IX. FORESTRY

A. General Effectiveness of Existing Forestry Programs and Adequacy for Meeting CZARA Requirements

Comment: The majority of commenters agreed with NOAA and EPA's proposed decision that Oregon's existing forest practices are not sufficient for meeting the CZARA requirements and that additional management measures for forestry are needed. They argued that current land use laws and the Oregon Forest Practices Act (FPA) and rules do not adequately prevent impacts to water quality or designated beneficial uses (e.g., fish spawning, migration, etc.) from forestry activities. (See additional forestry comments for more specific concerns raised about various elements of Oregon's forestry program.)

Furthermore, several commenters disagreed with language in the FPA that states that compliance with the forest practices rules equates to compliance with water quality standards; the commenters did not believe the FPA practices were sufficient to achieve and maintain water quality standards. Commenters also stated that the Oregon Department of Environmental Quality has failed to use its authority to address these inconsistencies between the FPA practices and water quality standards. A commenter also asserted that NOAA and EPA failed to use their authority under CZARA to address the issue.

Other commenters were concerned that FPA enforcement actions only occur after water quality damage has occurred. A commenter contended that the lack of political will within the state to address water quality problems along with state tax benefits to the timber industry contribute to the lack of resources state agencies have to improve degraded water quality. Commenters recommended NOAA and EPA look at various studies that demonstrate the adverse impacts of the forestry industry on water quality and designated uses in Oregon (see pg. 10-11 of public comment #58 and the attachments to public comment #57 as examples)[1].

Conversely, a few commenters disagreed with NOAA and EPA's proposed decision and believed Oregon does have programs in place to meet the CZARA forestry requirements and that no additional management measures are needed. For example, commenters stated the FPA "establishes a dynamic program that responds promptly and deliberately to environmental issues as they arise" and requires that water resources, including drinking water, be maintained. They also stated that the FPA requires that best management practices be established to insure maintenance of water quality standards. This FPA provision adheres to the CZARA requirement that additional management measures be established to maintain applicable water quality standards. The commenters further state that the FPA already requires best management practice monitoring, including for pesticide use and landslides, and that the state has proven processes in place to identify and implement additional management measures for forestry, when needed. They highlight that past monitoring efforts have already resulted in improvements to the forest practices rules, such as strengthening protections for land-slide prone areas when public safety is at risk and making improvements to road management procedures.

In addition, one commenter argued that EPA and NOAA have failed to show that Oregon's forest practices rules do not meet water quality and beneficial use objectives; on the contrary, the commenter asserts a "large body of science" demonstrates that Oregon forest practices have a "neutral to positive"

[1] http://coastalmanagement.noaa.gov/nonpoint/oregonDocket/publicComments.html

effect on aquatic life. They state that making a decision that is not backed by solid science would be arbitrary; such a decision would not stand up to judicial scrutiny.

Source: 35-I, 57-D, 57-E, 57-F, 57-G, 57-H, 57-S, 57-V, 57-W, 58-H, 67-E, 67-G, 70-C, 75-E, 75-G, 77-F, 77-G, 77-M, 77-Q, 79-B, 79-C

Response: As reflected in the final decision document, NOAA and EPA continue to find that Oregon has not satisfied the condition placed on its coastal nonpoint program to "identify and begin applying additional management measures where water quality impairments and degradation of beneficial uses attributable to forestry exist despite implementation of the (g) measures." In its 1998 conditional approval findings, NOAA and EPA identified specific areas where existing practices under Oregon's FPA and rules should be strengthened to attain water quality standards and fully support beneficial uses including: better protections for medium and small fish-bearing and non-fish bearing streams, including intermittent streams; better protections for areas at high-risk to for landslides; better management and maintenance of forestry roads, including so-called "legacy" roads; and better protections for non-fish bearing streams during the aerial application of herbicides.[2] Based on the comments received, NOAA and EPA have revised the final decision rationale to more clearly reference scientific studies that support the need for these additional management measures in the state.

NOAA and EPA recognize that the FPA has language stating that water resources and drinking water must be protected and that the state's monitoring programs for forestry practices that have resulted in noteworthy improvements to its FPA rules. The federal agencies have included language in the decision document that acknowledges these FPA rule improvements, such as amending the FPA rules to require the identification of landslide hazard areas in timber harvesting plans and road construction and place certain restrictions on harvest and road activities within these designated high-risk landslide areas for public safety. As the final decision rationale more fully explains, while the state should be commended for these positive achievements, these actions are not enough to satisfy the additional management measure for forestry condition. For example, existing science, including studies like the RipStream Analysis carried out by ODF, show that current FPA riparian protection practices are not sufficient to achieve water quality standards. Therefore, more improvements are needed to adopt additional management measures to achieve and maintain water quality standards and protect designated as CZARA requires under Section 6217(b)(3).

NOAA and EPA disagree with the commenter that believed NOAA and EPA are not using their authority under CZARA to ensure forest practices in Oregon achieve and maintain water quality standards. On the contrary, NOAA and EPA's act to find that Oregon has failed to submit a fully approvable coastal nonpoint program, based on the fact that the state has not satisfied its additional management measures for forestry condition, demonstrates that NOAA and EPA are using their authority under CZARA to bring about improvements to Oregon's forest practices.

According to state rule, the best management practices the Board of Forestry (Board) adopts are deemed sufficient for achieving and maintaining water quality standards (ORS 468B.110(2), ORS 527.756, and ORS 527.770). NOAA and EPA recognize that these provisions present some challenges to ODEQ in enforcing water quality standards on forestlands. However, ODEQ does have tools it can use to remove the "best management practices shield" (ORS 527.770) that will allow it to take enforcement

[2] See conditional approval findings for Oregon's Coastal Nonpoint Program: http://coastalmanagement.noaa.gov/nonpoint/docs/findor.txt

action when forestry activities are degrading water quality. The Environmental Quality Commission (EQC), the rule making body for ODEQ, can petition the Board if it believes the FPA rules are not adequate for achieving water quality standards. The Board (with EQC concurrence) can either terminate the review or proceed with rulemaking. If the Board fails to complete its rulemaking in the two-year time period or decides that the revisions are not needed, the "best management practices shield" is lifted. During the rulemaking process, the EQC can also request the Board employ interim steps "to prevent significant damage to beneficial uses;" if requested, the Board needs to take action. NOAA and EPA strongly encourage ODEQ to use these authorities to address forestry water quality impairments, when needed.

Finally, NOAA and EPA cannot comment on what contributes to the believed lack of resources in Oregon to address water quality issues and concerns with how the FPA is being enforced. In reviewing the adequacy of the state's coastal nonpoint program, the federal agencies look at what processes the state has in place to implement the CZARA 6217(g) management measures and if the state has satisfied the conditions placed on its program. Per NOAA and EPA's authority under CZARA, the federal agencies cannot consider potential implementation or enforcement issues or what may contribute to a potential lack of resources to sufficiently implement these programs. (See response to Comment IV.C (Enforcement) for a more in-depth discussion of the enforcement issue).

B. Importance of Forestry Riparian Management

Comment: Many commenters were generally in agreement about the importance of forestry riparian management for addressing erosion and water quality problems they believed were exasperated by lack of adequate riparian buffers along coastal watersheds. One commenter expressed the concern that "large companies with large land holdings" were conducting "dangerous activities" that impact people, wildlife habitats and water quality in the state. The commenter added that such activities required oversight from laws that limit pollution being released into waterways. Another commenter pointed out that habitat and water quality indicators overlap and contended that there was a need to fully examine how physical habitat and water quality are interconnected. The commenter added that because "streams form a linked network, water quality and stream health is closely associated with the intensity and cumulative extent of forest management activities near streams of all sizes, in all parts of the network", and noted that "approximately 55% of the 27,000 stream miles examined in Oregon were either severely or moderately impacted by nonpoint source pollution."

The commenters touted a variety of benefits to riparian buffers. A few commenters emphasized the negative impacts that occur due to clear cutting and not providing sufficient riparian buffers, such as increased soil erosion, and lack of pesticide filtration. For example, one commenter sited degraded lakes within the Sutton, Mercer, Woahink, and Siltcoos watersheds where clear cutting to the shores has occurred. Other commenters discussed the effects of winter blow downs where "strong coastal winds accelerate through the clear cuts and abruptly hit the buffers with great force." Narrow, inadequate buffers are not able to stand up to these winds, and trees are knocked down, leaving nothing to hold the soil in place which ultimately runoffs and impacts the creeks.

Commenters also pointed out the importance of riparian buffers in maintaining large woody debris (LWD). They stated large wood recruitment is essential to maintain biological and hydrological processes in streams (e.g., sediment retention and transport, habitat formation, substrate for biological activity) and is critical for salmonid populations. A commenter described how in a natural stream/riparian system, large wood is recruited from areas adjacent to streams and upslope, including unstable areas

that move down toward streams. Moreover, the commenter noted that large wood was not just needed instream but also adjacent to the stream and discussed the role of conifers and the importance of regeneration rates of conifers in the future. Another commenter noted that older forests and intact riparian areas, as well as large shifting beaver complexes have contributed to greater amounts of LWD in streams which has helped to maintain floodplains, habitat complexity, hyporheic flow, and hydrologic stability. However, the commenter explained, management of coastal lands has resulted in chronic and persistent disturbance and bare riparian areas along the lower reaches of coastal streams. This has led to low LWD, unstable banks, and high energy channels.

Other commenters explained the importance of riparian buffers for controlling sedimentation into streams. A commenter pointed out that if riparian buffers are not required for non-fish bearing streams (headwaters), those streams become a source of excess sediment to networked fish-bearing channels as sediment is transported downstream, essentially decreasing or eliminating the effectiveness of riparian management zones in maintaining low turbidity at a watershed scale. The commenter also described that erosion and sedimentation contributes to losses in channel depth, the frequency and quality of pools, and off-channel habitat critical for fish rearing. Another commenter noted the constant need for regular dredging of the port of Brandon and other coastal facilities due to siltation caused by erosional riparian areas.

In addition, commenters stated that increased sediment delivery and lack of LWD recruitment also impacts designated uses, such as salmoids and drinking water. Commenters explained how increased sedimentation contributes to increased levels of fine sediment, increased turbidity that can impair salmonid sight feeding and cause gill damage. A commenter also discussed how increased sediment delivery can even cause increased water temperatures in the absence shade loss. Others pointed out the importance of forest riparian buffers for maintaining healthy drinking water by filtering sediments, pesticides, and other pollutants from the water. One commenter noted that even where narrow buffers exist along river shores (e.g., the Siletz River), there are places where the forest buffer has been eliminated completely and streams that flow into the Siletz have no buffer zone at all.

Finally, a commenter also stated that large stream buffers play an important role in storing additional carbon and reduce greenhouse gas emissions.

Sources: 15-E-1, 15-F-1, 15-F-2, 28-B-1, 30-K-1, 35-J-1, 42-D-2, 45-AAA, 56-D-1, 56-D-2, 57-BBB, 57-DDD, 57-EEE, 58-B-1, 58-E-1, 58-E-3, 58-E-4, 58-H-2, 58-H-6, 75-I

Response: NOAA and EPA recognize the importance of riparian buffers along Oregon streams, including both small and medium fish-bearing streams and non-fish bearing streams. The federal agencies continue to find that Oregon's existing riparian management practices are not sufficient to protect water quality and designated uses from nonpoint source pollution related to forestry practices. The state still needs to adopt additional management measures to provide greater protection of forestry riparian areas before NOAA and EPA can find that the state has fully satisfied its coastal nonpoint program requirements under CZARA.

NOAA and EPA revised the final decision document for Oregon's Coastal Nonpoint Program to include additional scientific information about the importance of riparian areas. As discussed in the decision document, riparian buffers play an important role in shading streams to maintain cold water needed for salmon. They also help filter sediment and control erosion; excess sediment can impair salmon habitat

and drinking water. Riparian buffers also filter other polluted runoff from entering streams, such as pesticides and other chemical applications. In addition, buffers serve as a valuable natural source of large woody debris that adds complexity to the stream habitat and is important for salmon.

In the decision document, NOAA and EPA acknowledge that the Board of Forestry has been considering a rule change that would provide greater protections to small and medium fish bearing streams. NOAA and EPA encourage the state to complete the rulemaking expeditiously. However, NOAA and EPA also recognize that the rule change, if successful, will not address non-fish bearing streams and that the state also should protect riparian areas along these streams as well.

C. Forestry Riparian Management Accomplishments

Comment: Speaking to the accomplishments of Oregon's coastal nonpoint program as it relates to forestry-riparian management, commenters emphasized their support for Oregon's existing rules and programs in place to manage the forest industry and maintain water quality and riparian protections. One commenter pointed out that Oregon's Department of Forestry works to strengthen forest rules for riparian protection but faces political challenges that require "thoughtful science". The commenter noted the importance of maintaining the forest industry's support for water quality protection and acknowledged this process will take longer than Spring 2014.

Another commenter, on behalf of various groups, noted that private landowners, foresters, and loggers all support the Oregon Forest Practices Act and believe application of its rules is high. Another group called attention to Oregon's fifteen plus years of "superior voluntary riparian watershed enhancement accomplishments" by the forest sector and contended that EPA and NOAA's restrictions would "stifle these valuable watershed improvements". Lastly, another group noted how Oregon's Department of Forestry has been doing good work to improve water quality and riparian habitat.

Sources: 14-D, 77-AAA, 79-D, 82-B

Response: Currently Oregon relies on both regulatory and voluntary measures to provide riparian protections for fish bearing streams and non-fish bearing streams. While these practices are certainly better than having no protections in place, as discussed more fully in the final decision document, the science shows that Oregon's current riparian protection practices are not adequate for meeting water quality standards, specifically the cold water protection criterion of the temperature standard. Having broad-based support for Oregon's Coastal Nonpoint Program, including from the forest industry, will help contribute to the program's success. However, Oregon cannot continue with the status quo and ignore the results of multiple scientific studies that show changes must be made to the state's existing forestry riparian practices to achieve and maintain water quality standards.

NOAA and EPA recognize the political challenges the state faces as it considers a change to the FPA rules to provide greater riparian protection of fish-bearing streams and the importance of good science to support a rule change. Both NOAA and EPA have testified in front of the Board of Forestry in support of the science that shows greater riparian protections are needed. Both agencies stand ready to continue to assist the state, as needed, as it moves forward with the rule change.

Although the federal agencies understand a rule change takes time, NOAA and EPA cannot further delay a final decision on Oregon's Coastal Nonpoint Program. NOAA and EPA have already provided Oregon sufficient time to develop a fully approvable coastal nonpoint program. Per a settlement agreement with the Northwest Environmental Advocates, the federal agencies must make a final decision by May

15, 2014, (subsequently extended to January 30, 2015, by mutual agreement of the settlement agreement parties), regarding whether or not Oregon has failed to submit an approved (without conditions) coastal nonpoint program. NOAA and EPA arrived at this timeline based on the original commitment Oregon made in a letter to NOAA and EPA dated July 26, 2010, that the state would address its remaining conditions by March 2013.

D. Adequacy of Forestry Riparian Management for Protecting Small, Medium Fish-Bearing Streams and Non Fish-Bearing Streams

Comment: Many commenters expressed the opinion that Oregon's existing riparian management practices and forestry laws were inadequate for protecting small and medium fish-bearing and non-fish bearing streams. When required, buffer requirements are minimal (e.g., 20 feet) and Oregon lacks buffer requirements for non-fish bearing streams altogether. One commenter reasoned that because riparian buffers are not required for non-fish bearing streams, they become a source of sediment for connected fish-bearing channels thus compromising the effectiveness of the overall system of riparian management in maintaining sufficiently low turbidity.

Commenters stated that the Oregon Forest Practices Act and other comparable forest practices have been widely criticized for failing to protect water quality and salmonid habitat (examples provided of such failures related to inadequate shade, poor large wood recruitment, lack of tributary protection, and unstable slopes). They also stated that Oregon's forestry riparian protection standards lagged behind those of their neighboring states, such as Washington and California. Commenters pointed to the National Marine Fisheries Services' determination that the Oregon Forestry Practices Act did not have rules in place to adequately protect coho salmon habitat. Commenters opined that the FPA did not provide for the production and introduction of necessary large woody debris to medium, small, and non-fish bearing streams and any required buffers under the rules were inadequate for preventing significant warming of streams.

A white paper analyzing the proposed O&C Trust and the Conservation and Jobs Act was noted as providing evidence of support for the need of more stringent programs to protect water quality in Oregon's coastal zone. A concern was raised that even where narrow buffer zones exist along river shores there were areas where those buffers were eliminated completely. The claim was also made that the Board of Forestry has not shown any intent to provide riparian protection for non-fish bearing streams, which were believed to make up the majority of coastal stream miles and flow into fish bearing streams.

A commenter discussed how restoring and maintaining productive aquatic habitat did not appear to be a common stated objective of Oregon programs that influence the management and use of riparian areas and it appeared that riparian corridors have been significantly degraded across large portions of the state's landscape. Other comments pointed to the RipStream study findings as evidence that the existing FPA buffers are not in compliance with water quality standards and the Clean Water Act. They stated that riparian management on private lands has not improved since.

Other comments pointed out other weaknesses in Oregon's existing FPA rules. For example, the rules do not protect non-perennial, or intermittent, streams, which are determined "by the State Forester based on a reasonable expectation that the stream will have summer surface flow after July 15." In addition, the commenter raised issue with the lack of required riparian management for seeps and springs as well.

On the other hand, a couple of commenters believed Oregon's existing Forest Practices Act and rules, combined with its voluntary efforts, were adequate for protecting forestry riparian areas. One commenter stated the Forest Practices Act and rules do provide the minimum requirement for developing large mature trees that can contribute wood debris to streams. They also asserted that voluntary efforts, such as discretionary placement of additional wood in the stream, help to further create large wood debris habitat that salmon need. In addition, they discussed other new voluntary practices are being implemented well among the forest industry, such as the retention of additional leave trees in near-stream areas, and targeted restoration of high-priority riparian areas that are lacking woody debris.

These commenters cited results from several recent Watershed Research Cooperative (WRC) studies to support their position that Oregon's existing forestry riparian management was adequate. For example, they state that that two of the three WRC studies indicate a positive fish response following timber harvesting and that the Hinkle Creek WRC study found that small debris provides shade to non-fish bearing streams.

In addition, a couple of commenters chastised NOAA and EPA for relying on much older studies, such as ODF's 1999 RipStream study and the 2002 ODF and DEQ Sufficiency Analysis, to support the federal agencies' claim that Oregon's needed greater protection of small, medium fish-bearing streams and non-fish bearing streams. They stated NOAA and EPA should have considered newer, more relevant research, such as the WRC studies. In addition, one commenter felt NOAA and EPA misinterpreted the RipStream study findings. They believed NOAA and EPA's description of the study's findings on page 8 in the proposed decision document did not align with the actual conclusions of the report.

One commenter also reflected that the criticism of the existing FPA and rules should be tempered against the evolving science and understanding of forestry riparian management. They site how former thinking that clean wood placement in streams was needed to improve instream fish habitat and increase dissolved oxygen, has now evolved to an understanding that large woody debris is needed to achieve these goals. In addition, the commenter states that while there used to be an emphasis on retaining large conifers along streams, that thinking has now shifted to reflect a new understanding of the benefits of riparian hardwoods as well and the importance of diversity in tree species within the riparian zone.

Sources: 15-G-2, 28-B-1, 30-K-1, 43-BBB, 55-P, 56-D-2, 56-E-1, 56-E-2, 56-E-3, 57-AAA, 57-BBB, 58-E-2, 58-H-1, 58-H-3, 58-H-4, 58-H-5, 67-D1, 67-D-2, 75-H, 77-H. 77-I, 77-BBB, 77-CCC, 77-DDD, 79-E, 79-G

Response: NOAA and EPA continue to find that Oregon needs to do more to protect riparian areas along small and medium fish-bearing streams and non-fish bearing streams. As discussed in more detail in the final findings document for Oregon's Coastal Nonpoint Program, there is a wealth of science, such as the recent 2011 RipStream study, that shows that Oregon's existing FPA riparian protection practices on private forest lands in the Oregon Coast Range, are not sufficient for meeting the cold water protection criteria for the state's temperature water quality standard.

A few commenters claimed the existing FPA practices, coupled with voluntary riparian protection efforts, are sufficient for protecting riparian areas. These commenters cited unpublished, preliminary results from the Watershed Research Cooperative's paired watershed studies that indicated changes in stream temperature along non-fish bearing streams was variable and that were was no significant

change in downstream due to harvesting activities under the FPA. However, as NOAA and EPA discuss more fully in the final findings document, variation in stream temperature and overall net observed decrease in temperature decrease may be attributable to increased slash debris along the stream after harvest as well as a likely increase in stream flow post-harvest that could prevent an increase in temperatures and contribute to lower mean stream temperatures. DEQ evaluated the study results and concluded that temperature data from the Hinkle Creek and Alsea River paired watershed studies show that temperature increases downstream from the harvest sites for fish-bearing streams were very similar to the increases found in the RipStream study. Therefore, as stated in the final decision document, there may be other factors at play that make it difficult to draw any definitive conclusions about the adequacy of the FPA practices from their results.

NOAA and EPA do not believe the federal agencies have misinterpreted the RipStream study in the proposed findings document as one commenter claimed. In the proposed findings, NOAA and EPA stated,

> "A significant body of science, including: 1) the Oregon Department of Forestry's (ODF) Riparian and Stream Temperature Effectiveness Monitoring Project (RipStream)…continues to document the need for greater riparian protection around small and medium streams and non-fish bearing streams in Oregon. In its July 1, 2013, submission to the federal agencies, Oregon cited the RipStream study and acknowledged that there was evidence that forest practices conducted under the State's existing Forest Practices Act (FPA) rules do not ensure forest operations meet the State water quality standards for protecting cold water in small and medium fish bearing streams."

While NOAA and EPA did not specify which RipStream study they were referring to in the body of the proposed findings, the References section at the end of the document does provide the full citation for the three RipStream studies, one published in 2008 and two published in 2011. These RipStream studies assessed how the FPA's existing riparian protection practices affected stream temperature. In their RipStream publication, Groom et. al. (2011a) found that there was a "40.1% probability that a preharvest to postharvest comparison of 2 years of data will detect a temperature increase of >0.3 ºC". The state's stream temperature anti-gradation standard says that water temperatures cannot increase more than 0.3 ºC. Therefore, the researchers concluded that "[stream temperature] anti-degradation [standard] compliance may be a problem on private forestry lands in the Oregon Coast Range."[3]

The statements NOAA and EPA made in the proposed findings document about the RipStream study align with this conclusion. To address any apparent confusion regarding the federal agencies' interpretation of the RipStream study, NOAA and EPA have revised the final findings for Oregon's Coastal Nonpoint Program to further clarify the discussion of the RipStream study to include an in-text citations for the RipStream studies and provide a more in-depth discussion of the study's results.

As one commenter stated, the science around riparian buffer protection is evolving. That is true. NOAA and EPA continue to welcome and support scientifically rigorous studies to evaluate the effectiveness of Oregon's existing practices in protecting water quality standards and designated uses and to investigate alternative approaches that will provide greater protection, when warranted. However, just because the

[3] Groom, J.D., L. Dent, and L.J. Madsen. 2011. Stream temperature change detection for state and private forests in the Oregon Coast Range. Water Resources Research 47: W01501, doi:10.1029/2009WR009061.

science is continuously evolving should not prevent Oregon from taking action to provide better riparian protection when the current science clearly shows that the state's existing FPA practices are not meeting the protection of cold water criterion for the temperature standard. Employing a nimble adaptive management approach that allows the state to make adjustments and to identify when additional management measures are needed based on current science, is a core component of a state's coastal nonpoint program (See Section 6217(b)).

As a few commenters noted, Oregon's riparian protection standards for small and medium fish-bearing streams and non-fish bearing streams are not as strong as those for neighboring states like Washington and California. For example, Washington [****insert details]. In California, [**** insert details]. CZARA gives states the flexibility to develop a program that best meets their unique needs. Therefore, while Oregon does not have to adopt the same standards as its neighbors, NOAA and EPA encourage Oregon to look to Washington and California as potential models for the types of riparian protection practices it may wish to consider. These practices have already been instituted by the forest industry in Washington and California which have had to contend with similar topographies, weather conditions, and sensitive species.

Finally, NOAA and EPA note that one commenter expressed concern that in some areas, even Oregon's current FPA buffer requirements were not being followed. While that may be the case, that is an enforcement issue. Under CZARA, how well a state is enforcing its existing policies and programs is not considered for coastal nonpoint program approval. (See the response to Section VI.C, Enforcement, for a fuller explanation).

E. Greater Protection of Forestry Riparian Areas Needed

Comment: Several commenters stated that Oregon needs to provide greater protection for forestry riparian areas along both fish and non-fish bearing streams. One commenter provided several examples of recommended buffer widths that the state may wish to adopt. For example, they mentioned that NMFS recommends no-cut riparian buffers ranging from 150-300 feet in width to protect salmonids. The larger buffer widths are for fish-bearing streams, while the smaller widths are more suitable for non-fish bearing streams. The commenter also stated the Northwest Forest Plan recommends similar buffer widths (300 foot no-cut buffers along fish-bearing streams and 150 foot no-cut buffers along non-fish bearing streams). The commenters stated that wider riparian buffers would ensure large wood recruitment, improve sediment and pesticide filtration, and provide sufficient tree basal area within the riparian zone to shade streams and protect cold water needed for salmon. As one commenter also asserted, the larger buffers would also provide greater protection from blow downs and ensure that if a few trees are blown down, enough would remain to still provide a functioning buffer.

In addition to greater protection of forestry riparian areas, commenters stated that riparian restoration was needed. They highlighted the important role large downed trees, or nurse trees, play in forest regeneration.

One commenter did express concern with adopting riparian buffers similar to the Northwest Forest Plan. They stated that when the Bureau of Land Management adopted the plan's buffers, it limited the amount of timber that could be harvested. The new buffer requirements necessitated three landings and two more harvest units to harvest the same amount of timber that used to be done with one landing before. Therefore, as the commenter stated, more restrictive riparian buffers leads to greater ground disturbance.

Sources: 20-B-1, 30-K-1, 48-I, 55-N, 56-E, 56-E-1, 56-E-2, 57-E-3, 58-E-4

Response: NOAA and EPA agree that Oregon needs to do more to protect riparian areas along small and medium fish-bearing streams and non-fish bearing streams. In the final decision document, the federal agencies acknowledge the Board of Forestry's ongoing rulemaking process that is considering improvements to the FPA riparian protections for small and medium fish-bearing streams, may help the state provide some of the protection needed. NOAA and EPA encourage the state to complete those rule changes as expeditiously as possible.

NOAA and EPA appreciate the recommended buffer widths commenters provided and will be sure to share these suggestions with the state for its consideration. CZARA does not require states to adopt specific buffer widths to have a fully approved coastal nonpoint program. Rather, the state has the flexibility to identify the type of buffer protection that works for them yet still will enable them to achieve and maintain water quality standards. NOAA and EPA continue to work with Oregon to make sure the state has a good programs and processes in place to provide the riparian protection needed.

As with implementing any best management practice, there are trade-offs to be made. In some limited circumstances, more restrictive riparian buffers may result in greater ground disturbance to harvest the same amount of timber, when implemented well, the benefits wider riparian buffers provide to protect water quality and designated uses can outweigh any potential adverse environmental effects.

Finally, while Oregon should be encouraged to continue to restore forestry riparian areas through its voluntary Oregon Watershed Enhancement Board activities and other means, having specific restoration programs in place for forestry riparian areas is not one of the remaining issues Oregon needs to address to satisfy the condition related to additional management measures for forestry on its coastal nonpoint program. NOAA and EPA did not solicit specific comments regarding Oregon's program to restore forestry riparian areas.

F. Impacts of Strict Forestry Riparian Protection

Comment: A couple of commenters expressed concern about the impacts stricter riparian management would have on forestry operations. One commenter felt requirements for larger riparian buffer widths would only hurt the logging industry and drive up the price of lumber. Another commenter stated that any EPA and NOAA-proposed restrictions would limit the ability of private forest landowners to invest in watershed restoration efforts, including enhancements to forestry riparian areas. They felt additional restrictions would smother the forest sector's cooperative stewardship ethic and long-history of voluntarily adopting good riparian management and other forest stewardship practices.

Sources: 20-B, 79-D, 79-F

Response: NOAA and EPA recognize that wider no-cut riparian buffer requirements and strengthening other riparian management practices may slightly reduce the number of harvestable trees available to the timber industry in Oregon. However, many of the same timber companies are also successfully operating in Washington and California—states that already have stronger riparian protection requirements in place. Even though the timber industry must abide by stricter riparian protections in neighboring states, the industry still adopts voluntary practices that provide further protections and works with partners on watershed restoration activities in those states. For example....[can we include an example from WA or CA where the industry still has a "good stewardship ethic" and helping out with restoration or additional voluntary BMPs?].

Therefore, NOAA and EPA do not believe increasing buffer requirements within Oregon's coastal nonpoint management area will have a significant impact to the forestry industry in Oregon. Also, with more robust riparian protections in place, there will not be as great a need for the industry to invest in watershed restoration efforts. Riparian area and, as a result, water quality would be protected before damage occurs that would necessitate restoration. After all, it is typically more cost-effective to protect an area to begin with than to try to clean up a mess after it occurs.

G. Flexibility for Forestry Riparian Management Needed, Including Use of Voluntary, Incentive-Based Approaches

Comment: Rather than relying on strict regulatory approaches to better protect riparian areas on forest land, a few commenters advocated for more flexible, voluntary, and incentive-based approaches. The commenters recognized more could be done to protect riparian buffers, and thus water quality, salmon and other designated uses. However, they felt additional incentive-based approaches, combined with the existing Forest Practices Act rules, would be the best way to provide these additional protections and facilitate long-term wood recruitment and shade to support high-quality salmon habitat. Voluntary practices they recommended included the retention of additional leave trees near fish-bearing streams, the placement of large woody debris in streams, planting trees and other riparian restoration activities, and thinning riparian forests to levels that promote primary production in streams and the adjacent understory (primary production being important for salmon populations).

Sources: 75-F, 77-CCC, 79-D, 79-F

Response: NOAA and EPA understand and respect the need for states to be able to use flexible approaches in developing and implementing their coastal nonpoint programs. CZARA requires management measures to be backed by enforceable authorities. As NOAA and EPA describe in the *1998 Final Administrative Changes to the Coastal Nonpoint Pollution Control Program Guidance for Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990,*[4] this can either be through direct enforcement authority or through voluntary efforts, backed by enforceable authorities. If states chose a voluntary approach, as the guidance outlines, that states not only must provide a description of their voluntary programs but also meet other requirements including: (1) providing a legal opinion asserting they have suitable back-up authorities and demonstrating a commitment to use the back-up authority, when necessary; and (2) have program in place to monitor and track implementation of the voluntary program. Voluntary programs could play an important role in Oregon's Coastal Nonpoint Program, however, the state has not fully described its voluntary programs for forestry riparian protection or satisfied the other requirements needed to use voluntary programs to meet part of their CZARA 6217(g) management measure requirements.

H. Forestry Landslide Management

Comment: Some commenters acknowledged that landslides caused by logging practices, such as clear cutting on steep slopes, are a real problem in Oregon and additional management measures are necessary to address these impacts. It was noted that Oregon does not have sufficient programs to reduce landslide risk and control nonpoint pollution due to logging on private lands.

[4] http://coastalmanagement.noaa.gov/nonpoint/docs/6217adminchanges.pdf

Others expressed their disagreement with the federal agencies' recent decision and argued that the evidence provided by the federal entities was misleading, only focusing on "landslide density relationships" rather than considering the "total number of landslides triggered during major storms". If consider the latter, one would see that the "potential increases in sediment delivery to public resources from landslides...is proportionally small". It was recommended that EPA consider a broader scale view over longer timeframes to evaluate whether water quality and designated uses are impaired. In addition, it was argued that EPA has not offered objective evidence that additional management measures are needed to maintain water quality; the federal agencies have not produced any evidence that landslides resulting from forest management activities have caused exceedances in water quality or negatively impacted aquatic life.

Source: 61-A, 63-B, 67-B, 77-J, 77-K, 77-L

Response: NOAA and EPA continue to find that Oregon needs to do more to protect high-risk landslide areas from logging activities to ensure water quality and designated uses are not impaired. Based on the comments received, NOAA and EPA have revised the rationale in the final decision document to provide more specific scientific evidence to show the link between timber harvesting and landslide risk and how landslides increase sediment loads to nearby streams.

NOAA and EPA disagree that a wider landscape-scale approach to assessing landslide impacts would be appropriate. While the effects of a single landslide may be diluted when a landscape scale view is taken, the impact to a specific stream reach (or reaches), and the designated uses of that stream, are real and can be significant. It is still important to capture and consider these impacts when planning harvest activities so that landslide risks that can impair waterbodies can be minimized.

I. Forestry Road Management

Comment: One group commented that there is no program in place to control non-point pollution sufficiently to meet CZARA and management measures are needed to maintain water quality and protect designated beneficial uses due to logging impacts. Examples of logging roads and associated impacts to watersheds and habitat were noted by various commenters. Speaking to current forest practice rules, another group commented that "generic BMPs" are imposed and are not backed by relevant water quality data and so fail at protecting water quality and beneficial uses. The group added that existing rules for forest roads are vague and prioritize logging over protection of water quality. One argument stated that Oregon's road location rule, which only requires operators to minimize risk to streams rather than requiring them to avoid water quality problems, is not sufficient. Other examples given demonstrating the inadequacies of the current forest practices rules include how they are not designed to eliminate delivery of fine sediment or to ensure that delivery does not impair water quality and they do not require that existing, inactive logging roads or "legacy roads" be brought into compliance with water quality standards.

Another group made the argument that while NOAA and EPA have expressed their concerns about forest roads delivering sediment into streams and have requested that the state enact an inventory and reporting program for forest roads, they have not cited any sources supporting these concerns and have presented no basis for the request. The commenter contends that new rule revisions (2002 – 2003) and success under the Oregon Plan for Salmon and Watersheds were detailed in the State's submission and are evidence that the Oregon Forest Practices Act is working as it should and the Board of Forestry is committed to implement additional management measures for forestry roads as needed. They also note

that salmon stocks are recovering. The commenter also argued that while NOAA and EPA have expressed their concerns about forest roads delivering sediment into streams, they have not cited any sources supporting these concerns.

Source: 57-D, 57-I, 57-N, 57-O, 57-P, 57-R, 57-T, 57-U, 67-B, 75-D, 77-M, 77-N, 77-O, 77-P, 77-Q, 77-P, 77-Q

Response:

J. Impacts of Forestry Pesticide Application on Human Health, Drinking Water, and the Environment

Comment: Many commenters voiced concerns about the short and long-term impacts of pesticide and herbicide use associated with the forest industry in Oregon, especially using aerial spraying as a method of applying these chemicals. These commenters believed that Oregon coastal watersheds are not adequately protected from the use of these chemicals. Adverse impacts to drinking water, human health, salmon, amphibian and crayfish habitat, water quality, and property values, were among the list of concerns commenters raised. One commenter stated amphibians are particularly vulnerable because they have moist, permeable skin and unshelled eggs that are directly exposed to soil and water that could be contaminated with pesticides. Another commenter also discussed how certain chemical properties of herbicides allow them to persist in the environment and to eventually be carried downstream to fish. They stated that pesticides and herbicides, like atrazine, can bind to soil particles and then washed into waterways through surface runoff, sediment erosion, or groundwater transport. One commenter noted that is of particular concern because in Oregon, it is legal to spray herbicides, like atrazine, over dry channels. During wetter months, when the channels fill with water, atrazine, bound to the soil, can be carried downstream and affect fish.

A commenter also stated that not enough is known about the interactions of various pesticides and herbicides chemicals when mixed. They noted that synergistic effects of unknown components of pesticides could inhibit immune responses and pose long-term unknown issues.

Several commenters sited specific studies or personal observations to support their statements. For example, one commenter stated one finding of the report, *Oregon's Industrial Forests and Herbicide Use: A Case Study of Risk to People, Drinking Water and Salmon*, concluded there are known endocrine disrupting chemicals entering Oregon's drinking water sources and fish-bearing streams.

Other commenters described acute health impacts (e.g., headaches, breathing issues, etc.) immediately following spray events and more long-term health issues they contributed to pesticide exposure. One commenter reported that their drinking water system tested positive for glyphosate while another commenter, from the Triangle Lake area, stated that their urine and blood tested positive for 2,4-D and atrazine metabolites. Another commenter also relayed how people in Western Lane County were found to have low (high?) levels of insecticides in their blood. In the Triangle Lake area, a commenter stated that pesticide application records showed that over 20 tons of pesticides were applied in a three-year period. Commenters also reported seeing dead fish in streams after spray events and said that chemicals used in forest practices have been found in local streams.

Source: 2-C, 2-F, 2-G, 2-K, 2-J, 3-A, 3-B, 27-C, 28-C, 30-G, 30-P, 30-Q, 31-D, 35-L, 40-B, 42-F, 42-M, 42-R, 42-T, 46-E, 46-K, 46-O, 46-D, 46-E, 46-G, 48-F, 48-K,53-D, 54-D, 54-G, 54-F, 54-H, 55-M, 57-CF-A, 57-CF-B,

57-CF-D, 58-I, 59-A, 62-B, 62-C, 62-E, 69-B, 69-C, 69-D, 69-E, 69-F, 70-C, 70-D, 70-E, 70-G, 70-H, 70-J, 70-O, 72-B, 75-C, 76-A, 76-C, 76-D, 77-R, 77-S, 77-T, 83-M, 85-D, 85-E

Response: EPA and NOAA recognize that forestry pesticides are being observed in some drinking water and stream samples in coastal Oregon and that many citizens are concerned about adverse the public health and environmental impacts due to pesticide exposure. To better understand pesticide exposure, the Oregon Health Authority and other agencies are leading an Exposure Investigation to evaluate whether aerial application is affecting drinking water, surface water, food, and other resources. Additional research and monitoring is also needed to understand the potential impacts of pesticide use in Oregon. That is why, in the final decision document for Oregon's Coastal Nonpoint Program, NOAA and EPA have recommended Oregon continue to strengthen and expand its forestry pesticide monitoring efforts, especially within the coastal nonpoint program area. NOAA and EPA encourage Oregon to develop these more robust monitoring protocols in consultation with EPA and NOAA's National Marine Fisheries Service so that sound methodologies are selected to assess potential impacts to water quality and designated uses.

K. Adequacy of Current Forestry Pesticide Management Practices for Protecting Water Quality and Designated Uses

Comment: Many commenters expressed concern that Oregon does not have adequate management practices in place for the application of pesticides by the forest industry to protect water quality and designated uses. They cited specific studies and personal experiences of pesticide exposure to illustrate that current practices were allowing pesticides to impact human health and the environment. (See summery comment VI.A (Impacts of Forestry Pesticide Application) above.)

Commenters asserted that Oregon does not have an effective pesticide management program to protect groundwater and drinking water. Many commenters focused on the inadequate spray buffers for pesticide application. For example, commenters asserted that Oregon's existing spray buffers for the aerial application of pesticides, including the 60 foot no-spray buffer around fish-bearing streams, are ineffective at protecting water quality and designated uses, including drinking water; the 60 foot buffer is too small and non-fish bearing streams are not protected at all. For example, one commenter described that they observed narrow or non-existent buffers along streams that flow into the Siletz River where there are clear cuts to the banks and aerial spraying occurring over the cuts.

Several commenters noted that Oregon's spray buffer requirements, and many other pesticide management practices, were not as protective as neighboring states. Commenters felt Oregon needed larger spray buffers around waterbodies for the aerial application of pesticides and herbicides. One commenter also suggested a pesticide-free buffer was needed around certain land uses, such as schools. Another commenter expressed concern about herbicide spraying was allowed to occur in Lane County despite protection zone language and the Water Districts efforts to prevent application over the Clean Lake watershed (a drinking water watershed). Another commenter also asserted that additional research is needed to determine if aerial spraying of herbicides by the forest industry is a necessary method of application.

Commenters did not feel Oregon's existing spray buffers were large enough to protect against aerial drift, which they asserted was a common occurrence given the microclimates of the Oregon Coast Range. Commenters were concerned that aerial drift of pesticides from the application site could impact nearby organic farms, vineyard owners, natural forest land owners, members of the community,

streams, and drinking water sources. One commenter stated that although the Oregon Health Authority acknowledges that aerial drift can carry pesticides two to four miles from the application site, there is no monitoring of pesticide drift after application. Another commenter noted that glyphosate was detected in Jetty Creek, illustrating that legal spray buffers were not protective enough. A commenter suggested that EPA should require ODF, in consultation with DEQ, to exercise authority to review comments and require modifications of the written forest vegetation management plans when needed. A commenter also stated that additional management measures to provide increased protection for both fish and non-fish bearing streams during the aerial application of herbicides.

However, other commenters contended that Oregon's existing forestry pesticide management practices were adequate. They stated that pesticide applications must be licensed and, along with landowners, are already subject to stringent regulations and guidelines under the FPA and FIFRA. One commenter also noted that ODF has developed guidelines to provide further assistance implementing the FPA rules, including Forest Practice Rule Guidance for Chemical and Other Petroleum Products (2009). A few commenters asserted that EPA label requirements under FIFRA were sufficient. A commenter also noted that EPA has not revised the pesticide labels to reflect the restrictions that NOAA National Marine Fisheries Services' biological opinion on the pesticide labels says are necessary to protect ESA-listed salmon.

One commenter stated that water quality monitoring activities for non-fish bearing streams during and after spraying herbicides has shown no detrimental impacts to water quality. For example, one commenter cited a U.S. Geological Survey study (Kelly et. al, 2012) that looked at pesticide use in the Clackamas Basin. The commenter reported the study found that although low levels of pesticides were detected in some drinking water samples the potential threat to human health was negligible. The study also compared pesticide contamination from urban, forestry, and agriculture use and found that the forest land pesticides were rarely detectable in the McKenzie River, even though forest land accounted for the largest land use in the basin. In addition, a commenter also stated that Oregon continues to monitor for over 100 pesticides, which allows the state to identify potential problems with the aerial application of herbicides, if any arise.

Sources: 2-E, 2-I, 3-A, 27-C, 28-B, 30-G, 30-S2, 35-D, 35-E, 35-J, 42-H, 42-Q, 45-B, 46-C, 46-I, 46-D, 49-H, 54-B, 55-N, 56-F, 57-CT-B, 58-F, 62-B, 69-C, 70-C, 70-E, 70-J, 70-K, 70-L, 70-M2, 70-N, 76-C, 77-R

Response: NOAA and EPA recognize there is concern about the adequacy of Oregon's current spray buffers for pesticides and other pesticide management practices. Although a some research, such as Kelly et. al (2012) has shown that current pesticide management practices may not be resulting in adverse impacts to water quality and designated uses, this study was not conducted directly following a spray event so is not able to paint a full picture of pesticide exposure. Ex. 5 - Deliberative

Ex. 5 - Deliberative

Although there is always room for states to continue to improve their pesticide management practices, for the purposes of coastal nonpoint program approval, NOAA and EPA are only concerned with the adequacy of the state's protective measures for Type N (non-fish bearing streams) during the aerial application of herbicides. The final decision document for Oregon's coastal nonpoint program lists several steps the state could take to provide better protection for these non-fish bearing streams.

Although CZARA allows each state to design a coastal nonpoint program that meets their own unique needs and circumstances, NOAA and EPA also encourage Oregon to look to its neighboring states for examples of more protective practices that may also be useful to implement during the aerial application of herbicides along Type N streams. As some commenters stated, Oregon does have smaller spray buffers for the aerial application of herbicides compared to neighboring states and could learn from neighboring states that have similar topography, weather conditions, and sensitive species. For example….[insert examples from other states or if included in final decision doc, note that it is discussed more fully there so we don't have to repeat ourselves.]

L. Inadequate Notification and Transparency by Forestry Industry When Pesticides Are Used

Comment: Several commenters expressed concern about the poor notification procedures and lack of transparency related to the aerial application of pesticides. For example, one commenter described one instance where aerial spraying occurred within their watershed without warning. Commenters stated that the public is not informed of the exact date when spraying will occur; only provided a six-month window of when it would occur is provided. They also asserted that the notification requirements were vague and that pesticide application records were not available to the public. A commenter stated that application records are only available to the State Forester when requested. Another commenter stated that the Oregon Forest Practices Act prohibits researchers, doctors, and the public from obtaining accurate information about the types and quantities of herbicides that are sprayed.

Sources: 40-C, 42-G, 42-J, 42-K, 42-L, 42-P, 42-S, 46-E, 46-L, 48-G, 48-M, 53-D, 54-G7, 70-M, 85-I

Response: When pesticides are being used, it is important for the public to be well informed about when and what types of pesticides will be used near their property. That is why, in the final decision document, NOAA and EPA have recommended that Oregon improve its notification processes and transparency for the aerial application of herbicides and other pesticides.

M. Inadequate Forestry Pesticide Monitoring

Comment: In addition to their general concern about pesticide use by the forest industry and inadequate spray buffers when pesticides are applied, several commenters expressed their concern about the inadequacy of Oregon's water quality monitoring efforts following aerial application of pesticides and herbicides on forestry lands. One commenter stated Oregon has no program to determine the presence of forestry pesticides in the air and resulting in drift and deposition onto surface waters and soils. Commenters gave many examples of how they believe drinking water, human health, and fish and wildlife have been impaired by aerial spraying.

One commenter noted without effective monitoring protocols, the state lacks data to prove aerial application is a problem and that improvements were needed. For example, one commenter stated there was no monitoring of aerial drift even though the Oregon Health Administration said chemicals could drift two to four miles. Another commenter also noted there was little to no coordination between DEQ and ODF on pesticide monitoring. A few commenters also questioned NOAA and EPA's praise of Oregon's Water Quality Pesticide Management Plan. They noted that while the state purportedly uses water monitoring data to develop adaptive management approaches, the state actually undertakes very little pesticide monitoring and that there is no evidence the state collects any data in coastal watersheds.

It was pointed out that while NOAA and EPA found state-level frameworks and actions sufficient for addressing pesticide water quality controls, none of the pilot monitoring programs supporting this finding occur in the coastal zone. A commenter also added that the agencies "improperly assume that, should riparian buffer standards for type N streams and monitoring programs within the coastal zone adhere to existing state laws and programs concerning water quality and pesticides, then Oregon's CNPCP would warrant approval." The commenter contended that existing state and federal laws do not sufficiently address a large portion of pesticide application activities and do not collect necessary pesticide application and risk data. Referring to Oregon's Water Quality Pesticide Management Plan, which has a component that relies on monitoring data, a commenter noted that the state does little monitoring of pesticides and there is no indication of data being collected in coastal watersheds. A commenter also expressed concern with the lack of timely coordination between DEQ and ODF on pesticide monitoring in a timely manner.

However, other commenters noted that the Board of Forestry specifically requires effectiveness monitoring and evaluation of the chemical rules which lay out how applicators should use pesticides. They state the rules are designed to ensure chemicals do not occur in soil, air, or waters in quantities injurious to water quality or the overall maintenance of terrestrial or aquatic life. A commenter also noted that that state has established pesticides from forest practices as a low priority in the EPA-approved Water Quality Pesticide Management Plan because pesticide monitoring for forestland has shown that pesticide concentrations are below the lowest benchmarks provided by EPA.

Source: 27-B, 27-D, 30-R, 30-S, 42-G, 42-H, 42-N, 42-O, 46-H, 48-H, 49-H, 49-I, 53-D, 53-H, 53-I, 54-E, 54-F, 54-G1, 57-II, 57-II4, 62-C, 62-F, 70-B, 70-F, 70-J, 77-R, 77-T and State Comments

Response: In order to employ an effective adaptive management approach to pesticide use, as Oregon has proposed, it is important for the state to have a robust pesticide monitoring and tracking program in place that includes timely sampling (e.g. right after aerial application) and monitoring sites throughout the coastal nonpoint area. Although some monitoring studies have not found herbicides at harmful levels, other research has (see above responses). Therefore, as discussed more fully in the final decision document, NOAA and EPA believe Oregon would benefit from improved pesticide monitoring, especially expanding its pilot Pesticide Stewardship Program to include several sites within the coastal management area.

N. Inadequate Forestry Pesticide Monitoring

Comment: In addition to their general concern about pesticide use by the forest industry and inadequate riparian buffers when pesticides are applied, several commenters expressed their concern about the inadequacy of Oregon's water quality monitoring efforts following aerial application of pesticides and herbicides on forestry lands. One commenter stated Oregon has no program to determine the presence of forestry pesticides in the air and resulting in drift and deposition onto surface waters and soils. Commenters gave many examples of how they believe drinking water, human health, and fish and wildlife have been impaired by aerial spraying.

One commenter noted without effective monitoring protocols, the state lacks data to prove aerial application was a problem and improvements were needed. For example, one commenter stated there was no monitoring of aerial drift even though the Oregon Health Administration said chemicals could drift two to four miles. Another commenter also noted there was little to no coordination between DEQ and ODF on pesticide monitoring. One commenter also questioned NOAA and EPA's praise of Oregon's

Water Quality Pesticide Management Plan. They noted that while the state purportedly uses water monitoring data to develop adaptive management approaches, the state actually undertakes very little pesticide monitoring and that there is no evidence the state collects any data in coastal watersheds.

It was pointed out that while NOAA and EPA found state-level frameworks and actions sufficient for addressing pesticide water quality controls, none of the pilot monitoring programs supporting this finding occur in the coastal zone. A commenter also added that the agencies "improperly assume that, should riparian buffer standards for type N streams and monitoring programs within the coastal zone adhere to existing state laws and programs concerning water quality and pesticides, then Oregon's CNPCP would warrant approval." The commenter contended that existing state and federal laws do not sufficiently address a large portion of pesticide application activities and do not collect necessary pesticide application and risk data. Referring to Oregon's Water Quality Pesticide Management Plan, which has a component that relies on monitoring data, a commenter noted that the state does little monitoring of pesticides and there is no indication of data being collected in coastal watersheds.

Source: 30-R, 42-G, 42-H, 46-H, 49-I, 57-II, 70-F

Response:

O. Forestry Clear Cuts

Comment: Commenters expressed their concerns with the amount of clear cutting that occurs in Oregon. They disagreed with the FPA rule which allows up to 120 acres of forest to be clear cut and stated that the rule did not consider the cumulative impacts of multiple clear cuts. Commenters discussed how clear cutting impacts water quality. It leads to increased sediment runoff and is typically followed by pesticide and herbicide applications that also runoff to nearby waterways. They noted that increased sediment loads lead to the loss of fish spawning habitat and that toxics from pesticides and herbicides can also impact aquatic and human health. Commenters reflected that Oregon's lack of riparian buffers made the impacts of clear cutting greater since adequate buffers were not left to help filter sediment and pesticides from runoff before reaching waterways. In addition, commenters were concerned with clear cutting on steep, erosional slopes, which contributes to landslide problems and further impacts water quality. One commenter argued that clear cutting is not sustainable and Oregon needs to practice sustainable forestry. Commenters provided examples of clear cutting in Oregon's coastal area such as: extensive clear cutting in riparian areas, including waterways that provide drinking water; clear cutting on steep slopes with erosive soils; and clear cutting that has occurred in areas within designated spotted owl sites and high-risk areas.

Source: 12-A, 40-A, 42-D, 43-D, 53-F. 75-B, 75-C, 75-D,

Response: NOAA and EPA recognize that clear cutting, if not managed well, can have adverse impacts to water quality and designated uses. That is why NOAA and EPA placed a condition to develop additional management measures for forestry on Oregon's program that specifically require the state to provide greater protection of riparian buffers around small and medium fish-bearing streams and non-fish bearing streams, for the protection of high-risk landslide areas, and greater riparian protections during the aerial application of herbicides along non-fish bearing streams. These additional management measures will help protect water quality and designated uses from the impacts of clear cutting. The state has failed to address these additional management requirements to date. Therefore, NOAA and EPA find that the state has failed to submit a fully approvable coastal nonpoint program under CZARA. The final findings document recommends actions Oregon can take to address these additional

management measure requirements and thus help protect coastal water quality from adverse impacts associated with clear cutting.

IX. FORESTRY

A. General Effectiveness of Existing Forestry Programs and Adequacy for Meeting CZARA Requirements

Comment: The majority of commenters agreed with NOAA and EPA's proposed decision that Oregon's existing forest practices are not sufficient for meeting the CZARA requirements and that additional management measures for forestry are needed. They argued that current land use laws and the Oregon Forest Practices Act (FPA) and rules do not adequately prevent impacts to water quality or designated beneficial uses (e.g., fish spawning, migration, etc.) from forestry activities. (See additional forestry comments for more specific concerns raised about various elements of Oregon's forestry program.)

Furthermore, several commenters disagreed with language in the FPA that states that compliance with the forest practices rules equates to compliance with water quality standards; the commenters did not believe the FPA practices were sufficient to achieve and maintain water quality standards. Commenters also stated that the Oregon Department of Environmental Quality has failed to use its authority to address these inconsistencies between the FPA practices and water quality standards. A commenter also asserted that NOAA and EPA failed to use their authority under CZARA to address the issue.

Other commenters were concerned that FPA enforcement actions only occur after water quality damage has occurred. A commenter contended that the lack of political will within the state to address water quality problems along with state tax benefits to the timber industry contribute to the lack of resources state agencies have to improve degraded water quality. Commenters recommended NOAA and EPA look at various studies that demonstrate the adverse impacts of the forestry industry on water quality and designated uses in Oregon (see pg. 10-11 of public comment #58 and the attachments to public comment #57 as examples)[1].

Conversely, a few commenters disagreed with NOAA and EPA's proposed decision and believed Oregon does have programs in place to meet the CZARA forestry requirements and that no additional management measures are needed. For example, commenters stated the FPA "establishes a dynamic program that responds promptly and deliberately to environmental issues as they arise" and requires that water resources, including drinking water, be maintained. They also stated that the FPA requires that best management practices be established to insure maintenance of water quality standards. This FPA provision adheres to the CZARA requirement that additional management measures be established to maintain applicable water quality standards. The commenters further state that the FPA already requires best management practice monitoring, including for pesticide use and landslides, and that the state has proven processes in place to identify and implement additional management measures for forestry, when needed. They highlight that past monitoring efforts have already resulted in improvements to the forest practices rules, such as strengthening protections for land-slide prone areas when public safety is at risk and making improvements to road management procedures.

In addition, one commenter argued that EPA and NOAA have failed to show that Oregon's forest practices rules do not meet water quality and beneficial use objectives; on the contrary, the commenter asserts a "large body of science" demonstrates that Oregon forest practices have a "neutral to positive"

[1] http://coastalmanagement.noaa.gov/nonpoint/oregonDocket/publicComments.html

effect on aquatic life. They state that making a decision that is not backed by solid science would be arbitrary; such a decision would not stand up to judicial scrutiny.

Source: 35-I, 57-D, 57-E, 57-F, 57-G, 57-H, 57-S, 57-V, 57-W, 58-H, 67-E, 67-G, 70-C, 75-E, 75-G, 77-F, 77-G, 77-M, 77-Q, 79-B, 79-C

Response: As reflected in the final decision document, NOAA and EPA continue to find that Oregon has not satisfied the condition placed on its coastal nonpoint program to "identify and begin applying additional management measures where water quality impairments and degradation of beneficial uses attributable to forestry exist despite implementation of the (g) measures." In its 1998 conditional approval findings, NOAA and EPA identified specific areas where existing practices under Oregon's FPA and rules should be strengthened to attain water quality standards and fully support beneficial uses including: better protections for medium and small fish-bearing and non-fish bearing streams, including intermittent streams; better protections for areas at high-risk to for landslides; better management and maintenance of forestry roads, including so-called "legacy" roads; and better protections for non-fish bearing streams during the aerial application of herbicides.[2] Based on the comments received, NOAA and EPA have revised the final decision rationale to more clearly reference scientific studies that support the need for these additional management measures in the state.

NOAA and EPA recognize that the FPA has language stating that water resources and drinking water must be protected and that the state's monitoring programs for forestry practices that have resulted in noteworthy improvements to its FPA rules. The federal agencies have included language in the decision document that acknowledges these FPA rule improvements, such as amending the FPA rules to require the identification of landslide hazard areas in timber harvesting plans and road construction and place certain restrictions on harvest and road activities within these designated high-risk landslide areas for public safety. As the final decision rationale more fully explains, while the state should be commended for these positive achievements, these actions are not enough to satisfy the additional management measure for forestry condition. For example, existing science, including studies like the RipStream Analysis carried out by ODF, show that current FPA riparian protection practices are not sufficient to achieve water quality standards. Therefore, more improvements are needed to adopt additional management measures to achieve and maintain water quality standards and protect designated as CZARA requires under Section 6217(b)(3).

Comment [AC1]: Confirm this is correct. The Dec. decision doc does. Need to make sure these changes are still reflected in final version.

NOAA and EPA disagree with the commenter that believed NOAA and EPA are not using their authority under CZARA to ensure forest practices in Oregon achieve and maintain water quality standards. On the contrary, NOAA and EPA's act to find that Oregon has failed to submit a fully approvable coastal nonpoint program, based on the fact that the state has not satisfied its additional management measures for forestry condition, demonstrates that NOAA and EPA are using their authority under CZARA to bring about improvements to Oregon's forest practices.

According to state rule, the best management practices the Board of Forestry (Board) adopts are deemed sufficient for achieving and maintaining water quality standards (ORS 468B.110(2), ORS 527.756, and ORS 527.770). NOAA and EPA recognize that these provisions present some challenges to ODEQ in enforcing water quality standards on forestlands. However, ODEQ does have tools it can use to remove the "best management practices shield" (ORS 527.770) that will allow it to take enforcement

[2] See conditional approval findings for Oregon's Coastal Nonpoint Program: http://coastalmanagement.noaa.gov/nonpoint/docs/findor.txt

action when forestry activities are degrading water quality. The Environmental Quality Commission (EQC), the rule making body for ODEQ, can petition the Board if it believes the FPA rules are not adequate for achieving water quality standards. The Board (with EQC concurrence) can either terminate the review or proceed with rulemaking. If the Board fails to complete its rulemaking in the two-year time period or decides that the revisions are not needed, the "best management practices shield" is lifted. During the rulemaking process, the EQC can also request the Board employ interim steps "to prevent significant damage to beneficial uses;" if requested, the Board needs to take action. NOAA and EPA strongly encourage ODEQ to use these authorities to address forestry water quality impairments, when needed.

Finally, NOAA and EPA cannot comment on what contributes to the believed lack of resources in Oregon to address water quality issues and concerns with how the FPA is being enforced. In reviewing the adequacy of the state's coastal nonpoint program, the federal agencies look at what processes the state has in place to implement the CZARA 6217(g) management measures and if the state has satisfied the conditions placed on its program. Per NOAA and EPA's authority under CZARA, the federal agencies cannot consider potential implementation or enforcement issues or what may contribute to a potential lack of resources to sufficiently implement these programs. (See response to Comment IV.C (Enforcement) for a more in-depth discussion of the enforcement issue).

B. Importance of Forestry Riparian Management

Comment: Many commenters were generally in agreement about the importance of forestry riparian management for addressing erosion and water quality problems they believed were exasperated by lack of adequate riparian buffers along coastal watersheds. One commenter expressed the concern that "large companies with large land holdings" were conducting "dangerous activities" that impact people, wildlife habitats and water quality in the state. The commenter added that such activities required oversight from laws that limit pollution being released into waterways. Another commenter pointed out that habitat and water quality indicators overlap and contended that there was a need to fully examine how physical habitat and water quality are interconnected. The commenter added that because "streams form a linked network, water quality and stream health is closely associated with the intensity and cumulative extent of forest management activities near streams of all sizes, in all parts of the network", and noted that "approximately 55% of the 27,000 stream miles examined in Oregon were either severely or moderately impacted by nonpoint source pollution."

The commenters touted a variety of benefits to riparian buffers. A few commenters emphasized the negative impacts that occur due to clear cutting and not providing sufficient riparian buffers, such as increased soil erosion, and lack of pesticide filtration. For example, one commenter sited degraded lakes within the Sutton, Mercer, Woahink, and Siltcoos watersheds where clear cutting to the shores has occurred. Other commenters discussed the effects of winter blow downs where "strong coastal winds accelerate through the clear cuts and abruptly hit the buffers with great force." Narrow, inadequate buffers are not able to stand up to these winds, and trees are knocked down, leaving nothing to hold the soil in place which ultimately runoffs and impacts the creeks.

Commenters also pointed out the importance of riparian buffers in maintaining large woody debris (LWD). They stated large wood recruitment is essential to maintain biological and hydrological processes in streams (e.g., sediment retention and transport, habitat formation, substrate for biological activity) and is critical for salmonid populations. A commenter described how in a natural stream/riparian system, large wood is recruited from areas adjacent to streams and upslope, including unstable areas

that move down toward streams. Moreover, the commenter noted that large wood was not just needed instream but also adjacent to the stream and discussed the role of conifers and the importance of regeneration rates of conifers in the future. Another commenter noted that older forests and intact riparian areas, as well as large shifting beaver complexes have contributed to greater amounts of LWD in streams which has helped to maintain floodplains, habitat complexity, hyporheic flow, and hydrologic stability. However, the commenter explained, management of coastal lands has resulted in chronic and persistent disturbance and bare riparian areas along the lower reaches of coastal streams. This has led to low LWD, unstable banks, and high energy channels.

Other commenters explained the importance of riparian buffers for controlling sedimentation into streams. A commenter pointed out that if riparian buffers are not required for non-fish bearing streams (headwaters), those streams become a source of excess sediment to networked fish-bearing channels as sediment is transported downstream, essentially decreasing or eliminating the effectiveness of riparian management zones in maintaining low turbidity at a watershed scale. The commenter also described that erosion and sedimentation contributes to losses in channel depth, the frequency and quality of pools, and off-channel habitat critical for fish rearing. Another commenter noted the constant need for regular dredging of the port of Brandon and other coastal facilities due to siltation caused by erosional riparian areas.

In addition, commenters stated that increased sediment delivery and lack of LWD recruitment also impacts designated uses, such as salmoids and drinking water. Commenters explained how increased sedimentation contributes to increased levels of fine sediment, increased turbidity that can impair salmonid sight feeding and cause gill damage. A commenter also discussed how increased sediment delivery can even cause increased water temperatures in the absence shade loss. Others pointed out the importance of forest riparian buffers for maintaining healthy drinking water by filtering sediments, pesticides, and other pollutants from the water. One commenter noted that even where narrow buffers exist along river shores (e.g., the Siletz River), there are places where the forest buffer has been eliminated completely and streams that flow into the Siletz have no buffer zone at all.

Finally, a commenter also stated that large stream buffers play an important role in storing additional carbon and reduce greenhouse gas emissions.

Sources: 15-E-1, 15-F-1, 15-F-2, 28-B-1, 30-K-1, 35-J-1, 42-D-2, 45-AAA, 56-D-1, 56-D-2, 57-BBB, 57-DDD, 57-EEE, 58-B-1, 58-E-1, 58-E-3, 58-E-4, 58-H-2, 58-H-6, 75-I

Response: NOAA and EPA recognize the importance of riparian buffers along Oregon streams, including both small and medium fish-bearing streams and non-fish bearing streams. The federal agencies continue to find that Oregon's existing riparian management practices are not sufficient to protect water quality and designated uses from nonpoint source pollution related to forestry practices. The state still needs to adopt additional management measures to provide greater protection of forestry riparian areas before NOAA and EPA can find that the state has fully satisfied its coastal nonpoint program requirements under CZARA.

NOAA and EPA revised the final decision document for Oregon's Coastal Nonpoint Program to include additional scientific information about the importance of riparian areas. As discussed in the decision document, riparian buffers play an important role in shading streams to maintain cold water needed for salmon. They also help filter sediment and control erosion; excess sediment can impair salmon habitat

and drinking water. Riparian buffers also filter other polluted runoff from entering streams, such as pesticides and other chemical applications. In addition, buffers serve as a valuable natural source of large woody debris that adds complexity to the stream habitat and is important for salmon.

In the decision document, NOAA and EPA acknowledge that the Board of Forestry has been considering a rule change that would provide greater protections to small and medium fish bearing streams. NOAA and EPA encourage the state to complete the rulemaking expeditiously. However, NOAA and EPA also recognize that the rule change, if successful, will not address non-fish bearing streams and that the state also should protect riparian areas along these streams as well.

Comment [AC2]: May need to revise this statement based on final lang. in the decision doc.

C. Forestry Riparian Management Accomplishments

Comment: Speaking to the accomplishments of Oregon's coastal nonpoint program as it relates to forestry-riparian management, commenters emphasized their support for Oregon's existing rules and programs in place to manage the forest industry and maintain water quality and riparian protections. One commenter pointed out that Oregon's Department of Forestry works to strengthen forest rules for riparian protection but faces political challenges that require "thoughtful science". The commenter noted the importance of maintaining the forest industry's support for water quality protection and acknowledged this process will take longer than Spring 2014.

Another commenter, on behalf of various groups, noted that private landowners, foresters, and loggers all support the Oregon Forest Practices Act and believe application of its rules is high. Another group called attention to Oregon's fifteen plus years of "superior voluntary riparian watershed enhancement accomplishments" by the forest sector and contended that EPA and NOAA's restrictions would "stifle these valuable watershed improvements". Lastly, another group noted how Oregon's Department of Forestry has been doing good work to improve water quality and riparian habitat.

Sources: 14-D, 77-AAA, 79-D, 82-B

Response: Currently Oregon relies on both regulatory and voluntary measures to provide riparian protections for fish bearing streams and non-fish bearing streams. While these practices are certainly better than having no protections in place, as discussed more fully in the final decision document, the science shows that Oregon's current riparian protection practices are not adequate for meeting water quality standards, specifically the cold water protection criterion of the temperature standard. Having broad-based support for Oregon's Coastal Nonpoint Program, including from the forest industry, will help contribute to the program's success. However, Oregon cannot continue with the status quo and ignore the results of multiple scientific studies that show changes must be made to the state's existing forestry riparian practices to achieve and maintain water quality standards.

NOAA and EPA recognize the political challenges the state faces as it considers a change to the FPA rules to provide greater riparian protection of fish-bearing streams and the importance of good science to support a rule change. Both NOAA and EPA have testified in front of the Board of Forestry in support of the science that shows greater riparian protections are needed. Both agencies stand ready to continue to assist the state, as needed, as it moves forward with the rule change.

Although the federal agencies understand a rule change takes time, NOAA and EPA cannot further delay a final decision on Oregon's Coastal Nonpoint Program. NOAA and EPA have already provided Oregon sufficient time to develop a fully approvable coastal nonpoint program. Per a settlement agreement with the Northwest Environmental Advocates, the federal agencies must make a final decision by May

15, 2014, (subsequently extended to January 30, 2015, by mutual agreement of the settlement agreement parties), regarding whether or not Oregon has failed to submit an approved (without conditions) coastal nonpoint program. NOAA and EPA arrived at this timeline based on the original commitment Oregon made in a letter to NOAA and EPA dated July 26, 2010, that the state would address its remaining conditions by March 2013.

D. Adequacy of Forestry Riparian Management for Protecting Small, Medium Fish-Bearing Streams and Non Fish-Bearing Streams

Comment: Many commenters expressed the opinion that Oregon's existing riparian management practices and forestry laws were inadequate for protecting small and medium fish-bearing and non-fish bearing streams. When required, buffer requirements are minimal (e.g., 20 feet) and Oregon lacks buffer requirements for non-fish bearing streams altogether. One commenter reasoned that because riparian buffers are not required for non-fish bearing streams, they become a source of sediment for connected fish-bearing channels thus compromising the effectiveness of the overall system of riparian management in maintaining sufficiently low turbidity.

Commenters stated that the Oregon Forest Practices Act and other comparable forest practices have been widely criticized for failing to protect water quality and salmonid habitat (examples provided of such failures related to inadequate shade, poor large wood recruitment, lack of tributary protection, and unstable slopes). They also stated that Oregon's forestry riparian protection standards lagged behind those of their neighboring states, such as Washington and California. Commenters pointed to the National Marine Fisheries Services' determination that the Oregon Forestry Practices Act did not have rules in place to adequately protect coho salmon habitat. Commenters opined that the FPA did not provide for the production and introduction of necessary large woody debris to medium, small, and non-fish bearing streams and any required buffers under the rules were inadequate for preventing significant warming of streams.

A white paper analyzing the proposed O&C Trust and the Conservation and Jobs Act was noted as providing evidence of support for the need of more stringent programs to protect water quality in Oregon's coastal zone. A concern was raised that even where narrow buffer zones exist along river shores there were areas where those buffers were eliminated completely. The claim was also made that the Board of Forestry has not shown any intent to provide riparian protection for non-fish bearing streams, which were believed to make up the majority of coastal stream miles and flow into fish bearing streams.

A commenter discussed how restoring and maintaining productive aquatic habitat did not appear to be a common stated objective of Oregon programs that influence the management and use of riparian areas and it appeared that riparian corridors have been significantly degraded across large portions of the state's landscape. Other comments pointed to the RipStream study findings as evidence that the existing FPA buffers are not in compliance with water quality standards and the Clean Water Act. They stated that riparian management on private lands has not improved since.

Other comments pointed out other weaknesses in Oregon's existing FPA rules. For example, the rules do not protect non-perennial, or intermittent, streams, which are determined "by the State Forester based on a reasonable expectation that the stream will have summer surface flow after July 15." In addition, the commenter raised issue with the lack of required riparian management for seeps and springs as well.

On the other hand, a couple of commenters believed Oregon's existing Forest Practices Act and rules, combined with its voluntary efforts, were adequate for protecting forestry riparian areas. One commenter stated the Forest Practices Act and rules do provide the minimum requirement for developing large mature trees that can contribute wood debris to streams. They also asserted that voluntary efforts, such as discretionary placement of additional wood in the stream, help to further create large wood debris habitat that salmon need. In addition, they discussed other new voluntary practices are being implemented well among the forest industry, such as the retention of additional leave trees in near-stream areas, and targeted restoration of high-priority riparian areas that are lacking woody debris.

These commenters cited results from several recent Watershed Research Cooperative (WRC) studies to support their position that Oregon's existing forestry riparian management was adequate. For example, they state that that two of the three WRC studies indicate a positive fish response following timber harvesting and that the Hinkle Creek WRC study found that small debris provides shade to non-fish bearing streams.

In addition, a couple of commenters chastised NOAA and EPA for relying on much older studies, such as ODF's 1999 RipStream study and the 2002 ODF and DEQ Sufficiency Analysis, to support the federal agencies' claim that Oregon's needed greater protection of small, medium fish-bearing streams and non-fish bearing streams. They stated NOAA and EPA should have considered newer, more relevant research, such as the WRC studies. In addition, one commenter felt NOAA and EPA misinterpreted the RipStream study findings. They believed NOAA and EPA's description of the study's findings on page 8 in the proposed decision document did not align with the actual conclusions of the report.

Comment [EPA3]: Will want to review these comments.

Comment [EPA4]: same

One commenter also reflected that the criticism of the existing FPA and rules should be tempered against the evolving science and understanding of forestry riparian management. They site how former thinking that clean wood placement in streams was needed to improve instream fish habitat and increase dissolved oxygen, has now evolved to an understanding that large woody debris is needed to achieve these goals. In addition, the commenter states that while there used to be an emphasis on retaining large conifers along streams, that thinking has now shifted to reflect a new understanding of the benefits of riparian hardwoods as well and the importance of diversity in tree species within the riparian zone.

Sources: 15-G-2, 28-B-1, 30-K-1, 43-BBB, 55-P, 56-D-2, 56-E-1, 56-E-2, 56-E-3, 57-AAA, 57-BBB, 58-E-2, 58-H-1, 58-H-3, 58-H-4, 58-H-5, 67-D1, 67-D-2, 75-H, 77-H. 77-I, 77-BBB, 77-CCC, 77-DDD, 79-E, 79-G

Response: NOAA and EPA continue to find that Oregon needs to do more to protect riparian areas along small and medium fish-bearing streams and non-fish bearing streams. As discussed in more detail in the final findings document for Oregon's Coastal Nonpoint Program, there is a wealth of science, such as the recent 2011 RipStream study, that shows that Oregon's existing FPA riparian protection practices on private forest lands in the Oregon Coast Range, are not sufficient for meeting the cold water protection criteria for the state's temperature water quality standard.

A few commenters claimed the existing FPA practices, coupled with voluntary riparian protection efforts, are sufficient for protecting riparian areas. These commenters cited unpublished, preliminary results from the Watershed Research Cooperative's paired watershed studies that indicated changes in stream temperature along non-fish bearing streams was variable and that were was no significant

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change in downstream due to harvesting activities under the FPA. However, as NOAA and EPA discuss more fully in the final findings document, variation in stream temperature and overall net observed decrease in temperature decrease may be attributable to increased slash debris along the stream after harvest as well as a likely increase in stream flow post-harvest that could prevent an increase in temperatures and contribute to lower mean stream temperatures. DEQ evaluated the study results and concluded that temperature data from the Hinkle Creek and Alsea River paired watershed studies show that temperature increases downstream from the harvest sites for fish-bearing streams were very similar to the increases found in the RipStream study. Therefore, as stated in the final decision document, there may be other factors at play that make it difficult to draw any definitive conclusions about the adequacy of the FPA practices from their results.

NOAA and EPA do not believe the federal agencies have misinterpreted the RipStream study in the proposed findings document as one commenter claimed. In the proposed findings, NOAA and EPA stated,

> "A significant body of science, including: 1) the Oregon Department of Forestry's (ODF) Riparian and Stream Temperature Effectiveness Monitoring Project (RipStream)…continues to document the need for greater riparian protection around small and medium streams and non-fish bearing streams in Oregon. In its July 1, 2013, submission to the federal agencies, Oregon cited the RipStream study and acknowledged that there was evidence that forest practices conducted under the State's existing Forest Practices Act (FPA) rules do not ensure forest operations meet the State water quality standards for protecting cold water in small and medium fish bearing streams."

While NOAA and EPA did not specify which RipStream study they were referring to in the body of the proposed findings, the References section at the end of the document does provide the full citation for the three RipStream studies, one published in 2008 and two published in 2011. These RipStream studies assessed how the FPA's existing riparian protection practices affected stream temperature. In their RipStream publication, Groom et. al. (2011a) found that there was a "40.1% probability that a preharvest to postharvest comparison of 2 years of data will detect a temperature increase of >0.3 ºC". The state's stream temperature anti-gradation standard says that water temperatures cannot increase more than 0.3 ºC. Therefore, the researchers concluded that "[stream temperature] anti-degradation [standard] compliance may be a problem on private forestry lands in the Oregon Coast Range."[3]

The statements NOAA and EPA made in the proposed findings document about the RipStream study align with this conclusion. To address any apparent confusion regarding the federal agencies' interpretation of the RipStream study, NOAA and EPA have revised the final findings for Oregon's Coastal Nonpoint Program to further clarify the discussion of the RipStream study to include an in-text citations for the RipStream studies and provide a more in-depth discussion of the study's results.

As one commenter stated, the science around riparian buffer protection is evolving. That is true. NOAA and EPA continue to welcome and support scientifically rigorous studies to evaluate the effectiveness of Oregon's existing practices in protecting water quality standards and designated uses and to investigate alternative approaches that will provide greater protection, when warranted. However, just because the

[3] Groom, J.D., L. Dent, and L.J. Madsen. 2011. Stream temperature change detection for state and private forests in the Oregon Coast Range. Water Resources Research 47: W01501, doi:10.1029/2009WR009061.

science is continuously evolving should not prevent Oregon from taking action to provide better riparian protection when the current science clearly shows that the state's existing FPA practices are not meeting the protection of cold water criterion for the temperature standard. Employing a nimble adaptive management approach that allows the state to make adjustments and to identify when additional management measures are needed based on current science, is a core component of a state's coastal nonpoint program (See Section 6217(b)).

As a few commenters noted, Oregon's riparian protection standards for small and medium fish-bearing streams and non-fish bearing streams are not as strong as those for neighboring states like Washington and California. For example, Washington [****insert details]. In California, [**** insert details]. CZARA gives states the flexibility to develop a program that best meets their unique needs. Therefore, while Oregon does not have to adopt the same standards as its neighbors, NOAA and EPA encourage Oregon to look to Washington and California as potential models for the types of riparian protection practices it may wish to consider. These practices have already been instituted by the forest industry in Washington and California which have had to contend with similar topographies, weather conditions, and sensitive species.

Comment [AC5]: Alan and tech team…can you provide specifics here? We should site actual state regs/statute.

Finally, NOAA and EPA note that one commenter expressed concern that in some areas, even Oregon's current FPA buffer requirements were not being followed. While that may be the case, that is an enforcement issue. Under CZARA, how well a state is enforcing its existing policies and programs is not considered for coastal nonpoint program approval. (See the response to Section VI.C, Enforcement, for a fuller explanation).

E. Greater Protection of Forestry Riparian Areas Needed

Comment: Several commenters stated that Oregon needs to provide greater protection for forestry riparian areas along both fish and non-fish bearing streams. One commenter provided several examples of recommended buffer widths that the state may wish to adopt. For example, they mentioned that NMFS recommends no-cut riparian buffers ranging from 150-300 feet in width to protect salmonids. The larger buffer widths are for fish-bearing streams, while the smaller widths are more suitable for non-fish bearing streams. The commenter also stated the Northwest Forest Plan recommends similar buffer widths (300 foot no-cut buffers along fish-bearing streams and 150 foot no-cut buffers along non-fish bearing streams). The commenters stated that wider riparian buffers would ensure large wood recruitment, improve sediment and pesticide filtration, and provide sufficient tree basal area within the riparian zone to shade streams and protect cold water needed for salmon. As one commenter also asserted, the larger buffers would also provide greater protection from blow downs and ensure that if a few trees are blown down, enough would remain to still provide a functioning buffer.

In addition to greater protection of forestry riparian areas, commenters stated that riparian restoration was needed. They highlighted the important role large downed trees, or nurse trees, play in forest regeneration.

One commenter did express concern with adopting riparian buffers similar to the Northwest Forest Plan. They stated that when the Bureau of Land Management adopted the plan's buffers, it limited the amount of timber that could be harvested. The new buffer requirements necessitated three landings and two more harvest units to harvest the same amount of timber that used to be done with one landing before. Therefore, as the commenter stated, more restrictive riparian buffers leads to greater ground disturbance.

Sources: 20-B-1, 30-K-1, 48-I, 55-N, 56-E, 56-E-1, 56-E-2, 57-E-3, 58-E-4

Response: NOAA and EPA agree that Oregon needs to do more to protect riparian areas along small and medium fish-bearing streams and non-fish bearing streams. In the final decision document, the federal agencies acknowledge the Board of Forestry's ongoing rulemaking process that is considering improvements to the FPA riparian protections for small and medium fish-bearing streams, may help the state provide some of the protection needed. NOAA and EPA encourage the state to complete those rule changes as expeditiously as possible.

NOAA and EPA appreciate the recommended buffer widths commenters provided and will be sure to share these suggestions with the state for its consideration. CZARA does not require states to adopt specific buffer widths to have a fully approved coastal nonpoint program. Rather, the state has the flexibility to identify the type of buffer protection that works for them yet still will enable them to achieve and maintain water quality standards. NOAA and EPA continue to work with Oregon to make sure the state has a good programs and processes in place to provide the riparian protection needed.

As with implementing any best management practice, there are trade-offs to be made. In some limited circumstances, more restrictive riparian buffers may result in greater ground disturbance to harvest the same amount of timber, when implemented well, the benefits wider riparian buffers provide to protect water quality and designated uses can outweigh any potential adverse environmental effects.

Comment [AC6]: Does this make sense? Are we comfortable making this statement…can we substantiate it?

Finally, while Oregon should be encouraged to continue to restore forestry riparian areas through its voluntary Oregon Watershed Enhancement Board activities and other means, having specific restoration programs in place for forestry riparian areas is not one of the remaining issues Oregon needs to address to satisfy the condition related to additional management measures for forestry on its coastal nonpoint program. NOAA and EPA did not solicit specific comments regarding Oregon's program to restore forestry riparian areas.

F. Impacts of Strict Forestry Riparian Protection

Comment: A couple of commenters expressed concern about the impacts stricter riparian management would have on forestry operations. One commenter felt requirements for larger riparian buffer widths would only hurt the logging industry and drive up the price of lumber. Another commenter stated that any EPA and NOAA-proposed restrictions would limit the ability of private forest landowners to invest in watershed restoration efforts, including enhancements to forestry riparian areas. They felt additional restrictions would smother the forest sector's cooperative stewardship ethic and long-history of voluntarily adopting good riparian management and other forest stewardship practices.

Sources: 20-B, 79-D, 79-F

Response: NOAA and EPA recognize that wider no-cut riparian buffer requirements and strengthening other riparian management practices may slightly reduce the number of harvestable trees available to the timber industry in Oregon. However, many of the same timber companies are also successfully operating in Washington and California—states that already have stronger riparian protection requirements in place. Even though the timber industry must abide by stricter riparian protections in neighboring states, the industry still adopts voluntary practices that provide further protections and works with partners on watershed restoration activities in those states. For example….[can we include an example from WA or CA where the industry still has a "good stewardship ethic" and helping out with restoration or additional voluntary BMPs?].

Therefore, NOAA and EPA do not believe increasing buffer requirements within Oregon's coastal nonpoint management area will have a significant impact to the forestry industry in Oregon. Also, with more robust riparian protections in place, there will not be as great a need for the industry to invest in watershed restoration efforts. Riparian area and, as a result, water quality would be protected before damage occurs that would necessitate restoration. After all, it is typically more cost-effective to protect an area to begin with than to try to clean up a mess after it occurs.

G. Flexibility for Forestry Riparian Management Needed, Including Use of Voluntary, Incentive-Based Approaches

Comment: Rather than relying on strict regulatory approaches to better protect riparian areas on forest land, a few commenters advocated for more flexible, voluntary, and incentive-based approaches. The commenters recognized more could be done to protect riparian buffers, and thus water quality, salmon and other designated uses. However, they felt additional incentive-based approaches, combined with the existing Forest Practices Act rules, would be the best way to provide these additional protections and facilitate long-term wood recruitment and shade to support high-quality salmon habitat. Voluntary practices they recommended included the retention of additional leave trees near fish-bearing streams, the placement of large woody debris in streams, planting trees and other riparian restoration activities, and thinning riparian forests to levels that promote primary production in streams and the adjacent understory (primary production being important for salmon populations).

Sources: 75-F, 77-CCC, 79-D, 79-F

Response: NOAA and EPA understand and respect the need for states to be able to use flexible approaches in developing and implementing their coastal nonpoint programs. CZARA requires management measures to be backed by enforceable authorities. As NOAA and EPA describe in the *1998 Final Administrative Changes to the Coastal Nonpoint Pollution Control Program Guidance for Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990,*[4] this can either be through direct enforcement authority or through voluntary efforts, backed by enforceable authorities. If states chose a voluntary approach, as the guidance outlines, that states not only must provide a description of their voluntary programs but also meet other requirements including: (1) providing a legal opinion asserting they have suitable back-up authorities and demonstrating a commitment to use the back-up authority, when necessary; and (2) have program in place to monitor and track implementation of the voluntary program. Voluntary programs could play an important role in Oregon's Coastal Nonpoint Program, however, the state has not fully described its voluntary programs for forestry riparian protection or satisfied the other requirements needed to use voluntary programs to meet part of their CZARA 6217(g) management measure requirements.

H. Forestry Landslide Management

Comment: Some commenters acknowledged that landslides caused by logging practices, such as clear cutting on steep slopes, are a real problem in Oregon and additional management measures are necessary to address these impacts. It was noted that Oregon does not have sufficient programs to reduce landslide risk and control nonpoint pollution due to logging on private lands.

[4] http://coastalmanagement.noaa.gov/nonpoint/docs/6217adminchanges.pdf

Others expressed their disagreement with the federal agencies' recent decision and argued that the evidence provided by the federal entities was misleading, only focusing on "landslide density relationships" rather than considering the "total number of landslides triggered during major storms". If consider the latter, one would see that the "potential increases in sediment delivery to public resources from landslides...is proportionally small". It was recommended that EPA consider a broader scale view over longer timeframes to evaluate whether water quality and designated uses are impaired. In addition, it was argued that EPA has not offered objective evidence that additional management measures are needed to maintain water quality; the federal agencies have not produced any evidence that landslides resulting from forest management activities have caused exceedances in water quality or negatively impacted aquatic life.

Source: 61-A, 63-B, 67-B, 77-J, 77-K, 77-L

Response: NOAA and EPA continue to find that Oregon needs to do more to protect high-risk landslide areas from logging activities to ensure water quality and designated uses are not impaired. Based on the comments received, NOAA and EPA have revised the rationale in the final decision document to provide more specific scientific evidence to show the link between timber harvesting and landslide risk and how landslides increase sediment loads to nearby streams.

NOAA and EPA disagree that a wider landscape-scale approach to assessing landslide impacts would be appropriate. While the effects of a single landslide may be diluted when a landscape scale view is taken, the impact to a specific stream reach (or reaches), and the designated uses of that stream, are real and can be significant. It is still important to capture and consider these impacts when planning harvest activities so that landslide risks that can impair waterbodies can be minimized.

I. Forestry Road Management

Comment: One group commented that there is no program in place to control non-point pollution sufficiently to meet CZARA and management measures are needed to maintain water quality and protect designated beneficial uses due to logging impacts. Examples of logging roads and associated impacts to watersheds and habitat were noted by various commenters. Speaking to current forest practice rules, another group commented that "generic BMPs" are imposed and are not backed by relevant water quality data and so fail at protecting water quality and beneficial uses. The group added that existing rules for forest roads are vague and prioritize logging over protection of water quality. One argument stated that Oregon's road location rule, which only requires operators to minimize risk to streams rather than requiring them to avoid water quality problems, is not sufficient. Other examples given demonstrating the inadequacies of the current forest practices rules include how they are not designed to eliminate delivery of fine sediment or to ensure that delivery does not impair water quality and they do not require that existing, inactive logging roads or "legacy roads" be brought into compliance with water quality standards.

Another group made the argument that while NOAA and EPA have expressed their concerns about forest roads delivering sediment into streams and have requested that the state enact an inventory and reporting program for forest roads, they have not cited any sources supporting these concerns and have presented no basis for the request. The commenter contends that new rule revisions (2002 – 2003) and success under the Oregon Plan for Salmon and Watersheds were detailed in the State's submission and are evidence that the Oregon Forest Practices Act is working as it should and the Board of Forestry is committed to implement additional management measures for forestry roads as needed. They also note

that salmon stocks are recovering. The commenter also argued that while NOAA and EPA have expressed their concerns about forest roads delivering sediment into streams, they have not cited any sources supporting these concerns.

Source: 57-D, 57-I, 57-N, 57-O, 57-P, 57-R, 57-T, 57-U, 67-B, 75-D, 77-M, 77-N, 77-O, 77-P, 77-Q, 77-P, 77-Q

Response:

J. Impacts of Forestry Pesticide Application on Human Health, Drinking Water, and the Environment

Comment: Many commenters voiced concerns about the short and long-term impacts of pesticide and herbicide use associated with the forest industry in Oregon, especially using aerial spraying as a method of applying these chemicals. These commenters believed that Oregon coastal watersheds are not adequately protected from the use of these chemicals. Adverse impacts to drinking water, human health, salmon, amphibian and crayfish habitat, water quality, and property values, were among the list of concerns commenters raised. One commenter stated amphibians are particularly vulnerable because they have moist, permeable skin and unshelled eggs that are directly exposed to soil and water that could be contaminated with pesticides. Another commenter also discussed how certain chemical properties of herbicides allow them to persist in the environment and to eventually be carried downstream to fish. They stated that pesticides and herbicides, like atrazine, can bind to soil particles and then washed into waterways through surface runoff, sediment erosion, or groundwater transport. One commenter noted that is of particular concern because in Oregon, it is legal to spray herbicides, like atrazine, over dry channels. During wetter months, when the channels fill with water, atrazine, bound to the soil, can be carried downstream and affect fish.

A commenter also stated that not enough is known about the interactions of various pesticides and herbicides chemicals when mixed. They noted that synergistic effects of unknown components of pesticides could inhibit immune responses and pose long-term unknown issues.

Several commenters sited specific studies or personal observations to support their statements. For example, one commenter stated one finding of the report, *Oregon's Industrial Forests and Herbicide Use: A Case Study of Risk to People, Drinking Water and Salmon*, concluded there are known endocrine disrupting chemicals entering Oregon's drinking water sources and fish-bearing streams.

Other commenters described acute health impacts (e.g., headaches, breathing issues, etc.) immediately following spray events and more long-term health issues they contributed to pesticide exposure. One commenter reported that their drinking water system tested positive for glyphosate while another commenter, from the Triangle Lake area, stated that their urine and blood tested positive for 2,4-D and atrazine metabolites. Another commenter also relayed how people in Western Lane County were found to have low (high?) levels of insecticides in their blood. In the Triangle Lake area, a commenter stated that pesticide application records showed that over 20 tons of pesticides were applied in a three-year period. Commenters also reported seeing dead fish in streams after spray events and said that chemicals used in forest practices have been found in local streams.

Comment [AC7]: Jenny, your summary comment states low but that doesn't seem right. Should it be high?

Source: 2-C, 2-F, 2-G, 2-K, 2-J, 3-A, 3-B, 27-C, 28-C, 30-G, 30-P, 30-Q, 31-D, 35-L, 40-B, 42-F, 42-M, 42-R, 42-T, 46-E, 46-K, 46-O, 46-D, 46-E, 46-G, 48-F, 48-K,53-D, 54-D, 54-G, 54-F, 54-H, 55-M, 57-CF-A, 57-CF-B,

57-CF-D, 58-I, 59-A, 62-B, 62-C, 62-E, 69-B, 69-C, 69-D, 69-E, 69-F, 70-C, 70-D, 70-E, 70-G, 70-H, 70-J, 70-O, 72-B, 75-C, 76-A, 76-C, 76-D, 77-R, 77-S, 77-T, 83-M, 85-D, 85-E

Response: EPA and NOAA recognize that forestry pesticides are being observed in some drinking water and stream samples in coastal Oregon and that many citizens are concerned about adverse the public health and environmental impacts due to pesticide exposure. To better understand pesticide exposure, the Oregon Health Authority and other agencies are leading an Exposure Investigation to evaluate whether aerial application is affecting drinking water, surface water, food, and other resources. Additional research and monitoring is also needed to understand the potential impacts of pesticide use in Oregon. That is why, in the final decision document for Oregon's Coastal Nonpoint Program, NOAA and EPA have recommended Oregon continue to strengthen and expand its forestry pesticide monitoring efforts, especially within the coastal nonpoint program area. NOAA and EPA encourage Oregon to develop these more robust monitoring protocols in consultation with EPA and NOAA's National Marine Fisheries Service so that sound methodologies are selected to assess potential impacts to water quality and designated uses.

Comment [AC8]: Are we comfortable stating this?

Comment [AC9]: What area is this study? Is this only for the Triangle Lake area or more broadly? Is EPA involved?

Comment [AC10]: Revise and expand as appropriate to match final decision rationale language.

K. Adequacy of Current Forestry Pesticide Management Practices for Protecting Water Quality and Designated Uses

Comment: Many commenters expressed concern that Oregon does not have adequate management practices in place for the application of pesticides by the forest industry to protect water quality and designated uses. They cited specific studies and personal experiences of pesticide exposure to illustrate that current practices were allowing pesticides to impact human health and the environment. (See summery comment VI.A (Impacts of Forestry Pesticide Application) above.)

Commenters asserted that Oregon does not have an effective pesticide management program to protect groundwater and drinking water. Many commenters focused on the inadequate spray buffers for pesticide application. For example, commenters asserted that Oregon's existing spray buffers for the aerial application of pesticides, including the 60 foot no-spray buffer around fish-bearing streams, are ineffective at protecting water quality and designated uses, including drinking water; the 60 foot buffer is too small and non-fish bearing streams are not protected at all. For example, one commenter described that they observed narrow or non-existent buffers along streams that flow into the Siletz River where there are clear cuts to the banks and aerial spraying occurring over the cuts.

Several commenters noted that Oregon's spray buffer requirements, and many other pesticide management practices, were not as protective as neighboring states. Commenters felt Oregon needed larger spray buffers around waterbodies for the aerial application of pesticides and herbicides. One commenter also suggested a pesticide-free buffer was needed around certain land uses, such as schools. Another commenter expressed concern about herbicide spraying was allowed to occur in Lane County despite protection zone language and the Water Districts efforts to prevent application over the Clean Lake watershed (a drinking water watershed). Another commenter also asserted that additional research is needed to determine if aerial spraying of herbicides by the forest industry is a necessary method of application.

Commenters did not feel Oregon's existing spray buffers were large enough to protect against aerial drift, which they asserted was a common occurrence given the microclimates of the Oregon Coast Range. Commenters were concerned that aerial drift of pesticides from the application site could impact nearby organic farms, vineyard owners, natural forest land owners, members of the community,

streams, and drinking water sources. One commenter stated that although the Oregon Health Authority acknowledges that aerial drift can carry pesticides two to four miles from the application site, there is no monitoring of pesticide drift after application. Another commenter noted that glyphosate was detected in Jetty Creek, illustrating that legal spray buffers were not protective enough. A commenter suggested that EPA should require ODF, in consultation with DEQ, to exercise authority to review comments and require modifications of the written forest vegetation management plans when needed. A commenter also stated that additional management measures to provide increased protection for both fish and non-fish bearing streams during the aerial application of herbicides.

However, other commenters contended that Oregon's existing forestry pesticide management practices were adequate. They stated that pesticide applications must be licensed and, along with landowners, are already subject to stringent regulations and guidelines under the FPA and FIFRA. One commenter also noted that ODF has developed guidelines to provide further assistance implementing the FPA rules, including Forest Practice Rule Guidance for Chemical and Other Petroleum Products (2009). A few commenters asserted that EPA label requirements under FIFRA were sufficient. A commenter also noted that EPA has not revised the pesticide labels to reflect the restrictions that NOAA National Marine Fisheries Services' biological opinion on the pesticide labels says are necessary to protect ESA-listed salmon.

One commenter stated that water quality monitoring activities for non-fish bearing streams during and after spraying herbicides has shown no detrimental impacts to water quality. For example, one commenter cited a U.S. Geological Survey study (Kelly et. al, 2012) that looked at pesticide use in the Clackamas Basin. The commenter reported the study found that although low levels of pesticides were detected in some drinking water samples the potential threat to human health was negligible. The study also compared pesticide contamination from urban, forestry, and agriculture use and found that the forest land pesticides were rarely detectable in the McKenzie River, even though forest land accounted for the largest land use in the basin. In addition, a commenter also stated that Oregon continues to monitor for over 100 pesticides, which allows the state to identify potential problems with the aerial application of herbicides, if any arise.

Sources: 2-E, 2-I, 3-A, 27-C, 28-B, 30-G, 30-S2, 35-D, 35-E, 35-J, 42-H, 42-Q, 45-B, 46-C, 46-I, 46-D, 49-H, 54-B, 55-N, 56-F, 57-CT-B, 58-F, 62-B, 69-C, 70-C, 70-E, 70-J, 70-K, 70-L, 70-M2, 70-N, 76-C, 77-R

Response: NOAA and EPA recognize there is concern about the adequacy of Oregon's current spray buffers for pesticides and other pesticide management practices. Although a some research, such as Kelly et. al (2012) has shown that current pesticide management practices may not be resulting in adverse impacts to water quality and designated uses, this study was not conducted directly following a spray event so is not able to paint a full picture of pesticide exposure. Ex. 5 - Deliberative

Comment [AC11]: Compare with final rationale language and revise accordingly.

Ex. 5 - Deliberative

Ex. 5 - Deliberative

Although there is always room for states to continue to improve their pesticide management practices, for the purposes of coastal nonpoint program approval, NOAA and EPA are only concerned with the adequacy of the state's protective measures for Type N (non-fish bearing streams) during the aerial application of herbicides. The final decision document for Oregon's coastal nonpoint program lists several steps the state could take to provide better protection for these non-fish bearing streams.

Although CZARA allows each state to design a coastal nonpoint program that meets their own unique needs and circumstances, NOAA and EPA also encourage Oregon to look to its neighboring states for examples of more protective practices that may also be useful to implement during the aerial application of herbicides along Type N streams. As some commenters stated, Oregon does have smaller spray buffers for the aerial application of herbicides compared to neighboring states and could learn from neighboring states that have similar topography, weather conditions, and sensitive species. For example….[insert examples from other states or if included in final decision doc, note that it is discussed more fully there so we don't have to repeat ourselves.]

L. Inadequate Notification and Transparency by Forestry Industry When Pesticides Are Used

Comment: Several commenters expressed concern about the poor notification procedures and lack of transparency related to the aerial application of pesticides. For example, one commenter described one instance where aerial spraying occurred within their watershed without warning. Commenters stated that the public is not informed of the exact date when spraying will occur; only provided a six-month window of when it would occur is provided. They also asserted that the notification requirements were vague and that pesticide application records were not available to the public. A commenter stated that application records are only available to the State Forester when requested. Another commenter stated that the Oregon Forest Practices Act prohibits researchers, doctors, and the public from obtaining accurate information about the types and quantities of herbicides that are sprayed.

Sources: 40-C, 42-G, 42-J, 42-K, 42-L, 42-P, 42-S, 46-E, 46-L, 48-G, 48-M, 53-D, 54-G7, 70-M, 85-I

Response: When pesticides are being used, it is important for the public to be well informed about when and what types of pesticides will be used near their property. That is why, in the final decision document, NOAA and EPA have recommended that Oregon improve its notification processes and transparency for the aerial application of herbicides and other pesticides.

Comment [AC14]: Check with language in final rationale and revise as needed.

M. Inadequate Forestry Pesticide Monitoring

Comment: In addition to their general concern about pesticide use by the forest industry and inadequate spray buffers when pesticides are applied, several commenters expressed their concern about the inadequacy of Oregon's water quality monitoring efforts following aerial application of pesticides and herbicides on forestry lands. One commenter stated Oregon has no program to determine the presence of forestry pesticides in the air and resulting in drift and deposition onto surface waters and soils. Commenters gave many examples of how they believe drinking water, human health, and fish and wildlife have been impaired by aerial spraying.

One commenter noted without effective monitoring protocols, the state lacks data to prove aerial application is a problem and that improvements were needed. For example, one commenter stated there was no monitoring of aerial drift even though the Oregon Health Administration said chemicals could drift two to four miles. Another commenter also noted there was little to no coordination between DEQ and ODF on pesticide monitoring. A few commenters also questioned NOAA and EPA's praise of Oregon's Water Quality Pesticide Management Plan. They noted that while the state purportedly uses water monitoring data to develop adaptive management approaches, the state actually undertakes very little pesticide monitoring and that there is no evidence the state collects any data in coastal watersheds.

It was pointed out that while NOAA and EPA found state-level frameworks and actions sufficient for addressing pesticide water quality controls, none of the pilot monitoring programs supporting this finding occur in the coastal zone. A commenter also added that the agencies "improperly assume that, should riparian buffer standards for type N streams and monitoring programs within the coastal zone adhere to existing state laws and programs concerning water quality and pesticides, then Oregon's CNPCP would warrant approval." The commenter contended that existing state and federal laws do not sufficiently address a large portion of pesticide application activities and do not collect necessary pesticide application and risk data. Referring to Oregon's Water Quality Pesticide Management Plan, which has a component that relies on monitoring data, a commenter noted that the state does little monitoring of pesticides and there is no indication of data being collected in coastal watersheds. A commenter also expressed concern with the lack of timely coordination between DEQ and ODF on pesticide monitoring in a timely manner.

However, other commenters noted that the Board of Forestry specifically requires effectiveness monitoring and evaluation of the chemical rules which lay out how applicators should use pesticides. They state the rules are designed to ensure chemicals do not occur in soil, air, or waters in quantities injurious to water quality or the overall maintenance of terrestrial or aquatic life. A commenter also noted that that state has established pesticides from forest practices as a low priority in the EPA-approved Water Quality Pesticide Management Plan because pesticide monitoring for forestland has shown that pesticide concentrations are below the lowest benchmarks provided by EPA.

Source: 27-B, 27-D, 30-R, 30-S, 42-G, 42-H, 42-N, 42-O, 46-H, 48-H, 49-H, 49-I, 53-D, 53-H, 53-I, 54-E, 54-F, 54-G1, 57-II, 57-II4, 62-C, 62-F, 70-B, 70-F, 70-J, 77-R, 77-T and State Comments

Comment [AC15]: Hum. None of the other summary comments have addressed the state comments. May need to add state comments to other sections?

Response: In order to employ an effective adaptive management approach to pesticide use, as Oregon has proposed, it is important for the state to have a robust pesticide monitoring and tracking program in place that includes timely sampling (e.g. right after aerial application) and monitoring sites throughout the coastal nonpoint area. Although some monitoring studies have not found herbicides at harmful levels, other research has (see above responses). Therefore, as discussed more fully in the final decision document, NOAA and EPA believe Oregon would benefit from improved pesticide monitoring, especially expanding its pilot Pesticide Stewardship Program to include several sites within the coastal management area.

Comment [AC16]: Compare to final lang. in decision doc and revise as necessary.

N. Inadequate Forestry Pesticide Monitoring

Comment: In addition to their general concern about pesticide use by the forest industry and inadequate riparian buffers when pesticides are applied, several commenters expressed their concern about the inadequacy of Oregon's water quality monitoring efforts following aerial application of pesticides and herbicides on forestry lands. One commenter stated Oregon has no program to determine the presence of forestry pesticides in the air and resulting in drift and deposition onto surface waters and soils. Commenters gave many examples of how they believe drinking water, human health, and fish and wildlife have been impaired by aerial spraying.

One commenter noted without effective monitoring protocols, the state lacks data to prove aerial application was a problem and improvements were needed. For example, one commenter stated there was no monitoring of aerial drift even though the Oregon Health Administration said chemicals could drift two to four miles. Another commenter also noted there was little to no coordination between DEQ and ODF on pesticide monitoring. One commenter also questioned NOAA and EPA's praise of Oregon's

Water Quality Pesticide Management Plan. They noted that while the state purportedly uses water monitoring data to develop adaptive management approaches, the state actually undertakes very little pesticide monitoring and that there is no evidence the state collects any data in coastal watersheds.

It was pointed out that while NOAA and EPA found state-level frameworks and actions sufficient for addressing pesticide water quality controls, none of the pilot monitoring programs supporting this finding occur in the coastal zone. A commenter also added that the agencies "improperly assume that, should riparian buffer standards for type N streams and monitoring programs within the coastal zone adhere to existing state laws and programs concerning water quality and pesticides, then Oregon's CNPCP would warrant approval." The commenter contended that existing state and federal laws do not sufficiently address a large portion of pesticide application activities and do not collect necessary pesticide application and risk data. Referring to Oregon's Water Quality Pesticide Management Plan, which has a component that relies on monitoring data, a commenter noted that the state does little monitoring of pesticides and there is no indication of data being collected in coastal watersheds.

Source: 30-R, 42-G, 42-H, 46-H, 49-I, 57-II, 70-F

Response:

O. Forestry Clear Cuts

Comment: Commenters expressed their concerns with the amount of clear cutting that occurs in Oregon. They disagreed with the FPA rule which allows up to 120 acres of forest to be clear cut and stated that the rule did not consider the cumulative impacts of multiple clear cuts. Commenters discussed how clear cutting impacts water quality. It leads to increased sediment runoff and is typically followed by pesticide and herbicide applications that also runoff to nearby waterways. They noted that increased sediment loads lead to the loss of fish spawning habitat and that toxics from pesticides and herbicides can also impact aquatic and human health. Commenters reflected that Oregon's lack of riparian buffers made the impacts of clear cutting greater since adequate buffers were not left to help filter sediment and pesticides from runoff before reaching waterways. In addition, commenters were concerned with clear cutting on steep, erosional slopes, which contributes to landslide problems and further impacts water quality. One commenter argued that clear cutting is not sustainable and Oregon needs to practice sustainable forestry. Commenters provided examples of clear cutting in Oregon's coastal area such as: extensive clear cutting in riparian areas, including waterways that provide drinking water; clear cutting on steep slopes with erosive soils; and clear cutting that has occurred in areas within designated spotted owl sites and high-risk areas.

Source: 12-A, 40-A, 42-D, 43-D, 53-F. 75-B, 75-C, 75-D,

Response: NOAA and EPA recognize that clear cutting, if not managed well, can have adverse impacts to water quality and designated uses. That is why NOAA and EPA placed a condition to develop additional management measures for forestry on Oregon's program that specifically require the state to provide greater protection of riparian buffers around small and medium fish-bearing streams and non-fish bearing streams, for the protection of high-risk landslide areas, and greater riparian protections during the aerial application of herbicides along non-fish bearing streams. These additional management measures will help protect water quality and designated uses from the impacts of clear cutting. The state has failed to address these additional management requirements to date. Therefore, NOAA and EPA find that the state has failed to submit a fully approvable coastal nonpoint program under CZARA. The final findings document recommends actions Oregon can take to address these additional

management measure requirements and thus help protect coastal water quality from adverse impacts associated with clear cutting.