Nomination for Outstanding Resource Waters of the State of Oregon
Rough and Ready Creek, Its Tributaries, Springs and Associated and Wetlands

1. **Name and contact information of nominating person(s) and organization(s).**

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We're pleased to nominate "Rough and Ready Creek, its tributaries, springs, associated wetlands and other waterbodies including "Rough and Ready Lake" (hereafter Rough and Ready Creek) as Outstanding Resource Waters (ORW) of the State of Oregon. The only exception within the Rough and Ready Creek watershed is the reach of Parker Creek after it enters private land. We further request that due to potential threats, which would bring about irreparable harm to this nationally outstanding waterbody, that the Oregon Department of Environmental Quality make consideration of the designation a priority for the upcoming triennial review.

Rough and Ready Creek flows out of the Kalmiopsis Wilderness, through the South Kalmiopsis Roadless Area and into the Rough and Ready Creek Botanical Area and Area of Critical Environmental Concern. It's a unique stream system underlain by serpentine geology and characterized by exceptional water quality and clarity, a broad alluvial fan with braided stream channels and unparalleled botanical values. It's truly a remarkable waterbody.

Photo left - Rough and Ready Creek

"Rough and Ready Creek is a unique fluvial system characterized by exceptional water quality and clarity, very flashy flows, an unusual braided stream channel and a broad, relatively undisturbed alluvium of cobbles which may support an extensive hyporheic zone …"
Bureau of Land Management, 1998

2. Description of waterbody and basin.

Rough and Ready Creek flows through a mostly unroaded, natural 23,000 acre watershed in southwest Oregon's Illinois River Basin of the Klamath Mountain Province. The Rough and Ready Creek watershed is federally managed from its headwaters in the Kalmiopsis Wilderness and South Kalmiopsis Roadless Area to its confluence with the West Fork of the Illinois River on the Illinois Valley floor. The combination of foundational elements that make Rough and Ready Creek outstanding regionally and nationally include the following:

1) the extent of its underlying serpentine geology (93%),[1]
2) its relatively wet climate,[2]
3) antiquity, and
4) general lack of disturbance,[3] as well as
5) its broad alluvial fan.

Ten percent of Rough and Ready Creek's watershed is within the Kalmiopsis Wilderness,[4] 81% is in the 105,000 acre Inventoried South Kalmiopsis Roadless Area[5] and most is inaccessible to motor vehicles.[6]

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[1] U.S. Forest Service, 1998 West Fork Illinois River Watershed Analysis, Siskiyou National Forest, page 12.

[2] A resident of Rough and Ready Creek's ancient alluvial fan has kept meticulous precipitation records since 1994. His average annual precipitation for this period is 79.41". Annual precipitation has been as high as 110". Personal communication with Gordon Lyford. Agency isohyetal maps show the headwaters of Rough and Ready Creek and the North Fork Smith River receiving up to 150" annually.

[3] The U.S. Forest Service's Wild and Scenic River Eligibility Study for Rough and Ready Creek and Its Tributaries found that:

> "*Wide unconsolidated streams such as Rough and Ready Creek have extensive hyporheic or intergravel zones. These areas can be ecologically unique"* and that, *"Rough and Ready Creek drainage epitomizes serpentine/peridotite geology. Most of the drainage (particularly the upper portion) have few effects from mining or other human caused disturbance."* Page 7.

The study also concludes that,

> *"Rough and Ready Creek is unusual by both regional and natural standards. On a national scale, streams that flow through serpentinite-periodotite rock types are uncommon. On a regional scale, several streams flow through serpentine, but none have a large unconfined alluvial channel like Rough and Ready Creek.*" Page 2.

A digital copy of the Siskiyou National Forest wild and scenic river assessment is available from the authors on request.

[4] *Supra* note 1 at page 8. The West Fork Illinois River Watershed Analysis estimates the size of the Rough and Ready Creek Watershed as being 23,000 acres and the amount of Wilderness in the watershed as 2,300 acres. The U.S. Forest Service's Watershed Condition Framework's interactive map puts the watershed at a little over 23,700 acres.

[5] See Appendix A - Maps, Figure 3, page 2. The percentage of Rough and Ready Creek's watershed in the South Kalmiopsis Roadless Area was provided by Erik Fernandez of Oregon Wild. Inventoried Roadless Areas are partially protected as part of the U.S. Forest Service's Inventoried Roadless Area Conservation Rule. See - https://www.fs.usda.gov/main/roadless/2001rule/.

The rule offers little or no protection from mining, which is the principle threat to Rough and Ready Creek, its complex hydrologic system or its exceptional water quality.

[6] *Infra* note 11 at page 3.

Under the Rogue River-Siskiyou National Forest's Motor Vehicle Travel Management Plan, there's only one road in the watershed open to public motorized travel,[7] a native surface road on the watershed divide between the South Fork of Rough and Ready Creek and Baldface Creek, a tributary of the National Wild and Scenic North Fork Smith in Oregon.[8] In addition, the Redwood Highway crosses Rough and Ready Creek in its lowest reach and Airport Drive, a county road, accesses private land in the Parker Creek watershed.

Rough and Ready Creek's unique character, unusual geology and the fact that roughly 90% of it's watershed is either Wilderness or is wilderness-in-character inventoried roadless area and 93% is underlain by the serpentine/ultramafic terrain of the Josephine Ophiolite has resulted in an exceptional stream system.

Here's the Bureau of Land Management's description:

> *Rough and Ready Creek is a unique fluvial system characterized by exceptional water quality and clarity, very flashy flows, an unusual braided stream channel and a broad, relatively undisturbed alluvium of cobbles which may support an extensive hyporheic zone with rare or sensitive invertebrates.*[9]

The U.S. Forest Service's Wild and Scenic River Eligibility Study for Rough and Ready Creek and Its Tributaries provides more detail about Rough and Ready Creek's outstandingly remarkable Geologic/Hydrologic values[10]:

> *Rough and ReadyCreek is unusual by both national and regional standards. On a national scale, streams that flow through serpentinite-peridotite rock types are uncommon. On a regional scale, several streams flow through serpentinite, but none have the large, unconfined alluvial channel like Rough and Ready Creek.*[11]

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[7] There are a number of old user-created bulldozed mining tracks in the watershed that are closed to public motorized travel. In addition, the McGrew Trail follows parts of the watershed divide between Rough and Ready Creek and the West Fork Illinois River. Motorized travel on it is subject to permit. See Appendix A - Maps, Figure ___.

[8] See Appendix A - Maps, Figure 5, page 3.

[9] USDI Bureau of Land Management, 1998, Draft Management Plan and Environmental Assessment, Rough and Ready Creek Area of Critical Environmental Concern, Medford District, Grants Pass Resource Area, March 1998, page 3

[10] *Infra* note 10. In 1993, the Siskiyou National Forest Supervisor found that Rough and Ready Creek was free flowing with one or more outstandingly remarkable values (ORV). The named ORV are geological/hydrological, botanical/ ecological and wildlife. New information from the proposed Nicore Mining Plan of Operations Environmental Impact Statement and its 1999 Record of Decision also concludes that *"the waters of Rough and Ready Creek are exceptionally clear and remain clear during winter storms that turn other creeks muddy."* There's numerous photos and videos supporting this conclusion.

[11] USDA Forest Service 1993, Wild and Scenic Eligibility Study, Rough and Ready Creek and Its Tributaries, Siskiyou National Forest, page 2. Note - an electronic copy of the Wild and Scenic Eligibility Study for Rough and Ready Creek a is available on request.

The fractured bedrock provides numerous springs many of which support [serpentine Darlingtonia wetlands] and maintain summer flow in smaller tributaries.[12]

[The] *Rough and Ready Creek drainage epitomizes serpentine/peridotite geology ... The bedrock geology is a major influence on the channel morphology and plant communities ...*[13]

The unrestricted reaches of the mainstem Rough and Ready Creek have unusual channel morphology as evidenced by the large-size substrate in the lower gradient sections. The alluvial fan at the mouth of Rough and Ready Creek is unique for streams of this size within the Klamath/ Siskiyou province.[14]

The alluvial reaches of the mainstem may be associated with an extensive hyporheic zone. These zones have been known to support unique ecosystems.[15]

At the time of the wild and scenic river eligibility study, water quality was not identified as an outstandingly remarkable value. However, when comparative measurements of turbidity were actually made and the creek was observed during both high and low flows, the exceptional clarity and scenic quality of its waters were acknowledged by the agency. For example in 1999, the U.S. Forest Service concluded that the waters of Rough and Ready Creek are,

"exceptionally clear and remain clear during winter storms that turn other creeks muddy."[16]

The highest point in the Rough and Ready Creek watershed is Josephine Mountain at 4,764 feet. The lowest point (at its mouth) is 1280 feet.[17] On average, the transient snow zone is above 2500 feet in elevation, and the longer-lasting seasonal snow remains above 4500 feet.[18] Most of Rough and Ready Creek's watershed is below 4500 feet.

According to the Siskiyou National Forest's Wild and Scenic River Eligibility Assessment for Rough and Ready Creek and Tributaries,

Above - High elevation tributary of North Fork Rough and Ready Creek. The presence of Darlingtonia indicates a perennial spring.

[12] *Id.* at page 6.

[13] *Id.* at page 7.

[14] *Id.*

[15] *Id.*

[16] U.S. Forest Service, Nicore Mining Plan of Operations Environmental Impact Statement Record of Decision, R6-11-007-99 available online through Oregon State University at - https://ir.library.oregonstate.edu/xmlui/handle/1957/12297. See pages 1 and 9. See also photos in Appendix B.

[17] *Supra* note 1, Technical Reports, Physiography and Climate, unnumbered.

[18] Supra note 1 at unnumbered page in Technical Appendix under Physiography and Climate.

there's about 40 miles of perennial streams in Rough and Ready Creek's waterhed.[19] However, the extent of perennial streams may be even greater because some reaches go subsurface and some headwaters begin as high elevation springs.[20]

One documented example is a small headwaters tributary of the North Fork Rough and Ready Creek. The elevation of the area in the above photograph is roughly 3,470 feet. Boaters exploring the headwaters of the North Fork found flowing water, Port Orford cedar and *Darlingtonia californica*.[21] The highest point in the watershed divide above this spot is 3,623 feet.[22]

The presence of *Darlingtonia* in this headwaters stream indicates a perennial source of water with a consistent flow. The presence of Port Orford cedar in the serpentine terrain also indicates either a perennial surface flow or a subsurface source of water.

By all indications, Rough and Ready Creek is a groundwater dependent stream system. Groundwater sources and springs provide cool water refugia in the naturally warm stream system and supplement late summer/early fall flows. Groundwater inputs have been observed but have not been studied in detail. Most springs and wetlands have not been mapped. However, a number of references in agency documents indicate their importance. See above from the Siskiyou National Forest's wild and scenic river eligibility assessment.

In addition there's this from the U.S. Forest Service's West Fork Illinois River Watershed Analysis:

> *Landslide debris deposits on hillslopes have not been mapped in the ultramafic rocks of this watershed [Rough and Ready Creek] [data gap]. However, similar deposits were mapped for the Gasquet Mountain area and have been observed in the Josephine Creek watershed. These deposits store groundwater which flows along the contact with bedrock. Emergence of seeps along the margin of the deposit is associated with one of the largest Darlingtonia fens in the Gasquet Mountain area (Harper 1983).*

The Gasquet Mountain Mine Draft Environmental Impact Statement (DEIS)[23] provides some of the most specific information about the hydrogeologic characteristics, including delayed discharge of streams flowing through the serpentine/ultramafic terrain of Josephine Ophiolite that underlies 92% of Rough and Ready Creek's watershed, as well as parts of the North Fork Smith Watershed:

> *During October, November, and December when precipitation replenishes the groundwater supply, streamflows lag behind precipitation. By January, the soil is at maximum moisture*

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[19] *Supra* note 10 at page 3.

[20] See example in Appendix A, pages 10 & 11.

[21] *Id.*

[22] Elevation was roughly estimated using Google Earth.

[23] U.S. Forest Service, 1983, Gasquet Mountain Mining Project Draft Environmental Impact Statement. Del Norte County California, California Nickel Corporation. Six Rivers National Forest and Del Norte County.

capacity and any intense storm results in rapid increase in streamflows. From April through July, the rainfall diminishes but streamflow remains relatively high as water is released from shallow groundwater storage. Late summer stream flows are fed by deep groundwater drainage and exhibit little fluctuation from year to year. Page III-8

A typical hydrogeologic section is illustrated in figure 12. Perennial upward leakage from the semi-artesian to the unconfined aquifer is likely to occur. page III-14

During the dry season of the year, Gasquet Mountain's streams are sustained by deep groundwater drainage. If ground water were contaminated toxicity would be maximized during low-flow period when the contaminated portion of the groundwater would constitute the highest percentage of the total surface flow. Page IV-22.

Delayed discharge has also been documented in a study comparing three watersheds in the same climatic regime. The one stream flowing through serpentine had a relatively high flow at the end of summer compared to the two other streams. The more gradual decline in late summer flow in the stream underlain by serpentine geology was attributed to fractures in tectonically sheared serpentinite that retain infiltrated water and release it gradually.[24] The Gasquet Mountain Mine DEIS states that:

The fractured bedrock provides for numerous springs, many of which support Darlingtonia fens and maintain summer flows in the smaller tributaries.

In 2001, five thousand acres of federal mining claims in the Rough and Ready Creek area were subject to an extensive valid existing rights determination as a result of a 5th Amendment "takings" lawsuit.[25] The subsequent mineral report is said to the one of the largest and most complex ever conducted. While the report focused on the technical aspects of mineral value, the background discussion about the geology of Rough and Ready Creek's watershed provides additional insight into its hydrogeologic regime:

The peridotite in this area is faulted and locally strongly fractured.

Many serpentinites along fault zones are permeable, and springs are commonly localized along these structures.

The strongly dissected mountainous terrain has a dendritic drainage pattern, and most of the area is traversed by several westward-flowing rivers fed by numerous small streams.

The thickest laterite development typically occurs over brecciated or highly fractured peridotite

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[24] Earl B. Alexander, et al. 2007, *Serpentine Geoecology of Western North America: Geology, Soils and Vegetation*, Published March 22, 2007 by Oxford Academic Books. https://academic.oup.com/book/41004. See chapter 4.1 Watersheds and Hydrology.

[25] http://dockets.justia.com/search?query=Walter+B.+Freeman&court=cofce

Cool springs and a few deep pools provide some potential refuge for fish ...[26]

This description of the underlying geology of Rough and Ready Creek supports the Forest Service's findings in the agency's wild and scenic river eligibility study for Rough and Ready Creek that,

[t]he fractured bedrock provides numerous springs, many of which support bogs and maintain summer flow in smaller tributaries.[27]

Rough and Ready Creek is a complex hydrologic landscape with an unusual combination of geology, soils, topography, and climate. Where Rough and Ready Creek is a losing stream system, it has a strong influence on groundwater. Where it's a graining system, groundwater in the form of springs and other inputs play an important role in maintaining late season flow and providing cool water refugia for native fish and other aquatic species.

The numerous springs in the Rough and Ready Creek Watershed mostly form Serpentine *Darlingtonia* Wetlands, or smaller wetlands where *Darlingtonia* are present. The presence of *Darlingtonia* indicates a consistent perennial source of water. These springs and the wetlands they form are an essential part of Rough and Ready Creek's unique fluvial system and why they've been included in this ORW designation.

Finally, while many of the non-flood plain wetlands in the watershed may not have an apparent surface connection to nearby streams, they should not be considered isolated from the stream system. EPA's 2015 science synthesis *Connectivity of Streams and Wetlands to Downstream Waters*[28] enumerates how non-floodplain wetlands are connected to and influence downstream waters*:*

... Non-floodplain wetlands can alter baseflow or stormflows during dry periods. Ground-water discharge from wetlands that are connected to streams, such as fens or seeps are important sources of baseflow. Moreover wetlands can be focal points for ground-water recharge and thus contribute to baseflow.

In defining non-floodplain wetlands we note that this category could include wetlands that are geographically isolated and those that are not. Further we note that certain types of wetlands can be found with or without an outlet and can occur along a gradient of hydrological connectivity. This gradient can include non-floodplain wetlands that have permanent hydrologic connections to the river network through perennial channels.

Further, even geographically isolated wetlands can be connected to other wetlands and downstream waters through ground-water connections, occasional spillage, or biological

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[26] USDI, Bureau of Land Management, 2005, Mineral Report Nicore Claims Group, January 31, 2005. Pages 6-1, 6-3, 607, 6-7 and 6-10.

[27] *Supra* note 11 at page 6.

[28] U.S. Environmental Protection Agency, 2015, *Connectivity of Stream and Wetlands to Downstream Waters: A Review & Synthesis of the Scientific Evidence*, EPA/600/R-14/475F, January 2015, Pages 4-25, 4-35 and 4-38.

connections. Thus, the term "geographically isolated" should not be used to infer lack of hydrologic, chemical, or biological connectivity.

Ground water that flows through riparian areas and into streams helps moderate stream temperature.

The Rough and Ready Creek Wild and Scenic River Eligibility Assessment suggests that the headwaters areas provides the primary cool water refugia within the system and that these refugia were believed to be of greatest value to resident fish within its upper reaches. However, we've also noted cool water refugia in Rough and Ready Creek's mainstem and lower reaches of its forks.

Agency documents also note that:

... hyporheic zones (see section on hydrology/channel morphology) may supply cool groundwater, which may provide microsites for salmonids within the mainstem during the summer/early fall.[29]

While most springs, the wetlands they form, and other waterbodies in Rough and Ready Creek's have not been mapped, they can now at least be tentatively identified using Google Earth's higher resolution imagery. In addition, accounts from boaters doing first ascents in more remote parts of the watershed have noted the presence of *Darlingtonia* in its high elevation headwaters and along the remotes parts of the headwaters of Rough and Ready Creek indicating a perennial source of water.

Above - The North Fork of Rough and Ready Creek in the South Kalmiopsis Roadless Area is lined with ancient Port Orford cedar. It can be run in winter after wet storms. Access requires a long hike in by trail and then cross county to put in.

[29] *Supra* note 11 at page 9.

The connection between these springs, the rare plant wetlands they form, and downstream waters is just beginning to be understood. In sum, the perennial springs or other groundwater sources supplement summer low-flows and contribute to Rough and Ready Creek's exceptional water quality.

Finally, we'd like to share part of ecologist, boater, photographer and explorer of Rough and Ready Creek and the South Kalmiopsis, Nate Wilson's, description of Rough and Ready Creek:

> *This watershed is a recursion in wildness. Iterations of water over stone folding deeper into the hillsides.*
>
> *A restless line through this pathless place, Rough and Ready Creek is the freest branch of an untamed system.*
>
> *For the life rooted in this cradle of rock, this is the last refuge against the accelerating changes around it.*
>
> *Here, is a landscape of resiliency. A mosaic of uncommon geology, the rare plant life it supports and the purest of waters.*

In the two appendices to this ORW nomination, we provide Google Earth images of the Rough and Ready Creek watershed and photos by those who know it best. Along with personal observations, the images help better explain this enigmatic landscape, the connectivity between the numerous springs, the wetlands they form, Rough and Ready Creek and its tributaries and the ancient community of life that has found home in this seemingly stark, always fascinating untamed watershed.

3. Principle threat.

With each successive analysis or study of this exceptional fluvial system we gain a better understanding of Rough and Ready Creek and its value to science, ecology and society. And with each insight, comes the realization of just how much there is yet to learn about the ancient botanically rich community of life that's evolved to survive the harshness of its serpentine soils and other extremes.[30] But the geology and antiquity that sets Rough and Ready Creek apart, also holds its greatest threat—industrialization, large scale surface mining for nickel and associated road systems.

In the U.S. Forest Service's 1999 Record of Decision for the Nicore Mining Plan of Operations, the decision-maker wrote:

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[30] *Infra* note 16 at page 13 stating that:

> *"The analysis area contains resources that are highly valued by the public … The West Fork Illinois River Watershed (including Rough and Ready Creek)was ranked #1 in Oregon for botanical diversity. The Wild and Scenic River Eligibility, presence of listed and sensitive species, proximity to Wilderness, unroaded areas and remarkable water quality are unique attributes of the project area."*

And,

> *"Discovery of additional natural resource values is likely with continued inventories and research in the affected watersheds. The same geologic, climatic, and evolutionary processes that developed the ore deposits are responsible for developing an extremely special and unique environment."*

> *I did not select the proposed action or any other full scale mining alternative because the economic and operational uncertainties were too great* ***compared to the extremely high scientific, social, and ecological values that would be placed at risk*** (emphasis added).[31]

And that:

> *Damage to these valued resources could not be completely avoided if full scale mining (and road access) were implemented, even with mitigation measures discussed in the FEIS. Full scale mining would irretrievably alter the character of the landscape and the resources.*[32]

Among the valued resources of concern were Rough and Ready Creek's exceptional water quality and its wild and scenic river status. It should be noted that the Nicore Mining Plan of Operations Environmental Impact Statement did not assess potential impacts associated with the operation of a nickel smelter on the Rough and Ready Creek Area of Critical Environmental Concern (ACEC) because none was proposed then.

However in 2011, the proponent of the Nicore Mine submitted another mine plan of operations, this time as RNR Resources. The 2011 plan includes the construction and operation of a smelter and ore drying facility on the Rough and Ready Creek ACEC.[33]

Now with a renewed proposal to mine in the adjacent Baldface Creek/North Fork Smith River Watershed and a large new claims group located a little to its north, the ancient nickel laterite soils of the Rough and Ready Creek watershed and the large block of existing federal mining claims located there, have not escaped notice.

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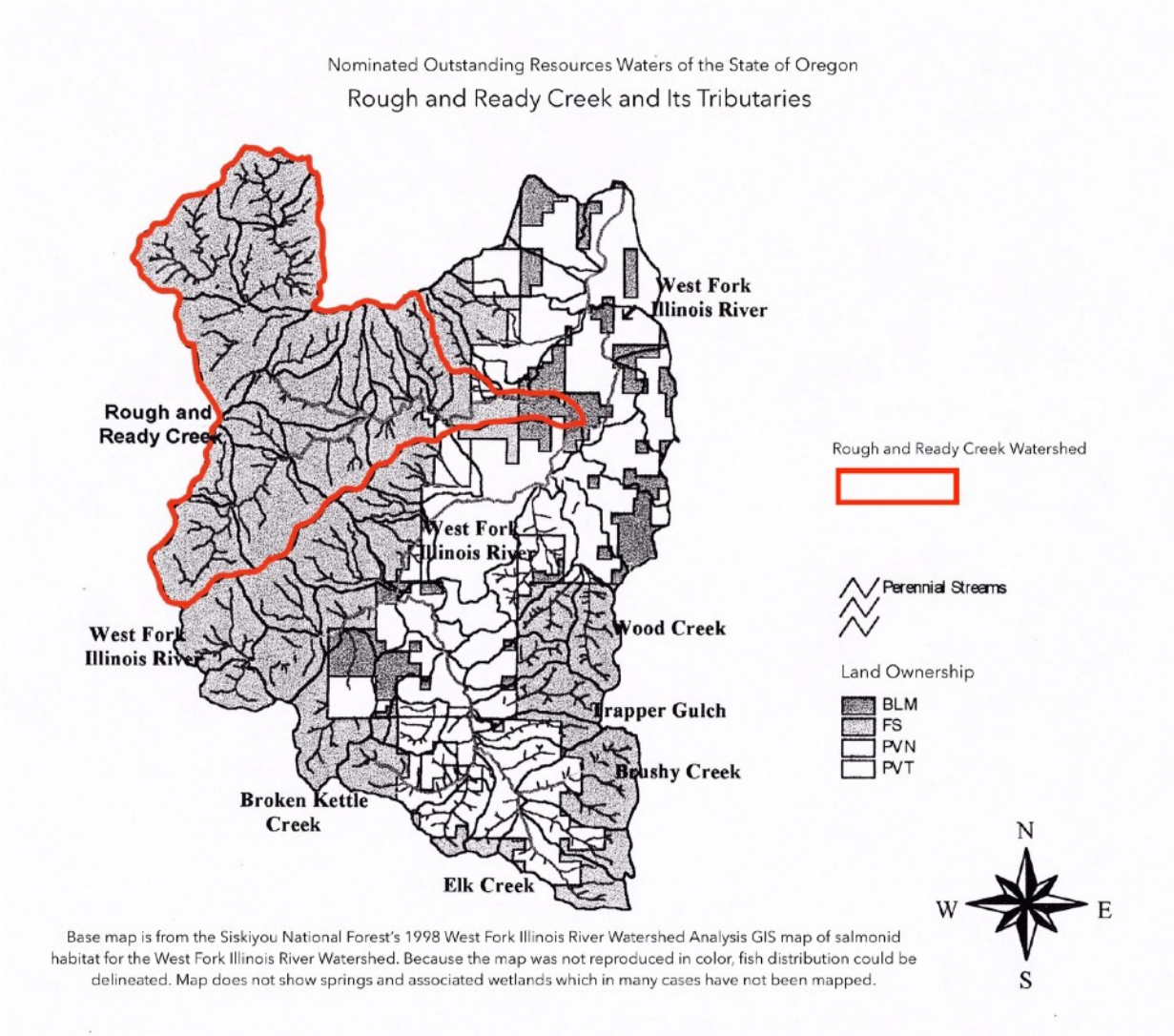
[31] U.S. Forest Service, 1999, Record of Decision for the Nicore Mining Plan of Operations, R6-11-077-99, Siskiyou National Forest, page 10 and 12. Available through Oregon State University Scholars Archive at - https://ir.library.oregonstate.edu/concern/defaults/bz60cx82v or as a pdf file from the nominators.

[32] *Id.* at page 9.

[33] The 2011 RNR Resources Mining Plan was incomplete, according to the U.S. Forest Service. So to this date it has yet to be acted on. We can supply a copy, acquired through FOIA, on request. The operation of a smelter and ore drying facility was also discussed in an unpublished Department of Interior Administrative Law Judge opinion. Also available on request.

4. Map of Rough and Ready Creek Watershed (See also additional maps in Appendix A).



5. Values at risk: Exceptional water quality and clarity, beneficial uses and the ability of Rough and Ready Creek to act as a refuge.

Most of Rough and Ready Creek is 303(d) listed for temperature. However, the relatively high temperatures in its lower reaches are due to natural conditions—i.e. the wide, shallow stream channel, naturally open riparian areas, and low flows.[34] The U.S. Forest Service's Watershed Condition Framework apparently recognizes that the high stream temperatures are a natural condition. Its interactive map shows Rough and Ready Creek's watershed as "functioning properly."[35]

[34] *Supra* at note 11, page 8

[35] https://usfs.maps.arcgis.com/apps/MapSeries/index.html?appid=f4332e5b80c44874952b57e1db0b4407

The Rough and Ready Creek Wild and Scenic River Eligibility Study lists the following beneficial uses:[36]

> *Fisheries: High summer water temperature and low summer flows limit summer habitat for fish in Rough and Ready Creek. The good water clarity may contribute to winter use of the stream by fish.*
>
> *Scenic: The water in Rough and Ready Creek is normally very clear most of the year and contributes substantially to the scenic value of the watershed.*
>
> *Recreation: The clear water and warmer summer water temperatures attract local swimmers to the lower reaches of Rough and Ready Creek and enhance local recreation use.*

The Bureau of Land Management's (BLM) Rough and Ready Creek Area of Critical Environmental Concern was established to protect similar natural resource values. These include:

> *...botanical, wildlife/fisheries, hydrologic systems, and other natural systems*.[37]

The Draft Management Plan for the ACEC notes that:

> *The botanically rich and colorful understories below the widely spaced, often stunted pines has attracted observes to the site for year and motivated the citizens of the Illinois Valley and Oregon State Parks to establish the original botanical wayside*.[38]

In addition,

> *The Oregon Chapter of the American Fisheries Society designated the Rough and Ready Creek drainage as highly sensitive, a reference watershed and a genetic refuge and recommended protection of the entire watershed (Oregon Chapter American Fisheries Society 1993).*[39]

It's also important to note that Rough and Ready Creek, as it reaches the valley floor, forms broad sweeping bends and multiple stream channels. As it approaches and then flows across its broad alluvial fan, it loses surface flow to an extensive hyporheic zone and the local aquifer. In the summer and before fall rains, the lower reach of the creek has no surface flow. This may prevent non-native fish that are found elsewhere in the Illinois River Basin from migrating into the watershed. And while not mentioned in the literature, this characteristic is likely also beneficial to other sensitive

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[36] *Supra* note 11 at page 8.

[37] *Supra* note 9 at page 2.

[38] *Id*. at page 10.

[39] USDI Bureau of Land Management, 1998, Draft Management Plan and Environmental Assessment, Rough and Ready Creek Area of Critical Environmental Concern, Medford District, Grants Pass Resource Area, March 1998 at page 18,

species that have found refuge in the Rough and Ready Creek Watershed, including the Foothill Yellow-legged Frog (*Rana Boylii*).[40]

Rough and Ready Creek's remoteness, wilderness character, serpentine soils and inaccessibility by roads that are open to public motorized travel enhances its value as a refuge for sensitive plants and animals.[41]

6. The Illinois River Basin.

Rough and Ready Creek is a tributary of the West Fork Illinois River. The West Fork joins the East Fork Illinois at the edge of the incorporated community of Cave Junction. In about 5 miles, the Illinois River's character changes as it reaches the boundary of the Rogue River-Siskiyou National Forest and leaving civilization dives into an ever deepening and wild canyon. In 1984 Congress added the lower 50.4 miles of Oregon's Illinois River to the National Wild and Scenic River System based on its outstandingly remarkable water quality and fisheries, scenic, recreation and botanical values.

The Illinois is the largest tributary of the Rogue River, joIning its lower National Wild and Scenic River reach 27 miles from the Pacific Ocean where it provides approximately 25% of the mean annual flow to the Rogue.

7. Land ownership in the Rough and Ready Creek Watershed.

There's several different numbers used to describe the area of Rough and Ready Creek's watershed —ranging from 23,000 acres to 23,740 acres. For the purposes of consistency, we use the 23,000 acre estimate from the U.S. Forest Service's West Fork Illinois River Watershed Analysis (page 11).

The Medford District Bureau of Land Management (BLM) manages 1164 acres in the lowest reach of Rough and Ready Creek as the Rough and Ready Creek Area of Critical Environmental Concern (ACEC).[42]

Tucked into the ACEC, immediately off the Redwood Highway, is the State of Oregon's 11 acre Rough and Ready Creek Botanical Wayside. The 11 acres is what's left from the original 99 acre wayside the State designated in 1937. The designation was the result of a multi year effort by local resident Effie Smith and the Illinois Valley Garden Club.

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[40] The U.S. Fish and Wildlife Service listed 4 Foothill Yellow-legged Frog distinct population segments in California under the Endangered Species Act. It notes that the *"amphibian faces several threats, including altered waterflows that are related to water infrastructure, competition with and predation by non-native species and disease."* See - https://www.fws.gov/species/foothill-yellow-legged-frog-rana-boylii.

[41] For example, Rough and Ready Lake, in the headwaters of the North Fork of Rough and Ready Creek, lies in the Kalmiopsis Wilderness and serves as a refuge for native amphibians. The only access to the shallow lake is by way of the Chetco Divide Trail and then cross country to the lake.

[42] The BLM's Rough and Ready Creek ACEC includes a small diverse remanent of valley floor old growth forest on the east side of the West Fork Illinois River across from the mouth of Rough and Ready Creek.

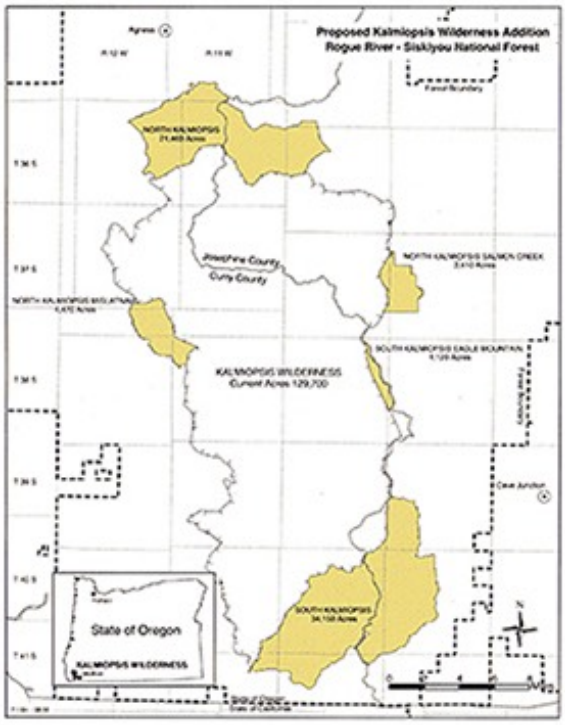
There's 6 private inholdings within the National Forest boundary totaling approximately 255 acres. Of the 255 acres, approximately 110 acres is the Rough and Ready Creek Preserve owned by the Southern Oregon Land Conservancy. Excluding the private land in the Parker Creek watershed, there's approximately 40 acres of private land within Rough and Ready Creek's watershed but outside the National Forest boundary. The rest of the watershed is National Forest land managed by the Rogue River-Siskiyou National Forest.

8. Special management areas and designations.

The following special management areas and designations are found in the Rough and Ready Creek Watershed:

- Rough and Ready Creek Botanical Area (USFS) - 1500 acres.
- Rough and Ready Creek Area of Critical Environmental Concern (BLM) - 1164 acres.
- Illinois Valley Botanical Emphasis Area (BLM)
- Rough and Ready Creek Botanical Wayside (State of Oregon) - 11 acres.
- Kalmiopsis Wilderness (USFS) - 2300 acres
- Inventoried South Kalmiopsis Roadless Area (USFS) - 19,268 acres.
- Northwest Forest Plan Late Successional Reserve - (USFS)
- Northwest Forest Plan Administrative Withdrawn Area (USFS)

See West Fork Illinois River Watershed Analysis land allocation map and the Inventoried Roadless Area map in Appendix A.



Above - USDA's map of the 5 recommended additions to the Kalmiopsis Wilderness. The 34,000 Acre South Kalmiopsis Wilderness Addition is the largest of the five. The Josephine/Curry county line is the watershed divide between the North and South Forks of Rough and Ready Creek and Baldface Creek.

9. U.S. Forest Service recommendations for future management.

In 1993, the Siskiyou National Forest found that Rough and Ready Creek and its North Fork were free flowing with one or more outstandingly remarkable values (ORV) and therefore its eligible to be added to the National Wild and Scenic River System. Rough and Ready Creek's identified ORVs are: Hydrological/Geological, Botanical/ Ecological and Wildlife.

Since 1993, new information, an extensive photographic record and a better understanding of

Rough and Ready Creek's hydrological regime provides support for adding water quality as an ORV. This is important for the protection of its exceptional water quality.

In 2004, Secretary of Agriculture, Ann Veneman, recommended that Congress add 64,000 acres to the Kalmiopsis Wilderness. The recommended wilderness additions included 5 separate areas, the largest of which is the 34,000 acre South Kalmiopsis Wilderness Addition. The South Kalmiopsis Wilderness Addition includes the watersheds of the North and South Forks of Rough and Ready Creek and Baldface Creek, a tributary of Oregon's North Fork Smith River.[43]

10. Southwestern Oregon Mineral Withdrawal: A temporary administrative protection.

In 2015, the Bureau of Land Management, at the request of the U.S. Forest Service, proposed the withdrawal of approximately 101,000 acres of National Forest and BLM lands from entry and location under the mining laws of the United States (hereafter mineral withdrawal or Southwestern Oregon Mineral Withdrawal).[44]

The mineral withdrawal was requested by Senators Ron Wyden and Jeff Merkley and Representatives Peter DeFazio and Jared Huffman after they'd introduced legislation earlier to permanently withdraw the 101,000 acres.[45] The Southwestern Oregon Mineral Withdrawal area includes the 23,000 acre Rough and Ready Creek Watershed. See detailed map of the Rough and Ready and Baldface Creek Mineral Withdrawal Area in Appendix A, Figure 4, page 2.

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[43] See USDA's July 8, 2004 press release for the proposed Kalmiopsis Wilderness Additions at - https://www.legistorm.com/stormfeed/view_rss/150990/organization/69504/title/veneman-proposes-additions-to-wilderness-in-oregon.html. It states:

> *Agriculture Secretary Ann M. Veneman today announced a proposal to Congress to designate more than 64,000 additional acres as wilderness in Southwest Oregon to continue to protect natural resources and wildlife habitat. The acreage is in five remote and largely roadless parcels, ranging in size from 1,000 to 34,000 acres, some of which were partially burned during the 2002 Biscuit Fire. The lands are adjacent to the existing Kalmiopsis Wilderness on the Rogue River-Siskiyou National Forests.*
>
> *"These lands have been noted for their outstanding wilderness characteristics for many years and there has been long-standing public interest in providing greater protections in this area," said Veneman. "The Bush Administration is pleased to move this important proposal forward and will begin work with Congress this session to provide this designation."*

Secretary Veneman's recommended 34,000 acre South Kalmiopsis addition to the Kalmiopsis Wilderness includes the watersheds of the North and South Forks of Rough and Ready Creek and the watershed of adjacent Baldface Creek, a tributary of Oregon's North Fork Smith River.

A larger map of the UDSA's recommended South Kalmiopsis Addition is available on request, as is the U.S. Forest Service's analysis of the South Kalmiopsis and the other wilderness additions.

[44] https://www.federalregister.gov/documents/2015/06/29/2015-15954/notice-of-proposed-withdrawal-and-notification-of-public-meetings-oregon

[45] https://huffman.house.gov/media-center/press-releases/defazio-huffman-wyden-merkley-praise-temporary-ban-on-mining-projects-in-southwest-oregon-watershed-protection-area-covered-by-their-bills-in-house-and-senate

The publication of the notice of the proposed mineral withdrawal began an extended process of public comment and meetings, environmental analysis and preparation of a report to Congress that's required by 43 USC §1714 (c) (1) and 43 CFR §2310.

A 20-year secretarial mineral withdrawal (Public Land Order No. 7859) was approved on Dec. 30, 2016 for the 101,000 acres.[46] The mineral withdrawal is also known as the Southwestern Oregon Mineral Withdrawal.[47] The Rough and Ready Creek Watershed makes up 23% of the Southwestern Oregon Mineral Withdrawal Area.

While the mineral withdrawal was overwhelmingly popular, with more than 99% of written comments supporting the mineral withdrawal and legislation to make it permanent,[48] in 2017 Representative Rob Bishop and the Secretary of Interior under President Donald Trump sought to have it overturned.[49]

See map of the Rough and Ready and Baldface Creek Mineral Withdrawal Area in Appendix A, figure 4, page 2.

The mineral withdrawal is subject to valid existing rights. Currently there's approximately 1,200 acres of existing federal mining claims in the Rough and Ready Creek Watershed. They're held by RNR Resources. The claims have not undergone a valid existing rights determination.

In the adjacent North Fork Smith Watershed there's 2,870 acres of existing contiguous federal mining claims. In 2017, the State of Oregon designated the North Fork Smith River, It Tributaries and Associated Wetlands as Outstanding Resource Waters.

11. Pending legislation before Congress.

Since 2015, there's been legislation in the House and Senate to make the Southwestern Oregon Mineral Withdrawal permanent. Currently the legislation is:

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[46] https://www.govinfo.gov/app/details/FR-2017-01-13/2017-00770

[47] The analysis file for the Southwestern Oregon Mineral Withdrawal is archived on the Rogue River-Siskiyou National Forest website at - https://www.fs.usda.gov/project/rogue-siskiyou/?project=47877.

[48] U.S. Forest Service and USDI Bureau of Land Management, 2016, Finding of No Significant Impact 2015 Southwestern Oregon Mineral Withdrawal Environment Assessment, stating that:

> *Public comments submitted to the BLM and the Forest Service were overwhelmingly in favor of the withdrawal(>99.9%), with comments received from almost every state in the nation (EA pg 5 and A-5).*

And,

> *During two comment periods, the agencies received over 45,000 comments (EA pg 5 and A-5), of which all but 27 were in support of withdrawal. Most of the supporters favored the 20-year withdrawal period (Alternative Action).*

[49] https://www.ijpr.org/environment-energy-and-transportation/2017-11-30/utah-congressman-seeks-to-re-open-area-in-sw-oregon-to-mining.

- Section 5 of the Oregon Recreation Enhancement Act, S. 1589.[50]
- The Southwestern Oregon Watershed and Salmon Protection Act, H.R. 980.[51]

In 2021, S. 1589 was passed out of committee on a bipartisan vote.

The legislation exactly mirrors the area and language of the Secretarial withdrawal established by Public Land Order No. 7859.

In addition, Rough and Ready Creek is among the streams proposed for addition to the National Wild and Scenic River System in Senators Wyden and Merkley's River Democracy Act of 2024 (S. 4449).[52] The legislation would classify the watershed upstream of the private inholding as a Wild River Area. Downstream classifications include both Scenic and Recreational River Area segments. The legislation was re-introduced on June 4, 2024 and a hearing before the Senate Subcommittee on Public Lands, Forests and Mining held on June 12, 2024.

12. Previous land management activities and the current Rogue River-Siskiyou National Forest Travel Management Plan.

Other than fire suppression, management activities in the Rough and Ready Creek Watershed have been confined to the logging of 108 acres which occurred in 1977 and 1987 after Forest Service (FS) system road 4402-112 was extended into the South Kalmiopsis Roadless Area. Logged was a rare island of ancient western hemlock, Port Orford cedar and sugar pine located in the headwaters of the South Fork of Rough and Ready Creek's watershed.

Appendix A, figure 3, page 2 shows the Rough and Ready Creek Watershed in relation to the Kalmiopsis Wilderness and the South Kalmiopsis Roadless Area. The two timber sale units are on watershed divide between Rough and Ready Creek and Baldface Creek. See photo of the rare plant association in the South Fork Rough and Ready Creek Headwater in Appendix B, page 2.

As we wrote above, there are two roads open for public motorized travel in the watershed. One is the Redwood Highway, which crosses Rough and Ready Creek in its lower reach. The other is a

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[50] https://www.congress.gov/bill/117th-congress/senate-bill/1589 In BLM's testimony before the Senate Energy and Natural Resources Committee, they state:

> *A high concentration of rare plants, forested trails, and scenic views are all emblematic of these drainages. Rough and Ready Creek and Baldface Creek are listed as eligible for National Wild and Scenic River designation by the USFS.*
>
> *These lands were administratively withdrawn for 20 years by Public Land Order 7859 on December 30, 2016, for the purpose of protecting the lands while Congress considered a permanent legislative withdrawal. The Department supports permanent protection of these lands.*

https://www.blm.gov/sites/default/files/docs/2021-10/S. 1589 Oregon Recreation Enhancement Act.pdf

[51] https://hoyle.house.gov/media/press-releases/rep-hoyle-introduces-bill-protect-southwestern-oregon-rivers-mining-pollution#:~:text=The 'Southwestern Oregon Watershed and, recreation from mining pollution.

[52] https://www.congress.gov/bill/118th-congress/senate-bill/4449/

segment of Forest Service Road 4402-112, in the headwaters of the South Fork of Rough and Ready Creek.

Rough and Ready Way is a short private road through the private inholdings that begins at the end of Naue Way and provides access to The Nature Conservancy's Rough and Ready Creek Preserve and other inholdings.

The McGrew Trail is a historic wagon route that runs along part of the watershed divide between the South Fork of Rough and Ready Creek and the West Fork Illinois River. Motorized travel on it is subject to a special use permit.

See Appendix A, Figure 5 on page 3 for a map excerpted from the Wild Rivers Ranger District Motorized Vehicle Use Map showing the area of the Rough and Ready Creek Watershed.

13. Wild, native populations, including rare, endemic or isolated species.

The Rough and Ready Creek Watershed supports wild, native populations of chinook salmon, winter steelhead and cutthroat and rainbow trout.[53] Rough and Ready Creek and a section of its North Fork are critical habitat for Southern Oregon/Northern California Coast Coho Salmon, which are protected as threatened under the Endangered Species Act. It's not known to what the extent that coho use the watershed.[54]

There's been no hatchery supplementation of the wild fish populations in the Rough and Ready Creek Watershed. Isolated populations of cutthroat trout may be significant to Rough and Ready Creek's value as a fishery.[55]

Rough and Ready Creek also provides important habitat for the Foothill Yellow-legged Frog (*Rana boylii*). In 2023, the U.S. Fish and Wildlife Service protected four of the six distinct population segments of the Foothill Yellow-legged Frog in California under the Endangered Species Act.[56] The listing does not include populations in southwestern Oregon, however, the Foothill Yellow-legged Frog is a Species of Concern in Oregon.[57] Little is known of its status in Oregon, except through stream surveys.

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[53] *Supra* note 23 at page 4-4.

[54] NOAA Fisheries summary of critical habitat for Southern Oregon/Northern California Coasts Coho Salmon - https://www.fisheries.noaa.gov/action/designation-critical-habitat-central-california-coast-and-southern-oregon-northern

> *"Critical habitat for the Southern Oregon/ Northern California Coasts ESU encompasses accessible reaches of all rivers (including estuarine areas and tributaries) between the Mattole River in California and the Elk River in Oregon, inclusive."*

[55] *Supra* note 11 at page 11.

[56] https://www.fws.gov/press-release/2023-08/foothill-yellow-legged-frog-receives-esa-protections

[57] https://www.oregonconservationstrategy.org/strategy-species/foothill-yellow-legged-frog/

Another federal species of concern that makes its home in the Rough and Ready Creek watershed is the California Mountain King Snake (*Lampropeltis zonata*). It's a sensitive species in the State of Oregon.[58]

In 1993, thirty-seven occurrences of twenty-two sensitive plants were documented along Rough and Ready Creek. Many of these are associated with streamside or wetland habitat.[59] Rough and Ready Creek is well known for its unique botanical resources. The number of species (richness) is unusual and may be related to the atypical stream morphology.[60] More recent rare plant surveys have identified additional sensitive plant occurrences. The Record of Decision for the Nicore Mining Plan of Operations notes that,

> *The high number of rare plant species growing within one-quarter mile of Rough and Ready Creek led to the identification of Botanical/Ecological ORV[outstandingly remarkable value].*[61]

A rare plant association—Western Hemlock/Saddler Oak— exists along headwaters tributaries of the South Fork of Rough and Ready Creek. It indicates a diverse and unusual conditions, is a disjunct population of Western Hemlock and is possibly a relic from ancient times.[62]

While not directly associated with streams, springs, or wetlands, interspecies hybrids have been discovered in the Rough and Ready Creek Watershed. Their presence is a unique feature of the watershed.[63]

Two plants protected by the Endangered Species Act are found in the Rough and Ready Creek Watershed. They are—Cook's lomatium (*Lomatium cookii*)[64] and McDonald's rock cress (Arabis MacDonaldiana).[65] Both are "Endangered".

The 77,000 acres West Fork Illinois River Watershed, which includes the 23,000 acre Rough and Ready Creek Watershed, was ranked #1 in Oregon for rare plant species in a study that looked at 1,400 fifth-field watersheds in Oregon.[66]

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[58] https://www.oregonconservationstrategy.org/strategy-species/california-mountain-kingsnake/

[59] *Supra* note 11 at page 12.

[60] *Id.* at page 11.

[61] *Supra* note 27 at page 17.

[62] *Supra* note 11 at page 11 & 12.

[63] *Id.* note 11 at page 12.

[64] https://ecos.fws.gov/ecp/species/1583#rangeInfo

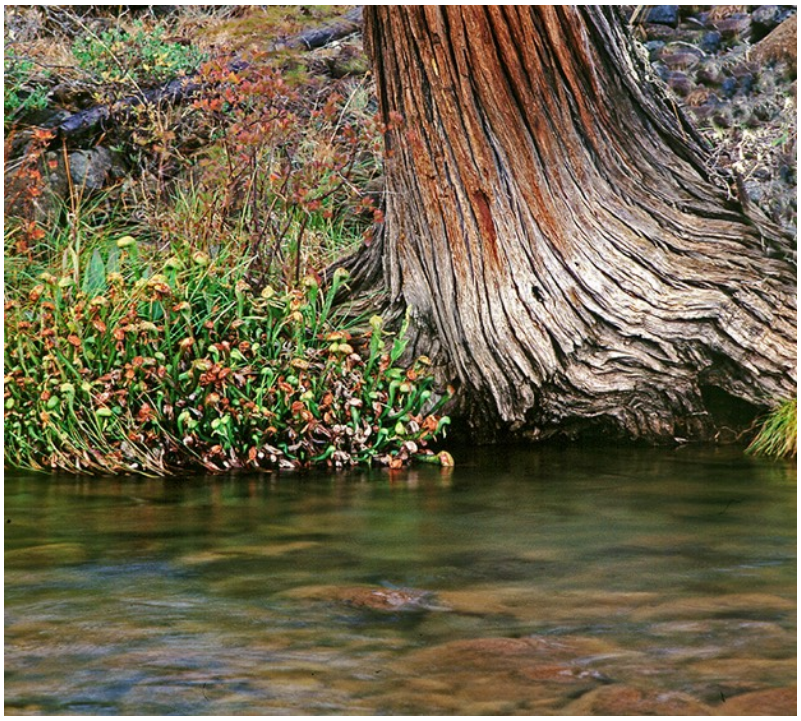
[65] https://ecos.fws.gov/ecp/species/6849

[66] *Supra* note 1 at page 2.

The Rough and Ready Creek Watershed is a refuge for Port Orford cedar, an important riparian conifer that's endemic to Northwest California and Southwest Oregon.[67] It's subject to a non-native water borne pathogen, *Phytophthora lateralis*, that kills even the largest of trees. In the journal Plant Disease, it states that:

> *The impact of POC mortality on riparian ecology depends on community structure and stream geomorphology. On ultramafic soils, POC may be the only riparian tree species.* ***Its loss may have an immediate and drastic effect on stream ecology****.* (emphasis added)[68]

Rough and Ready Creek is a rare watershed not known to be infested with POC disease.



Above - Along Rough and Ready Creek, *Darlingtonia* and associated rare wetland plants are often found in close proximity. This may be because they're tapping into a perennial seep or spring. The cedar's roots help stabilize the stream bank thus providing habitat for the *Darlingtonia* that is more resistant to high storm run off events.

14. The connectivity of Serpentine *Darlingtonia* Wetlands to downstream waters.

Numerous Serpentine *Darlingtonia* Wetlands (serpentine wetlands or wetlands) occur in the Rough and Ready Creek Watershed. The number is unknown because the watershed has not been fully surveyed.[69] Five rare plant species that are found in association with the serpentine wetlands are

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[67] Everett M. Hansen et al, 2000 Managing Port-Orford-Cedar and the Introduced Pathogen, Phytophthora lateralis, in Plant Disease, Vol. 84, No. 1, January 2000, page 4.

> *With the exception of the northern part of its range,* [Port Orford cedar] (POC) *usually grows primarily along streams and in areas with year-round seepage. It often grows within the active stream channel, where, as large, old trees, POC provides shade and long-lasting stream structure (Fig. 4). The stabilizing effects of its fibrous root system have also been noted by stream ecologists and fisheries biologists.*

https://apsjournals.apsnet.org/doi/pdf/10.1094/PDIS.2000.84.1.4

[68] *Id.* page 7.

[69] Evan Frost, et al. 2002, Serpentine Fen Conservation Project, Summary of Phase III: Field surveys for new fens and rare plant populations on the Siskiyou National Forest, 2002, page 3.

> *The Siskiyou National Forest is known to support the highest density of fens and associated rare plants, but large portions of the forest have never been previously surveyed for these unique plant communities. Most of the known sites are in heavily traveled areas, but much of the landscape is fairly remote from roads, is rarely visited and as a result has not been adequately surveyed.*

subject to an in-lieu-of-listing conservation agreement (agreement) between the U.S. Fish and Wildlife Service, the U. S. Forest Service and the Bureau of Land Management.[70] One of the conditions of the agreement is the preparation of a conservation strategy for the wetlands. The conservation strategy describes the wetlands as follows:

> *Serpentine wetlands, commonly referred to as serpentine fens or bogs or Darlingtonia wetlands, are unique natural communities characterized by a perennial flow of cold water that is either surface or sub- surface, and soils that are derived from ultramafic (e.g. serpentine, peridotite) parent materials (Becking 1997). The mineral and chemical composition of serpentine-derived soils is unusual and extreme, leading to high levels of plant speciation and endemism (Brooks 1987, Coleman & Kruckeberg 1999, Harrison et al. 2006). Serpentine wetlands are particularly noteworthy in this regard and occur as disjunct, relatively small green "islands" surrounded by xeric communities that support strikingly different types of vegetation (Tolman 2006). A number of plant species are essentially restricted to this system, including the five rare taxa of which this Conservation Strategy is focused.*[71]

The conservation agreement lists a number of threats. The most critical is any alteration in the hydrology of the wetlands, whether its from mining, road construction or off road vehicles:

> *Any alteration of the hydrology of a Darlingtonia wetland has the potential to drain water away from the wetland and its associated plants. As indicated by the Borgias and Biegel 1996 study, the hydrological regime of the Darlingtonia wetland environment is perhaps the most critical component of Darlingtonia wetland communities and their associated rare plant habitat.*[72]

The conservation strategy describes threats to the wetlands in more detail:

> *Any alteration of the hydrology of a serpentine wetland has the potential to drain water away from the wetland and its associated plant community. Several studies and general field observation indicates that the hydrological regime of the wetland environment is probably the most critical component of serpentine wetland communities and their associated rare plant habitat (Becking 1982, Borgias 1993, Borgias and Biegel 1996, Frost et al. 2004). All of the rare target species discussed in this Conservation Strategy are associated with high soil moisture or flowing water. Mining and its related activities, Off Highway Vehicle (OHV) use, road construction and maintenance, fire suppression activities, and domestic water diversions all have*

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[70] U.S. Fish and Wildlife Service, 2006, Conservation Agreement for *Hastingsia bracteosa*, *H. atropurpurea*, *Gentiana setigera, Epilobium oreganum*, and *Viola primulifolia ssp. occidentalis*, and serpentine Darlingtonia wetlands and fens from Southwestern Oregon and Northwestern California, https://ecos.fws.gov/ecp/report/conservation-plan?plan_id=3981. A copy of the Conservation Agreement is a available on request from the author of this nomination as a pdf document.

[71] USDA Forest Service, USDI Bureau of Land Management, 2018, Conservation Strategy for Oregon Fireweed (*Epilobium oreganum*), Mendocino Gentian (*Gentiana setigera*), Large-Flowered Rush-Lily (*Hastingsia bracteosa var. bracteosa*), Purple- Flowered Rush Lily (*H. bracteosa var. atropurpurea*), Western Bog Violet (*Viola lanceolata ssp. occidentalis*) in Serpentine *Darlingtonia* Wetlands of Southwest Oregon and Northwest California." Page 7. The conservation strategy if available on request as a pdf document from the author of this nomination.

[72] *Supra* note 50 at page 6.

the potential to adversely affect hydrologic processes by accelerating or diverting water flows. These activities represent significant threats to serpentine wetland biodiversity because many species are sensitive to small changes in hydrology and water chemistry. [73]

Serpentine Darlingtonia Wetlands, occur only in Klamath-Siskiyou Region in areas underlain by serpentine/ultramafic terrain. While the scientific literature does not precisely describe the wetlands as groundwater dependent ecosystem, the descriptions of the wetlands especially highlight one characteristic—that they require a perennial source of water and the principle threat to the wetlands is alteration of their hydrologic regime. Examples of the concern for the perennial water sources for these rare plant wetlands are found in the conservation agreement, conservation strategy and published scientific studies including the following:

Fed by perennial sources of cool water, these serpentine wetlands, or "Darlingtonia fens," remain moist during summer, a time when upland vegetation experiences a prolonged dry season of approximately 5 mo. The constant moisture in fens results in continually saturated soils … Besides providing habitat for D. californica, fens support small, isolated populations of several rare and regionally uncommon mesophytic plant species, such as Gentiana setigera A. Gray (Mendocino gentian), Hastingsia bracteosa var. bracteosa Watson (large-flowered rush-lily), and Viola lanceolata subsp. occidentalis (A. Gray) Russell (western bog violet) (Frost and Jules, 2007).[74]

And,

Hydrology is an important driver of these wetland communities. Variables related to geomorphic setting, water inflow and outflow, and water temperature provide for a diversity of plant communities. Hillslope springs, streamsides, and terraces are three broad categories of Darlingtonia plant communities.

Where hillslope springs occur, groundwater finds its way to the surface through fractures in the serpentine rock at sites subject to slumping. Streamside wetlands develop on gravel bars along stream channels. Terrace wetlands occur as a complex of seeps that run together on broad, low gradient slopes of former stream benches.[75]

…water management efforts, such as maintaining water levels, should not be understated as anthropomorphically lowering these levels may alter microhabitat processes and artificially hasten the demise of the Darlingtonia fens (Tolman 2004).[76]

The Serpentine *Darlingtonia* Wetlands that are subject to the conservation strategy are significant in their own right. However, what is less well understood is the important role that the springs forming

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[73] *Supra* note 51 at page 27.

[74] Erik S. Jules et al. 2011, Influence of Fire on a Rare Serpentine Plant Assemblage: A 5-Year Study of Darlingtonia Fens, in *American Journal of Botany* 98 (5):801-811. 2011, page 802.

[75] https://www.fs.usda.gov/wildflowers/beauty/serpentines/communities/darlingtonia.shtml

[76] Deborah A. Tolman, 2007, Soil Patterns in Three Darlingtonia Fens of Southwestern Oregon, in *Natural Areas Journal*, 27(4):374-384.2007.

them play in maintaining water quality in streams flowing through serpentine landscapes like Rough and Ready Creek. The springs and other ground water discharge areas are especially important in the summer and late fall and by providing cool water refugia for the hardy salmon, steelhead and cutthroat trout that reside for all or parts of their lives in Rough and Ready Creek.

The presence of *Darlingtonia* on this dry slope above the North Fork of Rough and Ready Creek indicates there's a perennial source of flowing water that's connected to the creek below.

The connectivity between these unique wetlands —even those that appear isolated—is becoming increasingly recognized. See a few examples of connectivity between the serpentine wetlands and Rough and Ready Creek in Appendix A, pages 6 - 11.

While Oregon does not have authority over management activities on federal lands where these endangered plants and their wetland habitats are found, the State does have—and should exercise—authority to protect the essential springs and their function in enhancing water quantity and quality in the *Darlingtonia* wetlands and in Rough and Ready Creek and its tributaries.

To repeat, the springs forming Serpentine *Darlingtonia* Wetlands are important not only as a rare habitat for rare plants but also for supplementing late summer/early fall stream flows and providing cool water refugia for wild salmon, steelhead and cutthroat trout and the other sensitive aquatic species inhabiting the watershed.

15. A unique feature: Rough and Ready Creek's alluvial fan.

Many of the land managing agency documents we reference emphasize the uniqueness of Rough and Ready Creek's broad alluvial fan and that underlying it is an extensive hyporheic zone and further that its is a losing stream system in its lower reaches that recharges the local aquifer:

Meandering and braided channels are evident all across the Rough and Ready alluvial fan. Loss of surface flow from the channel becomes evident during the low flow season, and indicates a losing" or "effluent" channel recharging groundwater to the aquifer.[77]

And,

Along Rough and Ready Creek, during at least the summer months, the channel bed loses flow to the subsurface, and may contribute to the local water table of the alluvial fan.[78]

Above - Rough and Ready Creek's broad alluvial fan is one of its unique features. This photo was taken on 3/16/2015. Flow is moderate for the time of year. Not all the multiple channels are visible. Here Rough and Ready Creek is a losing system, meaning it's losing surface flow to the local aquifer. Google Earth images give one a better idea of the expanse of its alluvial fan but the above illustrates the high quality of water and significant quantity of water Rough and Ready Creek contributed of the local aquifer

See Google Earth images in Appendix A, pages 3-6 showing the lower reaches of Rough and Ready Creek were it loses almost all surface flow to its hyporheic zone and the local aquifer. In addition on Google Earth, one can see other segments upstream that are likely losing reaches.

Illustrative of this phenomena but on a much smaller scale is the alluvial fan of No Name Creek (local name). No Name Creek is a small unnamed tributary to the mainstem of Rough and Ready Creek.

Its surface flow begins disappearing as it approaches the relatively small alluvial fan above it confluence with the mainstem of Rough and Ready Creek. It reappears as a spring brook that flows parallel to Rough and Ready Creek for a short distance. Water temperature measured where the main flow emerges as an upwelling spring was 5 degrees cooler than surface flows in Rough and Ready

[77] Supra note 1 at page 13.

[78] Supra note 1 at Technical Appendices under Physical Setting, Water Quality — for aesthetics, drinking, and aquatic life (page is unnumbered).

Creek. The spring brook forms a small linear wetland along Rough and Ready Creek with *Darlingtonia*, fragrant Western Azalea, lilies and orchids. See Appendix B, page 3 for photographs.

16. Potential environmental, social and economic benefits and impacts of ORW designation.

Rough and Ready Creek has long been cherished locally, serving as a rare open space for the public to enjoy on the otherwise developed valley floor.[79] While Rough and Ready Creek and its 23,000-acre watershed make up only a small percentage of the Illinois and Rogue River Basins, it stands apart regionally and nationally as the epitome of a stream systems flowing through serpentine geology.[80]

The combination of its uncommon geology, antiquity, relative lack of disturbance and a coastal influenced climate have resulted in a unique desert-like landscape of rare plants punctuated with springs and wetlands. Flowing through it is a wild creek with exceptional water quality that's so unconventional it's hard to define. During winter storms, Rough and Ready Creek becomes more a river, capable of moving large boulders in its confined reaches. As it approaches the valley floor Rough and Ready Creek increasingly forms multiple braided stream channels across its alluvial flood plain. Here Rough and Ready Creek becomes a losing stream system where it likely recharges the local aquifer that residential wells tap into.

The first impetus to preserve the ecological and botanical treasures of Rough and Ready Creek began from the efforts of Illinois Valley Garden Club who petitioned the State of Oregon to set aside the Rough and Ready Creek Botanical Wayside in 1937.[81] In 1989, the Siskiyou National Forest (SNF) established the 1500 acre Rough and Ready Creek Botanical Area and in 1993 found Rough and Ready Creek and its North Fork eligible to be added to the National Wild and Scenic River System. In 1994, the Medford District of the Bureau of Land Management (BLM) established the 1,164 acre Rough and Ready Creek Area of Critical Environmental Concern.[82] And in 1999, the

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[79] USDI Bureau of Land Management, 1998, Draft Management Plan and Environmental Assessment, Rough and Ready Creek Area of Critical Environmental Concern, Medford District, Grants Pass Resource Area, March 1998, page 3.

> *The ACEC provides a unique open space and scenic natural area with unusual character in the Illinois Basin. The undeveloped landscape stands out here on the valley floor where much of the lowlands have been converted to residential, agricultural, industrial or commercial development.* Page 3

[80] *Supra* note 11 at page 6.

[81] Darren Borgias, 1994, Oregon Plants, Oregon Places: Rough and Ready Creek, in *Kalmiopsis,* Oregon Native Plant Society (available online at - https://www.npsoregon.org/kalmiopsis/kalmiopsis04/borgias_ullian.pdf):

> *The impetus to protect the site began in 1937 with the Illinois Valley Garden Club led by Effie Smith. Smith, a woman who once called Mrs. Henry Ford to ask that the local dealer remove a billboard at the entrance to the valley, convinced the state to create the Rough and Ready Creek State Park. Succumbing to the pressures of development, the original 99-acre park was whittled down over time to the 11-acre botanical wayside that remains beside Highway 199. Expansion plans and new developments threaten to carve further into this park remnant and impact the larger Rough and Ready Creek watershed. Fortunately, re- cent federal designations have helped highlight the biological importance of the site.*

[82] See - https://www.fs.usda.gov/recarea/rogue-siskiyou/recarea/?recid=82293 and https://kalmiopsiswild.org/explore-kalmiopsis-wildlands/illinois-river-valley/rough-and-ready-creek/

Siskiyou National Forest's Record of Decision for the Nicore Mining Plan of Operations concluded that full scale mining would put the "extremely high scientific, social and ecological values" of Rough and Ready Creek at risk.[83]

One social value that's impossible to quantify is the role that Rough and Ready Creek plays in recharging the local aquifer. Most residents of this corner of the Illinois Valley are dependent on wells for their domestic water supply. While the aquifer underlying Rough and Ready Creek's alluvial fan is not well understood, its highly likely most local wells are tapping into the aquifer that is fed and replenished by the creek. Therefore protecting and not allowing the degradation of Rough and Ready Creek's excellent quality will benefit local residents who value clean drinking water.

As we note above, Rough and Ready Creek's watershed was administratively withdrawn from the location of new mining claims for 20 years on Dec. 30, 2016. However, the withdrawal is subject to valid existing rights and there are approximately1,200 acres of existing federal mining claims remaining in the watershed. Now there's a renewed interest in mining the area's nickel laterite soils.

Also in 2011, a mining plan of operation was submitted to the Forest Service that proposes the construction and operation of a smelter at the Rough and Ready Creek Area of Critical Environmental Concern. The plan was missing information, which the mine proponent failed to supply, so to date the mine plan had not been acted on.

Oregon's Senators Wyden and Merkley have proposed adding Rough and Ready Creek and its tributaries to the Wild and Scenic River System in the River Democracy Act. However, Wild and Scenic designation provided the managing agency with limited authority to safeguard water quality. It's the State of Oregon that has the authority to protect Rough and Ready Creek's outstanding water quality and the exceptional ecological, scientific and social values of this unique fluvial system as Outstanding Resource Waters.

17. Other groups and/or individuals supporting the nomination.

Below is the beginning of a support list. We will notify Oregon Department of Environmental Quality as more names area added. Currently supporting the designation are:

Kalmiopsis Audubon Society
Soda Mountain Wilderness Council
Northwest Rafting Company
Gordon Lyford
More to come

18. Water quality values to be protected.

- **Exceptional water clarity, including after storms** when turbidity in other streams in the Illinois River Basin is high. For example a turbidity reading for Rough and Ready Creek

[83] *Supra* note 16 at page 10.

below the Highway 199 bridge on 2//6/1994 was measured at .11 NTU. The distilled water control was .06 NTU. **The waters of Rough and Ready Creek and its tributaries and associated springs and wetlands are also exceptionally clean** due to the wilderness character of its watershed. In 1996, a Water Quality Monitoring Report for the Illinois River Basin found substantial algal growth in many basin streams, indicating eutrophication. Rough and Ready Creek and tributaries of the Wild and Scenic section of the Illinois River were exceptions.

- **Geologic/Hydrologic** as described by the U.S. Forest Service in its Wild and Scenic River Eligibility Study for Rough and Ready Creek and Its Tributaries and by the Bureau of Land Management in its Draft Management Plan and Environmental Assessment for the Rough and Ready Creek Area of Critical Environmental Concern.
- **Ecological** - Rough and Ready Creek serves as a refuge for native trout and salmon and sensitive species such as the Foothill Yellow-legged Frog (*Rana boylii*). Serpentine *Darlingtonia* Wetlands and streamside springs and seeps host a number of rare plant species including five subject to an in-lieu-of-listing interagency conservation agreement for: Oregon Fireweed (*Epilobium oreganum*), Mendocino Gentian (*Gentiana setigera*), Large-Flowered Rush-Lily (*Hastingsia bracteosa* var. *bracteosa),* Purple-Flowered Rush Lily (*H*. *bracteosa* var. *atropurpurea*), Western Bog Violet (*Viola lanceolata* ssp. *occidentalis).* These springs and wetlands supplement late season flows and provide cool water refugia in a naturally warm stream system. In addition, the waters of Rough and Ready Creek have slightly elevated pH levels (7.91 to 8.5 depending on the geology) and are therefore better buffered and more stable in this era of climate change when stream systems in Colorado and Alaska are running red due their higher acidity level and what's being termed as acid rock drainage."

  In 1999, the U.S. Forest Service found Rough and Ready Creek to have "extremely high scientific, social and ecological values."

- **Scenic** - Rough and Ready Creek and its tributaries are very scenic and are noted for their exceptionally clear waters (even during high flow periods). The creek's great sweeping bends braided stream channels, and the rare plants that bloom along its banks draw visitors
- **Recreational** - in the summer Rough and Ready Creek's warm, clear and clean waters make it a favorite with swimmers. In the winter, during high flows, Rough and Ready Creek and its two forks offer a one-of-a-kind recreational experience for those willing to brave the weather and long miles required to hike their boats into the creeks roadless headwaters.
- **Drinking Water** - Rough and Ready Creek contributes clean water to the local aquifer and thus to the domestic water of surrounding rural residents. In addition, it contributes very clean clear water to the Illinois River. An important source of domestic water for the city of Cave Junction is a well located on the river's flood plain.

19. Potential environmental, social and economic benefits and impacts of ORW designation effects on private inholdings.

Protecting Rough and Ready Creek's exceptional water quality and clarity will benefit surrounding private property owners and the city of Cave Junction who directly or indirectly and get domestic

water from Rough and Ready Creek, the West Fork Illinois River downstream or the aquifer that Rough and Ready Creek significantly contributes to.

The City of Cave Junction has long recognized the importance of Rough and Ready Creek as a community open space and the value of its clean clear waters. For example, a letter dated Feb. 14, 2022 from the Cave Junction City Council to Governor Kate Brown and others states:

> *The Rough and Ready Creek Botanical Area, serves as an important community open space for the Illinois Valley that includes a wheelchair accessible trail. As Rough and Ready Creek approaches the Illinois Valley in great sweeping bends it has developed a unique alluvial plain with braided stream channels. This water infiltrates into the ground recharging the local groundwater, which in turn feeds nearby domestic wells. It is the duty of the City of Cave Junction to protect our watershed.*
>
> *The City supports the protection of the West Fork of the Illinois River and Rough and Ready Creek in Southern Josephine County. This area has unique botanical diversity and a high concentration of rare plants. Furthermore, the area is a source of clean water for our community. Preserving nearby watershed and nationally outstanding water quality in our region's rivers and streams is important to the surrounding rural communities.*[84]

The private properties on Rough and Ready Creek include several residences, the Southern Oregon Land Conservancy's Rough and Ready Creek Preserve, the Sis-Q-Meadows Camp and small two unoccupied tax lots. One residence's water right is for domestic use. The others residences and Sis-Q-Meadows are for irrigation. All would benefit from protecting Rough and Ready Creek's exceptional water quality. The private property in the Parker Creek sub-watershed is excluded from the nomination.

20. Historic or current use by tribes for fishing or other cultural purposes.

There's little information about historic indigenous use of the Rough and Ready Creek watershed for fishing or cultural purposes. A Wild and Scenic River Eligibility Study notes that a trail which traverses the watershed divide between Rough and Ready Creek and Baldface Creek was a historic travel route. There's no known current fishing or cultural use.

21. What effect would designation have on future applications for consumptive water rights?

According to available information, there is currently no water available for consumptive use in the Rough and Ready Creek Watershed. It is fully appropriated. In addition, the State of Oregon holds instream water rights for the mainstem of Rough and Ready Creek and Parker Creek.

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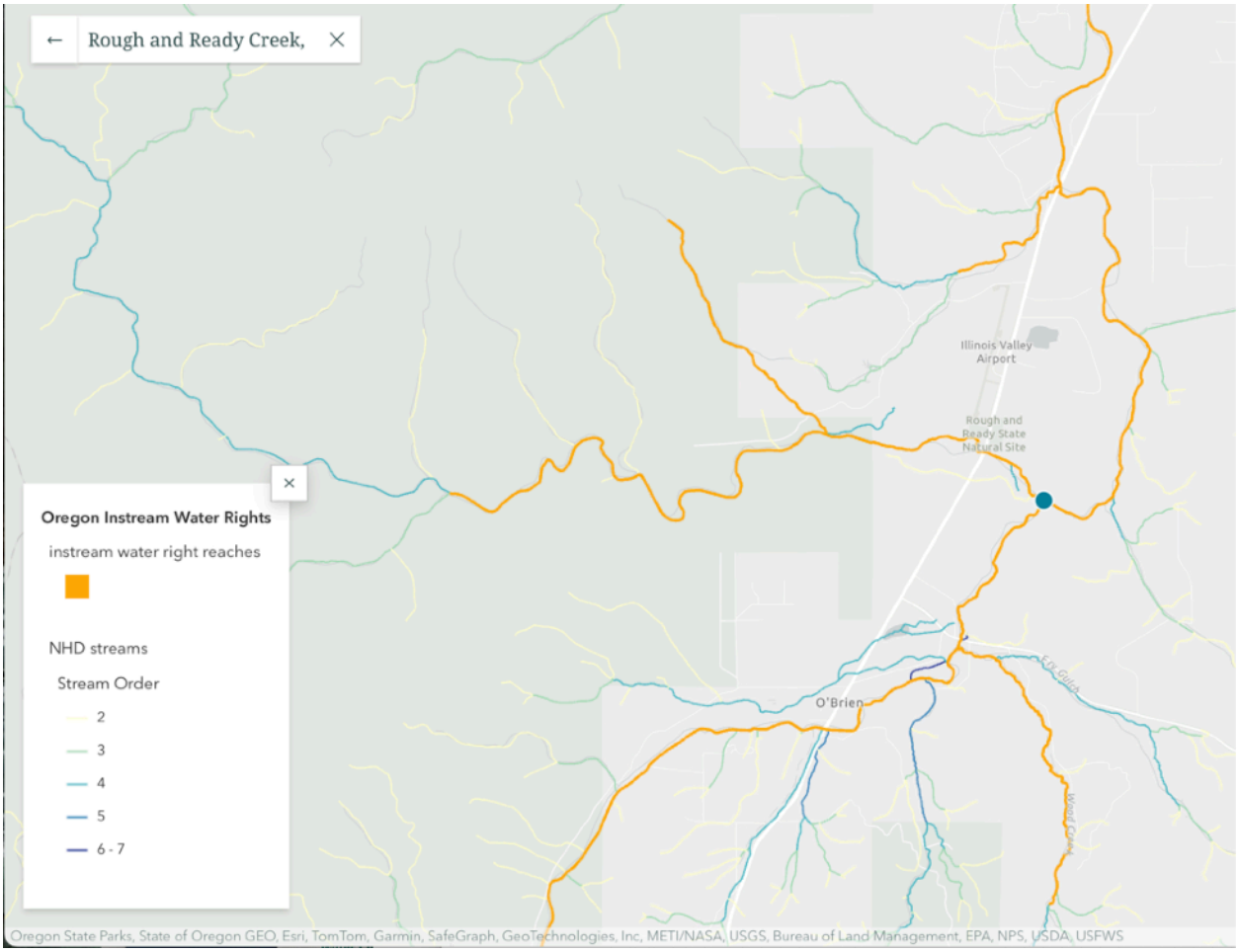
[84] Letter from the Cave Junction City Council stating support for the Southwestern Oregon Watershed and Salmon Protection Act in the House of Representatives and Section 5 of the Oregon Recreation Enhancement Act in the Senate. Letter available on request.



22. Outreach to land managers and interested parties.

We've spoken to the Wild Rivers Ranger District's District Ranger. He was not able to review the nomination at the time. The only question raised was what effect would the designation have, if any, on the Forest Service's ability to conduct emergency fire suppression activities. Since short term emergency actions can be exempted during rulemaking and there is precedent for this, this should not be a concern.

The Rogue River-Siskiyou National Forest has a new Forest Supervisor. We've not had a chance yet to meet with her. We will reach out to the Medford District Bureau of Land Management.

Southern Oregon Land Conservancy, one of the private property owners, has submitted a letter of support for the Wild and Scenic Illinois River and the Rough and Ready Creek ORW designation.

We will continue to reach out to other interested parties.

23. Supporting material.

Please see supporting maps and photographs in Appendices A and B and let us know if we can provide any of the referenced documents that are not available online or if you have questions.