Figure 7. Wildlife Sightings Postcard

Wildlife Observation Card

(fill in what you can)

Describe what you saw

Species Name (if known):

How observed: dead in hand —
good solid look —
fleeting glimpse —

Other types of observations: tracks ___ scat___ nests ___
sound ___ other ___

Number seen ____
Male / female ____
Adult / Juvenile ____

Where was it?

Location :

Forest __ Oaks __ Brush __ Grass __ Streamside __ Rocks/cliffs __

When Did You See It?

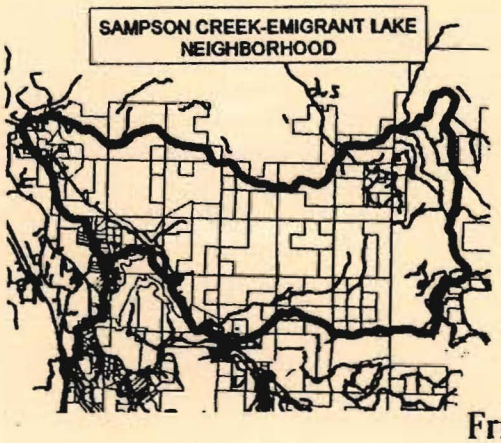
Date:
Time:
Weather:

Additional comments

Observer
Name & Address:

Phone #

May we call you for more information?
yes / no



Place Stamp Here

Friends of the Greensprings
15097 Highway 66
Ashland, OR 97520

COMPONENT X

Watershed Assessment Evaluation

Abraham Lincoln said that people and nations, not knowing their history, are bound to repeat the same mistakes. The same can be said for the residents of a watershed. The Emigrant Creek Watershed project reports that fish still swim in the many streams, that trees and grass continue to grow, that deer browse in the meadows and oak woodlands, and on recently introduced rose bushes. Life seems to carry on amid the constant noise of highways, the increased number of vehicles, new homes and homesteads, and the increasing constellation of yard lights.

Life is good amid the ridges and valleys of the Emigrant Creek Watershed. Yet, is it good for all living things great and small? How has this watershed faired since the arrival of the emigrants? What have we brought with us that has been and continues to be a questionable "good fit?" How much of the watershed now reflects our culture? It is a challenge to ask these questions, and a greater challenge to assess the observed conditions and adjust to the perceived ecological needs and goals.

This component is a report card for the project. The project's goal was to assess the ecological systems in the watershed and compare them to the Bear Creek Drainage and Rogue Basin. Although the Emigrant Creek Watershed is unique, its watershed functions are universal but fragmented (Map 27).

This project is a first attempt by the residents within the Emigrant Creek Watershed, led by the assessment team, to understand how the watershed functions. The objective was to identify the neighborhoods within the watershed, meet with its residents, explain the project's goals, and learn their issues and concerns. Their issues gave a picture of their sense of place in the watershed, and how far their concerns extended across the landscape. High fire danger, wildlife retention and restoration, severe soil erosion, and water quantity and quality were the four most popular topics of discussion during the neighborhood meetings. The challenge for the team was to explain and demonstrate how these issues are interconnected; that in addressing one, the others are then affected. The team initiated a learning process for a

large number of residents who volunteered to be trained to collect important information. Most want to continue with the process.

CONFIDENCE EVALUATION

Soils and Vegetation

While we may monitor fish, their immediate habitat, stream temperature and available food, we may miss the monitoring of a link to an essential resource that supports the fish--the "soil-shed." While few property owners in the watershed depend on the soil's health for their livelihoods, nature's life forms still do. This loss of human connection to the soil perpetuates an ignorance of the relationship between plants, animals, and humans. The high level of watershed fragmentation and isolation by highways, roads, power lines, and logging has created a mosaic that is deeply imprinted on the watershed, perhaps permanently.

The percentage of acute surface disturbance, covering nearly half of the watershed, creates a major challenge for restoration. Soil repair and replacement is a multi-century process, needing effective ground cover protection, humus, and soil animals to process it. Exotic and noxious weed eradication is an expensive and long-term program. The removal of water pollutants and sediment and adjusting stream water temperatures requires riparian planting and stream bank and upslope stabilization.

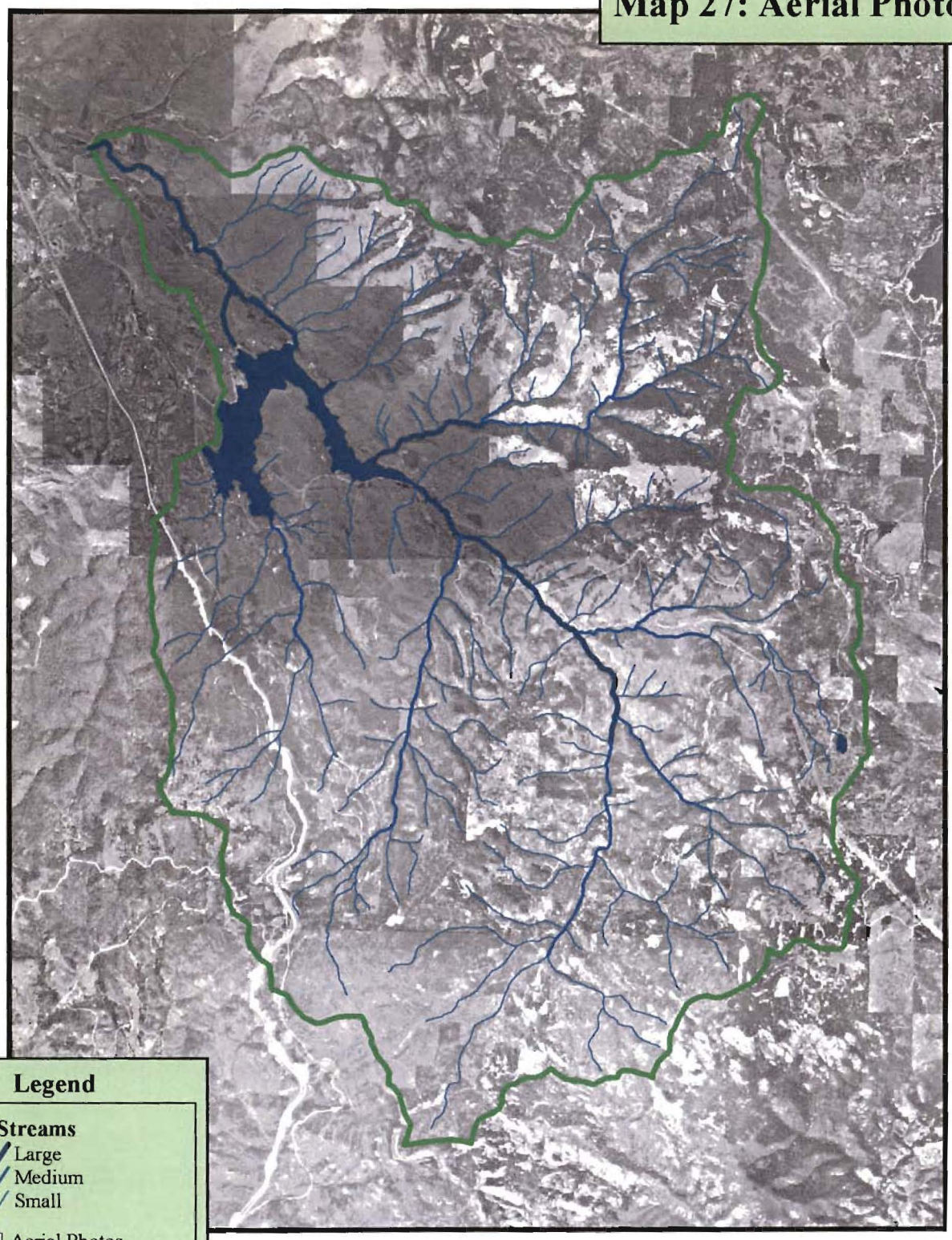
The confidence level is medium for data collection and analysis of vegetation, but it is low for soils. We possess insufficient spatial information of the watershed's soil conditions to make recommendations beyond supporting state and federal regulations.

Water Yield and Use

The snowmelt and precipitation collected within the watershed and impounded by Emigrant Lake Reservoir is insufficient to meet the needs of its down-stream users; it was also insufficient for those who lived 100 years ago in the Bear Creek Valley. Fortunately, the interbasin agreement to transfer Klamath Basin water has enhanced the lake's water volume for nearly 80 years. However, the agreement is currently under review and decisions could reduce future water availability.

Many watershed residences and ranches depend on stream water withdrawals and the Talent Irrigation District to supply their needs. Some possess water rights established in 1864. Most residences seem to have a sufficient quantity and quality of water. For many Emigrant Lake residences below the lake, especially in the Corp Ranch Road area, lack of water is a problem because the groundwater is becoming increasingly scarce.

Map 27: Aerial Photo



Legend

ODF Streams
- Large
- Medium
- Small

Aerial Photos

Lakes and Ponds

Emigrant Watershed Boundary

Base Mapping

Aerial Photos from Jackson County GIS
Streams from ODF, SRG & FOG
Lakes and Ponds from FOG
Created December 13, 2001 by Kara King
c:\emigrant\emigrantws\map 25 aerial.apr

N
W E
S

1 0 1 2 3 Miles

FRIENDS OF THE GREENSPRINGS

The confidence level of the water assessments is high because local, state, and federal data is easily available. Due to the lack of permission to access the water diversions and withdrawals on the larger private properties, consumptive use of water rights was not assessed.

Streams and Fish

The near removal of beaver from the watershed in the 1820s initiated a degradation of habitat for the anadromous salmon and steelhead fisheries within the watershed. The construction of Emigrant Dam in 1924 effectively removed the remnant fisheries from the watershed. Grazing, roading, logging, and water transfer further compromised the resident and cutthroat trout fisheries. Yet, fish presence in many streams extends nearly to the headwaters. Emigrant Lake has been stocked with hatchery-bred coho and steelhead a few times, and these stocks have been seen to migrate up the watershed's stream system to spawn. Their migrations are encumbered by the fluctuations of the lake level and Emigrant Creek water, between the lake and the Greensprings Power Plant. Another difficulty for fish passage is the buildup of sediment deltas at the base of Sampson, Hill, and Emigrant Creeks.

The stream and fish assessment has a high confidence level due to the large sampling by volunteers as well as the 1999 data from ODFW. Further investigation is needed to determine the extent and health of the developing landlocked coho and steelhead fishery.

Wildlife and Habitat

The continuing effort by the community to observe and record wildlife is providing needed information on the diversity of species within the watershed. Extensive restructuring of the landscape accompanied 150 years of settlement, affecting wildlife habitat and pathways. The aim of the Emigrant Watershed Wildlife Inventory is to assess the watershed's wildlife and habitat, monitor wildlife activity, and generate habitat restoration projects.

The wildlife survey confidence level is medium now but is expected to increase as the inventory continues.

Social Issues

Public interest in the area, locally and nationally, is high because a significant part of the watershed lies within the new Cascade-Siskiyou National Monument. The Pacific Crest National Scenic Trail extends along the top of the watershed, and I-5 is a vital ground transportation link on the Pacific Coast. The watershed is a popular destination for summer and winter recreation. The town serving the watershed's inhabitants is Ashland, a place with a high standard of living attracting many visitors and newcomers. Due to increased residential development, there are increasing demands on the rural infrastructure and its resources.

The canvassing of social issues and community involvement developed high confidence in the data collected and demonstrated continued interest by residents in their watershed.

HEALTH ASSESSMENT OF THE WATERSHED

For this assessment, watershed health identifies the products, structures, and resources needed to support healthy ecosystems. There are four characteristics of watershed health:

1. The physical, biotic and living networks are intact to support the watershed ecosystems.
2. Resistance to catastrophic change and the ability to recover on the landscape level.
3. A functional equilibrium between supply and demand of essential resources (water, light, nutrients, growing space) for major portions of the watershed's vegetation.
4. A diversity of forest and woodland structures and lifestages that provide habitat for native species and all essential ecosystem processes.

The following compares Emigrant Creek Watershed to the above characteristics:

1. The physical, biotic, and living networks are fairly intact to support the ecosystems of approximately 35 percent of the watershed. These areas are primarily within middle Carter Creek, Baldy Creek, the headwaters of Emigrant Creek, the east fork of Tyler Creek, and sections of the upper slope of Sampson Creek. Fragmentation, abundant food, and fire exclusion are critical issues affecting species diversity, richness, and mobility.
2. A significant threat of catastrophic wildland fire exits from the heavy fuel loading that would alter the structure and composition of the watershed. Most of the fires within the watershed have been human-caused, starting near roadways and residences. The long drought of 1988-1994 created stand dieback of the conifers on most of the ridges and mid-elevation slopes.
3. Nutrient cycling in low because of the high level of acute ground surface disturbance over half of the watershed. The high level of fuels, the lack of water infiltration, and heavy infestations of noxious weeds and annuals further reduce water availability and growing space of the native vegetation.
4. The changes to the structure and composition of the forests and woodlands from logging and grazing have severely compromised the habitats for animals and plants. There is very little old-growth and mature forest. The native grasses that provide animals their essential nourishment and minerals have been severely reduced.

Based on these four criteria, the watershed is impacted and unhealthy, but functioning. This level of function may continue to degrade unless a collaborative effort by its neighborhoods and the responsible agencies is instituted to promote recovery. The Friends of the Greensprings fully support such an effort.

COMPONENT XI

Data Gaps

Development of an Action Plan requires the planned collection of information during the assessment and subsequent collection of other information to answer questions that arose during the assessment. Both must address What and Why to collect more information.

Several data gaps were noted during preparation of this watershed assessment due to denial of access; other gaps resulted from incomplete assignments given to volunteers or from individuals not completing assigned tasks. Table 30 lists these as Field Verification Data Gaps. Confidence in the Condition Evaluation would be increased if the field verification data gaps had not developed. Perhaps review of this final report will encourage landowners to allow access or additional volunteers to take on omitted tasks.

A second and much larger set of data gaps developed from questions that appear to need answers prior to Action Plan formulation; most require data collection and analysis. These monitoring projects, listed in Table 31, are considered short-term monitoring if they can be accomplished in a single season or year. Multi-year data collection and analysis may be needed to eliminate seasonal or annual variability in natural systems; these projects are considered long-term monitoring. Short-term monitoring projects are listed before the long-term monitoring projects in Table 31, and the projects are grouped by watershed assessment component.

Table 30. Field Verification Data Gaps

Field verify channel habitat type in Sampson, Cattle, and Murphy Creeks where access was not authorized.
Field verify upland habitat maps generated from remote sensing, especially for conifer forest, oak woodland, and shrub communities.
Determine amount and location of water right withdrawal by beneficial use.
Field verify large wood currently in place and recruitment potential to locate priority sites for Action Plans.
Field verify riparian conditions in private forest lands near Interstate-5; Carter, Emigrant, and Sampson Creeks; and in Steinman area where access was not authorized.
Field verify plant composition of specific wetlands and locate priority sites for protection and restoration.
Locate current wetlands in Emigrant Creek below the dam, Sampson, Cattle, Murphy, and Emigrant Creeks, and field verify wetland extent and attributes where access was not authorized.
Field verify sediment contribution from rock quarries.
Field verify anadromous fish presence and extent in Emigrant, Cattle, and Murphy Creeks where access was not authorized.
Field verify absence of migration barriers to downstream fish passage during spring/summer and upstream during fall/winter.

Table 31. Short and Long-Term Monitoring

03 Habitat Classification
Field verify current wildfire fuel loads and fuel type and compare with fuel themes developed through wildfire modeling to improve wildfire danger mapping.
Map extent of historic wildfires and relate to current vegetation patterns and fuel loads.
Locate current old-growth and late-successional conifer stands, legacy hardwoods, snags, large down wood, and other specialized upland habitat where additional protection may be warranted.
Acquire ODF forest insect and disease themes and develop forest health spatial and trend data where landowners have an interest in improved forest management.
Locate historic meadows and compare extent with current meadows to add landowner Action Plan options.
Survey for location and extent of noxious weed species on private lands where landowners have an interest in coordinating control with public land managers.
Survey for location and distribution of sensitive botanic species on private lands where landowners have an interest in coordinating conservation with public land managers.
Determine the composition of native plant species in "natural" herbaceous communities.
Determine how landowners can sustainably restore native plant communities.
04 Hydrology and Water Use
Estimate stream flow and duration from StormWatch field observation or gauging data for use in sizing culverts and riparian buffers and for planning improved runoff and stormwater handling.
Survey well owners for information on well performance, groundwater changes, and relation to surface water hydrology.
Determine where existing consumptive water right, current water use, and irrigation system changes may increase stream flow.
Determine where increased instream flow may be needed to protect aquatic life and other instream beneficial uses.
Find key locations for potential purchase of instream water rights.
Determine the extent of illegal water diversions.
05 Riparian
Compare 2001 aerial photos with 1996 aerial photos to assess riparian impact of 1997 flood and other changes which landowners may include in Action Planning.
Compare ODEQ shade modeling with OWEB Stream Shade classification and StreamWalk canopy cover data for consensus input to riparian restoration Action Plans.
Determine historical riparian plant communities and compare with current site potential vegetation.
Survey riparian areas for current Proper Functioning Condition classification.
Establish permanent riparian photo-points for photo-monitoring visual trends of structural and compositional change where private landowners have an interest in protecting or restoring riparian conditions.

Table 31. Short and Long-Term Monitoring (continued)

05 Wetlands

Locate historic wetlands and beaver habitat based on early survey records, old-timer recollection, and hydric soil, vegetation, and landform analysis and compare extent to current wetlands to add flexibility to landowner Action Plans.

Establish permanent wetland photo-points for photo-monitoring visual trends of structural and compositional change where private landowners have an interest in maintaining wetland conditions and functions.

06 Sediment Sources

Locate end-haul sites for ditch waste and other excavated material to match landowner fill dirt needs and reduce sediment delivery to streams.

Determine location and sediment impact from recreational vehicle use near streams or water bodies.

Field verify sediment contribution from existing private driveways, haul roads and skid roads, especially those that cross streams, for planning improved runoff and stormwater handling

Locate and field verify legacy public and toll roads, logging roads, railroads, and sawmill sites that may erode and deliver sediment to streams.

Determine historic patterns and timing of residential development and land use change and map maximum build-out permitted under current land development ordinances.

07 Channel Modification

Locate channel modification due to BOR and TID facilities, ODOT highway development, and CORP railroad right-of-way and determine impact on stream function and water quality.

08 Water Quality

Determine summer temperature on Hill Creek, Barron Creek, Slide Creek, Wall Creek, Soda Creek, Sampson Creek, Cattle Creek, Murphy Creek, and Emigrant Creek below dam.

Determine dissolved oxygen, pH, conductivity, and turbidity on Emigrant Creek above Emigrant Reservoir, Carter, Tyler, Schoolhouse, Baldy, Hill, Barron, Slide, Wall, Soda, Sampson, Cattle, and Murphy Creeks and Emigrant Creek below dam.

Determine nutrient input on Emigrant Creek above Emigrant Reservoir, Carter, Schoolhouse, Tyler, Baldy, Hill, Barron, Slide, Wall, Soda, Sampson, Cattle, and Murphy Creeks, and Emigrant Creek below dam, especially high aquatic phosphorus levels.

Determine fecal coliform on Emigrant Creek above Emigrant Reservoir, Carter, Schoolhouse, Tyler, Baldy, Hill, Barron, Slide, Wall, Soda, Sampson, Cattle, and Murphy Creeks, and Emigrant Creek below dam.

Determine aquatic macroinvertebrate communities to establish baseline data on potential water quality problems and monitor improvement.

Locate inadequate septic systems and other sources of fecal bacteria.

Survey for extent of sedimentation, flow modification, and algal growth within Emigrant watershed.

Table 31. Short and Long-Term Monitoring (continued)

09 Wildlife and Wildlife Habitat
Resurvey streams for presence and extent of native and non-native fish to better inform landowners.
Determine historic fish population and distribution for comparison with current fish distribution.
Locate and characterize quantity and quality of key fish habitat where timely protection is warranted.
Survey redds and spawning to determine actual salmonid usage patterns, especially steelhead and other anadromous species.
Add to known bird species list using mist netting, point count, and Random Ornithological Inventory.
Survey for amphibian species presence on private lands and locate populations at risk from potential habitat loss or predation where landowners have an interest in protecting amphibians.
Survey for bat species presence on private lands and locate populations at risk from potential habitat loss where landowners have an interest in maintaining bat populations.
Survey for aquatic mollusks at springs on private lands where landowners are concerned about mollusk population and distribution.

COMPONENT XII

Action Plan

Development of Emigrant Watershed Action Plans involved three stages: gathering input on neighborhood issues, collecting existing and field inventory information, and developing options and getting neighborhood feedback on Action Plan priorities. This approach developed four high-priority, multi-neighborhood Action Plans and 70 priority neighborhood Action Plans.

The Action Plans addressed over 150 issues developed during 14 neighborhood meetings, 7 special issue meetings, and 86 Interest and Issues Canvass interviews. At neighborhood and special issue meetings, 164 different individuals offered 115 comments. During Canvass interviews, an additional 35 comments were gathered. The interviews developed several comments regarding apparent illegal water diversions and elicited no comment about fear of government rules or unhealthy forests. Otherwise, issues developed during individual Canvass sessions were very similar to concerns expressed at neighborhood group meetings.

Categories of comments directly related to this watershed assessment from neighborhood, special issue, and Canvass contact with landowners were presented in Component I. Comments related to watershed assessment but outside the project area and comments unrelated to the assessment topics were referred to other agencies and organizations, where appropriate.

LINKAGE OF ACTION PLANS, ISSUES, AND AGENCIES

Neighborhood information developed during field work was summarized and presented to landowners at four separate action plan meetings, one in each area, and at a general Emigrant Watershed Assessment Potluck. Attendance was high, with 47 individuals at Action Plan meetings and 41 at the Potluck. About 15 issues, classified as upland, riparian/wetland, and instream, were discussed for each neighborhood so Action Plans could be matched with *Oregon Plan Watershed Restoration Inventory (March 2001)* categories. Feedback from landowners became the basis for neighborhood Action Plans outlined in Tables 35, 36, and 37.

To improve linkage and coordination with agency plans, a series of five Fire, Water, and Wildlife meetings were held with an inter-agency group of state and federal agencies. Participants included BLM, ODF, ODFW, DEQ, Fire District 5, and FOG. Linkage to Senate Bill 1010 and the Bear Creek Agricultural Water Quality Management Area Plan was developed by providing an agricultural project tour to Mr. Tim Stevenson, ODA Water Quality Planner, and Mr. Keith Emerson, Bear Creek Watershed Council Chairman. To the extent possible, the Action Plan was linked to the Bear Creek Watershed Assessment by providing a day-long tour of key project sites, data on Emigrant fishery and habitat conditions, and on restoration priorities to Dr. Robert Horton, Bear Creek Assessment Technical Writer for Rogue Valley Council of Governments.

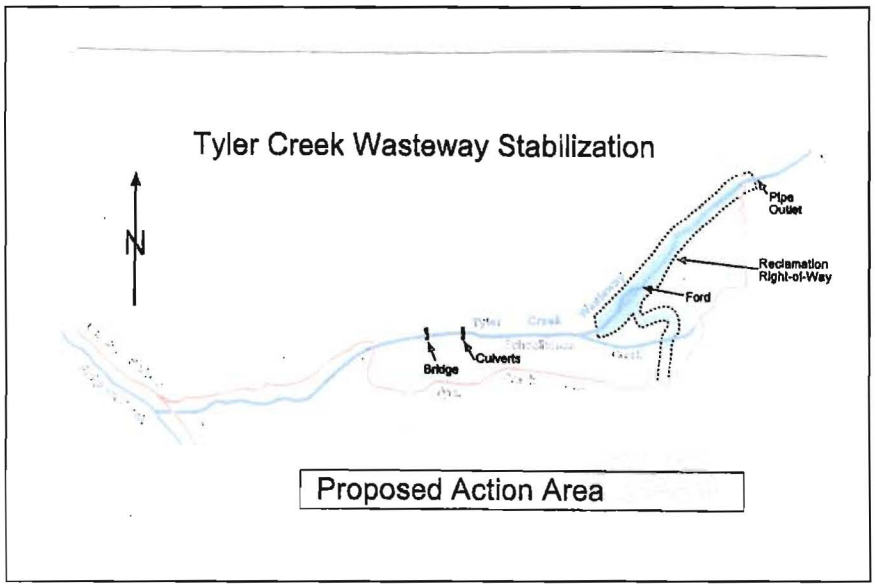
Emigrant Project Action Plans correspond closely with Rogue Basin Coordinating Council's seven strategic priorities. The emphasis on landowner involvement, protection of existing habitat at a landscape level, improved water quality, increased stream flow, removal of fish barriers, and active outreach to three generations of landowners is carried into neighborhood Action Plans.

HIGH PRIORITY MULTI-NEIGHBORHOOD ACTION PLANS

First Priority: Tyler Creek Wasteway Stabilization

Severe upland erosion occurred when a 2.5 mile tributary to Emigrant Creek was used season-long in 1993 to drop 60 cfs irrigation water 1,800 vertical feet to bypass the failed Green Springs Power Plant. About 200,000 cubic yards of soil erosion resulted from this discretionary management decision by Bureau of Reclamation (BOR). Chronic turbidity from the unrestored channel is the most serious long-standing problem in Bear Creek watershed and within the Emigrant project. It has caused drinking water to fail Clean Water Act standards in cities 30 miles downstream, caused turbidity in Ashland Creek and Tyler Creek that violates Oregon's water quality standards, and increased phosphorus to levels that exceed Bear Creek limits in 11 of 12 months, thus contributing to Bear Creek TMDL problems. The damage also violated the Aquatic Conservation Strategy of the Northwest Forest Plan.

Water quality problems from the wasteway were noted in the 1995 Bear Creek watershed Assessment and studied in an Oregon 319 grant Tyler Creek Monitoring Project (*Friends of the Greensprings, Oregon 319 Program Final Report, April 30, 2000*). The report found continuing bedload and suspended sediment transport, erosion of toe slopes along the channel, channel side-slope failure, head cutting and gullying into upslope areas. There was a loss of riparian canopy, county road instability and tension cracks, abandoned instream structures, and fish passage problems. Erosion has caused substantial property damage and threatened residents' health and safety. Geologists say there is a clear risk of reactivating the ancient landslide on which many homes have been built.



Project members have worked closely with BOR since November 2000 in scoping an Environmental Assessment (EA) but, as shown in blue on this BOR map, the currently Proposed Action Area only involves 1.0 mile of a 2.5 mile problem. Damage to a culvert bridge, a wooden bridge, and private roads and other property have denied residents access to two domestic wells across Schoolhouse Creek. This damage occurred beyond Reclamation's Right-of-Way. Landowners have asked BOR to extend the EA to 2.5 channel miles and to include alternatives that provide dependable irrigation water delivery while permanently abandoning use of the Tyler Creek Wasteway as a bypass.

Project members have assessed current wasteway conditions; brought in Rogue Basin Technical Pool members for advice on geology, geomorphology, and soils; consulted with ODEQ, EPA, NRCS, USFWS, and NMFS; measured water quality and photo-monitored channel condition; and participated in two site tours.

The next step is to resubmit a joint Bear Creek Watershed Council - Jackson Soil and Water District Technical Assistance grant to OWEB and to develop an OWEB Small Grant application to expedite technical assistance. An external proposal to the BLM-Medford Resource Advisory Committee for Title II funding is also being developed because restoration would benefit federal lands.

The immediate objective is to stabilize and restore the channel in three phases: Phase I - conduct geotechnic, geomorphic, and restoration analysis; Phase II - plan, design, and specify the restoration project; and Phase III - implement on-the-ground restoration. There is a longer term need to restore the degraded channel and find an alternative so wasteway use can be discontinued while still fully meeting irrigation water delivery obligations. Expected partners include landowners, Bear Creek Watershed Council, Jackson Soil and Water Conservation District, Bureau of Reclamation, Bureau of Land Management, Rogue Basin Technical Pool, Talent Irrigation District, Friends of the Greensprings, and Rogue Valley Council of Government.

Second Priority: Off-Channel Livestock Watering

Direct access to surface waters by livestock has resulted in severe water quality and riparian degradation in all Emigrant neighborhoods and is considered the second highest priority watershed concern. Winter animal feeding operations of commercial cattle now occur on Emigrant Creek, Carter Creek, Hill Creek, Slide Creek, and the TID laterals, though seasonal or year-round beef operations may occur at other locations. Some landowners keep horses and livestock species other than beef cattle. Apparently there are no active dairies in the project area.

Bare or unvegetated soil has been observed at winter feeding sites, accompanied by destabilized and eroding stream banks, reduced riparian vegetation, increased sediment loading, and decreased stream cover. The sites do not appear to be in properly functioning condition, nor able to withstand a 25-30-year storm, but Oregon has no regulation requiring trees along streams in an agricultural area.

Oregon has developed rules and actions if there is "Significant Discharge of Pollutants" from an animal feeding operation with 1 to 300 head of cattle confined for 45 days in a lot with little or no vegetation. Where livestock have direct access to surface water, direct deposition of manure and urine into the stream and, during storms, runoff of animal waste may occur. These have been receiving increased attention by EPA and ODA, especially operations with more than 300 head.

It is not known whether current commercial cattle feeding would meet the legal test as "Animal Feeding Operations" (AFO), nor whether the animal waste handling would be considered a "Significant Discharge of Pollutant" and thereby become a "Confined Animal Feeding Operation" (CAFO). Such operations may be "point" sources of pollution that require a professionally drafted nutrient management plan and/or a NPDES permit. Livestock on pasture are regulated as non-point sources of pollution, as found in Section 208 and 319 of the Clean Water Act. These sections provide incentive and grant programs to mitigate and correct non-point source problems.

The Bear Creek Water Quality Agricultural Management Area Plan, currently under periodic revision, may give increased attention to animal waste management, lack of riparian vegetation, and streambank erosion. The plan has

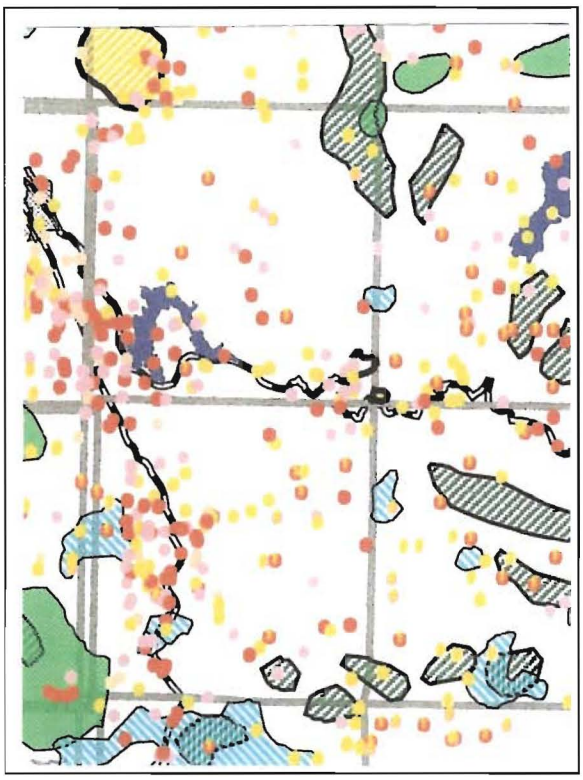
identified prohibited conditions from management of agricultural operations. The plan provides detail on voluntary actions by agricultural producers to address prohibited conditions and the assistance available from ODA, Jackson SWCD, and NRCS to improve water quality.

All agricultural landowners have been invited to neighborhood meetings, and most have attended one or more issue sessions, but few have responded to Action Planning invitations. Personal contact was made and field data, project endorsement, and assistance contacts were offered, but rancher preference has been to work with ODA Water Quality Planner and OSU Livestock Extension Agent. Voluntary action by one rancher has provided off-channel livestock watering equipment; livestock access to the stream is expected be restricted. A voluntary Action Plan to provide more use of off-channel livestock watering, to increase attention to management of animal waste, and to minimize nutrient input to streams is needed at other sites. Riparian planting may also be needed to control near-stream erosion and re-establish adequate root structure. Water quality monitoring for *E. coli*, nutrients, pH, stream temperature, and other water quality parameters is needed to verify implementation results.

Third Priority: Catastrophic Wildfire Threat

The most important danger to Emigrant community and watershed values, catastrophic wildfire, has resulted from abrupt man-caused changes over the last 180 years interacting with the more gradual natural and indigenous processes. Disturbance has been important in creating and maintaining the Emigrant landscape. Geologic events, climate shift, plant and animal species change, and altered fire regime all have had an impact. Native Americans periodically burned woodland and forest sites for at least several thousand years. Settlers unknowingly benefitted from this practice and opened additional land for agriculture, sometimes using fire as a land-clearing tool. Selective large tree harvest during the timber era has left an over abundance of trees, especially shade tolerant species, which increased fuel loads, verbal and horizontal fuel continuity, and fuel hazards. In recent times, fire, insect, and disease disturbance have been significantly altered by effective fire prevention and suppression on sites adapted to more frequent low and moderate severity fires.

A wildfire prevention and preparation response is slowly beginning on public and private lands to protect community health and safety; upslope, riparian, and aquatic function; and ultimate water quality. In this rural forestland, reducing wildfire danger will be an Action Plan priority for decades. The goal for many landowners is to create a community forest that can safely burn, withstand storms, and still be a pleasant place to live. This requires increasing landowner capacity to safely respond to wildfire, and reducing the number of small fires that become large. Over time, perhaps fires of reduced intensity can restore a more sustainable ecologic system.

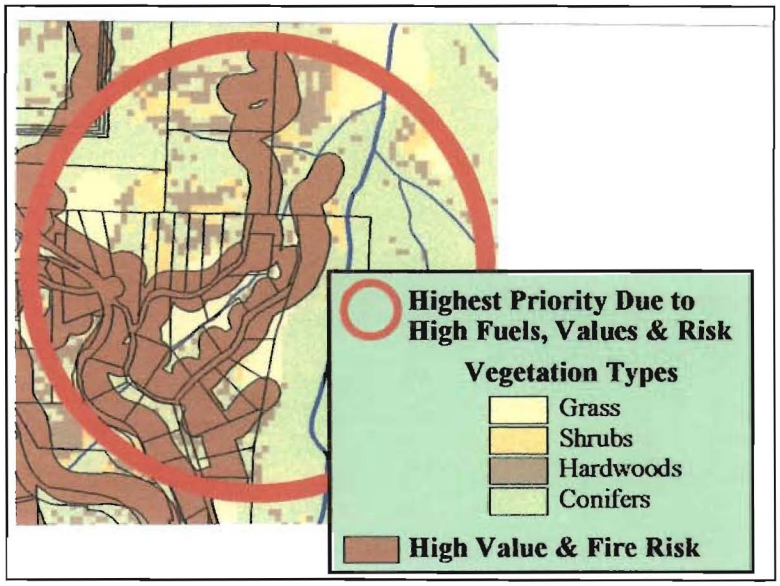


BLM developed a decadal history of about 200 Emigrant watershed fires between 1900 and the present that showed the last large acreage forestland fires occurred 66 years ago and 102 years ago (*Annette Parsons, BLM Fire/Fuels GIS Analyst, Jan. 17, 2001*). In 1936, about 1,500 acres burned in six irregular patches near Siskiyou Summit and Slide, Baldy, and Sampson Creeks. In 1900, about 2,500 acres burned over in six irregular patches along the Klamath River Ridge, upper Tyler Creek, and Sampson Creek. Two other fires, a 100-acre arson fire on grassland and a 250-acre grass fire on grazing land, have also occurred.

Historically unprecedented human and property values are currently surrounded by high fuel loads and are at risk from ignition from many sources. Sale of settlement ranches and logged-over timberlands has brought a ten-fold increase in rural population compared with earlier times, most often urban homeowners in an unfamiliar wildland setting where hot, dry summers are the norm. Residents themselves are the most frequent source of wildfire ignition, but travel corridors from an interstate highway and interstate railroad, a state highway, and other public roads are occasional ignition sites as well. It is said that during the steam engine era, the railroad caused numerous fires. Lightning has been the cause of about one-fourth of all fires, mostly along ridgelines or at high elevations away from residences.

Cumulative human-caused wildland fire occurrence appears to parallel population growth in the Emigrant watershed. There is no BLM or ODF fire occurrence data still available for individual fires prior to 1960, but in the four decades from the 1960s to the 1990s, the average number of human-caused fires increased as follows: 1.4 fires per year, 2.6 fires per year, 3.5 fires per year, and 3.6 fires per year. Structural fire data do not appear to be included with the BLM totals.

Wildfire-related action and progress easily exceeded targets set when this project started and are considered to be a big success. Wildfire concerns were the highest homeowner priority, and fire-related events and activities developed the highest homeowner participation. FOG homesite fire surveys similar to Appendix C were completed by 119 households; copies were given ODF to improve fire response planning and to document landowners' fuel reduction grant requests. Both BLM and ODF developed fire history and occurrence GIS maps for the Emigrant project area. A windshield survey of fuel loadings and type was used to develop an important planning tool, Map 24 - Wild Fire Priority Hazards. A portion of Map 24 was used to develop the maplet shown here. An overlay of tax lot boundaries identifies landowners within a danger circle where fuel loads are high, risk of fire ignition is high, and the homeowner's family, home, and property share a fire danger with their near neighbors. The wildfire maplet has been an effective communication tool for focusing attention on real problems in real neighborhoods at a level where individual action can make a difference neighbors can see. The residents have responded by participating in two wildfire initial attack training workshops, and 31 were involved in a group purchase of wildfire hand tools. Application and use of a fire resistant gel to temporarily protect structures was demonstrated. ODF added one neighborhood fire danger sign, and a landowner acquired, refurbished, and placed in neighborhood service a 200-gallon pumper mounted on a four-wheel drive truck. Training in How to Safely Run the Pumper was given to eight fire volunteers.



FOG asked for and received an ODF Wildland-Urban Interface Grant totaling $36,027 to reduce fuels around homes, provide critical community access, and develop community fuel breaks. Landowners provided their own cost share, hired their own contractors or performed the work themselves, and completed their fire work plan activities. The $26,827 grant received in 2001 permitted 75 Defensible Space grants to homeowners and six critical community access projects. Tyler Creek neighborhood had a 100% participation rate. The remaining $9,200 funded in 2002 will finish the Defensible Space, critical community access, and several community fuel breaks. Participants became eligible for up to 15 acres additional thinning and fuel reduction Stewardship Incentive Program cost share; several landowners have signed up for this extended program. Separately, an Owner's Manual

was developed by project staff to reinforce defensible space and fire-safe plantings near homes.

An Environmental Assessment (EA), the Tyler Creek Fuels Project EA, and Record of Decision were completed by BLM to permit a 17-acre fuel reduction on federal land adjacent to three neighbors who have completed fuel reduction on private lands. The work has been contracted by BLM for 2002 completion. FOG will develop an interpretive trail with appropriate signage so that landowners can see firsthand fuels treatment permitted under the Northwest Forest Plan.

FOG has organized a permanent Wildfire Committee to coordinate efforts across neighborhoods and provide a single coherent community interface with agencies, organizations, and industrial timber neighbors. The next steps in a 2002 Wildfire Action Plan are as follows:

- Accomplish community fuel breaks with funds remaining from 2001 grant.
- Continue FOG homesite fire survey to develop additional request for Defensible Space grant funding when available and to provide fire planning information to ODF and Fire District 5.
- Accomplish the 2002 Tyler Creek Neighborhood Fire Workplan.
- Present Tyler Creek Fire Plan as a suggested template to develop neighborhood Old 99, Carter-Emigrant, and Emigrant Lake Fire Workplans.

The next steps in a 2003-2005 Wildfire Action Plan are to submit a two-year Community Planning for Fire Prevention grant proposal for National Fire Planning funding. Wildfire planning in the watershed will give special attention to fire access roads and driveways crossing streams to assure fish-friendly passage with minimum sediment delivery. Retention of adequate riparian shade in thinning and fuels reduction work and retention of large wood in streams will be a part of the planning, which includes these elements:

- Part-time Community Coordinator to contact residents, schedule and coordinate events and group purchase of fire hand tools, handle fire consultation requests, and arrange mailings, publicity, and recognition in six neighborhoods.
- Develop neighborhood Fire Workplans using Tyler Creek Fire Plan as a template for Jenny Creek, Highway 66, Hyatt Lake, Old 99, Carter-Emigrant, and Emigrant Lake.
- Continue FOG homesite fire survey to develop additional requests for Defensible Space grant funding when available and provide fire planning information to ODF and Fire District 5.
- Find speakers, develop, schedule, and present Initial Attack Workshops in six neighborhoods, and acquire necessary training equipment (pulaskis, shovels, McLeods, hand-pump water cans, flagging).
- Find speakers, develop, schedule, and present two workshops on Fuels Thinning Impact on Wildlife and Watersheds.
- Find speakers, develop, schedule, and present two workshops on Firesafe Native Plants.

- Create 1900-2000 Wildfire History GIS map from BLM data.
- Create Wildfire Hazard GIS map with fuels/risk/values themes.
- Create Address/Water Source list for ODF seasonal fire crews.
- Determine need, source, and cost for out-of-district fire address signs.
- Determine water source needs and plan location, authorization, installation, and cost estimate for storage tanks and drafting access.
- Determine access and escape road needs and plan location, authorization, permits, NEPA clearance, and construction cost estimate with private non-industrial and industrial landowners and public land managers.
- Determine need, location, and authorization for additional ODF fire danger signage

A second grant proposal for a 3-year Wildland Urban Interface Fuels Reduction Project will be submitted for National Fire Planning funding. Special attention will be given to stream crossings and improvement needed for fire vehicle access on roads and driveways to assure fish-friendly passage with minimum sediment delivery. Retention of adequate riparian shade in thinning and fuels reduction work and retention of large wood in streams will be a part of the workplan, which has these elements:

- Identify low income and/or frail residents not served in 2001 and provide Defensible Space fuels reduction using volunteers and community corrections workers and equipment.
- Target residents within high priority danger circles who have not reduced fuels for one-acre Defensible Space (100-foot) fuels reduction.
- Target 2001 participants for five-acre Extended Defensible Space.
- Provide 50-foot Critical Community Access ladder fuels reduction for public roads and shared driveways.
- Provide 100-foot Extended Access road fuels reduction.
- Provide Community Fuel Breaks and Fire Line anchor points.
- Add ODF fire danger signage on Old 99 near Highway 66 and near ODOT materials yard at the Mt. Ashland exit on Interstate 5, and other locations identified in the community planning process.

Fourth Priority: Riparian Shade

Lack of riparian shade is seldom noticed by residents as a limiting watershed function, and the issue was not mentioned at neighborhood meetings or during Canvass interviews. Nevertheless, Emigrant, Carter, Tyler, and Baldy Creeks have been declared water quality limited for summer temperature by ODEQ and placed on the 303(d) list of impaired streams. Preliminary field data have shown Sampson, Hill, and Schoolhouse Creeks also have summer temperature high enough to justify listing. Excessive summer temperature affects the health and food chain of native and anadromous fish, amphibians, and aquatic insects; increases aquatic weeds and algae; decreases

dissolved oxygen; and increases pH. Providing adequate stream shade has been classified as the fourth most pressing priority in Emigrant watershed, one that must be addressed.

There are complex influences on stream temperature including climate; near stream topography and aspect; stream width and water depth; stream bank vegetation type, size, and density; riparian width; land use patterns; grazing management; groundwater exchange; and other factors, but the principal cause of high stream temperature is solar radiation. Retention and restoration of streamside vegetation is the most accepted way to maintain or increase shade, reduce sunlight reaching the water surface, and resolve the listing for summer temperature, and there are other benefits as well. Trees improve bank stability, slow stream velocity during floods, provide vital habitat and food for terrestrial wildlife, and, as large woody debris, help create pools and habitat for fish and other aquatic species.

This Action Plan has developed a "Protect the best, Restore the rest" approach to 342.8 miles of streambank shade, as illustrated in the maplet below. Shade percentage, "low" if under 40%, "medium" if between 40 and 70%, and "high" if above 70% shade, was estimated from digital-orthoquads for each bank along each riparian condition unit for each intermittent and perennial stream. Stream mileage was totaled for low, medium, and high shade by HUC-7 and aggregated into a total by neighborhood for federal and private lands; summary information is presented in Table 32. The maplet illustrates the rich detail available on stream shade combined with tax lot boundary information. Shade on opposite banks and on different ownerships can be visualized for analysis and discussion and has been totaled at the HUC-7 level for public and private land. If the intention is to "protect the best," retention of riparian vegetation where shade is 70% or more is usually important. Where shade is below 40%, there may be opportunity to "restore the rest" with streamside planting or other approaches. Some caution is needed with this approach, since digital-orthoquads were based on mid-summer 1996 aerial photos taken prior to the January 1, 1997 storms and floods. Possibly stream location and current vegetation is now different. Tax lot mapping was not to cadastral standards and should be considered approximate. And despite care and caution, shade estimation error may have passed undetected during field verification.

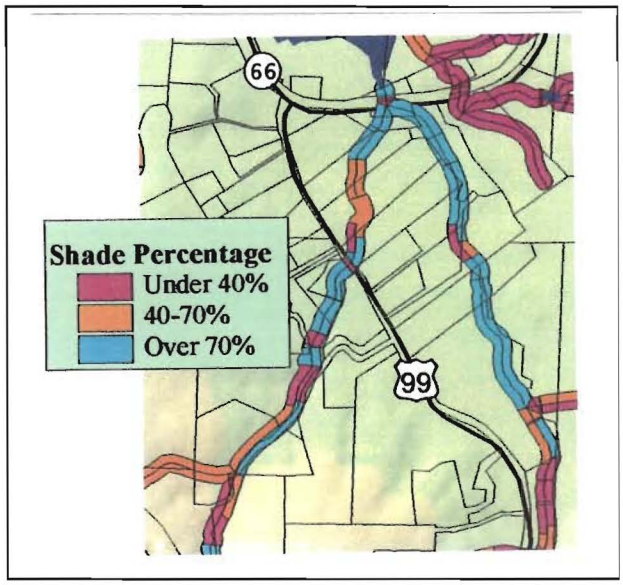


Table 32. Miles of Stream Shade for HUC-7 by Neighborhood

NEIGHBORHOOD and HUC-7s	< 40% Federal	< 40% Private	40% - 70% Federal	40% - 70% Private	> 70% Federal	> 70% Private	TOTALS
Old 99							
Hill Creek	0.1	9.4	0.4	9.5	2.5	8.9	
Songer Creek	0.6	4.3	0.2	1.5	-	-	
West Shore	0.1	1.7	0.0	3.3	0.0	1.2	
Totals	0.8	15.4	0.6	14.3	2.5	10.1	43.7
Carter-Emigrant							
Buck Rock	1.2	3.5	1.6	4.6	0.2	0.4	
Carter Creek	1.7	13.2	1.8	14.0	0.9	13.9	
Emigrant Creek	0.5	6.1	0.6	0.5	0.6	1.3	
Emigrant Falls	0.9	4.7	1.4	8.5	0.6	2.2	
Green Mtn.	1.3	1.6	2.0	3.4	0.8	0.3	
Pilot Rock	0.7	1.1	0.7	2.1	0.3	0.4	
Porcupine Creek	0.8	2.1	1.5	0.5	1.6	0.3	
Totals	7.1	32.3	9.6	33.6	5.0	18.8	106.4
Emigrant Lake							
Murphy Creek	1.5	23.1	0.2	1.0	0.5	3.8	
Cattle Creek	0.7	4.2	0.1	4.1	-	1.4	
Sampson Creek	3.5	4.8	0.4	1.9	0.3	0.7	
Barron Mtn.	0.1	5.6	0.4	5.1	0.1	1.7	
Round Mtn.	6.0	3.1	6.9	7.6	14.2	5.5	
Pearson Creek	0.4	1.5	-	-	-	-	
Totals	12.2	42.3	8.0	19.7	15.1	13.1	110.4
Tyler Creek							
Soda Creek	3.0	11.8	0.6	3.6	0.9	3.9	
Tyler Creek	1.8	10.1	3.3	10.8	2.5	3.7	
Baldy Creek	2.0	3.6	4.3	4.2	2.8	1.0	
Buckhorn Springs	1.5	2.9	0.9	2.5	0.2	0.4	
Totals	8.3	28.4	9.1	21.1	6.4	9.0	82.3
						Totals for All Neighborhoods	**342.8**

Retention of existing shade is especially important on streams with excessive temperature. Since a 303(d) listing is for a stream segment, rather than for a neighborhood, the data in Table 32 *by neighborhood* needed to be recomputed to show high shade streambank miles for *each listed stream*. The shade mileage by listed stream on federal and public land is presented in Table 33, rank ordered in decreasing total mileage. In this table, the total miles of stream shade includes the mainstem creek and tributaries within the HUC-7s for Carter, Tyler, and Baldy Creeks. Emigrant Creek below the dam is entirely within Murphy Creek HUC-7; the shade mileage includes mainstem Emigrant Creek and its many named and unnamed tributaries within the Murphy Creek drainage. Emigrant Creek above Emigrant Lake has existing high shade in several HUC-7 drainages. The mileage total in Table 33 includes all high shade streambanks in Emigrant Falls, Buck Rock, Buckhorn Springs, Emigrant Creek, and Soda Creek HUC-7s.

Table 33. Existing High Shade Streambank Miles for 303(d) Listed Streams

HUC-7 Drainage	Miles
Carter Creek	14.8
Upper Emigrant	10.7
Tyler Creek	6.2
Lower Emigrant	4.3
Baldy Creek	3.8
Total	**39.8**

For listed streams, retention of canopy cover on Carter Creek, nearly 90% privately owned, is most critical to maintain clear, cold water for native salmonids. The high shade areas on lower Emigrant Creek are also very important as a starting point for anadromous salmonid habitat improvement. This Murphy Creek area was settled very early and has been in continuous agricultural use for one hundred and fifty years. Maintaining the limited high shade currently there provides a base for habitat improvement.

Analysis suggests retention of existing shade in Round Mountain and Sampson Creek HUC-7s may also be a high priority to avoid stream listing for summer temperature. These two HUC-7s have the highest mileage, 20.7 miles, of streambanks with shade above 70% when streams where preliminary studies show listing is likely are included

with streams currently listed. About three-quarters of the high shade stream miles are on federal land in the Round Mountain HUC-7. Sampson Creek is a very important juvenile rearing stream for native fish and is considered marginal for summer temperature. Retention of existing canopy reduces the likelihood that listing will occur.

Another stream, Hill Creek, appears to be marginal for summer temperature, possibly due to warm water irrigation return flow. Collaborative action among neighbors may help avoid listing Hill Creek. Here, about 80% of the high shade mileage is on private lands, and it may be desirable for landowners to work together to maintain existing shade and to consider adjustments in irrigation water management to reduce warm water return flow. Total streambank miles in Hill Creek are 11.4 miles. Field studies on a third stream, Schoolhouse Creek, have shown high water temperature, but it is expected that restoration work on Tyler Creek Wasteway will resolve the excessive temperature. There are 6.3 miles of high shade streambank on all the other Emigrant watershed streams, mostly in headwater streams known to be cold.

Interim Riparian Reserve buffers required by the Northwest Forest Plan are likely to maintain acceptable stream temperatures on federal land. Private landowners could protect existing shade and help maintain cold headwater streams with voluntary buffers or conservation easements on their land.

Restoration of lost shade on streams with excessive temperature appears possible in most of Emigrant watershed. Pre-settlement riparian vegetation is thought to have been generally wider and more continuous than is the case at present, with many small wetlands and beaver ponds. The diverse riparian vegetation of conifer and deciduous trees, woody shrubs, forbs, grasses, and other plants changed with the changing land use, at some sites with substantial loss of soils. But along most streams, canopy and brush removal can be reversed to restore lost shade.

Nearly 100 miles of low shade streambank currently exist, over twice as many low shade stream miles as high shade. The shade data *by neighborhood* presented in Table 32 has been recomputed to show low shade streambank miles *for each listed stream*. The low shade mileage by listed stream in Table 34, rank ordered in decreasing total mileage, includes both banks of all perennial and intermittent streams on federal and private lands within one or more HUCs, as needed for the stream or stream segment, as in Table 33.

Table 34. Existing Low Shade Streambank Miles for 303(d) Listed Streams

HUC-7 Drainage	Miles
Upper Emigrant	35.1
Lower Emigrant	24.6
Carter Creek	14.9
Tyler Creek	11.9
Baldy Creek	5.6
Total	**92.1**

Possibly Baldy Creek, with the lowest mileage of low shade, offers the best chance for early success to de-list an occasionally warm stream. Timber Products, the industrial timber manager, has been very proactive in reducing logging road sediment by use of well-established water bars, providing oversized culverts, end-hauling road waste, and gating to restrict road access. They might consider providing access and allowing a volunteer effort to re-establish riparian vegetation where needed. The BLM manages 56% of the stream miles and may have increased responsibility to restore Riparian Reserve vegetation within a Cascade-Siskiyou National Monument harvested unit now designated LSR. StreamWalk volunteers reported probable sighting of a tailed frog near the Baldy drainage, and ODFW has documented fish presence well up into the Baldy drainage.

Not all low shade sites are restoration candidates. Wildfires, landslides debris flows and high peak flows from rain-on-snow events alter stream channels, remove and move streamside trees, create flood plains, and cause other natural changes on a scale which is uneconomic to reverse. Human causes also create changes that may be expensive to reverse, but typically restoration of stream shade can be accomplished for near-stream disturbance zones, roads near streams and road crossings, fragmented habitat due to agricultural and rural development, and canopy loss from timber harvest.

Riparian buffer width and basal area retention vary on forested sites. On federal land subject to the Northwest Forest Plan, riparian buffer width depends on the several factors but typically is one and one-half to two times the height of a site-potential tree for a buffer width up to 300-feet along perennial and intermittent streams. On private forest lands, the Oregon Forest Practices Act buffer width depends on size and classification of any perennial streams, which sets a buffer width ranging from 20 to 100-feet. No buffers are required on intermittent streams. Forested land in agricultural use only requires a buffer if trees harvested are sold commercially. Otherwise,

apparently have been set at 25 feet in Jackson County, but are not enforced.

Upper Emigrant Creek has the most low shade streambank, 35.1 miles, but two tributary drainages (Buckhorn Springs and Buck Rock) have a high percentage of federal ownership, which may give an early opportunity for shade restoration. Federal lands comprise 17% of the low shade Upper Emigrant mileage. Lower Emigrant Creek may be the most difficult high mileage low shade area where improvement is needed. The area is directly accessible to anadromous salmonids through Bear Creek, but fish presence has apparently not been confirmed due to denial of access to ODFW. Project staff were denied access for any purpose. Unstable stream banks, possibly due to excessive livestock use, have been accompanied by the loss of most riparian shrubs and canopy and continuing bank and soil erosion. Elevated stream temperature and loss of water quality directly affect fish use and survival. Voluntary efforts at habitat protection and elements of the Bear Creek Agricultural Water Quality Management Area Plan may encourage change in grazing and land use management by landowners.

When canopy restoration on all low shade streams within Emigrant watershed is considered, the Round Mountain and Sampson Creek HUC-7s offer an opportunity to avoid listing Sampson Creek, a very important fish stream, due to excessive temperature. As noted earlier, these two HUC-7s currently have 20.7 miles of high shade streambank. Of the 17.4 miles of low shade streambank, federal lands comprise 66% of Round Mountain (9.1 miles total) and 42% of Sampson Creek (8.3 miles total). Over half of both HUCs must meet interim Riparian Reserve guidelines in the Northwest Forest Plan, and it is possible that some private landowners would be interested in shade restoration.

The next steps of the Riparian Action Plan begin with taking the assessment and ideas for Action Plans back to landowners who did not think stream temperature and riparian shade were a concern, and to agencies who have land management or regulatory interest in voluntary reduction of excessive stream temperature. Information and demonstration of adequate riparian protection and restoration is a necessary component, as are maps and other information about where existing high shade needs protection and where existing low shade needs restoration. Landowners need to know why they should care about restoration action.

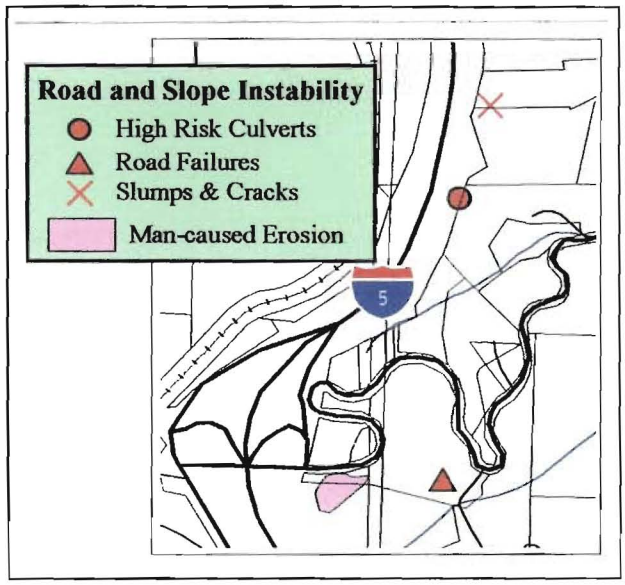
What steps landowners can take to retain or restore vegetation must be clear. They want to know how to protect riparian canopy, especially woody species where adequate riparian recruitment is needed; how to increase riparian width, especially lower in the drainage; how to restore canopy cover by planting with appropriate native plants and shrubs; how to increase stream flow by converting to more efficient out-of-stream water uses or leasing in-stream water rights; how to improve conifer growth where it is lacking; how to obtain CREP or other incentive assistance

to reduce livestock use of riparian areas; and how leaving both dead and live streamside trees benefits streams, fish, other wildlife, and people initially as shade and later as large wood.

Priority Neighborhood Action Plans

The volume and variety of Action Plan ideas generated during neighborhood meetings and landowner interviews and the site-specific restoration needs observed by StreamWalk and RoadWalk volunteers have been reviewed individually and grouped into categories used in the *Oregon Watershed Restoration Reporting Form 2001.* Four projects—Tyler Creek Wasteway, Off-Channel Watering, Catastrophic Wildfire, and Riparian Shade—were assigned "high priority" because they involved all neighborhoods and have been given more thorough analysis. About 70 projects were no less important in their neighborhood and were documented in the Component narrative. These project ideas are summarized neighborhood-by-neighborhood in Table 35 - Uplands and Roads, Table 36 - Instream and Fish Passage, and Table 37 - Riparian and Wetlands, mirroring Oregon's Restoration Inventory Report categories.

Road and slope instability received major attention in the Emigrant Watershed field work. Over 100 high-risk culverts, slumps, and road failures; 24 streambank erosion sites; and 29 slope instability sites were documented, mapped, and photographed. From a neighborhood perspective, there is a spatial pattern to the instability, and a visualization tool such as the Road and Slope Instability maplet to the right helps landowners better understand complex factors that may affect their plans. This also helps landowners to understand how their actions may affect adjacent landowners and why group effort may be needed. Building a sense of community is the heart of the Emigrant project.



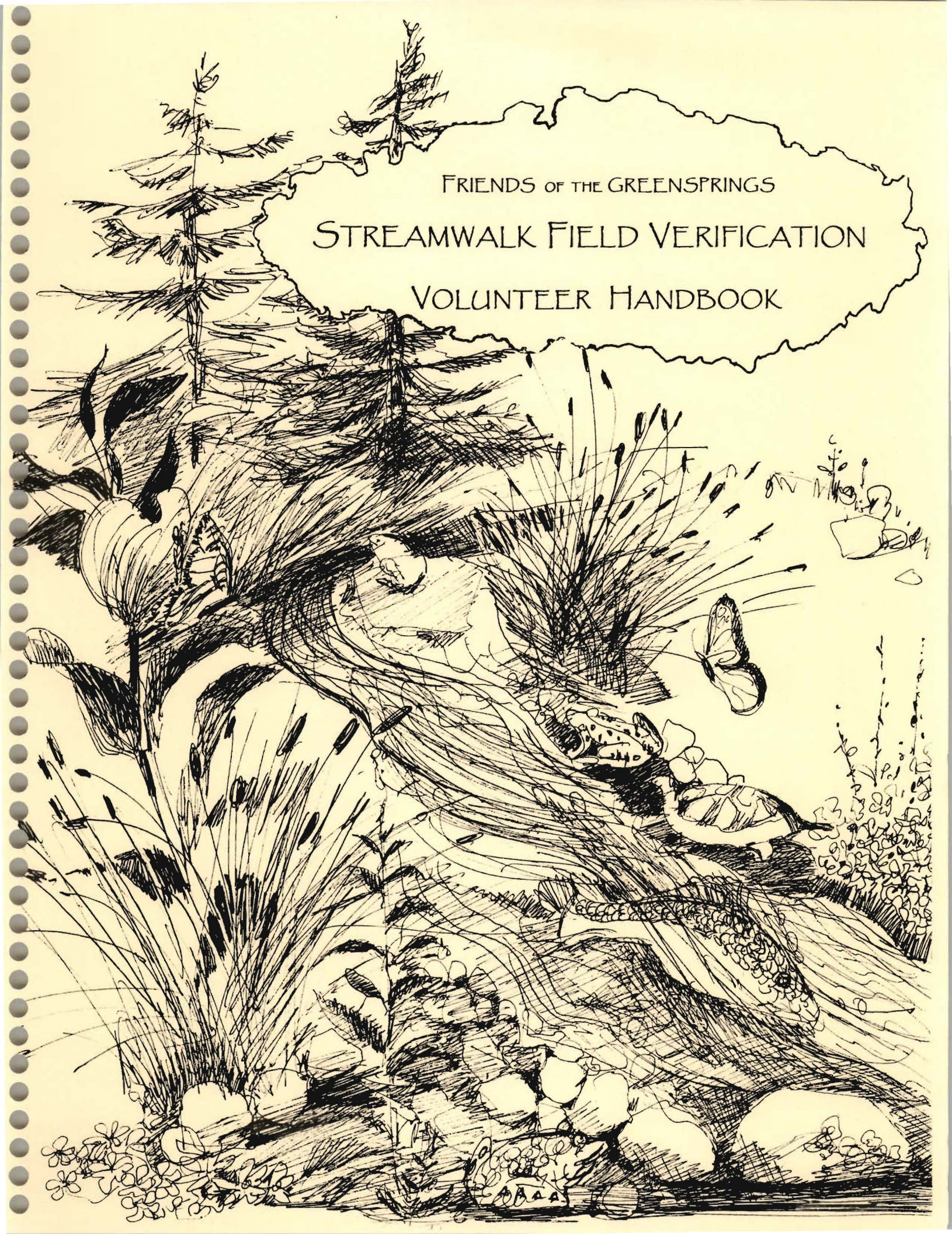
The priority Action elements in the following tables have been reviewed at neighborhood Action Planning meetings, but often the individual offering a comment was not at the follow-up meeting, and few of the elements have been reviewed by agency and organizational landowners and land managers. The next Action Plan step will be to ask for a more comprehensive review and discussion with those affected in order to identify common project ground. Where shared interests exist, commitment and technical support and funding will be obtained.

Some comments resulted in Priority Referral Action because the item, although within the Emigrant project boundary, was considered outside the watershed/wildfire/wildlife assessment scope. Many people commented on recreational public impact on or around Emigrant Lake. Comments and concerns touched on park management, lax law enforcement, lack of a firebreak between recreational activities and homesites, grass fires, illegal use of off-highway vehicles below high water line, lack of road maintenance, lack of toilets in some heavily used areas, lack of trash containers or pickup, grazing cattle allowed in recreation areas, and presence of a dead cow at the lake edge. These comments will be given to recently formed Friends of Emigrant Lake, who will take some of the matters up with Jackson County Parks and Recreation.

Another Priority Referral Action involves identifying end-haul sites on private property where landowners are interested in obtaining fill material, possibly from Jackson County Roads, ODOT, or BLM. Six landowners have expressed interest in working with Jackson County, and it is expected more can be identified and a process established to authorize disposal of fill on private land where the fill is unlikely to become a sediment source.

Collaborative noxious weed control is needed with suitable training, equipment, and safe disposal, as well as a visible process for site notification, timely collection, and acknowledgment. At a minimum, volunteers can begin inventorying weed sites on private lands and be given information on effective control methods. Priority referral will be made to local, state, and federal agencies.

The fourth Action Referral concerns informational signage to help develop a sense of place for residents and visitors. Few people knew the names of creeks they cross every day, and often they did not even know it was a creek. When people learn the names of places or objects, their relation to the place or object usually changes in a positive way. By installing signage with creek names, landowners may begin to adopt and protect sensitive watershed sites, and value and use these "new" landmarks in their lives. There is a lack of Fire Danger signage on several well used highways and public roads residents use daily, and some comment was received about a lack of wildlife signage. Some balance is needed to avoid sign clutter, but Emigrant residents seem to support more informational signs.



FRIENDS OF THE GREENSPRINGS

STREAMWALK FIELD VERIFICATION

VOLUNTEER HANDBOOK

STREAMWALK FIELD VERIFICATION HANDBOOK

Thank you for offering to help! And thanks to the Oregon Watershed Enhancement Board for helping the neighborhood fund this project. If you forget something that we went over in training, or if you missed it, just follow the steps on the data form once you have gotten to the stream you were assigned. You should walk up and down the stream segment that was given to you and take measurements several times so we can get an average on the data you're collecting. You're doing important scientific work, and we know you're capable—so be proud of the stuff you're doing! We know the stream you're surveying is in good hands.

Our policy on visiting private lands is simple: No Trespassing . We only go where the welcome mat is out. The Emigrant Project always gets a signed Access OK from landowners before asking Streamwalkers to collect data. We put names and phone numbers on the top of the data form so you can call ahead or clear up any questions. Please respect private property and take care to stay within the area you are assigned. Thanks for helping us keep the neighbor's trust.

Glossary of Terms

Bankfull Width: This is the width of the stream channel when it is full of water, but not when it is flooding. Bankfull width can be determined even when there is no water in the channel, with a little practice. Scour lines on rocks where moss has been washed off, absence of leaf litter or plants in the stream channel and a small terrace in the stream bank all provide clues for limits of the bankfull width.

Gradient: A measurement of slope (steepness) for a section of stream or a hillside. Gradient is usually measured using a clinometer, and expressed in percent(%) in Streamwalk work. Measure gradient by standing on a flat surface and sighting with the clinometer on an object at the *same height* as your eyes some distance away, usually about 50-70 feet. While you are looking at that point, close one eye and read the percent, the righthand number of the two numbers on dial of the clinometer.

Stream Reach: A section of stream with conditions that are fairly uniform throughout its length is called a "reach". Usually it's given a unique code such as TC-17 for reach 17 of Tyler Creek. OWEB reaches are anywhere from 1000 to 5000 feet long but the section you are checking will be shorter, often 100 to 500 feet long. You are asked to hike this section, taking measurements at the beginning and end and every 200 feet.

Stream Type: This refers to whether there is a defined streambed and streambank. If there are signs of scour and sediment deposition within the last year or so, then it is a "channel". If there's just a sort of smooth gully with grass and leaves where a stream would normally be, it is a swale, and we don't measure it. An educated guess as to how long you think water might flow in a channel is up to you, using this basic breakdown:

- Water is in the channel year around, with perhaps very little water in the driest weeks of the year, in pools or just a trickle = Perennial.
- Water flows during part of the year, but only for several months = Intermittent.
- Water that flows only during big storms, and not longer than about a week is termed "ephemeral" and is not included in OWEB studies.

Substrate: Also called streambed material, this is the size of "rocks" making up the streambed including everything within the bankfull width. You will estimate how much area the four sizes of substrate cover. Fines are clay, silt and sand up to small marble size. Gravel is from small marble to tennis ball size, while cobble is tennis ball to bowling ball size. Anything larger than a bowling ball is a Boulder.

Any boulders larger than a kitchen table should be counted as bedrock, which is the solid rock under all the dirt, plants and rocks on the mountain—the real skin of the planet.

Make your substrate estimate where the stream is straight and fairly even, with no deep pools. If you get confused, focus on a small section of streambed and don't overthink it. Keep in mind that larger substrates always draw the eye more, so you'll tend to overestimate on boulder and cobble. Look between the big stuff at what's filling in the cracks.

STREAMWALK DATA FORM ELEMENTS

TRY TO FILL OUT ALL THE ITEMS ON THE FORM BUT SOME PARTS MAY NOT APPLY

NAMES/DATE/TIME: THESE ARE ESSENTIAL; PLEASE DON'T FORGET!

- SEGMENT LOCATION: Write down where you began and ended your survey. Road crossings and stream confluences (where two come together) make the best landmarks. Try to make corresponding marks on your field map as well—it is very important that we know where your data applies.

  Write down the number of locations where you measured channe data and the approximate length of stream, e.g., "4 times over 500 feet of stream"

- BANKFULL WIDTH: Secure one end of the 100-foot tape on the left bank (facing downstream) using a nail or rock or your partner. Pull tight across the water keeping the tape level and perpendicular to the stream, and read the width to the nearest tenth-foot where the tape touches the bankfull point opposite. Leave your tape in place to measure stream cross-section here.

- STREAM CROSS-SECTION: Divide the bankfull width by four and use the rod to measure depth below the tape at each quarter section point to the nearest tenth-foot. For instance, for a bankfull width of 24 feet, you would take depth measurements at 6 feet, 12 feet, and 18 feet along the width. Then find the deepest part of the main flow called the thalweg, and record the depth and where in the width of the stream it is, e.g."0.8 feet at 9.4 feet from the left bank". Do not measure how deep the water is; instead measure depth from where the measuring tape crosses the rod. And leave the tape in place for a site photo.

- SUBSTRATE: Look around for a minute or so, then make a decision on the dominant and sub-dominant size of streambed material. Keep in mind the break points for size categories: bowling balls/tennis balls/small marbles are the dividers between boulders/cobble/gravel/fines.
- ROUGH SKETCH: Make a brief line drawing of the general shape of the valley and the stream width as if looking downstream. Add shrub and trees but don't go overboard on details; the main point is to capture the ratio of valley steepness and width to the stream channel's width and depth. Estimate a scale for the sketch.
- PHOTO POINT: Take four photos where you measured your cross-section: one facing downstream, one overhead, one facing upstream, and one of the measurement site from the right bank. Include your tape measure at your bankfull measurement site in the photo. Keep careful track of the photo frame numbers and write them down next to the sketch grid on the form.
- STREAM GRADIENT: Channel slope has a big influence on stream character and is important to verify in your streamwalk. Match your eye height with a partner or a tree branch. Have your partner walk downstream about 50 feet and, standing at water level, use your clinometer to sight on your partner or your branch. Read how steep the downstream segment is as a percentage. Repeat looking upstream.
- STREAMBANK SIDESLOPES: Use the same method as above, but walk uphill adjacent to the stream to take your measurement looking down. Because gradient is expressed in percent, it really doesn't matter whether you're looking up or down, it's the angle that matters. Recall left and right bank is while looking downstream.

- DESCRIBE STREAMBANKS: Use the same list as substrates in the glossary to describe the bank material and make a note on bank stability. Are the banks sheer and crumbling or undercut? If so they are actively eroding, and unstable. Are they fairly stable, with plant or tree roots holding them together? That means they are vegetation stabilized. If the banks are mostly made of bedrock, large cobble and boulders, mention that, and list as stable.
- CANOPY COVER: Look at the trees and shrubs around and over the stream channel, and if the trees aren't fully in leaf, pretend that they are. Try to estimate a percentage of sky you would be able to see if you were lying down on the stream bank. Take that number and subtract from 100. Example: 30% sky visible = 70% canopy cover. The helpful guide to canopy as if looking down from above is given in the OWEB table below which uses stream bank visibility.

Indicator	Shade	Code
Stream surface not visible, slightly visible, or visible in patches	>70%	H
Stream surface visible but banks are not visible	40-70%	M
Stream surface visible; banks visible or visible at times	<40%	L

- LARGE WOODY DEBRIS: These are logs and trees that have fallen into the stream. Only count individual wood that is thicker than 4 inches and longer than six feet. Note any "key" pieces over ten feet long and record. Also count any jams of logs, even if the logs are smaller than above. Root wads of fallen trees are counted separately. They should be at least halfway into the stream channel.

  Keep count with dots & boxes: ∴ = 3 ⊏ = 7 ⊠ = 10

- RIPARIAN WOOD RECRUITMENT: Often there is large wood currently beyond today's channel which will likely move into the stream in fifty years or so. Such streams have adequate wood for recruitment.

  Other streams lack available large wood due to riparian vegetation below the potential typical for sites like this and are judged to have inadequate wood for recruitment into the channel. Factors like residential, agricultural, powerline or road development, or beavers, acid springs and wet meadows may result in a lack of adequate wood as noted in the table below.

  Dense stands of large conifers are preferred to sparse stands of small hardwoods for riparian wood; use the 3-letter code form the reference card to suggest riparian vegetation presently at this site.

Riparian Recruitment Situation	Description
Adequate	No enhancement needed (dense stands of large-sized conifers).
Small stands	Stands that are generally too small to provide recruitment under current conditions. The land use associated with these stands is forestry.
Large hardwood stands	These stands are also associated with forestry land use. These stands are primarily areas of large hardwoods.
Agriculture	The land use associated with these stands is agriculture. These areas that have no or very narrow buffers between agricultural land and the streams.
Development	The land use associated with these stands is residential development. Buffers are either absent, small hardwoods, or lawns.
Infrastructure	Areas where roads and power lines have created permanent discontinuities in riparian conditions.
Beaver	These are areas where beaver ponds are limiting riparian recruitment.
Wet/meadow	Wetland conditions limit riparian recruitment.

COMMENTS are often some of the most important data you collect. In many cases, you are the only one out there who will look at this stream, perhaps for years, and many people will be relying on your observations! Didn't know you were so important. did you?

Feel free to use the back of the form for comments. Comments might include observation of fish passage barriers or wildlife signs, disturbances you saw such as "old skid road crossing" or "cattle trampling" or "lots of bug-damaged fir trees". You may see small islands in the stream, or old channels where water may have run during a flood event. Check along the whole reach for these, and comment on how many you saw, and whether any channels were active (had water or signs of recent flow) or not.

Add a diagram if it would help show what you saw, and add anything you think was noteworthy. Field verification is a key part assuring data quality in this study. Your hard work and observations will help us improve the final channel habitat type and riparian condition determination and increase the confidence we report to OWEB.

Thanks again for helping us meet the quality requirements of Oregon's Watershed Assessment methodology. Good job and thank you !

Streamwalk Volunteer Checklist

Streamwalk Tasks

- Water presence
- Fish presence
- Bankfull Width
- Channel X-section
- Substrate %
- Channel Gradient
- Stream Bank Slope
- Bank Stability
- Canopy Closure
- LWD counts
- Wood Recruitment
- Fish Barriers

Equipment Checklist

- ☐ Data forms
- ☐ Laminated card
- ☐ Taxlot x Vegetation map
- ☐ Aerial photo
- ☐ Quad map
- ☐ Aluminum form/map holder
- ☐ Clinometer
- ☐ GPS unit
- ☐ 100-foot tape
- ☐ 6-foot Pocket-Rod
- ☐ 6-foot PVC rod
- ☐ Rite-in-Rain notebook
- ☐ Pencil & pens
- ☐ Dry Erase board
- ☐ Dry-Erase markers
- ☐ Immersion Thermometer
- ☐ Lime Flagging
- ☐ Compass
- ☐ Disposable Camera
- ☐ Water Sample Bottle
- ☐ 60-penny Nails
- ☐ Clothes Pins
- ☐ Misc. Sample Baggies
- ☐ Hand Towel
- ☐ .
- ☐ .
- ☐ .
- ☐ .
- ☐ Signal Whistle
- ☐ First Aid Kit
- ☐ Knapsack

StreamWalk Field Verification Form for final CHT seg EC-17

StreamWalker names KARA K. / JOHN W. / RIO P. / RICHARD HART RCU seg

Access OK [X] yes Landowner BRUCE SARGENT Call first [X] 482-2979

Date surveyed 5/8/01 military time of day 18 : 30

Stream EMIGRANT CREEK Tributary to BEAR CR., ROGUE BASIN

Segment location BUCKHORN SPRS. ABOVE BRIDGE ODF stream class size S (M) L

Quad map EMIGRANT LAKE Location T 40 R 2E Sec 14

GPS if known North 42° 06.523 West 122° 31.891 sec

Stream is (✓) [X] perennial [ ] intermittent [ ] don't know water present today? [X] yes [ ] no

Flow level today [ ] low [X] medium [ ] high Water clarity [X] clear [ ] moderate [ ] turbid

Weather BRIGHT & SUNNY water temperature 17.8 °C

Fish Observations		Aquatic wildlife		Other wildlife	
species	quantity & size	species	comment	species	comment
NONE		FROG		abundant macro-invertebrates in stream	

Physical Stream Data

Bankfull channel width (feet and tenths) 34.7

Current wetted width (feet and tenths) 26.4

Stream x-section (feet and tenths) left ¼ 1.4 mid 1.9 right ¾ 0.9

Thalweg depth (in feet and tenths) is 1.73 feet at 9 feet from left bank

Substrate (boulder/cobble/gravel/fines) dominant GRAVEL subdominant COBBLE

Stream gradient downstream 3 % upstream 2 %

Rough sketch of valley & stream cross-section; add scale

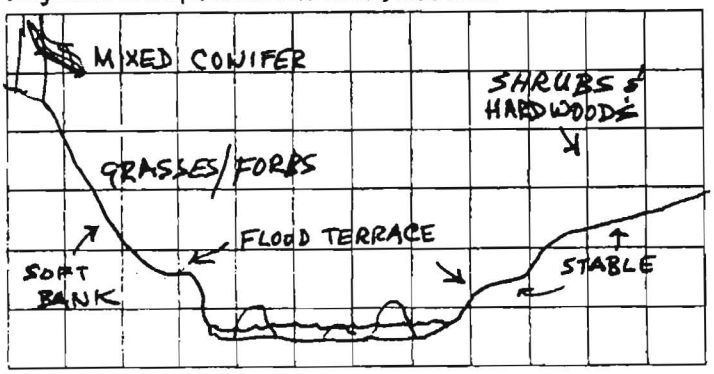


Photo point Roll & Frame

roll letter BS-1

Downstream frame # 04

Overhead frame # 05

Upstream frame # 06

Site frame # 07

Streambank Side Slope left 57 % right 30 %

Material in streambank GRAVEL / COBBLE

Stability of banks left VEG. STABLIZED right VEG. STABLIZED

OWEB Canopy Cover (left bank at site) [ ] low under 40% [ ] medium 40 - 70% [X] high over 70%

(right bank at site) [ ] low under 40% [ ] medium 40 - 70% [X] high over 70%

Large woody debris (over 4-inches diameter by 6-feet long) # of pieces 3 jams — root wads —

any KEY pieces over 10-feet long? # of pieces NONE

Riparian wood recruitment [X] adequate [ ] inadequate 3-letter Riparian Vegetation Type MMD

please use comment space on back of form to add the key details to help us see what you saw

OVER

Comments:

This stream reach, very near the Buckhorn Spa. rail car bridge, is stable and healthy. The water is cool and carries a full complement of caddis, stone, and mayfly nymphs. The water is clear, but the flow is below average due to drought conditions this year.

The stream channel is stable and 90% vegetatively covered on the right bank. The left bank is steep and much less stable due to its structure of loose material. There are signs of bank failure all along this left side.

A down-stream survey for ½ mile showed bank failures and debris jams from the '96-97 Flood. So, this stretch probably lost its accumulation of large woody material in the Flood.

Channel habitat type determination:

- ☐ Same as initial type
- ☐ Differs from initial type by:

  Can be extrapolated to the following areas:
- ☐ Divided into additional type:

Emigrant Watershed StormWatch

Thanks for volunteering for **StormWatch**, an important part of a Friends of the Greensprings (FOG) watershed study. **StormWatch** looks at the effect storms have on stream conditions in the Emigrant watershed and downstream.

Very little is known about how streamflow and turbidity change with storms here. Your **StormWatch** observations and photos will help us link weather data with changes in creek level and water color. Knowing which streams have a turbidity problem will help focus future studies and restoration efforts. And we will better understand how this watershed actually works

Since data is very scarce, your work is really important. FOG will pool data from **StormWatchers** to answer basic questions like:

- How soon after a quarter-inch rain does this creek rise?
- What is the rise after a one-inch rain?
- How much did this creek rise following each storm?
- How much did levels change with a warm rain-on-snow event, and how long did the rise last?
- Did the creek change color? When? What was the color?
- Did the color persist or quickly go back to normal?

You have seen high water, occasionally pretty muddy with plugged culverts and other storm effects. Your help in tracking major changes will help FOG document the hydrology and sediment parts of the Emigrant Watershed Demonstration Project. You and your neighbors will benefit by saving time and reducing costly storm damage. This study is funded by Oregon Lottery dollars through Oregon's Watershed Enhancement Board, by Friends of the Greensprings and by caring residents like you. Thanks to all!!!

What commitment will this take?

During the next five months we are asking you to get out in the weather for short periods on a regular basis, hopefully daily as part of your routine. We have obtained an access OK and have marked easily accessible **StormWatch** sites near you. Your commitment is to gauge stream height and turbidity, and take a water sample and photos if you feel it appropriate. Of course, write down any storm event unfolding at your location.

How do you do StormWatch?

Taking care of your self comes first. Dress for the weather. Tell someone what you are doing, where you are going, and an estimate of how long you will be out. Better yet, take a friend.

We will provide you with a **StormWatch Volunteer Kit** that includes:

- ☐ Rite-in-Rain notebook
- ☐ Pens: ballpoint & permanent
- ☐ Turbidity sample bottle
- ☐ Emergency rain poncho
- ☐ Recyclable camera
- ☐ Map of **StormWatch** sites
- ☐ LimeGlo ribbon flagging
- ☐ Two energy bars

Record in your notebook your name, the time of day using a 24-hour clock. *Date and time* of the observation is important. We suggest writing *the day of the week* followed by date and time as shown at right.

RON HARTMAN 14:38
TUESDAY 11/28/00

Every **StormWatch** site is marked with LimeGlo flagging, usually hanging above it. A bridge abutment, culvert, or tree at the location's water channel is marked at 1-foot height intervals in green paint. Estimate the water depth at or between the marks and record it in the notebook.

Mention whether you took a photo and record the photo frame number. And always comment on the appearance of the water and any recent weather events affecting the site. Good comments are the heart of the record you are documenting.

If the stream is unusually muddy and turbid, **and if it is safe to do so**, take a "grab sample" in your sample bottle from a representative part of the stream and cap the bottle tightly. Take a photo of the condition, one upstream and one downstream. Call John Ward or one of the others listed below to get the sample which must be analyzed within 24-hours for turbidity.

Networking

There may be a volunteer working another location on your creek. We will connect you with your neighbor, if you haven't done it already. This will help you compare notes and keep an eye out for each other. If there are storm events you feel the project team should known about and observe, or a muddy water sample, call the folks below:

John Ward, Stormwatch guy	482-2859
Richard Hart, Project Coordinator	488-1508
Rio Prince, Watershed Coordinator	482-9861

Other volunteers needed:

We still need to find residents who measure rain and snow fall every day to fill data gaps between weather stations. Please give us any leads about neighbors who are weather watchers; FOG will follow up right away.

A local news channel weatherman, Scott Lewis, would like to link to **StormWatchers** who would either contact him or let him call them in unusual weather situations. Scott would like to be notified if rains exceed half an inch. If interested, contact him at **773-1212** or via e-mail at "**slewis@KDRV.com**".

And the National Weather Service would like to be called any time rain exceeds one-inch within 12-hours, and as soon as rain goes above 1.5-inches in a 24-hour period. **DO NOT CALL** when rainfall is under these amounts. The direct number to the forecaster on duty is 773-1067.

FRIENDS of the GREENSPRINGS

A little backround info. . . .

Frost, rain, glaciers and rivers all help break up and dissolve rocks into smaller and smaller particles. These particles are transported by wind and rain, which we call **erosion;** where we live, water is by far the more dominant of the two. During the wet season, there is a brief period at the beginning when water is soaking into the earth almost as fast as it falls, so the dirt does not go anywhere for a while. Once the soil is saturated, water flows over the surface and down to the streams, bringing much of the loose, wet soil with it. This soil gets moved along in the stream until the water slows down enough for the dirt to start dropping out, called **deposition.** Erosion and deposition are what made the mountains and valleys you live in right now.

How does this affect me?

Human activities on the land often affect natural processes. Anything that either disturbs the soil or removes vegetation from it—construction, logging, fire, fill dirt dumping, etc.—will increase erosion. When increased loads of sediment flow through the stream, many undesirable conditions can occur. Insects and fish food get buried and many fish will leave, small dirt particles will clog the gravel so oxygen can't get to fish eggs, and habitat can become degraded for quite some time. During the rainy season, we all expect a swollen muddy creek, but how much mud is normal, and how do we tell when it's really high? The best answers usually come from people who live there and watch for any changes.

Winter Storm Patterns

Where we live, most storms come swirling off the ocean, usually in a series of low pressure troughs. Depending on the orientation of the jetstream, these storms may be warm, cold or first warm then cold. Often we have a day or two of clear, sunny weather with very mild wind conditions. This is followed by a calm, then gradual cloudiness. After this the rain starts, usually a slow steady rain which gets increasingly colder and wetter and more intermittent. Often storms are shaped like a large comma as they rotate down from Alaska.

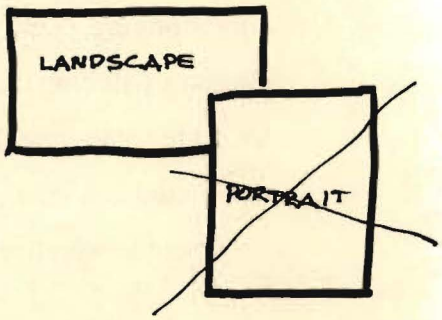
It takes about 8 or 9-inches of rain after a dry summer before turbidity shows up. A series of storms with steady or increasing rain for several days will boost streamflow and start sediment moving downstream. It is important to get a look at the stream before, during and after storm series of different length and intensity, so we can get a better idea how turbidity rises and falls.

Photo Records

A picture does not need to be taken every time you check your location. The camera is to document a major change, like going from a 3 to a 7 overnight. Also, you should try to take a picture for a range of your numbers; so a 2 and a 5 and a 9 for example, to give us an idea of the range of color you are seeing in your stream, and to help us learn your personal interpretation. Photos on the days you sample muddy water are especially helpful and can be tied to FOG measurement of light transmission.

Again, there is no right or wrong here—your 7 may be someone else's 5 or 9, and it won't be a problem if we can get photos of each of you for your range and what you call it. The important thing is consistency. Look over your notes from previous times to refresh your memory of what you saw to help you make a decision about the current turbidity.

When in doubt over whether to snap a photo or not, go ahead and take it. The actual procedure is to take two photos always: one straight down at the stream channel, and one facing upstream. Try to always get a particular landmark in every photo like a stump, fence or large rock to help gauge what is being photographed, and take both pictures in a landscape, not portrait, orientation.



Turbidity Samples

If you have something that is above a seven, try to get a representative creek sample in your bottle at about 40% of the water depth. Don't try for the muddiest spot, and avoid silt or sand near the bottom. These are sealed bottles, never used before, so put off opening them until you are ready to grab your sample. Because this water will be photometrically analyzed, never put anything but creek water in the bottle. Try to fill the bottle entirely with water so no air is left at the top. Call the Project Team right away; turbidity samples need to be analyzed within 24 hours to be reliable. Someone will come to get the sample as soon as possible and give you a new bottle. It is only necessary to get a few samples over the entire season, so certainly don't take more than one per major storm, unless it looks like the dam broke and what used to be a 7 is now a flood that should be a 13!

Turbidity describes the size and amount of particles suspended in water. FOG is equipped to test for turbidity by measuring how much light passes through a sample of water. Very high turbidity is hazy or even opaque like chocolate milk, whereas low turbidity may look like a glass of water with a teaspoon of milk in it.

Procedure

When you get to your stream location, you should first get out your notebook, each day, and put a header at the top of each days entry. Record the day of the week, the date and time on a 24-hour clock, the location and your name (possibly while sitting in your warm car!).The header may seem repetitive but it really helps avoid mistakes in compiling the data. ***Comments are the lifeblood of field observations***. Scientific measurements are good for precision, but your comments build understanding and can fill gaps that measurements leave.

If you can sit in your car and observe conditions, taking your time to write about them, GREAT. If, however, you are in nasty weather and want to get out of there, jot down some key numbers and words that will help you remember the conditions you are seeing. Then when you get back home, make the comments more robust.

Don't procrastinate! We speak from experience when we say the longer you wait, the more information you lose, and the greater the temptation to embellish your comments to make up for what you can't remember. Consistency is all-important for these observations. If some are highly accurate and others are very vague, the information loses most of its value. Take down comments every time you go out. How much water, how cloudy it looks, how much it has been raining that day, and all of these compared to the previous day, are good places to start. How many days it has rained and how high the water is are also important, as well as any wildlife sightings, comparison of this years weather with previous years are all helpful.

To help you gauge the turbidity of your stream, we suggest using a scale of 1-10 to rate the cloudiness of the water. Zero would be perfectly clear water, 10 would be like chocolate milk, and a 5 would be if you could dimly see the rocks on the bottom of a foot-deep stream. If you want to use other descriptors or criteria, please explain them as best you can and use that system consistently.

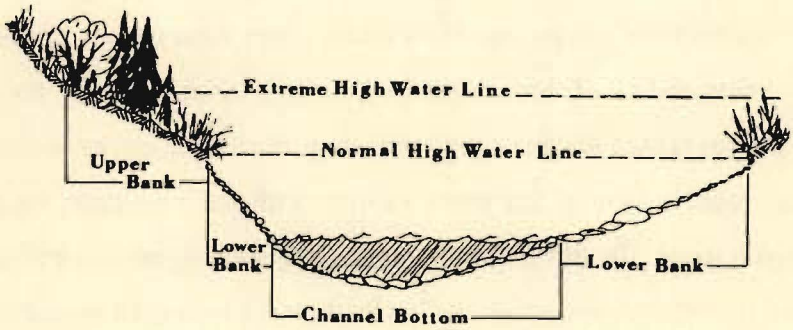
Is that all?

That is the procedure and information that we need from you. We don't want it to be complicated or something you hope to avoid. If you have ideas for the stormwatch program, FOG wants to hear them. As we get more data on the streams in our watershed, a picture will begin to emerge about sources of sediment and their location. Knowing which streams have a turbidity problem will help FOG focus future studies and restoration efforts.

You are doing important, valuable work. We will learn about the watershed together in a unique project on the cutting edge of watershed management. This kind of community effort to do a watershed assessment across ownerships, in cooperation with agencies and other landowners, is virtually unheard of and untried.

The work you and other volunteers are doing is going to change the way the Oregon Watershed Enhancement Board looks at community-based assessment. Thanks for helping pioneer a new phase in land management. In the end you and your neighbors will benefit from the community effort to share solutions that sustain the place we love.

THANK YOU!!



EMIGRANT WILDFIRE SURVEY

Friends of the Greensprings
January 1, 2001

NAME Jerry Masters + Rene

FIRE ADDRESS 6245 Old Hwy 995. HOME PHONE 541 482 3506

MAIL ADDRESS 6245 Old Hwy 995 97520 OTHER PHONE .....

I need a District 5 FIRE ADDRESS SIGN for my driveway. [ ] yes [X] no

I want to be part of a Neighborhood Fire PHONE LIST. [X] yes [ ] no

SPECIAL NEEDS OR HAZARDS - *Circle all that apply*

[ ] blind / invalid / hearing impaired [ ] gun powder / weak bridge [ ] above ground fuel tank: propane / oil / gas [ ] confined animals in barn / fenced / in house

I have a WATER SOURCE now.

[ ] pond [ ] pool [X] hot tub [X] tank [ ] helipond .....other pump chance

that holds about 1500 gallons

Firemen [X] could [ ] could not refill fire trucks here

I am interested in BUYING FIRE TOOLS to keep at home. [ ] yes [X] no

I am interested in coming to **INITIAL ATTACK TRAINING**. [X] yes [ ] no

I would like a FIRESAFE CONSULTATION for my - [X] yes [ ] no

[X] access road [X] house [X] wildlands

I make GREAT COOKIES/COFFEE & other TREATS such as:

English Tea Cakes

I would VOLUNTEER SOME TIME to make the neighborhood better prepared for the next fire. [X] yes [ ] no

I have some FIRE FIGHTING EXPERIENCE that is not being tapped.

RETURN THIS FORM TO :

Friends of the Greensprings
15097 Hwy 66
Ashland. OR 97520