

Winter/Spring 2010

WSA *Currents* & **PROFILES**

INFORMATION WITHIN REACH

Welcome to the winter/spring issue of "Currents & Profiles," the National Watershed, Soil, and Air (WSA) Technology and Development Centers' news and notes to the field. It is time to submit project proposals for the FY 2011 Watershed, Soil, and Air T&D program of work. Proposals must be submitted to San Dimas T&D by February 11, 2010. The project proposal form can be found on page 11 of this issue.

"Currents and Profiles" updates the watershed community on the progress of our projects and newly available publications. This issue includes the following topics:

- **CURRENT PROJECTS—UPDATE**
- **NEW PROJECTS**
- **T&D PROJECT PROPOSAL SUBMITAL FORM**
- **HIGHLIGHTS—New Study on Woody Biomass Residues at RMRS**
- **COMPLETED PROJECTS NOW AVAILABLE**
- **LINKS OF INTEREST**
- **WSA STEERING COMMITTEE MEMBERS AND T&D STAFF**

Mission Statement

To systematically apply scientific knowledge and advanced technology to create new or substantially improved equipment, systems, materials, processes, techniques, and procedures to meet the challenges and objectives of sustainable forest ecosystems management.



Watershed, Soil, and Air Technology & Development Program

1025 1801—SDTDC

• **CURRENT PROJECTS—UPDATE**

Development of Science-Based Winter Guidelines for Mechanical and Fuels Treatment Operations

Proposed by: John Townsley, Randy Tepler, and Brad Flatten (R6)

Objective: Develop science-based guidelines for winter logging by using low-cost, easily identifiable indicators of frozen soil.

In January 2009, winter logging tests were performed on two units on the Hiawatha National Forest in Region 9. Our focus was to develop practical, low-cost, science-based winter logging guidelines which are easily identifiable in the field by the sale administrator, logger, and soil scientist.

Prior to the onset of winter, San Dimas Technology and Development Center (SDTDC) staff worked with Rocky Mountain Research Station (RMRS) to develop a study plan that correlates soil temperatures at 3, 6, and 9 inches with actual conditions above ground. Our first step was to conduct soil disturbance monitoring evaluations before treatment using the new Forest Soil Disturbance Monitoring Protocol (FSDMP) (Dumroese et al, 2009) developed by RMRS. Working with the Hiawatha National Forest soil, watershed, and forest management staffs we conducted a soil disturbance assessment prior to treatment. At the same time, we installed HOBO dataloggers to record air temperature, soil temperature, and moisture at the different depths along both main and secondary skid trails. Frost tubes were also installed as a low-tech method of determining the depth of frozen ground in the unit.

The units were harvested in January and February of 2009 following normal operating procedures for winter logging. Field observations were recorded during logging to identify the following attributes:

- Depth of snow in skid trail and undisturbed.
- Type of snow (dry, wet, cohesive).
- Depth of frozen ground using both spike and frost tubes.

In July 2009 the units were monitored using the FSDMP to determine the amount of change from pre-treatment to post-treatment. Findings indicated that the Hiawatha NF soil standards were achieved in both units. There were several areas of rutting from the equipment and forest soil scientist Jim Gries felt much of the disturbance could be avoided in future winter logging harvest operations with the following mitigation measures:

1. Use skidding mats to reduce the equipment impact on soils with low load bearing strength due to high water table.
2. Increase the frozen ground depth by plowing and packing the snow on the main skid trails that access the landing area.
3. Use frost tubes to give the sale administrator and logger a better idea of depth of frozen ground within the unit so they can implement mitigation measures.
4. Place slash on skid trails to reduce equipment impacts.



Slash mats used to distribute equipment weight on main skid trail.



Frost tubes are easily installed at a unit and help determine the depth of frozen ground.



Forest Name:		Chequamegon-Nicolet NF, Medford unit		Harvest Method:		No Harvest Activity			
Location:		Aspen Cover edge of lag alder, Hobo SN 222731 H21-002 measuring: Air & soil temp, Soil water.		Unit:		PU #1 FR106 Mondeaux Salvage Sale			
Logging Start Date:		No Logging in 2008-09 due to poor market conditions		Logging End Date:		None			
Date & time	Unpacked Snow depth (in)	Packed snow depth on trail (in method)*	Soil frost depth in trail (in and inches and method)*	Soil frost depth unpacked soil	Snow Cond** (in)	Frost Tube Reading Spruce Site F	IR Reading Degrees	Picture (Y/N)	Comments
12/02/2008 0910	Trace	na	na	Spike 2 inches	Dry Loose	No Tube	3.3	Y	Photo showing dry snow conditions. 100% overcast and windy
12/18/2008 1030	2.5	na	na	7.5	Dry Loose	8.00	-9.0		100% sun, Winds 0 to 3 mph.
01/06/2009 1030	8.0	na	na	8.0	Dry Loose	7.00	-9.6	Y	Photo showing dry snow conditions. 100% sunny, Calm winds.
01/12/2009 0930	8.0	na	na	10.0	Dry Loose	7.50	-17.2		Old snow. Snow depth shrinkage due to no new snowfall. 100% overcast, calm winds.
1/20/2009 0900	11.0	na	na	not done	Dry Loose	8.50	-4.8		Fresh Snow fall. Overcast & calm wind. Subzero air temperatures 4 days ago. Have had very cold temps this week. Did not measure soil frost depth unpacked snow with Spike because there is now enough frost depth to support logging equipment and it is getting more difficult to drive spike into ground.
02/03/2009 1130	11.0	na	na	not done	Dry Loose	8.50	-1.7		Old snow. 100% Sun, cold and windy.
02/11/2009 0925	7.0	na	na	not done	Wet	8.75	21.8	Y	Old snow that is wet. Last several days have been 30 to 40 degrees air temps with some rain. 100% overcast.
02/17/2009 0840	7.0	na	na	not done	Crusty	8.50	5.6		Old re-frozen snow that has a crusty surface that is hard enough to walk on. 100% sun.
02/23/2009 1055	10.0	na	na	not done	Dry Loose	8.75	2.9	Y	Photos of snow conditions and hobo set up. About 3 inches of new snow 2 days ago, crusty snow under the new snow. 100% sun with calm winds. Cold day about 10 degrees F. Downloaded Hobo and re-launched. DF=63% Bat=85% Hobo first launched 11/13/2008.
03/03/2009 0845	9.0	na	na	not done	Dry Loose	9.50	-12.5		New snow about Feb 26. 15% Sun, Calm winds.
03/10/2009 0925	7.0	na	na	not done	Crusty	8.75	23.6		Snow is melted and re-frozen with a crusty surface that you can almost walk on. 100% overcast and some rain this week.
03/16/2009 0935	4.0	na	na	10.0	Crusty	8.75	20.7	Y	Picture of unpacked snow conditions showing melted, re-frozen snow and ice with patches of bare ground. Hobo site is more sun exposed than spruce plantation site. Snow is melted and re-frozen, patches of bare ground due to melting temps and some rain. 100% sun with air temps 50's - 60's this week.
03/26/2009 0910	0.0	na	na	6.5	0.00	5.50	15.5	Y	Snow cover is gone. Photo showing frost tube with 0 to 2.5 inches not frozen and 2.5 to 8 inches as frozen. Soil surface is thawing and some frost is thawing from the bottom up. Spike test feels frozen from surface down to about 6.5 inches.
04/02/2009 0910	Trace	na	na	6.0	Wet	7.00	17.5		Frost tube shows 0 to 1 inch as un-frozen surface and frozen from 1 to 7 inches. Spike test feels frozen from surface down to about 6.0 inches.

Winter-logging data collection form.



This winter the Chequamegon-Nicolet National Forest (R9) has two units that will be harvested over snow as a part of the study. Post-treatment monitoring will be conducted in the summer with draft guidelines available during the fall of 2010.

http://fsweb.sdtcd.wo.fs.fed.us/programs/wsa/soilqual/winter_log/Winter%20Logging%20Study/player.html View and listen to updated information on the winter logging study.

For further information, contact SDTDC project leader Carolyn Napper by phone (909) 599-1267, ext 229, or email: cnapper@fs.fed.us.

Literature Synthesis on Effectiveness of Forest Roads Best Management Practices

Proposed by: Carolyn Napper (SDTDC)

Objective: Provide a comprehensive technical reference on the effectiveness of Forest Service national BMPs for limiting erosion on forest roads and protecting water quality.

EPA's Assessment and Watershed Protection Program has supplemented last year's funding to support production of the synthesis. Pam Edwards, of the Timber and Watershed Lab in Parsons, WV, part of the Northeast Research Station, is the author. She has gathered a preliminary bibliography, which is posted at <http://www.fs.fed.us/td/programs/wsa/biblio.htm>, and we are requesting that everyone who has gathered their own references—local or otherwise—check her list and send her any missing references. She is particularly interested in graduate theses, which often don't get routed around the scientific community. Please go to the above link and find instructions about what and where to send your suggestions.

For further information, contact SDTDC project leader Kim Clarkin by phone (360) 766-4171 (office phone; (951) 533-2067 (cell); or email: kclarkin@fs.fed.us.

Water-level Datalogger Upgrade

Proposed by: Robert Kenworthy, R4

Objective: Make available a water-level recorder similar to the AquaRod, but cheaper and with upgraded functionality.

MTDC's electronics engineer, Ted Etter, evaluated an Aquarod and made some suggestions to the company owner about how they might be upgraded. Since the patent is privately held, we decided not to pursue the upgrade further, although we made ourselves available for consultation if the owner desired.

Answers to our request for information about field experience with the Aquarod brought the TruTrack WT-HR water level datalogger to our attention. According to the company Web site (<http://www.trutrack.com/WT-HR.html>), the WT-HR works based on the same capacitance technology as the Aquarod. Two users indicated they experienced fewer or no problems with data spiking, the problem that has plagued the Aquarod, although the company is well aware the problem can occur. We plan to procure a WT-HR logger and field test it this year.



*The 1-m
Aquarod.
Photo by Bob
Kenworthy, R4*



Training Curriculum for Potential Users of the Forest Soil Disturbance Monitoring Protocol

Proposed by: Steve Howes (R6)

Objective: Develop a comprehensive set of curricula, training manual, and other media for employees who collect soil assessment and monitoring information with the Forest Soil Disturbance Monitoring Protocol (FSDMP) and Soil Disturbance Field Guide. Include a hands-on training to ensure student understanding of the protocol. The training curriculum has seven components:

1. Introduction –Importance and Value of the Soil Resource
2. The Role of Soil Disturbance Classes
3. Developing Risk Ratings for Potential Soil Impacts from Mechanized Equipment
4. Using the FSDMP Assessment and Monitoring Forms
5. Interpreting the Data
6. How to Set up a Soil Monitoring Program
7. Hands-on field training

Region 5 hosted the first training session in October 2009 during their bi-annual soils meeting. Future training sessions are scheduled for Atlanta, GA, in March 2010, and Region 2 (location TBD) in June 2010.

Soil disturbance monitoring technology transfer workshop series—starting in March 2010

The first workshop will be webcast March 10, 2010 at 9:30 PST. The workshop is designed to provide an introductory overview of the Forest Soil Disturbance Monitoring Protocol.

For further information on the webcast contact SDTDC project leader Carolyn Napper by phone (909) 599-1267, ext 229, or email: cnapper@fs.fed.us.

CLASS 0

CLASS 1

CLASS 2

CLASS 3

Drawings by Natalie Cabrera

Visual indicators can be used in conjunction with the FSDMP to assess and monitor soil impacts.



Low-Cost Fish Screens at Diversions

Proposed by: Mark Weinhold (R2) and Bob Deibel (WO)

Objective: Find or develop moderate-to-low-cost fish screens for small diversions to protect most fish from entrainment in diversion ditches. One proposal particularly mentions protecting juveniles that normally inhabit stream margins, where most diversions originate.

Low-cost, simple-to-operate fish screens have been the goal for screen designers for many years. Most designers have given up on the quest after repeated episodes of plugging, dry ditches, and angry irrigators. Mention of a ‘simple’ fish screen draws wry smiles from experienced people. Nonetheless, we are pursuing the topic to gain an understanding of what has been tried and how (and how consistently) it has failed. We plan to visit screen shops in northwest States, where much of the experience is located, to see the lowest-technology screens they have or use. That and other information will be shared in a Web page.



A downstream view of a typical pole-and-tarp diversion in western Wyoming. The open diversion channel exits to the right.

For further information, contact SDTDC project leader Kim Clarkin by phone (360) 766-4171 (office phone); (951) 533-2067 (cell); or email: kclarkin@fs.fed.us.

Water Diversion Control Structures

Proposed by: Dave Gloss (R2)

Phase I: Diversion field guide

Objective: Provide information on planning and layout of surface water diversion and water control structures. Assist diverters and field personnel who work with them in evaluating alternative structures and layouts to meet instream-flow needs, protect aquatic habitat, and minimize detrimental effects on channels and riparian areas.

The first draft of the guide is nearing completion, and should be ready for peer review in 2010.



One of the simplest possible fish screens: a vertical screen cleaned by rapid flow in the concrete channel at left. Water passes through screen in center and is transported to a pivot irrigation system. Grade Cr, tributary of Bear River, Wyoming. Adult fish migrating upstream to spawn do pass this screening system with the help of rocks placed on the concrete floor.



Phase II: Variable flow diversion system

Objective: Find or develop diversion control systems capable of maintaining variable in-stream flows in the main channel. The goal is to permit diverters to implement in-stream flow agreements where environmental flow requirements vary over the course of the diversion season.

Canal and water supply districts are increasingly using Supervisory Control and Data Acquisition (SCADA) systems for water diversion monitoring and control. These systems can include water level and velocity sensors and dataloggers, telemetry components that transmit real-time sensor data, controllers that implement programmed or operator commands, and actuators that open or close headgates or other devices. As requested by the steering committee, we will include summary information on these systems in an appendix to the diversion field guide.

For further information, contact SDTDC project leader Kim Clarkin by phone (360) 766-4171 (office phone); (951) 533-2067 (cell); or email: kclarkin@fs.fed.us.

Biomass/Whole-Tree Harvesting, Soil Impacts, and Measurement Methods

Proposed by: Jim Gries (Region 9, Hiawatha NF)

Objective: Provide a literature review of effects of biomass removal on soil-nutrient cycling and identify potential tools to determine amount of large and fine woody debris. Share examples of contracts used to implement biomass harvest and achieve the coarse and fine-woody debris requirements.

The following Web page, <http://www.fs.fed.us/t-d/programs/im/biomass/>, has been created to provide a one-stop shopping of biomass resources now available to soil scientist and other resource specialist. Collaboration between RMRS, Michigan Tech, and SDTDC continues to explore the relationship between

long-term soil productivity data and biomass removal effects to the aspen and jack pine ecosystems of northern Michigan.

We did receive examples of contracts used to implement biomass harvest which are available on the Web site. If you have further examples to share please send them to Carolyn Napper at cnapper@fs.fed.us.

• NEW PROJECTS

GOES Satellite Telemetry for Smoke Monitors

Proposed by Pete Lahm, WO Fire and Aviation

Air quality specialists and fire managers use monitors to estimate smoke particulate concentrations from prescribed and wildland fires. It is valuable to have real-time data from these monitors so decisions can be made using up-to-date information. The smoke monitors are many times deployed in remote areas where the only means of providing real-time data is through satellite communications.

The proposed project requested that the T&D centers develop and test a satellite communications package that uses the GOES (Geostationary Operational Environmental Satellite) system that National Oceanic and Atmospheric Administration operates. The GOES system allows hourly transmission of data at no cost for meteorological data. Data from the monitors will be fed into the Wildland Fire Management Information system. The GOES equipment has been purchased and development has started. It is planned to have the system operational for evaluation in the winter of 2009/10.

For further information about this project contact Andy Trent at (406) 329-3912 or by email at atrent@fs.fed.us.



Construction Guide for Stream Restoration and AOP Projects

Proposed by: Bob Gubernick (R10) and Brian Bair (TEAMS)

Objective: Provide a practical reference for field construction personnel on construction planning, and implementation for stream restoration and aquatic organism passage projects. Include details on construction scheduling, equipment capability, specifications, dewatering, construction methods for various structure types, administering equipment rental contracts, etc.

Funding for this project is uncertain, and restoration construction experts are extremely busy with on-the-ground projects. Work this year is likely to be limited to scoping, developing a draft outline of the material to be covered, and identifying experienced restorationists who can provide the content.

For further information, contact SDTDC project leader Kim Clarkin by phone (360) 766-4171 (office phone); (951) 533-2067 (cell); or email: kclarkin@fs.fed.us.



Placing a small aquatic organism passage culvert on the Lolo NF, September 2006. Photo by Traci Sylte

Sampling Stream and Lake Waters for Chemical Analysis

Proposed by: Cindy Huber (R9)

Objective: Develop two training programs for employees who collect water samples from streams and lakes specifically for water chemistry measurements.

The program, "Collecting Water Samples for Chemical Analysis: Streams" is available on the Internet at <http://www.fs.fed.us/t-d/pubs/flash/fla08252F02/> The program has six parts:

1. How to Prepare for Your Trip
2. How to Locate Sample Sites
3. How to Document Sites
4. How to Collect Water Samples
5. Taking Measurements at the Collection Site
6. Sample Handling and Shipping

The program, "Collecting Water Samples for Chemical Analysis: Lakes" will be completed in fiscal year 2010. The footage for the program was shot at Island Lake, Montana, during the summer of 2009. A draft of the program is almost complete. The program has seven parts:

1. Types of Lake Sampling
2. Planning for a Sampling Trip
3. Packing for a Sampling Trip
4. Shoreline Sampling
5. Mid-Lake Sampling
6. Documenting the Samples and Site
7. Handling and Shipping Samples

For more information about this project, contact Lisa Outka-Perkins at 406-329-3849 or by email at loutka-perkins@fs.fed.us



BAER Hydrology Modeling Tools Review

Proposed by: Cheryl Mulder (R5)

Objective: To identify watershed runoff models and their strengths and weaknesses, used by BAER team hydrologists, while surveying and analyzing the potential effects of post-fire runoff.

Initial scoping of hydrological models commonly used by BAER team specialists in both the Forest Service and DOI has started. Previous work completed by Rocky Mountain Research Station provides information on various hydrologic models and their strengths and weaknesses.

<http://forest.moscowfs.l.wsu.edu/BAERTOOLS/ROADTRT/Peakflow/>

For further information contact project leader Carolyn Napper by phone (909) 599-1267, ext 229, or email: cnapper@fs.fed.us.

Removal of Small Dams: Removal Techniques and Monitoring Environmental Effects

Proposed by: Marty Rye, Jason Butcher, Dana Gauthier, Luke Rutten, Randy Kolka, Steve Sebestyen (R9)

Objectives: Compile a synthesis of the current knowledge of dam-removal methods, particularly for small structures, as a tool for specialists and decisionmakers to evaluate how best to remove unwanted structures. Compile a synthesis of the monitoring methods and environmental effects of small dam removal to aid project managers in preparing environmental documents and ultimately monitoring and documenting the results of dam removals. Monitor the environmental effects of several planned small structure removals and compare the actual environmental effects with the expected effects. For further information contact project leader Brenda Land by phone (909) 599-1267, ext 219, or email: bland@fs.fed.us.



Hydrologists use different models to assess post-fire runoff response. Determining which model works best in different climatic conditions is still uncertain.



• T&D PROJECT PROPOSAL SUBMITAL

The formal FY 2011 call letter for proposals was mailed in November. The due date to receive proposals is February 11, 2010. If you have an idea for a project, we encourage you to contact your regional representative of the steering committee first so they can help ensure the proposal is responsive to the selection criteria. Projects can include applications of technology such as equipment/tool development, product market searches, and technology transfer (reports, DVD's, Web sites, and training). Proposals have come from Forest Service (FS) employees at every level of the Agency. Each year hundreds of project ideas from FS employees are submitted to the T&D Centers for testing, evaluation, and/or solution.

Employees who identify a particular need sometimes have a proposed solution in mind, but lack the resources to follow through. This is where the T&D Centers can help. If your proposal is selected for the T&D program of work, you will be a key contact as the work is planned and completed.

Generally, funding comes from national program sponsors, not from your local budget. Visit the Missoula T&D Center (MTDC) Web site, <http://fsweb.mtdc.wo.fs.fed.us/>, or the San Dimas T&D Center (SDTDC) Web site, <http://fsweb.sdtdc.wo.fs.fed.us/>, for good examples of past selected projects.

Prepare your proposals by completing the enclosed project proposal request form for a field problem that needs to be solved. Return the form at any time to one of the T&D contacts listed, but no later than February 11, 2010 for timely consideration. You can earmark your proposal for one or more of the sponsoring programs or allow the T&D program to assign the proposal where it fits best. Any FS employee may submit proposals. Proposals submitted in a previous year that were not selected may be resubmitted.



PROJECT PROPOSAL

**USDA Forest Service
National Technology and Development Program**

SDTDC solicits input from the field for suggestions for future projects. Your suggestions are important to us, so please take a few moments to complete this form and return to the address provided.

Project Originator: Name _____ Date _____

Title _____

Unit _____

Mailing address _____

E-mail address _____ Telephone _____

Project Title: _____

Current Problem/Need

Describe how work is currently being done; current problem/need, location; why improvement is needed.

Proposed Solution

Describe your concept of the end product, i.e., new equipment design, video production, handbook, etc.

Potential Benefits

Describe how this product will improve safety, resource management; increase efficiency, customer satisfaction, productivity; reduce cost, time.

• HIGHLIGHTS—New Study on Woody Biomass Residues at RMRS

Portable in-woods pyrolysis: Using forest biomass to reduce forest fuels, increase soil productivity, and sequester carbon

Forest harvest activities often generate a significant quantity of woody biomass in the form of residues from timber harvests, pre-commercial thinning, and fuel reduction projects. Often, this material is either concentrated on forest landings, along roads, or within the harvest area far from facilities that use biomass as fuel or raw material. In many regions, open burning represents the only financially viable option for disposal of forest residues, but that often leads to undesirable smoke and particulates being released. In addition, open burning represents a loss of green bio-energy production. Recently, work has begun on the use of mobile pyrolysis reactors (fast pyrolysis) to produce bio-oil and bio-char from forest biomass close to the harvest site, thereby reducing the need to transport bulky, low-value raw material long distances to a centralized, large-scale processing facility. Application of bio-char, a byproduct of bio-oil production, to forest soils may help retain soil moisture and nutrients and help maintain or improve site productivity. Our work evaluates the environmental impacts of applying bio-char to forest soils, pelletizing bio-char to include as a part of the growing media at forest nurseries, and the economics of in-woods processing. Many gaps remain in our understanding of how mobile pyrolysis reactors perform under field conditions, when it is economically efficient and environmentally valuable to deploy them, and how mobile reactors compare to other technologies. Though mobile pyrolysis is in the early stages of development for forestry applications, results indicate that it has the potential to be profitable and carbon negative under certain land management scenarios, operational configurations, and market conditions.

For more information on bio-oil and bio-char environmental consequences contact Deborah Page-Dumroese at RMRS (208) 883-2339, Greg Jones, RMRS, Missoula, (406) 542-4167 for economic information, and Kas Dumroese, RMRS, Moscow, (208) 883-2324 for information on using bio-char in forest nurseries.



Deb Page-Dumroese (RMRS), Jim Archuleta (Umpqua NF), and Kristin McElligott (U of Idaho) apply bio-char to research plots on the Umpqua National Forest.



We conducted four demonstrations of the mobile in-woods pyrolysis reactor in Oregon during August 2009. Over 150 people attended each demonstration.



• **COMPLETED PROJECTS**

How To Set Up and Use the E-Sampler for Monitoring Smoke

Proposed by: Pete Lahm (WO Smoke Manager)

The 25-minute Flash Media training video on how to use the Met One E-Sampler for monitoring smoke particulate is available on MTDC's Web site at http://fsweb.mtdc.wo.fs.fed.us/php/library_card.php?p_num=0925%202F01.

It also joins the other smoke monitor training aids on the Interagency Real-Time Smoke Particulate Monitoring Web site at <http://www.cairsis.com/usfs/>. You can find all the Flash Media training programs and Quick Sheets for the E-Sampler, E-BAM, and DataRAM4 under the About Smoke button, then Monitor Training Aids. For more information, contact project leader Mary Ann Davies at (406) 329-3981, or mdavies@fs.fed.us.



The E-Sampler monitor.

Collecting Water Samples for Chemical Analysis: Streams

Proposed by Cindy Huber (R8, George Washington and Jefferson NFs)

The training video on how to collect samples for water chemistry analysis from streams is complete. This Flash Media training is available on MTDC's Web site and can be viewed at http://fsweb.mtdc.wo.fs.fed.us/php/library_card.php?p_num=0825%202F02.

This training video will help reduce training costs and improve consistency and accuracy for those collecting water samples from streams.

For more information, contact project leader Mary Ann Davies at (406) 329-3981, or mdavies@fs.fed.us.

Quantifying Fecal Coliforms - Ecoli In The Field

Kim Clarkin, Project Leader

Current EPA-approved methods for analyzing lake and stream coliform samples limit holding time to only 8 hours before processing. In the back country, it is sometimes impossible to send samples to a laboratory within the specified time, and an in-field analysis is necessary in those situations. The goal of this project was to assess available methods and equipment for use in the field.

We developed prototypes of two portable analysis kits—one for fecal coliforms and one for E. coli—that enable the complete cycle of sample processing, incubation and colony counting to be completed in remote areas. The kits can be powered by the vehicle battery, battery packs, deep cycle marine batteries, or a combination. Kit components include sterile disposables and other equipment from the Hach and Millipore companies, an incubator, and in the case of the E. coli kit, a sealer for the IDEXX Quanti-trays. http://www.fs.fed.us/t-d/programs/im/coliform/coliformhome_06.shtml

For further information, contact SDTDC project leader Kim Clarkin by phone (360) 766-4171 (office phone); (951) 533-2067 (cell); or email: kclarkin@fs.fed.us.



Low-Water Crossings Guide

Proposed by: Gary Harris and Rick Patten, Idaho Panhandle National Forest (R1).

"Low-Water Crossings: Geomorphic, Biological and Engineering Design Considerations" is a guide to low-water crossing structure selection and design. It focuses on low-water crossings' effects on streams, floodplains, fish and fish habitats while addressing all engineering road design issues. It should be useful to engineers, road managers, and resource specialist working together on crossing projects.

To order a hard copy, please email George at gtoyama@fs.fed.us

Two of the authors of the guide gave a paper at the 2007 Low Volume Roads conference in Austin, which highlighted many of the same ideas: "Geomorphic, Aquatic, and Engineering Design Considerations for Low Water Crossings." It is available at <http://trb.metapress.com>. Search on low-water crossings.



Biomass/Whole Tree Harvest: Soil Effects and Measurement Methods

<http://www.fs.fed.us/td/programs/im/biomass/>



Stream Simulation - An Ecological Approach to Providing Passage for Aquatic Organisms at Road-Stream Crossings

<http://www.fs.fed.us/eng/pubs/pdf/StreamSimulation/index.shtml>

To order a hard copy, please email George at gtoyama@fs.fed.us



Soil Disturbance Field Guide

http://www.fs.fed.us/td/php/library_card.php?p_num=0819%201815P

To order a hard copy, please email George at gtoyama@fs.fed.us



• LINKS OF INTEREST

National Association of Conservation Districts. 2009. Woody biomass desk guide and toolkit. <http://www.nacdnet.org/resources/guides/biomass/>.

Evans AM. 2008. Synthesis of knowledge from woody biomass removal case studies. Forest Guild and USDA Forest Service. Forest Guild, Santa Fe, NM. <http://biomass.forestguild.org>.

Managing Organic Debris for Forest Health. <http://www.cals.uidaho.edu/edComm/detail.asp?IDnum=1512>

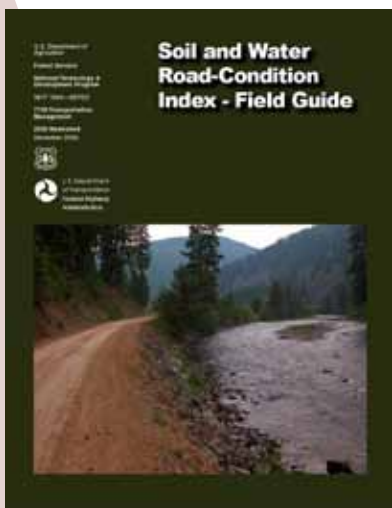
Biomass/Whole Tree Harvest: Soil Effects and Measurement Methods <http://www.fs.fed.us/td/programs/im/biomass/>

• WSA STEERING COMMITTEE MEMBERS

Soil Water Road Condition Index

http://www.fs.fed.us/td/php/library_card.php?p_num=0877%201806P

To order a hard copy, please email George at gtoyama@fs.fed.us



John Potyondy
Chairman; Director, Stream Systems Technology Center
970-295-5986 jpotyondy@fs.fed.us

VACANT
National Surface Water Hydrologist, WO
202-205-1093

Tim Sullivan
Water Team Program Manager, R1
406-329-3185 tsullivan@fs.fed.us

Tommy John
Regional Soil Scientist, R2
303-275-5583 tjohn@fs.fed.us

Wayne Robbie
Regional Soil Scientist, R3
505-842-3253 wrobbie@fs.fed.us

William Goodman
Assistant Regional Hydrologist, R4
801-625-5368 wgoodman@fs.fed.us



Brent Roath
Regional Soil Scientist & BAER Coordinator, R5
707-562-8941 broath@fs.fed.us

Brian Staab
Regional Hydrologist, R6
503-808-2694 bstaab@fs.fed.us

Michael Crump
Hydrologist, R8
404-347-3872 mcrump@fs.fed.us

Russ LaFayette
Regional Hydrologist, R9
414-297-1341.1 rlafayette@fs.fed.us

Julianne Thompson
Hydrologist, R10
907-772-5873 jethompson02@fs.fed.us

Mike Furniss
Research, PNW
541-758-7789 mfurniss@fs.fed.us

Ann Acheson
WO Air Program, WO
202-205-0800 aacheson@fs.fed.us

• **T&D STAFF**

VACANT
Manager, WO – T&D Program

VACANT
Center Manager, WO – MTDC

VACANT
Program Leader, Air, WO – MTDC

Andy Trent
Mechanical Engineer, WO – MTDC
406-329-3912 atrent@fs.fed.us

Mary Ann Davies
Mechanical Engineer, WO – MTDC
406-329-3981 mdavies@fs.fed.us

John Fehr
Center Manager, WO – SdTDC
909-599-1267, ext. 211 jfehr@fs.fed.us

Dexter Meadows
Program Leader, Watershed, WO – SdTDC
909-599-1267, ext. 276 dmeadows@fs.fed.us

Kim Clarkin
Hydrologist, WO – SdTDC
360-766-4171 kclarkin@fs.fed.us

Carolyn Napper
Watershed Specialist, WO – SdTDC
909-599-1267, ext. 229 cnapper@fs.fed.us

Marty Willbee
Outdoor Recreation Planner, WO – SdTDC
909-599-1267, ext. 231 mwillbee@fs.fed.us

