Appendix J

Agency Correspondence

Forest Service Review of Draft Design Report for Index-Galena Road Flood Repair, Mile Posts 6.4 to 6.9 - April 15, 2011 Letter

This Page Intentionally Left Blank

United States Department of Agriculture | **Forest Service** | **Mt. Baker-Snoqualmie National Forest, Skykomish Ranger District** | **P.O. Box 305, Skykomish, WA 98288, (360) 677-2414**

File Code: 1950, 2730
Date: April 15, 2011

Steve Dolde, P.E.
Snohomish County Public Works
3000 Rockefeller Avenue, M/S 607
Everett, WA 98201

Re: Forest Service review of Draft Design Report for Index-Galena Road Flood Repair, Mile Posts 6.4 to 6.9

Dear Mr. Dolde,

Per your request, Forest Service resource staff reviewed Snohomish County Public Works' Draft Design Report for the proposed repair and/or relocation of a flood damaged segment of Snohomish County's Index-Galena Road, from M.P. 6.4 to 6.9. The Draft Design Report compares advantages and disadvantages of the various alignment alternatives, from both a constructability and environmental perspective, as well as the costs. I believe that the Draft Design Report presents enough information to the multiagency group to select a preferred alternative (the Lower Alignment) that can be carried forward for site-specific analysis, as required by NEPA. A Forest Service interdisciplinary team discussed the various resource considerations in a conference call on March 31, 2011, and our comments on the Design Report and the Forest Service's preferred alternative are included as an attachment to this letter.

The Forest Service supports restoring the Index-Galena roadway's connectivity for direct public access to the North Fork Skykomish River watershed from U.S. 2. The Forest Service supports Lower Alignment Option 2, as it would minimize the area of ground disturbance, but we acknowledge and accept that a design somewhere between Lower Alignment Options 1 and 2 (IG-3 and IG-4) is more likely as more geotechnical data is gathered and the design progresses. We prefer that the design maximizes the use of retaining walls to the extent practical, and uses the narrowest roadway width that meets AASHTO standards to ensure motorist safety. These design considerations are needed to minimize the footprint of the relocated road prism and disturbance to forest vegetation, and reduce effects on riparian and aquatic habitat. It is our understanding that findings of site-specific resource and geotechnical surveys, and environmental analysis would ultimately determine the final location and utilization of retaining walls and reinforced slopes for the preferred Lower Alignment.

The Index-Galena Road is a direct and vital transportation link to the upper North Fork Skykomish River area, both for National Forest administrative and public recreational access, so the Forest Service supports repairing (and relocating out of the floodplain) the damaged road section for various reasons:

1. Forest recreationists and recreational property owners who live west of Index are forced to drive approximately 42.5 miles (10.5 miles on gravel road) to reach the Galena area at the Silver Creek/North Fork Skykomish confluence, via U.S. 2 and the Beckler River Road (Forest Road 65) over Jack's Pass. Aside from the inconvenience

and additional fuel consumption and emissions, this extended detour presents a safety risk to the public due to the increased drive time exposure and potential hazards of traffic and road conditions.

2. Forest Road 65 over Jack's Pass is a single-lane gravel road with turnouts, and has steep mountain grades and switchbacks. Although we appreciate that County Public Works has agreed to perform road maintenance to address additional wear and tear, this road is not designed to safely accommodate increased passenger car traffic that was displaced from the Index-Galena Road.
3. The Forest Service's Troublesome Creek and San Juan Creek campgrounds cannot be fully utilized by campers who drive motor homes or pull trailers, due to the inconvenience and hazard of driving the steep narrow grade over Jack's Pass.
4. The Forest Service's timber sale planning and administration is hampered due to adverse log haul over Jack's Pass from the North Fork Skykomish drainage. Some harvest units from our SkyForks Thin timber sale were dropped for this reason. Also, watershed restoration projects, and road maintenance or decommissioning contracts are more expensive to implement due to the detour.
5. Since the washout, response times have increased for emergency services, such as vehicle accidents, search and rescues, and fire suppression, due to the long detour.
6. Reestablishing the connectivity of the Index-Galena Road is important for providing an alternate access route into the North Fork Skykomish and upper Beckler River watersheds in case a major flood event were to wash out the Beckler River Road.

I am looking forward to working closely with County Public Works, State DOT, and Federal Highway Administration on the upcoming environmental studies and arriving at a design which is the most environmentally sensitive, meets our mutual objectives, and provides a safe, reliable roadway for the public. We are interested in reviewing the design and plan-in-hands as the project progresses. If you have any questions about our attached comments, please contact Eric Ozog, the project liaison for the Forest Service, at 360-691-4396.

Sincerely,

/s/ Joseph R. Neal
JOSEPH R. NEAL
District Ranger

Forest Service Comments – April 15, 2011

February 2011 Draft Design Report

Index Galena Road Flood Repair M.P. 6.4 to M.P. 6.9

General Comments

Overall, the level of work conducted so far in order to make an informed decision about the hazards and performance of the various route locations is commendable. The reasoning behind the Draft Design Report's preferred route (Alignment IG-3) seems sound and without serious or obvious flaws.

1. Road standard: It is apparent that the standard of the pre-existing route is lower than the current county standard for this class of road. If we understand correctly, the new route would meet the current standards with certain deviations (reference Table 1, Page 14, and Pages 15 and 16). In essence this results in a new road that is wider and presumably straighter than the current/former roadway. We recognize that it is fairly late in the processes to make this point, and that this may have already been addressed to some degree resulting in the current design and deviations stated, but is this higher standard for the new alignment required and still desired? We suggest checking if there is already an existing low-volume road standard from FHWA or other applicable agency that can be adopted, which will narrow the roadway and perhaps fit it better/tighter to the topography. Something similar was done with King County on the Middle Fork Snoqualmie Road, which may have been designed by FHWA.

2. Removal of existing road: Decommissioning provisions for existing roadway sections need to be more specific. It is clear that pavement and debris will be removed, but what about the associated embankment? We recommend that the embankment be removed to the level of the adjacent floodplain/natural ground elevation.

3. CMZ encroachment: As you may be aware, not all channel migration zone (CMZ) hazard zone designations are equal. As a result, it would be instructive to know how much (in lineal feet?) of the roadway encroaches within the CMZ and which CMZ zone applies (i.e., Historic Migration Zone, Avulsion Hazard Zone, or Erosion Hazard/ geotechnical setback Zone).

4. Geotechnical studies: We encourage additional geotechnical investigation of the lower alignment. There are still several design challenges, especially with regards to construction of steepened slopes and walls, but also with construction in the lacustrine ("blue-clay") and landslide deposits (Qvrl and Qls).

5. Cultural Resources: Field surveys will ultimately determine the true potential of the project to effect cultural resources. At this stage in the process, the assumptions about the potential to effect cultural resources has to be based on the existing Forest Inventory Design, which determines areas of high, medium, and low probability to encounter cultural resources, based on indicators like slope, distance from water, and transportation corridors. There is a potential to encounter prehistoric sites in areas of less than 15% slope on intact landforms on either side of the confluence of tributaries flowing into the North Fork Skykomish River. There is a potential to encounter historic sites near historic transportation corridors. There is a potential to discover culturally modified trees throughout the project area.

6. Wildlife Habitat: All of the proposed alignment alternatives would cause an adverse impact to marbled murrelet critical habitat and would remove nesting habitat for the marbled murrelet and northern spotted owl. There would be other potential impacts to non-ESA Forest Service Sensitive and Management Indicator Species due to the loss of overstory habitat (forest), which will need to be considered in the analysis. There would be no net loss of grizzly bear core habitat among the realignment alternatives as the old road prism would be decommissioned.

7. Wild and Scenic River: We understand that the preferred lower alignment moves the road out of the floodplain, which is beneficial, but one concern from a river management perspective is the visual impact of the proposed walls/cutslopes, as viewed from the river. No formal Section 7a WSRA is required from the Forest Service, however, we do need to conform with the Mt. Baker-Snoqualmie Forest National Land and Resource Management Plan (LRMP) as much as possible. In the LRMP the North Fork Skykomish River is a Recommended Recreation River, so project effects on the river's outstandingly remarkable values will need to be considered.

8. Visual Resources: This scenic roadway, once it's repaired and paved, will be used by many "recreationists": sightseers, campers, wilderness hikers, etc., so the visual (aesthetics) of the roadway should be a concern. If the lower route is chosen, which could involves large retaining walls and reinforced slopes, then these proposed design features should be designed with aesthetics in mind. Techniques such as colored and/or textured concrete or rock gabion walls should be considered. Also, the type of guardrail used, if needed, should be of the weathering steel type as we have been using along U.S. Highway 2. Also, retaining a few trees and shrubs in critical areas, as well as earth berming and rock boulders, could be used to naturalize the appearance of the proposed road.

9. Recreation Access: There is a need to maintain the existing road access to the river for launching rafts and fishing, and to dispersed recreation sites in the vicinity of Trout Creek. Access to the river and dispersed campsites can potentially be cut off in any of the proposed alternatives, so we recommend mitigation measures to construct or maintain access and/or parking at these sites as a component of the project.

10. Using native plants for revegetation: Native plant materials should be used that are grown from stock collected from or as close as possible to the local watershed (the North Fork Skykomish), and even more important, close to the elevation of the restoration site (below 1,000 feet). Once it is determined which species are needed for revegetation (these should be species that naturally grow in the immediate vicinity of the mitigation site, and would be expected to grow at the site if the area had not been disturbed), then the Washington State Department of Natural Resources website for Washington tree seed transfer zones can be referenced to determine which seed zone is appropriate for this site. We suggest contacting the County's Conservation District or a local commercial native plant nursery if they have the appropriate species from the local seed zone.

11. Consistency with Northwest Forest Plan: According to the Northwest Forest Plan land allocations, none of the proposed road realignment alternatives would be within Late Successional Reserve (LSR) habitat (at its closest point, LSR begins approximately 1/3 mile upslope to the southeast). As the Draft Design Report correctly states, the project would be within the "Matrix" merged land allocation (where timber harvest can occur). However, there would be constraints to protect Riparian Reserves. We will provide more detail on the Forest Plan land allocations' standards & guidelines as we begin the NEPA process. The most restrictive allocation is Riparian Reserves, which will encompass large parts of the project area (the riparian reserve boundaries should be checked in GIS to quantify the area impacted). Using the GIS coverage of Plant Association Groups (PAG), the project area is in PAG 1910 (Western Hemlock Moist Swordfern), which correlates to an 185-foot average site potential tree height and 370-foot (slope distance) riparian reserve zone on each side of fish-bearing streams, and an 185-foot riparian reserve zone on each side of permanent flowing non fish-bearing streams.

    According to NW Forest Plan standards & guidelines for Riparian Reserves, the project should be designed, operated and maintained to attain Aquatic Conservation Strategy (ACS) objectives, and avoid adverse effects that retard or prevent attainment of ACS objectives. New easements can be granted and existing easements can be adjusted to eliminate adverse effects that retard or prevent attainment of ACS objectives. An ACS analysis should be done as part of the NEPA effort (we will provide a format). For the planned reroute, standards & guidelines for roads management to attain ACS objectives are: minimize locating the road in Riparian Reserves, minimize the disruption of the natural hydrologic flow path, restrict sidecasting, and avoid wetlands entirely. Meeting these standards & guidelines will be challenging, but the benefits that the realignment would have on aquatic and riparian habitat over the existing condition, including mitigation/reclamation of the damaged road prism (which would help restore riparian reserve habitat), can be assessed in the ACS analysis.

Forest Service Preferred Alternative (IG-4, Lower Alignment Option 2):

- Geotechnical. The lower alignment (IG-3/4) is the best alignment option from a geotechnical perspective; our geotechnical engineer concurs with the conclusions in the

design report. Choosing between Option 1 (IG-3) and Option 2 (IG-4) is less certain. While IG-4 appears to be better given the smaller foot print and increased use of structural reinforcement, it is unclear whether the advantages would outweigh the increased cost. Further geotechnical investigation and analysis (as proposed) will refine these issues and the feasibility of treatments suggested in the design report. This should result in a blended alternative where IG-3 and IG-4 will converge toward a single best alternative.

IG-3/4: Lower Alignment, L= 5,020 ft
Both options:

- There are concerns with 1,000 feet of construction in glacial lacustrine deposits. Presumably a more careful design and further subsurface investigation will be targeted for these locations. Subsurface drainage measures beyond the permeable ballast technique indicated should be considered. Walls placed on these deposits (if any) should consider assessing stability against seismic loading, even where mechanically stabilized earth walls (MSEW) and reinforced soil slopes (RSS) are considered. It appears that the design report indicates that seismic loading does not need to be accounted for the global stability of the reinforced structures.
- Shallow groundwater and dispersed surface water flow through permeable (rock ballast) fill is a good idea, but is it practical/ feasible? If not, a proposed average drainage spacing of ~ 500 ft seems too wide. More ditch relief pipes may be needed and are either advised or should be checked in a final field review.
- In general, the location along the toe of the slope favors deposition (rather than initiation or erosion/transport) of slope movements and erodible surface deposits.

IG-3 Option 1: This is more conventional construction and probably easier to do correctly (for example, it avoids the possibility of pushing to put the wrong type of wall on a soft foundation).

IG-4 Option 2: A good solution if implemented correctly, but cost will likely limit the amount of structure placement. Also consider that structures have a design life and require some degree of maintenance.

It would be acceptable for the two options to converge towards one reasonable and feasible alternative through the development of the design and further geotechnical assessment. Both options should seek to steepen slope angles through use of select material (I.E. shot rock, etc.) and/or reinforcement in order to reduce the footprint and the length of fills and exposed cutslopes.

- Soil and Watershed Resources. Lower alignment IG-4 is the preferred alternative. Reasons being that this option provides lowest risk of effects to soil and watershed

Resources. Alignment IG-4 has the smallest roadway footprint with the least amount of soil and vegetative impacts within the riparian reserve and direct impacts to stream channels. While the upper alignment does impact less stream channel and wetlands, the total acreage required for the roadway is double that of the preferred alternative through riparian reserve and old growth areas. Only a portion of the alignment would remain in the CMZ, which would effectively remove the road from further potential impacts due to high water events in the N. Fork Skykomish River. The landforms are relatively well known along the lower alignment, providing the least uncertainty in design as well as the least risk to future mass wasting when compared to the upper alignment.

IG-3 Option 1. This option would impact approximately 9.5 acres of riparian reserves and approximately 900 linear feet of stream channel. This option would get the majority of the roadway out of the CMZ reducing the risk of impacts to the river or roadway during high water events in the N. Fork Skykomish River. Traditional road fill with some retaining walls gives this option the greatest footprint of the lower two options.

IG-4 Option 2. This option would impact 6.3 acres within the riparian reserve and 740 linear feet of stream channel. Wetland areas impacted are the same for both of the lower alignments, at 30,000 square feet. The reduction in acres of riparian reserves and lower impacts to stream channels is due to more retaining walls effectively reducing the roadway footprint by 3.2 acres compared to Lower Option 1. The landforms which the roadway would cross are relatively well known, reducing the risk for mass wasting.

- Cultural Resources. Lower Alignment IG-3 has the greatest potential to affect cultural resources, while IG-4 has less of a potential to affect cultural resources due to its smaller footprint area. Lower alignment IG-4 appears to be the best compromise due to less area of ground disturbance.

- Wildlife. Lower alignment IG-4 would have the smallest footprint of the proposed action alternatives, thus less disturbance of forest vegetation and wildlife habitat. Also, IG-4 would probably need the least amount of maintenance, with associated reduced disturbance to wildlife habitat, over time.

- Fisheries. Moving the road farther from the river, but also having less ground disturbance is preferred, in order to retain large trees that may someday recruit to the river. Lower alignment IG-4 appears to be the most favorable, but only if the design is successful and the walls do not fail. As fishery resources are affected by sedimentation and riparian impacts, a blended alternative between IG-3 and IG-4 may be the most successful.

- Botanical resources. Based on what we know at this point, lower alignment IG-4 would be the best of the action alternatives because there is a lower likelihood of impacts to botanical resources, due to less ground disturbance with this option than with alternatives IG-3 or IG-5. This alternative also impacts the least old-growth - 3.9 acres in the stand year of origin 1508 - than alternative IG-3 or IG-5. Without botanical survey information, alternative IG-3 is not as good as alternative IG-4, because there is a higher likelihood of impacts to botanical resources, since there is more ground disturbance with cuts and fills rather than using more retaining walls. In addition, IG-3 impacts more old-growth - 6.1 acres in the stand year of origin 1508 - than alternative IG-4.

- Wild & Scenic River and Visual Resources. From a river management perspective, there are benefits to moving the roadway away from the river, as impacts to free flow and the banks of the recommended recreation river would be reduced. There would likely be visual impacts of proposed walls and cutslopes, when viewed from the river. Using colored and/or textured concrete or rock gabion walls can mitigate visual impacts. A visual analysis should be done to determine effects as viewed from the river

IG-1 (No Action/Decommissioning Mitigation):

- This alternative would not meet the purpose and need of providing access to the cabin owners, campgrounds, emergency responders, and other forest users.
- We request more specifics on decommissioning standards and provisions as stated above. The damaged embankment should be removed to the adjacent natural surface floodplain elevation.
- The effects to soil and water resources would be limited to in-channel work required to remove the original roadway material from the river channel.
- There would be little to no potential to affect cultural resources.
- This alternative would have the least impact to wildlife resources as no suitable marbled murrelet nesting habitat would have to be removed.
- Although there would be temporary sedimentation by removing the old road prism (which can be mitigated during low flow periods), removing the damaged road and asphalt from the river would have a net benefit on the fisheries resources/aquatic habitat.
- This alternative would have the least impact from a botanical perspective.
- Decommissioning the damaged road prism would benefit the free-flowing characteristics of the recommended recreation river, but public access to river rafting put-in sites could be reduced. Visual quality would be enhanced by removing the damaged road prism.

IG-2 (Reconstruct on Existing Alignment):

- There are significant concerns with geomorphic effects of this alternative. The authors of the design report seem to concur with this.
- If this alternative is seriously considered for detailed study, then analysis should integrate maintenance and periodic reconstruction and storm damage repair costs. Over the life span of the route, it is expected that this might be recognized as the most costly alternative. Further, if climate change is considered, this may be the most risky alternative (as would any road construction within an active channel migration zone).

- The effects of this option to soil and water resources would be considerable and was thus not reviewed in detail. Effects from this option would primarily be due to encroachment of the roadway into the active river channel causing bank hardening, loss of CMZ, and continued retardation of riparian reserve function.
- There would be little to no potential to affect cultural resources.
- This alternative would have the least impact to wildlife resources as no suitable marbled murrelet nesting habitat would have to be removed. As the existing road alignment would be far enough away from suitable habitat, there would not be habitat disturbance from all activities associated with project construction, including long-term maintenance and operation.
- There would be an adverse effect on the fisheries resource and habitat due to reconstructing and armoring a road prism that would occupy an active channel of the river, along with long-term maintenance impacts.
- Reconstructing the road in this location would have a very high likelihood of washing out again, causing additional resource damage, and therefore is not recommended from a botanical perspective (as well as other resource areas).
- There would be adverse effects to the values of the recommended recreation river (such as impacts to free-flow), and impacts to visual quality.

IG-5: Upper Alignment (L= 7,675 ft)

- It is unclear how much of the alignment would be in glacial lacustrine (Qvrl) or landslide (Qls) deposits. However, relatively deep soils along steeper slopes with no break immediately downslope are problematic. Areas between Stations 47+50 to 52+50; 68+00 to 69+50; and around 75+30 are immediately upslope of landslide features. Boring B-11 (downslope from 75+30) looks particularly concerning. Note that while B-11 is between the upper and lower alignments; the lower alignment is down on the flats at this point.

Comparison between lower (IG-4) and upper (IG-5) alignments:

- It is difficult to judge which alignment is preferred (or worse) with regards to debris flow channels and/or alluvial fans. Both cross these features along their lower ends where depositions (and potential channel shifts) have occurred. However, the lower alignment is at or near the distal ends, where the ground is flatter and erosive energy is expected to be lower.
- Compared to the lower alignment the upper alignment is 2,600 feet longer (50%), located along a low mid-slope with steeper slopes, but without obvious material advantages. Often steeper slopes consist of harder materials (shallower soils and more rock), but the upper alignment has numerous relatively deep surficial (soil/glacial) deposits. The increased length does not appear to be favorably offset by better geotechnical conditions.

- An unknown amount of upper alignment IG-5 would be located within the riparian reserve. However, this option would impact the greatest amount of forested lands. Wetland impacts are the least of the new alignment options, at 15,000 square feet. This

option has the highest level of risk due to unknown geotechnical requirements. The alignment crosses through unstable landforms for which the design does not have definitive solutions for. More extensive geotechnical investigations would need to occur to ensure that the road and hill slopes would be stable. The disturbance of unstable ground increases the potential for landslides and subsequent sedimentation in downslope wetland areas and the N. Fork Skykomish River.

- The upper alignment has the least potential to affect cultural resources.
- This alignment would cause the greatest disturbance to the surface and forested vegetation, and remove the most old growth trees and marbled murrelet nesting habitat, thus this alternative is not recommended.
- This alignment moves the road the farthest from the river, which is desirable for fisheries habitat, but the greater amount of ground disturbance can affect fishery resources from sedimentation and removal of riparian habitat.
- The most likely place to find rare plants is in the immediate riparian area and in old-growth habitat. This alternative is not preferred because it would impact more old-growth habitat (8.8. acres in age class 1508) than both of the lower alignments.
- As with the lower alignments, there are benefits from moving the roadway away from the river, as impacts to free flow and the banks of the recommended recreation river would be minimized. However, due to the increased amount of ground disturbance on steeper, unstable slopes, benefits could be reduced if the new road prism failed. There would potentially be a greater impact to visual resources due to proposed walls and cutslopes (as more acreage would be disturbed for this alignment), although the somewhat longer distance of the upper alignment from the river could potentially provide a visual buffer.

Forest Service Interdisciplinary Team Members:

Bill Shelmerdine, geotechnical engineer
Andy Bryden, hydrologist
Carl Burdick, archeologist
Sonny Paz, wildlife biologist
Karen Chang, fisheries biologist
Laura Potash Martin, botanist
Greta Movassaghi, wild & scenic rivers specialist
Mike Miller, landscape architect
John Robinson, recreation
Eric Ozog, realty specialist