Fort Smith Regional Water Supply Project Update

Summer 1999

Highlights:

- Description of new dam and lake
- Analyses underway for spillway design and assessment of environmental impacts
- Site mapping and first phase of core sampling completed — conditions found to be suitable for dam expansion
- 3-D computer rendering of enlarged dam and lake
- Department of Parks does not object to possible relocation of Lake Fort Smith Park — proposes site north of dam on west shore for new park facilities

City Board of Directors Selects Size for Expansion of Lake Fort Smith

At its meeting on Wednesday, July 21, 1999, the Board of Directors of Fort Smith, Arkansas, selected a size for the expansion of Lake Fort Smith. The new lake will have a normal pool elevation of 911 feet above mean sea level. The current normal pool elevation of Lake Fort Smith is 825 feet.

The board selected from among several alternative designs with normal pool elevations ranging from 885 to 970 feet.

"An analysis of how water yield and construction costs were related to lake size indicated we could get the most for our money at the 911-foot elevation," said Steve Parke, director of utilities. According to Rebecca Kuhr, project engineer for Burns & McDonnell, the balance between required fill for the construction of the dam embankment and the material available from the excavation of the spillway was critical. A reasonable balance was indicated at a normal pool elevation of 911 feet.

Preliminary designs indicate the existing Lake Fort Smith Dam will be raised 101 feet, or about the height of a ten-story building. The surface area of the lake will more than triple, from 418 acres to about 1,390 acres. This expansion will include 338 acres that are currently Lake Shepherd Springs. The Lake Shepherd Springs Dam will be removed and the materials used to construct the new dam. The new Lake Fort Smith will hold about 2.75 billion gallons of water, or nearly five times as much as the current Lake Fort Smith and Lake Shepherd Springs combined. Based on the size of the lake's watershed and historic amounts of rainfall, the new Lake Fort Smith should be able to provide 51.2 million gallons of water per day 49 out of 50 years. This yield is predicted to meet the growing demand for water in the Fort Smith area for about the next 50 years.

What's Next?

The establishment of the lake's new elevation allows the final design process to start and the environmental impact analysis to be completed.

"Designing the spillway will be the next major challenge," said Frank Shorney, project manager for Burns & McDonnell. "The spillway must be wide enough and the dam must be high enough to pass the probable maximum flood without over-topping the dam. At the same time, the spillway must be narrow enough to fit in the available space and not increase downstream flooding from a 100-year storm."

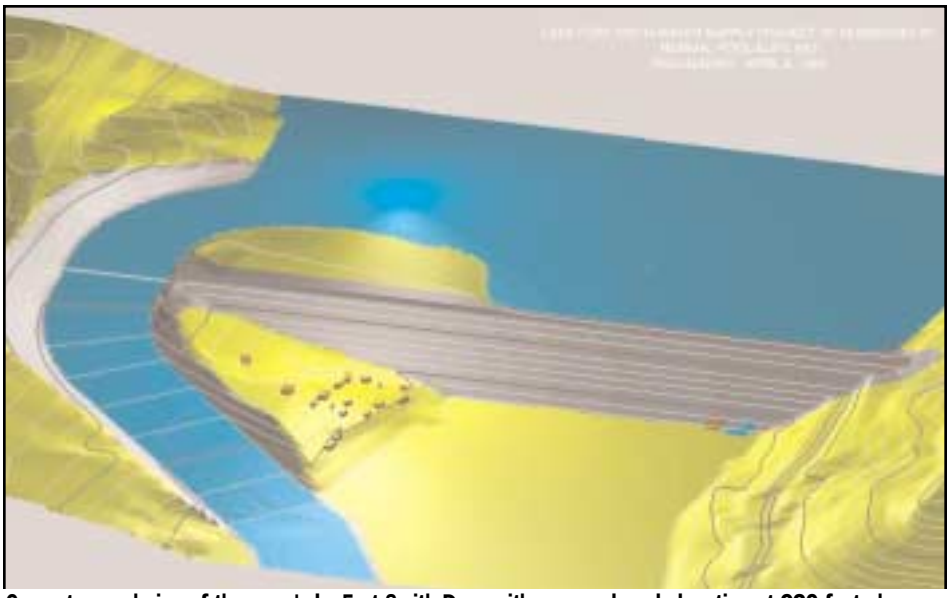
According to Bob Sholl, environmental studies manager for Burns & McDonnell, the environmental assessment report required by the Corps of Engineers is nearly complete. "Now that we know the lake elevation, we can finalize the calculations of impacts to natural resources, such as wetlands and forests, and prepare the required permit applications."

Site Investigations

The analyses have been completed for cores collected on and around the dams of Lake Fort Smith and Lake Shepherd Springs during the first round of sampling. Seventeen borings, ranging in depth from 49 to more than 450 feet, were made. Geotechnical consultants Shannon & Wilson, Inc., found no hidden geologic features that would preclude the enlargement of the Lake Fort Smith Dam. The detailed geologic information provided by the borings will be critical to the proper design of several important features of the new dam, including the abutments, discharge tunnel and side slopes, and to assess the amount of dam building materials that are available locally.

Core samples from Lake Fort Smith.

Detailed topographic maps of the dam site were created by Mickle Wagner Coleman, Inc., using aerial photography and surveyed ground-control points. The topographic data were added to a computer-aided design system used to produce plans for the dam. With this system, computer-generated, 3-dimensional views of the new dam and lake have been produced. (See above.) The engineers can use these views to make a rapid first assessment of how various designs for the new dam will fit into the existing landscape.



Computer rendering of the new Lake Fort Smith Dam with a normal pool elevation at 920 feet above mean sea level. The alternative selected by the board, a pool elevation of 911 feet, would appear slightly smaller.

A New Park for Lake Fort Smith

The expansion of the Lake Fort Smith Dam will cover many existing state park facilities, including the swimming pool and the visitors center. The new spillway can be designed to go around the cabins on the east side of the valley. However, the forested setting of the cabins would be degraded. In addition, the new dam, when completed, would dominate the view from the cabin windows.

With these concerns in mind, officials from the Fort Smith Utility Department and their consulting engineers met with the Arkansas Department of Parks on April 12, 1999. The city officials and the engineers described the project and its impact on the park, and discussed measures to mitigate the impact. Parks Department officials reacted favorably to this presentation and agreed to evaluate locations around Lake Fort Smith for a new park.

A second meeting was held on July 1, 1999, at which Parks Department officials presented their ideas for relocating and expanding Lake Fort Smith State Park. Based on topography, access, the location of the new shoreline and other factors, the area along the lake's west shore, starting 1.3 miles north of the dam, was identified as the area most suitable for park development. Additional studies are required before a final decision on the location for a new park can be made by the city and the state Parks Department.

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