



United States Department of Agriculture • Forest Service • 0171-2829-MTDC

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2001

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Roads/Riparian/ Restoration Project

The effects of Forest Service roads on riparian areas and wetlands, especially their impacts on water quality and wildlife, are being reviewed. The Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service, Federal Highway Administration, U.S. Environmental Protection Agency, and other Federal and State agencies banded together in 1999 to create an extensive training and information program promoting successful restoration techniques and technologies. Included in this program are formal training workshops at the national level, special training as requested at regional, State, and local



levels, and demonstration projects to showcase restoration technologies. Communication tools being developed include a three-ring interdisciplinary resource binder, a field guide, and an FSWeb Intranet site available to Forest Service and Bureau of Land Management employees at:

<http://fsweb.sdtdc.fs.fed.us/programs/eng/RRR>

To find out more about the Roads/Riparian/Restoration Project or to request training, contact Anthony Edwards, Project Team Leader:

Phone: 909-599-1267, ext. 235
Fax: 909-592-2309
E-mail: aedwards@fs.fed.us

The Rocketman

No, not the Elton John song. We are referring to a promising new backpack tree-marking paint system that San Dimas is developing. This pressurized system does away with the heavy trigger pull of the old paint guns, can be used with both citrus-based and water-soluble paints, and cleans up easily. The Rocketman comes in two sizes, one holding 2.5 gallons of paint and the other holding 1.25 gallons. The backpacks fit the specific tank without leaving exposed edges to catch on brush. They are also insulated to prevent the paint from thickening in cold weather.



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The Rocketman

(continued)

The system consists of a Mylar bag holding the paint inside a steel tank rated for 130 pounds-per-square-inch maximum working pressure. A CO₂ bottle operating through a regulator maintains a consistent 60 pounds-per-square-inch pressure inside the steel tank. Because the paint is inside the Mylar bag, paint does not clog the regulator and relief valve. Cleanup is fast and easy. The operator simply removes the empty bag from the tank and disposes of it properly.

All components in the Rocketman system are readily available. The steel tanks and fitted backpacks are sold under the Rocketman trademark as a mobile drink-dispensing system for sport stadiums. The Rocketman system is an easily procured, easily maintained, economical backpack tree-marking system.

For more information on the Rocketman tree-marking system, contact Ralph Gonzales, Project Leader:

Phone: 909-599-1267, ext. 212

Fax: 909-592-2309

E-mail: rhgonzales@fs.fed.us

Approved Spark Arresters

Just because a muffler or spark arrester says “USFS Approved” or “Forest Service Approved” does not mean it really was approved. Forest Service inspectors must consult the Spark Arrester Guide to check for the specific spark arrester model number. The online Spark Arrester Guide is available to Forest Service and Bureau of Land Management employees at:

<http://fsweb.sdtc.wo.fs.fed.us/programs/fire/spark/sag-index.html>



Printed guides are available through the National Interagency Fire Center at:

Attn: Great Basin Cache Supply Office
National Interagency Fire Center
3833 S. Development Ave.
Boise, ID 83705-5354
Fax: 208-387-5573
Phone: 208-387-5104

The order numbers for the guides are:

NFES 2363—Multi-Position Small Engine Spark Arrester Guide, Volume 2 (June 2001)
NFES 1363—General Purpose and Locomotive Spark Arrester Guide, Volume 1 (May 2000)

For more information on the Spark Arrester Approval Program, contact Ralph Gonzales, Project Team Leader:

Phone: 909-599-1267, ext. 212

Fax: 909-592-2309

E-mail: rhgonzales@fs.fed.us

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The Mouse and Smokey Bear

Disney's new theme park, California Adventure, includes three replica Forest Service fire lookouts built with the help of the San Dimas Technology and Development Center (SDTDC). Disney contacted Ralph Taylor, Fire Program Leader at SDTDC, in 1998. With the help of Mike McIntyre, forest archeologist on the Angeles National Forest, Ralph located lookout equipment, including an Osborne fire finder, and many lookout pictures. Ralph and Mike gave the Disney personnel an extensive briefing on lookout history, traditions, procedures, and operations. The studio constructed three lookouts connected by a suspended rope trail and built an Osborne fire finder, making subtle changes to childproof it.



The Disney lookouts include a minimuseum with pictures of California fire lookouts along with other items collected from national forests. Children can simulate a parachute landing by sliding down a rope at a smokejumper training tower.

If you visit the Anaheim, CA, area, you can see

Disney's tribute to Forest Service history and tradition in the Redwood Creek Challenge area of California Adventure.

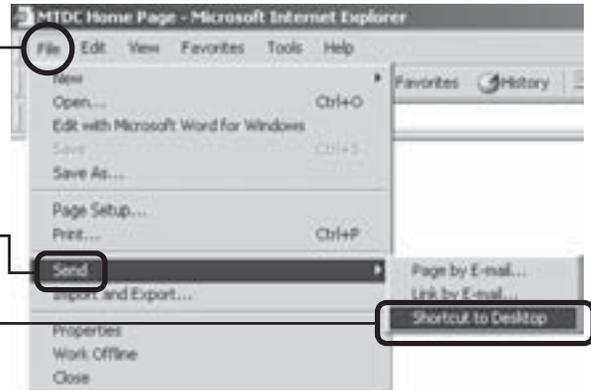
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Desktop Shortcut to MTDC's FSWeb Site (Not Available Over the Internet)

Forest Service and Bureau of Land Management employees can reach MTDC's Web site easily by installing an icon on their computer desktops. We have created a program that will install the icon on the desktop of a Windows 95 computer. The installation program is available at the FSWeb address: <http://fsweb.mtdc.wo.fs.fed.us/icon>

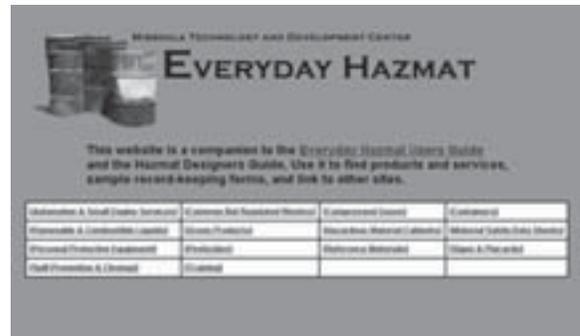
With a Windows 2000 machine, install the icon on the desktop yourself. Open Internet Explorer to MTDC's FSWeb site at: <http://fsweb.mtdc.wo.fs.fed.us>

Click "File / Send / Shortcut to Desktop" on Internet Explorer's menubar. Your desktop will have an Internet Explorer icon with the text "MTDC Home Page" beneath it.



Everyday Hazmat FSWeb Site

We've prepared an easy-to-understand summary of hazardous materials regulations and links to helpful information for persons working with hazardous materials. We welcome your comments as we continue to improve this summary. The FSWeb site is available to Forest Service and Bureau of Land Management employees at: http://fsweb.mtdc.wo.fs.fed.us/everyday_hazmat



For more information on the Everyday Hazmat Web site, contact Wes Throop, Project Leader:

Phone: 406-329-3957
Fax: 406-329-3719
E-mail: wthroop@fs.fed.us

Acid Mine Drainage

Acid mine drainage (AMD) from abandoned mines contributes to the degradation of streams and riparian areas and may harm fish and other wildlife. Plugging mine entrances to reduce the flow of drainage has had only limited success. Water treatment plants that require power and regular maintenance are not feasible for remote sites. The Missoula Technology and Development Center (MTDC) and the Montana Bureau of Mines and Geology have produced a series of reports on the application of passive treatment methods to mitigate the effects of acid mine drainage. The first report, *Treating Acid Mine Drainage From Abandoned Mines in Remote Areas* (9871-2821-MTDC), published in 1998, summarized literature about the different methods of passive treatment that offer the greatest chance of success for mines producing a discharge of less than 20 gallons per minute.

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Acid Mine Drainage, (continued)

Two additional reports have been published. *Using Recharge Control to Reduce Mine Adit Discharges: A Preliminary Investigation* (0071-2804-MTDC) discusses most of the Montana sites with discharges that might benefit from passive treatment. The information gathered about these mines provides a good basis to identify other sites.

Adit Discharge Monitoring Summary for the Elkhorn and Charter Oak Mines, MT (0071-2858-MTDC) reports on an adit discharge monitoring project that began in 1998. This type of hardrock mine is found throughout the United States. This report investigates the yearly variation in the flow and chemical composition of the mines' discharge. Measuring water quantity and quality over an extended time period helps explain the source of the discharge water and provides valuable information to anyone planning to treat or control acid mine drainage.



You may order printed copies of these reports using the printed order form on the last page.

You may also order these reports by contacting Emily Ranf, MTDC Publications:

Phone: 406-329-3978
Fax: 406-329-3719
E-mail: eranf@fs.fed.us

Aerial Fire Retardant Drop Guides

Forest Service fire managers need to know how much area can be covered by different types of airtankers when they drop retardant. The Wildland Fire Chemical Systems Program tests a variety of fixed- and rotary-wing tankers to determine the parameters for optimum fire-retardant ground pattern coverage. The tests cover a wide range of fuel and fire conditions, varying airspeeds, and different drop heights. A majority of the tests are made with three materials: water, foam, and gum-thickened retardant.



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Aerial Fire Retardant Drop Guides

(continued)

The drop tests are conducted over an array of plastic bowls. The quantity of material in each bowl is measured and a pattern of ground coverage is determined for the specific type of material dropped at a set airspeed and height from each of 22 types of airtankers or helibuckets. The results of these tests are published in a series of drop guides.

These guides allow managers to estimate the length of line a specific airtanker or helicopter can produce at various levels of coverage. The proper coverage level, expressed in gallons per 100 square feet, depends on the fuel model. Tables in the drop guides show the desired coverage for specific fuel models using both the National Fire Danger Rating System and the Fire Behavior Fuel Model descriptions.

You may order printed copies of these drop guides by using the printed order form on the last page.

You may also order drop guides by contacting Emily Ranf, MTDC Publications:

Phone: 406-329-3978
Fax: 406-329-3719
E-mail: eranf@fs.fed.us

Monitoring Smoke Particulates

Prescribed burns in forests and on rangelands pose potential health and safety problems. Measuring concentrations of airborne particulate is increasingly important as land managers use this method of reducing fuels.



The Missoula Technology and Development Center has completed an evaluation of commercially available optical instruments that measure particulate concentrations in real time. The results of this study were published in: *Evaluations of Optical Instruments for Real-Time Continuous Monitoring of Smoke Particulates* (0025-2860-MTDC).

The key items MTDC evaluated were accuracy, reliability, and portability. Other characteristics that contribute to the ease of setup and operation were also evaluated. Optical instruments were selected because they offered the best real-time continuous smoke sampling at a reasonable cost. The data were collected in four distinct experiments with two Federal Reference Method monitors used as a standard. Two experiments were conducted in a smoke chamber where pine needles were burned in a flaming and in a smoldering state. The other two experiments were conducted in ambient conditions near forest fires.

You may order the smoke monitoring report using the printed order form on the last page.

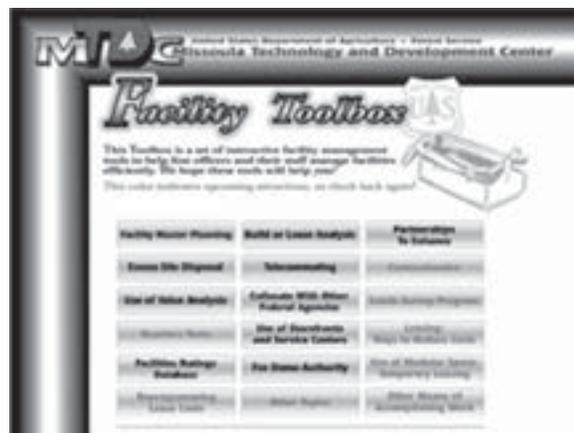
You may also order this report by contacting Emily Ranf, MTDC Publications:

Phone: 406-329-3978
Fax: 406-329-3719
E-mail: eranf@fs.fed.us

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Facility Toolbox for Managers

The Facility Toolbox for Managers is a set of interactive management tools designed to help line officers and their staff manage facilities efficiently. Forest Service and Bureau of Land Management employees can reach the Web site at <http://fsweb.mtdc.wo.fs.fed.us/toolbox>



Nine new tools are ready for review and comment.

Some of the topics include: facility master planning, build or lease analysis, collocating with other agencies, and the use of storefronts and service centers. These tools will be updated and new ones will be added. MTDC encourages your continued input to ensure that these tools meet the needs of facility managers. We also appreciate additional photos and examples for this Web site.

Forest Service and Bureau of Land Management employees may use the comment form on MTDC's FSWeb site (<http://fsweb.mtdc.wo.fs.fed.us>) to send comments, photos, and examples of successful tools.

You may also contact Mary Ann Davies:

Phone: 406-329-3981
Fax: 406-329-3719
E-mail: mdavies@fs.fed.us

Wildland Fire Safety Reports and Graphics on CD

Ten reports dealing with wildland fire safety and their graphics have been collected on a CD. The CD collection allows users to view or print the reports and to save the graphics for use in their own reports or presentations.

The CD starts automatically when it is inserted in a PC. It can be used on Macintosh or UNIX computers, but it will not start automatically on those machines.



The reports are in the Adobe Acrobat format. The free Acrobat Reader software for PCs is included on the CD. The graphics are displayed as thumbnail-sized images. When a user double-clicks on a thumbnail-sized image, the full-sized version is displayed. The graphics are in the .jpg or .gif formats. They can be printed or saved for use in reports or presentations.

You may order the Wildland Fire Safety Collection CD by using the order form on the last page.

You may also order this CD by contacting Emily Ranf, MTDC Publications:

Phone: 406-329-3978
Fax: 406-329-3719
E-mail: eranf@fs.fed.us

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Forest Health Protection Reports Now Available Electronically

A number of Forest Health Protection documents have been converted to electronic format to make them more widely available to Forest Service and Bureau of Land Management employees. They are:

- *Miniature Data Loggers Record Temperature Inexpensively and Reliably* **0034-2305-MTDC**
(<http://fswweb.mtdc.wo.fs.fed.us/pubs/htmlpubs/htm00342305/index.htm>)
- *Pheromone Placement Tracer Test: Experimental Design* **9934-2842-MTDC**
(<http://fswweb.mtdc.wo.fs.fed.us/pubs/htmlpubs/htm99342842/index.htm>)
- *Comments on: A Comparison of Spray Drift Predictions to Lidar Data* **9934-2831-MTDC**
(<http://fswweb.mtdc.wo.fs.fed.us/pubs/htmlpubs/htm99342831/index.htm>)
- *Dry Borax Applicator: Operator's Manual* **9934-2812-MTDC**
(<http://fswweb.mtdc.wo.fs.fed.us/pubs/lc/lc99342812.htm>)
- *Eighth Report: National Spray Model and Application Technology Working Group* **9934-2810-MTDC**
(<http://fswweb.mtdc.wo.fs.fed.us/pubs/htmlpubs/htm99342810/index.htm>)
- *MTDC/FHP FY 98 Achievements* **9834-2856-MTDC**
(<http://fswweb.mtdc.wo.fs.fed.us/pubs/pdfpubs/pdf98342856/pdf98342856.pdf>)
- *Weather Effects on Drift Meteorological Factors and Spray Drift: An Overview* **9834-2847-MTDC**
(<http://fswweb.mtdc.wo.fs.fed.us/pubs/htmlpubs/htm98342847/index.htm>)
- *Practical Application of G.P.S. Technology: Differential GPS Spray Aircraft Guidance* **9834-2846-MTDC**
(<http://fswweb.mtdc.wo.fs.fed.us/pubs/htmlpubs/htm98342846/index.htm>)
- *Pheromone Dispersion in the Canopy Trunk Space* **9834-2838-MTDC**
(<http://fswweb.mtdc.wo.fs.fed.us/pubs/htmlpubs/htm98342838/index.htm>)
- *New Methods of Application of Borax to Tree Stumps for Control of Heterobasidion annosum* **9834-2834-MTDC**
(<http://fswweb.mtdc.wo.fs.fed.us/pubs/htmlpubs/htm98342834/index.htm>)
- *A Simulation of Boom Length Effects for Drift Minimization* **9834-2833-MTDC**
(<http://fswweb.mtdc.wo.fs.fed.us/pubs/htmlpubs/htm98342833/index.htm>)
- *Single-Tree Spray Application Project: Final Report* **9634-2838-MTDC**
(<http://fswweb.mtdc.wo.fs.fed.us/pubs/htmlpubs/htm96342838/index.htm>)
- *Differential GPS Aircraft Navigation, Resource Inventory, and Positioning Demonstration* **9634-2324-MTDC**
(<http://fswweb.mtdc.wo.fs.fed.us/pubs/htmlpubs/htm96342324/index.htm>)

Some of these documents are also available in print and can be ordered using the form on the last page or by contacting Emily Ranf, MTDC Publications:

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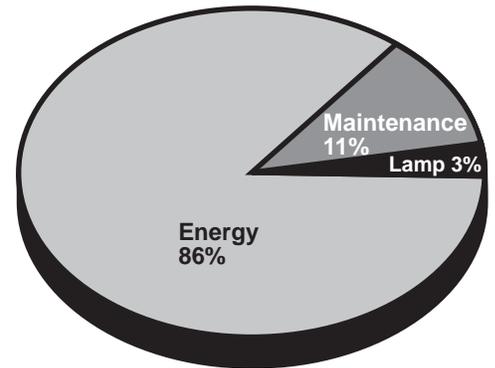
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Saving Energy by Upgrading Fluorescent Lighting

Modern fluorescent lights can save money and energy when they replace older lights. Information to help you determine whether to upgrade existing fluorescent lights is available in the Tech Tip, *Fluorescent Lamp Retrofits: Savings or Fantasy?* (0171-2310-MTDC).

The pie chart shows the operating cost breakdown for F40T12 fluorescent lamps with standard magnetic ballast and electricity costing 8 cents per kilowatt-hour.

Maintenance Cost Breakdown



You may order this report by using the printed order form on the last page.

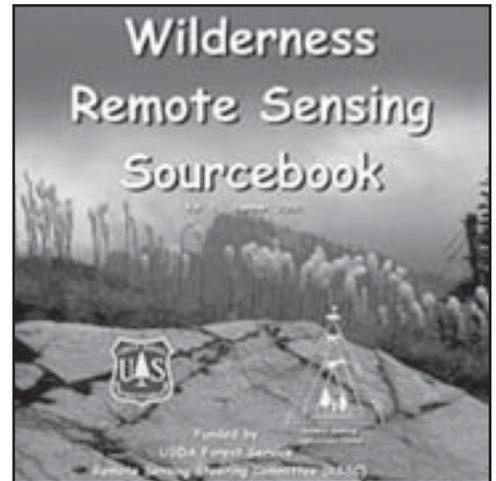
You may also order this report by contacting Emily Ranf, MTDC Publications:

Phone: 406-329-3978
Fax: 406-329-3719
E-mail: eranf@fs.fed.us

Wilderness Remote Sensing Sourcebook

The Remote Sensing Applications Center (RSAC) has distributed the Wilderness Remote Sensing Sourcebook CD to all Forest Service field offices. Randy Welsh, the Intermountain Region's wilderness coordinator and Don Evans, a remote sensing specialist at RSAC, developed the sourcebook. This CD includes primers on remote sensing, GPS, and sources for remote sensing data. Case studies of completed projects may help managers decide whether remote sensing technologies will work for them.

The sourcebook CD should interest resource staff employees, GIS personnel, and information managers. While the examples come from wilderness settings, the principles of remote sensing apply in other settings.



If you have any questions about the CD, or would like a copy, contact Henry Lachowski or Don Evans:

Phone: 801-975-3750
Fax: 801-975-3478
E-mail: hlachowski@fs.fed.us or dtevens@fs.fed.us

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Recent MTDC Videos



- 00-04-MTDC *Focus on the Mission: Transporting Wildland Firefighters*
00-06-MTDC *A Science-Based Roads Analysis Process for the National Forests*
01-02-MTDC *Personal Safety in Remote Work Locations Module 1: General Awareness*

You may order these videos by using the printed order form on the last page.

You may also order them by contacting Emily Ranf, MTDC Publications:

Phone: 406-329-3978
Fax: 406-329-3719
E-mail: eranf@fs.fed.us

Recent MTDC Reports

We will mail one copy of each document to you. If you need more than one copy, please call 406-329-3978.

You may order copies of our reports and videos by using the following form.

Publication Order Form

Aviation

- 9957-2850-MTDC Ground Pattern Performance of the 2000-Gallon Sims Helibucket
- 0057-2802-MTDC Ground Pattern Performance of the SEI Industries Bambi 324-Gallon Helibucket
- 0057-2816-MTDC Ground Pattern Performance of the Simms Rainmaker 2000-Gallon Helibucket
- 0057-2829-MTDC Ground Pattern Performance of the Griffith Big Dipper Model 100 Helibucket
- 0057-2834-MTDC Ground Pattern Performance of the Western Pilot Services Dromader
- 0057-2835-MTDC Ground Pattern Performance of the Marsh Turbo Thrush
- 0057-2836-MTDC Ground Pattern Performance of the Ayres Turbo Thrush With Standard Fire Door
- 0057-2848-MTDC Ground Pattern Performance of the Neptune P2V-7 Airtanker
- 0057-2849-MTDC Ground Pattern Performance of the Aero Union SP-2H
- 0057-2850-MTDC Ground Pattern Performance of the Erickson Air Crane
- 0057-2851-MTDC Ground Pattern Performance Airspray Electra L-188 With Aero Union Constant Flow Tank
- 0057-2852-MTDC Ground Pattern Performance of the Snow Air Tractor With Constant Flow Tank
- 0057-2863-MTDC Ground Pattern Performance of the LA County Bell S205 Helicopter With Sheetcraft Fixed Tank
- 0057-2864-MTDC Ground Pattern Performance of the Siller Brothers S-61N Helicopter Using the 1000-Gallon Griffith Big Dipper Helibucket
- 0057-2865-MTDC Ground Pattern Performance of the Columbia BV-107 Helicopter Using the 1000-Gallon Griffith Big Dipper Helibucket
- 0057-2866-MTDC Ground Pattern Performance of the Columbia BV-234 Helicopter Using the Modified 3000-Gallon Griffith Big Dipper Helibucket
- 0057-2867-MTDC Ground Pattern Performance of the Aero Flite DC-4 Airtanker With Modified ARDCO Conventional Tank
- 0057-2868-MTDC Drop Testing Airtankers: A Discussion of the Cup-and-Grid Method
- 0157-2803-MTDC Ground Pattern Performance of the California Department of Forestry Bell S205 Helicopter With the 300-Gallon Sims Rainmaker Collapsible Helibucket
- 0157-2804-MTDC Ground Pattern Performance of the National Guard Black Hawk Helicopter With the 660-Gallon SEI Industries Bambi Helibucket
- 0157-2805-MTDC Ground Pattern Performance of the Forest Service Bell 206 Helicopter With the 100-Gallon Sims Rainmaker Helibucket
- 0157-2806-MTDC Ground Pattern Performance of the Siller Brothers S-64 Helicopter With the 2000-Gallon SEI Industries Bambi Helibucket
- 0157-2807-MTDC Ground Pattern Performance of the California Department of Forestry Bell S205 and National Guard UH-1 Helicopters With the 240-Gallon SEI Industries Bambi Helibucket
- 0157-2808-MTDC Ground Pattern Performance of the Forest Service Bell 206 Helicopter With the 100-Gallon SEI Industries Bambi Helibucket

Engineering

- 9871-2821-MTDC Treating Acid Mine Drainage From Abandoned Mines in Remote Areas
- 0071-2373-MTDC Saving Money by Understanding Demand Charges on Your Electric Bill
- 0071-2804-MTDC Using Recharge Control to Reduce Mine Adit Discharges: A Preliminary Investigation
- 0071-2846-MTDC 1999 MTDC Documents
- 0071-2858-MTDC Adit Discharge Monitoring Summary for the Elkhorn and Charter Oak Mines, MT
- 0171-2310-MTDC Fluorescent Lamp Retrofits: Savings or Fantasy?
- 0171-2809-MTDC Comparison of GPS Receivers Under a Forest Canopy: After Selective Availability Has Been Turned Off
- 0171-2822-MTDC T&D News: Winter 2001

Fire

- 0051-2377-MTDC Drip Torch for Fuel Bottles
- 0151-2313-MTDC Chest Harness for the Fire Shelter
- 0151-2314-MTDC Tent Bag for the Personal Gear Bag
- 0151-2320-MTDC New Fire Shelter Training Materials
- 0151-2324-MTDC A Survey of Fuel Gelling Agents
- 0151-2817-MTDC Wildland Firefighter Health & Safety Report: No. 3
- 0151-2821-MTDC Health Hazards of Smoke Spring 2001
- 0151-2823-MTDC Investigating Wildland Fire Entrapments 2001 Edition
- 0151-2828-MTDC Urgent: Fire Shelter Safety Alert (electronic only)

Forest Health Protection

- 9934-2812-MTDC Dry Borax Applicator: Operator's Manual
- 0034-2305-MTDC Miniature Data Loggers Record Temperature Inexpensively and Reliably

Reforestation and Nurseries

- 0024-2372-MTDC Bark-Scoring Tools to Repair Tree Grafts

Watershed and Air Management

- 9925-2806-MTDC Laboratory Evaluation of Two Optical Instruments for Real-Time Particulate Monitoring of Smoke
- 0025-2860-MTDC Evaluation of Optical Instruments for Real-Time Continuous Monitoring of Smoke Particulates

Recent MTDC Videos

- 00-04-MTDC Focus on the Mission: Transporting Wildland Firefighters
- 00-06-MTDC A Science-Based Roads Analysis Process for the National Forests
- 01-02-MTDC Personal Safety in Remote Work Locations Module 1: General Awareness

Return address

Stamp

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