



DARCA

Ditch and Reservoir Company Alliance

DARCA WORKSHOP SERIES DARCA DITCH COMPANY HANDBOOK 2007-2008





Ditch and Reservoir Company Alliance

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DARCA is pleased to offer the 2007-2008 DARCA Workshop Series for its members. Colorado Water Congress members may attend the seminars at DARCA member rates. The workshops, taught by experts in the Colorado water community, cover a variety of topics and DARCA thanks the instructors for donating their time in the development, preparation and teaching of the courses.

We hope this information exchange and networking will be valuable for mutual ditch and reservoir companies, irrigation districts, incorporated laterals and private ditches. The workshops' aim is to inform and educate board members, superintendents, ditch riders, engineers, and lawyers about Colorado water enterprises. Our courses:

- I. Records Management
- II. The Power of Excel – Spreadsheet Techniques
- III. Real Estate Law
- IV. Flow Measurement (pre-convention workshop)
- V. Directors and Officers Training
- VI. GIS I
- VII. GIS II
- VIII. Ditch Hazards Awareness & Safety

DARCA is able to develop and deliver customized on-site courses for ditch and reservoir companies, engineering and law firms, water districts and municipalities on many water-related issues. Please contact us for details.

Thank you to our generous sponsors who helped make the workshops possible:

Applegate Group Inc.
Aqua Engineering Inc.
Bernard, Lyons, Gaddis & Kahn, P.C.
Boyle Engineering
Leonard Rice Engineers, Inc.
Lower South Platte Water Conservancy District
MWH
Northern Colorado Water Conservancy District
Poudre Valley REA
Southwestern Water Conservation District

Front Cover Photograph of Horsetooth Reservoir by Dick Stenzel

RECORDS MANAGEMENT

for Ditch Companies

When: **Thursday, Nov. 8, 2007**
10 a.m. to 4 p.m.

Where: **Lory Student Center, Room 220-222**
Colorado State University
Fort Collins, Colo.

Cost: **\$50 for DARCA/CWC members;**
\$75 for non-members

Records Management for Ditch Companies details the best practices for maintaining and storing ditch company documents. Most ditch companies are nearly a century old, and many have files dating back to the company's inception. In this workshop, learn the best methods for properly storing and cataloguing documents, and how to institute procedures today that will insure files are in order tomorrow. Also, learn what an archive can do for you.

The instructor for the first part of the workshop is Janet Bishop, Coordinator of Archives and Special Collections at CSU's Morgan Library. Janet will cover the basics of records management and how to apply them specifically to ditch company records. Janet has been at CSU for two years and in the archives profession for more than 20. She conducted a similar workshop for the Ute Water Conservancy District.

The instructor for the second part of the workshop is Patty Rettig, head archivist for Morgan Library's Water Resources Archive. Patty will give a presentation on the Water Resources Archive, which houses historically important collections related to Colorado's water. Patty has worked on the water archive for six years and has been an archivist for nine years. She has given many presentations related to Colorado water and the archive to diverse audiences.

The workshop ends with an optional tour of the Water Resources Archive in Morgan Library, just across the plaza from Lory Student Center.

The cost for this workshop is \$50 if you are a DARCA member; the fee for non-members is \$75. Lunch and handouts are included. Limit: 65 attendees.

The Records Management workshop is sponsored by Poudre Valley REA, Applegate Group Inc. and Aqua Engineering Inc.

THE POWER OF MICROSOFT EXCEL—SPREADSHEET TECHNIQUES

for Ditch Companies

When: **Friday, Nov. 9, 2007**
9 a.m. to 4 p.m.

Where: **Room 224D**
Weber Building
Colorado State University
Fort Collins, Colo.

Cost: **\$100 for DARCA/CWC members;**
\$150 for non- members

The Power of Excel—Spreadsheet Techniques for Ditch Companies is a hands-on workshop in the computer lab. The course is designed to teach smart spreadsheet strategies for typical ditch company data processing tasks. Are you awash in data but unsure how to make sense out of it? Would you like to access and use government collected data for your ditch company? This workshop will help solve these problems. After a brief review of basic Excel techniques, we will dive right into collecting data from online sources. We will show you how to use Pivot Tables—a simple but powerful Excel feature that will greatly assist in data evaluation.

An afternoon session includes some tips and recommendations on file management—how to name files and store your data for easy retrieval. We also will demonstrate sample spreadsheet applications for every day ditch company tasks, such as maintaining a shareholder list, basic water accounting and reservoir accounting.

We'll conclude with demonstrations of advanced spreadsheet techniques. They include a bit of statistics (for the timid) and forecasting available water for the season using historical data. If you've designed your spreadsheet properly, you're more than halfway there. With a little study on your own, or help from an outside professional, you can harness the power of Excel and take your data management to a whole new level. The topics:

- **Using a Ditch Company's Diversion Records**—Quick review of basic techniques, tricks and tips, basic functions, and statistics.
- **Finding and Using Outside Data Sources**—Online data sources available to the public. Downloading, importing and converting.
- **Using Data Sources**—Pivot table feature. Charting includes 3D, analyzing, describing, reporting, formatting and printing.
- **File Management**—Collecting, organizing and maintaining data for easy future access.
- **Sample Spreadsheet Demonstrations**—Shareholder lists, sorting, filtering and database functions, water accounting and colored water. Reservoir accounting, real-time automated data retrieval.
- **Advanced Excel Topics**—User forms, statistical analysis, forecasting and simulating water availability

DARCA is fortunate to have Darrell Fontane, Director of the International School for Water Resources and Professor of Civil Engineering at CSU as one of the instructors. Darrell has conducted numerous training sessions on water resources systems analysis, decision support systems and computing technologies. John McKenzie, Executive Director of DARCA and founder of Innovastat Corporation, also will teach the course. John has extensive experience in data analysis, simulation, optimization and forecasting in the context of Colorado water. While a basic working knowledge of Excel is desirable, both beginner and advanced Excel users will learn from this workshop.

Lunch and refreshments are included. Participants receive a workshop binder with all of the handout materials and a CD containing all of your sample data sets. Ditch company superintendents, board members, water commissioners and water professionals will benefit from the training.

Workstations will be provided in the computer lab, but if you are more comfortable with your own laptop, please bring it. Limit: 20 attendees.

The Power of Excel—Spreadsheet Techniques is sponsored by: The Department of Civil Engineering at CSU, Lower South Platte Water Conservancy District, MWH and Aqua Engineering Inc.

*COLORADO WATER CONGRESS ANNUAL CONVENTION
PRE-CONVENTION WORKSHOP*

REAL ESTATE LAW
for Ditch Companies

When: **Wednesday, Jan. 23, 2008**
1 p.m. to 4 p.m.
Where: **Hyatt Regency in the Denver Tech Center**
7800 East Tufts Avenue
Denver, Colo.
Cost: **\$50 for DARCA/CWC members;**
\$75 for non- members

Real Estate Law for Ditch Companies is a pre-convention workshop before the Colorado Water Congress Annual Convention in Denver on Jan. 23-25, 2008. Ditch and reservoir companies in Colorado are not only concerned with water law issues but many spend the majority of their efforts and time dealing with their portfolios of real estate assets. Many canal companies realize property rights can be extremely valuable. If properly managed, they can increase to the company's financial health. The scope of real estate holdings; and issues faced by canal companies may include: easements of ditches and reservoirs; carriage agreements; oil and gas royalties; reservoir holdings; and rights, responsibilities and liabilities of land owned under fee simple. Urban pressures facing ditch companies have created storm flow problems, the creation of trails along ditches and increased liability concerns. Topics:

- How to derive maximum value from ditch and reservoir company real estate holdings;
- What liabilities are associated with these holding and how can they be avoided or mitigated?
- The importance of business planning for ditch companies, including decision-making tools, strategies and examples of bad real estate decisions;
- Easements, such as St. Jude's case, crossings, relocations and sample agreements;
- Storm water discharge;
- Reservoir recreational leases;
- Carriage agreements;
- Negotiation tips; and
- Drafting agreements.

Attorney Jeffrey J. Kahn will cover real estate concerns. Kahn, of Bernard, Lyon, Gaddis & Kahn, P.C. of Longmont, has authored several articles for the DARCA Ditch Company Handbook and will bring sample real estate agreements. He will give the participants real-world examples of how some of his ditch company clients have benefitted financially from Colorado's urban growth.

Real Estate Law for Ditch Companies is sponsored by: Colorado Water Congress, Northern Colorado Water Conservancy District, Applegate Group Inc., and Aqua Engineering Inc.

**6TH ANNUAL DARCA CONVENTION
PRE-CONVENTION WORKSHOP**

FLOW MEASUREMENT
for Ditch Companies

When: **Wednesday, Feb. 20, 2008**
9 a.m. to 4 p.m.
Where: **Fort Garland Museum**
29477 Hwy 159 (just south of Hwy 160)
Fort Garland, Colo
Cost: **\$100 for DARCA/CWC members;**
\$150 for non-members

If you are registered for the 2008 Convention, please subtract \$25 from the workshop price.

Flow Measurement is the pre-convention workshop before the 6th Annual Ditch and Reservoir Company Alliance Convention in San Luis on Feb. 21-22, 2008. The workshop is essential for ditch company personnel interested in learning about the latest technologies of measuring, recording and reporting water flows in canals and for on-farm delivery applications. The workshop begins with flow measurement fundamentals: the common units of measurement and the operational benefits of flow measurement. Historical measurement devices, including the Parshall flume, basic operation of all critical flow measurement devices and details on measurement accuracy are on the agenda.

The course covers the design and installation of long-throated (Replogle) flumes and broad-crested weirs. These types of flumes have several advantages over the Parshall. They can be custom designed to the user's needs, cost less to construct and are more accurate. Participants are invited to bring their laptop computers to class. WinFlume, a powerful, easy to use software program will be provided. The program allows users to perform a rating analysis on an existing flume or a new flume can be designed. The participants will be instructed in the use of the software and will be able to solve exercises in the afternoon session of the class.

Flow meters for piped systems will be presented as well.

Recording devices of all types will be described and Supervisory Control and Data Acquisition, better known as SCADA, will be discussed and presented for flow recording and reporting. The technologies can provide monitoring and control of canal operations from a centralized location. Data and information, such as canal flows and reservoir storage data, can be easily posted to the canal company's Web site for management and shareholder access.

DARCA member Stephen Smith with Aqua Engineering, Inc. will organize and lead the workshop. Other presenters will be engineers from other DARCA member companies and Tony Wahl from the U.S. Bureau of Reclamation Hydraulics Laboratory in Denver.

Lunch and handouts are included. Limit: 80 attendees.

The Flow Measurement workshop is sponsored by: Aqua Engineering Inc. and Southwestern Water Conservation District.

DIRECTORS & OFFICERS TRAINING

for Ditch Companies

When: **Monday, March 10, 2008**
1 p.m. to 5 p.m.

Where: **Las Animas Bent County Library**
306 5th Street
Las Animas, Colo.

Cost: **\$50 for DARCA/CWC members;**
\$75 for non-members

If you ever wondered what your personal liability is as a ditch company director...

If you ever wanted to make your ditch company more efficient and effective...

If you ever have disputes between shareholders over water rights...

THIS WORKSHOP IS FOR YOU!

Repeating the highly successful 2003 workshop in Niwot and again in Mancos in 2007, DARCA brings a team of experts to southeast Colorado to present the:

- Corporate basics for ditch companies;
- Corporate structures;
- Responsibilities and liabilities for directors;
- Bylaws and rules and regulations;
- How to run a great meeting;
- Barriers and pitfalls to optimal decision making;
- Whiskey's for drinkin' water's for fightin'; and
- A word on the past and future from JFK

Jason Turner, Esq., with White and Jankowski LLP, begins the workshop the corporate basics for ditch companies. Extensive handouts citing Colorado statutory and case law will be provided. Next, Janet Enge, a retired broker, financial planner and DARCA board member, discusses her experience of working with 10 ditch companies in how to lead stockholder meetings. John McKenzie, DARCA Executive Director, follows with a discussion about biases of ditch company directors and officers, the importance of business planning, and barriers and pitfalls to optimal decision making. Aqua Engineering's MaryLou Smith explains how conflicts can be avoided and resolved by learning to view disputes differently and by trying different strategies - ones that have been shown to be effective. Finally JFK, through historic footage of the dedication ceremonies of the Frying Pan-Arkansas Project in Pueblo in 1963, adds a final word on water and working together for the future. Limit: 40 attendees.

The Director and Officers Training Workshop is sponsored by: Bernard, Lyons, Gaddis & Kahn, P.C., Leonard Rice Engineers, Inc., and Aqua Engineering Inc.

GIS I

for Ditch Companies

When: **Thursday, March 20, 2008**
9 a.m. to 4 p.m.

Where: **C205 Engineering,**
Colorado State University
Fort Collins, Colo.

Cost: **\$100 for DARCA/CWC members;**
\$150 for non-members

A one-day survey of the use of GIS in ditch company operations, the course demonstrates how GIS is used in Colorado, as well as internationally. Take a look at innovative ways GIS can be a valuable working partner in operating a ditch, and how it can be used to address urban encroachment. The afternoon includes a brief introduction of the ArcView 3.3 user interface. And, we will demonstrate the use of handhelds in field data collection. Walt Epley from CSU's Sociology Water Lab will coordinate the workshop and speakers. Walt has used GIS for ditch companies, drainage districts, and in engineering projects throughout Colorado for many years. Instructors for the workshop are:

- Luis Garcia—Department Head, Department of Civil Engineering, Colorado State University, and Director, Integrated Decision Support Group, The Water Center, Colorado State University.
- Tom Sheng—Computer Assisted Development Inc., Fort Collins, Colo. Tom has experience around the world using GIS in the development setting.
- John Wilkins-Wells—John has a wealth of experience working with canal companies all over the world and in the western United States.

Key opportunities to be presented during this course:

- Overview of use of GIS in ditch company operations;
- Frontiers in data manipulation for ditch companies;
- Discussion of real-life examples of GIS usage by ditch companies;
- Opportunity to share experiences/thoughts/and possibilities for GIS;
- Hands-on introduction to usage of ArcView for GIS spatial data presentations; and
- Specific tools and demonstrations of equipment to use in data collection.

Lunch and refreshments are included. Participants each receive a workshop binder with all handouts and a CD with all sample files. Ditch company superintendents, board members, water commissioners and water professionals all will benefit from the training.

Workstations will be provided in the computer lab, but if you are more comfortable with your own laptop, please bring it. Limit: 30 attendees.

GIS I is sponsored by: The Department of Civil Engineering at Colorado State University, Boyle Engineering and Aqua Engineering Inc.

GIS II

for Ditch Companies

When: **Friday, March 21, 2008**
9 a.m. to 4 p.m.

Where: **C205 Engineering**
Colorado State University
Fort Collins, Colo.

Cost: **\$100 for DARCA/CWC members;**
\$150 for non-members

This fast-paced course guides you through the basic data creation steps in ArcView 3.3, beginning with how to open the ArcView 3.3 user interface, then how to create and add notes to point data, create linear data and use the measuring tool, create polygons and use the area measurement tools. Put together a layered view of different feature layers, such as section lines, rivers, highways and county boundaries in a given geographical area; download and access data available on the Internet; and, print a map. This course is for beginners, and will demonstrate the basic steps needed to use this software. Feel free to come even if you know a bit about ArcView, as you will be able to ask questions, get help and tips for using ArcView, and create your own shapefiles and map. Participants will leave with a printed map and the digital files created during the day. Bring your own jump drive to load and save files. The hands-on workshop guides you through each step, and you will complete each at your own computer station in the lab.

Walt Epley from the Sociology Water Lab at Colorado State University is the instructor for the course. Walt has extensive experience in using GIS for many ditch and reservoir companies in Colorado. He will be able to use these real world applications in the class exercises.

Key opportunities to be presented during this course:

- Hands-on introduction to ArcView GIS 3.3;
- Data collection and database construction for ditch companies;
- Shapefile creation and usage for ditch companies; and
- Map creation for ditch company office personnel.

Lunch and refreshments are included. Attendees each receive a workshop binder with all of the handout materials and a CD with all sample files. Ditch company superintendents, board members, water commissioners, engineers and water professionals will benefit from the training

Workstations will be provided in the computer lab but if you are more comfortable with your own laptop, please bring it. Limit: 30 attendees.

The GIS II workshop is sponsored by: The Department of Civil Engineering at Colorado State University, Northern Colorado Water Conservancy District, Leonard Rice Engineers, Inc., and Aqua Engineering Inc.

DITCH HAZARDS AWARENESS & SAFETY

A Meeting and Participatory Workshop

When: **Monday, April 14, 2008**

6 p.m. to 9 p.m.

Where: **Ramada Inn**

752 Horizon Drive

Grand Junction, Colo.

Cost: **Free**

Irrigation ditches have been instrumental in the development of Colorado. For more than 100 years urbanization occurred along ditches and their riparian corridors. They are valuable environmental and aesthetic assets for the community, in addition to their historic importance for local agriculture. For ditch companies, urban growth has produced unforeseen consequences. Questions surround liability involved with open water in a populated environment. How can we ensure safety and prevent drowning?

Safety issues along the ditch are of utmost concern to everyone. Particularly vulnerable are the very young who must be supervised at all times. Ditch water runs cold, at times quite fast, and may pull a person under quickly. Concrete structures, which alter the way water flows, can be a trap for a person in the water.

A DARCA member and one of the largest ditch companies in Colorado, the Grand Valley Irrigation Company in Grand Junction, will hold a public educational workshop focused on safety issues and drowning prevention along and in the service areas of ditches.

The evening workshop includes a brief contextual statement, a session on the legal aspects of safety, and a participatory workshop to create proactive steps to prevent mishaps and drowning. Officials from GVIC, the City of Grand Junction and Mesa County will be present to work with people to create plans. Representatives from other ditch and reservoir companies from all over Colorado are encouraged to attend so that they will be able to adopt similar educational workshops for their respective ditch companies.

This project is a collaborative effort with GVIC, DARCA and the Colorado State University Sociology Water Lab. DARCA can help set up a ***Ditch Hazards Awareness & Safety Meeting*** for your ditch company. Please contact DARCA at (970) 412-1960 for details. Contact the Grand Valley Irrigation Company at (970) 242-2762.

The Ditch Hazards Awareness & Safety Meeting is sponsored by: The Grand Valley Irrigation Company, MWH, Southwestern Water Conservation District and Aqua Engineering Inc.

DARCA WORKSHOP SERIES REGISTRATION DITCH COMPANY HANDBOOK ORDERS

Workshop	Date/Time/Place	Cost	Qty.	Subtotal
Records Management	Thursday 11/8/07 10 a.m. to 4 p.m. Fort Collins	DARCA/CWC Members \$50		
		Non-Members \$75		
The Power of Microsoft Excel— Spreadsheet Techniques	Friday 11/9/07 9 a.m. to 4 p.m. Fort Collins	DARCA/CWC Members \$100		
		Non-Members \$150		
Real Estate Law (CWC pre-convention workshop)	Wednesday 1/23/08 1 to 4 p.m. Denver	DARCA/CWC Members \$50		
		Non-Members \$75		
Flow Measurement (DARCA pre- convention workshop)	Wednesday, 2/20/08 9 a.m. to 4 p.m. Fort Garland	DARCA/CWC Members \$100		
		Members registered for the convention \$75		
		Non-Members \$150		
		Non-members registered for the convention \$125		
Directors and Officers Training	Monday, 3/10/08 1 to 5 p.m. Las Animas	DARCA/CWC Members \$50		
		Non-Members \$75		
GIS I	Thursday, 3/20/08 9 a.m. to 4 p.m. Fort Collins	DARCA/CWC Members \$100		
		Non-Members \$150		
GIS II	Friday, 3/21/2008 9 a.m. to 4 p.m. Fort Collins	DARCA/CWC Members \$100		
		Non-Members \$150		
Ditch Hazards Awareness & Safety	Monday, 4/14/2008 6 to 9 p.m. Grand Junction	DARCA/CWC Members Free		
		Non-Members Free		
Ditch Company Handbook 2nd Ed.	<i>All DARCA members receive a free handbook. These orders are for additional copies.</i>	DARCA/CWC Members \$30		
		Non-Members \$45		
Total Due			\$	

Four ways to register:

Phone: (970) 412-1960

Mail: 1630A 30th St., #431 Boulder, CO 80301

Fax: (303) 516-1202

Online: www.darca.org

_____ Name
_____ Company/Organization
_____ Address
_____ City, State, Zip
_____ Phone
_____ E-mail

Check enclosed (Payable to DARCA)

Credit Card

Card Number _____

Credit Card Total \$ _____

Type of Card MC Visa Discover

Expiration Date _____

Signature _____

ORDER YOUR 2007 DARCA DITCH COMPANY HANDBOOK, 2ND EDITION

The second edition of the DARCA Ditch Company Handbook is available now. The first edition was published in 2005 and was provided to members of DARCA to assist them in the operation of their ditch and reservoir companies. That edition contained eight articles written by a diverse team of Colorado water experts. In the new edition, we've included 13 new articles, plus revisions of the 2005 edition. Many thanks to the authors who donated their time to provide material for the handbook. Their generosity towards DARCA has enabled this valuable information to become available for water providers across the state. The handbook is available in PDF format as well as on the DARCA Web site for DARCA members only.



- Preface: How Water Ditches Help To Invent and Reinvent Colorado Water—**
Justice Greg Hobbs, Colorado Supreme Court
- Introduction and Table of Contents**
- Articles of Incorporation—**Jack F. Ross, Joanne Herlihy, & John R. Heronimus, Esqs., Dufford & Brown P.C.
 - ✓ Sample Articles of Incorporation of a Mutual Ditch Company
- Bylaws—**Randolph W. Starr, Esq., Starr & Westbrook, P.C.
 - ✓ Sample Bylaws, Sample Policy Statement, and Request for Information Form
- Water Distribution—**Ray Anderson Ph.D., Sociology Water Lab, Colorado State University
- Finance & Personnel—**Cecil McPherron, Anderson & Whitney, P.C., CPAs
- Water Rights—**Joe Tom Wood P.E., Martin and Wood Water Consultants, Inc.
- Dealing With Urbanization and Development—**Jeffrey J. Kahn, Bernard, Lyons, Gaddis & Kahn P.C.
 - ✓ Sample Standard Crossing Agreement, Sample Ditch Relocation Agreement, Sample Reimbursement Letter, Sample Boring Agreement, Sample Discharge Agreement
- Information Management—**Patricia J. Rettig, Water Resources Archives, CSU
- History of DARCA—**Karen Rademacher P.E., Northern Colorado Water Conservancy District
- An Introduction to GIS—**Nils Babel, Riverside Technology, Inc.
- Moderately Priced SCADA Implementation for Canals—**Stephen W. Smith, Aqua Engineering Inc. & Donald O. Magnuson, New Cache La Poudre Irrigating Co.
- Section 404 Permitting Associated with Irrigation Ditches and Drains—**Steve Dougherty, ERO Resources Corp.
- Secondary Water Systems - Case Studies—**John Wilkins-Wells, Ph.D., Sociology Water Lab, CSU
- Urbanization of Irrigation Systems—**John Wilkins-Wells, Ph.D., Sociology Water Lab, CSU
- Directors and Officer Responsibilities and Liabilities—**Carrie L. Ciliberto, Esq., Ciliberto & Associates, LLC and Zachary Smith, University of Denver, J.D. Candidate
- Holding a Great Meeting—**Janet Enge, Animas Consolidated Ditch Company
- Conflict is Not a Four-Letter Word: Some Advice for Ditch and Reservoir Companies—**MaryLou M. Smith, Aqua Engineering Inc.
- Current Issues with Changes of Water Rights Involving Shares of Mutual Ditch Companies—**Jeffrey J. Kahn, Mark D. Detsky, & Matthew Machado, Esqs., Bernard, Lyons, Gaddis & Kahn P.C.
 - ✓ Sample Catlin Bylaws
- Using Water Markets to Preserve Rural Economies in Colorado: A Brief Look at Alternatives to Buy-and-Dry Contracts—**Troy Lepper, Sociology Water Lab, CSU
- Decision and Risk Analysis—**John D. McKenzie, Innovastat Corporation
- A Guide to Weather and Climate Information—**John Wiener, Ph.D., Institute of Behavioral Science, CU

Order form inside!