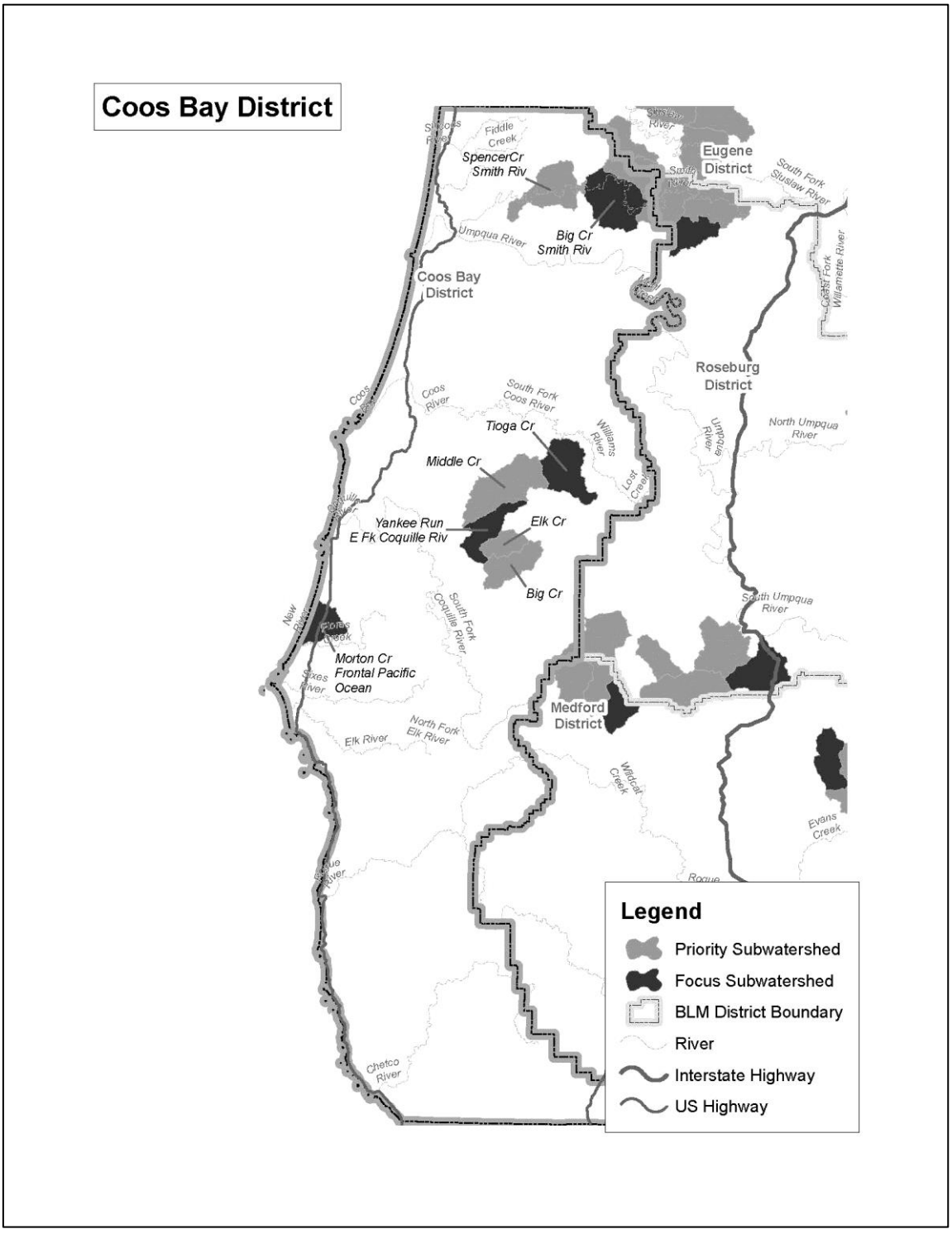
	invasives, planting of native species						

Appendix D – Coos Bay District

Coos Bay District fish biologists and hydrologists used a combination of HIP on BLM land, local knowledge, and partnership opportunities to select the priority and focus 6th field sub-watersheds. Species used for the HIP analysis were a combination of Coho (an ESA listed species) along with Chinook and Steelhead. Using this approach Coos Bay first identified which watersheds had the highest number of miles on BLM with HIP habitat for Coho, since this is a listed species. To incorporate a multi-species management approach, sub-watersheds with the highest number of HIP miles on BLM for Chinook and Steelhead were then overlaid. From this sub-set the fish biologists and hydrologists applied professional opinion of potential fish habitat, local knowledge of restoration history and future needs, and information regarding partnership opportunities such as watershed associations and other landowners within the sub-watersheds. For example the West Fork Smith River sub-watershed was not selected because extensive restoration work has already been completed and at this time the need for future work is a lower priority. By combining all this information Coos Bay was able to select their priority and focus watersheds for future restoration work.

6th Field Priority Sub-watersheds		
Coos Bay	HUC Number	**Estimated Completion Date**
Spencer Creek – Smith River	171003030704	2020 -2035
***Big Creek – Smith River**	171003030604	2020-2025
Halfway Creek – Smith River	171003030602	2020-2035
South Sister Creek	171003030603	2020-2035
***Tioga Creek**	171003040104	2020-2025
Middle Creek (North Fork Coquille)	171003050402	2020-2035
***Yankee Run – East Fork Coquille**	171003050306	2020-2025
Elk Creek (East Fork Coquille)	171003050305	2020-2035
Big Creek (Middle Fork Coquille)	171003050109	2020-2035
***Morton Creek – Frontal Pacific Ocean**	171003060104	2020-2025

* Focus sub-watersheds for each District.



Coos Bay District Priority and Focus sub-watersheds

Coos Bay District – Project Specific Information							
Big Creek/Smith River 6th Field Sub Watershed							
Project Name	Project Description and Location	Limiting Factors Addressed	Land Ownership	Scale (miles/acres)	Potential Partners Involved	Timeline, starting and number of years	Estimated Cost and Potential Funding Sources
Big Ck-Smith R 6th field instream	LW, LW/boulders	overwintering, spawning habitat	BLM, RRCo	15 miles	SRWC, PUR, ODFW, RRCo	2016-2026	$1,250,000
Upper Smith R boulders	Boulders	overwintering, spawning habitat	BLM, RRCo	2 miles	SRWC, PUR, ODFW, RRCo	2021-2026	$175,000
Rd decom	Various locations	Instream sedimentation	BLM, RRCo	2 miles	SRWC, PUR, ODFW, RRCo	2016-2026	$15,000
Fish passage	Culvert – various locations	Fish passage, sedimentation, road failure, habitat connectivity	BLM, RRCo	5	SRWC, PUR, ODFW, RRCo	2016-2026	$400,000
Rd sediment reduction	Add/replace cross drains, small stream crossings to pass 100 yr flows	Sedimentation, hydrologic connectivity	BLM, RRCo	10 miles	SRWC, PUR, ODFW, RRCo	2016-2026	$250,000

Coos Bay District – Project Specific Information							
Tioga Creek 6th Field Sub Watershed							
Project Name	Project Description and Location	Limiting Factors Addressed	Land Ownership	Scale (miles/acres)	Potential Partners Involved	Timeline, starting and number of years	Estimated Cost and Potential Funding Sources
Mainstem Tioga RLJs	RLJs from Burnt Ck u.s. to fish barrier	overwintering	BLM/Menasha	6 miles	BLM, Menasha, CoosWA, ODFW	2014-2025	$1,000,000
Mainstem Tioga boulders	Burnt Ck to mouth of mainstem Tioga – boulder structures (limited amt of wood)	overwintering	BLM/Menasha	5 miles	BLM, Menasha, CoosWA, ODFW	2015-2025	$400,000
Tioga tribs LW	LW structures	overwintering	BLM/Menasha	12 miles	BLM, Menasha, CoosWA, ODFW	2015-2025	$1,000,000
Rd decom	Rd decom – various locations	Instream sedimentation	BLM/Menasha	10 miles	BLM, Menasha, CoosWA, ODFW	2015-2025	$75,000
Fish passage	Culvert – various locations – Shotgun, unnamed tribs to mainstem	Fish passage, sedimentation, road failure, habitat connectivity	BLM/Menasha	5-15 replacements	BLM, Menasha, CoosWA, ODFW	2015-2025	$750,000
Rd sediment reduction	Add/replace cross drains, small stream crossings to pass 100 yr flows	Sedimentation, hydrologic connectivity	BLM/Menasha	50 miles	BLM, Menasha, CoosWA, ODFW	2015-2025	$1,250,000

Coos Bay District – Project Specific Information							
Yankee Run – East Fork Coquille 6th Field Sub Watershed							
Project Name	Project Description and Location	Limiting Factors Addressed	Land Ownership	Scale (miles/acres)	Potential Partners Involved	Timeline, starting and number of years	Estimated Cost and Potential Funding Sources
E Fk Coquille Tribs Habitat Improve-	LW structures in Steel Creek, Weekly	Over-wintering	BLM, Campbell Global, Plum Creek, Other private	6 miles	BLM, Menasha, Plum Creek CWA,	2015-2025	$600,000

ments	Creek, Hantz Creek, W Fk Yankee Run				ODFW		
Road Decommissioning	Road decoms – various locations	Instream sedimentation	BLM, Private	2 miles	BLM, Private, CWA	2016-2030	$20,000
Fish passage	Culvert – various locations	Fish passage, sedimentation, road failure, habitat connectivity	BLM, County, Private	2-5 replacements	BLM, County, CWA, Private	2016-2025	$350,000
E Fk and Tribs Riparian Restoration	Agricultural areas includes fencing, bank stabilization, offstream watering and planting.	Summer Temperature, Water Quality, sedimentation	Various Private	10 miles (includes work in contributing 6th HUCs)	BLM, Various Private, SCW, ODFW	2016-2035	$500,000
Road Sediment Reduction	Pave roads, add/replace cross drains, small stream crossings to pass 100 yr flows	Sedimentation, hydrologic connectivity	BLM, County, Private	30 miles (includes work in contributing 6th field HUCs)	BLM, County, CWA, Private	2016-2030	$1,125,000

Coos Bay District – Project Specific Information							
Morton Creek – Frontal Pacific Ocean 6th Field Sub Watershed							
Project Name	Project Description and Location	Limiting Factors Addressed	Land Ownership	Scale (miles/acres)	Potential Partners Involved	Timeline, starting and number of years	Estimated Cost and Potential Funding Sources
New River/Floras Creek RLJs	New River/Floras Creek	Summer and Winter Rearing	BLM, various Private landowners	10 miles	BLM, SCW, ODFW, Private.	2015-2025	$1,200,000
New River and Floras Creek Riparian Restoration	Agricultural areas-includes fencing, bank stabilization, offstream watering and planting.	Summer Temperature, Water Quality, sedimentation	Various Private	20 miles (includes work in contributing 6th HUCs)	BLM, Various Private, SCW, ODFW	2015-2035	$1,000,000

Fish passage	Culvert – various locations	Fish passage, sedimentation, road failure, habitat connectivity	County/Private	5-10 replace-ments	BLM, County, SCW, ODFW, Private	2015-2025	$600,000
New River Tributary Re-meander	Remeander Tributary Channels	Rearing, spawning, sedimentation	Private	2 miles	BLM, SCW, ODFW, Private	2016-2025	$400,000
Road Sediment Reduction	Pave gravel roads, add/replace cross drains, small stream crossings to pass 100 yr flows	Sedimentation, hydrologic connectivity	Private/County /little BLM	20 miles (includes work in contributing 6th field HUCs)	BLM, County, CWA, Private	2016-2030	$750,000

Appendix E – Medford District

1. **West Fork Evans Creek**

   Rationale for selection: high miles of Coho Intrinsic Potential, high density of Coho Intrinsic Potential, high BLM stream ownership with restoration potential upstream from dam removal projects located 9 and 16 miles downstream which are slated for removal in the near future. Removing these partial barriers is expected to allow much greater salmonid passage. Mainstem stream access is easy throughout. Although stream restoration has occurred here, many reaches have not been tackled and the ones that have could easily be improved upon. Additionally, two dams located 12 and 19 miles downstream are slated for removal in the near future. Removing these partial barriers is expected to allow much greater salmonid passage.

   Nearly the entire subwatershed is comprised of fragile soils – primarily decomposing granitics. Off-trail OHV use is a serious problem leading to chronic erosion and sedimentation in the stream network. Additionally a major transmission corridor runs through the subwatershed. Access roads for the same are used and expanded upon by OHV users. Erosion control measures are often unsuccessful due to the extreme erodibility of the soils and geology. Road decommissioning and/or blocking could happen on approximately 28 miles of system and non-system roads and trails.

2. **Bear Creek**

   Rationale for selection: high miles of Combo (Chinook, Coho, and Steelhead) High Intrinsic Potential (>5 miles), low density of Coho Intrinsic Potential (0.1-1.10 mile/square mile), high BLM stream ownership, and within a Tier One Watershed. Mainstem stream access is easy throughout. Past stream restoration haven't occurred here, many reaches have not been tackled and the ones that have could easily be improved upon. Additionally, BLM owns half of this watershed.

   Approximately 3 miles of West Fork Cow Creek and 1.5 miles of Bear Creek have potential for restoration on BLM land alone. At this time, there are no stream crossings which need to be upgraded. PUR staff will be assessing culverts and cross drains in this area in the spring of 2015. Since the entire sub-watershed is a Tier One watershed –Road decommissioning and/or blocking should be assessed by an engineer.

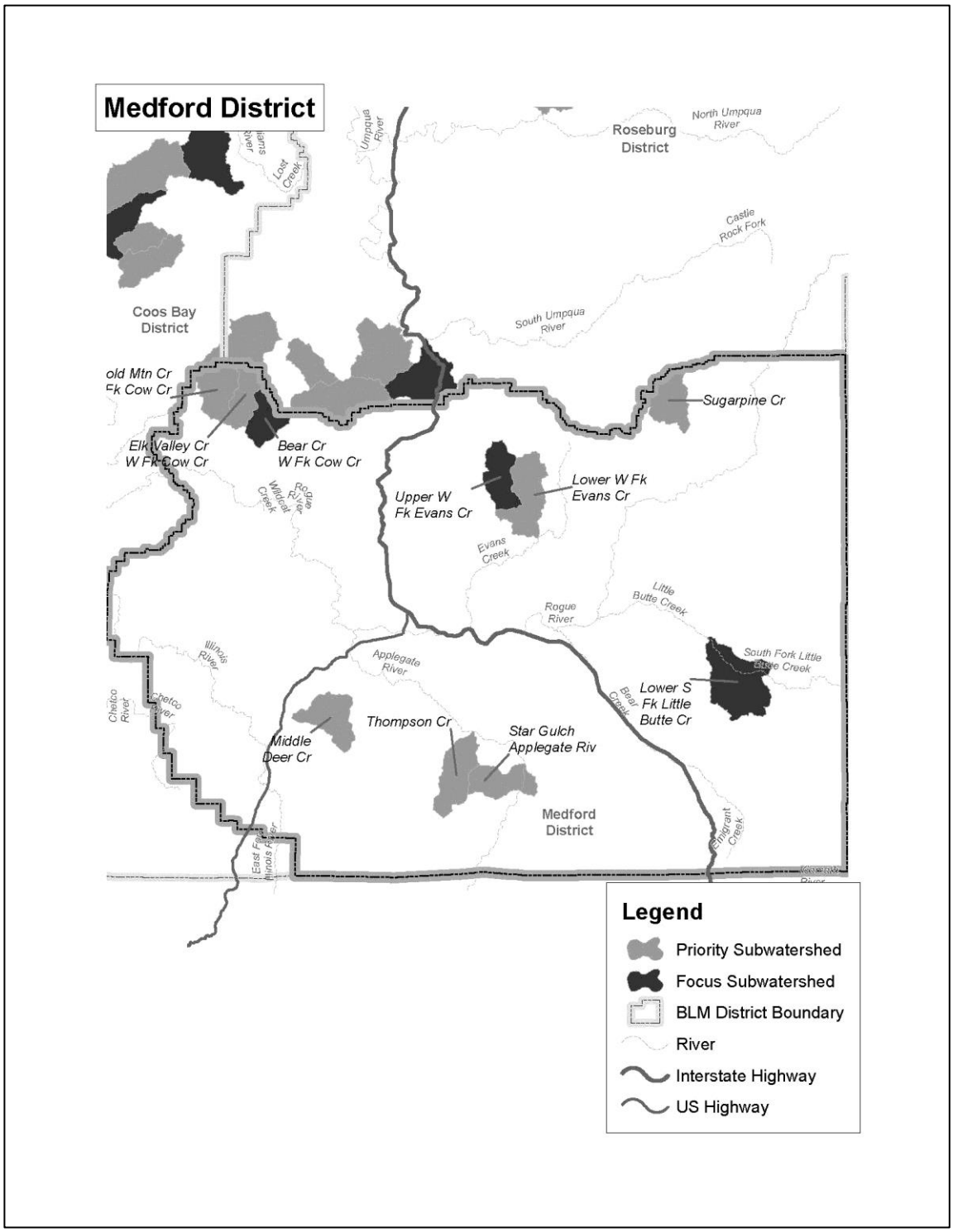
3. **Lower South Fork of Little Butte Creek**

   Rationale for selection: The Lower South Fork of Little Butte Creek is a designated key watershed for at risk salmonids, a core salmon stronghold, and key recovery area identified in the SONCC recovery plan. BLM has significant ownership on Lost, Soda, and Deer Creeks, as well as ~ 1 mile of the mainstem channel of the South Fork. The Little Butte Creek Watershed is noted as a highly productive salmonid system (see chart below), and ODFW surveys identified that the South Fork is where the majority of the

high quality spawning and rearing habitat in the watershed is located. Sediment, turbidity, high water temperatures, and other water quality issues are pervasive throughout the entire watershed and restoration that addresses these issues is essential to ensuring the watershed remains a salmon and steelhead stronghold. Cattle grazing in the uplands and high road densities throughout the watershed have been identified as the primary factors contributing to water quality and habitat degradation in the watershed streams.

6th Field Priority Sub-watersheds		
Medford	HUC Number	**Estimated Completion Date**
***Lower South Fork Little Butte Creek-Ashland**	171003070806	
Star Gulch-Ashland	171003090203	
Thompson Creek-Ashland	171003090404	
***Upper West Fork Evans Creek-BF**	171003080302	
Lower West Fork Evans Creek-BF	171003080303	
Sugar Pine Creek-BF	171003070503	
***Bear Creek-West Fork Cow Creek-GP**	171003020804	
Elk Valley Creek-West Fork Cow Creek-GP	171003020803	
Gold Mountain-West Fork Cow Creek-GP	171003020802	
Middle Deer Creek-GP	171003110502	

* Focus sub-watersheds for each District.



Medford District Priority and Focus sub-watersheds

Medford District Project Specific Information							
Lower South Fork Little Butte Creek 6th Field Sub Watershed							
Project Name	Project Description and Location	Limiting Factors Addressed	Land Ownership	Scale (miles/ acres)	Potential Partners Involved	Timeline, starting and number of years	Estimated Cost and Potential Funding Sources
Push up Dam Replacement	Lost Creek-Lower South Fork Little Butte Creek	Reviewed by ODFW-lengthy process	1 on Private, 2 on BLM	3 Dams	ODFW, Private landowner	1-5 years (2017-2020)	$65,000 each for $195,000 Pipeline, Title 2
Lost Creek Instream Wood Placement	Lost Creek-Lower South Fork Little Butte Creek	Funding	BLM	2.0 miles	ODFW, Upper Rogue Watershed Council	1-2 years (2017)	$120,000
Soda Creek Instream Wood Placement	Lost Creek-Lower South Fork Little Butte Creek	Funding	BLM	2.0 miles	ODFW, Upper Rogue Watershed Council	1-2 years (2018)	$120,000
Deer Creek Culvert Replacement	Lost Creek-Lower South Fork Little Butte Creek	Funding, engineering staff	Private land, BLM road	1 culvert or bridge	None	1 year (2019)	$400,000
Road decommissioning, blocking, and drainage Improvements	Lost Creek-Lower South Fork Little Butte Creek	Hydro staff, Recip rights	BLM Roads	10 miles	None	5-7 years (2017)	$200,000
Range Exclosures, Riparian Planting	Lost Creek-Lower South Fork Little Butte Creek	Funding, Range Tech staffing	BLM	5 acres	None	1 year (2018)	$30,000

Medford District – Project Specific Information							
Upper West Fork Evans Creek 6th Field Sub Watershed							
Project Name	Project Description and Location	Limiting Factors Addressed	Land Ownership	Scale (miles/ acres)	Potential Partners Involved	Timeline, starting and number of years	Estimated Cost and Potential Funding Sources
Upper West Fork Evans Instream Wood Project	West Fork Evans	Funding, logs, staff	BLM	6.0 miles within 6th field	ODFW, Seven Basins Watershed Council, Lone Rock Timber	5-6 years (2016)	$330,000
Lower West Fork Evans Instream Wood Project	West Fork Evans	Funding, logs, staff	BLM	9.0 miles	ODFW, Seven Basins	8-9 years (2018)	$490,000

					Watershed Council, Lone Rock Timber		
Upper Road and OHV Trail Decommissioning	West Fork Evans	Workload for engineering	BLM	13 miles	Seven Basins Watershed Council	4-5 years (2016)	$82,000
Lower Road and OHV Trail Decommissioning	West Fork Evans	Workload for engineering	BLM	15 miles	Seven Basins Watershed Council	4-5 years (2018)	$95,000

Medford District – Project Specific Information							
Bear Creek – West Fork Cow Creek 6th field Sub Watershed							
Project Name	Project Description and Location	Limiting Factors Addressed	Land Ownership	Scale (miles/acres)	Potential Partners Involved	Timeline, starting and number of years	Estimated Cost and Potential Funding Sources
West Fork Cow Creek In-stream Wood Project	Bear Creek	Funding, logs, staff	BLM	3 miles	Partnership for the Umpqua Rivers	2-4 years (2016)	$200,000
Bear Creek In-stream Wood Project	Bear Creek	Funding, logs, staff	BLM	1.5 miles	Partnership for the Umpqua Rivers	3-4 years (2017)	$50,000

Appendix F – Klamath Falls

Prior to the construction of hydroelectric dams many of the watersheds in the Klamath Falls area historically had populations of anadromous fish. These populations included Coho Salmon, Chinook Salmon, and Steelhead Trout. Authorization for removal of these dams has been obtained by Congress and feasibility studies for their removal are currently underway. In the future, when the removal of these dams is more certain, a concerted effort to prioritize these watersheds for restoration will be undertaken.