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September 24, 2016

The Honorable Lisa Murkowski
U.S. Senate, SH-709 Hart Senate Office Building

The Honorable Maria Cantwell
U.S. Senate, SH-511 Hart Senate Office Building

**Re: Support for S. 346 – the Southwest Oregon Watershed and Salmon
Protection Act of 2015**

Dear Chairwoman Murkowski and Ranking Member Cantwell:

Geos Institute would like to thank the Senate Energy and Natural Resources Committee (“Committee”) for this opportunity to submit testimony in support of S. 346, sponsored by Oregon’s U.S. Senators Ron Wyden and Jeff Merkley.

Geos Institute is a nonprofit organization that provides science-based solutions to climate change challenges by partnering with decision makers, conservation groups, and land managers. Since 1998, we have been compiling scientific and economic information on the importance of the Kalmiopsis wildlands and rivers in southwest Oregon that we summarize herein for the Committee and in support of permanent protection for the area as specified in S. 346.

We would especially like to thank Senators Wyden and Merkley, and also Representatives Peter DeFazio (OR) and Jared Huffman (CA), who have introduced companion legislation in the House of Representatives (H.R.682) This legislation is necessary to withdraw from mining specified federal public lands in Curry and Josephine Counties, for amending the Wild and Scenic Rivers Act to elevate the certain segment designations, and to extend full protection for the Chetco Wild and Scenic River against mining impacts to the myriad public values represented by these unique and relatively pristine rivers and landscapes.

I would like to call the Committee’s attention to related testimony submitted by conservation groups (The Pew Charitable Trusts, American Rivers, Klamath-Siskiyou Wildlands Center et. al) demonstrating overwhelming public support for the area as reflected in public meetings on temporary mineral withdrawal in aid of legislation conducted by the Forest Service and the support of numerous businesses, local leaders, Native Americans, and other constituents. In sum, withdrawing the area from mining has generated very little public opposition.

At-Risk Ecological Values of Scientific and Public Interest

The Kalmiopsis wildlands of southwest Oregon represent a unique geo-botanically rich area within the world-class Klamath-Siskiyou ecoregion that encompasses southwest Oregon and northern California. The World Wildlife Fund recognized the larger ecoregion within which this remarkable area lies as among the top temperate conifer forests in the world (DellaSala 2013). The larger ecoregion within which it lies is well known in the scientific community for its world-class values that are present in the affected area. Some of these unique values include:

- Pristine rivers that support a continentally significant fishery;
- Most intact landscape along the Pacific Coast from Mexico to Canada;
- Streams with at least one Forest Service recognized “outstandingly remarkable value;”
- Outstanding botanical diversity including one of the highest concentrations of rare plants in western North America and the highest concentration of rare plants of any of Oregon’s 1,400 watersheds, many of which are localized endemics (highly restricted distributions) occurring on serpentine soils (rare soil type containing unusual concentrations of certain minerals);
- Critical habitat for threatened fish and wildlife species;
- Large relatively intact landscape connections to over 1 million acres of nearby wilderness, national parks (redwoods), and recreation areas (e.g., Smith River National Recreation Area);
- Climate refuge for rare plants, fish, and wildlife in search of relatively stable environments (low human disturbance); and
- Historical and cultural sites.

I would also like to call the Committee’s attention to the importance of the specific creeks and tributaries proposed for withdrawal in S. 346 as follows.

Rough & Ready Creek and Tributaries – the Wild and Scenic Eligibility Report by the Forest Service (1994a) states that this creek is “unusual by both national and regional standards.” It includes streams flowing through serpentine rock types (uncommon nationally) with unconfined alluvial channels (rare regionally), contains large numbers of rare plants (“exceptional levels:” 37 occurrences of 22 sensitive plants documented), rare plant communities (western hemlock—sadler oak plant association), is free-flowing (however, some small impoundments and diversions occur on the lower reaches), has “the potential to provide exceptionally high quality habitat for fish species indigenous to the region” (wild stocks, state or federally listed species), and is “internationally, nationally or regionally an important producer of resident and/or anadromous fish species.”

Baldface Creek and Tributaries – at the time of its eligibility determination, the USDA Forest Service (1994b) concluded that this creek “provides some of the best water quality and fisheries habitat known on the Siskiyou National Forest” and that “the world-class fishery on the Smith River depends on the water and fish produced in the Baldface drainage.” Further, “more numbers

of fish were counted on this creek than any other on the Illinois Valley Ranger District.” Other outstanding remarkable values include botanical, wildlife, scenic (landscape elements of landform, vegetation, water, color, and related factors that are notable or exemplary visual features) recreational, and cultural (prehistoric).

Chetco River and Tributaries - outstandingly remarkable water quality supporting regionally important fisheries, including unusually large fall chinook salmon runs, winter steelhead, and sea-run coastal cutthroat trout.

Greater Red Flat Area (Hunter Creek and North Fork Pistol River) – includes the BLM designated Hunter Creek Area of Critical Environmental Concern (ACEC), which contains the Hunter Creek Bog (species rich fen with numerous wildflowers), five special status wildlife species (clouded salamander, southern torrent salamander, red-legged frog, mountain quail, winter steelhead) along with over 120 other wildlife species. Notably, mardon skipper, a candidate for listing under the Endangered Species Act (ESA), has been surveyed in the Hunter Creek ACEC and other areas with serpentine soils. Fall Chinook salmon and winter steelhead runs occur in the Greater Red Flat area as well. The area also contains the headwaters of Hunter Creek and North Fork Pistol River and has exceptional concentrations of rare plants.

The two mineral withdrawal areas combined contain habitat for some 400 species of plants, including McDonald’s rockcress, a federally threatened species and second plant species to be listed under the ESA. Veva’s erigeron, an extremely rare member of the sunflower family, is known to occur in this area.

Mining Threats

Where there are serpentine soils, there is nickel, chromite, cobalt and other potentially exploitable minerals. The concentration of nickel in particular has resulted in industrial scale-mining proposals that would degrade water quality, salmon, and botanical values. Small amounts of gold are present in streambeds and miners use suction dredges mounted on small crafts to remove flecks of gold, an activity extremely harmful to salmonid spawning sites. Of note, former Interior Secretary Bruce Babbitt in his visit to the area in January 2001 declared that the area’s mining violations were “among the most egregious in the nation.” In sum, the impacts of current and proposed mining led American Rivers in 2015 to declare Rough and Ready and Bald Face creeks and the North Fork of the Smith River as among America’s most endangered rivers.

I am including as Exhibit B an executive summary of an economic study conducted by Oregon economist Ernie Niemi, who estimated the value of the area’s natural amenities and potential costs from proposed industrial-scale nickel mining to at-risk public values. In sum, natural amenities of the Kalmiopsis area support an increasingly thriving tourism industry that spent some \$245 million in Curry and Josephine Counties in 2013, generated more than \$70 million in business earnings, 3,400 jobs, and almost \$9 million in government revenues. Dollars were primarily spent on visiting Oregon Caves National Monument, rafting, angling, and a variety of

outdoor recreation pursuits (hunting, fishing, wildlife viewing, jet boating). The public comes to the region to recreate because of the beautiful landscape, wild rivers, and outdoor amenities that are increasingly difficult to find in today's developed world and that would be irreparably harmed by industrial-scale nickel mining and other mining activities.

Proposed nickel mining would diminish natural values, increase health risks from toxic wastes and air pollution, reduce nearby home values and commercial properties, result in taxpayer funded cleanup costs, and contribute to overall economic destabilization (high volatility of mining activity and jobs, Exhibit B). For example, if the proposed nickel mines resemble similar mines elsewhere, the acid-rain costs, alone, to those exposed could total \$30,000–\$450,000 per year. Property values could be reduced by 4 to 21 percent from Superfund sites needed to clean up mining wastes that could cost taxpayers some \$1,000-50,000 (2003 dollars) per acre of disturbed lands. Tourism values and related business would suffer economic impacts as well.

In closing, simply put, this is the worse possible place to conduct mining in one of the last relatively untrammled and exceptionally important wild areas remaining in western North America.

We would also like to request that Senator Wyden consider asking the Committee to include in this legislation the provision for his proposed Illinois Valley Botanical and Salmon Area that is in his proposed Oregon and California Land Grant Act of 2015 (S.132). The areas overlap and complement each other hydrologically and ecologically.

Sincerely,

Dominick A. DellaSala, Ph.D.
Chief Scientist, Geos Institute
Ashland, OR

Citations

DellaSala, D.A. 2013. Klamath-Siskiyou Conifer Forests of northern California and southwest Oregon. *Biomes and Ecosystems: An Encyclopedia*, Howarth, R.W. ed. Ipswich, MA; Salem Press, 2013; Salem Press. Pp: 742-744.

USDA Forest Service. 1994a. Rough and Ready Creek Siskiyou National Forest: Eligibility Study. USDA Forest Service, Illinois Valley District, Cave Junction, OR.

USDA Forest Service. 1994b. Baldface Creek Siskiyou National Forest: Eligibility Study. USDA Forest Service, Illinois Valley District, Cave Junction, OR.

Exhibit A: Scientist Letter (over 200 signatories) in Support of Permanent Protection for the Kalmiopsis Area

September 15, 2015

Jerome E. Perez, Esq.
State Director: Oregon/Washington
Bureau of Land Management, Portland, OR

Re: Recognition of the Kalmiopsis Wildlands in Southwest Oregon and Need for Maximum Interim Protection From Industrial-Scale Nickel Mining

As scientists with expertise in natural resources management, we write to request your leadership in the temporary withdrawal of ~95,805 acres of the Rogue-Siskiyou National Forest and 5,216 acres of BLM Medford District in southwest Oregon from industrial scale-nickel mining proposals. We request that you provide the maximum possible interim protection allowable (20 years) under the 1872 Mining Law while permanent protection efforts are considered such as the Southwest Oregon Watershed and Salmon Protection Act introduced by Oregon Senators Ron Wyden and Jeff Merkley and Congressman Peter DeFazio (OR) and Jarred Hoffman (CA).

“The permanent protection of this area [Klamath-Siskiyou] will not only be an important benefit for science, but will also rank as one of the great environmental achievements in American history.”

E.O. Wilson, Professor Emeritus Harvard University

The Kalmiopsis wildlands represent a hotspot of geo-botanical richness within the world-class Klamath-Siskiyou ecoregion of southwest Oregon and northern California. The World Wildlife Fund recognized the ecoregion as among the top temperate conifer forests in the world (DellaSala et al. 2013). The Kalmiopsis area within the ecoregion contains nationally significant botanical values that have been the focus of scientists for well over a century. Pioneering botanists such as Dr. Thomas J. Howell began cataloguing the area’s plants in the 1880s, Dr. Robert Whittaker (1960) documented the extraordinary plant diversity in the 1950s, and Drs. Robert Coleman and Art Kruckerberg (Coleman and Kruckeberg 1999) described the relationship between the area’s unique serpentine geology and high concentrations of rare and endemic plants in the 1980s. The area includes a rich assortment of plant communities from Jeffrey pine savannah to mature forest to *Darlingtonia* fens, many of these communities include plant species found nowhere else on Earth. Scientists also have documented the importance of roadless areas as “refugia” for sensitive species in the area requiring relatively intact landscapes such as the endemic Port Orford-cedar that is being killed off by *Phytophthora lateralis* (root rot fungus) primarily spread by mud on vehicles. Other studies have demonstrated that the area’s river corridors might function as a climate refuge for numerous plants and wildlife (Carroll et al. 2010, Olson et al. 2012).

The watersheds of the Kalmiopsis contain the headwaters of continentally significant rivers (Abell et al. 2000) and clearest waters in the nation, including Baldface Creek and Rough and Ready Creek, that are tributaries to the Wild and Scenic Smith and Illinois Rivers, respectively. Additionally, Hunter Creek and the North Fork Pistol River represent two highly productive native salmonid streams on the Wild Rivers Coast. American Rivers recently recognized the Rogue and Smith rivers as among the most endangered in the nation due to proposed nickel mines in these tributaries that you now seek to withdraw from mining.

We appreciate the collaboration that is taking place between the BLM and Forest Service in the withdrawal process underway for this area and ongoing interest from the Oregon Congressional delegation in seeing it receive the maximum interim protection allowable while congress deliberates on longer-term proposals. When permanently protected, the at risk-watersheds and wildlands of the Kalmiopsis region, in aggregate with the surrounding Kalmiopsis Wilderness and adjoining Smith River National Recreation Area, would make this one of the nation's premier wildlands complexes that will continue to provide downstream communities with outstanding ecosystem benefits that come from intact public lands and watersheds.

Sincerely (affiliations are for identification purposes only),

Only the Lead Signatories are Shown Here

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Paul Hosten, Ph.D.
Plant Ecologist
Kauai, HI
Dennis Odion, Ph. D.
University of California, Santa Barbara

Citations

- Abell, R., et al. 2000. Freshwater ecoregions of North America: a conservation assessment. Island Press, Washington, D.C
- Carroll, C., J. R. Dunk, and A. J. Moilanen. 2010. Optimizing resiliency of reserve networks to climate change: multi-species conservation planning in the Pacific Northwest, USA. *Global Change Biology* 16:891-904.
- Coleman, R.G., and A.R. Kruckeberg. 1999. Geology and plant life of the Klamath-Siskiyou Mountain region. *Natural Areas Journal* 19(4):320-340.
- DellaSala, D.A. 2013. Klamath-Siskiyou Conifer Forests of northern California and southwest Oregon. Biomes and Ecosystems: An Encyclopedia," Howarth, R.W. ed. Ipswich, MA; Salem Press, 2013; Salem Press. Pp: 742-744.
- Olson, D.M., D.A. DellaSala, R.F. Noss, J. R. Strittholt, J. Kaas, M. E. Koopman, and T.F. Allnutt. 2012. Climate change refugia for biodiversity in the Klamath-Siskiyou ecoregion. *Natural Areas Journal* 32:65-74.
- Whittaker, R.H. 1960. Vegetation of the Siskiyou Mountains, Oregon and California. *Ecological Monographs* 30:279-238.

Exhibit B: The Economic Importance of the Kalmiopsis Area’s Natural Resource Amenities Executive Summary, Prepared by Economist Ernie Niemi, Natural Resource Economics, Eugene, Oregon

The Kalmiopsis area’s outstanding natural amenities also are important to the economy. They generate steady jobs, personal income, business earnings, and government revenue through the outdoor recreation industry and by enabling Curry and Josephine Counties to attract workers, business managers, entrepreneurs, and households. Powerful economic trends, such as the increasing number of retirees seeking to live where the quality of life is high, will enhance the natural amenities’ ability to generate robust, resilient future economic growth, but only if appropriate actions are taken to protect these amenities and their exceptional character.

Recent studies document the economic importance of the Kalmiopsis area’s natural amenities:

- Travelers spent \$245 million in Curry and Josephine Counties in 2013, nearly all of which by those who came to the area as a destination rather than just passing through.
- This spending, plus re-spending by businesses and workers, generated more than \$70 million in business earnings, 3,400 jobs, and almost \$9 million in government revenue .
- Travelers’ spending generated about four percent of all jobs in Josephine County, and 16 percent in Curry County.
- 72,717 individuals from elsewhere visited Oregon Caves National Monument in 2013 and spent \$4,795,000 locally, generating 69 jobs and \$1,757,000 in personal income.
- In 2007, 13,147 rafters and anglers floated the wild section of the lower Rogue River, and 84,840 passengers took trips on commercial jetboats on the Hellgate section of the river. These recreationists spent \$9.8 million in Josephine County, generating \$14 million in total sales by businesses and governmental agencies, 225 full- and part-time jobs and \$7.5 million in personal income for workers and business owners. The average income per job was about \$30,000, slightly less than the average for the economy as a whole.
- In 2008 recreationists spent more than \$40 million (2013 dollars) in Curry and Josephine Counties, combined, on shellfishing, fishing, hunting, and wildlife viewing.

Proposals to develop three nickel strip mines—two southwest of Cave Junction and one east of Gold Beach—threaten many natural amenities and their ability to stimulate business growth. The mines pose multiple risks for neighbors, taxpayers, communities, and the overall economy:

Degraded natural amenities. Case studies of mines in western states found three-quarters of resulted in pollution that exceeded water-quality standards. Moreover, whenever the mines took steps to prevent or reduce the pollution, about two-thirds of these efforts failed.

Increased risk of cancer. Individuals downwind from the mines would face the risk of cancer from exposure to nickel refinery dust, a human carcinogen.

Costs to neighbors from exposure to mine-related pollution. Strip mines and ore-processing facilities elsewhere often emit pollutants harmful to humans, pets, livestock, fish, wildlife, crops, native vegetation, buildings, and materials. Rural and urban residents of southwestern

Oregon likely would incur costs similar to those in this table, which were determined by national studies. If the three mines resemble nickel mines elsewhere, the acid-rain costs, alone, to those exposed would total \$30,000–\$450,000 per year.

Costs to Rural and Urban Populations Exposed to Air Pollutants, per Ton of Pollutant

Population Exposed	Annual Cost Per Ton of Pollutant					
	PM _{2.5}	PM ₁₀	NO _x	NH ₃	VOC	SO ₂ (Acid Rain)
Rural	\$1,100	\$200	\$300	\$ 100	\$300	\$300
Urban	\$3,300	\$500	\$300	\$4,200	\$500	\$600

Source: Muller, N.Z. and R.O. Mendelsohn. 2007. “Measuring the damages from air pollution in the United States.” *Journal of Environmental Economics and Management*. 54(1), 1-14.

Note: PM_{2.5} = particulate matter 2.5 microns in diameter or smaller. PM₁₀ = particulate matter 10 microns in diameter or smaller. NO_x = nitrogen oxides. NH₃ = ammonia. VOC = volatile organic compounds. SO₂ = sulfur dioxide or its equivalent source of acid rain.

Reductions in the nearby home values. Many strip mines and ore-processing operations have become highly contaminated Superfund sites. A nationwide survey of studies found that Superfund sites reduce the value of nearby residential properties by 4 to 21 percent. Even if the three mines do not become Superfund sites, the development of industrial operations could reduce the values of nearby homes.

Reductions in the value of some commercial properties. Reductions in the value of tourism businesses would occur if mining-related pollution were to diminish the area’s attractiveness to outdoor recreationists. Widespread negative commercial impacts would occur if, for example, mining pollution were to degrade the quality of municipal/industrial water supplies so all users must pay extra for clean water.

Stigma. Severe contamination, or even the threat of it, could cause people and businesses to leave the area. Case studies of Superfund sites have found stigma reduced the value of nearby residential properties by as much as 40 percent.

Taxpayer-funded cleanup costs. Mine operators often have failed to set aside enough money to cover cleanup costs, and, by declaring bankruptcy or abandoning a mining site, push these costs onto taxpayers. Cleanup costs at mines elsewhere have cost taxpayers \$1,000–\$50,000 [2003 dollars] per acre of disturbed land at the mining site.

Economic destabilization. The high volatility of mining activity and jobs could destabilize families, businesses, communities, and public services.

These costs can be prevented by permanent conservation of the natural amenities at risk from the proposed mining. Numerous studies of protected areas in Oregon and other western states indicate the permanent protection also likely would enable the area’s natural amenities to generate economic activity even more broadly and at a faster pace than occurs now.

Permanently protecting the area's natural amenities in a manner that increases its attractiveness to visitors likely would generate at least 200-400 local visitor-related jobs. Additional jobs would materialize as the protection reassures in-migrants that the area's natural amenities and quality of life will remain extraordinary. Protection via other mechanisms likely would have a less robust effect on the local economy.