SEIJ
Social Environmental and Indigenous Justice

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Dear Supervisor Carlson, Ranger Aebly and North Shore planning team,

On behalf of SEIJ, please accept these comments on the North Shore Restoration Project. Our organization represents over 25 members and supporters, and several affiliated organizations, who care deeply about the wildlife, forest ecosystems and rivers of the Mendocino National Forest.

RE: North Shore Restoration Project Environmental Assessment

The proposed action calls for the application of toxic chemicals on 1,515 acres, 1,080 acres for "release" treatments and 435 acres to "treat" invasive species- spread by fire suppression actions and worsened by ground-based logging operations. Larger area unit logging is proposed on 592 acres, as well as 30 miles of roadside hazards, the construction of 3.9 miles of "temporary" roads and an undisclosed number of landings.

Pesticides and herbicides are only one component of Integrated Pest Management (IPM). The EA fails to adequately and fully consider non-toxic alternatives. Herbicides are well known to be dangerous for human health, wildlife, and the environment. Even when herbicide is carefully applied, there is a potential for harm to native species through off-target drift, surface runoff, or leaching. Spraying herbicides around planted trees is unnecessary for sapling survival. As for treating invasive plant species, non-toxic alternatives must be considered.

Post-fire logging is ecologically destructive. The EA states "[t]he existence of many weed propagules already within the project area combined with the **extensive ground disturbance that would be caused by this project indicates a high risk of expansion and/or spread of**

existing sites."[1] Rather than worsen the spread invasive species the agency should simply not propose such extensive ground-based disturbance from heavy machinery for logging operations, as addressed in Alternatives 4 and 5.

Non-Toxic Alternatives and Integrated Pest Management

We appreciate the inclusion of Alternative 4, with no herbicide use. However, the EA fails to sufficiently consider the use non-toxic alternatives and does not adequately analyze the negative impacts of herbicides. Toxic chemicals are only one component to an Integrated Pest Management approach.

Under the discussion of alternatives 2, 3 & 5 the EA listed many reasons why the proposed project utilizes herbicides. These included reduced cost, seedling survival (due to less competition), faster tree growth, reduced longevity of treatment, and decreased applicability of prescribed fire without the prior use of herbicides. However, what these alternatives failed to adequately consider was that these benefits could also be achieved through the use of non-toxic alternatives to herbicides.

Around the world, forest managers have begun to realize that extensive herbicide use does more harm than good for their forests. As such, non-toxic alternatives have begun to be implemented.[2] Instead of using toxic herbicides, forest managers can use biological, manual, or other strategies to control invasive species.

Biological Treatments

The EA fails to consider biological control options. In the 1960's, three insects were introduced as biological control agents on brooms—the Scotch broom seed beetle (*Bruchidius villosus*), the Scotch broom seed weevil (*Apion fuscirostre*), and the Scotch broom twig miner moth (*Leucoptera spartifoliella*). The latter two species are specific to Scotch broom, while the seed beetle also attacks Portuguese broom, Spanish broom, and French broom. While we realize biological control options may be limited, the EA should have included the consideration of this option.

Manual Treatments

We appreciate the use of some mechanical treatment in certain areas under the current plan, however there is zero information in the EA or the Invasive Plants Management Plan for the North Shore project about the location and extent of these treatments. There are multiple other non-toxic manual alternatives the EA and any Integrated Pest Management plan should and must consider. Other methods include, mulching, tarping and burning.

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[1] EA at 23

[2] Little, K. M., et al. "Towards reduced herbicide use in forest vegetation management." *Southern African Forestry Journal* 207.1 (2006): 63-79.

The EA failed to analyze and disclose any details on the the use of manual pulling, mowers, weed whackers and/or hoeing. Well-timed and executed cutting can nearly eliminate re-sprouting. Old plants in dry soil re-sprout the least, with re-growth rates near zero if cutting is done carefully. With all methods timing is important. Obviously, implementing these manual and mechanical options is best before the plant goes to seed but late enough that the plant is actively growing.

Cutting invasive species and allowing it to dry on site, followed by burning, can effectively control re-sprouting. Scotch broom may be trimmed back by tractor-mounted mowers on even ground or by scythes on rough or stony ground. If only a single cutting can be made, the best time is when the plants begin to flower. At this stage, root reserves are at their lowest point and new seeds have not yet been produced. Follow-up treatment of some kind is generally necessary because broom may re-sprout following cutting, especially when cuts are made significantly above the ground surface.

Non-Toxic Chemical Compounds

The EA failed to analyze the use of biopesticides, which are types of pesticides derived from natural materials like animals, plants, bacteria and certain minerals. A few of the plant derived and other non-toxic compounds that have been used successfully include vinegar, soap and sodium chloride (salt) and Pyrethrum. We urge the Mendocino National Forest to consider these options.

The Bradley Method

The Bradley method is one sensible approach to manually controlling weeds (Fuller and Barbe 1985, attached) in an area too large to clear all at once. The basis of this method is the native species' ability to re-colonize by tipping the ecological balance away from the weeds and toward the native plants. This method consists of weeding selected small areas of infestation in a specific sequence, starting with the best stands of native vegetation (those with the least extent of weed infestation) and working towards those stands with the worst weed infestation. Initially, weeds that occur singly or in small groups should be eliminated from the extreme edges of the infestation. The next areas to work on are those with a mixture of at least two natives to every weed. As the native population stabilizes in each cleared area, work deeper into the center of the densest weed patches. This method has great promise on nature reserves with low budgets and with sensitive plant populations.

Post-removal Planting

Research suggests that broom stands are early successional in nature and may be replaced by later seral stages if left undisturbed. Planting of tall growing shrubs or trees in or near broom stands may aid in reducing photosynthesis in broom plants and possibly lead to their demise. There are reports of salal and other plants in the Ericaceae family retarding broom regeneration, because these species may possibly have allelopathic properties.

Native grasses have also been shown to diminish broom species (Harrington 2012 at https://www.fs.usda.gov/pnw/pnw-research-highlights/native-grasses-help-stem-invasives)

Scotch broom is a large nonnative shrub that has invaded forest and prairie sites throughout western Oregon and Washington. It produces many seeds that remain viable for years, enabling Scotch broom to occupy sites for decades. Several native grasses of the Pacific Northwest, however, show promise as effective competitors for inhibiting development of Scotch broom seedlings. In greenhouse experiments, three native perennial grass species were seeded into soils containing Scotch broom seeds. Biomass of Scotch broom seedlings decreased by 72 to 90 percent when grown under grass competition. The most competitive species, spike bentgrass, was able to colonize all growing space and deplete soil water rapidly. The least competitive species, western fescue, developed more slowly. When combined with Scotch broom control treatments and seedbed preparation, native grass seeding is a promising approach for restoring invaded areas to native grasslands.

Replanting may be necessary for sites that have been dominated by brooms for an extended period of time. Establishing a dense cover of native species in areas where broom has been removed may lessen the chances of survival of subsequent broom seedlings. Replanting should initially consist only of grasses. When the broom seed bank has been effectively exhausted, native broadleaf plants can be planted within the established grass cover.

The agency must consider an integrated project. Incorporating native plants and grasses to shade and out compete invasive species would help to diminish and control the species long term and would relieve maintenance needs.

Effectiveness and Community Involvement

Herbicides are not a one-time cure all. Even the agencies own researchers, such as Dr. Harrington have shown that chemical treatment is not 100% effective and his research looked at controlling germination rather than larger live plants. Manual and mechanical treatments have been shown to be as equally and perhaps more effective and safer than toxic chemical applications. For instance, EPIC has volunteered for four years on the Shasta-Trinity National Forest pulling scotch broom. After the first year, only tiny seedlings came back and they were easy to hand pull, a hoe would have worked fine. So far, manual removal has been much more effective than the proposed herbicides.

The Salmon River Restoration Council (SRRC) is a national leader in non-toxic alternatives being involved in noxious weed management since 1994. Their Cooperative Noxious Weed Program (CNWP) promotes pulling, digging, mulching, tarping, burning, cutting, mowing and other non-chemical methods of invasive plant control throughout the Salmon River watershed and surrounding area emphasizing local community and landowner/resident involvement. The CNWP program has implemented a 13 Step Management Strategy for Controlling Noxious Weeds and Restoring Native Plant Communities: Step # 1 – Cooperation/Coordination, Step # 2 – Planning and Assessment, Step # 3 – Education/Outreach, Step # 4 – Preventing the Spread, Step # 5 – Inventory - Locate and Map, Step # 6 - Groundwork Control Methods, Step # 7 –

Tracking –Implementation Monitoring, Step # 8 – Apply Adaptive Management Techniques & Research, Step # 9 – Re-vegetation with Native Plants, Step #10 – Monitoring for Effectiveness, Step # 11– Evaluation and Recommendation, Step # 12 – Funding and Support, Step # 13 – Reporting. Please consider the example above or expand on the Mendocino National Forests approach and strategy for addressing non-native invasive species.

To effectively control noxious weeds, coordination, participation and support from the private landowners, community and others is part of the Framework for the Forest Service's management of invasive species and would help the agency

achieve the purpose of the project. The agency should work towards community involvement with local landowners, Native Tribes and other interested people and organizations, such as EPIC, to address the control of invasive species within the project area.

Time Commitment, Monitoring and Long-term Strategy

Despite the effects from the Ranch Fire and regardless of treatment method, because of its extremely long-lived seeds, areas infested with broom and other invasive species need long-term management to exhaust the seed bank. No single control method is proven to be best for all situations, and successful, affordable long-term control may best be achieved by combining approaches. Whether you pull, cut or burn persistence and perseverance will be required if invasive species have been present long enough to establish an abundant seed bank. Each year and periodically for decades, diligent removal/control of blooming plants will be required to prevent new seed production and deplete the seed banks.

It cannot be over-emphasized: <u>If you are not going to maintain the site, do not spend the effort and resources on the initial treatment.</u> Without follow-up treatment of re-sprouting and newly germinating seeds, it will likely take only a few years for the site to descend back to invasive dominance. **The EA and the North Shore Invasive Plants Management Plan are completely void in the consideration or even mentioning of monitoring**, except in some research plots. Even then, any information on the "research" is missing from the analysis.

Has a Pesticide-Use Proposals (PUPs) been completed? PUPs include, uses by licensees, permittees, grantees, States, and other Federal agencies. An IPM plan should include planning, threshold action levels, monitoring and adaptive management. There is no consideration, mention or information on the timing and spatial scale of toxic herbicide applications. Where are the exact locations?
What timing is being considered? For which species? Over how many years? What time of year? How does timing relate to the stages of plant growth? This basic information must be included for the public and the decision maker to make informed comments and decisions. The lack of information on monitoring and on the temporal scale is a violation of NEPA.

We urge the Mendocino National Forest to implement an Integrated Pest Management Plan that utilizes a variety of non-toxic alternatives and that incorporates a discussion of the overall

strategy including: timing, duration, integrated approaches, community and tribal outreach and involvement, maintenance and monitoring.

Negative Impacts of the Invasive Plants Management Plan

We maintain that the Forest Service should utilize manual and nonchemical alternatives to control invasive plant species. Toxic chemicals are harmful to people, wildlife, and the environment. Many have been repeatedly, for years now, linked to cancer and severe health effects.

In general, we are greatly concerned with 1) the impacts of herbicides to aquatic habitats and species, 2) the impacts of herbicides to native plant species, 3) the impacts of herbicides to terrestrial habitats and species.

Aquatic Habitats and Species

The Invasive Management plan states that "No herbicides will be applied within 10 feet of any surface water, including streams, ponds, and wetlands."[3] This is an insufficient protection measure for aquatic habitats and species within the project area. Herbicides have a tendency to be carried through the air and spray a much larger area than intended.[4] In addition, some of the proposed herbicides have long half-lives which allows them to persist in the environment and continue to negatively impact species long into the future. As discussed in more detail below, many of the proposed herbicides are particularly toxic to aquatic species including amphibians and fish.[5] Given our planet's amphibians are already facing a catastrophic loss in numbers due to ambient pollution, the USFS has a responsibility not to further degrade their habitat by spraying dangerous herbicides. Likewise, some of the proposed herbicides are linked to increased mortality in fish, including coho salmon.[6] Given that Coho Salmon are a threatened species and that their protection is paramount for restoring our forests, the USFS should not spray herbicides, which could endanger them.

The Clean Water Act (CWA) of 1977 (33 U.S.C. 1151 et seq.), provides for restoration or maintenance of water quality to meet national standards, including considerations related to the use of pesticides on or near water. The CWA establishes the national pollutant discharge elimination system (NPDES) and a permit system for discharge of pollutants to waters of the United States. Has the agency sought or received a NPDES permit? The EA does not adequately consider impacts and danger to aquatic species from the 1,515 acres of herbicide application.

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[3] EA at 86

[4] Egan, J. Franklin, et al. "Herbicide drift can affect plant and arthropod communities." *Agriculture, Ecosystems & Environment* 185 (2014): 77-87.

[5] Babalola, Oluwaseun Olusegun, Johannes Christoff Truter, and Johannes Hannes Van Wyk. "Lethal and Teratogenic Impacts of imazapyr, diquat dibromide, and glufosinate ammonium herbicide formulations using frog embryo teratogenesis assay-xenopus (FETAX)." *Archives of Environmental Contamination and Toxicology* 80.4 (2021): 708-716.

[6] Barron, M. G., et al. "Pharmacokinetics and metabolism of triclopyr butoxyethyl ester in coho salmon." *Aquatic toxicology* 16.1 (1990): 19-32.

Impacts to Native Plant Species

Negative impacts to non-target species due to the application of herbicides are well documented. Given the goal of this project is to restore the area, USFS should do everything in its power to avoid unnecessarily harming native plant species through the application of herbicide. In addition to direct effects, the proposed herbicide Fluazifop has been documented to have long lasting negative impacts on soil health and soil bacterial communities.[7] Similarly, Imazapyr has been found to prevent the recolonization of native species following application.[8] These impacts would have long lasting consequences for the area's native plants and for the success of this restoration project.

The Impacts to Terrestrial Habitats and Species

Though less severe than impacts to aquatic species, impacts to terrestrial species from herbicide application should not be ignored. Important bird species and smaller mammal species have been harmed by higher concentrations of herbicides. Also, the accompanying loss of leafy material will restrict the amount of food available for certain species.

Negative Impacts of Specific Proposed Herbicides

The project proposed the use of the following herbicides: Aminopyralid, Fluazifop, Imazapyr, and Triclopyr BEE.

Aminopyralid

The EPA granted a conditional use permit for Aminopyralid in 2005 which is still in effect.[9] Aminopyralid is a relatively new herbicide, having been first developed in 2005, and as such its long-term effects on humans, wildlife, and the environment remain unknown. In addition to that concern, Aminopyralid has a long half-life. "Under aerobic conditions, degradation of aminopyralid in five different soils resulted in the production of CO2 and non-extractable residues. Half-lives ranged from 31.5 to 533.2 days in 5 soils."[10] When placed on the soil surface, the half-life was 72 days and the compound degraded to produce CO2, non-extractable residues and small amounts of acidic volatiles.[11] Because of its long half-life Aminopyralid has been found to contaminate compost, which has been responsible for several crop kills across many states.[12]

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[7] Darine, Trabelsi, et al. "Fluazifop-P-butyl (herbicide) affects richness and structure of soil bacterial communities." *Soil Biology and Biochemistry* 81 (2015): 89-97.
[8] Clarke, P. A. 2006. Aquatic resources trust fund Phragmites australis control in Eastern Virginia; Year 3 final report. Natural Heritage Technical Report #06-12, Virginia Department of Conservation and Recreation, Richmond, Virginia.
[9] https://www3.epa.gov/pesticides/chem_search/reg_actions/registration/fs_PC-005100_10-Aug-05.pdf
[10] https://www3.epa.gov/pesticides/chem_search/reg_actions/registration/fs_PC-005100_10-Aug-05.pdf
[11] https://www3.epa.gov/pesticides/chem_search/reg_actions/registration/fs_PC-005100_10-Aug-05.pdf
[12] https://www.theguardian.com/environment/2008/jun/29/food.agriculture

Given this chemical's long half-life and ill understood effects, it should not be used in this project.

Fluazifop

Fluazifop has been found to negatively impact soil bacterial communities.[13] Darino et al. (2015) demonstrated clearly that fluazifop-P-butyl application reduced pea grain yield and affected enzyme activity and diversity of soil bacterial communities even at commonly used field-rates, particularly near plant root systems.[14] Fluazifop was also found to stimulate some potential pathogens and inhibited some bacteria with plant growth promoting abilities.[15] As such, Fluazifop can potentially have a long lasting negative impact on soil health by reducing healthy bacteria and increasing pathogens. In addition, some of the fluazifop-P-butyl stimulated species such as B. claussi, B. antracis, B. mycoides and others are "potential human pathogens that may be involved in respiratory infections and some gastrointestinal disorders."[16]

According to the Forest Service's own analysis of Fluazifop, "Longer-term exposures to mammals and birds are a concern for exposure scenarios involving the consumption of [Fluazifop] contaminated vegetation."[17] In addition, the "risk characterization of mammals and birds is constrained by the lack of field studies 14 involving exposure of mammals and birds to applications of fluazifop-P-butyl."[18] Some research has indicated that high levels of exposure could lead to reduced reproductive capacity in mammals.[19] Mammals that eat the greases to which fluazifop is applied are particularly at risk of losing reproductive capacity.[20] There is also currently no data available on the risk of fluazifop to reptiles and amphibians.[21] Given these troublining indications, Fluazifop should not be used in this project.

Imazapyr

Due to its negative human health and environmental impacts, Imazapyr is banned for sale in the European Union.[22] Imazapyr is slowly degraded by microbial metabolism and can be relatively persistent in soils.[23] Because of its long lasting nature, there have been a few reports from the

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[13] Darine, Trabelsi, et al. "Fluazifop-P-butyl (herbicide) affects richness and structure of soil bacterial communities." *Soil Biology and Biochemistry* 81 (2015): 89-97.
[14] Darine, Trabelsi, et al. "Fluazifop-P-butyl (herbicide) affects richness and structure of soil bacterial communities." *Soil Biology and Biochemistry* 81 (2015): 89-97.
[15] Darine, Trabelsi, et al. "Fluazifop-P-butyl (herbicide) affects richness and structure of soil bacterial communities." *Soil Biology and Biochemistry* 81 (2015): 89-97.
[16] Darine, Trabelsi, et al. "Fluazifop-P-butyl (herbicide) affects richness and structure of soil bacterial communities." *Soil Biology and Biochemistry* 81 (2015): 89-97.
[17] https://www.fs.fed.us/foresthealth/pesticide/pdfs/Fluazifop-P-butyl.pdf at xvii
[18] https://www.fs.fed.us/foresthealth/pesticide/pdfs/Fluazifop-P-butyl.pdf at xvii
[19] https://www.fs.fed.us/foresthealth/pesticide/pdfs/Fluazifop-P-butyl.pdf at xvii
[20] https://www.fs.fed.us/foresthealth/pesticide/pdfs/Fluazifop-P-butyl.pdf at xvii
[21] https://www.fs.fed.us/foresthealth/pesticide/pdfs/Fluazifop-P-butyl.pdf at xviii
[22] https://www.pan-europe.info/old/Archive/About%20pesticides/Banned%20and%20authorised.htm
[23] Wang, Xuedong, Huili Wang, and Defang Fan. "Degradation and metabolism of imazapyr in soils under aerobic and anaerobic conditions." *International Journal of Environmental Analytical Chemistry* 86.08 (2006): 541-551.

field of unintended damage to desirable, native plants when imazapyr has either exuded out of the roots of treated plants into the surrounding soil, or when intertwined roots transfer the herbicide to non-target plants.[24] For example, native trees, next to target species, can be permanently damaged by Imazapyr.[25] Clarke (2006) found that Imazapyr inhibited the recolonization of native plants by persisting in the environment.[26] Other research has demonstrated that different native species react negatively to Imazapyr spraying.[27]

Another concern with the use of Imazapyr is its impacts on amphibians and aquatic habitats. Studies have shown serious negative impacts to amphibians from Imazapyr.[28] These impacts are particularly concerning given the current global decline in amphibian populations due to pollutants in our ecosystems, which disproportionately impact these animals with permeable skin.[29] While the EA does contain some provisions for preventing herbicide contamination of watercourses, given the severity of these concerns, these protections should be greatly strengthened.

Triclopyr BEE

Triclopyr BEE has been found to be toxic to human health by the EPA and is classified as toxicity class III.[30] Triclopyr is toxic via oral, dermal, or eye contact.

Tricycopler acid has been found to be slightly toxic to birds and moderately toxic to aquatic species.[31] For example, researchers have found that Triclopyr BEE negatively impacts Coho Salmon, an endangered species of concern.[32] At higher application rates Triclopyr BEE exists at levels of concern for mammals, non-target plants, and fish.[33] Given these troubling indications, Triclopyr should not be employed in this project.

Reduced Logging Acreage as an Alternative

[24] https://www.invasive.org/gist/products/handbook/17.imazapyr.pdf
[25] https://www.mlive.com/news/grand-rapids/2012/09/no_quick_fix_for_herbicide_dam.html
[26] Clarke, P. A. 2006. Aquatic resources trust fund Phragmites australis control in Eastern Virginia; Year 3 final report. Natural Heritage Technical Report #06-12, Virginia Department of Conservation and Recreation, Richmond, Virginia.
[27] Douglass, Cameron H., et al. "Impacts of imazapyr and triclopyr soil residues on the growth of several restoration species." *Rangeland Ecology & Management* 69.3 (2016): 199-205.
[28] Babalola, Oluwaseun Olusegun, Johannes Christoff Truter, and Johannes Hannes Van Wyk. "Lethal and Teratogenic Impacts of imazapyr, diquat dibromide, and glufosinate ammonium herbicide formulations using frog embryo teratogenesis assay-xenopus (FETAX)." *Archives of Environmental Contamination and Toxicology* 80.4 (2021): 708-716.
[29] Hayes, T. B., et al. "The cause of global amphibian declines: a developmental endocrinologist's perspective." *Journal of Experimental Biology* 213.6 (2010): 921-933.
[30] https://www3.epa.gov/pesticides/chem_search/reg_actions/reregistration/fs_G-82_1-Oct-98.pdf
[31] https://www3.epa.gov/pesticides/chem_search/reg_actions/reregistration/fs_G-82_1-Oct-98.pdf
[32] Barron, M. G., et al. "Pharmacokinetics and metabolism of triclopyr butoxyethyl ester in coho salmon." *Aquatic toxicology* 16.1 (1990): 19-32.
[33] https://www3.epa.gov/pesticides/chem_search/reg_actions/reregistration/fs_G-82_1-Oct-98.pdf

The Forest Service should consider that the need for such extensive herbicide use stems from their unnecessary plans to conduct intensive ground based logging. Post-fire logging is ecologically unsound. The EA states "[t]he existence of many weed propagules already within the project area combined with the extensive ground disturbance that would be caused by this project indicates a high risk of expansion and/or spread of existing sites." Rather than worsen the spread invasive species the agency should simply not propose such extensive ground based disturbance from heavy machinery for logging operations, as addressed in Alternatives 5.

Middle Creek Management Area

The project lies mainly in Middle Creek Management Area, which the EA fails to consider or mention. Management prescriptions for this area are: wildlife emphasis, chaparral management, minimal management, Late Successional Reserves and timber modified. Wildlife emphasis areas are to be managed for maintaining and increasing habitat capability for management indicator species. Minimal Management direction maintains the existing physical characteristics of land through low intensity management. Timber Modified must meet the Retention Visual Quality Objective by providing a natural appearing landscape by assuring management activities are not visually evident. The objective of Late Successional Reserves (LSR) is to protect and enhance conditions of late-successional and old-growth forest ecosystems, which serve as habitat for late-successional and old-growth related plant and animal species. The NW Forest Plan at C-11 reiterates that, "because these areas are considered important to meeting the objectives for species other than spotted owls, these areas are to be maintained even if they become no longer occupied by spotted owls". The proposed action is not consistent with the Northwest Forest Plan or the Mendocino LRMP.

Tribal Consultation

Decision makers must have regular, meaningful and robust consultation with affected Tribes. Please see this January 26, 2021, Memorandum concerning Tribal Consultation and Strengthening Nation-to-Nation Relationships.

Executive Order 13175 of November 6, 2000 (Consultation and Coordination With Indian Tribal Governments), charges all executive departments and agencies with engaging in regular, meaningful, and robust consultation with Tribal officials in the development of Federal policies that have Tribal implications. Tribal consultation under this order strengthens the Nation-to-Nation relationship between the United States and Tribal Nations. The Presidential Memorandum of November 5, 2009 (Tribal Consultation), requires each agency to prepare and periodically update a detailed plan of action to implement the policies and directives of Executive Order 13175.

More than 400 Native American archaeological sites, dating back hundreds and thousands of years, have been identified within the Ranch Fire area. We hope that the District has done its due diligence to engage in regular, meaningful, and robust consultation with all affected and interested Tribes.

Sapling Survival

Please see these results from agency research*, Six-Year Growth of Douglas-Fir Saplings After Manual or Herbicide Release From Coastal Shrub Competition:* [34]

Six years after initial measurement and release, Douglas-firs averaged four times as tall and nearly seven times as large in stem diameter at 30 centimeters (12 in). In both total height and stem diameter, trees not released were significantly smaller than those given release—462 vs. 578 centimeters (182 vs. 228 in) for total height, 71 vs. 107 millimeters (2.8 vs. 4.2 in) for stem diameter. Average height and stem diameter of trees released manually were somewhat greater than for those released by herbicide. Two or three manual release treatments were no better than one, and growth differences among herbicide treatments were minor. Site quality effects on tree growth became evident as indicated by changed rankings among locations for average total height and stem diameter.

> The growth and development of Douglas-fir saplings was definitely speeded by reducing competition from associated vegetation. But even in the untreated control, most Douglas-firs overtopped associated shrubs during the 6-year study period. Some trees, especially in one untreated control, are still vunerable to severe overtopping by red alder, however.

While this research was from a more coastal forest environment, it still has applicability to the project. Herbicide application has been shown to assist in sapling growth but it is not necessary for survival. Conifers will eventually overtop brush species. Further there are multiple other factors such as slope, aspect, stock quality, fertility, and soil compaction can affect seedling growth more so than weed control.

Conclusion

For the foregoing reasons, the currently proposed action North Shore Restoration Project is unfit for our public lands. We urge the Forest Service to reconsider the use of herbicides and the extent of the post-fire logging. In fact, the agency must adequately consider the multitude of non-toxic alternatives available to abide by Integrated Pest Management standards. By reducing the amount of logging, as Alternative 5, and using non-toxic alternatives to herbicides, this project could be transformed into one that would promote restoration.

Sincerely,
SIGNATURE

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[34]34 Stein, William I. 1999. Six-year growth of Douglas-fir saplings after manual or herbicide release from coastal shrub competition. Res. Pap. PNW-RP-500. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 55 p.

YOUR NAME
YOUR ORGANIZATION
YOUR EMAIL AND CONTACT INFO