CORPUS CHRISTI - NUECES RIVER OBSERVATION NETWORK

CC-NRON

GRADUATE PROJECT

BY
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December 10, 1998

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ACKNOWLEDGEMENTS

The water planners, geographic information sciences professionals whose philosophies and knowledge provided ideas incorporated within this graduate report:

Stephen Densmore, State Hydrologist, Texas Water Development Board,

James Dodson, Regional Director, Coastal Bend Division, Nueces River Authority,

Rocky Freund, Chairperson, Comprehensive Data Management Plan, Texas A&M-CC, and

Ed Garana, Water Superintendent, City of Corpus Christi, Texas.

Thank You,
Barbara F. DuFrain
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MASTER'S GRADUATE PROJECT
Computing and Mathematical Sciences Department
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ABSTRACT

The purpose of the Corpus Christi-Nueces Observation Network project is to design and implement a geographic information system for observing the stream flow within the Nueces Watershed. The system provides a near-real-time graphic display of streams located within the Nueces Watershed and establishes the South Texas Natural Resource Geographic database. In addition, the system has designed and implemented an interface between the United States Geological Survey (USGS) Web site data and the supportive layers of the South Texas Natural Resource Geographic database.

The Corpus Christi-Nueces River Observation Network (CC-NRON) provides and maintains data so that the following are available within the Nueces River boundaries on a daily basis:

- Watershed with major streams and stream gages
- Temporal stream flows
- Stream gage hydrographs
1. BACKGROUND AND RATIONALE

Consider the following scenario:

In the middle of the night you are thirsty. You go into the kitchen and to the water dispenser on the refrigerator. You push the lever. Nothing happens. Now, you stand and study. Next, you go to the faucet over the kitchen sink. You turn the handle. Nothing happens. Who do you call?

You try the faucet again. Hissing and groaning sounds are emitted. Suddenly brown sludge pours forth. Oh the smell! Who do you call?

Jane, she lives near Choke Canyon. You dial her number.

Jane says, "My water is ok. However, we had five inches of rain two days ago. You know, the caliche pits and the gravel pits are flooded."

In rural Texas where rivers and streams provide home drinking water, you call your neighbor for information.

In Corpus Christi, you call the Mayor, the City Manager, or your city council member, who then calls the Water and Wastewater Supervisor, who in turn calls the plant manager, who then calls Jane at Choke Canyon and asks her if she’s had any rain.
The quality and quantity of drinking water in the Corpus Christi urban area is a primary concern. Currently, nearly half a million people depend on the Corpus Christi water supply for their drinking water. If the trend in population growth in Texas continues, there will also be a corresponding rise in the demand for water. Therefore, city planners require information that will determine the impact of changes within our watershed on our city’s water supply system. They yearn for a tool that can facilitate the dissemination of timely and accurate information about the current situation(s) within the source watershed. Daily questions routinely include the following:

How much water do we have?
How much water is coming into our lakes?
How much water is going into the bay?

Other questions might include:

Is the amount of run-off above Choke Canyon causing lake-level problems?
Is our lake low enough for the boat docks to be out of water?

Furthermore the public is interested in knowing:
Why are we in Conservation Level II?

The answers to these questions are required to be in a format understandable to the average customer/user. Overall, the system needs to convey conditions within the Nueces River Watershed that answer the questions:

**What** is happening and **where** is it happening?