Endangered Species Act - Section 7
Consultation

BIOLOGICAL OPINION

West Fork Dairy Creek (Soupy Mud) Erosion Repair
Nehalem Highway
Washington County, Oregon

Agency: Federal Highway Administration

Consultation Conducted By: National Marine Fisheries Service,
Northwest Region

Date Issued: September 22, 2000

Refer to: OSB2000-0231

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I. BACKGROUND

On September 22, 2000, the National Marine Fisheries Service (NMFS) received a request from the U.S. Army Corps of Engineers (COE) for Endangered Species Act (ESA) section 7 formal consultation for the West Fork Dairy Creek (Soupy Mud) erosion repair project (Corps No. 2000-862). The project will repair the erosion along the Nehalem Highway (Highway 47) at milepoint 74.8, located about 1.5 miles north of the Sunset Highway in Washington County, Oregon. The road shoulder along West Fork Dairy Creek is undercut and is endangering the road. The project applicant is the Oregon Department of Transportation (ODOT). The ODOT has designed the project and will construct the project with maintenance staff. The project is funded from the ODOT maintenance budget, which uses state tax dollars. The Federal nexus for the ESA consultation is the COE regulatory authority under section 404 of the Clean Water Act.

The West Fork Dairy Creek is a tributary of the Tualatin River. The dominant land use upstream of the project area is forestry. The watershed has been logged intensively in the past 10 years. The Soupy Mud project includes bank reshaping, installing an erosion control mat, and placing large boulders along a 85-foot long portion of the west bank of the West Fork Dairy Creek. The existing slope will be laid back to 1:3 and revegetated with native shrubs and trees. This work is projected to take two to three days and will occur during the in-water work period (July 1 to September 30) of 2000.

The effects determination was made using the methods described in *Making ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NMFS 1996). The COE/ODOT determined that the proposed action was likely to adversely affect Upper Willamette River (*Oncorhynchus mykiss*) steelhead. The Upper Willamette River (UW) steelhead was listed as threatened under the ESA on March 25, 1999 (64 FR 14517). Critical habitat was designated on February 16, 2000 (65 FR 7764) and protective regulations were issued under section 4(d) of the ESA on July 10, 2000 (65 FR 42423).

This biological opinion (Opinion) is based on the information presented in the biological assessment (BA) and the result of the consultation process. The consultation process has involved a site visit, and correspondence and communications to obtain additional information and clarify the BA. As appropriate, modifications to the proposal to reduce impacts to the indicated species were discussed and enacted. This has included revisions to the original design including a reduction in the amount of riprap proposed, more plantings, and leaving a large tree on the streambed.

The objective of this Opinion is to determine whether the action to stabilize the site at Soupy Mud is likely to jeopardize the continued existence of the UW steelhead, or destroy or adversely modify critical habitat.

II. PROPOSED ACTION

The Soupy Mud project includes bank reshaping, installing an erosion control mat, and placing large boulders along a 85-foot long portion of the west bank of the West Fork Dairy Creek. The existing slope will be laid back to 1:3 and revegetated with native shrubs and trees. This work is projected to take two to three days and occur during the in-water work period (July 1 to September 30) of 2000.

Disturbance to the wetted channel will be minimized. Summer low flows will allow most of this work to be completed in the dry. An excavator will access the project from the top of the west bank only. This machinery is projected to impact an area of 50 feet by 20 feet, which currently contains shoulder gravels and blackberry brambles. Rock will not be dumped into the channel. The excavator on the top of the bank will lower the rock to the base of the bank. No trees will be removed. Existing downed trees and root wads in the stream will not be removed or moved.

Prior to any work, sediment mats and biofilter bags and/or sand bags will be installed to control sediment movement during construction. The sediment mats will be placed in the streambed at the downstream end of the project area. Biofilter and sand bags will be secured to the toe of slope, progressing from the upstream end of the project and continuing to downstream of the project. Sand bags would only be used in those portions of the stream with deep water (> ten inches) where biofilter bags would not be as effective. The sediment mats and biofilter bags will remain in place during project construction, and will be removed carefully by hand after work has been completed.

An irregular toe will be created by staggering the placement of large boulders at the base of the work area. A shallow toe trench (less than one foot depth) will be excavated at the base of the bank to seat the boulders. An excavator sitting on the top of the bank will dig the toe trench. The toe at the upper end of the project will be placed in the active channel. The lower portion of the project area has a shallow, cobble bank that will probably be above the water level during early fall. It is unlikely that in-water work will be required there.

Locally-collected red ader and big-leaf maple seedling trees will be planted between the boulders during boulder installation. Approximately 14 trees will be planted. Smaller rock (class 100 or larger) will be placed behind the boulders, to fill in spaces between the boulders and trees. Blackberries and non-native vegetation will be removed. If additional soil is needed, commercial topsoil will be imported. If excess soil is generated, it will be disposed of in an upland area at least 300 feet away from any wetland or stream. After the slope is graded, grubbed and compacted, it will be seeded with native species. Geotextile erosion control fabric will be placed over the seeded slope above the riprap and secured with stakes. Locally common riparian shrubs and herbs, such as vine maple, salmonberry and red elederberry, will be planted.

III. BIOLOGICAL INFORMATION AND CRITICAL HABITAT

Although there are currently limited data to assess population numbers or trends, NMFS believes that steelhead stocks comprising the UW steelhead Evolutionarily Significant Unit (ESU) are depressed relative to past abundance. The status and relevant biological information concerning UW steelhead are well described in the proposed and final rules from the Federal Register (63 FR 11798, March 10, 1998; and 64 FR 14517, March 25, 1999, respectively), and Busby *et al*. (1995,1996).

UW steelhead are a late run winter steelhead. Hatchery fish are widespread throughout the region. Both summer steelhead and early-run winter steelhead have been introduced to the basin and escape to spawn naturally in substantial numbers. Winter steelhead are in steep decline after exhibiting wildly fluctuating abundance. Recent average adult abundance has been estimated at 3,000 fish. Natural fish adult returns in 1995 were the lowest in 30 years. Declines have been recorded in almost all natural populations. Natural steelhead integrity is at risk from introduced summer steelhead.

Upstream spawning migration of winter steelhead primarily begins in March and April, and peak spawning occurs from April through June. Suitable spawning habitat is found in the upper reaches of the Tualatin Basin, including the West Fork Dairy Creek.

Critical habitat for UW steelhead includes all river reaches accessible to steelhead upstream of Willamette Falls to the Calapooia River. Freshwater critical habitat includes the stream, stream bottom, and riparian zone. Riparian areas include areas adjacent to a stream that provide the following functions: shade, sediment, nutrient or chemical regulation, streambank stability, and input of large woody material (LWM) or organic matter. The proposed action would occur in designated critical habitat for UW steelhead.

IV. EVALUATING PROPOSED ACTIONS

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). NMFS must determine whether the action is likely to jeopardize the listed species and/or whether the action is likely to destroy or adversely modify critical habitat. This analysis involves the initial steps of defining the biological requirements and current status of the listed species and evaluating the relevance of the environmental baseline to the species' current status.

Subsequently, NMFS evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NMFS must consider the estimated level of mortality attributable to: (1) Collective effects of the proposed or continuing action, (2) the environmental baseline, and (3) any cumulative effects. This evaluation must take into account measures for survival and recovery specific

to the listed salmon's life stages that occur beyond the action area. If NMFS finds that the action is likely to jeopardize the listed or proposed species, NMFS must identify reasonable and prudent alternatives for the action.

Furthermore, NMFS evaluates whether the action, directly or indirectly, is likely to destroy or adversely modify the listed species' proposed or designated critical habitat. The NMFS must determine whether habitat modifications appreciably diminish the value of critical habitat for both survival and recovery of the listed species. The NMFS identifies those effects of the action that impair the function of any essential element of critical habitat. The NMFS then considers whether such impairment appreciably diminishes the habitat's value for the species' survival and recovery. If NMFS concludes that the action will destroy or adversely modify critical habitat it must identify any reasonable and prudent measures available.

For the proposed action, NMFS' jeopardy analysis considers direct or indirect mortality of fish attributable to the action. NMFS' critical habitat analysis considers the extent to which the proposed action impairs the function of essential elements necessary for migration, spawning, and rearing of the UW steelhead under the existing environmental baseline.

A. Biological Requirements

The first step in the methods NMFS uses for applying the ESA section 7(a)(2) to listed salmon is to define the species' biological requirements that are most relevant to each consultation. NMFS also considers the current status of the listed species taking into account population size, trends, distribution and genetic diversity. To assess to the current status of the listed species, NMFS starts with the determinations made in its decision to list UW steelhead for ESA protection and also considers new data available that is relevant to the determination (Busby et al., 1995, 1996).

The relevant biological requirements are those necessary for UW steelhead to survive and recover to naturally reproducing population levels at which protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environmental.

For this consultation, the biological requirements are improved habitat characteristics that function to support successful migration, spawning, holding, and rearing. The current status of the UW steelhead, based upon their risk of extinction, has not significantly improved since the species was listed.

B. Environmental Baseline

The defined action area is the area that is directly and indirectly affected by the action. The direct effects occur at the project site and may extend upstream or downstream based on the potential for

impairing fish passage, hydraulics, sediment and pollutant discharge, and the extent of riparian habitat modifications. Indirect affects may occur throughout the watershed where actions described in this Opinion lead to additional activities or affect ecological functions contributing to stream degradation. As such, the action area for the proposed activities include the immediate watershed containing the bank stablization and those areas upstream and downstream that may reasonably be affected, temporarily or in the long term. For the purposes of this Opinion, the action area is defined as the streambed and streambank of West Fork Dairy Creek extending upstream to the edge of disturbance, and extending 100 feet downstream of disturbance. Increased turbidity is not expected downstream of this area. Other reaches of West Fork Dairy Creek or the Tualatin River watershed are not expected to be directly or indirectly impacted.

The project reach consists of a narrow, V-shaped valley. The stream is bordered by a narrow band of alder-based riparian woodland, except in the vicinity of the project where the road is immediately adjacent to the stream. The surrounding landscape is planted with Douglas-fir, although a 5-10 year old clear-cut is located immediately to the west of the project site. On this property, a landslide has destabilized the slope above the highway directly across from the Soupy Mud, and has contributed to the problems at the project site.

Juvenile steelhead are present in the project reach throughout the year, including the in-water work period. The project reach is used primarily for rearing and migration. Riparian vegetation is present on east bank of the project reach, with overhanging vegetation and downed trees contributing to good structural diversity at the site. The bed is composed primarily of cobbles; however, the substrate is deeply embedded with fine sediment.

The West Fork Dairy Creek is listed on the Oregon Department of Environmental Quality (ODEQ) 303(d) List of Water Quality Limited Water Bodies for not meeting the temperature, bacteria, and dissolved oxygen criteria. Bacteria counts exceed the *E. coli* standards 33% of the times measured. Water temperatures exceed established rearing temperatures throughout the summer. The upper reaches of Dairy Creek have high phosphorus levels that are well above the TMDL standards for the lower and middle reaches.

Based on the best available information on the current status of UW steelhead range-wide; the population status, trends, and genetics; and the poor environmental baseline conditions within the action area, NMFS concludes that the biological requirements of the identified ESU within the action area are not currently being met. River basins have degraded habitat resulting from agricultural and forestry practices, water diversions, and urbanization. The following habitat indicators are either at risk or not properly functioning within the action area: Temperature; turbidity/sediment; chemical constituents/nutrients; large woody debris; pool frequency and quality; and off-channel habitat. Actions that do not maintain or restore properly functioning aquatic habitat conditions would be likely to jeopardize the continued existence of UW steelhead.

V. ANALYSIS OF EFFECTS

A. Effects of Proposed Action

The effects determination in this Opinion was made using a method for evaluating current aquatic conditions, the environmental baseline, and predicting effects of actions on them. This process is described in the document *Making ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NMFS 1996). The effects of actions are expressed in terms of the expected effect - restore, maintain, or degrade - on aquatic habitat factors in the project area.

The proposed action will cause temporary and permanent adverse impacts to steelhead and their habitat, but will provide a long-term benefit by reducing local erosion and enhancing riparian overstory cover. The excavator's bucket will be working directly in the stream. Boulders will also be placed in the stream. These activities have the potential to directly harass, harm, wound or kill juvenile steelhead rearing at the site. By working during the low flow time of year, the impact is decreased because less work is occurring in the wetted channel.

Project activities will increase turbidity in the stream. Juvenile steelhead are visual predators, and low water clarity decreases foraging success. If steelhead are present, the increased turbidity will decrease feeding activity and likely displace fish from the project area. Erosion control measures implemented as part of the proposed action are intended to minimize turbidity increases.

The riprap placed along the streambank of West Fork Dairy Creek reduces the potential quality of riparian habitat available. Herbaceous growth at the site will be reduced, as will habitat complexity. The riprap bank will reduce foraging and holding opportunities compared to a properly functioning streambank. This impact will be reduced by staggering the toe of the boulders to create flow refuges and planting trees among the boulders to increase shade and organic inputs.

The NMFS expects the effects of the proposed action are likely to maintain or restore each of the habitat elements over the long term, greater than five years, based on the current condition of the site. In the short term, a temporary increase in sediment entrainment and turbidity, and disturbance of riparian habitat is expected. Fish may be killed, or more likely, temporarily displaced by the riprap placement along West Fork Dairy Creek.

B. Effects on Critical Habitat

NMFS designates critical habitat based on physical and biological features that are essential to the listed species. Essential features for designated critical habitat include substrate, water quality, water quantity, water temperature, food, riparian vegetation, access, water velocity, space and safe passage.

Critical habitat for UW steelhead consists of all waterways below naturally impassable barriers including the project area. The adjacent riparian zone is also included in the designation. This zone is defined as the area that provides the following functions: Shade, sediment, nutrient or chemical regulation, streambank stability, and input of large woody debris or organic matter.

The proposed actions will affect critical habitat. In the short term, temporary increase of sediments and turbidity and disturbance of riparian habitat is expected. In the long term, a slow recovery process will occur as the plants mature. Also, habitat complexity will be increased at the site by the addition of the boulder clusters. The NMFS does not expect that these actions will diminish the value of the habitat for survival of UW steelhead.

C. Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." The action area has been defined as upstream to the edge of disturbance extending 100 feet downstream of project activities in West Fork Dairy Creek. A wide variety of actions occur within the Tualatin River basin, within which the action area is located. NMFS is not aware of any significant change in such non-Federal activities that are reasonably certain to occur. NMFS assumes that future private and State actions will continue at similar intensities as in recent years. Future FHWA/ODOT transportation projected are planned in the Tualatin River watershed. Each of these projects will be reviewed through separate section 7 consultation processes and therefore are not considered cumulative effects.

VI. CONCLUSION

After reviewing the current status of UW steelhead, the environmental baseline for the action area, the effects of the proposed West Fork Dairy Creek (Soupy Mud) erosion repair project and the cumulative effects, it is the NMFS biological opinion that this project, as proposed, is not likely to jeopardize the continued existence of the Upper Willamette steelhead, and is not likely to destroy or adversely modify designated critical habitat. This conclusion is based on findings that the proposed action will use soil stabilization and revegetation techniques to restore the slope in addition to the riprap.

VII. CONSERVATION RECOMMENDATIONS

Section 7 (a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Conservation recommendations are discretionary measures suggested to minimize or avoid adverse effects of a proposed action on listed species, to minimize or avoid adverse modification of

critical habitat, or to develop additional information. The NMFS does not request any conservation recommendations for this action.

VIII. REINITIATION OF CONSULTATION

This concludes formal consultation on the West Fork Dairy Creek (Soupy Mud) erosion repair. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and if: 1) The amount or extent of incidental take is exceeded; 2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this Opinion; 3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this Opinion; or 4) a new species is listed or critical habitat is designated that may be affected by the action. In instances
where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

IX. REFERENCES

Section 7(a)(2) of the ESA requires biological opinions to be based on "the best scientific and commercial data available." This section identifies the data used in developing this Opinion.

Busby, P., S. Grabowski, R. Iwamoto, C. Mahnken, G. Matthews, M. Schiewe, T. Wainwright, R. Waples, J. Williams, C. Wingert, and R. Reisenbichler. 1995. Review of the status of steelhead (*Oncorhynchus mykiss*) from Washington, Idaho, Oregon, and California under the U.S. Endangered Species Act. 102 p. plus 3 appendices.

Busby, P., T. Wainwright, G.J. Bryant, L.J. Lierheimer, R.S. Waples, and I.V. Lagomarsino. 1995. Status review of west coast steelhead from Washington, Idaho, Oregon, and California

DEQ 1996. 303d List of Water Quality Limited Streams, as Required Under the Clean Water Act. Oregon Department of Environmental Quality (DEQ), Portland, Or. 1996. (www.deq.state.or.us/wq/303dlist/303dpage.htm).

DEQ 1998. Draft 303d List of Water Quality Limited Streams, as Required Under the Clean Water Act. Oregon Department of Environmental Quality (DEQ), Portland, Or. 1998. (www.deq.state.or.us/wq/303dlist/303dpage.htm).

DSL 1996. Essential Indigenous Salmonid Habitat, Designated Areas, (OAR 141-102-030). Oregon Division of State Lands. Portland, Or. 1996.

NMFS (National Marine Fisheries Service) 1996. Making Endangered Species Act determinations of effect for individual and grouped actions at the watershed scale. Habitat Conservation Program, Portland, Oregon.

ODFW 1996. Database -- Salmonid Distribution and Habitat Utilization, Arc/Info GIS coverages. Portland, Or. 1996. (rainbow.dfw.state.or.us/ftp/).

X. INCIDENTAL TAKE STATEMENT

Sections 4 (d) and 9 of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering. Harass is defined as actions that create the likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with
the terms and conditions of this incidental take statement.

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

A. Amount or Extent of the Take

The NMFS anticipates that the action covered by this Opinion has more than a negligible likelihood of resulting in incidental take of UW steelhead because of detrimental effects from increased sediment levels (non-lethal) and the potential for direct incidental take during the placement of riprap (lethal and non-lethal). There is also the potential for harm because of significant habitat modification. Effects of actions such as these are largely unquantifiable in the short-term, and are not expected to be measurable as long-term effects on coho habitat or population levels. Therefore, even though NMFS expects some low level incidental take to occur due to the actions covered by this Opinion, the best scientific and commercial data available are not sufficient to enable NMFS to estimate a specific amount of incidental take to the species itself. In instances such as these, the NMFS designates the expected level of take as "unquantifiable." Based on the information in the biological report, NMFS anticipates that an unquantifiable amount of incidental take could occur as a result of the actions

covered by this Opinion. The extent of the take is limited to the reach of West Fork Dairy Creek immediately adjacent to project activities and extending 100 feet downstream.

B. Reasonable and Prudent Measures

The NMFS believes that the following reasonable and prudent measures are necessary and appropriate to minimizing take of the above species. Minimizing the amount and extent of take is essential to avoid jeopardy to the listed species.

1. To minimize the amount and extent of incidental take from project activities within and adjacent to West Fork Dairy Creek, measures shall be taken to limit the duration and extent of ground disturbance and riprap placement, and to schedule such work when the fewest number of fish are expected to be present.

2. To minimize the amount and extent of incidental take from construction activities near the creek, effective erosion and pollution control measures shall be developed and implemented to minimize the movement of soils and sediment both into and within the river, and to stabilize bare soil over both the short-term and long-term.

3. To minimize the amount and extent of take from loss of instream habitat and to minimize impacts to critical habitat, measures shall be taken to avoid impacts to riparian and instream habitat, or where impacts are unavoidable, to replace lost riparian and instream function.

4. To ensure effectiveness of implementation of the reasonable and prudent measures, all erosion control measures and plantings for site restoration shall be monitored and evaluated both during and following construction.

C. Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, COE/ODOT must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. To Implement Reasonable and Prudent Measure #1, above, the COE/ODOT shall ensure that:

    a. All work within the two-year floodplain of West Fork Dairy Creek will be done during the ODFW in-water work window of July 1st to September 30th. This includes work within the active channel and along the streambank.

    b. Rock will be placed individually and not end dumped. Placement will be performed in the dry as much as possible, and from the top of the bank where possible.

2. To Implement Reasonable and Prudent Measure #2, above, the COE/ODOT shall ensure that all erosion control and pollution control measures included in the August 2000, BA are included as terms and conditions of this consultation. Based on prior project evaluations, the NMFS requires ODOT to give particular attention to the following measures:

    a. Vehicle maintenance, re-fueling of vehicles and storage of fuel shall be done at least 150 feet from the 2-year flood elevation or in an adequate fueling containment area.

    b. At the end of each work shift, vehicles shall be stored greater than 150 feet (horizontal distance) from the 2-year flood elevation, or in an area approved by the ODOT Engineer.

    c. All erosion control devices will be inspected daily during project activities to ensure that they are working adequately. Work crews will be mobilized to make immediate repairs to the erosion controls, or to install erosion controls during working and off-hours. Should a control measure not function effectively, the control measure will be immediately repaired or replaced. Additional controls will be installed as necessary.

    d. If soil erosion and sediment resulting from construction activities are not effectively controlled, the ODOT Engineer will limit the amount of disturbed area to that which can be adequately controlled.

3. To Implement Reasonable and Prudent Measure #3, above, the COE/ODOT shall ensure that:

    a. Boundaries of the clearing limits will be flagged by the ODOT Project Inspector. Ground will not be disturbed beyond the flagged boundary.

    b. Alteration of native vegetation will be minimized.

    c. Riparian plantings will be completed as described in the August, 2000 BA.

4. To Implement Reasonable and Prudent Measure #4, above, the COE/ODOT shall ensure that:

    a. All significant riparian replant areas will be monitored for a minimum 3-year period to insure the following:

        i. Finished grade slopes and elevations will perform the appropriate role for which they were designed.
        ii. Plantings are performing correctly and have an adequate success rate. An adequate success rate is 80%.

b. Failed plantings and structures will be replaced, if replacement would potentially succeed. If not, plantings at another appropriate location will be done during the next available planting season.

c. By December 31 of each year, ODOT shall submit to NMFS a monitoring report that addresses the success of erosion control measures and of the plantings. At a minimum, the monitoring report must include photographs of the erosion control measures and plantings, with a short narrative that addresses riparian function. Monitoring reports will be submitted to:

Oregon Branch Chief
National Marine Fisheries Service
525 NE Oregon Street, #500
Portland, Oregon 97232-2737

d. If a dead, sick or injured steelhead is located, initial notification must be made to Nancy Munn, Ph.D., NMFS, telephone: (503) 230-6269. Care will be taken in handling sick or injured specimens to ensure effective treatment and care or the handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured species or preservation of biological material from a dead animal, the finder has the responsibility to carry out instruction provided by Dr. Munn to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.