

# Paso del Norte Watershed Council

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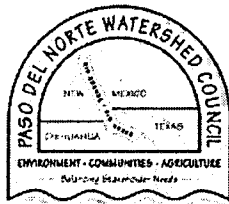
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## Workshop on the Coordinated Water Resources Database and Geographic Information System for the Paso del Norte Watershed

September 15, 2003, 3:00 pm to 5:00 pm

at the

Texas Agricultural Experiment Station, Texas A&M University  
1380 A&M Circle  
El Paso, TX 79927  
phone: 915-859-9111

Sponsored by the  
Paso Del Norte Watershed Council

The Paso del Norte Watershed Council kindly invites you to attend a workshop on the use and availability of the new Coordinated Water Resources Database and Geographic Information System (GIS) for the Paso del Norte Watershed. The database and GIS bring together historical and real-time data from federal, state, and local agencies, and private organizations, for use in water planning and management in this section of the Rio Grande. Access to the data is provided through an Internet Web site.

As the first phase of a larger project, this workshop will demonstrate the use of the Coordinated Water Resources Database Web site with GIS interfaces and the current availability of water resources information. Participants' comments and suggestions for improvement of the Web site will be solicited and greatly appreciated during or after the workshop.

The workshop is being provided as part of a joint project sponsored by El Paso Water Utilities, and conducted by the cooperation of scientists at Texas A&M University, New Mexico State University, New Mexico State Water Resources Research Institute, University of Texas El Paso, and Universidad Autónoma de Ciudad Juárez through the Paso del Norte Watershed Council. Dr. Christopher Brown, Professor of Geography, New Mexico State University, will lead the workshop demonstration. We look forward to your participation in the workshop and to strengthening cooperation and communications among all the stakeholders. For further information, the Council's Program Coordinator can be reached at [pdnwc@pdnwc.org](mailto:pdnwc@pdnwc.org).

*Promoting ecosystem health and economic sustainability in the Paso del Norte watershed.*

## **PDNWC Coordinated Water Resources Database Project Workshop**

**Paso del Norte Watershed Council  
15 September 2003  
Texas A&M University  
Agricultural Research  
& Extension Center**

### **Acknowledgements**

- Financial support of El Paso Water Utilities
  - ◆ Institutional support for the PDNWC
  - ◆ Start-up funding for the Database Project
- Efforts of Database Project Technical Committee
- Operational contributions of Matt Rich
- Support of the the NM WRR!
- Logistic and technical support of Nancy Hanks, Ari Michelsen, Carol and Lee Placchi, and the NMSU Department of Geography
- The contributions of the regional data providers

### **Outline of Workshop activities**

- Review of project background, history, tasks undertaken, and results
- Release of Final Project Report
- Demonstration of Project Website and database functions
- Open forum for discussion, suggestions for improvements, and next steps in project work

### **Early research efforts**

- Iterative process of the origin of the idea for the Database Project & proposal development
- Initial discussions among project staff towards development of work plan
- Research into existing webpages to identify key elements of databases
- Development of a set of protocols by which PDNWC database and related webpage was be developed

### **Major findings of on-line research**

- Most data are centrally located on project servers.
- Both spatial (GIS) & aspatial data are served.
- Tabular data are served via "cartoons," HTML tables, and downloads.
- Spatial queries are handled by keyword and also area of interest tools.
- Metadata range from FGDC/SDTS to the basic elements (source, spatial extent, date, variables involved, format, and details of access)

### **Insights for PDNWC project**

- Early idea was a structure based on a warehouse model with some links to outside data – things do change!
- ArcIMS provides a "Map front end" and interactive means to execute a spatial query.
- Tabular data are handled as downloads of Excel or .dbf files, not HTML tables.
- Most accessible data are handled first (Hewlett map, WRR! and TAMU data, and UTEP and UACJ data).

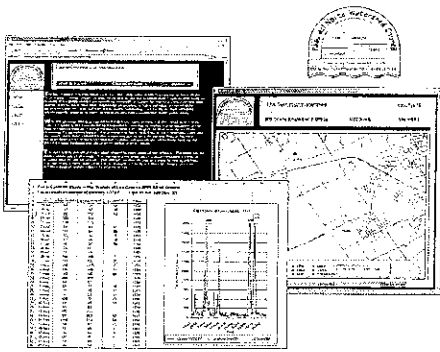
### Continuing Project efforts

- Exploration of datasets to be used in pilot project development
- Development of HTML scripts, transfer of data to WRRRI server, and assembly of ArcIMS and HTML elements
- Documentation of project work via final project report, PDNWC workshop, and technical paper

### Mechanics of PDNWC project

- Combination of ArcIMS front end and image map tiles provide spatial query (following graphic)
  - ◆ ArcIMS provides overall view of the study area
  - ◆ Pre-clipped tiles of larger map are served as image maps
  - ◆ Pop-up menus of available data are served off of image maps, number of data points allowing
- Basic metadata (source, spatial extent, date, variables involved, format, and details on access) are served via web-interface and published in Final Project Report

### Mechanics of PDNWC project



### Exploration of pilot datasets

- Hewlett data sets and other WRRRI data provided mapping background.
- Project staff in NM and Texas worked with their local data providers (EBID, EPCWID #1, EPWU, and CLC) to obtain data.
- Larger sets already served on-line by other agencies are incorporated (USGS, USBR, and IBWC).
- EPWU, UTEP, and UACJ data are currently being brought into the project.

### Findings and outcomes

- Operational website is delivered at:
  - ◆ <http://www.pdnwatershed.org/>
  - ◆ <http://wrrri.nmsu.edu/arcims/pdnwc-map/tiles/home.htm>
- Final report is delivered to EPWU and Watershed Council Executive Committee members.
- Several findings and insights into future project development and enhancement have been uncovered.

### Findings and outcomes

- Recommendations for enhanced water monitoring in the field are provided.
  - ◆ Suggestions are offered for enhanced operation and maintenance activities.
  - ◆ Recommendations for new monitoring sites are provided in Final Project Report.
    - Flood control gauges with EBID and IBWC
    - Water flow gauges with EPCWID#1 & USBR
    - Water quality monitoring with IBWC

### Findings and outcomes

- ArcIMS and image map issues
  - ◆ Initial use of image maps for larger scale maps posed update challenges.
  - ◆ Converting Project completely to ArcIMS will resolve issues and increase functionality.
- "User interface plateau" – Portal structure yields range of user interfaces, not one seamless look.
- Some form of scripts installed on data providers' servers or a batch data transfer mode would resolve this issue.

### Findings and outcomes

- Systems administration issues – UNIX operating system posed problems with ArcIMS service, remote access, and mapextent
- Data format and consistency issues – wide range of data sources argues for additional quality control and assurance measures
  - ◆ Locational data of spatial features
  - ◆ Consistency of data across multiple sources

### Summary recommendations

- Complete migration of Project to ArcIMS
- Detail is provided on installation of new monitoring stations and equipment
- Enhanced levels of funding for regional data providers
- Incorporate UACJ, UTEP, and EPWU data more fully into next phases of project
- Exploration of scripting, automated FTP, and batch data transfers

### Summary recommendations

- Inclusion of more groundwater data into future project phases
- Link the EPWU Database Project to the USACE-funded project and explore modeling efforts
- Additional funding to be sought for future phases of project work
- Other ideas from workshop attendees....

