

The Cannon Creek Lake Development Study

Commissioned by the Bell County Fiscal Court with funding provided by a grant from the Economic Development Administration



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CANNON CREEK LAKE DEVELOPMENT STUDY

Executive Summary

Cannon Creek Lake is a hidden recreational treasure in the heart of Bell County. The lake covers 243 acres and serves as the reservoir for the Pineville Utility Commission. Currently, the lake is secluded and is used very lightly for fishing. However, there is potential for the lake to become a recreational area for the enjoyment of tourists, businesses and the local Bell County Citizenry.

The first section of this study is to consider the feasibility of developing public lands in the Cannon Creek Lake Watershed for recreational uses. This study will identify several possible developments that could attract tourists to the area. These include, but are not limited to, a lodge, on-site meeting facilities, a recreational vehicle (RV) park, fishing cottages, campsites, fishing access, and better boating facilities. The costs and benefits of several options and the infrastructure needed to implement them will be investigated to determine the feasibility of recreational development on Cannon Creek Lake to augment existing tourist attractions in Bell County.

The second section of this study is to provide direction for the Bell County Fiscal Court in establishing guidelines for the development of adjacent private lands. Any development in this watershed could drastically alter the quality of the water supply; therefore it is imperative to establish guidelines to prevent any actions that could damage the quality of water. Other regional water suppliers with residential and commercial developments surrounding their lakes were consulted in the development of this section.

Principal findings of this study were:

- Infrastructure including roadway, water and sewer are reasonably constructible and could open this area to many uses.
- All recreational facilities considered are feasible, however, several of those facilities are not recommended for the protection of this watershed.
- Cannon Creek Lake is an environmentally sensitive watershed that could be developed as long as the proper precautions are taken.
- An advisory board needs to be established to develop guidelines that set limits, monitor activities, and review construction projects. Guidelines need to be established for lands in the Cannon Creek Lake watershed before any development begins and then address development issues as they arise.

Introduction

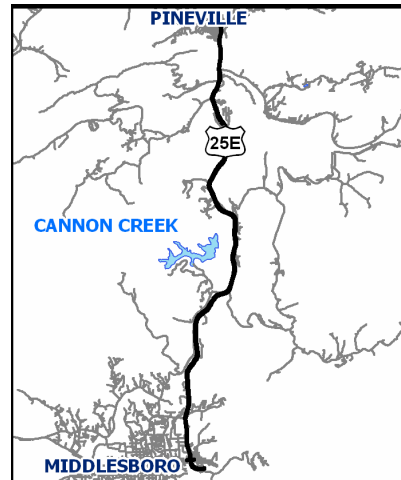
The Bell County Fiscal Court, with the assistance from EDA (Economic Development Administration), has funded a study to consider a proposed tourism development at Cannon Creek Lake. The idea of this study began with the Bell County Judge Executive. He wanted to develop an area of natural beauty easily accessible from the main corridor through the county to both draw in tourists and be enjoyed by Bell Countians. So he formed a committee consisting of Robert W. Vaughn, PE, PLS; Mark Woods, Cumberland Gap National Historical Park; Bill Bunch, Pineville Water Commission; Harold W. Williams, Kentucky Division of Forestry; John K. Schneider, PLS, Vaughn & Melton Engineers; and himself, Bill Kelley, Bell County Judge Executive to provide input, feedback and pertinent information for this project. These members were chosen because of their particular knowledge, previous experience with such projects and/or their vested interest in this project. Once the committee had a clear and concise vision of what they would like to see happen to Cannon Creek Lake, they applied for funding assistance.

This advisory committee has met throughout the study process to represent the issues and concerns of local government, citizens and interest groups within the Cannon Creek study area. As additional information was gathered, committee members provided input about possible features and concerns. The Committee recommended investigating the following recreational facilities: a lodge, on-site meeting facilities, a recreational vehicle (RV) park, fishing cottages, campsites, fishing access, better boating facilities, ATV trails, and equine trails. However, water quality is their major concern since this lake is the source of water for Pineville and Bell County.

The two main sections in this study are (1) the feasibility of developing public lands in the Cannon Creek Lake Watershed for recreational uses and (2) establishing guidelines for the development of adjacent private lands. This study includes an overview of the area and location of Cannon Creek Lake. Additionally, the need for and cost associated with infrastructure and recreational facilities are discussed. Then, the environmental considerations and guidelines needed for development are considered throughout the writing of this study and are included herein. Finally, a summary of the study provides a final cost estimate for the project and direction for the development of the Cannon Creek Lake through the guidelines recommended.

Location and Area:

Cannon Creek Lake is halfway between Pineville and Middlesboro on US 25E. The dam is visible from US 25E at the Pineville Water Treatment Plant. US 25 E is the main corridor through Bell County. It has an average traffic volume of 17,004 vehicles per day. The Kentucky Department of Fish and Wildlife stocks the lake periodically with a variety of fish, primarily trout. The lake is seven miles from the Cumberland Gap National Historical Park, four miles from the Wasioto Winds Golf Course at Pine Mountain State Resort Park, and five miles from the off-track betting center in the Narrows at Pineville.



Completed in 1972, Cannon Creek Lake covers 243 acres and has seven miles of shoreline. It has a surface elevation of 1290 ft msl (mean sea level) and a maximum depth of 95 ft. The dam is the largest in Bell County with a height of 125 ft. This dam is classified as high (class c), meaning failure of the structure would likely result in loss of human life. The lake serves as the primary source of raw water for the Pineville Water System.

Cannon Creek Lake is owned by the Commonwealth of Kentucky. Private individuals or groups own the surrounding property. Most of the accessible, developable land is owned by three entities, which have been contacted and would consider selling a portion of their property or be interested in private development. Developable land, for this study, is defined as a 3:1 slope or flatter. This can be seen on Map 1 in Appendix A, along with the current property owners.

The 2005 census information for Bell County gives a population of 29,665 persons. This is down from 30,060 persons in 2000. This 1.3% decrease in population is common in many Southeast Kentucky counties. With declining populations, counties are looking for ways to draw people into the area. Tourism is a curial part of the economics of Bell County. Approximately one million persons visited the Cumberland Gap National Historic Park last year. This, in addition to other local tourist attractions, yields a 2005 economic impact of \$35 million for Bell County. Currently, in Bell County 1,450 persons are employed per year through tourism.

The location of Cannon Creek Lake will allow it to augment existing tourism in Bell County. Tourist attractions in the area include: Bell County Historical Society and Museum, the Chain Rock and Wasioto Winds Golf Course at Pine Mountain State Resort Park, Cumberland Ford and the Narrows, Cumberland Gap National Historic Park, Cumberland Mountain Fall Festival, and the Kentucky Mountain Laurel Festival.

There are many opportunities for developing Cannon Creek Lake. One possibility could be to consider tying Cannon Creek Lake to the Pine Mountain State Park. The Park is

one of the few Kentucky State Parks that does not include a lake or offer recreational lake activities. Additionally Pine Mountain State Park is one of only two Kentucky state resort parks that do not offer camping. Since Cannon Creek Lake is geographically close to Pine Mountain, officials from Pine Mountain State Resort Park could also manage this site and take advantage of additional recreation opportunities. Vacation packages including features from both sites could be sold to tourists. Considering the location and area, tying this development in with the Pine Mountain State Park does seem to be feasible, especially considering the full capacity the Pine Mountain Lodge operates on many months of the year.

Infrastructure:

Before development can begin, adequate infrastructure is needed on the site. Existing infrastructure includes a single lane unpaved boat ramp. The existing roads are narrow and few. The study area is rural and mountainous. New roads are needed to improve access to the area. Additionally, the area does not have access to public water or sewer. Currently, water is accessible through wells and septic tanks are used by the few residents located in the watershed. However, this is unacceptable for any type of planned development. By improving the roads, water, sewer, and boating facilities, the Cannon Creek Lake could be developed into a vast recreational area.

A preliminary highway plan was developed in the early 1970's to access the lakeshore property directly from US 25E. A similar alignment has been chosen, shown on Map 1 in Appendix A, to access a large portion of developable land. An existing cemetery is in the vicinity of the proposed alignment, but would remain undisturbed. The proposed road consists of two 12' lanes with 2' shoulders and would cost an estimated \$3,010,000. Other roads could be developed, however, this one seems to best meet the criteria of tying to the existing road and boat dock, opening up developable land, providing the best access for adjacent water and sewer access, and providing lake access from US 25 E. Additionally, this alignment allows for future growth to include a road across the dam to access other properties along the lake. Discussions with the Kentucky Division of Water Dam Safety Section reveal that it is feasible to construct a road over the dam. However, a bridge would be required to cross the spillway. Additionally, stability analysis and permitting would be needed for approval of this future design.

Water and sewer are also needed to service the proposed developments. Adequate water will be needed to provide fire protection to commercial developments. By constructing a 6" waterline along the proposed roadway, no tanks will be needed onsite. A waterline from the Meldrum area is estimated to cost \$250,000. In addition to providing water to the proposed development, this waterline will allow for several existing residents to tie in, allowing Kentucky to continue in making great strides toward achieving the state's goal of making safe and suitable drinking water available to every household by the year 2020.

Sewer is especially important to maintain the water quality in this watershed since it is the primary source of drinking water for the entire Pineville Water System, which covers the entire county except the City of Middlesboro. With the proposed extension of the Pineville Sewer System to Ferndale, only another short extension is needed to reach this project. To provide sewer service to the lake area, including two needed lift stations, costs are estimated at \$1,211,625. The breakdown for this cost is in Appendix D. Other utility work such as electricity, telephone, and natural gas are available in the proximity and would be handled by private entities.

The lake itself also has some infrastructure needs to accommodate development. Existing boating and fishing access is crude. There is one boat ramp with an unimproved surface. An improved boat ramp with a small dock would greatly improve boating. This will cost

an estimated \$150,000. Additionally, another boat dock is proposed across the lake near a proposed camping area. The addition of a second boat dock would open up an inaccessible area of land adjacent to the lake for fishing and camping. This area can be seen on Map 2 in Appendix A.

Table 1: Infrastructure Summary and Cost Estimates

<u>Infrastructure</u>	<u>Cost Estimate</u>
Roadway	\$3,010,000
Water	\$250,000
Sewer	\$1,211,625
2 Boat Docks	\$300,000
Total Infrastructure	\$4,771,625

An estimated cost of approximately \$4.8 million would provide the Cannon Creek Lake area the infrastructure necessary to develop a substantial recreational retreat.

Recreational Facilities:

The Cannon Creek Lake area has great potential to be a relaxing and fun family retreat. To draw tourists to Cannon Creek Lake, recreational facilities are needed in addition to improved infrastructure. This study addresses those needs, especially the possibilities for a lodge with meeting facilities, an RV park and campground, a picnic area, and trails.

Lodge

There is a need for additional resort type lodging in Bell County. Currently, there are 300 accommodations in Bell County for the traveling public. The Pine Mountain State Park Lodge has 50 of those accommodations, including 30 rooms and 20 cabins. This region has an average occupancy rate of 55.9%, just slightly below the state average of 58.5%. However, the Pine Mountain State Park Lodge has a higher than average occupancy rate. Over an 11 month period in 2006, their room occupancy was 68.9% and the cottage occupancy was 54.7% for a combined average occupancy rate of 62.6%. The table below shows the fluctuation in occupancy at the Lodge throughout the last year.

Table 2: 2006 Pine Mountain Lodge Resort Occupancy Rate

Month	% in Rooms	% in Cottages
February	58.2	43.1
March	81.9	57.1
April	58.6	60.2
May	66.2	53.2
June	79.7	68.2
July	80.5	74.8
August	68.7	51.5
September	76.2	53.7
October	89.4	69.7
November	61.7	41.0
December	37.3	29.2
11 Month Average	68.9	54.7

A hotel is said to be operating at a full capacity if it has an occupancy rate of 80% or higher. There are several months throughout the year the lodge is 80% occupied or more. Many people have family reunions and weddings at the park. In addition to the autumn leaf changing season and local festivals, the lodge attracts many types of individuals to use their facility for many different activities. The Cannon Creek Lake development could accommodate these and similar groups and individuals by offering additional recreational opportunities.

In the Cannon Creek Lake Study, the hallmark of all the considered recreational facilities is the lodge. A lodge would provide a location where tourists could spend the night and enjoy a good meal. The lodge could also rent small fishing cottages with direct access to the lake. The lodge must fit the rustic setting, yet provide the comforts and activities the traveling public demands. A meeting facility would augment the lodge as a tourist

attraction. Companies and groups could hold gatherings and seminars at the meeting facility, and attendees could stay the night and dine at the lodge. As shown on Map 2 in Appendix A, a proposed 70 room lodge is located along the proposed alignment. Located in the vicinity is a Conference/Meeting Building. Additionally there is an area designated for cabins.

Table 3: Lodging Summary and Cost Estimates

Lodging	Cost Estimate
70 Room Hotel	\$6,000,000
20 Cabins	\$2,500,000
Meeting Building	\$2,500,000
Total Lodging	\$11,000,000

The estimated lodging cost for the project is \$11,000,000. As with any project in the study phase, these costs can change depending on the size and number of amenities desired when design begins.

RV Park and Campground

As more Americans retire and hit the road, the RV is becoming more popular. An RV park with full hookups is needed to serve this growing segment of tourists. The Cumberland Gap National Historic Park, located 7 miles south, has a primitive campground with electrical hookup only. Currently, the closest RV/campground area of similar structure is at Laurel Lake, approximately 50 miles northwest of Cannon Creek Lake.

A campground at Cannon Creek Lake would serve the more rustic campers who preferred using tents and open fires to staying indoors in a lodge. The campground would need a bath house, parking area and trash collection facilities. A picnic area would provide local residents a place to enjoy a weekend afternoon or have a family reunion. These facilities would adequately accommodate a vacationing family, a business group, and the local citizenry. As seen on Map 2 in Appendix A, there are four proposed camping areas and one proposed RV camping site. One camping site is accessible by boat, while another is accessible by hiking. Two others are also accessible by hiking, but located along the lake.

Each campsite within the RV camping area is estimated at \$20,000 and would include a fire ring, picnic table, lantern hook, utility hookups and a paved parking area. Assuming 20 sites, a 900 sq. ft. bath house would be adequate, costing an estimated \$300,000. Additionally, four camping areas are proposed costing approximately \$10,000 each.

Table 4: Camping Summary and Cost Estimates

Areas	Cost Estimate
RV Camp Area	\$400,000
Camping Areas	\$ 40,000
Bath House	\$300,000
Total Areas	\$740,000

Trails

Most of the land around Cannon Creek Lake is inaccessible since there are few roads and trails in the area. Committee members expressed interest in several types of trails: ATV, equine, and hiking. The need for and feasibility of these trails are addressed below.

In Eastern Kentucky several new campgrounds have been constructed to accommodate ATV/off-road parks. In neighboring Harlan County, the two new ATV/off-road parks are drawing in a large number of tourists and completely filling the campground many weekends of the year. Bell County has the ideal terrain for an ATV park. This is one of the activities the committee expressed interest in developing. It is feasible to construct an ATV park in the Cannon Creek Lake Watershed; however, strict guidelines must be in place to ensure riders stay on the designated trails. Constant monitoring of the trails and enforcement to keeping ATV riders on the designed trails may not be cost efficient or time effective. Unplanned new trails could cause extensive erosion, damaging the quality of the water supply. The Pineville Utility Commission has already reported problems with keeping ATVs off the dam area. Although an ATV park could positively affect Bell County, Cannon Creek Lake may not be the ideal setting for the park.

Equine trails are popular throughout the state. According to the American Horse Council’s recent National Economic Impact of the U.S. Horse Industry, there are 320,200 horses in Kentucky, over 50 percent of which are involved in showing and recreation. Although Bell County is a low-income area, this report dispels the misperception that the horse industry is an activity only for wealthy individuals. Approximately 34% of horse owners have a household income of less than \$50,000 and 28% have an annual income of over \$100,000. 46% of horse owners have an income between \$25,000 to \$75,000. Over 70% of horse owners live in communities of 50,000 or less. A number of Bell Countians own horses. Currently, there are no designated equine trails in Bell County. In addition to a need for equine trails, the environment of Cannon Creek Lake would compliment such horse activities. As seen on Map 2 in Appendix A, there is a designated equestrian area to include fenced in areas and a barn.

Additionally on Map 2, there are two designated hiking trails. These trails would be multifunctional by allowing campers to hike from campsite to campsite, allow horseback riding, and provide fishermen access to other areas of shoreline.

Table 5: Equestrian Summary and Cost Estimates

<u>Areas</u>	<u>Cost Estimate</u>
Trails	\$19,200
Equestrian Barn	\$500,000
Total Areas	\$519,200

Other developments

The new development must support lake-related sporting and entertainment activities. The design allows for boat and canoe rentals at a proposed dock close to the lodge and cabin area as seen on Map 2 in Appendix A. A bait and tackle shop could provide fishers with their necessary supplies onsite. There is ample room in the vicinity of the proposed rental boat dock to locate this type or even other shops.

Multiple activities are needed onsite to draw the active vacationing family. A proposed 72 acre recreational area would allow for a number of possible activities; frisbee golf, baseball/softball fields, picnic areas, playground, splashgrounds, petal carts, outdoor theater, horseshoe pits and volley ball courts.

One specific activity committee members mentioned was a water park for summer family entertainment. Although a splashground is a consideration for the recreational area and a pool would be a great amenity for the lodge, a full-scale water park may not be in the best interest of this development. A water park may be a financially and environmentally feasible option to draw both local citizens and tourists to the development. However, an independent study is recommended to determine if the Cannon Creek Lake area is the best location for a water park in Bell County.

Table 6: Additional Recreation Summary and Cost Estimates

<u>Recreational Facilities</u>	<u>Cost Estimate</u>
Recreational Area	\$894,350
Rental Boat Dock	\$275,000
Totals	\$1,169,350

Each of these recreational features can be reduced, expanded, or modified depending on budget and scope of work to directly affect the projected costs. Table 7 shows a summary of all the proposed recreational features of this development and their associated costs.

Table 7: Recreational Summary and Cost Estimates

<u>Recreational Features</u>	<u>Cost Estimate</u>
70 Room Hotel	\$6,000,000
20 Cabins	\$2,500,000
Meeting Building	\$2,500,000
RV Camp Area	\$400,000
4 Camping Areas	\$ 40,000
Bath House	\$300,000
Trails	\$19,200
Equestrian Barn	\$500,000
Recreational Area	\$894,350
Rental Boat Dock	\$275,000
Totals	\$13,428,550

Environmental Considerations:

Since Cannon Creek Lake provides drinking water to thousands of people, it is an environmentally sensitive watershed. Pineville Utility Commission is one of two public water systems in Bell County. In addition to supplying water to the City of Pineville and most of Bell County, they provide water to Green Hills Water District and Cawood Water District in Harlan County and recently connected to Frakes Elementary and Henderson Settlement in Bell County.

Each water system is required to have a Source Water Assessment and Protection Plan (SWAPP). The two major components of Source Water Protection planning are (1) to evaluate the potential for contaminants to enter the water supply and (2) to develop recommendations for protection. According to Pineville Water System's SWAPP, activities immediately upstream of the water supply intake are of special concern because of the little response time to the water supply operators. However, the protection area for Cannon Creek Lake is the entire watershed. Currently, the largest potential contamination immediately upstream of the intake is land coverage, which is predominately forest; this land cover is subject to logging which may potentially result in soil erosion. Any development in the watershed should be strictly controlled to prevent erosion and point-source pollution. Any development plans, public or private, in the watershed should require a detailed erosion control plan to prevent construction sediment from flowing into the lake. All development should also be required to use a public sewer system to keep human waste out of the water supply. Boating restrictions need to remain in place to allow only electric motors in the water. This resource must be maintained as clean as possible.

As part of this study, state wildlife officials have been contacted about using Cannon Creek Lake as a fishing resource. Currently, the lake is stocked with trout four months of the year. Occasionally, other fish such as crappie and catfish are also stocked depending on the surpluses in the State fisheries. No known federally endangered and threatened species are listed for Cannon Creek Lake; however, *phoxinus cumberlandensis*, more commonly known as the Blackside Dace, inhabits Cannon Creek. The presence of this species classifies the streams as an outstanding water resource. This would restrict development upstream from the lake, but not lands adjacent to the lake.

Using precautions, the watershed can be developed as a recreational retreat for many. There are already a number of Bell County residents who take advantage of the lake for fishing and hiking. However, the primary concern of all entities involved must be the water quality of the lake.

Guidelines:

In addition to developing infrastructure and recreational facilities, guidelines for development of adjacent private lands must be addressed. Guidelines should attempt to balance recreational development opportunities with the protection of the lake environment quality.

To allow for controlled growth, an advisory board should be set up to establish and address guidelines, monitor activity, and review applications. The guidelines developed for this watershed should be done by an advisory board of elected officials, appointed officers and concerned citizens. Applications should be required before building any new structures near or on the lake. Any boat docks to be constructed by private owners need to meet certain criteria and be approved before construction. The board shall set these criteria, including whether these docks may become public or commercial, and accept or decline approval of each application. The board should also consider lot restrictions to mandate lot size and address zoning issues. Lot restrictions may need to be placed on any land sold adjacent to the lake. Current boating restrictions need to remain in place to allow only electric motors in the water.

Guidelines should minimize site disturbance and protect the lake and surrounding adjacent properties. The lake is owned by the Commonwealth of Kentucky to a specified elevation. Property lines for private landowners extend to that elevation. A buffer zone needs to be created to protect the lake from unnecessary erosion and pollutants that could negatively affect the lake. One standard buffer distance is 100', however newer developments are extending buffer zones as far as 300'. To protect the lake, there should be no disturbing (clearing, excavating) of land to a designated buffer distance. No trash, garbage, or other litter shall be placed, dumped, or left in the lake within the buffer zone.

Oftentimes guidelines are difficult to enforce. They could be implemented through covenants negotiated at time of resale of land and informally by providing them to developers and residents to guide their development plans on the Cannon Creek watershed properties. With proper guidelines, Cannon Creek Lake can be enjoyed by many as a recreational area and continue to remain a safe, quality water supply.

Summary:

The Cannon Creek Lake project is an excellent opportunity to improve tourism in Bell County. With development of infrastructure and recreational facilities, this project will attract local citizens for a relaxing afternoon or overnight camping experience, provide business groups a facility to conduct meetings and enjoy a scenic environment, and draw tourists into a serene mountain retreat. The project will help the local economy by generating new jobs and giving the local businesses the benefit of increased traffic.

This study includes plans to develop a roadway approximately 1 mile in length with utilities, a lodge with meeting facilities, a RV park and campgrounds, an equine area, several multi-functioning trails, a recreational area, and three boat docks. The roadway and utilities are estimated to cost \$4,771,625 and the recreational features are estimated to cost \$13,428,550 for an approximate total cost of \$18.2 million. This is a plan that could be implemented all at once or in stages. The estimated costs will vary depending on budget, scope, and the number of amenities.

Although the majority of this study addresses the feasibility of developing public lands in the Cannon Creek Lake Watershed for recreational uses, the most important and urgent issue addressed in this study is the development of guidelines for properties and activities that affect the lake. Guidelines are the main step in protecting the Cannon Creek Lake Watershed. It is probable this land will be developed; it is just a matter of time. By planning ahead, the Bell County Fiscal Court can determine the type of developments that are constructed in this area. Many times communities must react to developments that may not be in the best interest of the community and environment.

This study is a first step in being proactive to creating a type of development to compliment the existing environment. The Center for Watershed Protection has found that no matter what watershed they are working in, there are 8 basic management tools needed to mitigate the impacts of development; watershed planning, land conservation, aquatic buffers, detailed site design, erosion and sediment control, stormwater management, non-stormwater discharges, and watershed stewardship programs. This study is a plan for the watershed before development begins. Within this study, land is conserved for natural uses and the chosen activities compliment the serene and sterile environment of the lake. The guidelines recommended address aquatic buffers and erosion & sediment control. The recommendation to establish an advisory board is a step in watershed stewardship. If this study becomes a reality, detailed site design, stormwater management and non-stormwater management should be addressed in design details that extend beyond this scope of work. By planning to use these 8 basic management tools before any development begins, the watershed is better protected.

The pristine nature of the watershed can be maintained through all the proposed developments so the lake will preserve the excellent water quality Bell Countians expect and remain a beautiful place to visit. The Cannon Creek Lake Development will open a land of beauty in the heart of Bell County.

APPENDICES