



**Meeting Minutes**  
**April 6, 2011 - 2:00 PM**  
**Traffic Operations Conference Room, Franklin City Hall**

**Attendees:**

David Parker, City of Franklin

Eric Stuckey, City of Franklin

Eric Gardner, City of Franklin

Mark Hilty, City of Franklin

Dr. Ken Moore, Mayor City of Franklin

Eugene LeBoeuf, Steering Committee

Kati Bell, CDM

Zack Daniel, CDM

Kirk Westphal, CDM

Jamie Lefkowitz, CDM

Andrew Lynn, CDM

**I. Drought Management Plan Submitted March 31, 2011**

The Drought Management Plan was submitted and received by TDEC on March 31<sup>st</sup>. The analysis conducted for development of the plan showed that the City of Franklin's drought triggers reflect the increased susceptibility of their local system to hydrologic stress, and that the City can be confident that their bylaws support implementation of appropriate conservation measures, should a regional drought declaration be made.

**II. Subtask Status Reports**

The meeting provided an update of each subtask related to Phase II of the IWRP as follows:

**A. Stormwater Analysis**

CDM held meetings the City's Parks department and Stormwater staff regarding the incorporation of stormwater improvement and harvesting plans. The analysis and draft technical memorandum will be delivered to the Steering Committee for review in early May.

**B. Water Distribution System Analysis**

The analysis is nearly completed, and a Technical Memorandum will be produced following the receipt of additional information on the water system master planning work that has been drafted to date. This information will be used to aid in developing model scenarios that will be used to evaluate loading the future system conditions.



**C. Water Conservation Analysis**

CDM will set a meeting with the codes department to determine what conservation measures are already proposed to be addressed through their planning process. Zack will meet with Vernon Gerth and Andrew Orr; Mark Hilty will also participate in this meeting.

**D. Wastewater Treatment Plants Analysis**

1. Existing WWTP

The evaluation of the biological treatment has been completed. In addition to the biological capacity analysis, CDM has conducted additional testing as part of the hydraulic analysis for the plant. This testing was conducted with plant staff assistance and allowed water level measurements to be made after a large rain event; CDM will need to collect baseline (dry weather flow) measurements to complete this task.

2. New WWTP

Kati Bell presented equipment and operating costs for the proposed UV-AOP system option that was originally discussed as part of the new WWTP to treat for aesthetics and currently unregulated constituents. The cost for treatment equipment is on the order of \$18M with an annual O&M cost of approximately \$2.5M. Due to the extremely high costs associated with this option and the ability to meet similar project objectives, the recommendation was to evaluate this technology as an option at the WTP where costs will be significantly lower. The committee agreed with CDM's recommendation to move the point of UV-AOP system application. However, the Committee also requested that a discussion of this decision along with these costs be retained in the project documentation. CDM is finalizing the draft technical memorandum for this task and the document will be provided to the Steering Committee for review in May.

**E. Water Treatment Plant Analysis**

Because of the presence of a single cryptosporidium reported in a source water sample, the City now falls into Bin 2 with respect to Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) requirements. As part of the overall point of UV-AOP application, water samples were collected at the WTP for analysis. In addition to the proposal that was requested for sizing the UV-AOP system, CDM also requested information on a UV disinfection only option which would address Bin 2 requirements as a project option. CDM will also evaluate costs for UV disinfection only side-by-side with



the UV-AOP treatment for the WTP and results will be summarized in the draft technical memorandum that will be provided to the Steering Committee for review in May.

#### **F. Wastewater Collection System Analysis**

Collection system flow meters are still in the ground are scheduled to be pulled on April 26<sup>th</sup>. CDM has requested an immediate data transfer to aid in expediting the analysis required as part of this subtask.

#### **G. Reclaimed Water Analysis**

Andrew is working with SSR to provide an update of the 2009 Reclaimed Water Master Plan demand projections and this information will be available for discussion in May.

#### **H. Biosolids Analysis**

CDM has completed TM1 (existing conditions, solids production) and will review with the Director of the Water Management Department prior to submitting to the Steering Committee for review. CDM is also preparing a brief memorandum to evaluate high level cost differences between operating one or two biosolids handling facilities, i.e. one at each wastewater plant (existing and potential new) versus consolidating biosolids treatment at the existing facility.

### **II. River Model Development Update**

CDM provided a presentation on the status of the River Model development. The presentation provided during the meeting is attached to these minutes. The discussion addressed differences between the two models that were evaluated by CDM and presented the justification for selecting the RQUAL model over the model that was previously used to develop the Harpeth River TMDL. CDM has met with TDEC and maintained communications regarding the selection and development of the model so that as later decisions are made with the model, there will be a basis for regulatory support of these decisions.

### **III. Scheduling and Upcoming Meetings**

- A. May Steering Committee Meeting May 4
- B. BOMA Meeting – Project Update May 10
- C. Steering Committee Workshop – June 1
- D. Public Meeting – June 21, following the Stormwater Appeals Board Meeting

**Harpeth River Water Quality Modeling Status**  
Franklin IWRP

Steering Committee Briefing  
April 6, 2011

**CDM**

The slide features a blue background with a white grid pattern. The title and subtitle are in the top left, the briefing information is in the top right, and the CDM logo is in the bottom right.

**Non-regulated WQ Issues in COF Water Resources**

- What are non-regulated WQ issues?
  - Taste and odor
  - Public perception
  - EDCs, PPCPs, etc.
- Emerging Regulations
  - Disinfection by-products (NDMA)
  - 1, 4-dioxane
  - Perchlorates

**CDM**

The slide has a blue background with a white grid pattern. The title is at the top, followed by a bulleted list of issues and regulations. The CDM logo is in the bottom left corner.

## Addressing Non-regulated WQ Issues

- UV-AOP at the WWTP

**DESIGN CRITERIA**

<b>Peak Design Flow:</b>	<b>18 MGD (12 MGD)</b>
Average Flow:	<b>6 MGD</b>
UV Transmittance:	<b>65% (minimum)</b>
Target Contaminant Removal	<b>0.5 log 1,4 Dioxane</b>
Target Contaminant Removal	<b>1.22 log NDMA</b>

<b>Capital Cost:</b>	<b>\$18,000,000 (\$12,000,000)</b>
<b>Annual O&amp;M:</b>	<b>\$2,563,770</b>

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## Alternative Treatment Solution

- UV/UV-AOP at the WTP

**DESIGN CRITERIA**

<b>Peak Design Flow:</b>	<b>2.1 MGD (4 MGD)</b>
Average Flow:	<b>6 MGD</b>
UV Transmittance:	<b>90% (minimum)</b>
Target Contaminant Removal	<b>0.5 log 1,4 Dioxane</b>
Target Contaminant Removal	<b>1.22 log NDMA</b>


<b>Capital Cost:</b>	<b>\$450,000 (\$600,000)</b>
<b>Annual O&amp;M:</b>	<b>\$48,000 (\$90,000)</b>

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## Alternative Development

- Recommendation from Steering Committee
- Include/Exclude from New WWTP evaluation
- Include/Exclude from WTP evaluation considering ancillary benefits
  - Taste and odor control could replace PAC addition
  - Cryptosporidium removal requirements
  - Partial reduction/control of DBPs

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<h1>New WWTP – UV/UV-AOP Options</h1> <p>Franklin IWRP</p>	<p>Steering Committee Briefing</p> <p>April 6, 2011</p>
 <p style="text-align: right;"><b>CDM</b></p>	

## Overview

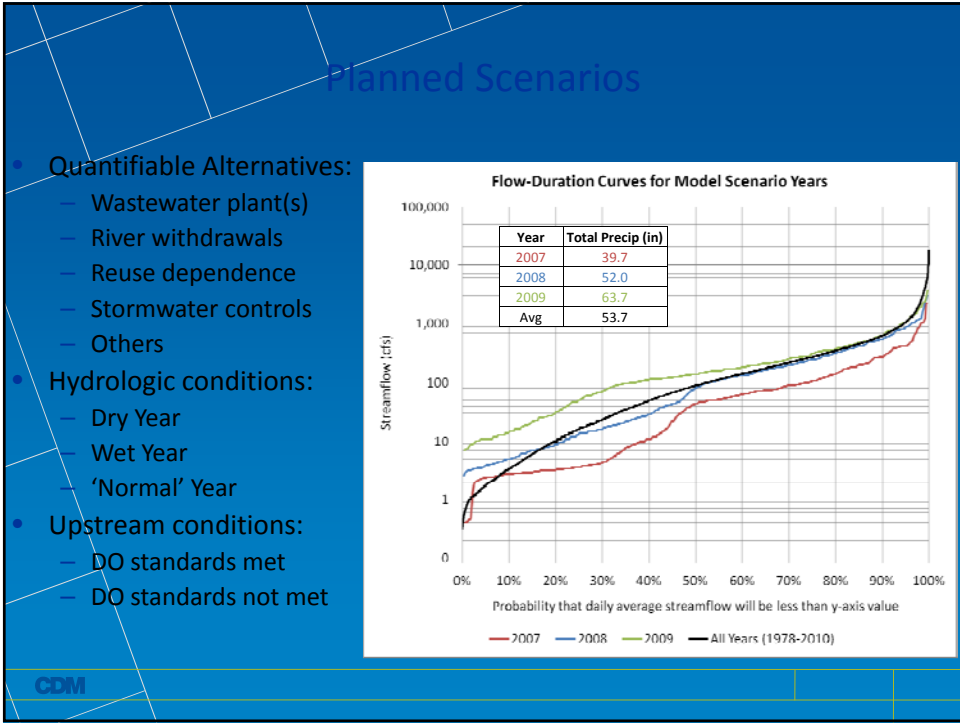
- Water quality questions related to IWRP
- Scenarios to be analyzed
- Review of model selection
- Performance of RMS model
- Data extension progress
- Brief WQ Model Demonstration
- Use of Integrated Model for Phase II
- Next steps

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## Water Quality Questions for IWRP

- Phase I modeling focused on river flow and pollutant loads, *but not instream water quality*
- This is not a load allocation study
- Questions for Phase II:
  - Which alternative is likeliest to yield the best water quality in the Harpeth River in Franklin and downstream?
  - What are the likely water quality impacts of the selected alternative?
  - How will Franklin's IWRP affect the river:
    - If water quality upstream meets DO standards?
    - If water quality upstream *does not* meet DO standards?

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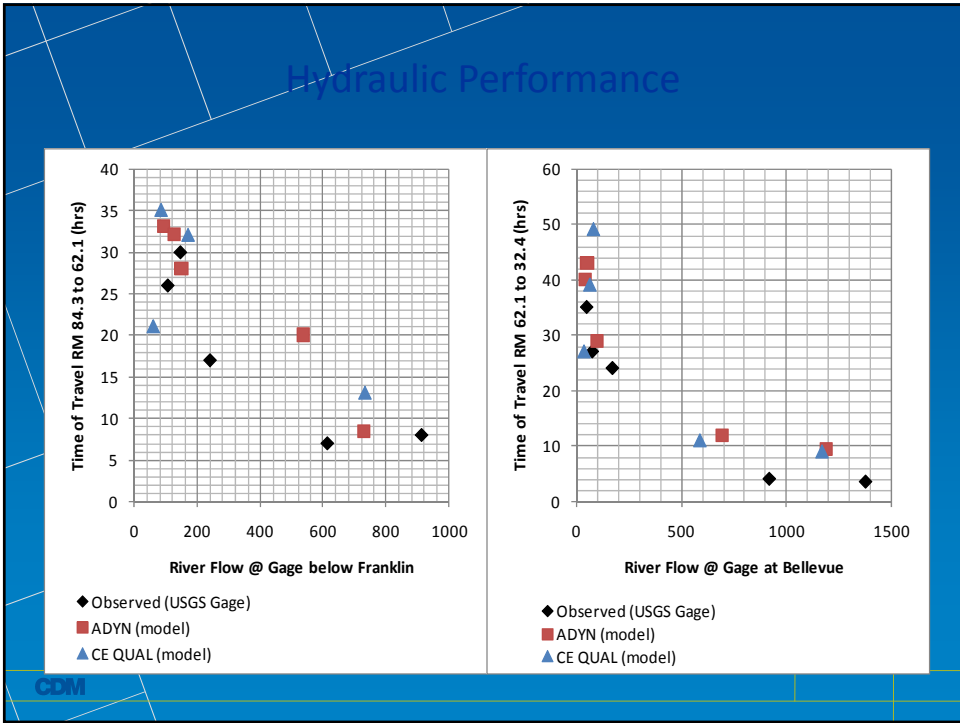
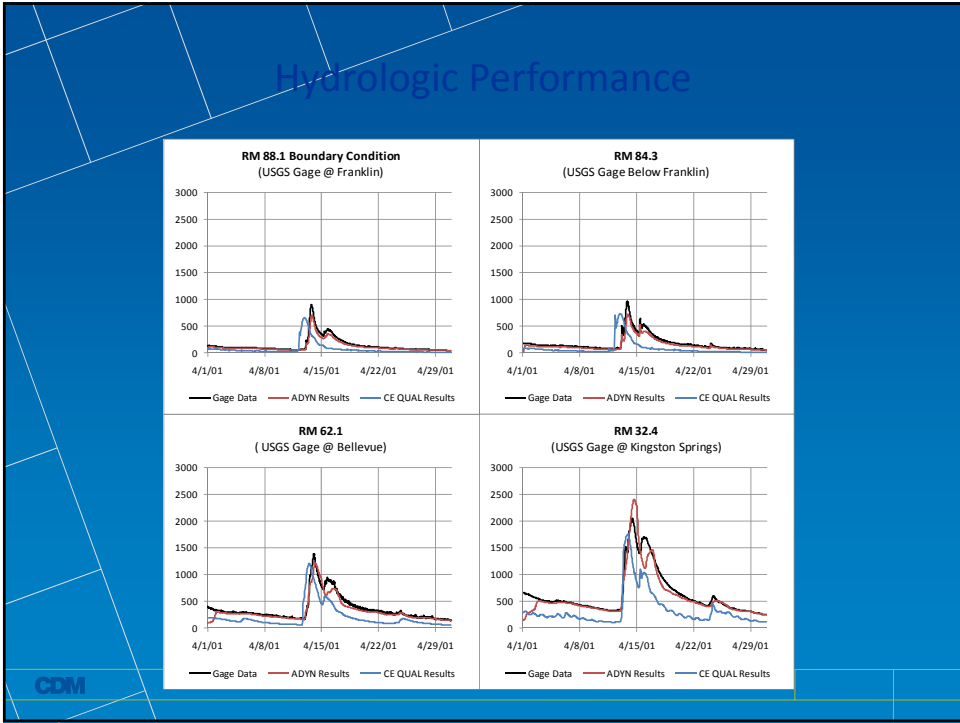


### Summary of Model Comparison

CRITERIA	CE-QUAL / WASP	RMS (ADYN / RQUAL)
Hydrologic / Hydraulic Calibration/Performance		•
Dissolved Oxygen Calibration/Performance		•
Peer Reviews	•	•
Hydraulic Parameterization		•
Water Quality Parameterization		•
Functionality		•

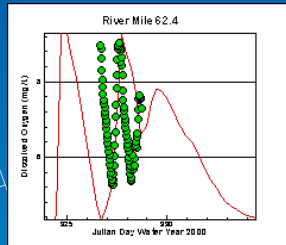
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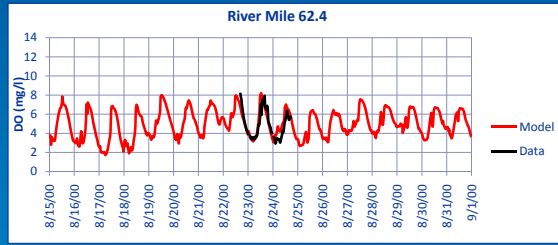


# Diurnal Dissolved Oxygen Performance

WASP Model



RQUAL Model

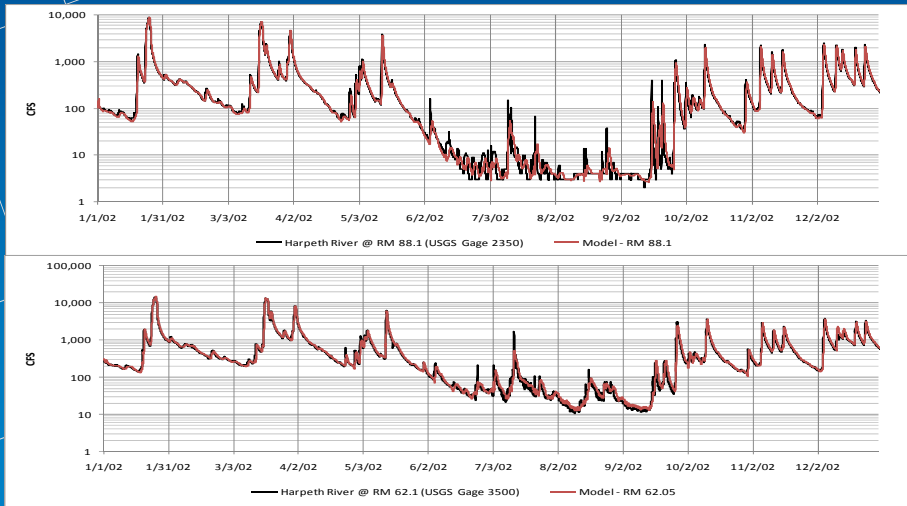


Excerpted from: Harpeth River Watershed Modeling Effort: A Tool for TMDL Development Report (EPA, July 2002)



# Data Extension for Parameter Finalization

- 2002, 2003, 2006 to be used for verification/ refinement



## Next Steps for WQ Modeling

- Water quality parameterization (2002, 2003, 2006)
  - We have identified key parameters with TDEC
  - Meeting to discuss attached algae observations
- Input data extension for 2007-2009 (alternatives analysis)
  - Flows
  - Boundary conditions pollutant loads
- For the June stakeholder workshop
  - Preliminary results for each alternative
  - Likely some additional hybridizing after this

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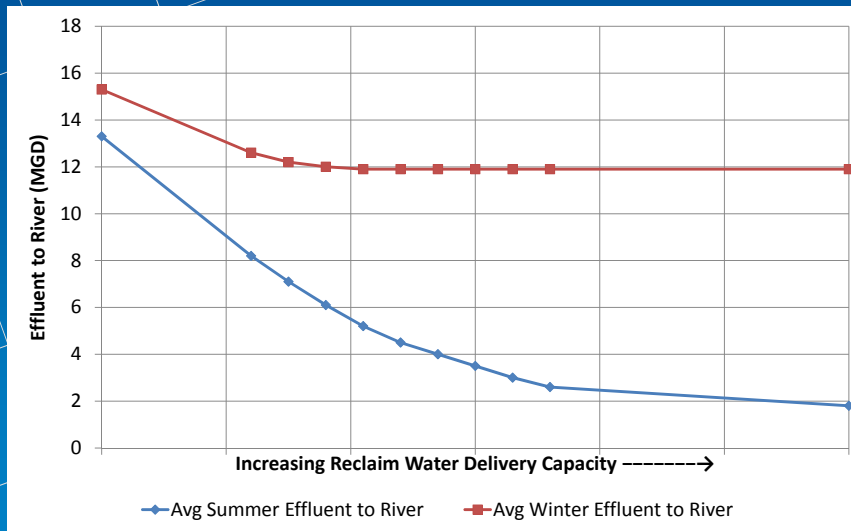
# RMS MODEL DEMONSTRATION

## Using the Integrated Model for Phase II

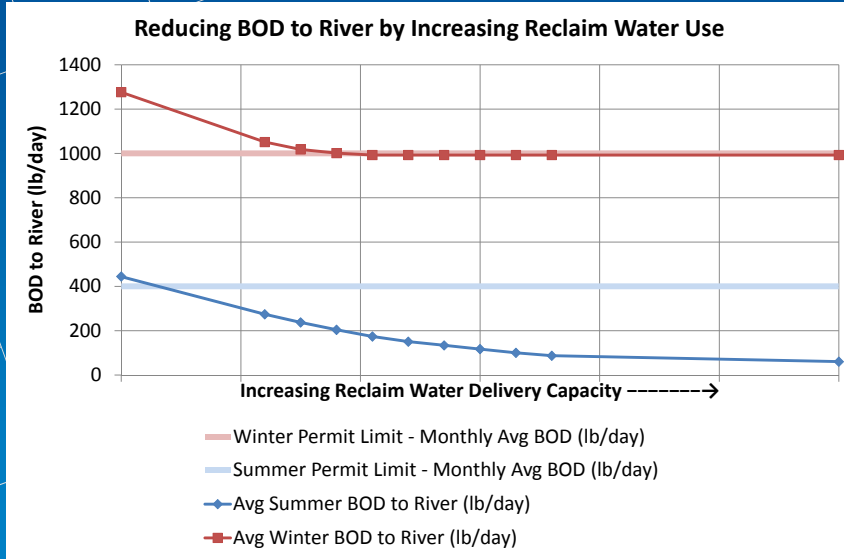
- Example Question: How do we meet WLA *and* prepare for future wastewater demands?
  1. Reuse the effluent instead of discharging
  2. Reduce the effluent concentration



### 1. Reuse the effluent

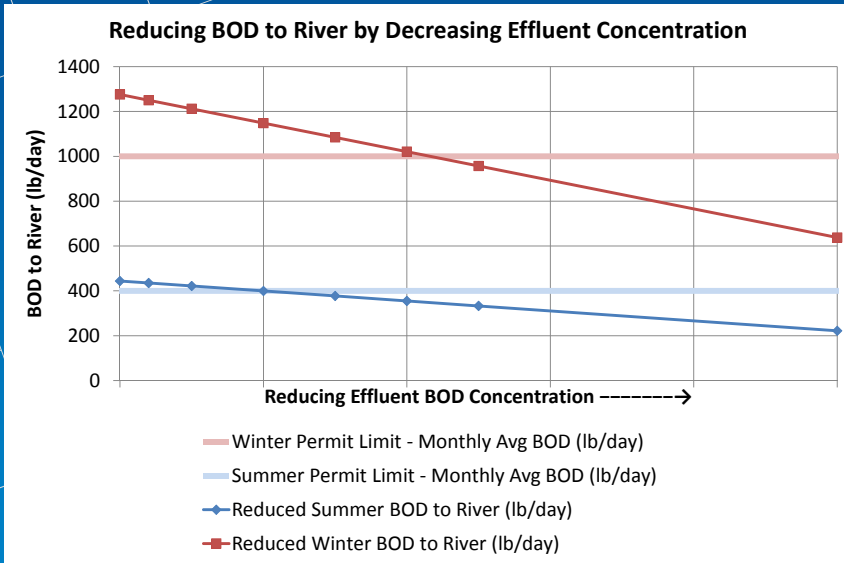


## 1. Reuse the effluent



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## 2. Reduce the effluent concentration



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## Next Steps for Integrated Modeling

- Update model with capacities and costs based on detailed engineering evaluations
- Help guide conceptual design of facilities
- Quantify major tradeoffs between the alternatives
- Use the model to help hybridize as necessary
- Develop final scores for comparative analysis