COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

APPLICATION OF NORTHERN KENTUCKY WATER DISTRICT FOR ACCREDITATION AND APPROVAL OF WATER COMMISSIONER TRAINING	))))	CASE NO. 2008-00 191

APPLICATION FOR APPROVAL AND ACCREDITATION OF WATER COMMISSIONER TRAINING

Northern Kentucky Water District (NKWD), by counsel, petitions the Commission for an order approving and accrediting training for its water commissioners as provided by KRS 74.020(6) and (7). The following information is filed in accordance with the Commission's regulations:

1. NKWD'S office address is 2835 Crescent Spring Rd., Erlanger, KY 41018-0640. Its principal officers are listed in its current Annual Report on page 6, which is filed with the Commission as are its prior years Reports;

2. NKWD is a non-profit water district organized under Chapter 74 and has no separate articles of incorporation.

3. NKWD serves retail customers in Kenton and Campbell Counties and sells water at wholesale to non-affiliated water distribution systems in Pendleton County.

4. NKWD has six commissioners, who have over the course of this calendar year participated in a number of training sessions which NKWD believes conform to the requirements of 807 KAR 5:070.

5. In order for the commissioners to receive credit for this training, it is necessary to obtain approval from the Commission for the training sessions.

6. In conformity to 807 KAR 5:070 (1) and (2), five copies of the training manuals are being submitted for review, which contain the following information:

1. The name and address of the applicant

2. The name and sponsor of the program and the subject of the program

3. A summary of the content of the program

4. The number of credit hours requested for each program

5. The name and qualifications of each instructor

6. A copy of the written materials provided

7. The names of any certifying organizations

7. Minutes of the meetings of the training sessions are included as item 4 for each training session.

8. Copies of board meeting minutes for 2008, which indicate the time and date of the meetings, as well as a roster of those attending are attached.

9. All board meetings are advertised to the public and open to the public, but the specific agenda or training programs are not listed in the notice.

10. No fees are assessed for attending a board meeting or in participating in the training session.

11. The instructors' relationship with Northern or their employment is explained in item 5 of each program description.

12. NKWD asserts that the programs all relate to the areas of instruction for which approval shall be granted as set forth in 807 KAR 5.070(2). These programs are in

addition to the routine status reports, project briefings and informational presentations that the Northern staff provides to the Board members as part of their oversight of the District's operations, which occur on a regular basis.

14. In its order in Case No. 2007-00387, the Commission stated that Northern should submit its request for approval of commissioner training 30 days prior to the scheduled sessions. Due to the timing of the order, previously scheduled sessions and the timing of the receipt of speakers' acceptance and printed materials, Northern was unable to meet that requirement for the training sessions from January through June. It requests a deviation from the 30 day requirement for this calendar year for those sessions. One of the sessions described in tab F is scheduled for September, 2008 and meets the order's timing requirement.

13. NKWD seeks approval of these credit hours as soon as possible so that if the training hours are not approved, the district's commissioners can attend other approved training sessions.

For these reasons, NKWD requests an order approving the credit hours of training for each of the programs offered to its water commissioners.

Submitted by:

John N. Hughes
124 West Todd
Frankfort, KY 40601
Attorney for Northern Kentucky
Water District

Northern Kentucky Water District

Commissioner Training — 2008

Tab	Topic
A	Asset Management Program
B	Regulatory Overview
C	Residuals Treatment
D	Green Design
E	Customer Service Overview
F	Main Replacement Program

Northern Kentucky Water District

Commissioner Training — 2008

1 – Item One

Northern Kentucky Water District
2835 Crescent Springs Road
P.O. Box 18640
Erlanger, KY 41018

Northern Kentucky Water District

Commissioner Training — 2008

2 – Item Two

Name: Asset Management Program

Sponsor: Malcolm Pirnie

Subject Matter: Overview of Northern Kentucky Water District's Asset Management Program.

Northern Kentucky Water District

Commissioner Training — 2008

3 – Item Three The purpose of this training session is to advise the Board of Commissioners on how a structured asset management program can minimize the cost of owning and operating assets while delivering the service levels customers desire.

Northern Kentucky Water District

Commissioner Training — 2008

4 – Item Four	One Credit Hour – Copy of Board Minutes showing Commissioners attendance attached.

Northern Kentucky Water District
Board of Commissioners Meeting
January 16, 2008

A regular meeting of the Board of Commissioners of the Northern Kentucky Water District was held on January 16, 2008 at the District's facility located at 2835 Crescent Springs Road in Erlanger, Kentucky. All Commissioners were present. Also present were Ron Lovan, Richard Harrison, Bari Joslyn, Jack Bragg, Mark Lofland, Bill Wulfeck, Don Gibson, Amy Kramer, Jim Dierig, Bob Buhrlage, Mary Carol Wagner, Frances Robinson, Greg Osthues, Chris Weber, and Charles Pangburn.

Commissioner Koester called the meeting to order.

Mr. Lovan led those in attendance in the Pledge of Allegiance.

Mr. Harrison and Ms. Kramer, both of the District staff, and Greg Osthues of Malcolm Pirnie delivered a presentation to the Board on the asset management plan.

The Board reviewed correspondence received and articles published since the last regular Board meeting on November 15, 2007.

On motion of Commissioner Collins, seconded by Commissioner Wagner, the Board unanimously approved the minutes for the regular Board meeting held on November 15, 2007.

On motion of Commissioner Jackson, seconded by Commissioner Collins, and after discussion, the Board unanimously approved the expenditures of the District for the months of November and December, 2007.

On motion of Commissioner Jackson, seconded by Commissioner Sommerkamp, and after discussion, the Board unanimously agreed to award the Elm Street Service Line Replacement Project to Generation II Construction, Inc. and to authorize the District staff to execute appropriate contract documents.

On motion of Commissioner Sommerkamp, seconded by Commissioner Wagner, and after discussion, the Board unanimously approved a resolution authorizing the District to file a loan application for the Drinking Water State Revolving Fund and appointing the President and Chief Executive Officer to act as the District's representative in connection with such application.

On motion of Commissioner Sommerkamp, seconded by Commissioner Collins, and after discussion, the Board unanimously agreed to award the Pike Street Water Main Replacement Project to Fields Excavating and to authorize the District staff to execute appropriate contract documents.

On motion of Commissioner Wagner, seconded by Commissioner Jackson, and after discussion, the Board unanimously agreed to award the U.S. 27 Water Service Switch Over and

8 inch Water Main Abandonment Project to RFH Construction and to authorize the District staff to execute appropriate contract documents.

On motion of Commissioner Macke, seconded by Commissioner Sommerkamp, and after discussion, the Board unanimously agreed to reject all bids received in December, 2007 for the installation of Pump No. 3 at the Ohio River Intake.

On motion of Commissioner Collins, seconded by Commissioner Wagner, and after discussion, the Board unanimously agreed to award the Fort Thomas Treatment Plant Filter Building Partial Roof Replacement Project to CA Eckstein Inc. and to authorize the District staff to execute appropriate contract documents.

On motion of Commissioner Koester, seconded by Commissioner Sommerkamp, and after discussion, the Board unanimously agreed to elect the following Board officers with terms beginning on January 17, 2008:

Chairman:	Fred Macke
Secretary:	Doug Wagner
Treasurer:	Drew Collins

The Board reviewed the District's financial reports and Department reports.

Mr. Pangburn departed the Board meeting.

On motion of Commissioner Koester, seconded by Commissioner Collins, the Board unanimously agreed to go into executive session under the provisions of KRS 61.810(1)(f) to discuss an individual personnel matter and to protect personal privacy in such discussion.

The Board returned to open session.

On motion of Commissioner Wagner, seconded by Commissioner Jackson, and after discussion, the Board unanimously agreed to change the District's agreement with the firm of Hemmer Pangburn DeFrank PLLC and directed the President and Chief Executive Officer of the District to execute a new letter agreement incorporating changes specified by the Board.

On motion of Commissioner Wagner, seconded by Commissioner Sommerkamp, the Board unanimously agreed to go into executive session under the provisions of KRS 61.810(1)(f) to discuss an individual personnel matter and to protect personal privacy in such discussion.

The Board returned to open session.

On motion of Commissioner Wagner, seconded by Commissioner Collins, the Board unanimously agreed to authorize and direct the Chairman of the District to execute an amendment to Mr. Lovan's employment agreement incorporating changes specified by the Board.

Other matters of a general nature were discussed.

There being no further business to come before the Board, the meeting was adjourned.

CHAIRMAN

SECRETARY

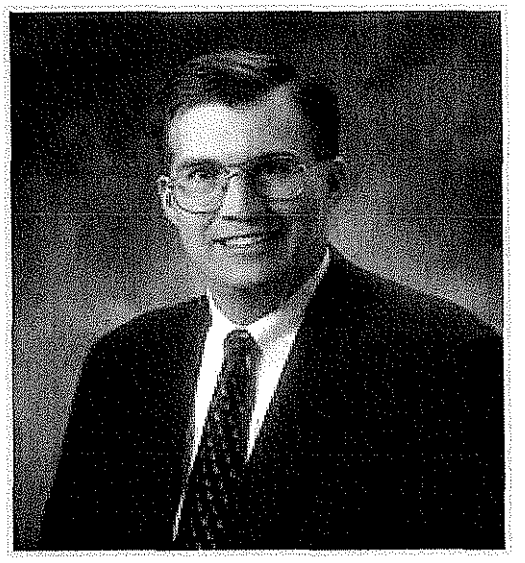
Northern Kentucky Water District

Commissioner Training — 2008

5 – Item Five

Mr. Richard Harrison, VP of Engineering & Distribution,
Northern Kentucky Water District
Ms. Amy Kramer, Design Engineering Manager,
Northern Kentucky Water District
Mr. Greg Osthues, AM/IM Midwest Leader
Malcolm Pirnie

Bios of the presenters are attached.



Richard Harrison

Engineering and Distribution

Richard Harrison is Vice President of Engineering and Distribution at the Northern Kentucky Water District. He has a Bachelor's of Science Degree in Civil Engineering from the University of Kentucky and is a Licensed Professional Engineer in the State of Kentucky. The group he manages is responsible for the maintenance of the distribution system and the procurement of professional services, design and construction management for new projects for the District.

Richard is a past President and current member of the Covington Rotary Club and a member of the Northern Kentucky Society of Professional Engineers currently serving on the Chapter's Board of Directors. He is also a member of the American Water Works Association serving as the Chair of the executive committee of the Kentucky Water Utility Council. He is a graduate of Leadership Northern Kentucky 1996.

Richard has been with the Northern Kentucky Water District since 1988.

Session T7A
Title: Moving from Reactive to Proactive Main Replacement

Amy Kramer, P.E.
Northern Kentucky Water District
859-426-2734
akramer@nkywater.org

PROFESSIONAL CREDENTIALS AND CURRENT INVOLVEMENT

Registered Professional Engineer
AWWA, Capital Project Delivery Committee
KDOW, Capacity Development Subcommittee
KDOW, Design Standards Subcommittee

EXPERIENCE

12/01 – Present	Design Engineering Manager Northern Kentucky Water District, Erlanger, Kentucky
5/92 – 12/01	Project Engineer Black & Veatch, Cincinnati, Ohio
9/91 – 6/92	Student Research Assistant, Undergraduate University of Cincinnati, Cincinnati, Ohio
3/89 – 9/91	Co-op Student U.S. Environmental Protection Agency, Cincinnati, Ohio

EDUCATION

B.S. Civil Engineering
University of Cincinnati, Cincinnati, Ohio

Mr. Osthues leads the Asset Management practice for Malcolm Pirnie in the Midwest with overall responsibility for the delivery of services relating to utility asset management in support of facility and capital planning including: the development and implementation of asset inventory and condition assessment programs, the evaluation and implementation of Geographic Information Systems and Computerized Maintenance Management Systems and O&M program evaluation and development. Mr. Osthues has authored articles and presented on asset management topics for the International City/County Management Association and for the Utility Management Conference. Mr. Osthues is a registered professional engineer with 20 years of experience in the planning, design and construction of large municipal infrastructure projects.

Detailed Experience

- The City of Delaware Department of Public Utilities Asset Management Program / Delaware, OH. Project Manager for implementation of a comprehensive asset management program for the four divisions within the Public Utilities Department (Water Distribution, Water Treatment, Wastewater Treatment, Sewer Collection/Storm Water). The implementation includes the development of service level measures, the development and implementation of condition assessment methodologies for in-plant and buried assets, the implementation of a new GIS for storm, sanitary and water and the configuration of a new CMMS including asset inventory population, work order processing and customer call management.
- The Northeast Ohio Regional Sewer District: Southerly WWTC Condition Assessment / Cleveland, OH. Project Lead for methodology development, data management and condition assessment activities for NEORSD's 240 MGD Southerly WWTC. The condition assessment is part of the District's overall facilities planning for wet weather improvements and capital planning for overall renewal and replacement. Activities included field data collection for assessment of physical condition for mechanical, electrical, instrumentation and HVAC equipment along with staff interviews to assess equipment and process operating history. Data management was provided via a

Gregory J. Osthues

Title/Firm:

Principal Consultant
Red Oak Consulting
Division of Malcolm Pirnie

Years of Experience

20

Education

BSCE Civil Engineering
University of Massachusetts
1987

ME Environmental Engineering
Manhattan College 1994

Licenses and Certifications

Professional Engineer

Certified Construction Documents Technologist (CSI)

Health and Safety Training

Construction Safety Awareness

Societies

Tau Beta Pi - The Engineering Honor Society

Employment History

Malcolm Pirnie, Inc. 1990 to present

Dames and Moore 1988 to 1990

Lombardo & Associates 1987 to 1988

relational database tool and was coordinated with District's CMMS asset inventory.

- The Metropolitan District: WPCF 25-Year Capital Needs Assessment / Hartford MDC, CT. Project Lead for data management and condition assessment activities for the MDC's comprehensive 25-Year Capital Needs Assessment, including the District's four wastewater treatment facilities. The assessment provides the District with a hierarchical capital asset database, condition and criticality assessment, 25-year $250-million capital improvement plan for wastewater facilities, and financial analysis of a combined total $1-billion CIP wastewater and CSO programs.
- Miami-Dade County Water and Sewer Department / Miami-Dade County, FL Project Lead for data management and condition assessment methodology development for Renewal and Replacement Needs Assessment of MDWASD's Central District WWTP and Hialeah WTP, including development of 15-yr capital budgeting for renewal and replacement of process equipment, electrical systems and HVAC equipment.
- Allen County Sanitary Engineers: GIS and CMMS / Allen County OH. Project Manager for the development of a wastewater collection system GIS and selection of computerized maintenance management system (CMMS), including needs assessment, RFQ development and software procurement.
- City of Youngstown: Collection System Maintenance Management Program / Youngstown OH. Project lead for technical development of the Youngstown Work Order Tracking System (YWOTS) to provide the City with a web-based, database-driven CMMS application accessible through the City's intranet to provide a method for recording, tracking, and archiving the City's collection system work orders for both preventive and corrective maintenance.
- City of Lima: Water Distribution GIS and CMMS / Lima OH. Project Manager for the development of a complete GIS-based asset inventory for the City of Lima's water distribution system and selection of new CMMS, including needs assessment, RFQ development and software procurement.

Northern Kentucky Water District

Commissioner Training — 2008

6 – Item Six Asset Management Program – PowerPoint Handouts attached

Northern Kentucky Water District

Asset Management Program

Board Presentation

January 16th, 2008

Solutions For Life

MALCOLM PIRNIE

Today's Presenters

Richard Harrison
NKWD, V.P. Engineering & Distribution

Amy Kramer
NKWD, Asset Management Update Team Leader

Greg Osthues
Malcolm Pirnie AM/IM Midwest Leader

Solutions For Life

MALCOLM PIRNIE

Definition of Asset Management

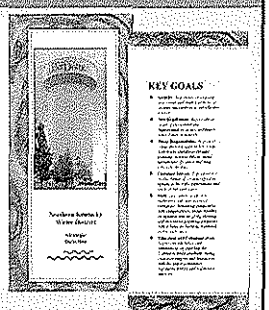
"An Asset Management Program (AMP) is a structured program to *minimize* the cost of owning and operating assets while delivering the service levels customers desire."

Solutions For Life

MALCOLM PIRNIE

NKWD Strategic Direction

- AMP supports all Key Goals:
  - Security
  - New Regulations
  - Fiscal Responsibility
  - Customer Service
  - Staff
  - Education and Communication



NKWD Strategic Initiatives

- AMP supports all initiatives:
  - Strategic Planning with the Board and Management Team setting priority goals and strategic direction.
  - Asset Management Program to provide long-term planning guide.
  - Annual 5-year CIP
  - Annual O&M Budget

Summary of 2004 AMP

- Included:
  - Above-ground condition assessment of over 1,000 supply, treatment, and distribution system assets
  - Improvements to meet regulations, demand needs, technology, and reliability
  - Developed CIP through 2020 for Minimal, Moderate and Aggressive approaches
  - Rate analysis for implementing Minimal, Moderate, and Aggressive approaches
  - Combined numerous engineering reports into one plan

Engineering Reports Included in 2004 AMP

- B&V Hydraulic Master Plan 2001
- B&V Water Quality Modeling 2001
- B&V FTTP Treatment Evaluation 2001
- B&V Addendum for Newport 2002
- B&V Taylor Mill Study 2003
- CH2 Vulnerability Assessment
- EMA UIM Needs Assessment

Comprehensive AMP Fee History

B&V	Hydraulic Master Plan 2001	$90,800
B&V	Water Quality Modeling 2001	$32,100
B&V	FTTP Treatment Evaluation 2001	$59,700
B&V	Addendum for Newport 2002	$93,000
B&V	Taylor Mill Study 2003	$19,850
B&V	Asset Management 2004	$300,37
CH2	Vulnerability Assessment	$177,80
EMA	UIM Needs Assessment	$69,800
B&V	Asset Management 2004	$300,374
		$843,421

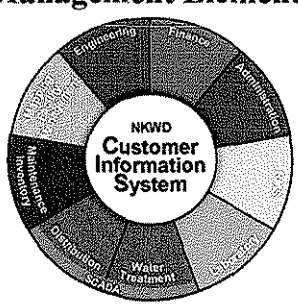
Summary of 2004 AMP continued

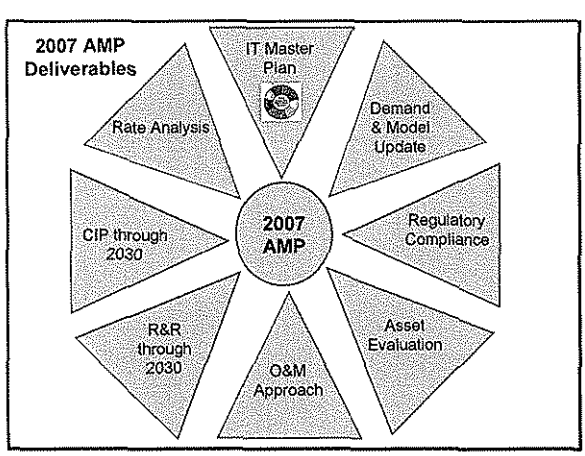
- Did not include:
  - Updated population and demand projections (Last updated in 2001)
  - Information Technology (IT) Component
  - Detailed above-ground Infrastructure Repair and Replacement Program
  - Buried asset data management needs to develop comprehensive water main R & R program
  - Buried asset condition assessment
  - Buried asset R & R program

Key Components of Current AMP Project

- Demand projections and hydraulic model update through 2030
- Update supply, treatment and recommended improvements through 2030
- Detailed above-ground Infrastructure Repair and Replacement Program
- CIP through 2030
- Updated rate analysis for Minimal, Moderate, and Aggressive
- IT Master Plan including phased implementation

Water District Utility Information Management Elements





CURRENT PROJECT OVERVIEW

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Asset Management is a National Concern for All Types of Infrastructure

National Infrastructure Report Card 2001 to 2005

Subject	2001	2005	Investment
Bridges	C	C	$9.4 Billion/yr
Dams	D	D	$10.1 Billion/yr
Roads	D+	D	$94 Billion/yr
Drinking Water	D	D-	$11 Billion/yr
Wastewater	D	D-	$19.5 Billion/yr
Schools	D-	D	$127 to $268 Billion
Total Investment = $1.6 Trillion			*Source = ASCE*

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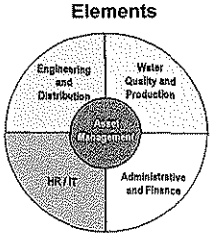
Asset Management Program Involves All Departments

Organizational / Functional Elements



- Workshops and interviews involving internal stakeholders to ensure buy-in and consensus
  - Understand knowledge / data transfer, tools and templates
  - Identify current practices and needs
- Build the foundation for a successful long-term program

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Demand Projections and Hydraulic Model Update Through 2030

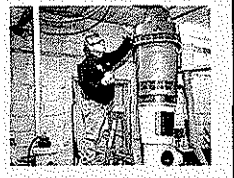
- Demand projections through 2030
  - Current 64 MGD capacity will be exceeded in 2028
  - Supports GAC design for blending analysis.
- Use hydraulic model to identify capacity-driven CIP projects:
  - Growth in Central Campbell Co.
  - Southern area growth

Regulatory Compliance

- Stage 2 Disinfectant/Disinfection Byproducts Rule (compliance date 2012)
  - Total trihalomethanes and haloacetic acids
- Long-Term 2 Enhanced Surface Water Treatment Rule (compliance date 2012)
  - *Cryptosporidium*
- Future Regulations
  - Total Coliform Rule Revisions – focus on distribution system concerns such as cross connections, microbial regrowth, intrusion of contaminants from pressure loss
  - Contaminants Candidate List – emerging contaminants of concern

Asset Evaluation: Above Ground and Buried Assets

- Update Facility Condition data from 2004 AM study for above-ground assets (1,000 +)
- Assign asset criticality for each Water Treatment Plant, pumping stations, *tanks and other NKWD facilities.*
- Evaluate current NKWD O&M programs for above ground assets.
- Identify data management needs for buried assets.
  - Sets the foundation for comprehensive water main R&R program



Asset Repair & Replacement (R&R) Through 2030 Identifies O&M, OCB and CIP Priorities

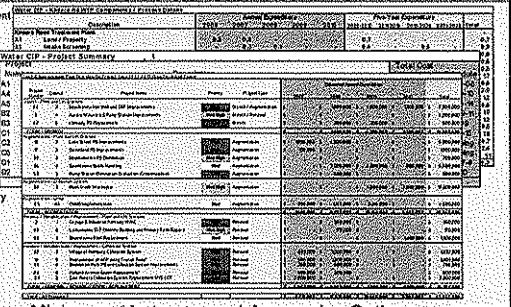
- O&M strategies for above ground assets
  - Reliability Centered Maintenance techniques
- Operating Capital Budget
  - Asset Effective Useful Life approach
- Define projects for 5-yr Capital Budget
  - Larger R&R needs
- Identify CIP needs through year 2030

2030 CIP and Rate Analysis Includes All Projected Capacity, Regulatory and R&R Needs

3. Component / Process

2. Project Details

1. Summary



Minimum, Moderate, and Aggressive Options

IT Master Plan Prioritizes and Aligns IT Projects with NKWD Asset Management Needs

Information Needs

Operations & Maintenance | Customers | Engineering | Water Quality

Data Collection → Data Storage → Analysis & Reporting → System Integration

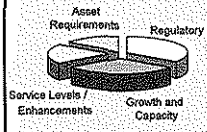
Customer, Asset & Water Quality Data

CIS, GIS, CMMS SCADA & LIMS

NKWD Data & Systems

Asset Management Outcomes

1. Identify Requirements & Objectives



Driven By Strategic Goals

2. Develop Project Needs

Growth / Capacity
- Water Resources
- Treatment / Storage
- Pumping / Distribution

Service Levels/Enhancements
- Customer Service
- Reliability

Regulatory
- 2012 Regulations
- Future requirements

Asset Requirements
- O&M Program
- Repair & Replacement
- Above Ground & Buried

3. Prioritize and Balance with Rate & Financial Impacts

CIP Options and Funding Alternatives

Next Steps for This Program

- *Present report summer 2008*
- Implement short-term recommendations in 2008 - 2009
  - Data collection on maintenance activities & buried infrastructure
  - Introduce automation for existing data systems
  - Continue with capital projects
- Move towards more fully integrated systems in long term 2010 – 2012
- Next update to plan around 2013
  - Address buried infrastructure condition & criticality
  - Full integration of data systems
  - Deployment of real-time technology

Northern Kentucky Water District

Commissioner Training — 2008

7 – Item Seven No.

Northern Kentucky Water District

Commissioner Training — 2008

1 – Item One

Northern Kentucky Water District
2835 Crescent Springs Road
P.O. Box 18640
Erlanger, KY 41018

Northern Kentucky Water District

Commissioner Training — 2008

2 – Item Two Name: Regulatory Overview

Sponsor: Department for Environmental Protection, Environmental & Public Protection Cabinet
Subject Matter: Regulation development, new rules and expected changes.

Northern Kentucky Water District

Commissioner Training — 2008

3 – Item Three The purpose of this presentation is to inform the Board of Commissioners about the history of regulation development and to advise of upcoming changes to rules and regulations as they affect the water treatment process.

Northern Kentucky Water District

Commissioner Training — 2008

4 – Item Four	One Credit Hour – Copy of Board Minutes showing Commissioners attendance attached.

Northern Kentucky Water District
Board of Commissioners Meeting
March 24, 2008

A regular meeting of the Board of Commissioners of the Northern Kentucky Water District was held on March 24, 2008 at the District's facility located at 2835 Crescent Springs Road in Erlanger, Kentucky. All Commissioners were present. Also present were Ron Lovan, Bari Joslyn, Richard Harrison, Jack Bragg, Mark Lofland, Bill Wulfeck, Amy Kramer, Jim Dierig, Bob Buhrlage, Mary Carol Wagner, Amy Matracia, Chris Wetherell, Tim Koenig, Todd Schulkers, Donna Marlin, Randy Kellinghaus, Joe Boyle and Charles Pangburn.

Commissioner Macke called the meeting to order.

Commissioner Koester led those in attendance in the Pledge of Allegiance.

Chief Tim Koenig of the Erlanger Fire Department thanked the Board and the District for the District's contribution to the Erlanger Fire Department's high rating in its recent ISO inspection.

The Board recognized Randy Kellinghaus on the occasion of his completion of 35 years of dedicated and faithful service to the District.

The Board recognized and thanked Joe Boyle on the occasion of his retirement for over 27 years of dedicated and faithful service to the District.

The Board recognized Commissioner Koester for his leadership as Chairman of the Board over the past two years.

Donna Marlin, Manager of the Drinking Water Branch of the Kentucky Division of Water, delivered a presentation to the Board on drinking water regulations and changes.

The Board reviewed correspondence received and articles published since the last regular Board meeting on February 21, 2008.

On motion of Commissioner Koester, seconded by Commissioner Jackson, the Board unanimously approved the minutes for the regular Board meeting held on February 21, 2008.

On motion of Commissioner Wagner, seconded by Commissioner Sommerkamp, and after discussion, the Board unanimously approved the expenditures of the District for the month of February, 2008.

On motion of Commissioner Sommerkamp, seconded by Commissioner Koester, and after discussion, the Board unanimously agreed to award the Hazelwood Drive Water Main Replacement Project to Jack Gemmer & Son, Inc. and authorized the District staff to execute appropriate contract documents.

On motion of Commissioner Collins, seconded by Commissioner Jackson, and after discussion, the Board unanimously agreed to award the Waterworks Road 30-inch Water Main Replacement Project to Smith & Brown Contractors, Inc. and authorized the District staff to execute appropriate contract documents.

On motion of Commissioner Koester, seconded by Commissioner Wagner, and after discussion, the Board unanimously agreed to retain Brandstetter Carroll, Inc. to design the 2008 Newport Main Replacement Project and authorized the District staff to execute appropriate engineering contract documents.

On motion of Commissioner Sommerkamp, seconded by Commissioner Wagner, and after discussion, the Board unanimously agreed to retain HDR/Quest to design the Portable Generator Project and authorized the District staff to execute appropriate engineering contract documents.

On motion of Commissioner Koester, seconded by Commissioner Sommerkamp, and after discussion, the Board unanimously agreed to award the Dudley Pump Station Motor # 7 Replacement Project to Matlock Electric and authorized the District staff to execute appropriate contract documents.

On motion of Commissioner Wagner, seconded by Commissioner Koester, and after discussion, the Board unanimously agreed to award the Automated Meter Reading System Project to Badger Meter, Inc. for the purchase of the Badger/Orion Mobile System with a 1-year deployment and authorized the District staff to execute appropriate contract documents.

Commissioner Collins departed the meeting.

On motion of Commissioner Koester, seconded by Commissioner Sommerkamp, and after discussion, the Board unanimously agreed to award the purchase of the specified meter items to the highlighted companies listed on the attached three-page Bid Tab and authorized the District staff to execute appropriate contract documents.

The Board reviewed the District's financial reports and Department reports.

Other matters of a general nature were discussed.

On motion of Commissioner Wagner, seconded by Commissioner Sommerkamp, the Board unanimously agreed to adjourn the meeting.

CHAIRMAN

SECRETARY

Northern Kentucky Water District

Commissioner Training — 2008

5 – Item Five Ms. Donna Marlin, Manager, Drinking Water Branch, Kentucky Division of Water (KDOW)

Bio of the presenter attached.

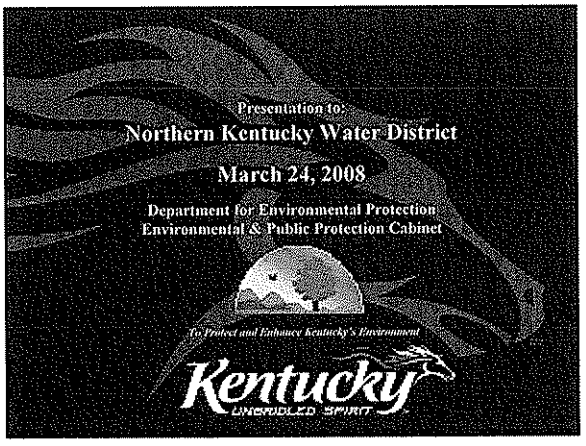
Donna Marlin

Employed by the Dept. for Environmental Protection since 1986. Graduated from the University of Kentucky in 1994 with BS in Civil Engineering. Reviewed technical plans and specifications on wastewater facilities from 1993 to 1994 and drinking water systems from 1994 to 1999. From July 1999 to October 2001 coordinated and managed the Drinking Water State Revolving Fund and the Capacity Development Programs. Temporarily reassigned to the Cabinet's Empower project from October 2001 to May 15, 2003 with the primary responsible of coordination and management of the requirements library team. Appointed Drinking Water Branch manager on May 15, 2003.

Northern Kentucky Water District

Commissioner Training — 2008

6 – Item Six Regulatory Overview – PowerPoint Handouts attached



Outline

- Regulation Development
- New Rules and Expected Changes
  - Electronic submittals… eMOR
  - Drinking Water Watch
- Drinking Water Contacts
- Questions

2

Regulation Development

- Federal Statutory Requirements
  - 1986 SDWA Amendments
  - Publish list of contaminants (CCL), every five years, that may require regulation and are known to occur in public water supplies.
  - CCL1 (March 1998)
  - CCL2 (February 2005)
  - CCL3 (90-day comment period to May 2008) to be Final Summer 2009

3

Regulation Development

- 11 Microbial Pathogens on CCL3 and several chemicals including MTBE again.
- After comments received on CCL3, then Unregulated Contaminants Monitoring Rule (UCMR) is developed.
- After implementation, EPA will determine if a standard is required – based on occurrence and health effects.
  - Perchlorate… 2 studies under review by EPA. Determination to establish a standard is expected by the end of the year.

4

Regulation Development

- If yes, a Federal regulation is drafted.
- States then have two to four years to draft the state regulation.
- States then will prepare a Primacy Application and submit to EPA.
- Primacy is the first-line authority for enforcing the federal requirements.

5

Rules and Expected Changes

- Total Coliform Rule (EPA 6 year review)
  - Federal Advisory Committee/Technical Workgroup
  - Proposing MCL for E-Coli and TT for TC (monitor, investigate, respond, public notify)
  - Only those analytical methods yielding both TC and EC results in 24-28 hours.
  - Baseline Monitoring: no change for large CWS or one sample per month at EPDS and number representative samples per population.

6

Rules and Expected Changes

- Total Coliform Rule - continued
  - Reduced Monitoring Threshold based on
    - Historical information of TC+
    - Sanitary Surveys
    - Compliance History
    - Distribution Items – Existence of Cross Connection Control Program (definition?) and disinfection status
  - no change for large CWS or one sample per month at EPDS and reduced number representative samples per population.

7

Rules and Expected Changes

- Total Coliform Rule – continued
  - Eliminate 5 follow-up samples the next month.
  - Action Triggers for TC on 3 tiers and actions related may require more work on either the state or water system.
  - Correction
  - Agreement in Principal this summer.
  - Proposed Rule in 2010

8

Rules and Expected Changes

- Electronic Submittals – eMOR
  - Amber Vaughn is the compliance rule manager for the SWTR and IESWTR rules which are reported on the Monthly Operating Report.
  - Newly reworked eMOR form through a pilot with 7 public water systems.
  - The form will have some built in checks for water systems to help ensure the report is filled out correctly.
  - Hope to release July 1, 2008 to all water systems.

9

Rules and Expected Changes

- Drinking Water Watch
  - is a read only version of the State compliance database.
  - This tool is a way for operators to check various pieces of information contained with the state database.
  - Designed to allow help water system staff keep track of compliance by allowing them to look at key information such as sampling points, sample schedules, and samples received. Drinking Water Watch can be found at:

    http://dep.gateway.ky.gov/DWW/

10

Questions???

Donna S. Marlin, Manager
Drinking Water Branch
KY Division of Water
502/564-3410 extension 541
Donna.Marlin@ky.gov

11

Northern Kentucky Water District

Commissioner Training — 2008

7 – Item Seven No.

Northern Kentucky Water District

Commissioner Training — 2008

1 – Item One

Northern Kentucky Water District
2835 Crescent Springs Road
P.O. Box 18640
Erlanger, KY 41018

Northern Kentucky Water District

Commissioner Training — 2008

2 – Item Two

Name: Residuals Treatment

Sponsor: GRW Engineers, Inc.

Subject Matter: To define "residuals", where they come from, and what we do with them.

Northern Kentucky Water District

Commissioner Training — 2008

3 – Item Three This presentation is to inform the Board of Commissioners about what makes up our residuals, how we currently dispose of them, what our future options for disposal are, and the estimated costs associated with those options.

Northern Kentucky Water District

Commissioner Training — 2008

4 – Item Four	One Credit Hour – Copy of Board Minutes showing Commissioners attendance attached.

Northern Kentucky Water District
Board of Commissioners Meeting
April 17, 2008

A regular meeting of the Board of Commissioners of the Northern Kentucky Water District was held on April 17, 2008 at the District's facility located at 2835 Crescent Springs Road in Erlanger, Kentucky. All Commissioners were present. Also present were Ron Lovan, Bari Joslyn, Jack Bragg, Mark Lofland, Don Gibson, Bill Wulfeck, Amy Kramer, Jim Dierig, Bob Buhrlage, Mary Carol Wagner, Brad Montgomery, Don Fritz, Adam Davey and Charles Pangburn.

Commissioner Macke called the meeting to order.

Mr. Pangburn led those in attendance in the Pledge of Allegiance.

Mr. Montgomery of GRW Engineers, Inc. delivered a presentation to the Board on water treatment plant residuals.

The Board reviewed correspondence received and articles published since the last regular Board meeting on March 24, 2008.

On motion of Commissioner Koester, seconded by Commissioner Wagner, the Board unanimously approved the minutes for the regular Board meeting held on March 24, 2008.

On motion of Commissioner Collins, seconded by Commissioner Koester, and after discussion, the Board unanimously approved the expenditures of the District for the month of March, 2008.

On motion of Commissioner Sommerkamp, seconded by Commissioner Wagner, and after discussion, all of the Commissioners except Commissioner Collins agreed to award the Water Fill Station Project along Ivor Road in California to Jack Gemmer & Sons and authorized the District staff to execute appropriate contract documents. Commissioner Collins abstained.

On motion of Commissioner Wagner, seconded by Commissioner Koester, and after discussion, the Board unanimously agreed to award the Ross Avenue Water Main Replacement Project to Generation 2 Construction and authorized the District staff to execute appropriate contract documents.

On motion of Commissioner Collins, seconded by Commissioner Jackson, and after discussion, the Board unanimously agreed to award the Flowable Fill Concrete and Class A Concrete contract to Moraine Materials and authorized the District staff to execute appropriate engineering contract documents.

On motion of Commissioner Collins, seconded by Commissioner Sommerkamp, and after discussion, the Board unanimously agreed to award purchase contracts for the following

construction restoration materials to the vendors indicated and authorized the District to execute appropriate contract documents:

#2 Limestone	Bray Trucking
#610 Limestone	Bray Trucking
#57 Limestone	Bray Trucking
Limestone Sand	Bray Trucking
Fill Sand	Bray Trucking
Natural Sand	Bray Trucking
Winter Asphalt Mix (Cold Patch)	Bray Trucking
#4 Limestone	Krebs Construction
Channel Lining CLII	Krebs Construction

On motion of Commissioner Koester, seconded by Commissioner Wagner, and after discussion, the Board unanimously agreed to reject all bids received for two one-ton utility vehicles, a hydraulic excavator and a mid-size car, to award contracts for the purchase of the following vehicles from the vendors indicated and to authorize the District staff to execute appropriate contract documents for the purchase of such vehicles:

Compact extended cab pickup 4 door/4x2	Superior Chevrolet, Cincinnati, Ohio
Compact extended cab pickup 4 door/4x4	Town & Country Ford, Louisville, Kentucky
Compact 5 passenger 4 door sedan	Countryside Mtrs., Lawrenceburg, Kentucky

Mr. Fritz and Mr. Davey presented the auditor's report and review of District operations performed by VonLehmann & Company, Inc.

The Board reviewed the District's financial reports and Department reports.

Other matters of a general nature were discussed.

On motion of Commissioner Collins, seconded by Commissioner Sommerkamp, the Board unanimously agreed to adjourn the meeting.

CHAIRMAN

SECRETARY

Northern Kentucky Water District

Commissioner Training — 2008

5 – Item Five

Mr. D. Bradley Montgomery, P.E.
Vice President, GRW Engineers, Inc.

Bio of the presenter attached.

D. Bradley Montgomery, PE
Vice President, GRW Engineers, Inc.

Years of Experience: 26 **Years with GRW:** 26

Education
B.S., Civil Engineering, 1983, University of Kentucky
Graduate Studies, Hydraulics and Wastewater Treatment Plant Design, University of Kentucky

Registration
Professional Engineer, KY, OH, PA, WV, IN
NCEES Member, allows reciprocity with other states

Professional Affiliations and Training
American Water Works Association
American Consulting Engineers Council
Kentucky Society of Professional Engineers
National Society of Professional Engineers
Water Environment Federation
KY-ACEC Environmental Committee
KY-TN WEA Watershed Committee

Key Qualifications

Mr. Montgomery is a Principal Engineer of GRW with 26 years of experience in the planning, design and construction administration of water mains, pumping stations, treatment plants, and storage tanks. Mr. Montgomery is also an expert in hydraulic analysis and water distribution system modeling. Mr. Montgomery has also previously designed water system improvement projects for the Northern Kentucky Water District, Louisville Water Company, Kentucky-American, Indiana-American, West Virginia-American, and Pennsylvania-American Water Companies.

Relevant Project Experience

- **65 MGD Ohio River Pump Station No. 1, Northern Kentucky Water District, Ft. Thomas, KY** - Project Manager for upgrading improvements to the Ohio River Intake Pumping Station, the single source of raw water for their 44 MGD Ft. Thomas Water Treatment Plant. Work included review of the original station, and completion of a vibration analysis of existing equipment, a station hydraulic model and a transient (surge) model. Three of the six existing pumps are being replaced with new 1250 HP vertical turbine pumps. The three stations include the emergency replacement of Pump #1 (12.5 MGD) and Pump #2 (11 MGD), and the replacement of Pump #6 (12.5 MGD).
- **Granular Activated Carbon Implementation Study, Northern Kentucky Water District** - Principal-in-Charge for the evaluation of the implementation of post-filtration granular activated carbon contactors for disinfection by-product control at three water treatment plants in Northern Kentucky including the 44 MGD Ft. Thomas Treatment Plant. This project will represent the first implementation of post-filtration GAC contactors in Kentucky. The project also consisted of the preliminary engineering improvements to the 10 MGD Taylor Mill Water Treatment Plant preliminary treatment facilities. The recommended improvements include new rapid mist, flocculation, and sedimentation with an expansion to a capacity of 12 MGD. This project also evaluated MIEX as an alternative form of advanced treatment at Taylor Mill.

- **Residuals Handling Improvements, Ft. Thomas Treatment Plant, Northern Kentucky Water District** - Principal-in-Charge for the planning and design of residuals handling improvements at the 44 MGD Ft. Thomas Water Treatment Plant. Improvements evaluated during the planning phase included reservoir dredging, backwash treatment, thickening, dewatering of plant residuals and dredged solids, and treatment of filter press filtrate and wash water for surface water discharge. The design phase consisted of a new gravity thickener.
- **Filter Hydraulics Evaluation, Taylor Mill Treatment Plant, Northern Kentucky Water District** - Project Manager for an evaluation of hydraulic restriction in the filter backwash drain piping at the 10 MGD Taylor Mill Treatment Plant.
- ***12 MGD Ohio River Pump Station No. 2 Consulting Services, Northern Kentucky Water District No. 1*** - Project Manager for the performance of consulting services associated with a conditional assessment of the Ohio River Pump Station No. 2. The assessment included evaluation of traveling screen repair/replacement options, a structural condition assessment, and an evaluation of options for the isolation of the screenings chamber.
- **Dudley Pump Station Generator, Northern Kentucky Water District** - Prinicipal-in-Charge for for design of addition of standby diesel generators. The site accommodates two 5 MG ground storage tanks and two water booster pump stations. The first pump station is referred to as the "1040 Pump Station" and has four 250 horsepower pumps. The second pump station is referred to as the "1080 Pump Station" and has four 600 horsepower pumps. The new generators are designed to operate two pumps in each station, plus miscellaneous building loads and chemical feed systems. A total capacity of 2,000 KW was required, and the Owner opted for two parallel 1,000 KW units for redundancy.
- **Eastern Regional Wastewater Treatment Plant, Sanitation District No. 1of Northern Kentucky** - Project Manager for design of new 4.0 MGD (20.0 MGD peak) secondary wastewater treatment facilities including Carrousel oxidation ditches, final clarifiers, medium pressure/high intensity ultraviolet disinfection facility, non-potable water booster pump station, effluent Parshall flume, cascade aeration, outfall gravity sewer, return/waste sludge station, scum pumping and concentration, aerated sludge holding tanks and sludge pumping, combination gravity belt thickeners/belt filter presses and related site design and infrastructure.
- **Residuals Handling Improvements, Richmond Road Station Water Treatment Plant, Kentucky American Water, Lexington, KY** - Principal-in-Charge for the design of residuals handling improvements at the 25 MGD Richmond Road Station Water Treatment Plant. Improvements include a new belt filter press (with ancillary equipment such as a conveyor, polymer feed system, etc.), a new gravity thickener, and washwater holding tank improvements.
- **Residuals Dewatering Facility, Pool 3 Water Treatment Plant, Kentucky American Water, Lexington, KY** - Principal-in-Charge for the design of a Residuals Dewatering Facility for the 20 MGD Pool 3 WTP. The dewatering facility include two new belt filter presses, a dewatered sludge conveyance system, and a polymer feed system. This project is currently under design.
- **Expansion and Upgrade for the Oldham County Water District's Water Treatment Plant, Oldham County KY** - Principal-in-Charge for water system improvements program including the expansion of the Oldham County Water Plant from 7.5 MGD to 13 MGD; over 9,000 linear feet of new 24" raw water main; new chemical feed equipment and a new chemical building; upgrading the two existing 1,000,000 gallon clearwells to include baffles; a new high service pump station including three new 600 HP vertical turbine pumps; and over 13,500 linear feet of 36" high service transmission main.
- **Water Treatment Plant Expansion, Raw Water Main and High Service Mains, City of Versailles, Kentucky** - Project Manager for expansion of the existing water treatment plant from 4 MGD to 10 MGD. This project involves a new 10 MGD raw water pump station with two 36" intake lines, two 10 MGD vertical turbine pumps, a 30" discharge header, 3,000 LF of 24" raw water main, a

dual train ballasted flocculation with high rate sedimentation system (Actiflo) to settle a combined flow of 10 MGD, a filter building addition with six new 1 MGD (each) filters with air assisted backwash, a new chlorine storage and feed building, a new 900,000-gallon clearwell with an integrated high service pump station having two 10 MGD vertical turbine pumps, and approximately 30,000 LF of 24" high service main along with appurtenant instrumentation and controls to be operated by a Supervisory Control and Data Acquisition (SCADA) system.

- **Upgrade/Expansion of Water Treatment Plant, Murray, KY** - Project Manager for upgrade/expansion of an existing plant from approximately 3.0 MGD to 7.0 MGD. The raw water is ground water from deep well found in the McNairy geologic formation. The project consisted of the installation of a cascade aerator for the oxidation of iron, and in-line mechanical chemical mixer, chemical feed facilities for the addition of caustic soda, alum, fluoride and potassium permanganate, two new two-stage flocculation basins, two new rectangular sedimentation basins, four new filters with associated valves, piping and controls, a new chlorine feed building, the installation of two new high service pumps, the installation of one new backwash pump and a new washwater/sludge holding tank. A one million gallon cast-in-place concrete clearwell was constructed as a subsequent project.
- **Upgrade/Expansion of Water Treatment Plant, Wilmore, KY** - Project Manager for upgrade/expansion from 1.0 MGD to 2.0 MGD. The major items of work included new KY River intake pumping station; new raw water main; pre-settling reservoir improvements; chemical feed improvements; a new floculator/clarifier; renovation of existing filter (including air/water backwash); new clearwell; high service pumping improvements; solids processing improvements; and plant instrumentation (SCADA) upgrade.
- **New 1.5 MGD Water Treatment Plant, Scottsville, KY** - Project Manager for new 1.5 MGD water treatment plant on a new site on Barren River Lake. The project included a tower-type raw water intake pump station, a rapid mix basin, chemical feed facilities for the addition of lime, alum, fluoride, potassium permanganate and chlorine, a circular flocculation/sedimentation basin, filters, a chlorine feed building, a 350,000-gallon pre-stressed, wire-wound concrete clearwell, a high service/backwash pump station, and two lagoons for residual disposal. The chemical feed facilities, offices, laboratory, and filters were housed in the filter building, while high service pump station and chlorine building were separate buildings. The project was designed to easily accommodate an expansion which would double the capacity. Also, since the site is located directly across Barren River Lake from the State Park and is visible from the lodge, aesthetics were of great importance in the design of the facility.
- **Relocation and Expansion of Water Treatment Plant, Brandenburg, KY** - Project Manager for the relocation of the existing 0.5 MGD water treatment plant to a new site and an expansion of the treatment capacity to 1.0 MGD. The expansion consists of one new 1.0 MGD raw water well, a new 12" raw water main, new chemical feed facilities for chlorine, caustic soda and fluoride, a new contact basin for oxidation of iron and manganese, new low lift pumps, a new four-cell pressure filter, a new 1,000,000 gallon clearwell and a new high service pump station, together with new laboratory and office facilities. The contact basin, filters, laboratory and office will be house in a new filter building. The chemical feed facilities will be located in a separate building.
- **Hodgenville Water Treatment Plant Expansion/Upgrade, Hodgenville, KY** - Project Manager for expansion/upgrade to the existing Hodgenville Water Treatment Plant to 1,000,000 GPD. Designed facilities consisted of a new raw water meter/rate of flow control vault, a new chemical mixer, new chemical feed equipment, one flocculation basin, new filter equipment and piping for two existing filters, a new filter, a high service pump, and a washwater holding/sludge holding tank. The water treatment plant expansion project also included the design of over 12,000 linear feet of 12" PVC raw water main from the Salem Lake source, a 90-acre reservoir, to the water treatment plant. The new raw water main will provide ample supply of high quality, low turbidity water supply for the current and future needs of Hodgenville. Due to the elevation at which the lake was constructed, raw water

will flow to the existing plant by gravity.

- **62.5 MGD Raw Water Intake Pumping Station, Kentucky American Water, Lexington, KY** - Project Engineer for computer hydraulic analyses necessary for the planning and preliminary engineering of the raw water pumping and transmission system improvements.. The hydraulic analyses consisted of both a steady state hydraulic analysis using KYPIPE software and a transient analysis using KYSURGE software. Results of the analysis determined that a maintenance intensive intermediate 56 MGD pumping station could be eliminated by the replacement of the existing raw water pumps on the intake structure. The improvements, which expanded the station capacity to 62.5 MGD, consisted of the installation of six new 1,250 HP vertical turbine raw water pumps, 48" transmission main, a surge protection system, and wetwell improvements.
- **33 MGD Shire Oaks Pump Station Pennsylvania American Water, Pittsburgh, PA** - Project Manager for design of an additional building at the Shire Oaks site to house a new 3600 cubic foot surge tank to alleviate excessive pipe pressure ratings. The new surge tank is approximately 12 feet in diameter by 34 feet long with a 24" diameter inlet connection. The project also included the review and modification of the KYSURGE hydraulic transient analysis computer files developed by the University of Kentucky to optimize the design of the tank.
- **Clays Mills 18 MGD Booster Pump Station and 3 MGD Ground Storage Tank, Kentucky American Water, Lexington, KY** - Project Manager for design of pump station and ground storage tank. This pump station houses two horizontal split case pumps, each rated at 9 MGD with variable frequency (VFD) controllers. The pump station was built to allow for the future expansion of a 9 MGD constant speed pump which will increase the reliable capacity of the station to 18 MGD. In addition, the pump station houses a control valve to regulate the water level in the 3 MG ground level storage tank located at the same site. The tank is a wire-wound, prestressed concrete tank with domed roof, and is approximately 120 feet in diameter and 37 feet and 6 inches tall. A 200,000 gallon holding pond was also constructed on the site for containment and dechlorination of emergency tank overflows or controlled tank drainage. Operation of the tank and booster station is accomplished by SCADA from the KAWC's Richmond Road Station.
- **6.0 MGD Raw Water Pumping Station, West Virginia American Water, Fayette Plateau Water Treatment Plant, Fayetteville, WV** - GRW Project Manager for 4.0 MGD pump station which includes three 2.0 MGD variable speed vertical turbine pumps, a 9-foot diameter by 12-foot tall surge tank, three 12" diameter pump control ball valves, and a potassium permanaganate feed system. The project also included two, 1,200 LF of 24" restrained joint ductile iron pipe intake lines which were installed on piers and bored under the CSX railroad. The primary power lines and a potable water main extend approximately 4,700 LF over a vertical elevation difference of 550 feet to the Fayette Plateau Water Treatment Plant. Due to the rough terrain, the project also included a 325-foot long drilled pile/precast panel retaining wall with a maximum height of approximately 40 feet.
- **Parkers Mill Pump Station, Kentucky American Water, Lexington, KY** - Project Manager for the renovation of the 6 MGD Parkers Mill Pump Station. The project involves the installation of two new 6 MGD pumps, associated switchgear, a standby generator and an automatic transfer switch.
- **Water Distribution System Hydraulic Analysis and Master Plan, Oldham County Water District, Oldham County, KY** - Principal-in-Charge for analysis of the existing water distribution system utilizing WaterCad modeling software. This model included over 275 miles of water main, 15 storage tanks and seven pump stations. The model was calibrated to resemble actual field conditions. Modeled results helped to locate low-pressure and low-flow areas in the existing system due to elevations and main sizes, and helped to identify needed improvements to meet both current and future demands.
- **Capital Improvement Plan, Oldham County Water District, Oldham County, KY** - Principal-in-Charge for analysis of the existing water distribution system, including the well field, water treatment plant, and distribution lines. Improvements were recommended over a 20-year period and were

prioritized into three phases based on importance. A cost analysis was also included for each recommended project. Results were based on information from the hydraulic model, well and groundwater study, and hydraulic calculations.

- **Hydraulic Analysis for Proposed Developments, Oldham County Water District, Oldham County, KY** - Principal-in-Charge for analysis of over 15 proposed developments in the Oldham County Water District. Each development was added to the existing WaterCad system hydraulic model and demands were calculated. Using an extended period simulation (EPS), developments were analyzed for adequate pressures and fire flows. Recommended lines sizes and connections were determined for each development. Results were also calculated for the Kentucky Division of Water requirements for new developments.
- **Water Distribution System Hydraulic Analysis and Master Plan, Versailles, KY** - Project Manager for the hydraulic analysis of the existing water distribution system utilizing WaterCad modeling software. Modeled results helped to locate the low-pressure and low-flow areas in the existing system due to elevations and main sizes, and helped to identifying needed improvements to meet both current and future demands.
- **Huntertown Road Pressure Zone and Water System Improvements, Versailles, KY** - Project Manager for creating a new pressure zone in the southeast section of the City. The project included a new 1,000,000 gallon elevated storage tank; a new pump station that replaced three smaller booster stations; and 440 LF of 8", 6,700 LF of 12", 1,050 LF of 16", and 13,130 LF of 24" ductile iron water main. The system improvements were modeled utilizing the WaterCad modeling software.
- **Derby Hills and Cedar Ridge Hydraulic Analysis, Versailles, KY**- Project Manager for analysis of the existing booster pump station and water distribution system utilizing CYBERNET modeling software. The model helped in determining the required upgrades to the existing booster pump station to allow additional development to occur in the system while maintaining fire flow protection.
- **16" Cross Country Transmission Main, Hardin County Water District #1, Radcliff, KY** - Project Manager for planning, preliminary engineering, and design for comprehensive water system improvements including a very detailed, calibrated computer hydraulic analysis of the entire water distribution system. Improvements consisted of approximately six miles of transmission main (6" to 16"), two elevated water storage tanks (.75 MG and .25 MG), one booster pumping station, and a complete telemetry system.
- **Clearwell Renovation, Murray Water Treatment Plant, Murray, KY** - Project Manager for the design of improvements to a structurally deteriorated one million gallon cast-in-place concrete clearwell at Murray's 7 MGD Water Treatment Plant.
- **48" Raw Water Transmission Main, Kentucky American Water, Lexington, KY** - Project Engineer for aerial raw water supply main constructed on a 48 degree rock slope of the Kentucky River and installed by helicopter. This raw water main was installed to operate in conjunction with parallel existing 36" and 20" raw water mains in order to expand the reliable raw water pumping capability of Kentucky American Water to 62.5 MGD at their Kentucky River station intake.
- **Clays Mills Ground Storage Tank #2, Kentucky American Water, Lexington, KY** - Project Manager for design and construction of a second 3 MG prestressed, wire-wound concrete ground level storage tank on the site of the existing Clays Mill tank and pump station. In addition, the project included the necessary 30" and 24" piping and a valve vault which will control the flow of water into the storage facilities.
- **60" Water Transmission Main, Louisville Water Company, Louisville, KY** - Project Engineer for five miles of water transmission main constructed in downtown Louisville. Project included four crossings of I-264 utilizing 96" diameter deep rock tunnels. The major tunnel crossings included the Watterson Expressway (368-foot steel lined tunnel), Poplar Level Road (175-foot steel lined tunnel), Bardstown Road (114-foot steel lined tunnel) and Poplar Level Road (75-foot steel lined tunnels).

Since the project was constructed primarily in city streets, significant relocation of existing utilities was required including over 5,000 LF of collector sewers as well as gas distribution mains and storm sewers.

- **16" Raw Water Transmission Main, City of Cynthiana, KY** - Project Engineer for design and construction of a 3 MGD raw water intake pumping station and 16 miles of transmission main. The project construction included a major crossing of the Licking River (250 feet of ball and socket river crossing pipe). The raw water transmission main generally follows the alignment of U.S. 62 from main fork of the Licking River on the Bracken County/Harrison County border to Cynthiana.
- **24" Water Transmission Main, City of Murray, KY** - Project Manager for 7,000 LF transmission main constructed to reinforce pressures and flows in downtown Murray, KY. All construction was accomplished in downtown city streets with associated complications of existing water, sanitary sewer, gas and storm sewer utilities.
- **10.7 MGD High Service Pump Station, City of Murray, KY** - Project Manager for design of Murray's high service pump station which consists of four horizontal split case pumps. Two of the pumps have a capacity of 1,250 gpm each. The two larger pumps have a capacity of 2,500 gpm each. The station also includes a 5,000-gpm backwash pump.
- **16" Transmission Main, City of Scottsville, KY** - Project Manager for 1,800 LF ball and socket ductile iron crossing of the mouth of Hurricane Creek on Barren River Lake was necessitated to transport treated water from Scottsville's water treatment plant to the existing 12" transmission main. The lake crossing portion of the 2,500 LF transmission main was constructed from a barge during winter pool on Barren River Lake.
- **6" Water Transmission Main, South Anderson Water District, Lawrenceburg, KY** - Project Manager for a trenched 6" PVC water main crossing of the Salt River in western Anderson County.
- **Water Transmission Main, Versailles, KY** - Project Manager for design, bidding and construction administration of approximately 11,000 LF of 12" water main extending from US 60 to existing Elm Street water storage tank.
- **U.S. 27 (Somerset-Burnside Road) Utility Relocation, City of Burnside, KY** - Project Engineer for relocation of 6" ductile iron water mains with the attachment of the water main to the new bridge crossing the Cumberland River.

Northern Kentucky Water District

Commissioner Training — 2008

6 – Item Six Residuals Treatment – PowerPoint handouts attached

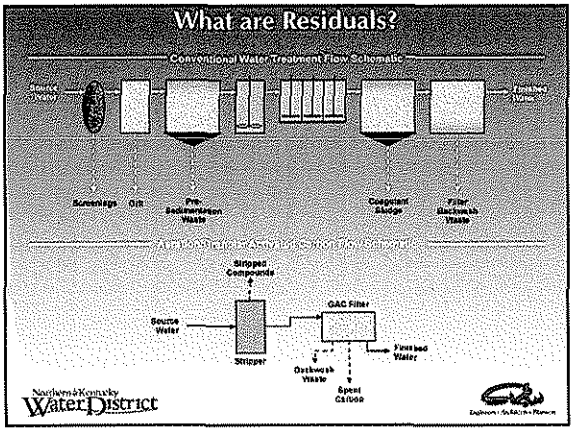
Water Treatment Plant

~~Residuals~~ Sludge

Northern Kentucky Water District
Board of Commissioners Presentation
April 17, 2008

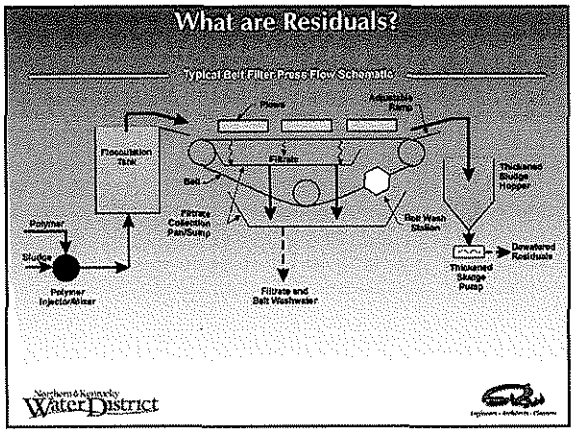
Northern Kentucky Water District

What are Residuals?



Northern Kentucky Water District

What are Residuals?



Northern Kentucky Water District

A Historical Perspective

- It is estimated that until 1971, more than 90% of water treatment plants were discharging wastes to streams or lakes.
- The Water Pollution Control Act Amendment of 1972 categorizes residuals from water treatment plants as an industrial waste.
- This amendment prohibited the discharge of untreated water treatment plant waste after 1985.
- *Continuing changes in regulations,* land availability and environmental sensitivity.

All treatment plant wastes are to be recycled or treated in some manner prior to ultimate disposal.

Northern Kentucky Water District

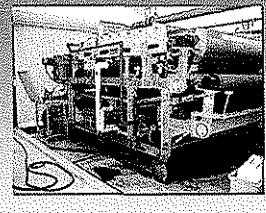
What Makes Up Residuals?

Stuff That's In The Water

- Sediment
- Silt
- Organic Material
- Minerals

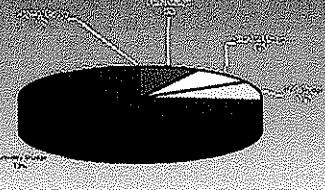
Stuff That You Put In The Water

- Copper Sulfate
- Potassium Permanganate
- Powdered Activated Carbon
- Iron-Based Coagulant
- Aluminum-Based Coagulant
- Lime/Caustic Soda



Northern Kentucky Water District

What Makes Up Our Residuals?



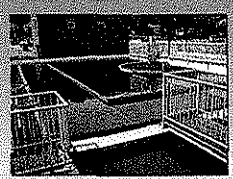
Origin of FTTP Residuals
(July 2001-December 2006 data)

Northern Kentucky Water District

Where Do Our Residuals Come From?

Raw Water Pumping
- Screenings

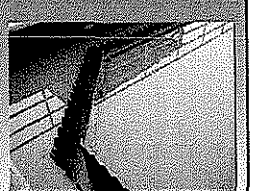
Conventional Water Treatment
- Presedimentation Reservoir Solids
- Coagulant Residuals
  - Sedimentation Basin Routine Underflow
  - Sedimentation Basin Draining and Cleaning
- Filter Waste Streams
  - "Spent" Filter Backwash Wastewater
  - Filter-To-Waste



Northern Kentucky Water District

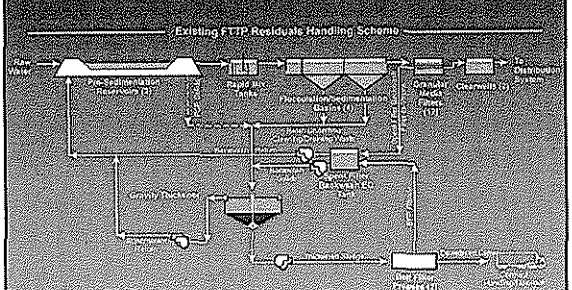
Where Do Our Residuals Come From?

- Advanced Water Treatment
  - Granular Activated Carbon
    - Spent Carbon
    - GAC Backwash Wastewater
- Residuals Treatment
  - Gravity Thickener Supernatant
  - Belt Filter Press Filtrate
  - Belt Filter Press Spray Wash Water
  - PSR Screenings and Grit

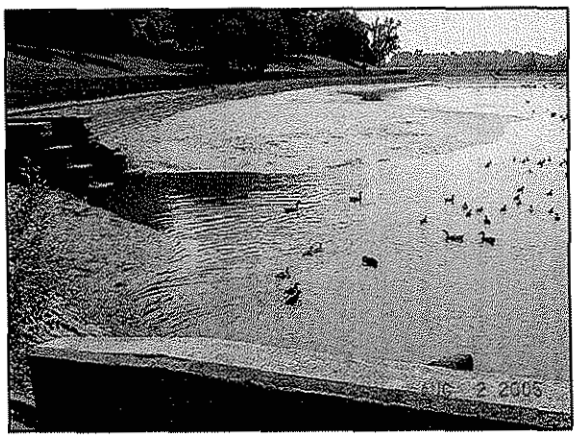


Northern Kentucky Water District

What Do We Do With Our Residuals Now?



Northern Kentucky Water District



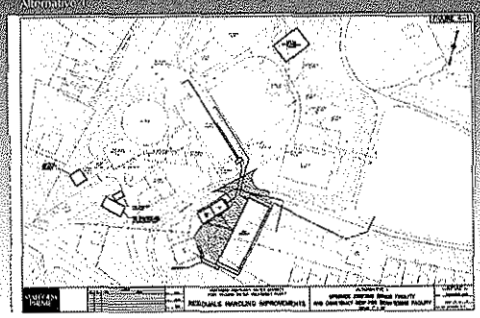
What Are We Going To Do With Our Residuals?

- Construction of a New Gravity Thickener (currently under design by MPI/GRW)
- Purchase New PSR Dredging Equipment
- Replace Existing WTP Residuals Dewatering Equipment
- Construct PSR Residuals Screening and Equalization Facilities
- Construct New PSR Residuals Dewatering Facilities
- Perform Pilot Scale Evaluation of Technologies to Treat BFP Filtrate, BFP Spray Wash Water and possibly Sedimentation Basin Cleaning residuals to levels appropriate for KPDES discharge
- Construct an Equalization Basin for BFP Filtrate, BFP Spray Wash Water and Sedimentation Basin Cleaning Residuals
- Construct Treatment Facilities for BFP Filtrate, BFP Spray Wash Water and possibly Sedimentation Basin Cleaning Residuals based on the results of the Pilot Study.

Northern Kentucky Water District

How Are We Going To Do It?

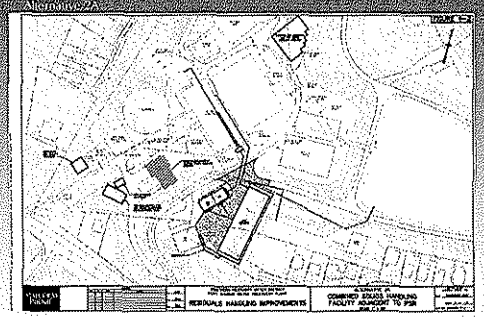
Alternative 1



Northern Kentucky Water District

How Are We Going To Do It?

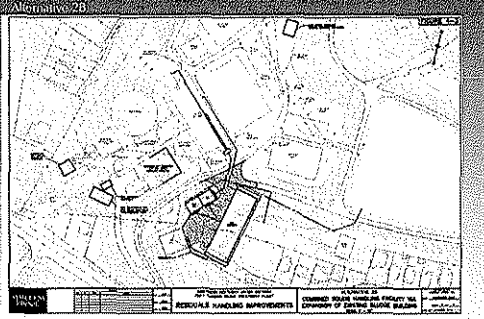
Alternative 2A



Northern Kentucky Water District

How Are We Going To Do It?

Alternative 2B



Northern Kentucky Water District

How Are We Going To Do It?

Alternative 3
Contract Dewatering of WTP Residuals

Northern Kentucky Water District

How Much Is It Going To Cost?

Table ES-1
Comparison of Integrated Residuals Handling Alternatives
(2007 Dollars)

Description	Alt. 1	Alt. 2A/2B	Alt. 3
Capital Cost Component			
Integrated Handling/Dewatering	$3,477,000	$4,597,500	$400,000
PDR Solids Dry Fibers Treatment	$2,300,000	$2,300,000	$2,300,000
Second Gravity Thickener	$650,000	$650,000	$650,000
Total Construction Cost	$6,630,000	$7,540,000	$3,350,000
Amortized Capital Cost	$900,000	$1,070,000	$580,000
Incremental Operational Costs			
Labor / Personnel	$472,000	$412,000	$37,400
Power	$18,600	$18,000	-
Chemicals	$213,000	$213,000	-
PDR Fibers Treatment O&M	$150,000	$150,000	$150,000
Sub-Total NTWD O&M	$853,600	$773,000	$312,400
Contractor Dredging / Dewatering	-	-	$3,290,000
Contractor Hauling & Disposal	$652,000	$652,000	Included
Total Incremental O&M Cost	$1,400,000	$1,450,000	$3,500,000
Annual Cost Comparison	**$2,390,000**	**$2,500,000**	**$4,100,000**

Notes:
1.Capital costs amortized over 10 year period at 6.0% interest.
2.PDR reclamation is anticipated to take about 10 years under Alternative 1 and 2, and about 8 years under Alternative 3.

Northern Kentucky Water District

Questions?

Please do not hesitate to contact me

Brad Montgomery, P.E.
GRW Engineers, Inc.
801 Corporate Drive
Lexington, KY 40503
859-223-3999
bmontgomery@grwinc.com

Northern Kentucky Water District

Northern Kentucky Water District

Commissioner Training — 2008

7 – Item Seven No.

Northern Kentucky Water District

Commissioner Training — 2008

1 – Item One

Northern Kentucky Water District
2835 Crescent Springs Road
P.O. Box 18640
Erlanger, KY 41018

Northern Kentucky Water District

Commissioner Training — 2008

2 – Item Two

Name: Green Design

Sponsor: Strand Associates, Inc.

Subject Matter: To define "green design" as it pertains to infrastructure design, storm water management, and cost-effective, environmentally friendly solutions.

Northern Kentucky Water District

Commissioner Training — 2008

3 – Item Three This presentation provides the Board of Commissioners an overview of how green design can be used to augment traditional engineering solutions addressing: storm water discharges; combined sewer overflows; sanitary sewer overflows; and other public infrastructure.

Northern Kentucky Water District

Commissioner Training — 2008

4 – Item Four	One Credit Hour – Copy of Board Minutes showing Commissioners attendance attached.

Northern Kentucky Water District
Board of Commissioners Meeting
May 15, 2008

A regular meeting of the Board of Commissioners of the Northern Kentucky Water District was held on May 15, 2008 at the District's facility located at 2835 Crescent Springs Road in Erlanger, Kentucky. All Commissioners were present. Also present were Ron Lovan, Bari Joslyn, Jack Bragg, Mark Lofland, Richard Harrison, Don Gibson, Bill Wulfeck, Amy Kramer, Jim Dierig, Bob Buhrlage, Chris Wetherell, Frances Robinson, Melissa Bielo, Colleen Medert, Lori Simpson, John Lyons, Tom Lutkenhoff, Rosann Lutkenhoff, Chip Seibert, Niejse Seibert, Karen Murray, John Murray, Rosemary Johnston, James Bennett, Paul Webster, Connie Pangburn and Charles Pangburn.

Commissioner Macke called the meeting to order.

Mr. and Mrs. Pangburn led those in attendance in the Pledge of Allegiance.

The Board recognized and thanked Tom Lutkenhoff, Chip Seibert, Karen Murray, Connie Pangburn, James Bennett and Paul Webster, upon the occasion of their retirement, for their many years of dedicated service to the District and the community.

Mr. Lovan introduced Tapwater Ted, the District's new mascot, to the Board.

Ms. Robinson and Ms. Medert delivered a presentation to the Board on National Drinking Water Week activities and AquaVenture, an open house held on May 6, 2008.

Mr. Lyons of Strand Associates, Inc. delivered a presentation to the Board on Green Infrastructure.

The Board reviewed correspondence received and articles published since the last regular Board meeting on April 17, 2008.

On motion of Commissioner Wagner, seconded by Commissioner Koester, the Board unanimously approved the minutes for the regular Board meeting held on April 17, 2008.

On motion of Commissioner Collins, seconded by Commissioner Sommerkamp, and after discussion, the Board unanimously approved the expenditures of the District for the month of April, 2008.

On motion of Commissioner Wagner, seconded by Commissioner Sommerkamp, and after discussion, the Board unanimously approved a resolution authorizing the District to file a loan application with the Kentucky Infrastructure Authority and appointing the President/CEO as the official project representative.

On motion of Commissioner Koester, seconded by Commissioner Sommerkamp, and after discussion, the Board unanimously agreed to award the Fort Thomas Avenue Water Main Replacement Project to RFH Construction and authorized the District staff to execute appropriate contract documents.

On motion of Commissioner Collins, seconded by Commissioner Wagner, and after discussion, the Board unanimously approved payment to Viox & Viox, Inc. for the engineering design of the water main replacement related to the Kentucky Department of Transportation's KY-1120 (12th Street) Covington Construction Project, which payment will be reimbursed by the Kentucky Department of Transportation.

On motion of Commissioner Sommerkamp, seconded by Commissioner Wagner, and after discussion, the Board unanimously approved payment to Viox & Viox, Inc. for the engineering design of the water main replacement related to the Kentucky Department of Transportation's KY-16 (Taylor Mill Road), Phase 1, Taylor Mill Construction Project, which payment will be reimbursed by the Kentucky Department of Transportation.

On motion of Commissioner Koester, seconded by Commissioner Jackson, and after discussion, the Board unanimously approved payment to Viox & Viox, Inc. for the engineering design of the water main replacement related to the Kentucky Department of Transportation's KY-16 (Taylor Mill Road), Phase 2, Taylor Mill Construction Project, which payment will be reimbursed by the Kentucky Department of Transportation.

On motion of Commissioner Sommerkamp, seconded by Commissioner Wagner, and after discussion, the Board unanimously agreed to authorize the District staff and legal counsel to commence condemnation proceedings to secure a water easement from Mr. Kenzie L. Baker and Ms. Mary S. Baker who own property located at 3760 and 3794 Lipscomb Road.

On motion of Commissioner Jackson, seconded by Commissioner Koester, and after discussion, the Board unanimously agreed to increase the project budget for the Fort Thomas Treatment Plant Pretreatment Building Project from $2,400,000 to $3,100,000, to award the base bid and alternate number two of the project to Building Crafts, Inc. and to authorize the District staff to execute appropriate contract documents.

On motion of Commissioner Koester, seconded by Commissioner Sommerkamp, and after discussion, the Board unanimously agreed to award a three-year agreement with Reynolds, Inc. for pump services and authorized the District staff to execute appropriate contract documents.

On motion of Commissioner Collins, seconded by Commissioner Sommerkamp, and after discussion, the Board unanimously agreed to award a three-year agreement with Greater Comfort, Inc. for HVAC services and authorized the District staff to execute appropriate contract documents.

The Board reviewed the District's financial reports and Department reports.

Other matters of a general nature were discussed.

On motion of Commissioner Wagner, seconded by Commissioner Koester, the Board unanimously agreed to adjourn the meeting.

CHAIRMAN

SECRETARY

Northern Kentucky Water District

Commissioner Training — 2008

5 – Item Five

Mr. John T. Lyons, P.E.
Director of Operations
Strand Associates, Inc.

Bio of the presenter attached.

John T. Lyons, P.E.
Strand Associates, Inc.
(513) 861-5600
john.lyons@strand.com

EXPERIENCE

John T. Lyons, P.E., John is the Director of Operations for Strand Associate's Cincinnati, Ohio, office. John has 20 years of experience in the civil/environmental field. John is currently leading numerous green infrastructure initiatives throughout the Midwest including the development of a regional green infrastructure program for Louisville MSD, to comply with a U.S.EPA Consent Decree targeting CSO reduction. Activities include the evaluation of green opportunities throughout the community, identification of green pilot projects, development of public outreach and education materials, and the development of a green infrastructure design manual.

As the former Director of Storm Water Management for Sanitation District No. 1, John directed the development and implementation of a regional stormwater utility that serves more than 330,000 customers in a three-county area in Northern Kentucky. In this capacity, Mr. Lyons led the conceptual development of a green infrastructure demonstration site that includes a vegetated roof, porous pavements, wetland forebay, wet pond, dry pond, biofiltration chamber, vegetated swale and an urban forest. This Stormwater Management Program received USEPA's 2004 CWA First Place Award in the stormwater management category.

EDUCATION

B.S. Civil Engineering
University of Massachusetts at Amherst

Northern Kentucky Water District

Commissioner Training — 2008

6 – Item Six Green Design – PowerPoint handouts attached

Green Infrastructure

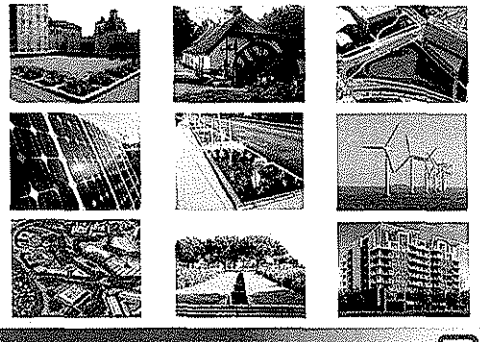
Presented by:
John Lyons, P.E.

Strand Associates, Inc.

Agenda

1. Background
2. Regulatory Perspective
3. Using Green Infrastructure to Control Stormwater Runoff
4. Case Studies
   a. *National Urban Programs*
   b. Louisville, KY
   c. American Can - Cincinnati, OH
5. Conclusions
6. Discussion

What is Green Infrastructure?



What is Green Infrastructure?

"It traditionally has been thought of as the interconnected network of waterways, wildlife habitats, and other natural areas that maintain natural ecological processes."

- Rooftops to Rivers

What is Green Infrastructure?
(from a stormwater perspective)

Green infrastructure techniques utilize natural systems, or engineered systems that mimic natural landscapes, to capture, cleanse and reduce stormwater runoff using plants, soils and microbes.

- U.S. EPA website

What is Green Infrastructure?

- Regional Scale:
  - On the regional scale, green infrastructure consists of the interconnected network of open spaces and natural areas (such as forested areas, floodplains and wetlands that improve water quality while providing recreational opportunities and wildlife habitat.

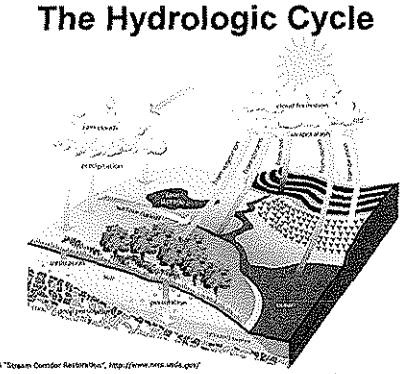
- U.S.EPA

What is Green Infrastructure?

- *Local Scale:*
  - On the local scale, green infrastructure consists of site-specific management practices (such as rain gardens, porous pavements, and green roofs) that are designed to maintain natural hydrologic functions by absorbing and infiltrating precipitation where it falls.

- U.S. EPA

The Hydrologic Cycle



Source: EPA "Stream Corridor Restoration", http://www.nrcs.usda.gov/

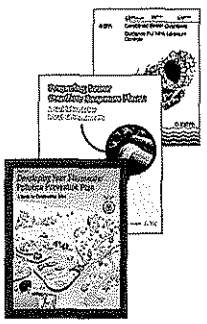
Regulatory Perspective

"Green infrastructure represents a new approach to stormwater management that is cost-effective, sustainable, and environmentally friendly."

– U.S. EPA

Regulatory Perspective

- Green Infrastructure now being considered as a tool to augment more traditional engineering solutions to address:
  - Stormwater discharges
  - Combined sewer overflows
  - Sanitary sewer overflows
  - *Other public infrastructure*



Using Green Infrastructure to Control Stormwater Runoff

Water Quality

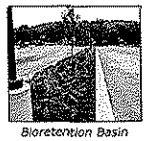
vs.

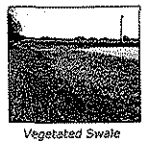
Water Quantity

Using Green Infrastructure to Control Storm water Runoff

- Example Components
  - Vegetated Roof
  - Trees
  - Rain Gardens
  - Vegetated Swales
  - Pocket Wetlands
  - Stormwater Pond
  - Infiltration Planters
  - Vegetated Filter Strips
  - Reforestation
  - Riparian Buffers
  - Porous Pavements
  - Dry Swale

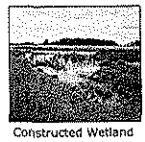
Example Components


Bioretention Basin


Vegetated Swale


Rain Garden

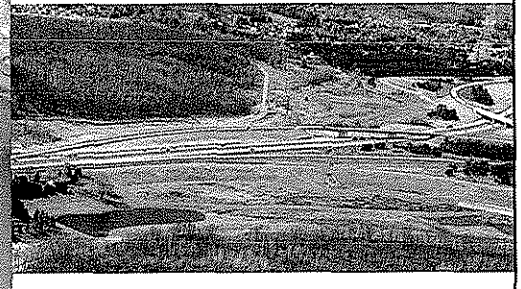

Wet Detention Pond


Constructed Wetland


Infiltration Basin

Example green infrastructure pictures from Strand Associates, Inc. projects.

Integrated Components

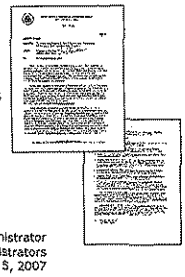


Green Highway - Wisconsin

Regulatory Perspective

U.S. Environmental Protection Agency

"Green infrastructure can be both a cost effective and an environmentally preferable approach to reduce stormwater and other excess flows entering combined or separate sewer systems in *combination with, or in lieu* of, centralized hard infrastructure solutions."

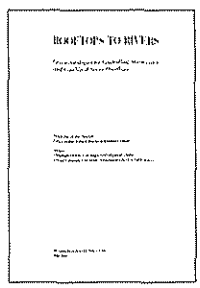


– Ben Grumbles, Assistant Administrator
Memo to EPA Regional Administrators
March 5, 2007

Green Infrastructure Case Studies

- **"Reducing runoff with green infrastructure decreases the amount of pollution introduced into waterways and relieves the strain on stormwater and wastewater infrastructure."**

  - *Rooftops to Rivers*, Natural Resources Defense Council, June 2006



Green Infrastructure Case Studies

	Chicago	Kansas City	Milwaukee	Pittsburgh	Portland	Seattle	Washington, D.C.
Green Roofs	☑		☑	☑	☑	☑	☑
Downspout Disconnect	☑	☑	☑	☑	☑	☑	☑
Rain Gardens and Swales	☑	☑	☑	☑	☑	☑	☑
Rain Barrel Program	☑	☑	☑	☑	☑	☑	☑
Green Streets	☑		☑	☑	☑	☑	☑
Permeable Pavement	☑		☑	☑			☑
Wetlands	☑		☑	☑			
Park Restoration		☑	☑	☑		☑	☑

Source: Rooftop to Rivers

Portland, OR

Green Streets

SW 12th Avenue

Sandy Boulevard

NE Siskiyou Street

Example green street pictures from projects completed in Portland Oregon.

Portland, OR

NE Siskiyou Green Street

Reduced peak flow for 25-year storm by 88%.

Reduced total runoff by 85%

Cost $15,000

Source: NE Siskiyou Green Street Project Report / www.portlandonline.com

Chicago, IL

Green Roofs

Chicago City Hall

Seattle, WA

Green Streets

110th Cascade Drainage Project

2nd Avenue Street Edge Alternative Project

Kansas City, MO

Rain Gardens

Visitation Church

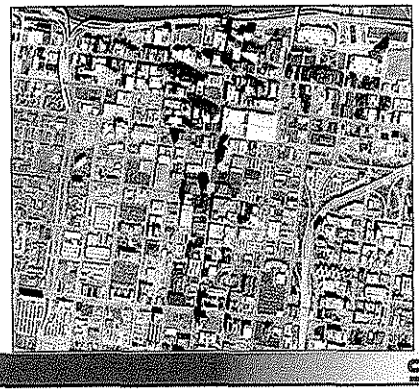
Discovery Center

Weatherby Lake Home

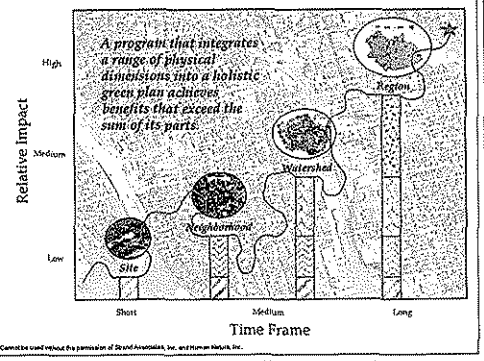
Regional Green Infrastructure Projects

- **Louisville, KY** (CSO Consent Decree)
- **Lexington, KY** (2010 World Equestrian Games)
- **Northern Kentucky** (SD1 Consent Decree)
- **Cincinnati, OH** (CSO Consent Decree)

The Challenge...



Green Infrastructure Strategy

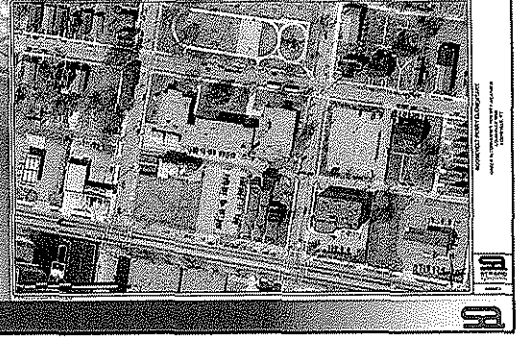


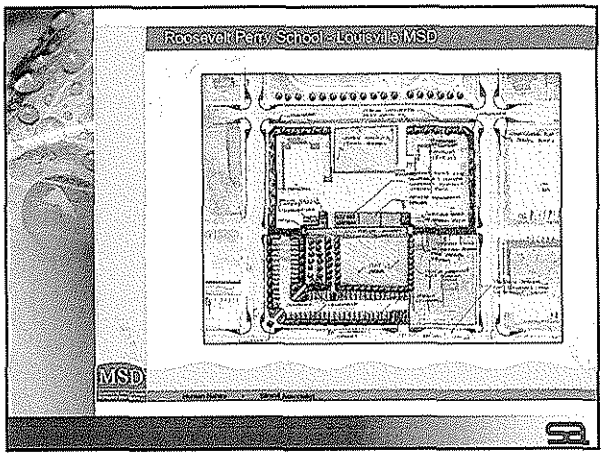
Example Regional
Green Infrastructure
Projects

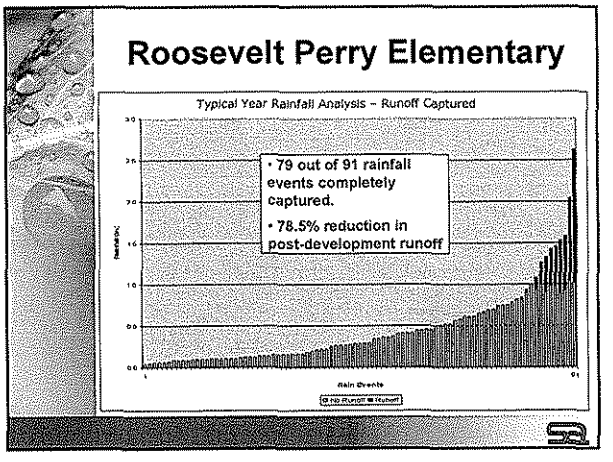
Louisville, KY

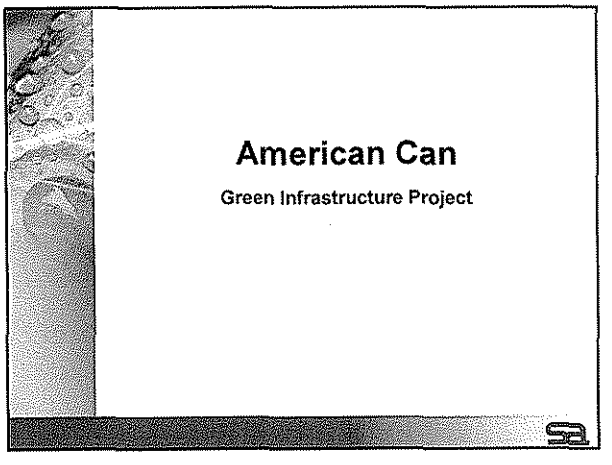
Roosevelt Perry Elementary School

Roosevelt Perry Elementary

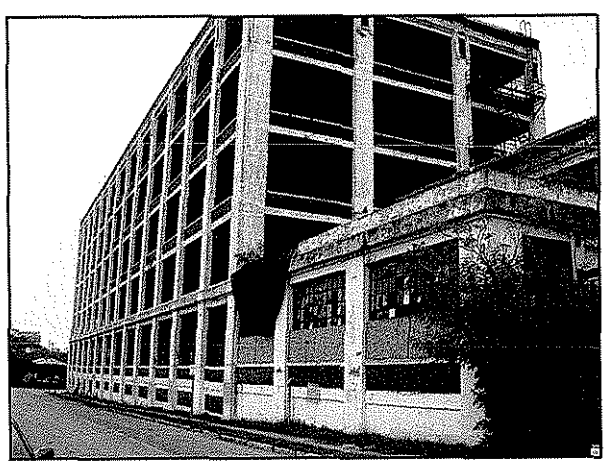


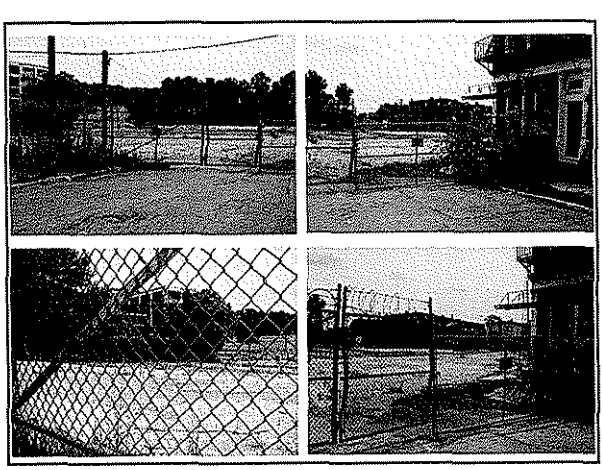

Roosevelt Perry School - Louisville MSD
MSD

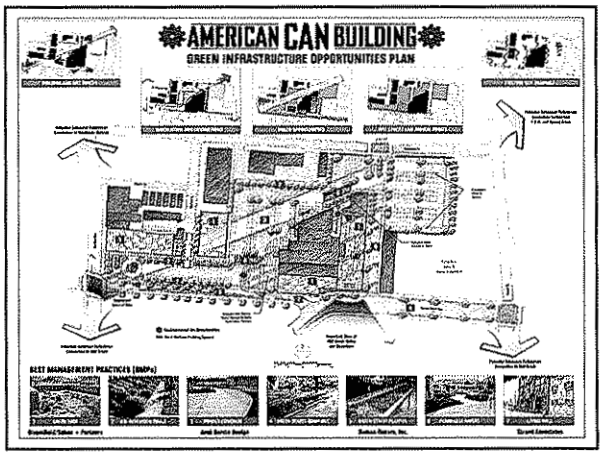

Roosevelt Perry Elementary
Typical Year Rainfall Analysis – Runoff Captured
• 79 out of 91 rainfall events completely captured.
• 78.5% reduction in post-development runoff


American Can
Green Infrastructure Project

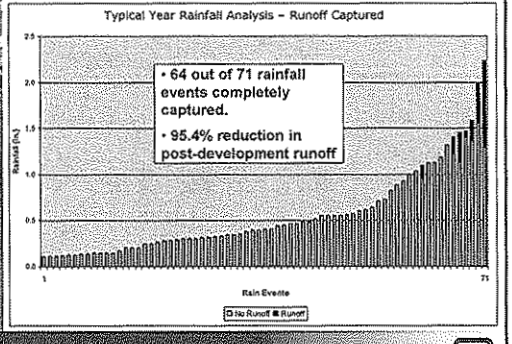

American Can Site
Google







American Can



Green BMP Premium Costs

➢ Green roofs	$320,000
➢ Pervious concrete	$180,000
➢ Porous pavers	$0.00
➢ Grass pavers	$65,000
➢ Porous asphalt	$15,000
➢ Biofiltration beds	$40,000
Total =	**$620,000**
➢ Less traditional	
• underground storage	$81,000
• curb reduction	$41,000
• pipes/inlets	$20,000
• sewer separation	$50,000

By removing 3 of the 4 green roofs and increasing the gravel base under the pervious concrete the green premium reduces to $260,000 without reducing the storage capacity of the site.

Green Premium (approximately) $428,000

Green Infrastructure Approach

- Programs are site specific and must acknowledge:
  - *Physical and Technical Limitations*
  - Financial Constraints
  - Regulatory Issues
  - Political and Social Issues
  - Community Values

Benefits of Green Infrastructure

- **Cleaner Water**
- **Enhanced Water Supply**
- **Groundwater recharge**
- **Cleaner Air**
- **Reduce Heat Island Effect**
- **Increase Energy Efficiency**
- **Community Benefits**
- **Cost Savings**
- **Urban Beautification**
- **Protect Natural Habitats**
- **Greenway Connectivity**

The Green Challenge...

- Site Specific
  - Soils, topography, rainfall, land use
- Project Scale
  - Regional, watershed, neighborhood, site
- Broad Range of Stakeholders
  - Public and private
  - Federal, State, County, Local
- Program Objectives
  - Green space, SW, CSO, SSO, Connectivity

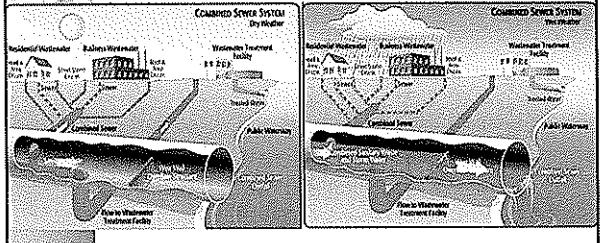
BMP Costs

BMP	Capital Cost	$/gal
Downspout Disconnect	$50 - $250/downspout	0.34 – 1.68
Rain Barrels	$150/ each rain barrel	1.27
Cisterns	$1,000 (500 gal) - $5,000 (6,500 gal)	0.77 – 2.25
Rain Gardens	$5 - $10/sq. ft	0.84 – 1.69
Green Roofs	$15/sq. ft or roof $8/sq. ft (ret)	26.93 – 50.5
Rooftop Storage	$100/drain restrictor. $5/sq. ft waterproofing	0.17 – 8.59
Green Parking Lots	$2/sq. ft turf pavers	.39 – 0.45
Stormwater Trees	$200 - $340/tree	1.22 – 2.07
Porous Pavement	$2 - $4/sq. ft	3.16 – 6.72
Inlet Restrictors	$400 - $1,200 per restrictor	0.01 – 0.02
Bioretention	$13,000 - $30,000/ac	0.25 – 0.58
Swales	$3,500/5-acre residential site	0.05
Sand Filter	$35,000 - $75,000/5-acre commercial site	0.34 – 0.72
Filter Strips	$13,000 - $30,000/ac	0.10
Pocket Wetlands	$60,000/ac/ft	0.62
Dry Wells	$900 - $1,400 each	6.06 – 9.43
Infiltration Sumps	$5,000 - $10,000 per sump	0.21 – 0.43

Source: Milwaukee Metropolitan Sewer District, 2005

Infrastructure Overview

Combined Sewer Overflow

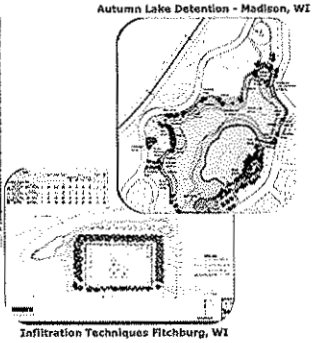


Source: EPA "Stream Corridor Restoration", http://www.nrcs.usda.gov/

Example Components

Autumn Lake Detention - Madison, WI

University of Madison BMP Evaluation– Madison, WI



Infiltration Techniques Fitchburg, WI

Northern Kentucky Water District

Commissioner Training — 2008

7 – Item Seven No.

Northern Kentucky Water District

Commissioner Training — 2008

1 – Item One

Northern Kentucky Water District
2835 Crescent Springs Road
P.O. Box 18640
Erlanger, KY 41018

Northern Kentucky Water District

Commissioner Training — 2008

2 – Item Two Name: Customer Service Overview

Sponsor: Northern Kentucky Water District

Subject Matter: To provide an overview of account services and billing, and the many ways in which this department interacts with employees and customers.

Northern Kentucky Water District

Commissioner Training — 2008

3 – Item Three

This presentation provides an outline to the Board of Commissioners of the processes and procedures utilized by NKWD's Account Services and Billing Department to address day-to-day operations, distribute water use and billing information, and provide a high-level of service to its customers.

Northern Kentucky Water District

Commissioner Training — 2008

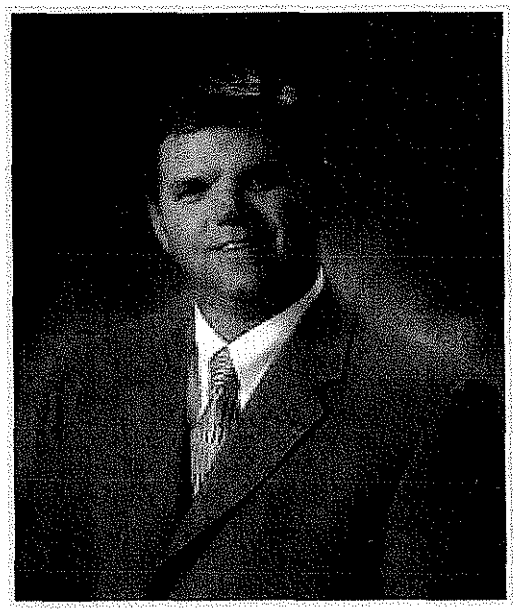
4 – Item Four	One Credit Hour – Copy of Board Minutes showing Commissioners attendance to be attached following June 2008 meeting.

Northern Kentucky Water District

Commissioner Training — 2008

5 – Item Five — Mr. Mark Lofland, VP Account Services & Billing, Northern Kentucky Water District

Bio of the presenter attached.



Mark Lofland

Customer Service

Mark Lofland is the Vice President of Account Services and Billing at the Northern Kentucky Water District. He is responsible for the management of customer services and billing, light field services, meter reading, meter testing, meter repair, and distribution system mainline flushing and leak detection. He is a graduate of Northern Kentucky University and has earned Distribution System, Water Treatment, and Meter Testing licenses from the Commonwealth of Kentucky.

Mark is a member of the American Water Works Association, has volunteered time to the Northern Kentucky Chamber of Commerce, and has been involved coaching youth sports for several years.

Mark has been with the Northern Kentucky Water District since 1982.

Northern Kentucky Water District

Commissioner Training — 2008

6 – Item Six Customer Service Overview – Outline attached

OUTLINE FOR TRAINING SCHEDULED FOR THE JUNE 2008 COMMISSION MEETING

Account Service and Billing

A) Payment options

B) Convenient access via the web

C) Recording of phone calls

D) Adjustment of Bills in the event of an Underground leak

E) Assist customers in leak detection that may have generated a high bill

F) Assist customers when discolored water occurs

G) Provide educational and promotional information/items to our customer

H) Assist customer with payment of the bill to avoid disconnection of service

I) Provide one -on- one sit down customer contact in private conference room.

J) Fire Hydrant Meter Rentals

K) Outside Meter Testing

L) Same Day Service

M) On-Call Service

N) Customer Inspections

Northern Kentucky Water District

Commissioner Training — 2008

7 – Item Seven No.

Northern Kentucky Water District

Commissioner Training — 2008

1 – Item One

Northern Kentucky Water District
2835 Crescent Springs Road
P.O. Box 18640
Erlanger, KY 41018

Northern Kentucky Water District

Commissioner Training — 2008

2 – Item Two Name: Main Replacement Program

Sponsor: Northern Kentucky Water District

Subject Matter: An overview of the objectives of Northern Kentucky Water District's (NKWD) Main Replacement and Rehabilitation Program (MRRP).

Northern Kentucky Water District

Commissioner Training — 2008

3 – Item Three This presentation will outline to the Board of Commissioners the objectives and procedures followed by NKWD in assessing the replacement and rehabilitation needs of its distribution system, and the costs and benefits of implementing this program.

Northern Kentucky Water District

Commissioner Training — 2008

4 – Item Four	One Credit Hour – Copy of Board Minutes showing Commissioners attendance will be attached after September 2008 meeting.

Northern Kentucky Water District

Commissioner Training — 2008

5 – Item Five

Ms. Amy Kramer, Design Engineering Manager,
Northern Kentucky Water District
Mr. Jeff Schuchter, Staff Engineer
Northern Kentucky Water District

Bios of the presenters are attached.

Amy Kramer, P.E.
Northern Kentucky Water District
859-426-2734
akramer@nkywater.org

PROFESSIONAL CREDENTIALS AND CURRENT INVOLVEMENT

Registered Professional Engineer
AWWA, Capital Project Delivery Committee
KDOW, Capacity Development Subcommittee
KDOW, Design Standards Subcommittee

EXPERIENCE

12/01 – Present	Design Engineering Manager Northern Kentucky Water District, Erlanger, Kentucky
5/92 – 12/01	Project Engineer Black & Veatch, Cincinnati, Ohio
9/91 – 6/92	Student Research Assistant, Undergraduate University of Cincinnati, Cincinnati, Ohio
3/89 – 9/91	Co-op Student U.S. Environmental Protection Agency, Cincinnati, Ohio

EDUCATION

B.S. Civil Engineering
University of Cincinnati, Cincinnati, Ohio

Jeff Schuchter
Northern Kentucky Water District
859-426-2703
jschucter@nkywater.org

Professional Credentials and Current Involvement

Engineer in Training
Land Surveyor in Training
KSPE, Northern Kentucky Chapter
AWWA Member

Experience

5/06 – Present	Staff Engineer Northern Kentucky Water District
5/05-5/06	Student Research Assistant, Postgraduate University of Louisville, Louisville, Kentucky
1/03-8/04	Co-op Student Alcan Ingot, Sebree, Kentucky

Education

B.S Civil Engineering
University of Louisville, Louisville, Kentucky

Masters of Engineering
University of Louisville, Louisville, Kentucky

Northern Kentucky Water District

Commissioner Training — 2008

6 – Item Six Main Replacement Program – PowerPoint handouts attached

Northern Kentucky Water District

Main Replacement and Rehabilitation Program

Key Water District Facts:

- Supplies water to over 300,000 people in Kenton and Campbell Counties and portions of Boone, Grant and Pendleton
- Capacity up to 64 MGD from 3 plants
- Over 1,200 miles of main, portions dating to *pre*-1900s

Objective of MRRP

The key objectives of the Main Replacement and Rehabilitation Program (MRRP) are:

- To have reliable process for identifying candidates for water main rehabilitation and replacement
- To optimize available funds by making the best decisions on main replacement

History

- NKWD has spent approximately $38 million in the last 12 years on the program
- Past projects are largely driven by main *breaks and customer complaints*
- Moving towards a more sophisticated program that will eventually become a proactive replacement program instead of a reactive program

Data Sources

- Customer Information System
  - Discolored Water Complaints, Critical Customers
- GBA Work Order System
  - Breaks and Leaks
- GIS
  - Main Size, Age, Material, Soil Corrosivity, Blowoffs, Road Class
- Cities
  - Provide list of future street work
- Hydraulic Model
  - Available Flow

Program Development

- SQL Server is used to pull all data together and score each pipe segment based on criteria
- Scores are then imported into GIS to give a visual assessment of the results
- Highest possible score is 100 and the higher the score, the higher the main is on the priority list
- Mains are grouped into projects as low, medium and high priority

Program

Incorporates 3 categories of parameters to score a pipe segment

- Physical
- *Impact*
- Functional

Physical Criteria

- Given a weighting of 20 percent
- Pipe Diameter
- Age of Main
- Pipe Material
- Soil Corrosivity

Impact Criteria

- Given a weighting of 30 percent
- Street Work
- Available Flow
- Service to Critical Customer
- Road Class

Functional Criteria

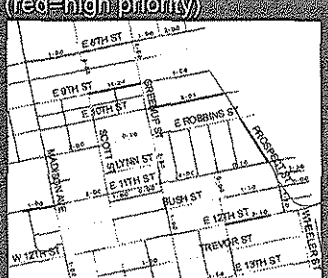
- Given a weighting of 50 percent
- Discolored water incidents
- Main breaks
- Main leaks
- Blowoffs

Scoring Pipe Segments

- Segment Score = (0.2)Physical + (0.3)Impact + (0.5)Functional
- *Over 13,000 pipe segments are scored* between 0 and 100

GIS Output

- Gives visual representation of high priority mains (red=high priority)



Program Budget

- MRRP Budget
  - 2008 – $6.5 million
  - 2009 – $7.1 million
  - 2010 – $6.6 million
  - 2011 – $6.7 million
  - 2012 – $6.8 million
- $2 million of annual main replacement budget is dedicated to coordinated street work projects with cities
  - This is both very beneficial to NKWD, cities, and the public

Rehabilitation vs. Replacement

- Rehabilitation
  - Best on mains that have no breaks
  - Usually on unlined cast iron that has buildup on inside causing low flows and discolored water
- Replacement
  - For mains that have high break/leak history

Program Improvements

- Staff continues to increase the accuracy of data inputs such as pipe material, age, size, etc.
- Continue to gather soil data throughout system to incorporate into model
- Working with local governments to increase coordination with street work and other utility projects
- Increases in budget to keep up with aging infrastructure

Program Benefits

- Fewer Service Interruptions
- Avoid repeated construction
- Lower restoration costs
- Decrease traffic interruptions
- Fewer Customer complaints
- Lower O & M costs
- Increased fire protection
- Better water quality

Northern Kentucky Water District

Commissioner Training — 2008

7 – Item Seven No.