

**Lake Maumelle Watershed Management Plan  
Policy Advisory Council  
Meeting Summary  
January 19, 2006**

**Attendees**

See Attachment A.

**Project Update**

Trevor Clements began the meeting with a roll call and a welcoming of new members. Four new members were in attendance:

Marge Brewster, primary delegate for small landowners in the Northern portion of the watershed  
John Bentley, primary delegate for small landowners in the Western portion of the watershed  
Ray Vogelpohl, alternate delegate for small landowners in the Western portion of the watershed  
Jeff Allison, Maumelle Water Corp. Board member, primary delegate for the Water Associations in the watershed (he is replacing Ken Texter who resigned his position from the Perryville Water Association).

Trevor announced that CAW staff had been working feverishly to improve the sound system performance in the meeting room. Speakers voices can now be heard better through the improved amplification. Additionally, microphones are being placed in front of every delegate seat at the table. Trevor emphasized the importance of all delegates speaking directly into their microphone during periods of discussion so that all can hear the points being made.

Trevor passed along that CAW is interested in avoiding unnecessary duplication of meeting materials where possible. Some members are choosing to print out the materials being emailed in advance, which is fine. However, if CAW knows up front which members wish to do their own notebook maintenance, then the staff can save time and resources by not duplicating their efforts. A list was sent around for members to sign if they were willing to be responsible for their own notebook updates. (Note: if you did not sign the list but wish to do your own notebook updates, please contact Marie Crawford so that she can add you to the list.)

Trevor then summarized key efforts for the project that had occurred since the last meeting:

- Recruitment of new members to represent small landowners in the watershed and to replace the vacant Water Association delegate went well, as indicated by the attendance of four new representatives at the meeting.
- Planning has begun for the next round of public meetings. Three meetings will be held from February 13<sup>th</sup> through the 15<sup>th</sup>. The first two will be held in the watershed, one the evening of the 13<sup>th</sup> and one during the day on the 14<sup>th</sup>. The third meeting will be held in North Little Rock on the 15<sup>th</sup>. Details regarding time and location are included in the invitations, which members will receive copies of shortly.
- In a parallel effort to investigating potential watershed management options, Tetra Tech is proceeding with model development. Preliminary calibration and validation of the watershed modeling framework is complete and Tetra Tech staff are conducting a quality assurance review. Early stages of the lake modeling are going well as the performance of the hydrology component is very good. Staff is currently working on the lake model water quality calibration and

validation. Model development is on track to support presentation of baseline modeling results at the March Policy Advisory Council meeting.

- Tetra Tech worked closely with local representatives and Technical Advisory Council members to develop future land use assumptions to use in the baseline modeling analysis. The Technical Advisory Council reviewed preliminary results and their comments were incorporated in the summary mailed to PAC members.

Trevor then revisited the project roadmap to provide context for the evening's agenda. By March, Tetra Tech plans to bring together results of the baseline modeling analysis and draft management scenarios to the Council for review and comment. The meeting's two primary topics continue the preparation of council members for the March session: review of the future land use assumptions for the baseline analysis, and continued exploration of management options for potential consideration. Two options were presented: low impact development and large lot zoning.

### **Reviewing Future Land Use Assumptions for the Baseline Analysis**

Trevor first reviewed the purpose of the baseline analysis: to establish a point of reference with which to compare targets and help select management options. The analysis compares existing conditions assuming no new management. He said this type of analysis is challenging, with many factors influencing future development, and that there is no perfect answer or crystal ball regarding the future. The analysis, however, can depend on a reasonable approximation showing the relative magnitude of possible change.

In developing the future land use assumptions for the baseline analysis, Tetra Tech obtained input from local planners, realtors, and engineers on future patterns of development. This included factors shaping growth and the type of development; where development would occur; and density. Next, Tetra Tech conducted a GIS analysis to estimate developable land in the watershed, to distribute development based on the lot-size assumptions, and to estimate households in each subwatershed.

The initial assumptions were based on the following local input:

- water and wastewater treatment will be available over the long term.
- steep slopes do not eliminate much land, but shape how the land is developed.
- the majority of the development will be residential.
- the area around the lake will develop faster because of its proximity to Little Rock and the lake attraction.

This yielded two baseline analysis zones: near-lake (approximately to the western edge of the lake) and the remainder of the watershed.

Based on the local guidance, Trevor said that the project team needed to forecast how many houses would be in the high-, medium-, and low-density categories. The team developed two future scenarios, one characterized by large lot development and the other characterized by denser development near the lake.

*Scenario 1 (Large Lot)* has the following assumptions:

#### Near-Lake Zone

- Approximately 15 percent of the lots would be less than 3 acres in size
- Approximately 70 percent of the lots would be 3 to 5 acres in size
- Approximately 15 percent of the lots would be greater than 5 acres in size

Remainder of the Watershed

- Where slopes are less than 15 percent, lots will average approximately 5 acres in size
- Where slopes are greater than or equal to 15 percent, lots will average approximately 10 acres in size

Mr. Clements said this scenario represents what the local realtors, engineers, and planners thought would most likely occur.

*Scenario 2 (Denser Development Near the Lake)*

The following table shows the assumptions for Scenario 2 for the Near-Lake Zone. Assumptions for the Remainder of the Watershed are the same as Scenario 1.

Development Category	Percent of Developable Land	Percent of Total Households
Multi-family (condos, apartments)	2%	39%
0.5-ac to 1-ac Single Family	5%	16%
1-ac to 3-ac Single Family	20%	16%
3-ac to 5-ac Single Family	58%	22%
> 5-ac Single Family	15%	3%

Trevor said this scenario reflects the TAC observation that some lakes near urban areas have higher density around the lake, especially in relatively unregulated watersheds.

The results for total projected households for the two scenarios are shown in the following table:

Location	Total Households SCENARIO 1	Total Households SCENARIO 2
Near-Lake Zone	4,400	8,700
Remainder of Watershed	4,500	4,500
Whole Watershed	8,900	13,100

Based on information received from local planners, realtors, and engineers, Trevor said the projected watershed buildout timeframe for Scenario 1 is 30 to 50 years, while buildout for Scenario 2 would be much longer than 50 years.

**Discussion**

The group discussed how Scenario 2 above should be labeled—sensitivity analysis or scenario 2. Trevor said it would be labeled and referred to as noted on the slide: Scenario 2 (Denser Development Near the Lake).

Some members asked for clarification on how the baseline analysis would be used, particularly related to the water quality targets. Trevor said that these future land use assumptions under the baseline scenario would not change the water quality targets. Tetra Tech, working with the PAC, will set water quality targets and performance standards based on what the lake needs to maintain a high quality water supply. The baseline analysis is trying to determine what type of impairment and what magnitude of impairment would likely occur if no additional management measures are adopted. This will help provide a point of

reference: how far are we from meeting the targets if we do nothing, and what types of management options do we need to consider? We will then test different options for meeting the targets.

Another member asked for clarification on what types of development were assumed: urban, suburban, or rural—was a new town envisioned. Kimberly Brewer, from Tetra Tech, said that it was a mix of rural and suburban development, with commercial type development—such as gas stations and convenience stores—assumed at key road intersections. Some members noted that they thought there would be higher density development in the watershed, and especially more commercial and office development. They noted the commercial development in recent years along Highway 10 going toward the watershed, and the type and amount of residential and commercial development approved in the last 10 to 20 years.

Trevor noted that, in the near lake zone, the projected average lot size for Scenario 1 is 3-acre lots, while for Scenario 2 it is 1.6-acre lots. He said that Tetra Tech evaluated the lot and housing sales data for the last five years. Eighty percent of the land/housing sales were in lots greater than 5 acres. After reviewing an initial scenario run using these assumptions, Tetra Tech determined that the very large lot trend would likely not hold. Therefore, we reduced the lot sizes for Scenario 1, increasing the number of houses by 50 percent over what we would have seen if we had used recent trends for the area. Scenario 2 further increased the density. Trevor said that if we add significantly more houses to the watershed, we would need to extend the buildout timeframe considerably.

One member noted that the growth in the watershed needed to be considered along with growth in the Little Rock region. He believed that existing nearby towns or crossroads would grow to serve commercial needs in the watershed. Also, there are other areas in Little Rock that will likely absorb more dense development (subdivision and multifamily).

One member stressed that Tetra Tech is doing a “best educated guess” regarding the future land use assumptions for the baseline analysis, and asked that we refer to it as that in our final report.

Mr. Clements said he understood the group has a number of different visions of what the future might hold absent of any watershed management plan or actions. He noted that he had heard the concerns and points expressed. However, he stressed that Scenario 1 and 2 Baseline Analysis reflects reasonable projections or guesstimates. As is, they will show future impacts on the lake and will provide an informative frame of reference.

## **Continued Discussion of Management Options**

Kimberly reminded the group that at the last meeting, we reviewed performance standards as a management options approach. At this meeting we will continue to discuss management options, including low impact development design and large lot requirements with imperviousness limits.

### Low Impact Development Design

Kimberly said Low Impact Development (LID) Design involves several key principles:

- Using hydrology and water quality as an integrating framework of site design.
- Thinking micromanagement of stormwater.
- Using simple, nonstructural methods whenever possible.
- Preserving and even creating a multifunctional landscape.

Nonstructural controls, or using the landscape and site design to control stormwater, is also called conservation design. There are also structural or engineered LID controls.

Kimberly used an example development from Orange County North Carolina to illustrate LID with nonstructural controls. She walked through the process Orange County uses in its Conservation Development Subdivision Regulations. This process includes:

- (1) Identifying potential building areas versus conservation areas. At least 33 percent of the tract must be in permanent conservation area. The conservation area includes:
    - Unbuildable areas (steep slopes (>25 percent) and unsuitable soils) – no building allowed in conservation or traditional subdivision). Often this represents a small fraction of the tract, so the applicant maps out primary and secondary conservation areas to “make up” the remaining 33 percent open space.
    - Primary Conservation Area – Stream buffers and moderately steep slopes (15-25 percent).
    - Secondary Conservation Area – Significant vegetation area.
- She said according to Randall Arendt, conservation design usually results in 40-80 percent open space preservation on the site.
- (2) Locate house sites. As the design process moves forward, LID would minimize the imperviousness on the lot and disconnect impervious areas (or connect runoff from impervious areas to natural areas rather than to another impervious area).
  - (3) Add street network. Minimize impervious area, stream crossings, and disturbance of woodlands.
  - (4) Add lot lines. In Orange County, each lot must be able to accommodate an individual septic system and well.

In Orange County, two things drive the number of lots allowed in the conservation design development: the underlying zoning and the requirement for onsite septic/well. Regarding the zoning, if the underlying zoning is one house per 2 acres that determines the maximum yield of houses on the tract. However in conservation design, the lot sizes can vary. In the example given, the average lot size was 0.8 acre, with an underlying zoning of one house per 2 acres. This means that the developer was able to preserve 70 percent of the tract in undisturbed open space.

In other communities, water quality performance standards might drive how many houses can be placed on a parcel of land. If a community has strict performance standards, and, after going through steps 1 through 4 above, the development applicant is still not able to meet the development performance standards, he or she can use structural LID controls. Example structural controls include water quality swales (used instead of curb and gutter), raingardens, constructed wetlands, and runoff storage filtration devices, such as dry wells.

In an urban and suburban type development, the LID design uses a combination of nonstructural and structural controls. Key to the long-term success of LID is maintenance of structural controls.

Kimberly said non-structural LID (conservation design) would be very applicable to the Lake Maumelle watershed, but additional measures may be needed depending on the targets or site performance standards.

Considerations for using structural LID BMPs in the watershed include:

- Type of development.
- Physical site characteristics.
- Hydrology.
- Performance standards.
- Cost.
- Maintenance burden.

Hours for administering LID or conservation design ordinances vary by community. Ms. Brewer used the Town of Huntersville as an example community that requires LID and employs BMPs in most developments. The engineering staff spends 17 to 34 hours per development in plan review, and planning staff spends 12 to 20 hours on this task. Inspectors spend 8 hours per BMP during construction. Final inspections take 2 hours.

### Large Lot Subdivisions

Kimberly said she was presenting three of the oldest “large lot” watershed programs in the country, to give a sense of the history of these programs.

#### *Occoquan Watershed, VA*

The Occoquan Watershed in Virginia has had large lot subdivision/zoning requirements since 1982. Fairfax County zoned for one house per 5 acres, and Facquaier County has subdivisions requirements for larger lots that mesh water supply protection with other planning objectives such as farmland preservation. The state has strong limits on additional wastewater discharges in the watershed.

Because lots are so large, subdivisions in the watershed are exempt from detailed subdivision review. Staff only has to check on the lot sizes to ensure compliance with the watershed regulations, which takes less than 30 minutes per development. They do not have impervious surface limitations, which would add time to compliance review but also would strengthen the water quality protection. Generally, staff can complete plan review and approval and filing of the plat in less than 10 hours per development.

#### *University Lake and Cane Creek Watersheds, NC*

Based on watershed studies, land was zoned to require minimum of 5-acre lots (per house) and maximum 6 percent impervious area (including driveway, house, patios, roads, and streets). Conservation subdivisions are strongly encouraged. The University Lake regulations have been administered since 1988 and the Cane Creek Regulations since 1997. There is strong community participation in the reviewing and approving of new development.

Kimberly noted that when the large lot zoning requirements began, the county offered an option to the developer to cluster the lots. In the 1990s, the county developed an approach for conservation design and required applicants to develop a conceptual plan for both large lot subdivision and a conservation design subdivision. In 90 percent of the cases, the applicant chose the large lot subdivision. The county revised its ordinance to allow the Planning Board to decide which concept plan is more protective; now, the Planning Board selects the conservation design 90 percent of the time. The maximum number of lots allowed in the subdivisions is still driven by the underlying 5-acre lot zoning, however the size of the lots can vary in size. The number of houses allowed is also driven by the ability to find suitable septic and well sites onsite. The zoning and subdivision regulations are supplemented by:

- Stream buffer requirements (approx. 100 ft).
- Strong sedimentation and erosion control.
- Strong enforcement of septic tank regulations.
- Land acquisition program.
- Agricultural BMP cost-share program.
- No provision of public water and sewer service into the watersheds.
- A state prohibition of additional wastewater discharges in the watersheds.

With strong community input and a requirement to assist in the development and review of two conceptual plans, administrative demands on staff time are considerable. It requires 210 to 260 hours of staff time for each development application.

*Lake Michie and Little River Watersheds, NC*

In 1989, based on watershed studies, the watersheds were zoned for minimum 3-acre lots per house, 6 percent imperviousness, with a cluster development option allowed. The zoning and subdivision regulations are supplemented by:

- Stream buffer requirements (approx. 150 ft).
- Sedimentation and erosion control.
- No provision of public water and sewer service into the watersheds.
- A state prohibition of additional wastewater discharges in the watersheds.

Subdivisions created with 10-acre lots (or greater) are exempt from detailed subdivision review, and require less than 20 hours for plan review, approval, and platting. Nonexempt subdivisions require 85 to 110 hours of staff time per development application.

Kimberly said that requirement of large lot developments in the Lake Maumelle watershed may be applicable in the watershed management plan. However, additional measures may be needed depending on the targets or site performance standards. She noted that large lot development with the conservation design option or incentive provides more water quality protection and more design flexibility.

**Discussion**

A couple of members asked about experience in the enforcement of standards, and the cost of such enforcement. Kimberly noted that the enforcement comes at different stages: design of BMPs, construction, and post-construction (inspection and maintenance of BMPs). She said that the county that initiated LID more than 10 years ago, Prince George's County, MD, does not have a formal inspection and maintenance program for residential BMPs. They rely on education of homeowners. Based on recent monitoring of BMPs in some of their oldest LID subdivisions, they are finding that the raingardens and swales, etc., are still functioning well based on simple homeowner or homeowner association maintenance (e.g., changing mulch annually). Most communities do require a formal inspection and maintenance program. Sometimes the community takes over ownership and responsibility of the BMP, sometimes the owner. If the group wants to include LID as one of the future management options, she said the project team would bring back detailed information on maintenance requirements and costs during the management scenario evaluation phase.

One member expressed concern about BMPs altering recharge and natural flow pattern. Tetra Tech said that LID is designed to try to mimic, to the extent possible, the infiltration and flow patterns under predevelopment conditions on the site.

With regard to the case studies requiring large lots, a member asked why two of the case study communities, as part of their watershed management protection, also do not extend water and sewer lines into the watershed. The thinking behind the utility's policy was that if you extend water and sewer lines, you will spur more development than if you rely on the capacity of the land to provide well and septic sites. Also, with low density zoning, there is a fear that if you extend water and sewer lines, there will be a momentum and demand to change the zoning requirements.

One member asked if these communities provided municipal wells in low density areas (e.g., one well per 40 homes). Kimberly said she believes there may be some community (not municipal) wells in Durham County's Lake Michie and Little River watersheds, but in Orange County, the owner must find onsite well and septic sites.

Finally, another member asked if any of these (or other) communities had paid owners to "leave trees alone." Kimberly said, in the examples, the Orange Water and Sewer Authority has a very successful land acquisition program where they buy conservation easements as well land through fee simple

purchase. Durham also has a land acquisition program. Many other watershed management programs in the country also have land acquisition programs.

**Lake Maumelle Policy Advisory Council Meeting Sign-In Meeting Date: 1/19/06**

(P indicates Present, NP indicates Not Present)

<b>Present</b>	<b>Member Name</b>	<b>Designation</b>	<b>Representing</b>
<b>P</b>	Herb Dicker	<b>PRIMARY</b>	Ratepayers (Little Rock Neighborhoods)
<b>P</b>	Kathy Wells	Alternate	Ratepayers (Little Rock Neighborhoods)
<b>P</b>	Sue Corker	<b>PRIMARY</b>	Ratepayers (North Little Rock Neighborhoods)
<b>NP</b>	Jack Finnegan	Alternate	Ratepayers (North Little Rock Neighborhoods)
<b>NP</b>	Mike Simpson	<b>PRIMARY</b>	Ratepayers – Jacksonville Water Works (Master-Metered Customers)
<b>P</b>	Robert Stout	Alternate	Ratepayers – North Pulaski Water Works (Master-Metered Customers)
<b>P</b>	Jane Dickey	<b>PRIMARY</b>	Central Arkansas Water Commission (Member)
<b>NP</b>	Tony Kendall	Alternate	Central Arkansas Water Commission (Vice Chair)
<b>P</b>	Ruth Bell	<b>PRIMARY</b>	Community (League of Women Voters of Pulaski County)
<b>P</b>	Kathleen Oleson	Alternate	Community (League of Women Voters of Pulaski County)
<b>P</b>	Steve Owen	<b>PRIMARY</b>	Community (North Little Rock Chamber of Commerce)
<b>NP</b>	James Dietz	Alternate	Community (North Little Rock Chamber of Commerce)
<b>P</b>	Randy Wilbourn	<b>PRIMARY</b>	Community (Little Rock Regional Chamber of Commerce)
<b>P</b>	Paul Harvel	Alternate	Community (President & CEO – Little Rock Regional Chamber of Commerce)
<b>P</b>	Kate Althoff	<b>PRIMARY</b>	Community (Citizens Protecting Maumelle Watershed)
<b>P</b>	Barry Haas	Alternate	Community (Citizens Protecting Maumelle Watershed)
<b>P</b>	Justice Harrison Jones	<b>PRIMARY</b>	Elected Official (Perry County Quorum Court)
<b>NP</b>	Justice Charlie Clements	Alternate	Elected Official (Perry County Quorum Court)
<b>P</b>	Justice Pat Dicker	<b>PRIMARY</b>	Elected Official (Pulaski County Quorum Court)

<b>Present</b>	<b>Member Name</b>	<b>Designation</b>	<b>Representing</b>
<b>P</b>	Alderman Neil Bryant	<b>PRIMARY</b>	Elected Official (North Little Rock City Council)
<b>P</b>	Vice Mayor Barbara Graves	<b>PRIMARY</b>	Elected Official (Little Rock Board of Directors)
<b>NP</b>	City Director Stacy Hurst	Alternate	Elected Official (City Director, City of Little Rock)
<b>P</b>	Glen Hooks	<b>PRIMARY</b>	Environmental (Sierra Club)
<b>NP</b>	Dale Ingram	Alternate	Environmental (Sierra Club)
<b>P</b>	Kevin Pierson	<b>PRIMARY</b>	Environmental (Audubon Arkansas)
<b>P</b>	Stephanie Hymel	Alternate	Environmental (Audubon Arkansas)
<b>P</b>	Charles Nestrud	<b>PRIMARY</b>	Property Owners (Deltic Timber Corporation)
<b>P</b>	Larry Hedrick	<b>PRIMARY</b>	Property Owners (U.S. Forest Service)
<b>P</b>	Jeff Allison	<b>PRIMARY</b>	Property Owners – Water Association (Maumelle Water Corporation)
<b>P</b>	Wally Loveless	<b>PRIMARY</b>	Realtors (Member of Arkansas Realtors Association)
<b>P</b>	Kenneth Gill	Alternate	Realtors (Coldwell Banker Advantage)
<b>P</b>	John Bryant	<b>PRIMARY</b>	Recreationists (Grand Maumelle Sailing Club)
<b>P</b>	Nicole Claas	Alternate	Recreationists (Grand Maumelle Sailing Club)
<b>P</b>	Randy Day	<b>PRIMARY</b>	Recreationists – Fishermen (President of Maumelle Bass Club)
<b>P</b>	John Bentley, III	<b>PRIMARY</b>	Small Property Owners within Watershed – Western Portion
<b>P</b>	Ray Vogelpohl	Alternate	Small Property Owners within Watershed – Western Portion
<b>P</b>	Marge Brewster, Ph.D.	<b>PRIMARY</b>	Small Property Owners within Watershed – Northern Portion

**OTHERS ATTENDING**

<b>Name</b>	<b>Representing</b>
Norvell Plowman	Attorney for Lee Bodenhamer, watershed property owner
Lee Bodenhamer	Watershed property owner
John Heard	Watershed property owner
Shirley Gilmore	Watershed property owner
Debbie Moreland	Roland-area property owner
Bart Moreland	Roland-area property owner
George Crook	Crook Environmental Consulting
Tim Daters, P.E.	White-Daters & Associates, Inc.
Roger Miller	Technical Advisory Council, AR Dept. of Health & Human Services
Bruno Kirsch	Technical Advisory Council, Central Arkansas Water
Marie Crawford	Central Arkansas Water
Kam Alston	Central Arkansas Water
Andrew Marsh	Central Arkansas Water
Kimberly Brewer	Tetra Tech, Inc.
Trevor Clements	Tetra Tech, Inc.