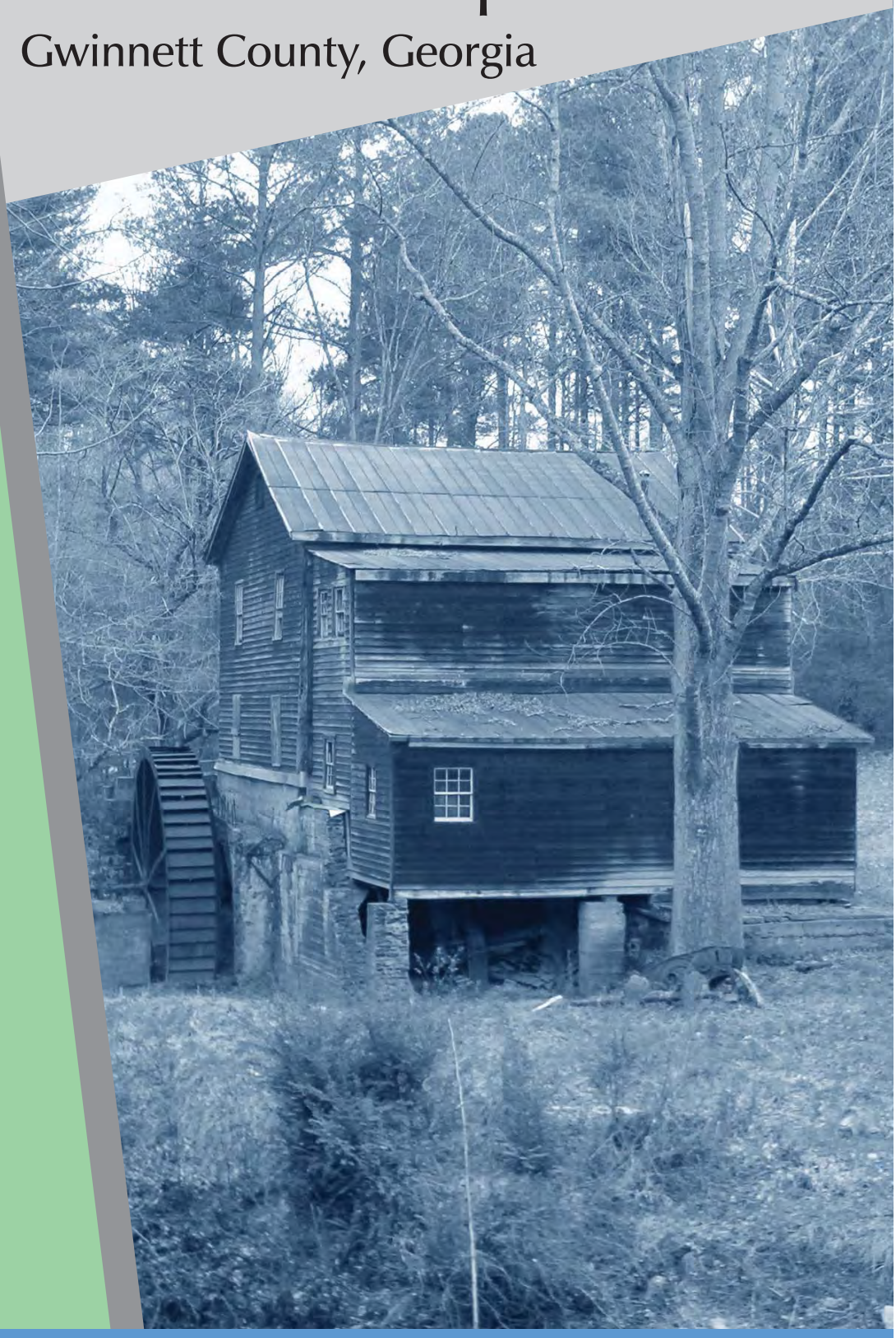
Landscape Architecture
Architecture
Engineering
Planning

Freeman's Mill Park Master Plan Report

Gwinnett County, Georgia



Prepared by

Lose & Associates, Inc.

Freeman's Mill Park Master Plan

January 31, 2006

Gwinnett County
Department of Community Services –
Parks and Recreation Division

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Susie Geyer	Pam Tomason
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Section 1
Introduction

Introduction

In 2002, Gwinnett County was presented with the opportunity to acquire the 11-acre property containing Freeman's Mill. It did so by utilizing Georgia Greenspace Program funds and subsequently moved forward into developing a historic structure report to catalog the mill and its associated structures (millrace, spillway, dam, etc.). The report identified the condition and location of the mill's windows, doors, structure type, roofing and various millwork features such as the gears, the drive shafts and the belts. The report noted that the millworks were mostly intact and could be restored for interpretative purposes but were in such a fragile state that restoration to a working condition would be unlikely. Additionally, many features of the dam, millrace and sluiceway, such as gates, valves, etc., necessary to a functioning mill were missing; thus it would be conjecture to create a historically accurate working millrace to supply the wheel with water.

In mid-June 2003, a severe thunderstorm event created such a large flood that the dam was compromised, leading to the failure of the dam and the loss of 4' to 5' of height in its central portion. This flood event also highlighted the fact that flood waters frequently inundate the mill's basement, resulting in the mill wheel being buried in several feet of silt. Although it had already been considered that the 11-acre site eventually would be developed as a park to support the use and interpretation of the mill, this flood event moved the planning of necessary mill improvements to the forefront of the County's park planning efforts.

The purpose of this master planning effort was to provide recommendations for the scope of the restoration efforts needed at the mill and dam and to plan supporting, passive recreation amenities for the overall mill property. In order to accomplish these tasks, an initial hydrologic analysis of the Alcovy River was performed with regard to the frequency of flood events on the mill and dam and their potential impacts (see Appendix B).

Section 2
Site Analysis

Site Analysis

2.1 Summary

The Freeman's Mill Park site is located on Alcovy Road at the Alcovy River bridge, just east of Lawrenceville, Georgia (see Figure 1). The site is bordered by Alcovy Road on the south, the Alcovy River on the north and west and by another parcel to the east.

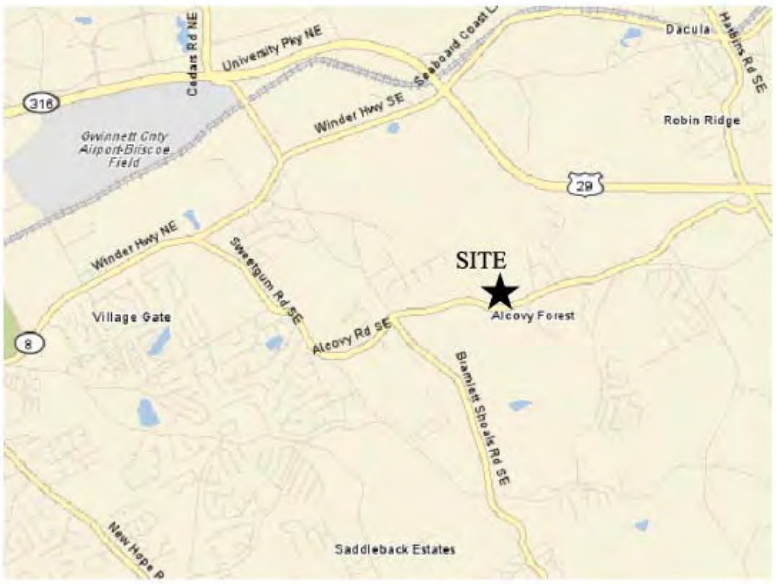


Figure 1

Alcovy Road is a two-lane county road that carries a significant amount of traffic, often exceeding the posted 45-mile-per-hour limit. Water and power utilities are available along Alcovy Road. Sanitary sewer access will be available via a small lift station and force main once the subdivision under development across Alcovy Road nears completion.

The site's terrain is comprised of a consistently sloping hillside that drains toward the Alcovy River, with the only flat areas being those directly adjacent to the river itself. The underlying rock strata break the surface in and around the mill and are deeper on the upper reaches of the site. Upland soils are suitable for development of all types, whereas soils located in the riparian zones of the site would allow only light development. Flooding is a frequent problem around the mill itself contributing to its deterioration, and the results of the hydrological analysis associated with this planning effort show that the 50-year flood event reaches the elevation of the mill's first floor. The site's vegetation cover consists primarily of a pine/hardwood mixture indicative of cutting and disturbance within the past 50 years. Concentrations of hardwoods and riverine plant species can be found along the Alcovy River corridor.

Cultural impacts include the traffic noise generated by Alcovy Road and the potential for development on adjacent parcels directly in the line of sight of the mill and dam. Long-term plans for a sewer trunk line down the Alcovy River

could also impact the site and quality of the interpretive experience associated with the mill.

The following sections provide additional information and graphic representations for the categories of site climate, subsurface conditions, soils, topography, hydrology, vegetation and cultural impacts.

2.2 Climate

Gwinnett County has a humid, subtropical climate characterized by long, hot summers (average summer temperature of 77°) and influenced by moist, tropical air from the Gulf of Mexico. Winters are cool and moderate (average winter temperature of 44°), and significant cold spells generally last for only one or two days. Precipitation is heavy throughout the year and results mainly from afternoon thunderstorms. Total annual precipitation is slightly more than 50 inches.

2.3 Subsurface Conditions

In several places around the mill, large areas of surface rock are evident, indicative of a high rock elevation elsewhere on the site. In order to plan mill foundations better, a subsurface exploration report was prepared by United Consulting, noting auger refusal between 5′ and 10′ around the mill area. The results of this effort can be seen in Appendix C.

2.4 Soils

The underlying soils of the site consist of two main categories, upland loamy soils suitable for development and lowland loams and silts unsuitable for development due to poor strength or frequent flooding. The following Soils Analysis map (see Figure 2) was derived from the USDA and Soil Conservation Service soil survey of Gwinnett County. The Congaree soils (noted as Cos and colored blue-green) are the only soils on the site that would be poor for heavy development. The suitability for development of other soils shown is determined more by slope than by bearing capacity.

2.5 Topography

The site's highest point along Alcovy Road rises to an elevation of 924′, and the lowest area along the Alcovy River falls to an elevation of 836′, for a difference of 88′ across the property. Figure 3 outlines the relatively flat areas and their relationship to the steeper areas of the site. In general, the consistent slopes present the same conditions for development almost anywhere on the site. Topography should impact site planning significantly.

2.6 Hydrology

Drainage across the property follows the consitent slopes from southeast to northwest, towards the Alcovy River, without significant channelization on the property (see Figure 4). In order to assess the impacts of the Alcovy River

on the mill and dam properly, a detailed hyrdological report (see Appendix B) was prepared. The latest FEMA flood data was analyzed with regards to the elevation of the 2-year, 10-year, 50-year and 100-year flood events and the extent to which these events flooded the mill. What was noted was that the bottom level of the mill, where the mill's foundations and main wheel drive shaft are located, is frequently flooded on at least a two-year cycle. This would explain the silatation evident around the mill wheel and other features. The 100-year flood event currently reaches an elevation of 854.90', flooding the first floor of the mill (elevation 851.19') by 3.71'. Although there is only a 1% chance in any one year that the 100-year flood event will occur, the more frequent flooding of the foundations continues to deteriorate the structure and has the potential to cause failure of the entire structure. For the dam, it was determined that prior to the 2003 flood event, the spillways in the top of the dam allowed the protective silt level behind the dam to drop to the elevation of the spillway, rather than remain at the top of the dam. This left a portion of the dam exposed to the full forces of the Alcovy River, ultimately leading to the top section's failure. The impacts of the flood events on the post-damage dam were found to be less significant, given that the silt behind the lowered dam top is helping to protect the structure from further failure. The hydrological analysis also projected flood elevations for the year 2020, using current Gwinnett County growth projections, and noted that the flood event elevations would only increase in the future.

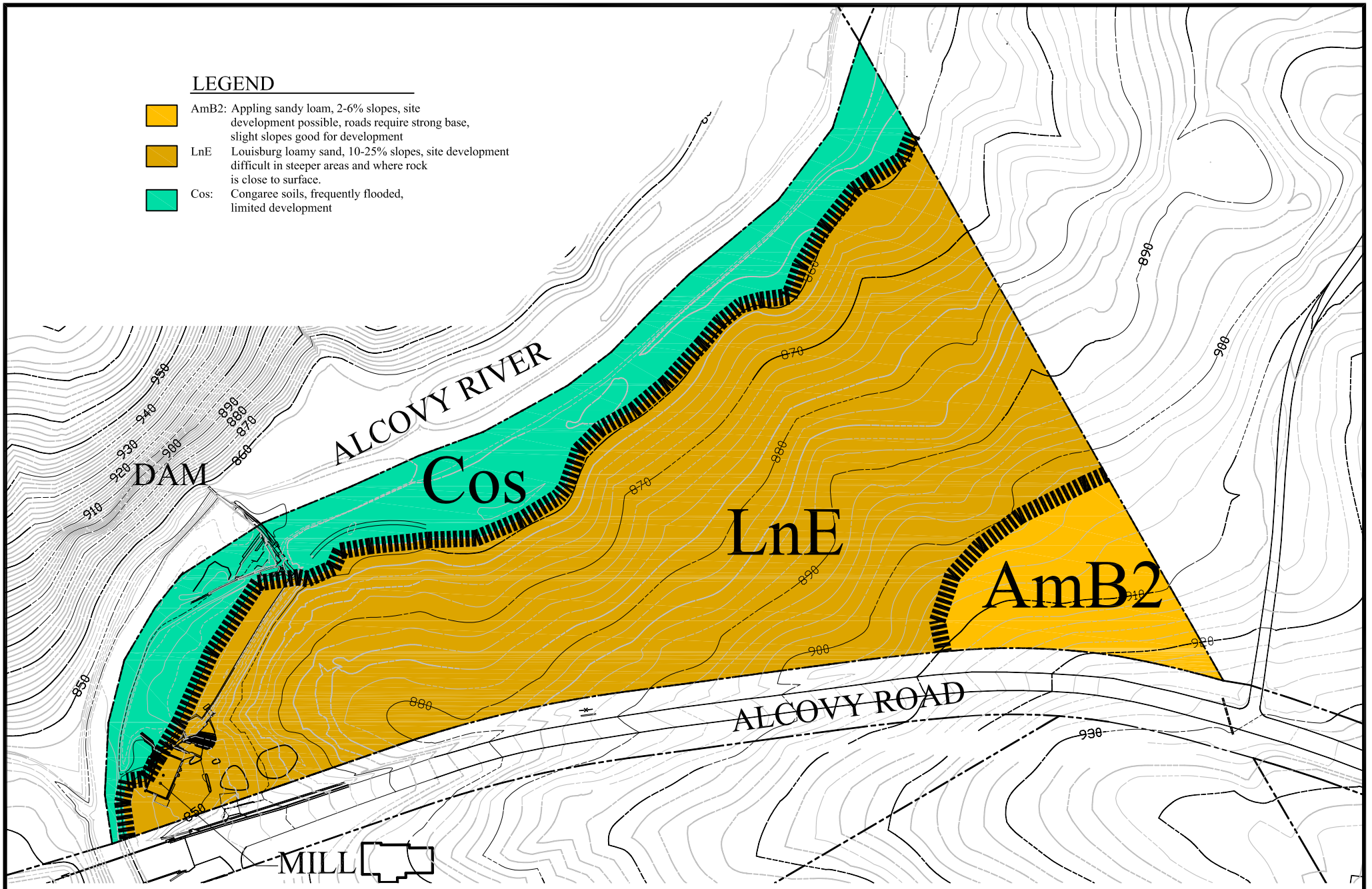
2.7 Vegetation

Until the arrival of European settlers three hundred years ago, the Georgia Piedmont was predominately forested with mixed hardwoods. Subsequent agricultural practices have cleared the forested areas so often, allowing younger pine forests to grow back time and time again, that most people associate the pine forest as Georgia's dominant forest cover type. The sequential change in forest cover on the Freeman's Mill Park site is the direct result of human intervention. Aerial photography dating back to the 1950s shows portions of the site cleared (see Figures 5-7). The following Figure 8 is a graphic representation of the vegetation composition of the site. The mixed pine/hardwood areas are those that were most recently cleared. These areas also contain pockets of invasive exotic plants such as honeysuckle and Chinese privet. The predominately hardwood areas are older and contain pockets of mountain laurel and native azaleas along the river corridor. These hardwood areas are in good condition and should be retained, if possible, as the site develops.

2.8 Cultural Impacts

As noted above, the potential for surrounding development could drastically impact the pastoral character of the mill setting. Any site development should include leaving vegetation buffers around the park's perimeter. Additionally, the County should investigate the potential for acquiring adjacent properties,

or conservation easements upon them, in its effort to minimize offsite disturbance. Furthermore, several routes through the Alcovy River corridor have been studied in the past as potential sewer main line locations; however, no sewer has been built or is currently scheduled. The old home site was reviewed as part of this site analysis by the team historian and was determined not to contain significant cultural resources. The following Figure 9 is a graphic representation of the cultural impacts on the site.



EXISTING SOILS ANALYSIS

FREEMAN'S MILL PARK

GWINNETT COUNTY, GEORGIA

LOSE & ASSOCIATES, INC.
LANDSCAPE ARCHITECTURE ARCHITECTURE ENGINEERING
255 W. CROGAN ST. SUITE 100 LAWRENCEVILLE GA 30045

SCALE: 1"=40'-0"
SEPTEMBER 7, 2005

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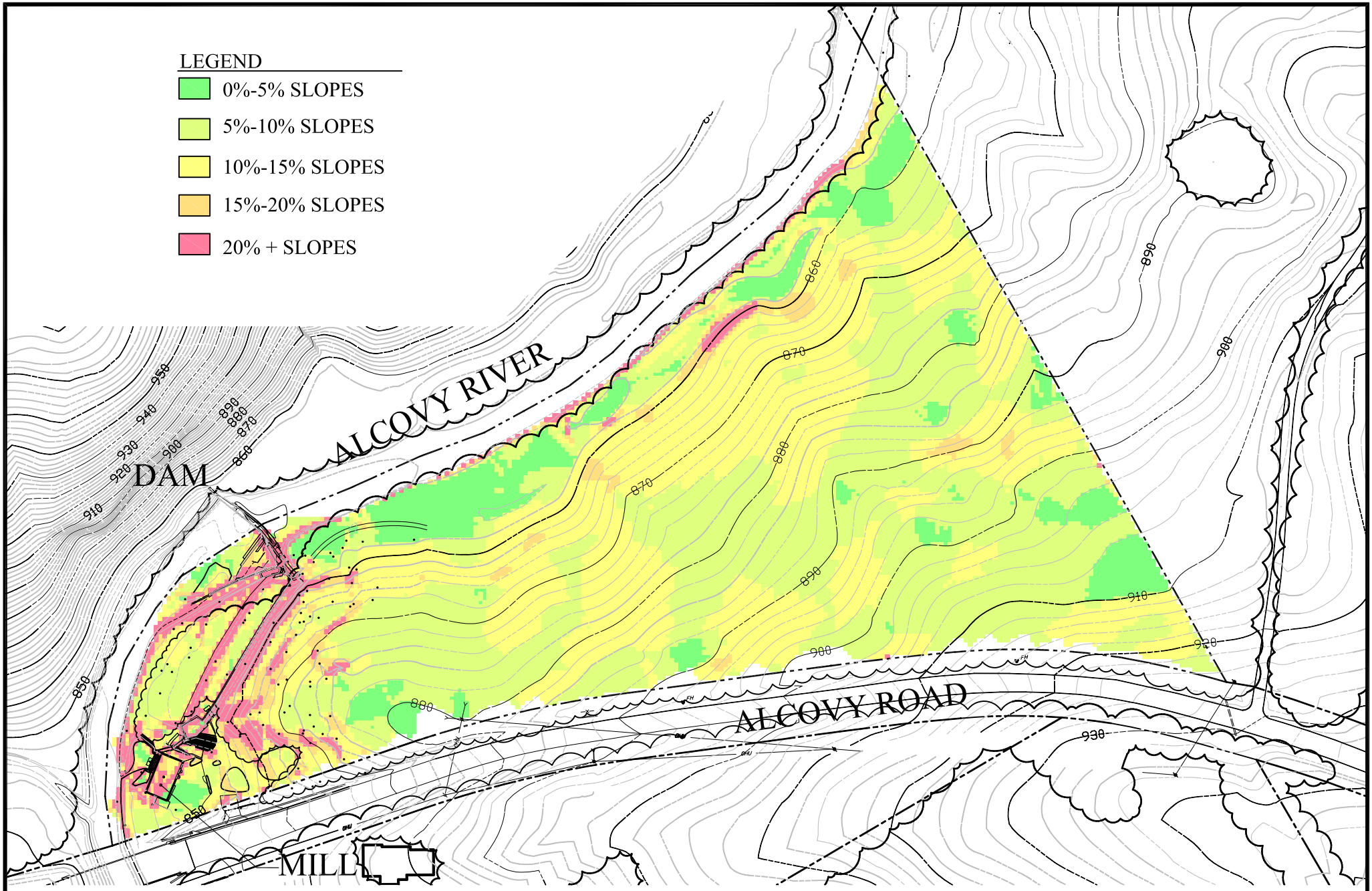
Figure 2



EXISTING SLOPE ANALYSIS

FREEMAN'S MILL PARK

GWINNETT COUNTY, GEORGIA

LOSE & ASSOCIATES, INC.
LANDSCAPE ARCHITECTURE · ARCHITECTURE · ENGINEERING
320 W. CROGAN ST. SUITE 100 LAWRENCEVILLE GA 30045

SCALE: 1"=40'-0"
SEPTEMBER 7, 2005

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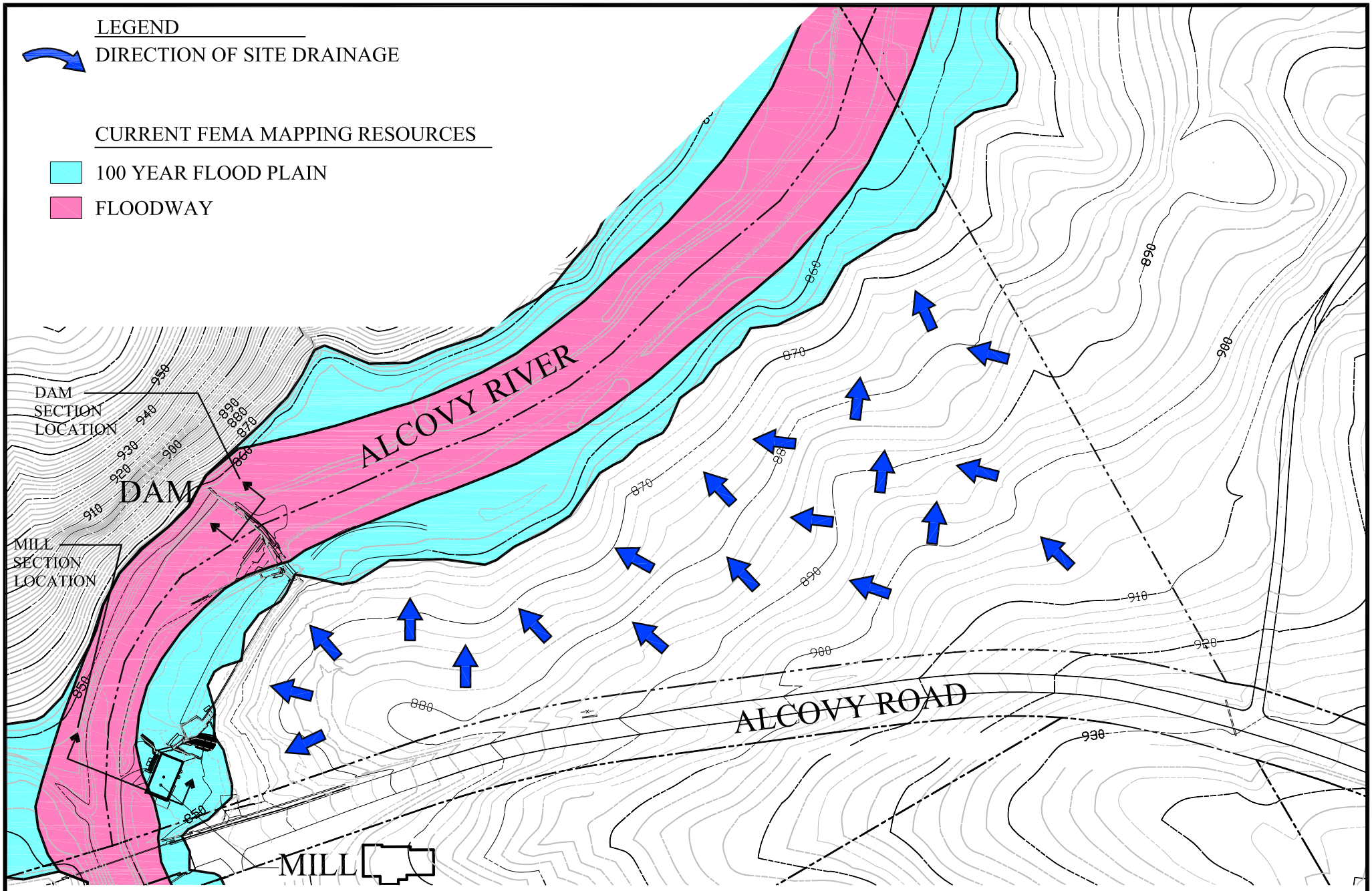
Figure 3



EXISTING HYDROLOGY ANALYSIS

FREEMAN'S MILL PARK

GWINNETT COUNTY, GEORGIA

LOSE & ASSOCIATES, INC.
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200 W. CROGAN ST. SUITE 100 LAWRENCEVILLE GA 30045

SCALE: 1"=40'-0"
SEPTEMBER 7, 2005

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Figure 4

SCALE: 1"=100'-0"
SEPTEMBER 7, 2005

1955 AERIAL PHOTOGRAPHY

FREEMAN'S MILL PARK

GWINNETT COUNTY, GEORGIA

LOSE & ASSOCIATES, INC.
LANDSCAPE ARCHITECTURE · ARCHITECTURE · ENGINEERING
250 W. CROGAN ST. SUITE 150 LAWRENCEVILLE GA 30046

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Figure 5

SCALE: 1"=100'-0"
SEPTEMBER 7, 2005

1972 AERIAL PHOTOGRAPHY

FREEMAN'S MILL PARK

GWINNETT COUNTY, GEORGIA

LOSE & ASSOCIATES, INC.
LANDSCAPE ARCHITECTURE · ARCHITECTURE · ENGINEERING
220 W. CROGAN ST. SUITE 100 LAWRENCEVILLE GA 30046

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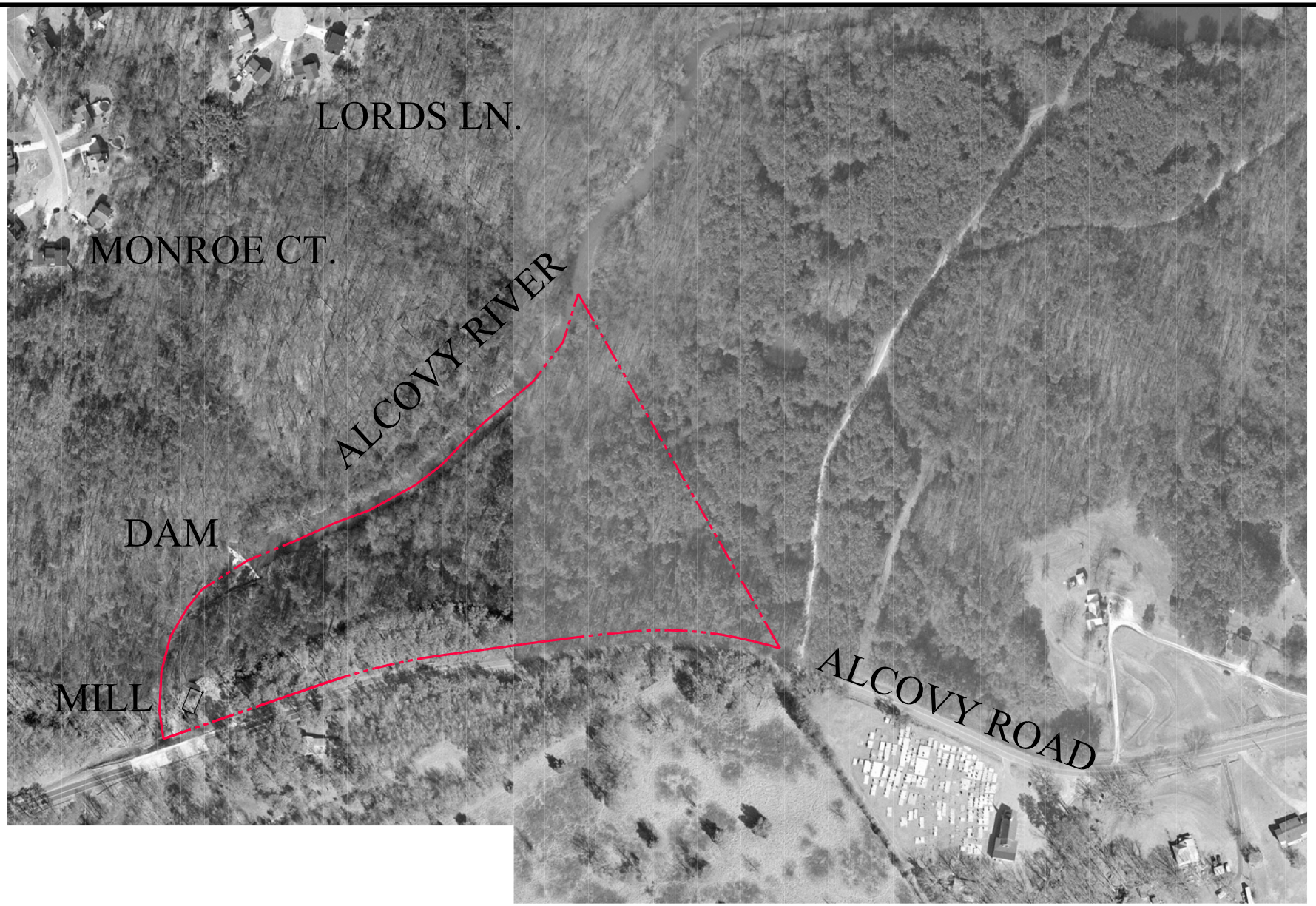
Figure 6



SCALE: 1/8"=10'-0"
SEPTEMBER 7, 2005

2000 AERIAL PHOTOGRAPHY

FREEMAN'S MILL PARK

GWINNETT COUNTY, GEORGIA

LOSE & ASSOCIATES, INC.
LANDSCAPE ARCHITECTURE · ARCHITECTURE · ENGINEERING
250 W. CROGAN ST. SUITE 150 LAWRENCEVILLE GA 30045

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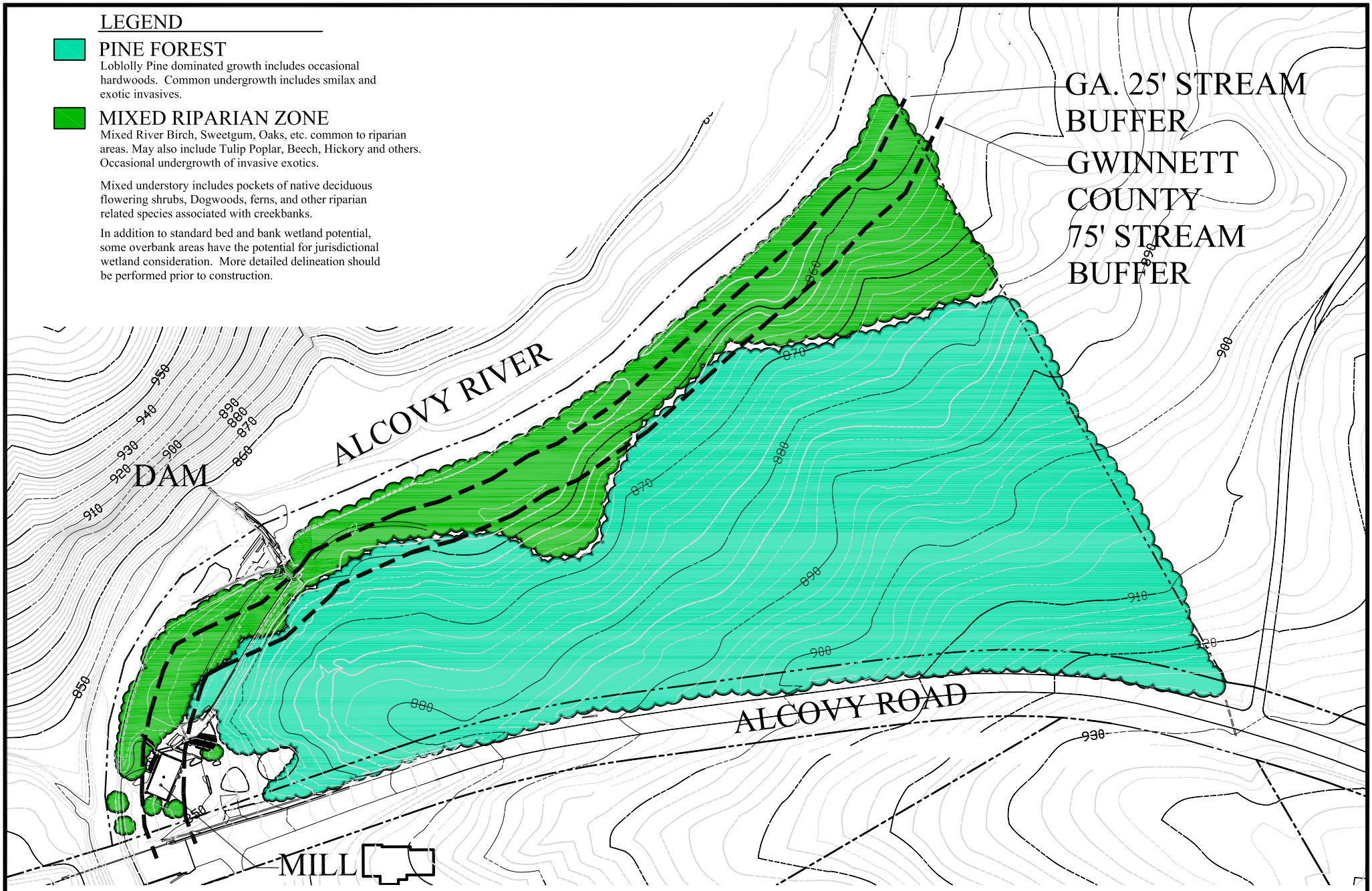
Figure 7



EXISTING VEGETATION ANALYSIS

FREEMAN'S MILL PARK

GWINNETT COUNTY, GEORGIA

LOSE & ASSOCIATES, INC.
LANDSCAPE ARCHITECTURE · ARCHITECTURE · ENGINEERING
200 W. CROGAN ST. SUITE 100 LAWRENCEVILLE GA 30045

SCALE: 1"=40'-0"
SEPTEMBER 7, 2005

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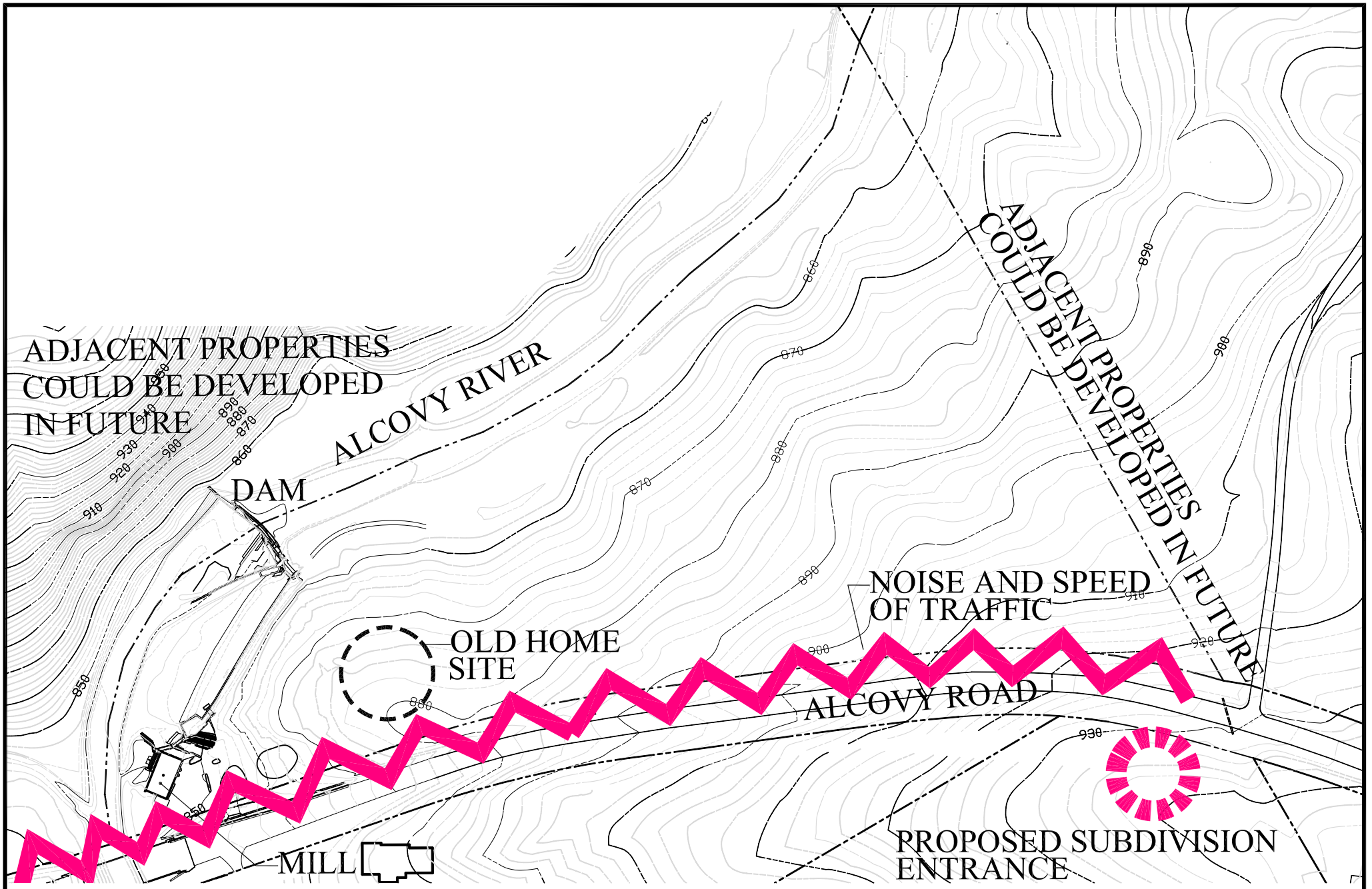
Figure 8



CULTURAL IMPACT ANALYSIS

FREEMAN'S MILL PARK

GWINNETT COUNTY, GEORGIA

LOSE & ASSOCIATES, INC.
LANDSCAPE ARCHITECTURE · ARCHITECTURE · ENGINEERING
200 W. CROGAN ST. SUITE 100 LAWRENCEVILLE GA 30045

SCALE: 1"=40'-0"
SEPTEMBER 7, 2005

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Figure 9

Section 3
Public Input

Public Input

3.1 Initial Program Development

To initiate the public input process, a meeting was held at the Rhodes Jordan Park Community Center on October 21, 2004, to allow members of the community an opportunity to voice their desires for the Freeman's Mill Park program. Gwinnett County officials presented a map of the park property, a brief history of how the property was acquired and the results of the historic structures report. Aerial photography dating back to the 1950s was also presented, demonstrating the amount of disturbance the site had experienced over the decades.

The group of citizens was asked to fill out a survey form outlining their wishes and concerns for the Freeman's Mill Park development. They were also asked to rank, in order, the facilities they would most like to see included in the park. In order of importance, the citizens designated the items shown below as their top priorities.

Category	**Number of times requested in survey responses**
Walking/nature trails-limit paved trails	14
Limited picnic areas	10
Preservation/restoration of mill and dam	9
Interpretive features for site historic and natural features	9
Continue to allow Baptisms on-site	6
Playground (some noted it should have historical character/learning through play)	6
Limit tree clearing/keep site natural	4
Enhance landscaping	1
Removal of silt behind dam	1
Camping area for boy/girl scouts	1
Protect waterfalls	1
Control speed on Alcovy Road	1
Acquire additional property across Alcovy River	1
Historic re-enactments	1
Working farm/selling of cornmeal	1

The group was also asked to list the issues that most concerned them about the proposed park development, and the following is a list of their top concerns.

Category	Number of times mentioned in survey responses
Proposed development impacts on site and river	6
Traffic speed/congestion	4
Light pollution	2
Lack of access to the river	1
Do not include a playground	1
Too large of a parking area	1
Continued deterioration of mill and dam	1
Potential lack of maintenance	1
Hours of operation	1
Loitering when mill is closed	1
Lack of pedestrian access for nearby residents	1
Lack of property line definition/trespassing onto adjacent land owners	1

Also at the meeting, the citizens were asked to volunteer for a steering committee to guide the design consultant and Gwinnett County officials in the program development and design of the park. The Citizen Steering Committee, as selected from the volunteer applications, was involved in all of the later programming and design review meetings.

3.1 Initial Program Development

Over the next few months, Gwinnett County updated its FEMA flood map resources, and upon the receipt of the revised flood elevations, the hydrological analysis of the Alcovy River and its impacts on the mill and dam was performed. Once this was complete, the planning effort resumed with the steering committee touring several other mill sites across Georgia.

On July 23, 2005, the Citizen Steering Committee first visited the Alcovy River Gristmill. The group explored the foundations and area underneath the mill. It was demonstrated that most of the mechanical workings present when the mill closed were still in place. It was also shown that silt from the river was collecting under the mill building, and that occasional floodwaters were deteriorating the structure. As the group explored the first and second floors, as well as the attic, similar features were pointed out. Most of the mechanical systems were still in place. It was explained that the framing, flooring, etc. had been improvised over the years and in some cases might not meet current codes. The group visited the dam location noting the amount of the dam

that was removed during the flood event a few years ago. The flume was examined, and it was noted that if water were to be directed into the flume, the current level of the Alcovy River would have to be raised significantly by means of restoring the dam for gravity flow to occur. It was observed that many of the gates and mechanisms necessary to direct the flow were missing. Staff members described the character of the remaining site, explaining how the river corridor contained mostly a riverine deciduous plant mix, and the upper portions of the site were a loblolly pine re-growth forest. The project historic architect mentioned that during the planning effort, preservation vs. restoration issues needed to be carefully considered. The mill that people are most familiar with today is the current structure with its blend of modern and older features. Few records exist that clarify which portions or features of the mill were original to specific periods of the nineteenth or early twentieth century, so it is not possible, for instance, to restore the mill to its year 1875 or 1910 appearance with any real claim to accuracy.

The group then journeyed to Head's Mill in Hall County. This mill was largely void of its mechanical systems. Some recent efforts at stabilization of the structure and site were evident. However, the dam and portions of the flume were on adjacent properties and were not currently considered for renovation. The property is owned by Hall County Parks and Recreation, but a local non-profit group had committed to raise funds for the mill's restoration. As funds have not been raised, deadlines have been missed, and the project is in limbo. One lesson given by this project was that it is very difficult for a small non-profit group in a jurisdiction such as Hall or Gwinnett County to raise the amount of capital funds needed to accomplish a complex historic preservation/restoration project. Another lesson was to show how rich an asset existed at the Alcovy River site, given the amount of mechanical system still intact.

The group then journeyed to Sell's Mill Park in Jackson County. The mill's site had been developed into a park complete with pavilion, restrooms and playground. Recent renovations to the mill had revived the workability of the wheel, replaced the siding and flooring, relocated a staircase, replaced windows with modern windows, added modern ceiling fans and added exterior concrete staircases and parking. The original structure under the mill, supporting the main drive wheel and gears, was much more massive and well thought out than at Freeman's Mill. Freeman's Mill's wheel supportive structure, by comparison, seemed to be more improvised and less stable. Views across the park site had been opened up to allow views from the playground/pavilion area to the mill; however, this meant views of the playground area were obvious from the immediate mill area. Pedestrian access across the site was not available. One lesson given by this project was to show what was possible when decisions could be reached, and progress could occur. The downside to this lesson was that sometimes accuracy is sacrificed for expediency. These

lessons were noted in relation to the Freeman's Mill project, which will require a balancing act of historic preservation and upgrade for stability, accessibility and interpretation.

The group then journeyed to Hurricane Shoals Park in Jackson County to visit a gristmill that had been relocated to the site of an old electric power generation plant. The purpose of this visit was to see how the principles of milling could be demonstrated on a small scale. An overshot water wheel sent power by secondary belts to a small, self-contained manufactured mini-gristmill. The small mill fit in a space about four feet wide, six feet long and six feet high. It had two vertical stone mill wheels and was in operation when we arrived.

The group then visited Little Mulberry Park and McDaniel Farm Park in Gwinnett County to see examples of standard Gwinnett County park layout and structures. Staff noted how the placement and separation of the parking lots, play features, restrooms, etc. were all designed to provide self-policing of the parks in an effort to reduce vandalism. Styles of park architecture were contrasted, with that of Little Mulberry Park meant to mimic the style of the WPA/CCC projects and that at McDaniel Farm designed with a modern style to contrast with the old farm structures. The group returned to Alcova Elementary School, with the explanation that the next weekend tour would be to Hamburg State Park to visit another mill, along with the possibility of an opportunity to visit a second mill in the vicinity.

On August 13, 2005, the Citizen Steering Committee reconvened to tour additional mills. The group first toured the Hamburg State Park Mill. Daniel Hill, the park manager, explained the history of the mill and how it was used for hydroelectric power, grinding of grain and ginning of cotton. The source of power for this mill was a series of water turbines. Daniel explained methods for balancing the millstones and was able to engage the series of belts and gears to give an impression of the milling process. The group also toured the Ogeechee River Mill, owned by Mr. and Mrs. Garner. This mill was also powered by turbine and had undergone several upgrades to keep it in running condition well into the 1990s.

As the tour concluded, Staff asked the group for programming directives. In addition to the playground, pavilion, restroom building, parking and pedestrian systems that had previously been discussed, the potential for an interpretive water play feature for children was discussed as was the desire to have a demonstration gristmill for interpretive purposes.

Following up on the group's desire to have a demonstration mill, somewhat like that seen at Hurricane Shoals Park, Staff researched several sources and found that small, portable mills that completely reproduce and interpret the milling process are readily available. In fact, some refurbished mills dating

back to the early 20th century are available now for less than $10,000. (see Appendix D for examples of available demonstration mills). Staff asked the design consultant to determine the feasibility of using an additional water source to produce enough water power to drive such a demonstration mill (assuming that the dam and sluiceway might not be able to be made functional again). The synopsis of this study is that large amounts of water are required to produce even small amounts of horsepower. It would not be feasible to have an artificial water source power the demonstration mill alone. For interpretive purposes, another power source would be necessary. The results of this study can be seen in Appendix E.

A few weeks after the site visits and program refinement, Lose & Associates prepared and presented the graphic site analysis (see Section 2) to the Citizen Steering Committee. Also presented were three alternative graphic concept master plans that placed the desired program into graphic plan relationships on the site. The following section describes these conceptual plans in more detail.

Section 4
Alternative Conceptual Master Plans

Alternative Conceptual Master Plans

4.1 Revised Program

Based on the results of the initial community meeting and the refinements added by the Citizen Steering Committee after the tour of the various mill sites and Gwinnett County facilities, a refined list of program elements emerged that was to be incorporated in the three alternative conceptual master plans. This list included the following:

- Restoration/renovation of the mill and dam
- Passive picnicking opportunities
- Multi-purpose trails
- Open play lawn
- Interpretive areas
- Playground

On September 7, 2005, the results of the hydrological report, site analysis effort and three alternative conceptual plans for the mill and park were presented. The meeting began with the presentation of the site analysis of the overall 11-acre site including information related to the site's vegetation, soils, slopes and cultural impacts. The summary of this presentation was that the areas along the Alcovy River were less desirable for development, whereas the upper portions of the site would support development. The hydrologic analysis of the site, including the flood impacts that the Alcovy River is having on the mill and dam, was also presented. Most notable was that storm events were flooding the basement of the mill on an every-two-year cycle and that the first floor of the mill would be flooded during the 50-year event.

The elevations associated with the various flood events and their effects on the mill were described in further detail leading to suggested treatments for the dam, the sluiceway and the mill itself (see Appendix F). After much discussion, the steering committee voted to return the dam to the Swann-era elevation for aesthetic purposes (vote was 8 to 0 to rebuild the dam) and not to flood the sluiceway due to safety concerns and the fact that it would continue to deteriorate (vote was 7 to 1 for keeping the sluiceway dry). It was decided that the mill building would be raised five feet in place, and that a new foundation system would be built (vote was 8 to 0). The group asked that the wheel be raised in proportion to the mill and that the new foundation system have the appearance of a historic foundation system. It was also suggested that the wheel could be made to turn for aesthetic purposes through an artificial power source. Additionally, the group discussed the possibility of removing some of Swann's alterations to the mill, including the corrugated metal pipes in the

flume.

Following the mill discussions, the three different concepts for the development of the overall 11 acres were presented (see figures 10-13). The elements that would be required of any park development were described along with the list of program elements that had previously been selected by the input committee. The three different conceptual layouts for the vehicular access and parking, a multi-purpose trail network, locations for a playground, a picnic pavilion and a picnic shelter, an option for a separate demonstration mill/museum building, and various options for river and dam interpretive stations were presented. The group discussed the reasoning for the various locations. The group then chose to have the vehicular access at the higher elevation, eastern end of the property to reduce conflicts with speeding traffic. They believed that vehicles are moving at a faster rate as they descend toward the bottom of the hill (vote was 7 for to 1 undecided). The group decided to have the rental pavilion and playground at the eastern end of the property, away from the mill (vote was 8 to 0), and also decided to have a separate small shelter in this playground area (vote was 7 to 1). The group was advised that the garage structure at the historic mill might not be retained, thus eliminating a possible location at the mill building for the demonstration mill equipment. The committee then voted to include the separate demonstration mill/museum building as shown in concept three (vote was 8 to 0). The group wanted to provide access and an interpretive station at the dam itself (vote was 8 to 0) and also liked the idea of a dam overlook/observation deck near the top of the hill in conjunction with the demonstration mill area (vote was 6 to 2). The group also liked the idea of a separate river overlook deck somewhere upstream of the dam (vote was 8 to 0).

Following the plan discussions, various theme topics for the interpretive program were presented, including the following:

- Introduction to the site
- Site history
- Milling in North Georgia and Gwinnett County
- Mill technology and operation
- Preservation of the mill
- The evolution of a watershed
- The mill's place in the community

The group liked the topics, and it was noted that the relationship of the mill site and the nearby churches, especially related to the on-site baptisms, could also be theme worth pursuing.

On September 8, 2005, the same presentation was made to The Gwinnett County Historic Preservation Board. They further recommended that the park

be named Freeman's Mill Park, as the mill once had that name and various generations of other families owning the mill were somehow related to the Freeman family.

DEVELOPMENT REQUIREMENTS:

PROPERTY SQUARE FOOTAGE: 517,993

PER GEORGIA GREENSPACE PROGRAM, MAXIMUM SITE DEVELOPMENT PERCENTAGES ARE AS FOLLOWS:

5% (OR 25,899 SF) BUILDINGS, PLAYGROUNDS, OTHER PUBLIC AMENTIES

5% (OR 25,899 SF) IMPERVIOUS PARKING AND VEHICULAR ACCESS

5% (OR 25,899 SF) IMPERVIOUS TRAILS AND SIDEWALKS.

NOTE: PERVIOUS MATERIALS DO NOT COUNT TOWARDS THESE TOTALS

GREENWAY CONNECTION:

THE GWINNETT COUNTY OPEN SPACE AND GREEWAY MASTER PLAN IDENTIFIED A ROUTE FOR A FUTURE GREENWAY THROUGH THE ALCOVY RIVER CORRIDOR.

STREAM BUFFERS:

IN THE FIRST 25' FROM TOP OF BANK, DISTURBANCE REQUIRES A VARIANCE FROM THE STATE OF GEORGIA. ONLY PERVIOUS MATERIALS MAY BE USED. IN THE NEXT 50' FROM TOP OF BANK, VARYING DEGREES OF DISTURBANCE ALSO REQUIRE VARIANCES FROM GWINNETT COUNTY.

AMERICANS WITH DISABILITIES ACT:

NEW FACILITIES MUST BE HANDICAPPED ACCESSIBLE (REQUIRING GENTLE SLOPES, FIRM STABLE SURFACES, ETC.).

STORMWATER MANAGEMENT:

THE STATE OF GEORGIA AND GWINNETT COUNTY REQUIRE THE DETENTION OF SURFACE RUNOFF TO PRE-DEVELOPMENT CONDITIONS. THIS REQUIRES THE DEVELOPMENT OF DETENTION FACILITIES.

DESIRED PROGRAM

MILL & DAM

CREATE AN INTERPRETIVE EXPERIENCE CENTERED ON THE ALCOVY RIVER GRISTMILL & DAM

PAVILION

A SMALL GWINNETT COUNTY PICNIC PAVLION WILL BE DEVELOPED. DESIGN AND MATERIAL OPTIONS INCLUDE:

- A PALETTE OF WOOD AND STONE DESIGNED TO REFLECT THE CHARACTER OF THE MILL.
- A PALETTE OF WOOD AND STONE, DESIGNED IN A MORE CONTEMPORARY FASHION, IN ORDER TO HIGHLIGHT THE UNIQUE QUALITIES OF THE MILL.

RESTROOM

A GWINNETT COUNTY STAND ALONE RESTROOM WILL BE DEVELOPED. MATERIAL AND DESIGN OPTIONS WILL MATCH THOSE LISTED IN THE PAVILION OPTIONS.

PLAYGROUND

A PLAYGROUND FEATURE WITH PLAY FEATURES FOR VARIOUS AGE GROUPS AND ABILITIES WILL BE DEVELOPED. SURFACING FOR THIS AREA WILL LIKELY BE PERVIOUS WOOD CHIP, WITH SOME AREAS OF RESILIENT SURFACING FOR ACCESSIBILITY. ALSO INCLUDED WOULD BE SEATING FOR PARENTS.

MULTI-PURPOSE TRAILS

A NETWORK OF TRAILS WILL BE INCLUDED TO CONNECT THE VARIOUS FACILITIES AND TO PROVIDE PASSIVE RECREATION OPPORTUNITIES. PAVED SURFACES PROVIDE ACCESSIBILITY FOR WHEELSCHAIRS, STROLLERS, BICYCLES, ETC. BOARDWALKS ALSO PROVIDE ACCESSIBILITY, BUT CREATE LESS DISTURBANCE. TRAILS TO BE 12' WIDE FOR SAFE PASSAGE IN MORE CONGESTED AREAS. PERVIOUS ASPHALT AND CONCRETE WILL NOT COUNT AGAINST GREENSPACE PERCENTAGES AND ARE ALLOWED WITHIN STREAM BUFFERS BY VARIANCE.

VEHICULAR AREAS

PASSENGER AND BUS PARKING WILL BE PROVIDED. A TURN-AROUND LARGE ENOUGH FOR BUSES WILL BE INCLUDED. PERVIOUS ASPHALT WILL REQUIRE LESS DETENTION AND WILL NOT COUNT AGAINST GREENSPACE PERCENTAGES.

POTENTIAL PROGRAM ELEMENTS:

MILLING DEMONSTRATION AREA

SHOULD THE TREATMENT OF THE MILL RECOMMEND THAT ACTUAL MILLING TAKE PLACE APART FROM THE MILL STRUCTURE, A SMALLER WORKING MILL COULD BE DEVELOPED TO INTERPRET THE HYDRO-MECHANIC PRINCIPLES INVOLVED.

MILLING INTERPRETIVE PLAY ELEMENT

INCLUSIVE TO THE PLAYGROUND AREA, A TACTILE WATER FEATURE ALLOWING CHILDREN TO EXPLORE THE CHARACTER OF MOVING WATER, ITS EFFECTS ON THE ENVIRONMENT, ITS USES FOR INDUSTRY, ETC. COULD BE DEVELOPED.

SUGGESTIONS:

FACILITIES PROGRAMMING

FREEMAN'S MILL PARK

GWINNETT COUNTY, GEORGIA

LOSE & ASSOCIATES, INC.
LANDSCAPE ARCHITECTURE ARCHITECTURE ENGINEERING
250 W. CROGAN ST. SUITE 100 LAWRENCEVILLE GA 30045

SEPTEMBER 7, 2005

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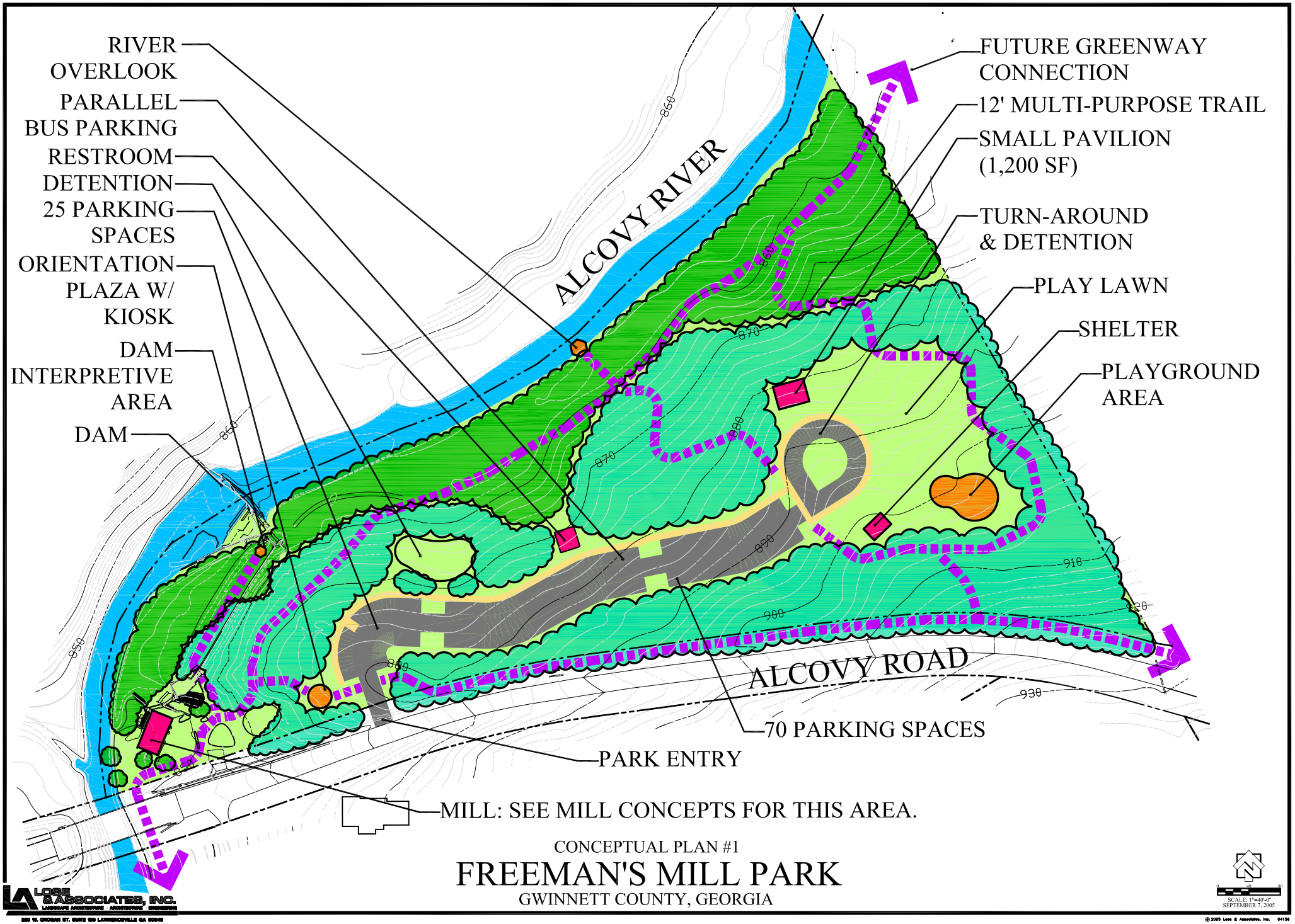
Figure 10



CONCEPTUAL PLAN #1

FREEMAN'S MILL PARK

GWINNETT COUNTY, GEORGIA

LOSE & ASSOCIATES, INC.
LANDSCAPE ARCHITECTURE · ARCHITECTURE · ENGINEERING
250 W. CROGAN ST. SUITE 100 LAWRENCEVILLE GA 30045

SCALE: 1"=40'-0"
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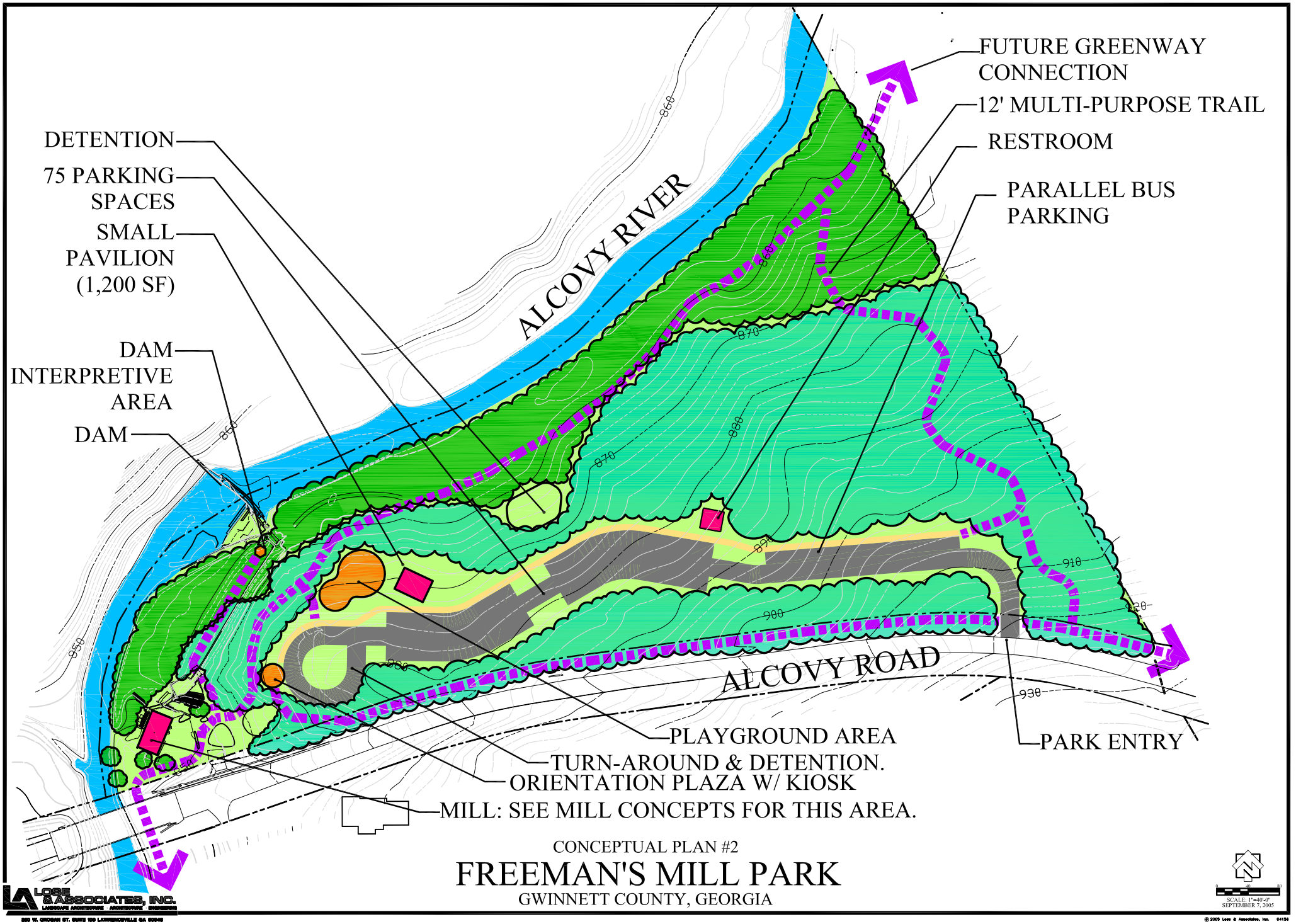
Figure 11



CONCEPTUAL PLAN #2

FREEMAN'S MILL PARK

GWINNETT COUNTY, GEORGIA

LOSE & ASSOCIATES, INC.
LANDSCAPE ARCHITECTURE · ARCHITECTURE · ENGINEERING
320 W. CROGAN ST. SUITE 100 LAWRENCEVILLE GA 30045

SCALE: 1"=40'-0"
SEPTEMBER 7, 2005

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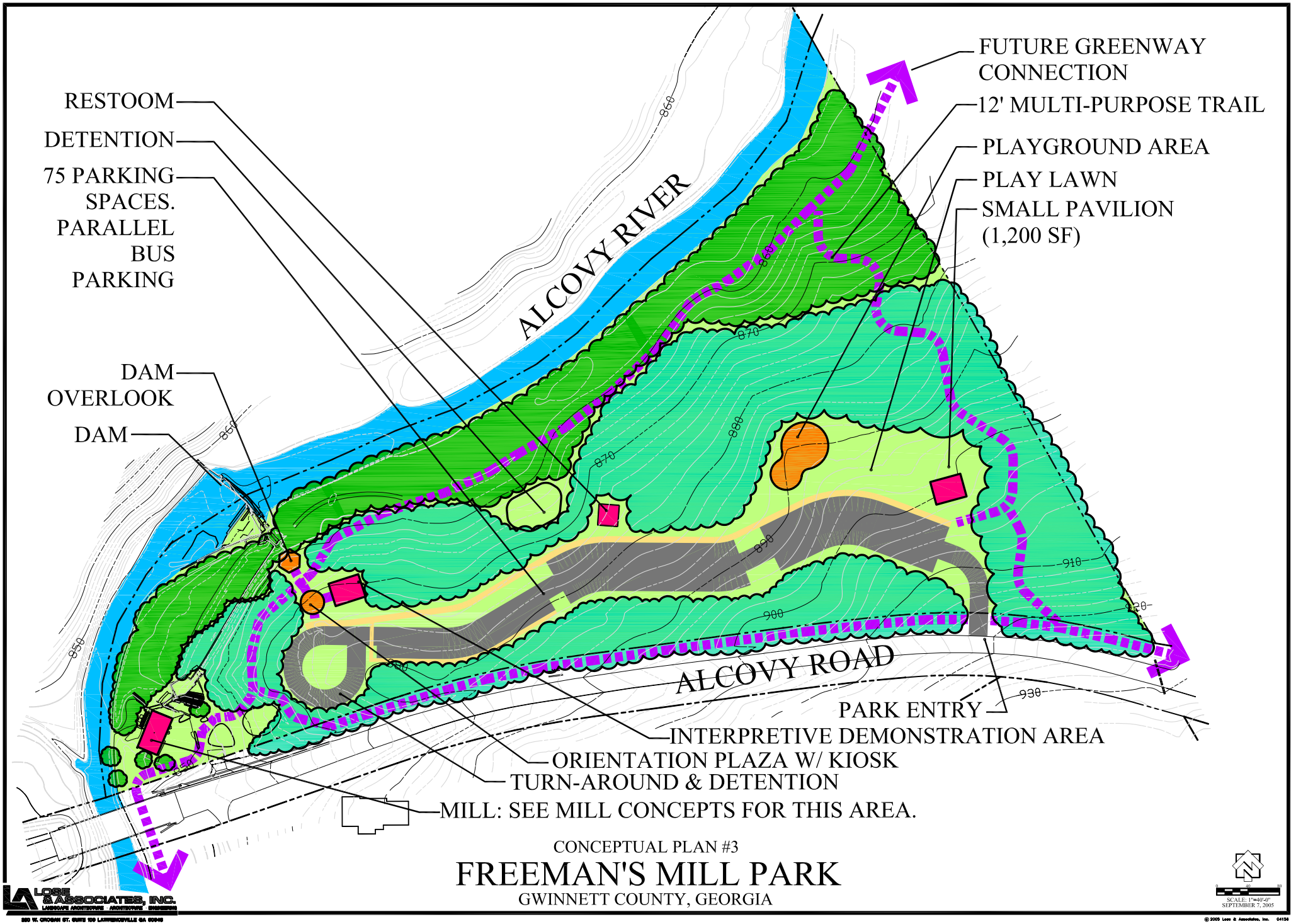
Figure 12



CONCEPTUAL PLAN #3

FREEMAN'S MILL PARK

GWINNETT COUNTY, GEORGIA

LOSE & ASSOCIATES, INC.
LANDSCAPE ARCHITECTURE · ARCHITECTURE · ENGINEERING
320 W. CROGAN ST. SUITE 100 LAWRENCEVILLE GA 30045

SCALE: 1"=40'-0"
SEPTEMBER 7, 2005

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Figure 13

Section 5
Preliminary Master Plan

Preliminary Master Plan

Using the comments gathered in the previous meetings, the consultant team prepared a preliminary master plan and presented it on September 27, 2005.

The meeting began with the presentation of a method for providing new concrete foundations for the mill and wheel (see figure 14). The new foundations would be tall enough to raise the mill the recommended 5'. On top of the new foundations, the additional height of the existing foundations would remain and would be made out of materials consistent with the existing foundations (perhaps even using some of the original material). Also discussed was the idea of needing a wall of some sort between the end of the sluice and the mill to protect the mill from overflow from the sluice discharge during large storm events.

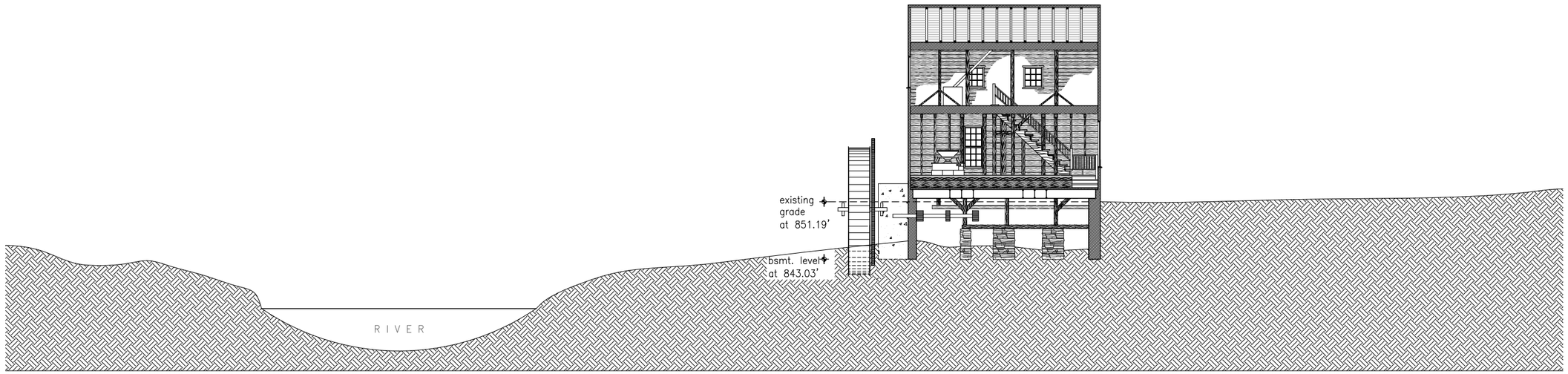
Following the mill discussion, methods of restoring the dam were presented. The concept included leaving the two end pieces of the Swann dam in place, building back the stone masonry to approximately the height of the pre-Swann dam, and placing a concrete cap over the gap between the two Swann sections to create a smooth weir for the water to pour across. The group discussed this option for a while, and it was decided that a more illustrative graphic should be prepared for review by the group.

The project historian then presented refinements of the interpretive package themes, and the group felt that she was on the right track. The project historian stated that she would interview the last miller and record his discussion for use in future interpretive elements.

Finally, the overall park design was presented (see figure 15). It was explained how the differences in elevation helped to separate necessary elements and that in the immediate area of the mill, the trees were to remain in an effort to maintain the character of its setting. The placement of all the facilities and their notable features were explained in detail. Staff noted that additional discussion had been given to keeping the trail access to the mill at 12' wide, in order to accommodate maintenance vehicles.

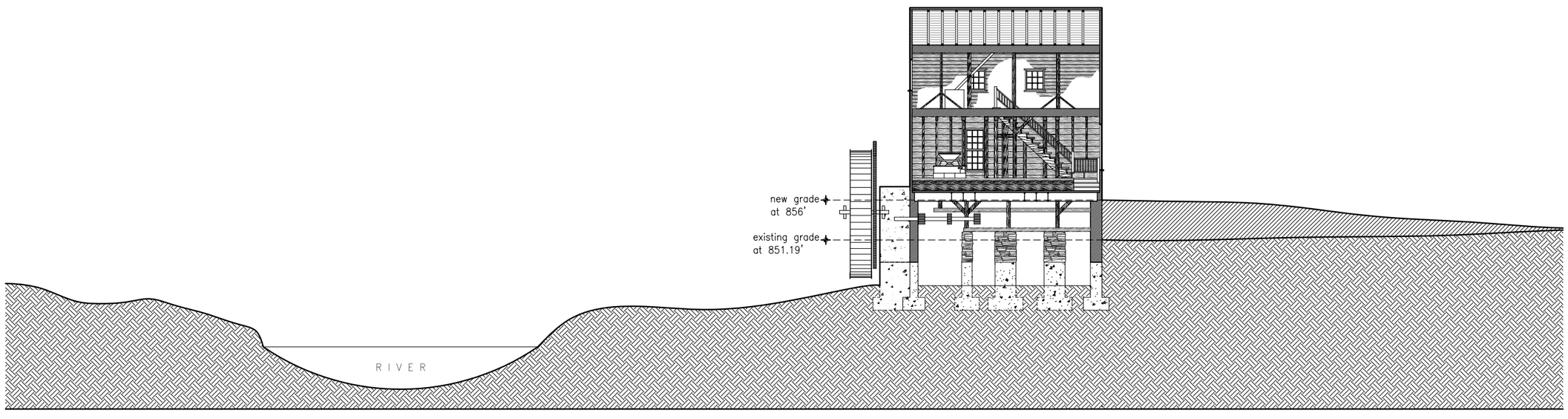
The meeting concluded with the group unanimously voting to raise the mill as shown, to continue with the interpretive themes and to approve the preliminary master plan. Some dissention was given on the height option provided at the dam, but the majority felt that the basic methodology of a concrete cap with a continuous sheet of water was correct. The majority of the group liked the idea of maintaining the remaining portions of the Swann dam, along with an elevation matching the pre-Swann dam for historic interpretive purposes. The group felt the additional graphic (mentioned above) would help them better

understand the exact elevation suggested.



1 / A.200 Site Section - Existing

SCALE: 1/8" = 1'-0"



2 / A.200 Site Section - Proposed

SCALE: 1/8" = 1'-0"

Figure 14

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Office of Jack Pyburn, Architect, Inc.

1197 Peachtree St., N.E.
Suite 533-A
Atlanta, Georgia 30361
Tel 404.685.9015
Fax 404.685.9017

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Revisions

No.	Date	By

Drawn: BHA

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Date: 22 Sept 2005

Scale: As Noted on Drawing

Project #:

Project :

Alcovy Mill

Gwinnett Co. Georgia

Drawing Title :

Site Sections

Drawing Number :

A.200


RESTROOM
HISTORIC CHARACTER TO ARCHITECTURE
PARKING
85 SPACES
4 BUS SPACES
PERVIOUS ASPHALT
DETENTION
INTERPRETIVE BUILDING
1,200 SF SECURED AREA FOR DISPLAYS
ORIENTATION PLAZA
TEXTURED PERVIOUS PAVING
STONE VENEERED SEATWALLS
ENHANCED LANDSCAPING
INTERPRETIVE PANELS DEPICTING SITE INTRODUCTION, SITE HISTORY, MILLING IN GWINNETT COUNTY AND THE MILL'S PLACE IN THE COMMUNITY
DAM OVERLOOK
BOARDWALK CONSTRUCTION
INTERPRETIVE PANELS DEPICTING DAM AND SLUICE THEMES
DAM AND SLUICE
RESTORE ELEVATION TO PRE-2003 LEVEL
SLUICE IS NOT OPERATIONAL
DROP-OFF
BUS TURNAROUND
VEGETATED DETENTION
CONTINUATION OF MULTIPURPOSE TRAIL LOOP
WOODEN FENCE
FUTURE GREENWAY CONNECTION
RIVER OVERLOOK
BOARDWALK CONSTRUCTION
INTERPRETIVE PANELS DEPICTING WATERSHED EVOLUTION AND RIVER ECOLOGY THEMES
12' MULTIPURPOSE TRAIL LOOP
PERVIOUS ASPHALT
0.53 MILE LOOP
SMALL PAVILION
1,200 SF
HISTORIC CHARACTER TO ARCHITECTURE
PLAYGROUND
MILL WHEEL THEME IN SAFETY SURFACES
9, 500 SF PLAY AREA
PLAY STRUCTURES AND SWINGS SEPARATED BY AGE GROUP. INTERACTIVE PLAY WATER FEATURE WITH SPRING AT ONE END, FLOWING STREAM OVER MULTIPLE LEVELS, AND VORTEX FEATURE AT END. INCLUDED IN COURSE OF STREAM ARE PLAY FEATURES DEMONSTRATING OPERATION OF AN OVERSHOT WHEEL, BREAST WHEEL AND UNDERSHOT WHEEL.
SHELTER
HISTORIC CHARACTER TO ARCHITECTURE
PLAY LAWN
IRRIGATED TURF
0.60 ACRES
RETAINING WALL
STONE VENEER SURFACE
GUARDRAILS AT CRITICAL SECTIONS
ENTRY
DECELERATION LANE
ENTRY SIGNAGE
SIDEWALK CONNECTION
ALCOVY RIVER
ALCOVY ROAD
MILL AREA
RAISE MILL AND WHEEL 5' ON NEW FOUNDATION SYSTEM AND RAISE SURROUNDING GRADE TO MAINTAIN GROUND LEVEL RELATIONSHIP
PROVIDE RETAINING WALLS FOR GRADES AND TREE PROTECTION
STABILIZE AND INTERPRET MILL WHEEL AND WORKINGS
PROVIDE DEMONSTRATION MILL AND INTERPRETIVE PANELS IN GARAGE AREA
PROVIDE ACCESS TO MILL THROUGH GARAGE AREA
SPECIAL PAVING FOR ACCESS ROUTE IN MILL AREA
SMALL FOOTBRIDGE PROVIDES ACCESS ACROSS SLUICE
DIRT FOOTPATH FOR ACCESS TO BAPTISM AREA
SIDEWALK CONNECTION
FUTURE GREENWAY CONNECTION
PRELIMINARY MASTER PLAN
FREEMAN'S MILL PARK
GWINNETT COUNTY, GEORGIA
LOSE & ASSOCIATES, INC.
LANDSCAPE ARCHITECTURE · ARCHITECTURE · ENGINEERING
SCALE: 1"=40'-0"
SEPTEMBER 27, 2005
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Figure 15

Section 6
Final Master Plan and Opinion of Probable Cost

Final Master Plan and Opinion of Probable Cost

After the preliminary master plan was presented, the requested modifications were made to the plan, and the opinion of probable cost was developed. The final master plan was presented on October 13, 2005.

6.1 Master Plan Description

Entrance
Vehicular entrance to the site will be at the southeastern corner of the property with a decelaration lane. Park signage will not match typical Gwinnett County standard (i.e. green metal with cmu base) but will be designed to reflect the historic character of the mill.

Parking
Parking for 86 vehicles and four buses is provided, and a drop-off turn-around is located near the orientation plaza/interpretive area. All parking and drive lanes should be constructed of pervious asphalt in order to meet the requirements of the Department of Natural Resources' Greenspace Program. A letter outlining the ability to use pervious asphalt to meet these requirements can be found in Appendix G.

Restrooms
A small restroom building is located between the mill area and the passive recreation area at the level of the parking lot for good visibility. The design of this structure is to reflect the historic character of the mill. A small lift station and force main connecting to the proposed subdivision across Alcovy Road will be necessary to provide sanitary sewer access.

Passive Recreation Area
An area for passive recreation and picnicking is located at the eastern end of the property, away from the mill. This area is located on the more developable portions of the site and is as far from the mill as possible in order to reduce noise and sight-line conflicts with the area around the mill. Included is an open play lawn, a rental pavilion smaller than the Gwinnett County standard, a community playground with swings and separate play structures for different age groups, and a small shelter to shade parents watching children play and for open picnicking. The playground was designed to reflect the image of water wheels and includes a hands-on shallow "stream" water feature that begins at one end in a bubbling spring, cascades over several ledges to provide opportunities to interpret the movement of water over whimsical mechanical wheels, and ends in a vortex pool that recirculates to the beginning. The design

of the pavilion and shelter should reflect the historic character of the mill.

Interpretive Area
Visitors to the mill and dam first pass through the orientation plaza to access the walkway leading to the mill. This small plaza, located off the drop-off turn-around, includes stone seatwalls, paving patterns to reflect a waterwheel motif, enhanced native plantings and a majority of the interpretive panels. A boardwalk overlook near the plaza provides a view of the dam and sluiceway and an opportunity to interpret their historic use. It was decided that this would be the best way to interpret the dam, as direct access from the mill would prove difficult and necessary code improvements would alter the historic character of the sluice and dam. A small building could also be located near the orientation plaza to provide a secured space for the display of mill artifacts.

Mill and Dam
The mill and water wheel are to be raised approximately 5' on a new system of foundation piers. Each pier is to be designed to demonstrate the level of the raising operation and mark the original level of the mill's elevation. This could be done with surface treatments on the piers or by the application of the original stone to the piers for interpretive purposes. A retaining wall would allow the grade of the mill's "front yard" to be raised along with the mill in order to present the same mill/grade relationship as currently exists. The renovation of the mill and its mechanical systems would provide the ability to interpret how milling used to occur but would stop short of restoring the mill to working condition in order to save the works from damage. The "garage" area of the mill provides the entry point for visitors, a place for interpretive display and the opportunity to demonstrate milling principals through a small self-contained mill (see Appendix D). The center portion of the dam, at its current elevation, would receive a small concrete cap in order to level out the flow of the river and create a sheet curtain waterfall effect. The ends of the dam, which still have evidence of the taller dam that failed in 2003, would remain for interpretation of the dam's evolution. In order to ensure that the pastoral character of the mill's setting is enjoyed by future generations, the County should investigate methods to limit development on properties across the Alcovy River and Alcovy Road.

Trails
Any development on the property would require the provision of a sidewalk along Alcovy Road to meet current development regulations. In addition, the route of the planned Alcovy River Greenway passes through the site and needs to be considered in the development of a trail network. By incorporating these two necessary trail routes, and the addition of others, a complete ½ mile multi-purpose trail loop could be developed along the Alcovy River, along Alcovy Road and through the wooded areas of the site. Materials for the trails would include pervious asphalt to meet the Department of Natural Resources'

requirements for development on properties acquired with Greenspace Program funds and for stream buffers. In the immediate proximity of the mill, the materials for the trails could be changed to reflect the historic character of the mill but should still be of a pervious nature. An additional boardwalk overlook of the Alcovy River in the northeast corner of the property would provide an incentive to venture to that portion of the site and also provide interpretive opportunities centered around the Alcovy River, its watershed and its ecosystem.

6.2 Master Plan Presentation

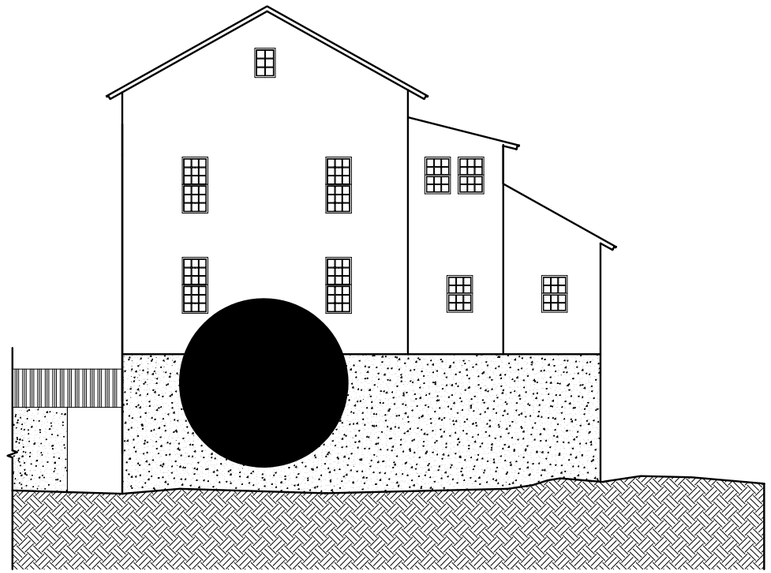
The presentation began with the refinements and expansions of the interpretive theme text (see Appendix H). It was noted that the project historian had recently interviewed the last miller and was using some of his information in the text. The group agreed that the themes, information, images, etc., were appropriate for the project and that all topics had been covered.

The meeting continued with a more detailed description of the mill's foundation system and a more graphic representation of the dam improvements, including an image of what the waterfall at the dam would look like (see figures 16-19). The group noted that the new graphics better explained the dam suggestions and agreed with the concept of the concrete cap.

The final park master plan (see figures 20-21) was presented noting the changes to the mill trail on the master plan. A synopsis of the master plan was presented to several committee members who were not present at the last meeting.

From there, the overall opinion of probable cost (see Appendix A) was presented, as well as a potential Phase 1 project (see Appendix A) that included raising the mill and making structural and condition improvements, while also providing vehicle and pedestrian access to the mill. It was explained that the costs would evolve as more detailed design took place, but that the budgets were a good starting point for considering phasing options. The group agreed that the potential Phase 1 project was logical and needed to be pursued.

After the presentations, the committee unanimously approved sending the suggestions to the Recreation Authority for their review. Staff ended the meeting by asking the group if they felt that they had been informed and prepared to make their decisions. The group agreed that they had been. Staff also asked if they would suggest improvements to the process. One committee member noted that he wished he had more time to review the information before making a decision.



1 A.100 West Elevation
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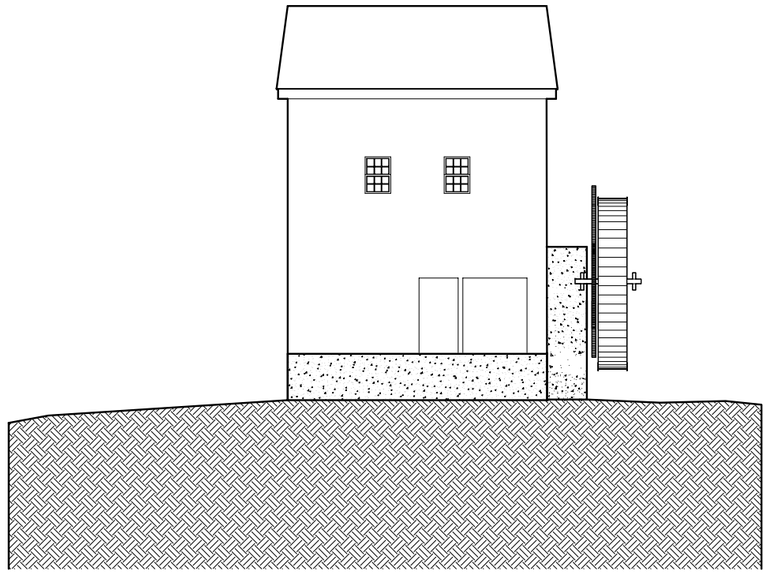
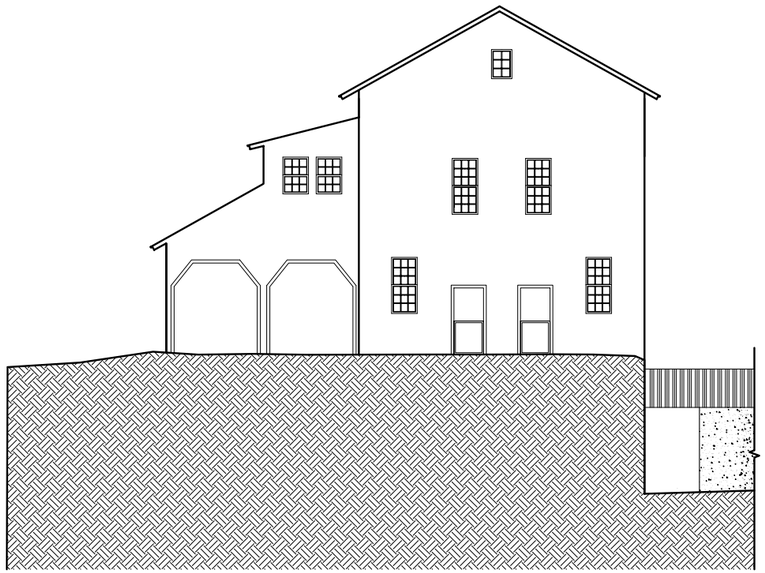


2 A.100 North Elevation
SCALE: 1/8" = 1'-0"



4 A.100 East Elevation
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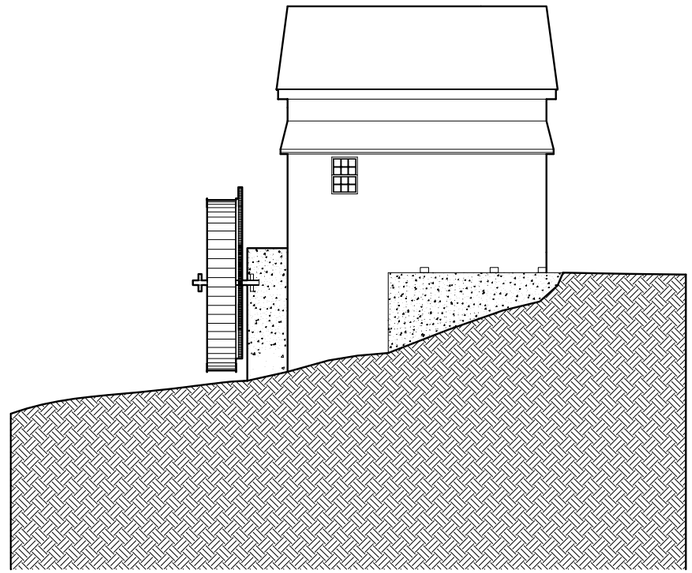

3 A.100 South Elevation
SCALE: 1/8" = 1'-0"

Figure 16

OJP Architect
Office of Jack Pyburn, Architect, Inc.
1197 Peachtree St., N.E.
Suite 533-A
Atlanta, Georgia 30361
Tel 404.885.9015
Fax 404.885.9017
Member of American Institute of Architects

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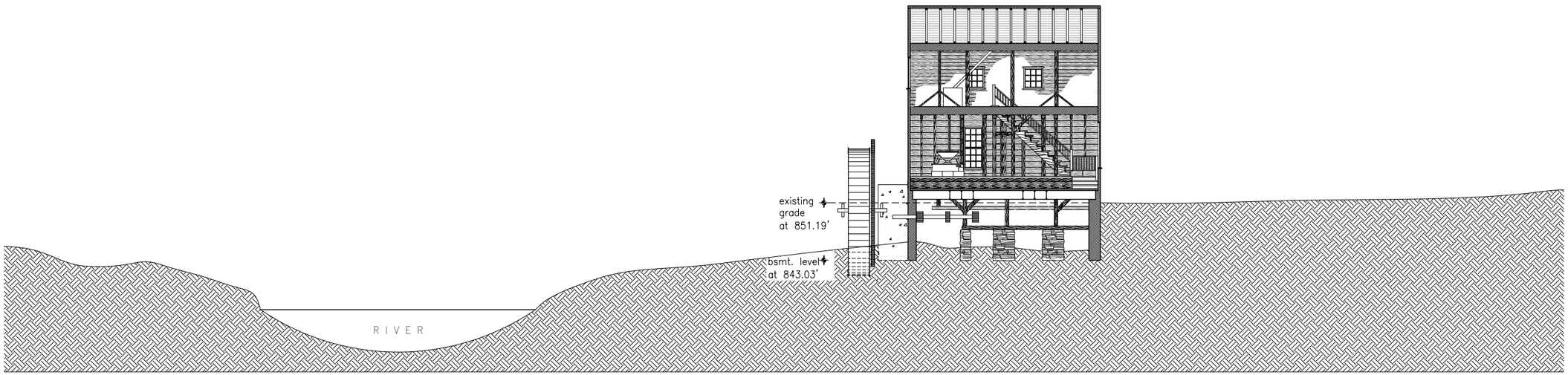
Freeman's Mill Park

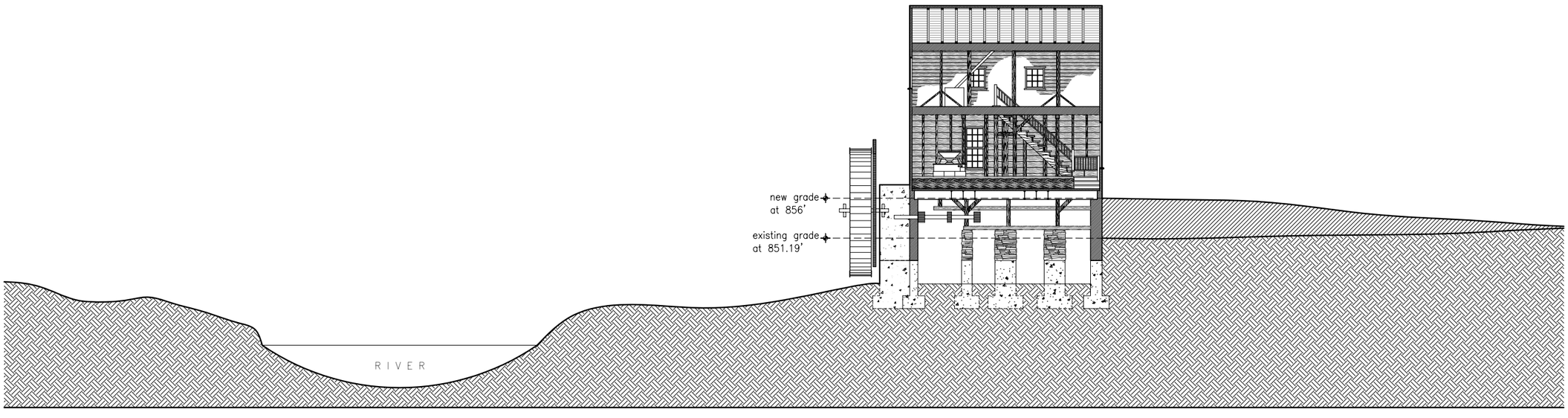
Gwinnett Co.
Georgia

Drawing Title :
Building Elevations

Drawing Number :
A.100



1 A.200 Site Section - Existing
SCALE: 1/8" = 1'-0"



2 A.200 Site Section - Proposed
SCALE: 1/8" = 1'-0"

Figure 17

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1197 Peachtree St., N.E.
Suite 533-A
Atlanta, Georgia 30361
Tel 404.885.9015
Fax 404.885.9017

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Freeman's Mill Park

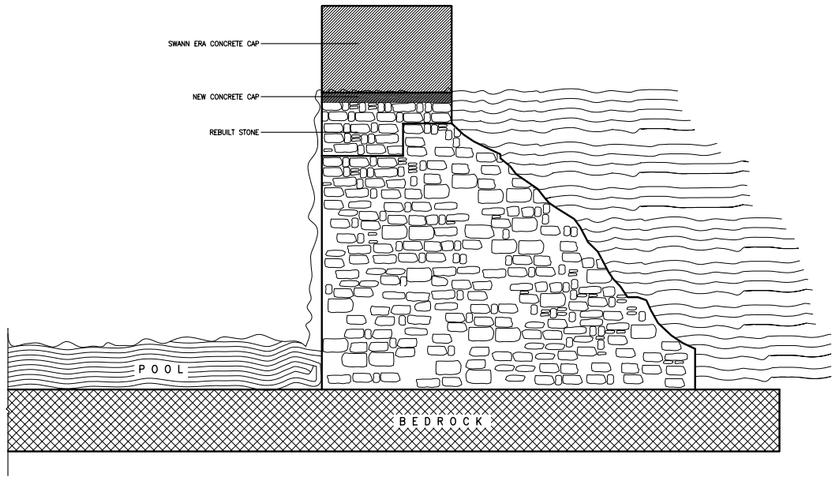
Gwinnett Co. Georgia

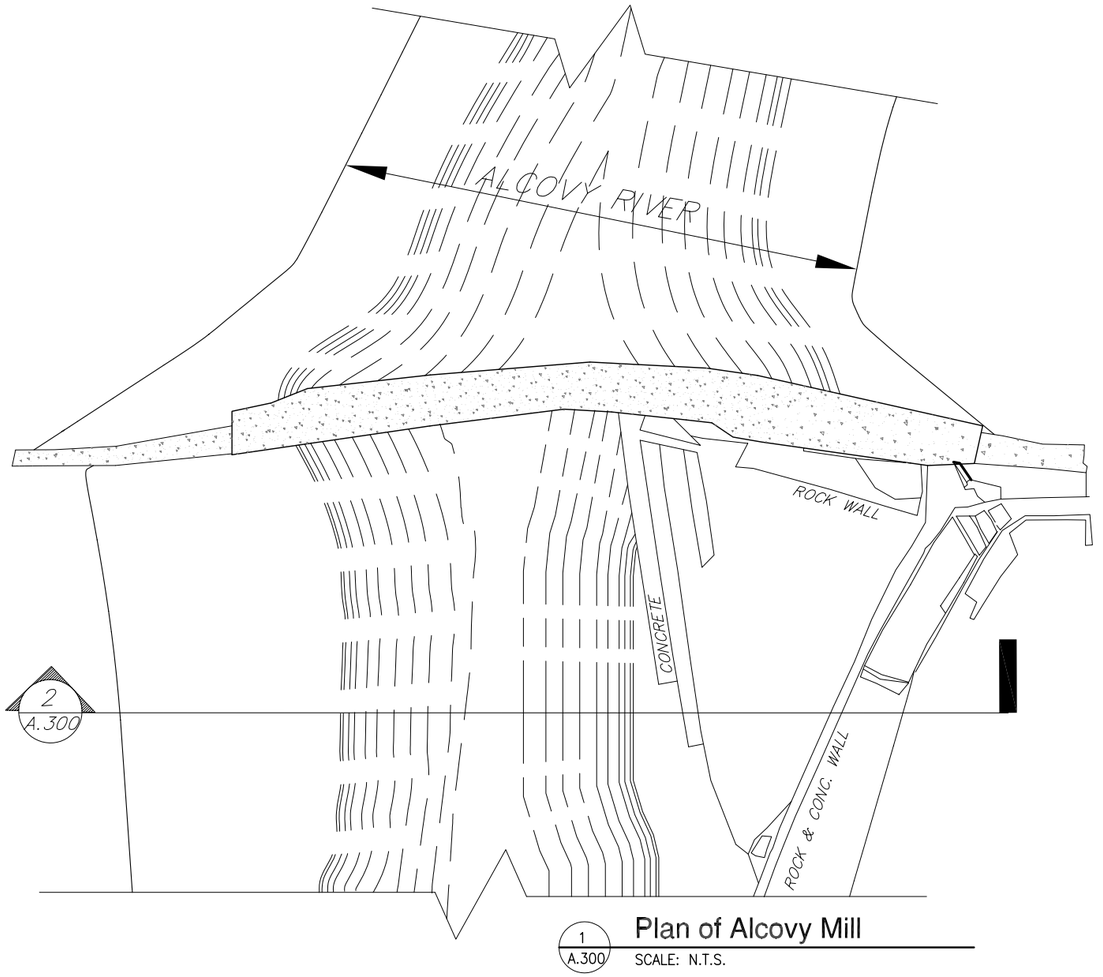
Drawing Title :

Site Sections

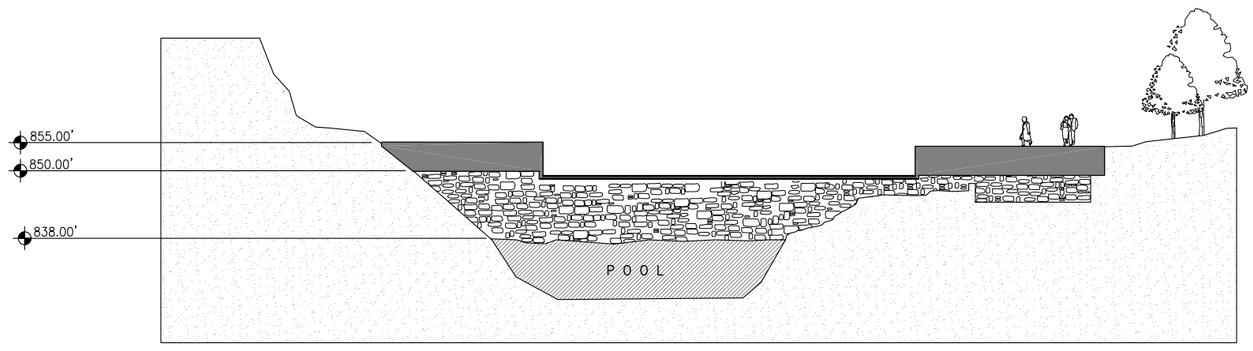
Drawing Number :

A.200





1 A.300 Plan of Alcovy Mill
SCALE: N.T.S.



2 A.300 Elevation of Alcovy Mill
SCALE: N.T.S.

Figure 18

Suite 533-A

Tel 404.885.9015
Fax 404.885.9017

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Freeman's Mill Park

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Georgia

1 A.400 Alcovy Dam
SCALE=N.T.S.

Figure 19 Artistic Rendition of Dam and Waterfall Depicting Recommended Repairs

OJP Architect

Office of Jack Pyburn, Architect, Inc.

1197 Peachtree St., N.E.
Suite 535-A
Atlanta, Georgia 30361
Tel: 404.885.9015
Fax: 404.885.9017

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Project :
Freeman's Mill Park

Gwinnett Co.
Georgia

Drawing Title :
Alcovy River Dam

Drawing Number :
A.400

RESTROOM
- HISTORIC CHARACTER TO ARCHITECTURE

PARKING
- 86 SPACES
- 4 BUS SPACES
- PERVIOUS ASPHALT

DETENTION

INTERPRETIVE BUILDING
- 1,200 SF SECURED AREA FOR DISPLAYS

ORIENTATION PLAZA
- TEXTURED PERVIOUS PAVING
- STONE VENEERED SEATWALLS
- ENHANCED LANDSCAPING
- INTERPRETIVE PANELS DEPICTING SITE INTRODUCTION, SITE HISTORY, MILLING IN GWINNETT COUNTY AND THE MILL'S PLACE IN THE COMMUNITY

DAM OVERLOOK
- BOARDWALK CONSTRUCTION
- INTERPRETIVE PANELS DEPICTING DAM AND SLUICE THEMES

DAM AND SLUICE
- RESTORE ELEVATION TO PRE-2003 LEVEL
- SLUICE IS NOT OPERATIONAL

DROP-OFF
- BUS TURNAROUND
- VEGETATED DETENTION
- CONTINUATION OF MULTIPURPOSE TRAIL LOOP
- WOODEN FENCE

FUTURE GREENWAY CONNECTION

RIVER OVERLOOK
- BOARDWALK CONSTRUCTION
- INTERPRETIVE PANELS DEPICTING WATERSHED EVOLUTION AND RIVER ECOLOGY THEMES

12' MULTIPURPOSE TRAIL LOOP
- PERVIOUS ASPHALT
- 0.53 MILE LOOP

SMALL PAVILION
- 1,200 SF
- HISTORIC CHARACTER TO ARCHITECTURE

PLAYGROUND
- MILL WHEEL THEME IN SAFETY SURFACES
- 9, 500 SF PLAY AREA
- PLAY STRUCTURES AND SWINGS SEPARATED BY AGE GROUP. INTERACTIVE PLAY WATER FEATURE WITH BUBBLING SPRING AT BEGINNING, FLOWING STREAM OVER MULTIPLE LEVELS, AND VORTEX FEATURE AT END. INCLUDED IN COURSE OF STREAM ARE PLAY FEATURES DEMONSTRATING OPERATION OF AN OVERSHOT WHEEL, BREAST WHEEL AND UNDERSHOT WHEEL IN A WHIMSICAL FASHION.

SHELTER
- HISTORIC CHARACTER TO ARCHITECTURE

PLAY LAWN
- IRRIGATED TURF
- 0.60 ACRES

RETAINING WALL
- STONE VENEER SURFACE
- GUARDRAILS AT CRITICAL SECTIONS

ENTRY
- DECELERATION LANE
- ENTRY SIGNAGE

SIDEWALK CONNECTION

ALCOVY RIVER

ALCOVY ROAD

MILL AREA
- RAISE MILL AND WHEEL 5' ON NEW FOUNDATION SYSTEM AND RAISE SURROUNDING GRADE TO MAINTAIN GROUND LEVEL RELATIONSHIP
- RETAINING WALLS TO PROTECT MILL FROM SLUICE OVERFLOW IN FLOOD EVENTS
- STABILIZE AND INTERPRET MILL WHEEL AND WORKINGS
- PROVIDE DEMONSTRATION MILL AND INTERPRETIVE PANELS IN GARAGE AREA
- PROVIDE ACCESS TO MILL THROUGH GARAGE AREA
- SPECIAL PAVING FOR ACCESS ROUTE IN MILL AREA
- SMALL FOOTBRIDGE PROVIDES ACCESS ACROSS SLUICE
- DIRT FOOTPATH FOR ACCESS TO BAPTISM AREA

SIDEWALK CONNECTION FUTURE GREENWAY CONNECTION

MASTER PLAN

FREEMAN'S MILL PARK

GWINNETT COUNTY, GEORGIA

PARK ACREAGE: 11.89
PARKING SPACES: 86
BUS SPACES: 4

SCALE: 1"=40'-0"
JANUARY 3, 2006

LOSE & ASSOCIATES, INC.
LANDSCAPE ARCHITECTURE · ARCHITECTURE · ENGINEERING
229 W. CROGAN ST. SUITE 100 LAWRENCEVILLE GA 30045

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Figure 20

MASTER PLAN ENLARGEMENT-MILL AREA

FREEMAN'S MILL PARK

GWINNETT COUNTY, GEORGIA

SCALE: 1"=10'-0"
OCTOBER 13, 2005

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Figure 21

Section 7
Gwinnett County Recreation Authority and Gwinnett County Board of Commissioners Presentations

Gwinnett County Recreation Authority and Gwinnett County Board of Commissioners Presentations

After the final master plan was approved by the Citizen Steering Committee, it, along with the prioritized-facility and phase 1 costs, was presented to the Gwinnett County Recreation Authority. The Authority Board also unanimously approved the final master plan.

On January 3, 2006, the final master plan with recommended phasing was presented to the Gwinnett County Board of Commissioners.

Section 8
Cited Resources

Cited Resources

8.1 Resource Documents

Dewberry & Davis LLC. "Alcovy River Basin Flood Study." Gwinnett County, Georgia: January 2002.

Lose & Associates, Inc. "Alcovy River Grist Mill Historic Structure Report." Gwinnett County, Georgia: September 9, 2003.

WaterWheel Factory. November 24, 2005. Hydro Techno, Inc. August 16, 2005. <http://www.waterwheelfactory.com/>.

8.2 Resource Mapping

GIS and Aerial Photography. Digital format. Provided by Gwinnett County Department of Community Services, Planning Development and Special Operations.

United States Department of Agriculture Soil Conservation Service. An Update for the Soil Survey of Gwinnett County, Georgia. 1988.

United States Department of the Interior. "United States Geological Survey 7.5 Minute Series Topographic Mapping."

Appendix A

FREEMAN'S MILL PARK

Opinion of Probable Cost – 12-23-05

PARK DEVELOPMENT

ITEM	QUA.	UNIT	COST/UNIT	COST w/ 20% contingency
Site Development				
Balanced grading (approximate volume)	17000	cy	$ 4.50	$ 91,800.00
Mass clearing	4.6	ac	$ 6,000.00	$ 33,120.00
Tree protection	7600	lf	$ 4.00	$ 36,480.00
Erosion control	1	ls	$ 10,000.00	$ 12,000.00
Storm drainage	1	ls	$ 75,000.00	$ 90,000.00
Electrical service	1	ls	$ 15,000.00	$ 18,000.00
Irrigation water meter	1	ls	$ 13,000.00	$ 15,600.00
Irrigation backflow preventer	1	ls	$ 2,500.00	$ 3,000.00
			subtotal	**$ 300,000.00**
Parking Lot Area				
Entrance signage	1	ls	$ 10,000.00	$ 12,000.00
Entrance gates	1	ls	$ 3,500.00	$ 4,200.00
Trash receptacle	1	ea	$ 500.00	$ 600.00
5' Concrete pavement- pervious	1100	sf	$ 4.00	$ 5,280.00
8' Concrete pavement- pervious	6800	sf	$ 4.00	$ 32,640.00
Asphalt paving- pervious	50000	sf	$ 3.00	$ 180,000.00
Concrete curb & gutter	3000	lf	$ 12.00	$ 43,200.00
Vehicular signage	7	ea	$ 250.00	$ 2,100.00
Striping	1	ls	$ 2,000.00	$ 2,400.00
Retaining walls	410	cy	$ 450.00	$ 221,400.00
Retaining walls- stone veneer	11500	ff	$ 25.00	$ 345,000.00
Decorative guardrail along retaining wall	390	lf	$ 100.00	$ 46,800.00
Landscaping	1	ls	$ 20,000.00	$ 24,000.00
Irrigation	1	ls	$ 10,000.00	$ 12,000.00
			subtotal	**$ 931,620.00**
Restroom Facility				
Small lift station	1	ls	$ 25,000.00	$ 30,000.00
2" Force sewer	1000	lf	$ 20.00	$ 24,000.00
8" Fire water service	900	lf	$ 42.00	$ 45,360.00
3" Water service for domestic	750	lf	$ 25.00	$ 22,500.00
2" Water service for irrigation	900	lf	$ 20.00	$ 21,600.00
Domestic water meter	1	ls	$ 13,000.00	$ 15,600.00
Domestic backflow preventer	1	ls	$ 2,500.00	$ 3,000.00
Fire hydrant w/ fee	1	ea	$ 5,200.00	$ 6,240.00
Double-detector check	1	ea	$ 6,000.00	$ 7,200.00
Restroom building	1	ls	$ 125,000.00	$ 150,000.00
Retaining walls	40	cy	$ 450.00	$ 21,600.00
Retaining walls- stone veneer	800	ff	$ 25.00	$ 24,000.00
Decorative guardrail along retaining wall	90	lf	$ 100.00	$ 10,800.00
			subtotal	**$ 381,900.00**
Trail Network				
12' Asphalt pavement- pervious	37000	sf	$ 3.00	$ 133,200.00
5' Concrete pavement- pervious (to bridge)	1320	sf	$ 4.00	$ 6,336.00
Seat wall-veneer w/ stone cap	350	lf	$ 150.00	$ 63,000.00
Wood fence	200	lf	$ 25.00	$ 6,000.00
Overlook boardwalk	635	sf	$ 30.00	$ 22,860.00
Concrete abutment at overlook	1	ls	$ 3,000.00	$ 3,600.00

Railing at overlook	120	sf	$ 100.00	$ 14,400.00
Interpretive panels at overlook	2	ea	$ 3,500.00	$ 8,400.00
Trash receptacle	1	ea	$ 500.00	$ 600.00
Landscaping	1	ls	$ 3,000.00	$ 3,600.00
			subtotal	**$ 261,996.00**
Playground Area				
5' Concrete pavement- pervious	5650	sf	$ 4.00	$ 27,120.00
Wood mulch	500	sy	$ 3.50	$ 2,100.00
Rubber play surface	5200	sf	$ 18.00	$ 112,320.00
Concrete curbing (around rubber surface)	345	lf	$ 7.00	$ 2,898.00
Play structures (tot lot,5-12, swing set structures)	1	ls	$ 85,000.00	$ 102,000.00
Interactive water feature	1	ls	$ 125,000.00	$ 150,000.00
Drinking fountain	1	ea	$ 5,000.00	$ 6,000.00
Small shelter	1	ls	$ 125,000.00	$ 150,000.00
Small pavilion	1	ls	$ 175,000.00	$ 210,000.00
Trash receptacle	3	ea	$ 500.00	$ 1,800.00
Benches	6	ea	$ 1,000.00	$ 7,200.00
Picnic tables	10	ea	$ 1,500.00	$ 18,000.00
Landscaping	1	ls	$ 30,000.00	$ 36,000.00
Irrigation	1	ls	$ 20,000.00	$ 24,000.00
			subtotal	**$ 849,438.00**
Interpretive Plaza Area				
Concrete pavement–pervious	2100	sf	$ 4.00	$ 10,080.00
Special texture paving accents-pervious	375	sf	$ 15.00	$ 6,750.00
Interpretive building	1	ls	$ 300,000.00	$ 360,000.00
Overlook boardwalk	528	sf	$ 30.00	$ 19,008.00
Concrete abutment at overlook	1	ls	$ 3,000.00	$ 3,600.00
Railing at overlook	100	sf	$ 100.00	$ 12,000.00
Interpretive panels	4	ea	$ 3,500.00	$ 16,800.00
Seat wall-stone veneer	200	lf	$ 150.00	$ 36,000.00
Landscaping	1	ls	$ 15,000.00	$ 18,000.00
Irrigation	1	ls	$ 7,500.00	$ 9,000.00
			subtotal	**$ 491,238.00**
Mill Area				
12' Asphalt pavement-pervious	1700	sf	$ 3.00	$ 6,120.00
Paved walk-pervious	3400	sf	$ 15.00	$ 61,200.00
Retaining walls	23	cy	$ 450.00	$ 12,420.00
Retaining walls- stone veneer	130	ff	$ 25.00	$ 3,900.00
Stone veneer seatwall	325	lf	$ 150.00	$ 58,500.00
Railing at wall	60	sf	$ 100.00	$ 7,200.00
Interpretive panels	3	ea	$ 3,500.00	$ 12,600.00
Foot bridge	1	ls	$ 9,000.00	$ 10,800.00
Site stabilization	1	ls	$ 35,000.00	$ 42,000.00
Landscaping	1	ls	$ 5,000.00	$ 6,000.00
			subtotal	**$ 220,740.00**
			Park development subtotal	**$ 3,436,932.00**
Contractor overhead, mobilization, profit, etc.			**10% of subtotal**	**$ 343,693.20**
Construction subtotal: park development subtotal + contractor fees				**$ 3,780,625.20**
A&E and construction fees			**12% of construction subtotal**	**$ 453,675.02**
			Park construction + A&E total	**$ 4,234,300.22**

MILL AND DAM

ITEM	QUA.	UNIT	COST/UNIT	COST w/ 20% contingency
Demolition				
Remove concrete slabs	550	sf	$ 6,600.00	$ 7,920.00
Remove concrete/masonry piers/walls	200	lf	$ 25,000.00	$ 30,000.00
Remove roofing	2500	sf	$ 5,000.00	$ 6,000.00
General selective demolition - historically sensitive	2500	sf	$ 30,000.00	$ 36,000.00
Haul off of debris	1	ls	$ 5,000.00	$ 6,000.00
			subtotal	**$ 85,920.00**
Site Work				
Pest control	1	ls	$ 7,000.00	$ 8,400.00
			subtotal	**$ 8,400.00**
Concrete & Masonry				
Exterior foundation drainage	75	lf	$ 11,250.00	$ 13,500.00
Foundation wall/pier extension/construction	200	lf	$ 100,000.00	$ 120,000.00
Wheel support extension/construction	1	ls	$ 50,000.00	$ 60,000.00
River diversion	1	ls	$ 150,000.00	$ 180,000.00
Dam stabilization and cap	1	ls	$ 500,000.00	$ 600,000.00
			subtotal	**$ 973,500.00**
Structural				
Stabilizing/lifting/moving structure	1	ls	$ 500,000.00	$ 600,000.00
Floor/roof framing repairs	4000	sf	$ 35,000.00	$ 42,000.00
Construct new floor structure in garage	550	sf	$ 19,250.00	$ 23,100.00
Miscellaneous repairs	4000	sf	$ 40,000.00	$ 48,000.00
			subtotal	**$ 713,100.00**
Wood				
Rehabilitation of windows	20	ea	$ 30,000.00	$ 36,000.00
Rehabilitation of wood doors	6	ea	$ 21,000.00	$ 25,200.00
Rehabilitation of exterior wood	4000	sf	$ 100,000.00	$ 120,000.00
			subtotal	**$ 181,200.00**
Roofing				
Install new sheet metal roof, including gutters	2500	sf	$ 100,000.00	$ 120,000.00
Miscellaneous deck repair	1250	sf	$ 15,000.00	$ 18,000.00
			subtotal	**$ 138,000.00**
Interior Construction				
Rehabilitation of stair	1	ls	$ 8,000.00	$ 9,600.00
Miscellaneous interior repair/rehabilitation	4000	sf	$ 100,000.00	$ 120,000.00
General allowance for cleaning and repair of mill equip.	1	ls	$ 50,000.00	$ 60,000.00
			subtotal	**$ 189,600.00**
Mechanical, Electrical and Plumbing Systems				
Mechanical system - potentially exhaust fan system only	2500	sf	$ 62,500.00	$ 75,000.00
Electrical system	4000	sf	$ 60,000.00	$ 72,000.00
Plumbing system - potential wheel operation	4000	sf	$ 20,000.00	$ 24,000.00
			subtotal	**$ 171,000.00**
	Mill and dam development subtotal			**$ 2,460,720.00**

Contractor overhead, mobilization, profit, etc.			**20% of subtotal**	**$ 492,144.00**
			Construction subtotal: mill and dam subtotal + contractor fees	**$ 2,952,864.00**
A&E and construction fees			**18% of construction subtotal**	**$ 531,515.52**
			Mill and dam construction + A&E total	**$ 3,484,379.52**
			GRAND TOTAL FOR PROJECT	**$ 7,718,679.74**

FREEMAN'S MILL PARK-POTENTIAL PHASE 1

Opinion of Probable Cost – 12-23-05

PARK DEVELOPMENT

ITEM	QUA.	UNIT	COST/UNIT	COST w/ 20% contingency
Site Development				
Balanced grading (approximate volume)	17000	cy	$ 4.50	$ 91,800.00
Mass clearing	4.6	ac	$ 6,000.00	$ 33,120.00
Tree protection	7600	lf	$ 4.00	$ 36,480.00
Erosion control	1	ls	$ 10,000.00	$ 12,000.00
Storm drainage	1	ls	$ 75,000.00	$ 90,000.00
			subtotal	**$ 263,400.00**
Parking Lot Area				
Entrance signage	1	ls	$ 10,000.00	$ 12,000.00
Entrance gates	1	ls	$ 3,500.00	$ 4,200.00
8' Concrete pavement- pervious	6800	sf	$ 4.00	$ 32,640.00
Asphalt paving- pervious	50000	sf	$ 3.00	$ 180,000.00
Concrete curb & gutter	3000	lf	$ 12.00	$ 43,200.00
Vehicular signage	7	ea	$ 250.00	$ 2,100.00
Striping	1	ls	$ 2,000.00	$ 2,400.00
Retaining walls at bus parking & play area only	410	cy	$ 450.00	$ 221,400.00
Stone veneer at bus parking only	1500	ff	$ 25.00	$ 45,000.00
Decorative guardrail along retaining wall	390	lf	$ 100.00	$ 46,800.00
			subtotal	**$ 589,740.00**
Trail Network				
12' Asphalt pavement- pervious	16000	sf	$ 3.00	$ 57,600.00
5' Concrete pavement- pervious (to bridge)	1320	sf	$ 4.00	$ 6,336.00
Seat wall-veneer w/ stone cap	350	lf	$ 150.00	$ 63,000.00
Wood fence	200	lf	$ 25.00	$ 6,000.00
			subtotal	**$ 132,936.00**
Interpretive Plaza Area				
Concrete pavement–pervious	2100	sf	$ 4.00	$ 10,080.00
Special texture paving accents-pervious	375	sf	$ 15.00	$ 6,750.00
			subtotal	**$ 16,830.00**
Mill Area				
12' Asphalt pavement-pervious	1700	sf	$ 3.00	$ 6,120.00
Paved walk-pervious	3400	sf	$ 15.00	$ 61,200.00
Retaining walls	23	cy	$ 450.00	$ 12,420.00
Retaining walls- stone veneer	130	ff	$ 25.00	$ 3,900.00
Stone veneer seatwall	325	lf	$ 150.00	$ 58,500.00
Railing at wall	60	sf	$ 100.00	$ 7,200.00
Interpretive panels	1	ea	$ 3,500.00	$ 4,200.00
Foot bridge	1	ls	$ 9,000.00	$ 10,800.00
Site stabilization	1	ls	$ 35,000.00	$ 42,000.00
Landscaping	1	ls	$ 5,000.00	$ 6,000.00
			subtotal	**$ 212,340.00**
			Park development subtotal	**$ 1,215,246.00**

Contractor overhead, mobilization, profit, etc.			**10% of subtotal**	**$ 121,524.60**
			Construction subtotal: park development subtotal + contractor fees	**$ 1,336,770.60**
A&E and Construction Fees			**12% of construction subtotal**	**$ 160,412.47**
			Park construction + A&E total	**$ 1,497,183.07**

MILL AND DAM

ITEM	QUA.	UNIT	COST/UNIT	COST w/ 20% contingency
Demolition				
Remove concrete slabs	550	sf	$ 6,600.00	$ 7,920.00
Remove concrete/masonry piers/walls	200	lf	$ 25,000.00	$ 30,000.00
Remove roofing	2500	sf	$ 5,000.00	$ 6,000.00
General selective demolition - historically sensitive	2500	sf	$ 30,000.00	$ 36,000.00
Haul off of debris	1	ls	$ 5,000.00	$ 6,000.00
			subtotal	**$ 85,920.00**
Site Work				
Pest control	1	ls	$ 7,000.00	$ 8,400.00
			subtotal	**$ 8,400.00**
Concrete & Masonry				
Exterior foundation drainage	75	lf	$ 11,250.00	$ 13,500.00
Foundation wall/pier extension/construction	200	lf	$ 100,000.00	$ 120,000.00
Wheel support extension/construction	1	ls	$ 50,000.00	$ 60,000.00
			subtotal	**$ 193,500.00**
Structural				
Stabilizing/lifting/moving structure	1	ls	$ 500,000.00	$ 600,000.00
Floor/roof framing repairs	4000	sf	$ 35,000.00	$ 42,000.00
Construct new floor structure in garage	550	sf	$ 19,250.00	$ 23,100.00
Miscellaneous repairs	4000	sf	$ 40,000.00	$ 48,000.00
			subtotal	**$ 713,100.00**
Wood				
Rehabilitation of windows	20	ea	$ 30,000.00	$ 36,000.00
Rehabilitation of wood doors	6	ea	$ 21,000.00	$ 25,200.00
Rehabilitation of exterior wood	4000	sf	$ 100,000.00	$ 120,000.00
			subtotal	**$ 181,200.00**
Roofing				
Install new sheet metal roof, including gutters	2500	sf	$ 100,000.00	$ 120,000.00
Miscellaneous deck repair	1250	sf	$ 15,000.00	$ 18,000.00
			subtotal	**$ 138,000.00**
	Mill and dam development subtotal			**$ 1,320,120.00**
Contractor overhead, mobilization, profit, etc.			**20% of subtotal**	**$ 264,024.00**
Construction subtotal: mill and dam subtotal + contractor fees				**$ 1,584,144.00**
A&E and construction fees	**18% of construction subtotal**			**$ 285,145.92**
Mill and dam construction + A&E total				**$ 1,869,289.92**
GRAND TOTAL FOR PROJECT				**$ 3,366,472.99**

Appendix B

HYDROLOGIC ANALYSES

Gwinnett County is one of the most rapidly growing counties in the area, with development pressure resulting from growth in the Atlanta urban area. Based on the available mapping and growth maps posted on the Gwinnett County website, it appears that the Alcovy River Basin has not developed to the degree as the areas nearer Atlanta. However, review of subsequent maps shows the available space in the basin filling in at a relatively rapid pace. Urbanization is a hydrologic concern due to the increase in storm water runoff and the potential increase in pollutants contained in that runoff.

The U.S. Army Corps of Engineers Hydrologic Engineering Center's Hydrologic Modeling System (HEC-HMS) was used as the rainfall runoff model for the project. For the purposes of this study, rainfall and flood events may be referred to as the 10-year, 100-year, etc. The use of these terms is a common standard and do not mean that if the 100-year event occurs in one year that it will not happen again for 100 years. The terms are descriptive of hydrologic statistics, and the 10-year event is one that has a 10% chance of being equaled or exceeded in any given year. The 100-year event has a 1% chance of being equaled or exceeded in any given year. Hydrologic variables such as the rate at which rain falls, the soil moisture conditions at the start of a rainfall event and seasonal vegetation can all contribute to different results from the same total volume of rainfall within a basin under the same conditions of development. In other words, a 24-hour, 3.74 inch rainfall during drier summer months with abundant summer vegetation should produce less storm water runoff than a 12-hour 3.74 inch rainfall that follows a one-half inch rainfall during the month of November when vegetation is dormant. Given this, we determined to analyze the drainage basin with the assumptions of normal conditions of ground cover, soil moisture, and use the 24-hour storm as the basis. We used 24-hour rainfall totals to produce results for hypothetical storms tied to the frequency events in our model.

We began the study with a review of available mapping of the drainage basin and recent topographic data collected at the Mill site. Our goal in the study was to determine the frequency at which the Mill might suffer flood damage and propose strategies to remediate the flooding so that future damages might be prevented. We reviewed the conditions of development within the drainage basin in order to make estimates of hydrologic parameters that were used in the modeling effort. These parameters relate to land use and ground cover conditions, impervious area, drainage patterns and drainage channel conditions that would affect the portion of a rain event that would result in excess runoff and also affect timing considerations in the basin. We compiled County GIS maps to describe the drainage basin graphically for our study. These maps were used to delineate the drainage basin boundaries and obtain approximate land slopes and flow paths for the drainage basins and routing reaches. Routing reaches are the flow paths storm water takes from the outlet of a small drainage basin to the downstream outlet where the flow of a number of drainage basins is combined. For the purpose of this study, the drainage basin was divided into nine sub-basins totaling approximately 15.1 square miles. The area is comprised of a mixture of commercial, industrial, residential, supportive infrastructure and low intensity uses.

Following our data collection efforts, we began compiling the hydrologic models that we would use in our analyses. We used computer modeling programs created by the U.S. Army Corps of Engineers (Corps) in this project. One program, HEC-RAS (*R*iver *A*nalysis *S*ystem) is a one-

dimensional steady flow riverine hydraulics modeling software that is commonly used by the Corps and the Federal Emergency Management Agency (FEMA) to calculate water surface profiles for streams during flood events. Flow in this program can be gradually varied by changing the input peak flows at various points in the model. The program takes into account the friction losses produced by the stream geometry and cover conditions and the effects of hydraulic structures such as bridges and box culverts upon flow profiles. It does not take into account the natural progression of a flood wave down a water course during the period of a rain event. For that reason, we also used HEC-HMS (*H*ydrologic *M*odeling *S*ystem) in the analysis. The Hydrologic Modeling System is designed to simulate the rainfall-runoff processes of dendritic watershed systems. It is designed to be applicable in a wide range of geographic areas for solving the widest possible range of problems. This range includes large basin water supply and flood hydrology, and small urban or natural watershed runoff. The HEC-RAS model used in the study is the one currently being developed by FEMA for the basin.

The HEC-RAS model geometry replicates field conditions of flow area, bank locations, culverts, bridges and rubble dams along the study reach. We accepted the Manning's coefficients and other parameters used in the model for the sake of continuity, but did alter some in the immediate vicinity of the Mill site. The flows developed using the HEC-HMS model were used in the HEC-RAS model to perform our analyses of flood profiles at the site.

Stream flows were developed for the HEC-RAS model by using the HEC-HMS model. As stated previously, this model calculates the runoff response of drainage basins to rainfall events, and is applicable to urbanizing watersheds such as the one studied here. We divided the watershed into nine sub-basins. We utilized the areas of each basin, along with Soil Conservation Service TR-55 methodology to estimate the SCS Curve Number and Time of Concentration for each sub-basin. The SCS Curve Number is an index of land use that is used in calculating the excess rainfall that results in runoff. The time of concentration is the time required for rain falling on the most hydraulically distant part of the basin to flow to the basin outlet. Routing reaches were created in order to route each sub-basin's contribution to the study area and thence to the model outlet at the Alcovy Road Bridge. The mill dam and Alcovy Road Bridge were treated as reservoirs in order to allow the model to utilize overbank storage and calculate stages in the area. The site survey information and GIS maps were used to develop elevation / area relationships for use in the model.

Since the Alcovy River is gaged at several points, we used the Log Pearson analyses supplied on the USGS web site with basin transfer techniques to calculate flows in our study area. We also used a program developed by the USGS to calculate flows of small urban streams. We further allowed the TR-55 program to calculate discharges for our project since the total drainage area falls within the range of limitations of that program. These provided a check for the reasonableness of our modeling results. We rejected the results of the basin transfer techniques with the Log Pearson analysis after further review of all records. Many of the gage records were either discontinued prior to the period of intense urbanization, or the gage period of record was too short for confident analysis. The gage at Lawrenceville may be useful in future years, but with the relatively short period of record and rapid urbanization of the past several years, it might not yield useful results at this time. We further discarded the USGS Urban Streams results because the Alcovy River gage near Grayson had a peak discharge in 2003 that far exceeded the

100-year discharge produced for that location by the Urban Streams Equations. TR-55 and the HEC-HMS models produced results similar to the discharges used in the FIS HEC-RAS model and this provided a confidence level appropriate to the study.

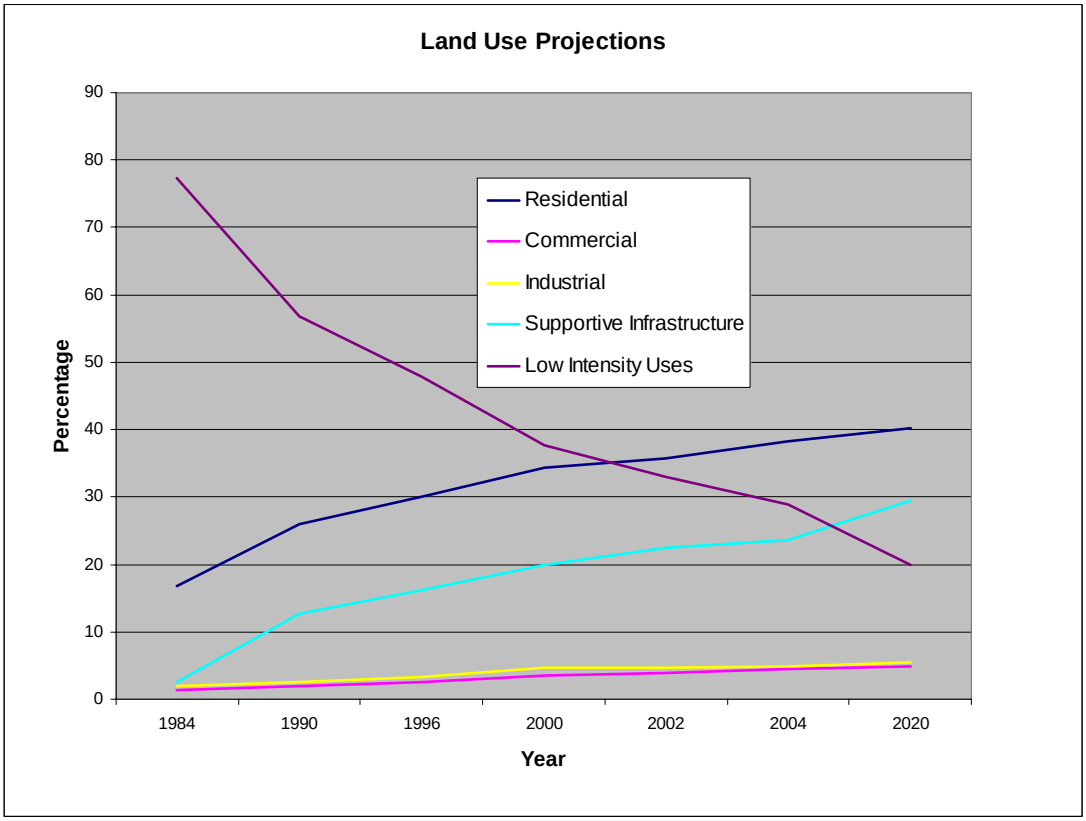
Discharges at Alcovy River Grist Mill Site				
Frequency	USGS Urban Streams Equations	TR-55	FIS HEC-RAS Model	HEC-HMS
2-Year	1,222	2,232	3,234	2,407
5-Year	1,985	4,322		
10-Year	2,587	5,948	6,797	5,634
25-Year	3,442	8,360		
50-Year	4,149	10,653	9,819	9,709
100-Year	4,930	11,965	10,637	10,968

Sub-Basin Drainage Areas		
Sub-Basin	Acres	Square Miles
1	1,348.8	2.11
2	579.5	0.91
3	1,133.6	1.77
4	480.6	0.75
5	1,284.0	2.01
6	1,675.7	2.62
7	503.3	0.79
8	877.7	1.37
9	1,773.4	2.77
∑=	9,656.6	15.10

Urbanization Analysis

Growth trends can be difficult to predict, especially given influences such as infrastructure availability, local and national economy, market influences and land availability. We attempted to make reasonable projections of the growth in Gwinnett County based on past years' land use statistics. We applied a forecast routine to the statistics in the table below. The growth projected for the increasing uses (residential, commercial, industrial, supportive infrastructure) totaled above 100%, and the low intensity uses went to 0% before the year 2020. This indicates that the growing land uses will compete for available space, and that some uses may not grow as high as history might indicate, or demand may desire. Based on the rapid urbanization of the basin, it is possible the low intensity uses will approach 0% well before 2020 if the county growth plan is not followed. Gwinnett County participates in the Georgia Community Greenspace Program that seeks to preserve 20% of net acreage as greenspace. We used 20% for low intensity uses and applied a constant to the other land uses to achieve no greater than 100% total land use. Based on these estimates, we revised the Soil Conservation Service Curve Numbers to reflect future conditions land use, and further revised the HEC-HMS model with the new Curve Numbers to analyze the runoff response to rainfall under those conditions.

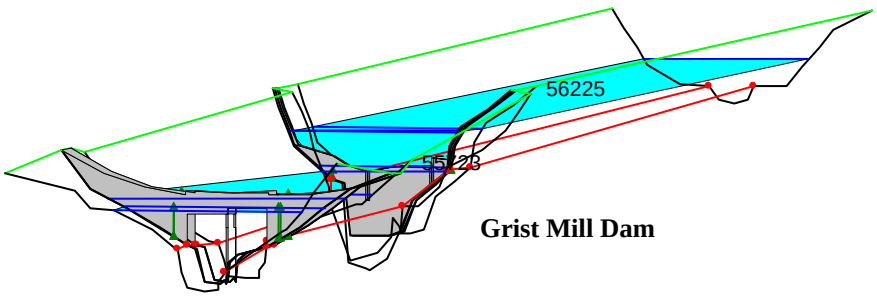
Land Use	Gwinnett County Percent of Total Land Area						2020 Projection
	1984	1990	1996	2000	2002	2004	
Residential	16.70	26.00	30.00	34.40	34.80	38.25	40.17
Commercial	1.30	1.90	2.50	3.50	3.82	4.43	4.84
Industrial	2.00	2.60	3.40	4.70	4.65	4.81	5.43
Supportive Infrastructure	2.60	12.70	16.20	19.90	22.45	23.64	29.57
Low Intensity Uses	77.40	56.80	47.80	37.60	33.05	28.87	20.00

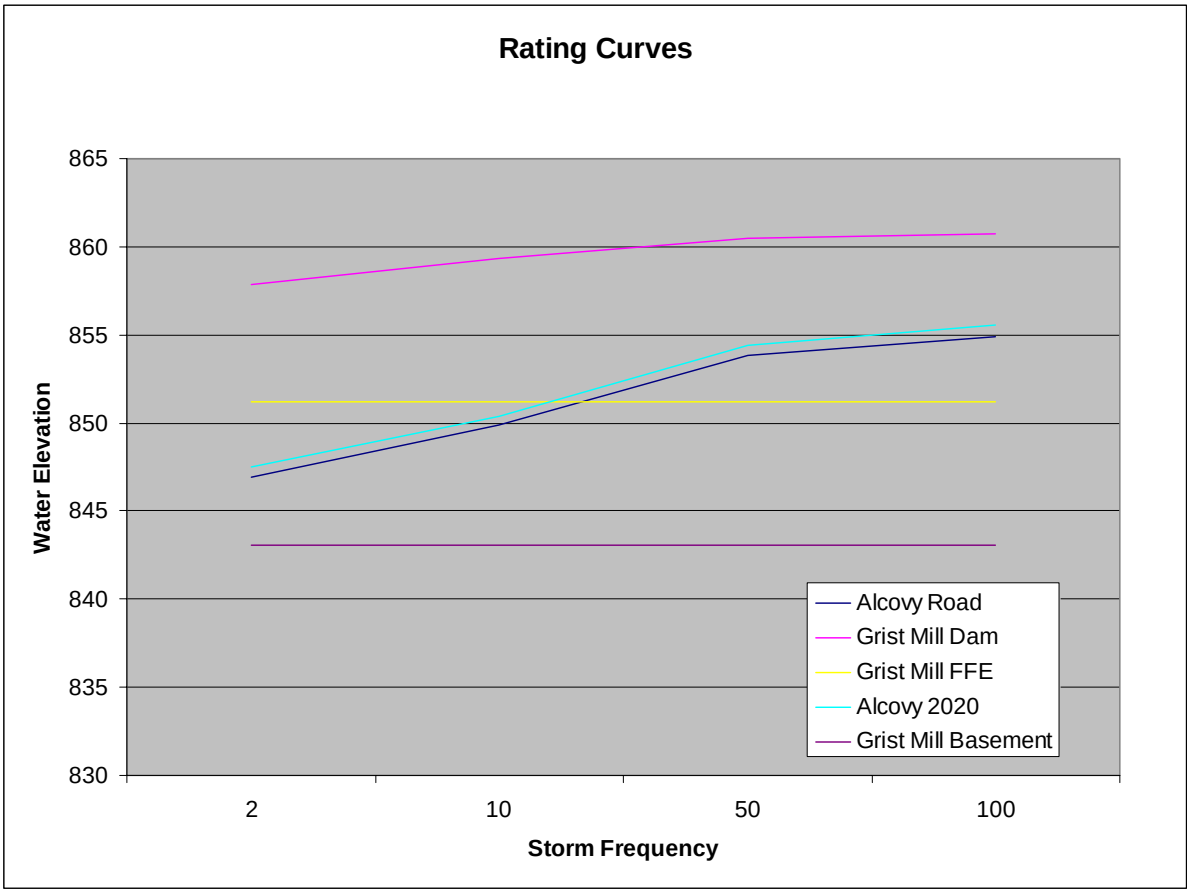


Present Conditions and 2020 Discharges at Alcovy River Grist Mill Site		
Frequency	Present (cfs)	2020 (cfs)
2-year	2,940	3,380
5-year	4,630	5,270
10-year	6,075	6,705
25-year	8,120	8,870
50-year	9,755	10,535
100-year	10,850	11,670

As stated earlier, we used the HEC-RAS model being developed by FEMA for our study. We altered only the geometry and discharges within our study area within the model to evaluate present and future conditions riverine hydraulics. The figures below illustrate the modeling results provided by the HEC-RAS model. The model indicated a sudden drawdown at the dam of approximately 4.7 feet. It is unlikely that this drawdown would occur as abruptly as indicated by the model, but would probably occur over a greater distance. It is possible that the flow would transition through critical depth at some point over the dam, but the program only calculates flows at the cross sections and head losses due to the structures. The profiles show that the Alcovy Road Bridge and the dam exert degrees of hydraulic control on the stream profiles. The bridge produces a "heading-up" of approximately 2.2 feet during the 100-year flood event. This heading-up converges to zero as you approach the more frequent events. The present conditions rating curve indicates that the grist mill would experience first floor flooding at approximately the 22-year event.

Alcovy River Grist Mill





Future conditions discharges will increase flood profiles to a greater degree at the bridge opening than at the dam location because of the varying degrees of hydraulic control at each structure. The bridge produces an increase that varies from approximately 0.5 feet during the 2-year event up to approximately 0.6 feet during the 100-year event. Increases at the dam can be expected to be approximately 0.25 feet. The tables and figures below show the expected flood elevations for existing and future conditions during the referenced flood events and the expected depths and velocities during the events under future conditions.

Calculated Flood Elevations (ft.) for Present and Future (2020) Conditions With Dam Reconstructed				
Frequency	Upstream Face of Alcovy Road		Upstream Face of Grist Mill Dam	
	Present	2020	Present	2020
2-year	846.92	847.47	857.82	858.06
10-year	849.91	850.35	859.31	859.53
50-year	853.79	854.40	860.47	860.68
100-year	854.90	855.52	860.76	860.95

Table of Expected Depths and Velocities for Existing Conditions Hydrology With Dam Reconstructed				
Frequency	At Mill Floor (ft)	Velocity at Mill (ft/s)	Above Dam Crest (El. 855) (ft)	Velocity at Dam (ft/s)
2-year	-4.27	1.18	2.82	4.1
10-year	-1.28	2.21	4.31	5.8
50-year	2.60	2.82	5.47	6.7
100-year	3.71	1.84	5.76	7.0

*Negative numbers indicate distance below referenced structures.

Table of Expected Depths and Velocities for Future (2020) Conditions Hydrology With Dam Reconstructed				
Frequency	At Mill Floor (ft)	Velocity at Mill (ft/s)	Above Dam Crest (El. 855) (ft)	Velocity at Dam (ft/s)
2-year	-3.72	1.36	3.06	4.3
10-year	-0.84	2.38	4.63	6.1
50-year	3.21	2.94	5.68	6.9
100-year	4.33	1.89	5.95	7.2

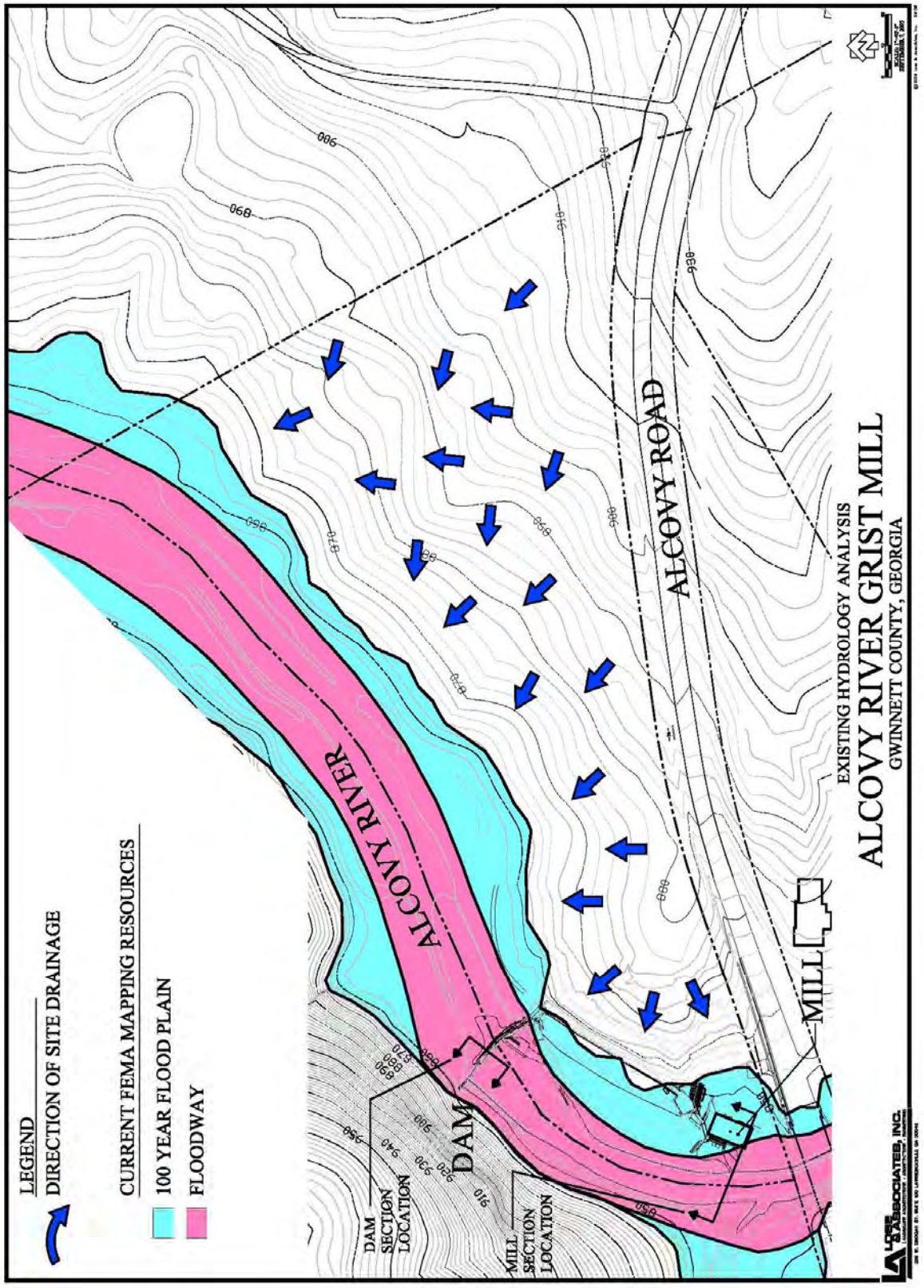
*Negative numbers indicate distance below referenced structures.

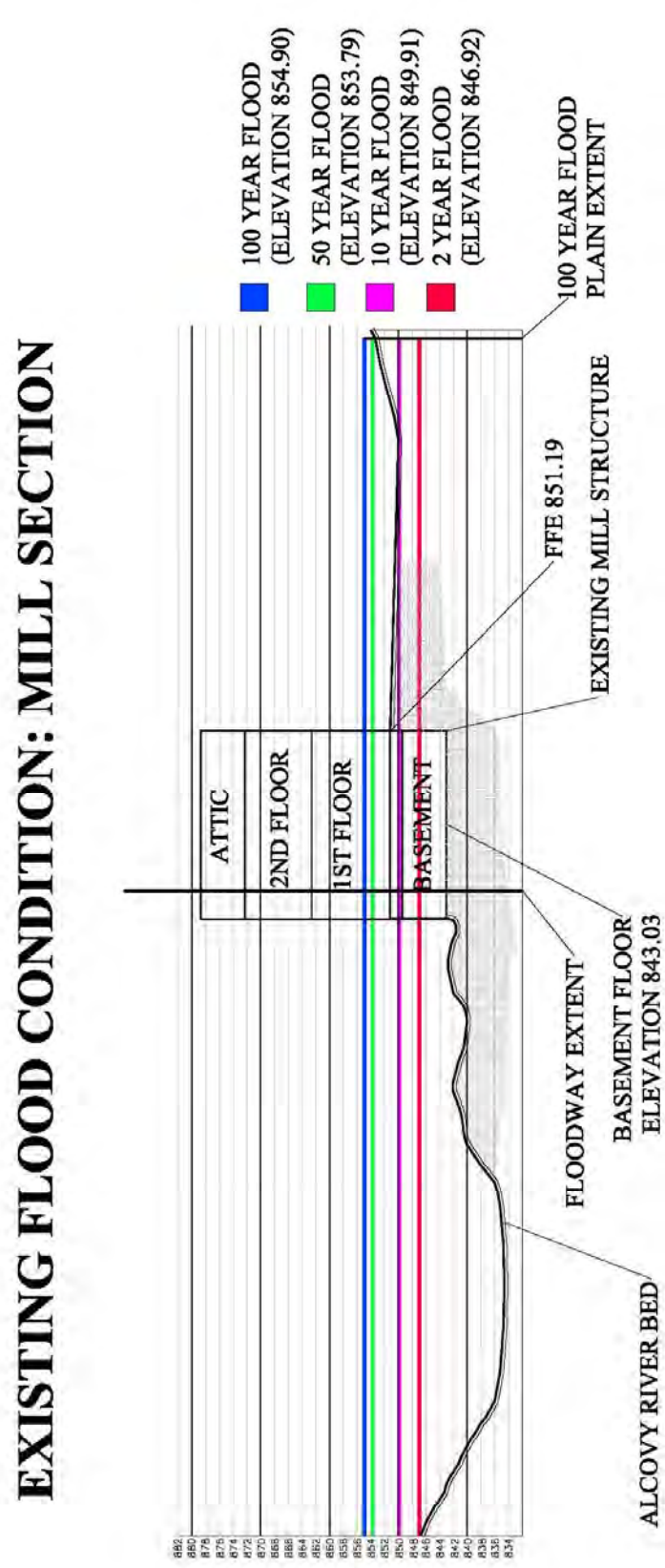
Table of Expected Depths at Mill Basement for Existing and Future (2020) Conditions With Dam Reconstructed		
Frequency	Existing Conditions	Future (2020) Conditions
2-year	3.61	4.16
10-year	6.60	7.04
50-year	10.48	11.09
100-year	11.59	12.21

*Velocities will be the same at the Mill in the above table.

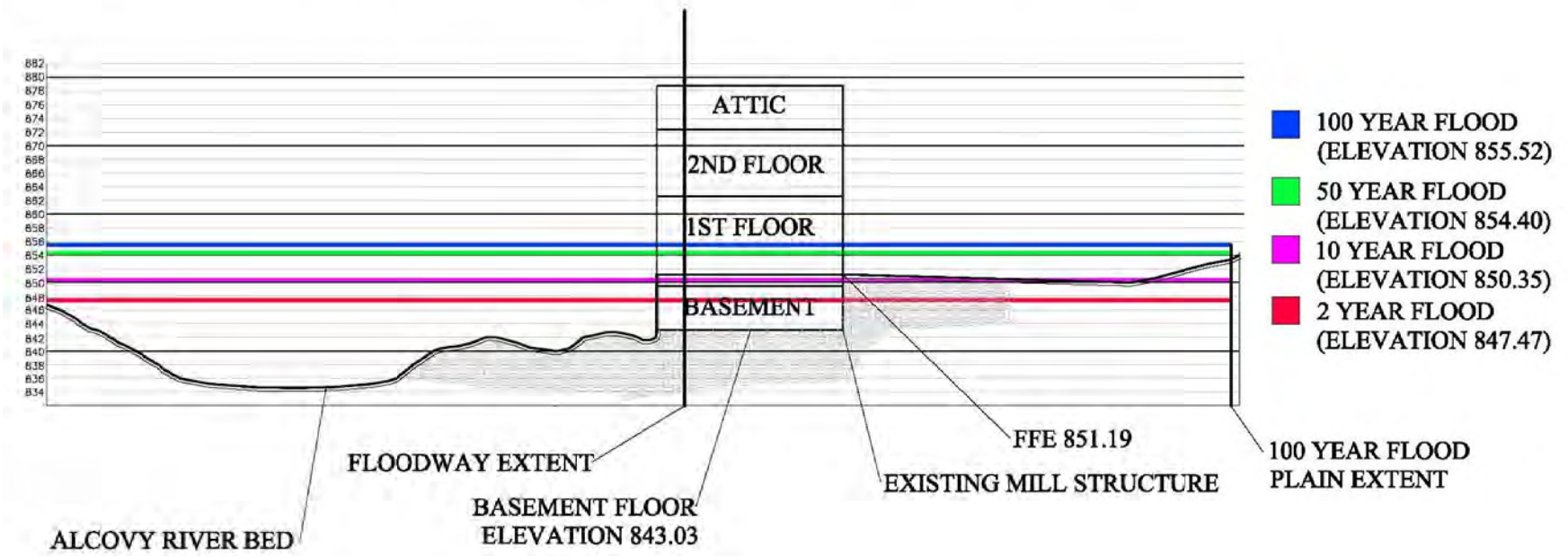
Table of Expected Depths and Velocities for Existing Conditions Dam Geometry				
Frequency (year)	**Existing Conditions Hydrology**		**Future (2020) Conditions Hydrology**	
	Above Dam Crest (El. 850) (ft)	Velocity at Dam (ft/s)	Above Dam Crest (El. 850) (ft)	Velocity at Dam (ft/s)
2-year	3.57	2.6	3.83	2.9
10-year	5.19	4.4	5.44	4.7
50-year	6.49	6.2	6.71	6.5
100-year	6.82	6.7	7.01	7.0

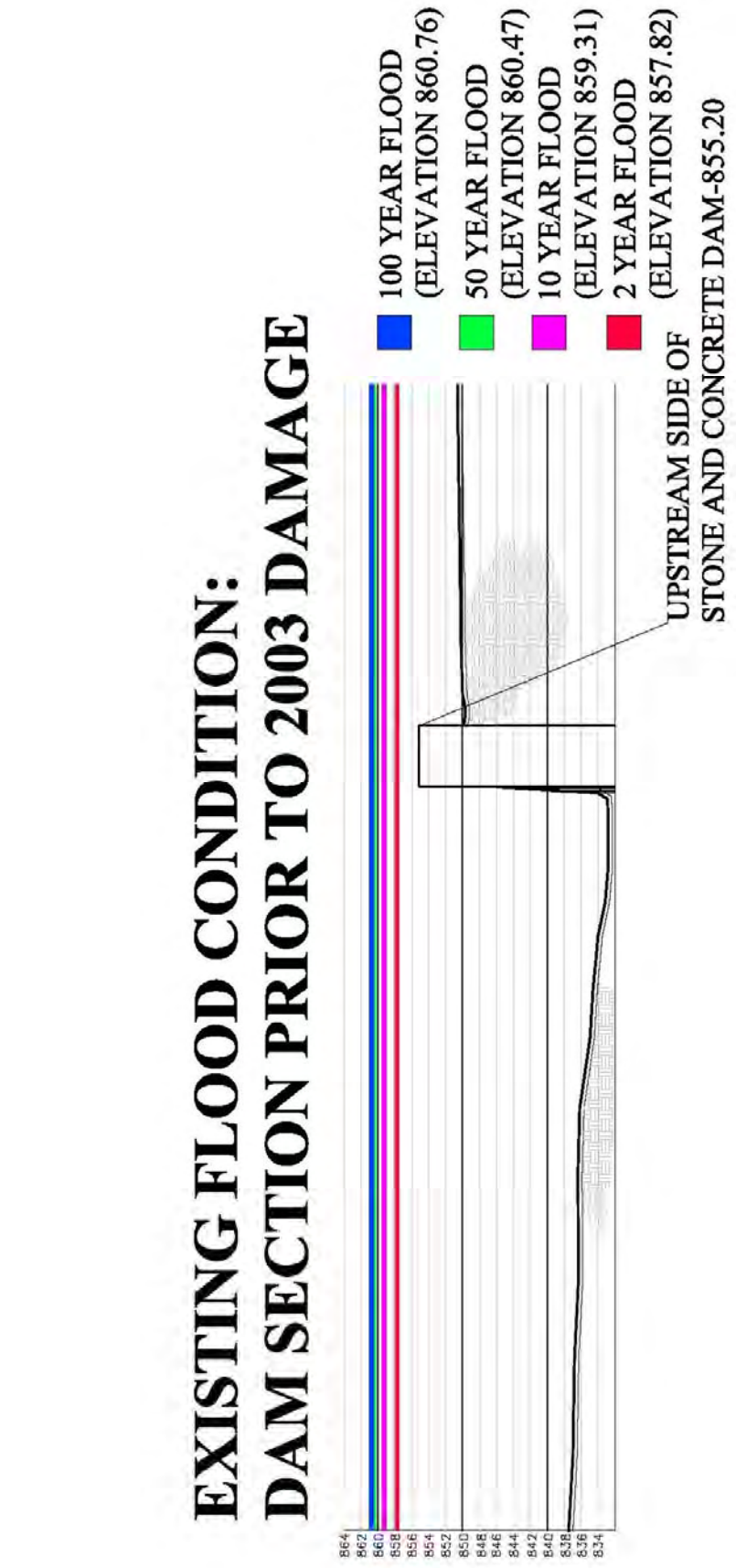
The following figures graphically illustrate the elevation of various flood events on the mill and dam both currently and in the projected year 2020. Furthermore, the graphics for the dam represent the flood elevations on both the dam as it currently exists and the hypothetical dam, if it were to be reconstructed to its configuration prior to the damage in 2003. The first plan graphic represents 100 year floodplain and floodway extents as noted in recent FEMA mapping. Please refer to this map for locations for the mill and dam sections.

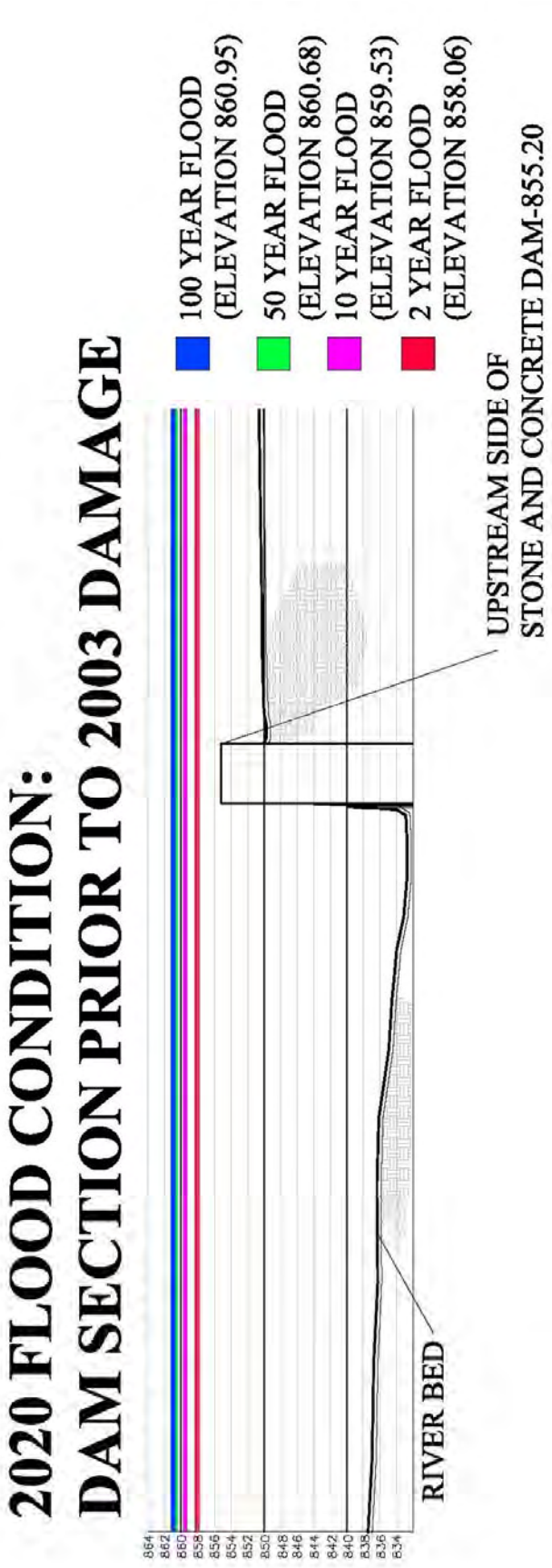

LEGEND
DIRECTION OF SITE DRAINAGE
CURRENT FEMA MAPPING RESOURCES
100 YEAR FLOOD PLAIN
FLOODWAY
ALCOVY RIVER
ALCOVY ROAD
DAM
MILL
DAM SECTION LOCATION
MILL SECTION LOCATION
EXISTING HYDROLOGY ANALYSIS
ALCOVY RIVER GRIST MILL
GWINNETT COUNTY, GEORGIA

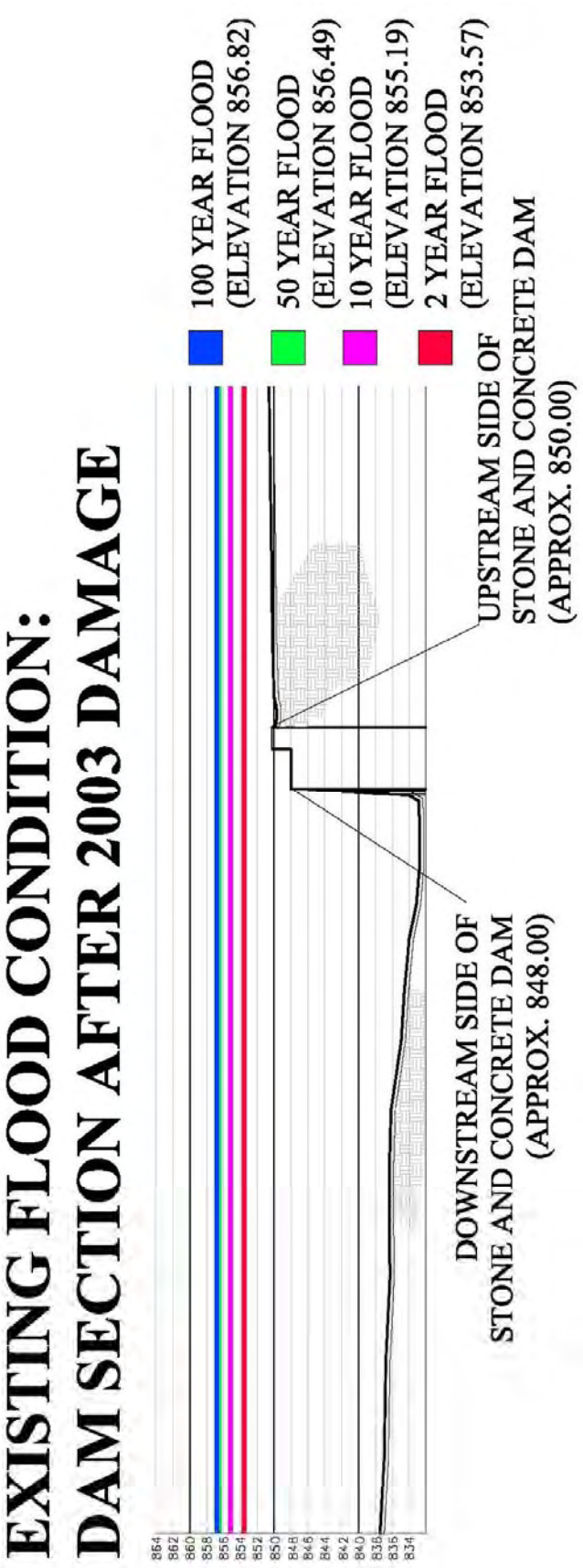

EXISTING FLOOD CONDITION: MILL SECTION
100 YEAR FLOOD (ELEVATION 854.90)
50 YEAR FLOOD (ELEVATION 853.79)
10 YEAR FLOOD (ELEVATION 849.91)
2 YEAR FLOOD (ELEVATION 846.92)
100 YEAR FLOOD PLAIN EXTENT
FFE 851.19
EXISTING MILL STRUCTURE
ATTIC
2ND FLOOR
1ST FLOOR
BASEMENT
FLOODWAY EXTENT
BASEMENT FLOOR ELEVATION 843.03
ALCOVY RIVER BED

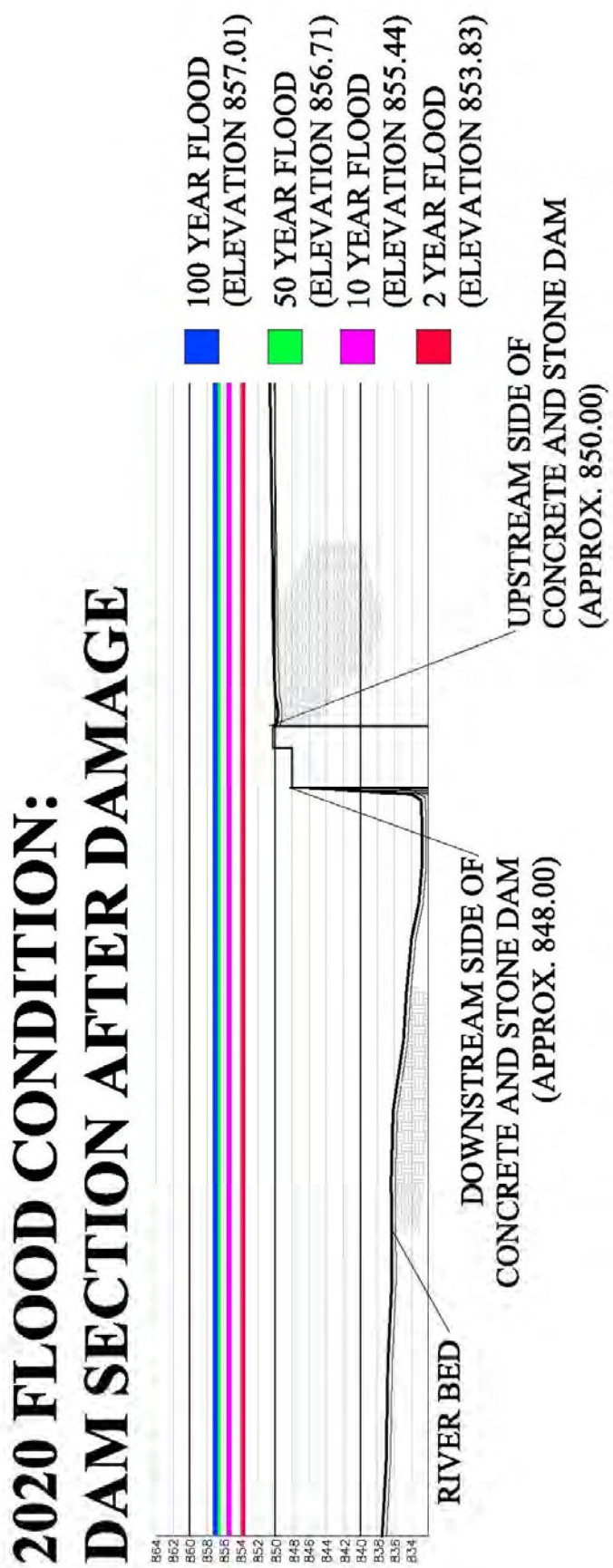
2020 FLOOD CONDITION: MILL SECTION




EXISTING FLOOD CONDITION:
DAM SECTION PRIOR TO 2003 DAMAGE
100 YEAR FLOOD
(ELEVATION 860.76)
50 YEAR FLOOD
(ELEVATION 860.47)
10 YEAR FLOOD
(ELEVATION 859.31)
2 YEAR FLOOD
(ELEVATION 857.82)
UPSTREAM SIDE OF
STONE AND CONCRETE DAM-855.20
864
862
860
858
856
854
852
850
848
846
844
842
840
838
836
834


2020 FLOOD CONDITION:
DAM SECTION PRIOR TO 2003 DAMAGE
100 YEAR FLOOD
(ELEVATION 860.95)
50 YEAR FLOOD
(ELEVATION 860.68)
10 YEAR FLOOD
(ELEVATION 859.53)
2 YEAR FLOOD
(ELEVATION 858.06)
UPSTREAM SIDE OF
STONE AND CONCRETE DAM-855.20
RIVER BED
864
862
860
858
856
854
852
850
848
846
844
842
840
838
836
834


EXISTING FLOOD CONDITION:
DAM SECTION AFTER 2003 DAMAGE
100 YEAR FLOOD (ELEVATION 856.82)
50 YEAR FLOOD (ELEVATION 856.49)
10 YEAR FLOOD (ELEVATION 855.19)
2 YEAR FLOOD (ELEVATION 853.57)
UPSTREAM SIDE OF STONE AND CONCRETE DAM (APPROX. 850.00)
DOWNSTREAM SIDE OF STONE AND CONCRETE DAM (APPROX. 848.00)
864
862
860
858
856
854
852
850
848
846
844
842
840
838
836
834


2020 FLOOD CONDITION:
DAM SECTION AFTER DAMAGE
100 YEAR FLOOD
(ELEVATION 857.01)
50 YEAR FLOOD
(ELEVATION 856.71)
10 YEAR FLOOD
(ELEVATION 855.44)
2 YEAR FLOOD
(ELEVATION 853.83)
UPSTREAM SIDE OF
CONCRETE AND STONE DAM
(APPROX. 850.00)
DOWNSTREAM SIDE OF
CONCRETE AND STONE DAM
(APPROX. 848.00)
RIVER BED
864
862
860
858
856
854
852
850
848
846
844
842
840
838
836
834

Flood Mitigation Strategies

There are four basic flood mitigation strategies employed as part of the federal government's national strategy. These strategies are evacuation of the floodplain, elevate-in-place, structural measures (levees/floodwalls) and channel modifications. Since the Alcovy Grist Mill is an historic site and is dependent upon the river for operation, evacuation of the floodplain is not a viable flood hazard mitigation strategy for this structure. Removing the mill from the river would destroy the historical accuracy of the facility and remove the original power source for the mill's equipment. Additionally, levees and floodwalls are not considered viable for this site for two primary reasons. First, the historical nature of the site would be deluded by the presence of floodwalls around the structure. Second, the operation of the floodwall system would be somewhat intensive for the nature of the site. Consideration would have to be given to operation of floodgates or stop log structures at upstream and downstream flume openings and the operation of interior drainage equipment. Not only would this require contingency plans and flood warning capabilities, but they would take away from the historical accuracy of the site. This leaves two basic strategies for consideration: elevate-in-place and channel modifications. Channel modifications will be considered first. As with any mitigation strategy, the desired level of protection should be identified. Local regulations may require the structure to be protected to the 100-year event, which would mean that protection would be provided to the base water surface elevations plus one foot (as a minimum). However, if regulations allow, site conditions and mitigation costs may make lesser levels of protection desirable. All levels of protection are based on the relationship of the flood elevation and first floor elevation of the structure being protected. Additionally, combinations of strategies may be necessary to protect the foundation and piers for the mill and to provide the level of protection against flooding requested by the owner and regulatory agencies.

Current trends in riverine engineering and floodplain management move away from the old method of enlarging the natural channel until sufficient capacity exists to carry the design flood. That strategy is expensive both in terms of monetary costs to perform the work and environmental costs in habitat damage. Mitigating a stream of this size could require enlarging a significant length of the stream, which could become partially clogged with silt within a few years. However, on streams that have man made obstructions such as bridges, it is sometimes possible to modify those structures to mitigate any heading-up on the upstream side of the structure. The existing conditions stream profiles show that the Alcovy Road Bridge constricts the flow of the Alcovy River and produces heading up on the upstream side of the bridge during larger flood events. The bridge apparently has little effect on the present conditions 10-year event. Increasing the bridge opening would have little effect on flooding during that event, or lesser events, but could reduce the magnitude of flooding during larger events and perhaps be more benefit during future conditions events. We analyzed altering the bridge from its present opening of approximately 96 feet, as shown in the FEMA model, to an opening of 150 feet. As expected, this change did not reduce the water surface elevations for the more frequent events, but did alter the elevations for larger flood events. The table below provides a comparison of the water surface elevations at the Alcovy Road Bridge for future conditions discharges (2020) with the present bridge opening and the 150 feet wide bridge opening.

Alcovy Road Water Surface Elevations (feet) – 2020 Discharges				
Frequency	Existing Bridge	150' Bridge Opening	Difference in Elevations (ft)*	Relationship to Mill First Floor (ft)**
2-year	847.47	847.47	0	-4.72
10-year	850.35	850.35	0	-0.84
50-year	854.40	853.18	-1.22	1.99
100-year	855.52	854.01	-1.51	2.82

* Negative numbers indicate lowered water surface elevation.
** Negative numbers indicate water surface is below first floor, positive numbers indicate depth above first floor.

Increasing the bridge opening does not significantly improve flooding conditions at the Alcovy Grist Mill. The Mill should continue to be flooded at approximately the 10-year event, and only the depth of flooding for events greater than the 10-year flood would be affected. In other words, the Mill would still flood, just not as deep during the less frequent floods. This alternative does not appear to provide the flood mitigation required at the site.

We also considered raising the structure in place. This option would require raising the first floor to elevation 856.52, as a minimum, or 5.33 feet if the 100-year flood was the target of mitigation efforts. If the bridge is opened as discussed, the floor could be raised 3.82 feet to protect to the 100-year level. Since the building is founded on piers that support the frame structure, raising the structure may be feasible. The wheel could be left in its present location, although some modifications to the drive system may be required. It would also be necessary to modify the stairs, doorways and ramps into the building for access. However, this strategy would cause the least impact to the historical appearance of the structure and may cost less than enlarging the Alcovy Road Bridge. A structural evaluation should be performed to assess the capacity of the structure to withstand being raised-in-place.

We also analyzed the piers supporting the grist mill for susceptibility to scour. Scour is the process by which flowing water removes supporting soil around, and potentially under, foundations supporting load-bearing structures. If left unchecked, scour can lead to structural failure. We analyzed the scour potential at the grist mill using techniques typically employed in these types of analyses. We utilized output from the hydraulic modeling efforts to establish the depths and velocities of flow in the floodplain for the 2-, 10-, 50- and 100-year events for both existing and future (2020) conditions flows. Then we calculated the theoretical scour depth for the 2-year existing conditions flow, the 100-year future conditions flow and the 50-year future conditions flow. These events were chosen for their depths and velocities relative to the range of results provided by the hydraulic models. The 50-year future conditions event provided the greatest velocity of the three trials, but a flow depth that was less than the 100-year event. However, this combination provided the greatest theoretical scour at 4.0 feet, assuming bedrock is not present at a higher elevation. These results indicate that scour potential exists around the piers beneath the structure, and that scour protection should be provided to the piers during remediation or renovation. Scour protection can be provided by changing the bearing elevation of the foundation so that it is below the theoretical scour depth, or by placing armor such as riprap around the threatened structure. Any measure employed should be properly designed to provide the best results. The table below illustrates the events that were analyzed for their depths

of flow and water velocities in the vicinities of the supporting piers. The scour depths recorded result from the combination of flow depth and water velocity applied to the face of the piers beneath the structure.

Scour Analysis Results			
Event	**Depth of Flow (ft)**	**Velocity (ft/s)**	**Scour Depth (ft)**
2-Year Existing	4.92	1.18	2.2
100-Year 2020	13.52	1.89	3.1
50-Year 2020	12.40	2.94	4.0

RESULTS

Based on the analyses described in the preceding pages it appears that the Alcovy Grist Mill first floor could be damaged by the occurrence of the 22-year flood event, and the basement could be flooded by the occurrence of a discharge of approximately 1,980 cubic feet per second, which is less than the estimated 2-year flood discharge. Flood elevations will increase by less than one foot in analyzed events if the County grows in accordance with our projections for the year 2020. Our projections are generalized for the drainage sub-basins and certain clusters or patterns of development could affect peak discharges through flood wave timing changes, but these changes may not be significant.

Our analyses included existing conditions flood discharges and projected discharges for the year 2020 based on projected growth rates in the County. The table below illustrates the expected flood elevations for the frequency events for both conditions and the top elevation of the floodwall and first floor elevation of the grist mill needed to provide protection against each event. In evaluating this data, the historic and structural design team members should consider that the floodwall option requires closure structures at the upstream and downstream flume locations, and that the floodwall must enclose the building by intersecting the natural slopes at the top of wall elevations. The closure structures will require manual operation and must either be closed at the end of each day of site operation or closed when a flood warning is issued (which may require installation a flood warning system). Additionally, a pumping system will be required to handle internal drainage during times of rainfall when the closure structures are closed. Raising the structure may require some reconfiguration of the mill's drive mechanism and public access, but the method of construction seems to make this alternative possible. The project's historic architect and structural engineering team members should analyze this alternative to determine structural and historic feasibility. Raise-in-place could be performed to an acceptable level of protection. Providing protection against the 100-year event will require raising the structure 5.33 feet. If the 50-year event was an acceptable level of protection the structure could be raised 2.99 feet. Obviously, lower levels of protection require less elevation when raising the Mill. Additionally, scour calculations indicate the potential for scour to a depth of approximately 4.0 feet around the piers and footings supporting the structure. Appropriate measures should be taken to guard against scour. Scour countermeasures should also be part of the considerations undertaken by the project's historic architect and structural engineering team members. Opening the bridge to 150 feet does not, by itself, significantly improve flooding at

the site. However, this option might be employed in conjunction with one of the other two strategies to mitigate flooding at the grist mill site.

Table of Water Surface Elevations, Top of Floodwall Elevations, Raise-in-Place First Floor Elevations and Water Surface Elevations with Alcovy Road Bridge Widened to 150' for Flood Hazard Mitigation								
Event	**Water Surface Elevation**		**Top of Floodwall Elevation**		**Raise-in-Place First Floor Elevation**		**Water Surface Elevation with Bridge Widened**	
Flow cond.	Existing	2020	Existing	2020	Existing	2020	Existing	2020
25-Year	852.08	852.85	853.08	853.85	853.08	853.85	851.73	851.95
50-Year	853.79	854.40	854.79	855.40	854.79	855.40	853.17	853.18
100-Year	854.90	855.52	855.90	856.52	855.90	856.52	853.41	854.01
Existing Grist Mill First Floor Elevation 851.19								

The project's historic architect and structural engineering team members should analyze these alternatives and formulate the historical and cost impacts of these options when developing the project strategy for flood hazard mitigation.

Appendix C

REPORT OF

PROFESSIONAL SERVICES
ON THE
ALCOVY RIVER GRIST MILL
1564 ALCOVY ROAD
LAWRENCEVILLE, GWINNETT COUNTY, GEORGIA

FOR

MR. REX SCHUDER, ASLA
GWINNETT COUNTY
PARKS & RECREATION PROJECT ADMINISTRATION
75 LANGLEY DRIVE
LAWRENCEVILLE, GA 30045-6900

PROJECT NO. 2005.2175.01

UNITED CONSULTING

We're here for you

UNITED CONSULTING

August 18, 2005

Mr. Rex Lee Schuder, ASLA
Gwinnett County
Parks & Recreation Project Administration
75 Langley Drive
Lawrenceville, GA 30045-6900

PROJECT: Summary of Professional Services
Alcovy River Grist Mill
1564 Alcovy Road
Lawrenceville, Gwinnett County, Georgia
Project No: **2005.2175.01**

Dear Mr. Schuder:

United Consulting is pleased to submit this report of our Professional Services for the above-referenced project.

We appreciate the opportunity to assist you with this project. Please contact us if you have any questions or if we can be of further assistance.

Sincerely,

UNITED CONSULTING

Aaron C. Epstein, P.E.
Senior Geotechnical Engineer

Chris Roberds, P.G.
Executive Vice President

ACE/CLR/zc

h:\geoenvir\reports\2005\2005.2175.01.doc

625 HOLCOMB BRIDGE ROAD ♦ NORCROSS, GEORGIA 30071
Tel: 770/209-0029 ♦ Fax: 770/582-2900 ♦ Client Service: 800/266-0990
Web: http://www.unitedconsulting.com ♦ E-mail: united@unitedconsulting.com

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APPENDIX

PROJECT INFORMATION

The project site is the historical Alcovy River Grist Mill located at 1564 Alcovy Road, Lawrenceville, Gwinnett County, Georgia. The mill consisted of a 3-story timber frame building with shed roof and appurtenant works including flumes, sluiceway, waterwheel, and a grouted quarry stone dam located across the Alcovy River, a few hundred feet upstream of the mill building. The mill has apparently been inactive for over two decades and was somewhat dilapidated and is not operable at this time. The lower (basement) level of the mill has been subject to flooding, and sediment deposits have accumulated within and around the basement and much of the perimeter of the mill building. The base of the water wheel was partially buried by the sediment deposits.

It is our understanding that the mill was constructed during sometime in the later half of the 19th century and was operated until the 1970's to 1980's. It was apparent that the mill building has undergone some renovation effort in the past, as non-historical construction materials such as concrete masonry unit blocks were observed supporting some of the interior columns. A report titled "Historic Structure Report", dated 9/9/2003, prepared by Lose & Associates; Jack Pyburn, Architect, Inc. and New South Associates was provided with us as a reference documents to assist us preparing this report.

We understand that Gwinnett County is considering refurbishing the mill so that its historical and aesthetic value may be preserved and appreciated by the public. United Consulting has been requested to provide professional geotechnical services including a subsurface exploration, as requested by the design team, to assist with this endeavor.

PURPOSE

The purpose of this exploration included the following:

- Providing subsurface information around and within the mill building in an attempt to determine the type, and size of the existing foundations for the mill structure and to assess condition, consistency, depth to groundwater, and capacity of the soils supporting the building foundations.

- Evaluating the soil types supporting the foundations adjacent to the river with respect to the potential for scour.

- Providing subsurface information, in the area between the mill and the river, to assist the designers in assessing the option of constructing containment walls to protect the mill structure.

- Evaluating the depth and type of foundations, and the condition and consistency of the soil supporting the stone flume between the dam and the mill building.

SCOPE

The scope of our service has included the following items:

1. A visual reconnaissance of the Site from a geotechnical standpoint;

2. Using a combination of manual excavation, hand auger borings and hand probing in order to determine the type and size of the existing exterior/interior foundations of the mill structure, the depth of the flume, and conditions of the materials supporting the flume and building foundations.

3. Coring seven 10-inch diameter holes through the floor slab within the interior basement area in order to access the sub-surface.

4. Performing 19 Standard Penetration Test (SPT) borings around the perimeter of the mill building, within the proposed containment wall area and along the flume to assess subsurface condition.

5. Performing 4 hand auger borings with dynamic cone penetrometer testing through the holes cored in the basement slab.

6. An examination of soil samples obtained during our field exploration program by a geotechnical engineer for further identification, classification and assignment of laboratory testing to determine the potential for scour;

7. Preparing this report to document the results of our findings, analysis and other Geotechnical pertinent information.

SUBSURFACE CONDITIONS

SPT Borings

Perimeter of the Mill Building

SPT borings B-1 through B-7 and B-1A, which were drilled around the southern and western perimeter of the mill, each encountered about 2.5 to 6 feet of fill and/or alluvial soils. The fill/alluvium in these borings generally consisted of sand or sandy silt with occasional traces of roots and clay. The fill/alluvium in these borings was generally very loose to loose with SPT N-values ranging from 2 to 5 bpf.

Below the fill/alluvium, borings B-4, B-6 and B-7 encountered PWR at depths of 3 to 4 feet. Borings B-1 through B-7 and B-1A each encountered auger refusal (likely rock) at depths ranging from 4 to 6 feet.

Borings B-16 and B-17, which were drilled around the eastern perimeter of the mill, encountered fill consisting of sand with varying amounts of silt and clay to a depth of about 5 feet. The SPT N-values in the fill ranged from 5 to 8 bpf. A thin layer of residual soil typical of the Piedmont Physiographic Province was encountered below the fill prior to auger refusal (rock), which was encountered in each of the borings at a depth of about 8.5 feet.

Proposed Containment Walls

Borings B-8 and B-9, which were drilled in the area between the mill and Alcovy River, encountered about 11 to 12.5 feet of alluvial soils. Borings B-8 and B-9 encountered auger refusal (rock) immediately below the alluvium at depths of 11 to 12.5 feet.

Flume

Borings B-10 through B-15 and boring B-11A were drilled along the northwest side of the flume extending from the dam to the mill. Each of these borings encountered fill to depths ranging from about 3 to 8.5 feet. The fill generally consisted of sand with varying amounts of silt, clay and rock fragments. Residual soils were encountered below the fill in borings B-11A and B-15. The residual soils consisted of silty sand or sand with some silt. The SPT N-values in the residual soils ranged from 22 to 23 bpf. Partially Weathered rock was encountered below the fill in borings B-10, B-13, and B-14 at depths of 4 to 7 feet. Auger refusal (rock) was encountered in each of the borings drilled along the flume at depths ranging from 3 to 12.5 feet.

Groundwater

Groundwater was encountered in borings B-8 and B-9 at a depth of about 8.5 feet. No groundwater was encountered in the remaining borings at the time of drilling. Groundwater levels should be anticipated to fluctuate with the change of seasons, during periods of very low or high precipitation, or due to changes in the floodplain or watershed upstream from the area. For a more detailed description of the conditions encountered in the borings, please refer to the boring logs in the Appendix.

Hand Auger Borings

A floor slab was identified throughout most of the basement area below a roughly 1 to 3-foot thick layer of sediment. Four hand auger borings, designated HAP-1 through HAP-4 were performed within holes cored through the concrete basement slab. Below the concrete slab, each

of the hand auger borings encountered very loose to loose fill consisting of sand with some silt and traces of root hairs. Dynamic cone penetrometer tests values performed within the fill typically ranged from 3 to 5 blows per 1 ¾ inch penetration. Hand auger refusal occurred in each of the borings at depths ranging from 2 to 2.5 feet below the concrete slab. Hand auger refusal may represent a layer of very dense soil, soil containing rocks or other relatively small obstructions, or possibly mass rock.

DISCUSSION, RECOMMENDATIONS AND SUMMARY OF FINDINGS

The following recommendations and findings are based on our understanding of the proposed construction, the data obtained from our soil test borings, hand excavation, and laboratory testing, a site reconnaissance, and our experience with soils and subsurface conditions similar to those encountered at this site. United Consulting requests the opportunity for a general review of the final design and specifications in order to verify that earthwork and foundation recommendations have been properly interpreted and implemented in the design and specifications. We appreciate the opportunity to provide this Geotechnical Exploration.

We also recommend that United Consulting be consulted during construction to conduct Geotechnical Controls for the Owner's Representative. The purpose is to verify the similarity of the in-situ conditions with conditions anticipated by the designers.

Building And Flume Foundations

Exterior Building Columns

United Consulting performed a combination of manual excavation; probing and hand auger borings in an attempt to determine the type, size and thickness of the exterior footings. The footing numbers used in this context correspond to the numbers indicated on the foundation plan found in the Appendix of the "Historical Structure Report – Alcovy River Grist Mill".

The northwest side of the building, including Columns 1, 3 and 5 appeared to be supported on strip footings. However, the strip footings observed were not continuous as a gap was detected between Columns 1 and 3. Based on our probing, hand augers and SPT borings, these footings are probably supported directly on very dense soil, PWR or bedrock. The footings observed appear to be composed of crushed stone bound by mortar. Our observations regarding these exterior footings are as follows:

Column 1: The top of the footing was about 1.6 feet below the elevation of the interior floor slab. The width of the footing extended out about 1.1 feet beyond the northwest face of Column 1. The length of this footing was about 4.5 feet, measured from the southeast corner of Column 1.

Columns 3 and 5: The top of the footing was about 2.0 feet below the elevation of the interior floor slab. The width of the footing extended out about 1.3 feet from the northwest face of the wall. The length of the footing was about 4.5 feet.

Column 2: No footing was encountered within the depth excavated and/or probed at this location (about 3 feet). It is possible that a footing exists at this location, but it may be deeper than were able to manually excavate.

For a more illustrative description please refer to Figures 2 and 4 in the Appendix. Below are some of the photographs of the exterior excavations taken during our fieldwork:

Photo 1: Excavation at column #2

Photo 2: Excavation at column #1, inside. A slab was observed

Photo 3: Outside of column #1, the footing was exposed.

Photo 4: Another view of the exposed footing, outside of column #1

Photo 5: Footing exposed at column location #5

Photo 6: View of area between column #3 and #5

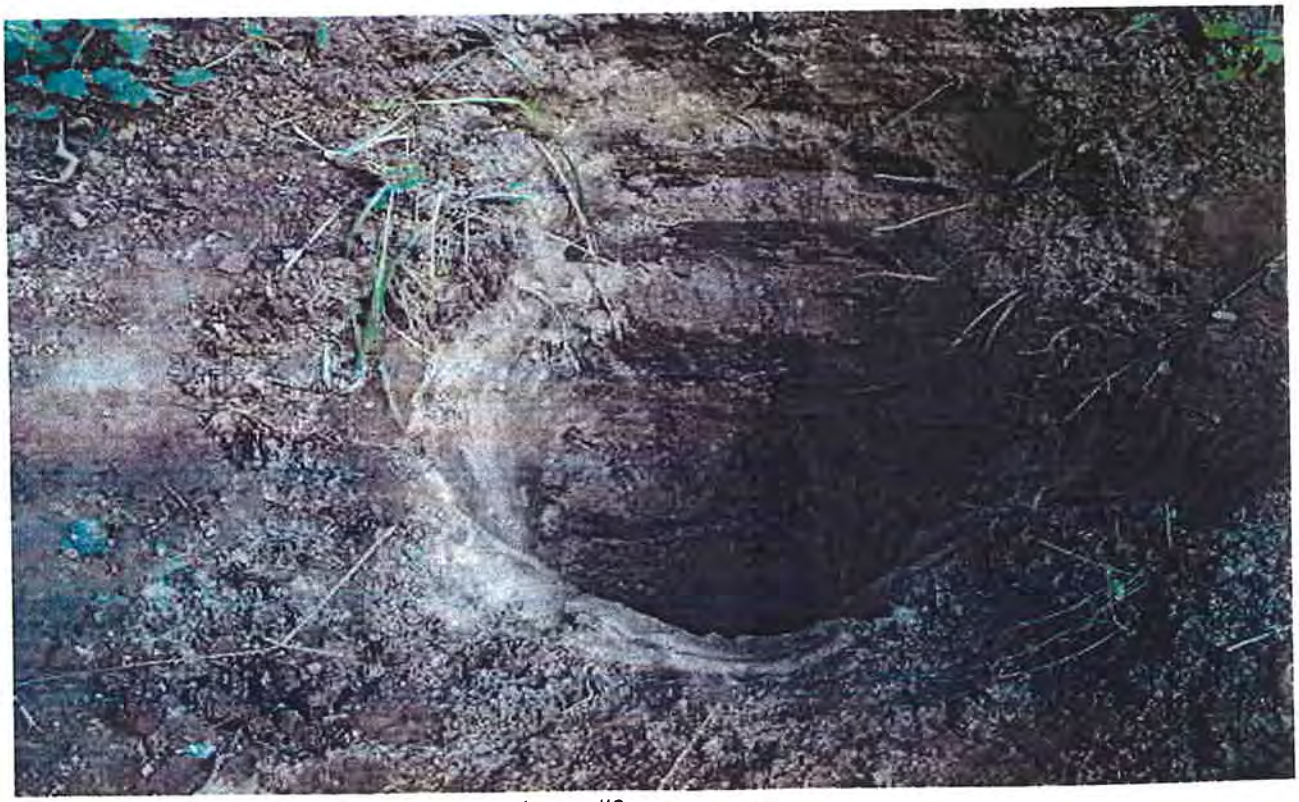

Photo 8: View of exposed footing at column #3

Interior Building Columns

Below a roughly 1 to 3 foot layer of loose sediment deposits, a concrete slab was encountered throughout most of the lower level of the mill. Coring of the slab indicated that the thickness of the slab generally varied from about 3 to 6 inches thick. The presence of the sediment and underlying concrete floor slab, as well as the lack of light in the basement area made observation of the interior column foundations very difficult. Our observations regarding the interior footings are as follows:

Column #7: A footing was detected along the southwest side of this column at about 6 inches below the bottom of the buried floor slab. The width of this footing appeared extend about 1'-2" to the southwest, beyond the edge of the column. This footing was approximately 2.5 feet thick and was probably bearing on very dense soil, PWR or rock.

Column #14: A footing was detected along the northeast side of this column at about 1 foot below the bottom of the buried floor slab. The width of this footing appeared extend about 1.5 feet to the northeast, beyond the edge of the column. This footing was approximately 2' 1" thick and was probably bearing on very dense soil, PWR or rock.

Column #6, #9, #10, and #13: Coring, augering, and probing in the areas of these columns did not reveal the presence of footings extending out beyond the face of the columns. Auger borings and probing in these areas indicated that hard material was encountered at depths ranging from about 2 to 2.5 feet below the top of the buried floor slab. It is possible that the columns might be supported directly on dense soil, PWR or rock; or the hard material encountered at these locations could possibly be the top of column footings that are set somewhat deeper.

Figure 3 in the appendix showed a more illustrative summary of the results. Below are some photographs taken within the interior basement area:

Photo 9: Excavation at column #7

Photo 10: Slab adjacent to the column #13

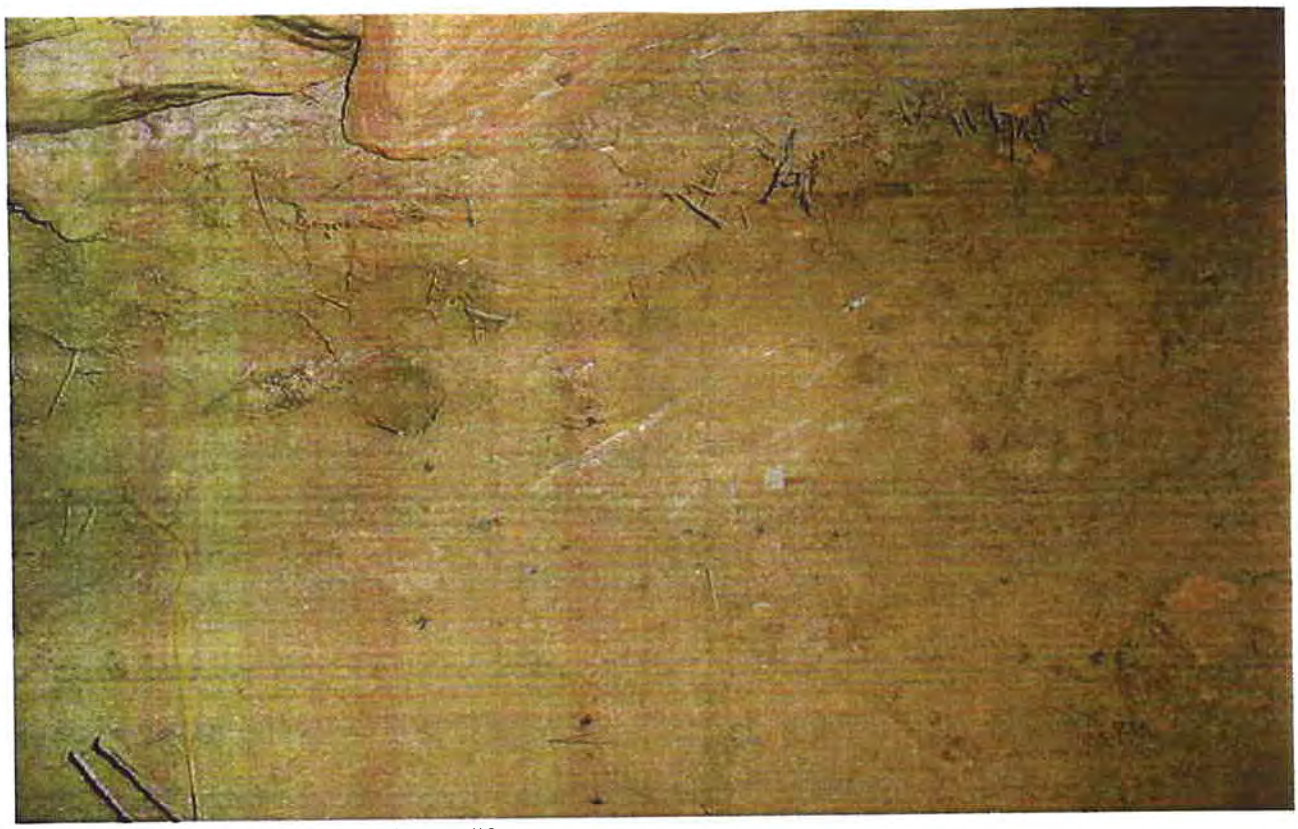

Photo 11: Slab adjacent to column #8

Photo 12: Slab adjacent to column #9

Photo 13: View at area adjacent to column #9

Photo 14: View at area adjacent to column #6

Photo 15: View at area adjacent to column #14

Photo 16: View of area adjacent to column #6 and #13

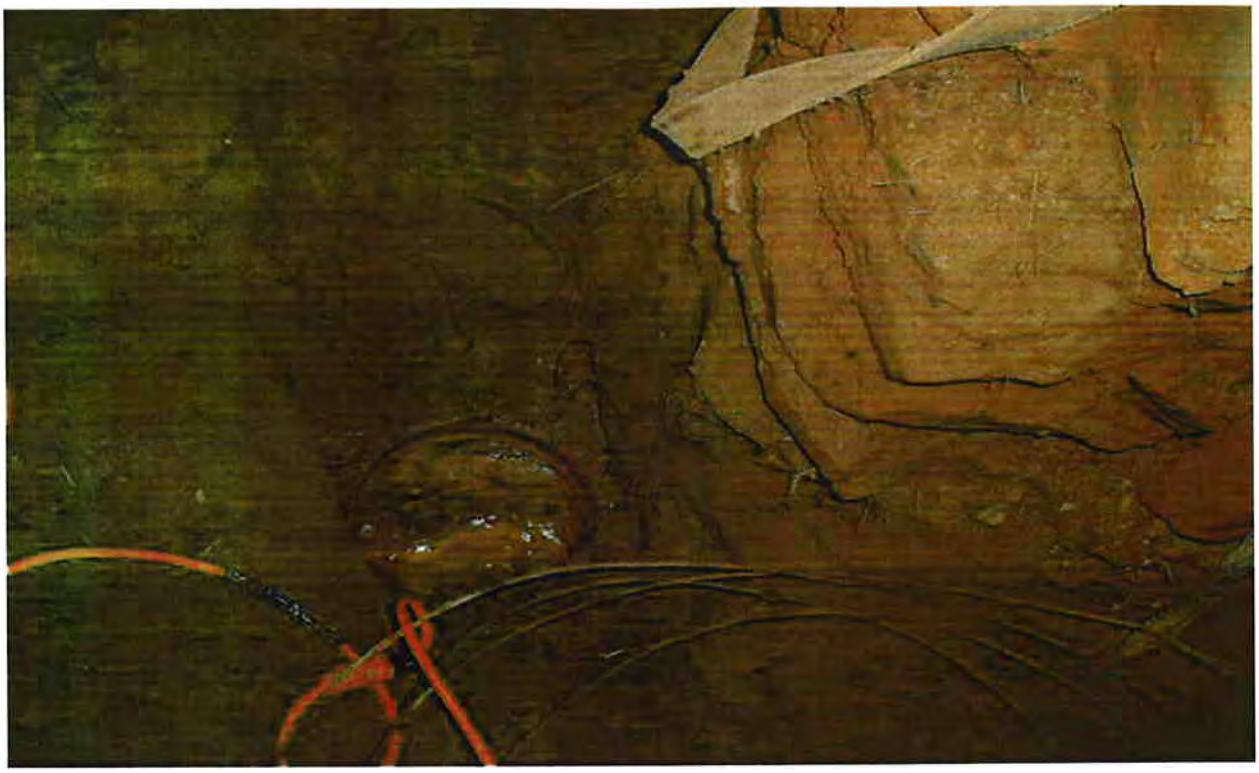

Photo 17: View of area adjacent to column #7

Existing Flume Between The Mill And The Dam

The existing flume was approximately 180 feet in length and the stone wall that formed the flume extended up about 2 to 3 feet above the existing ground surface on the inside of the flume. The inside of the flume was covered with a layer of accumulated loose sediments. Manual excavations, hand auger borings and probing performed at several random locations along the inside of the flume indicated that the depth of the inside of the flume (from the top of the flume wall) was typically about 4.5 feet to 6 feet. The bottom of flume, below the accumulated sediments, was observed to be composed of crushed rock and/or rip rap. No apparent wall footing was observed, and it appears that the existing flume wall might be supported directly on the crushed rock layer.

The SPT borings along the length of the flume generally indicate that the depth to auger refusal (rock) along the northwest side of the flume was somewhat greater than the depth of the flume. As such, it is likely that most of the flume wall is supported on soil as opposed to PWR or rock.

Below are the photographs taken at the flume area:

Photo 18: View of the flume area

Photo 19: Excavation at the east end of the flume

Photo 20: View of the east end of the flume

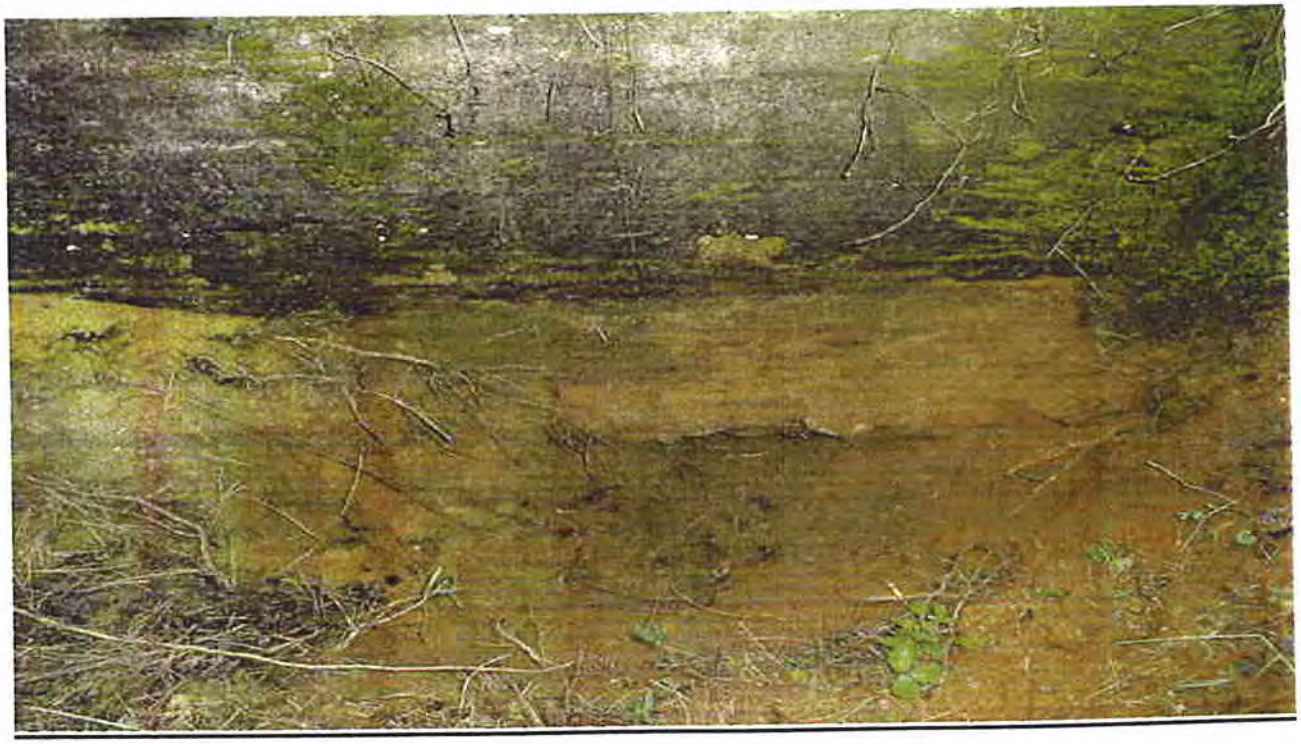

Photo 21: Excavation in the inside of the flume

Photo 22: Excavation in the inside of the flume

Proposed Containment Walls

We understand that cast-in-place concrete containment walls are being considered for the area between the Mill and the Alcovy River. The actual location and structural information for the proposed containment walls has not been finalized. Therefore, the following recommendations should be considered preliminary and must be reevaluated once the location and pertinent design information becomes available.

Wall Foundations

Borings B-8 and B-9, which were drilled in the general area where containment walls are being considered, encountered very loose to loose alluvial sand to depths ranging from 11 to 12.5 feet. Auger refusal, presumably due to rock was encountered immediately below the alluvial soils. Because of the loose consistency and the potential for scour, the alluvial soils are not considered to be suitable to support the containment walls. As such, United Consulting recommends that containment wall foundations be extended through the loose alluvial soils, so as to bear directly on competent rock. Alternatively, the wall foundation bearing elevation may be set at a higher

elevation, however, the underlying alluvial soils below the wall bearing elevation must be over-excavated to expose competent rock prior to backfilling with lean concrete. Shallow foundation constructed as recommended could be designed for an allowable bearing pressure of up to 5,000 psf.

Caving Considerations and Groundwater Control

Due to presence of the adjacent creek, loose alluvial soils, and shallow groundwater, sloughing or caving of the soils should be expected. Flattening of the excavation sidewalls and/or the use of excavation bracing may be needed to maintain stability. All excavations must be performed in accordance with OSHA excavation safety standards.

Groundwater was encountered several feet above the rock at the boring locations. As such, significant dewatering, will be required in order to perform the excavations for the containment walls. watering will be required throughout the excavation and replacement process. Dewatering means and methods should be left as the contractor's discretion.

Lateral Earth Pressure

Design of the retaining walls will require determination of the lateral earth pressure that will act on the wall. Based on our experience with similar soils, we recommend an effective cohesion of 0 psf and soil angle of internal friction of 28 degrees be used in calculation of earth pressures. Based on a uniform soil unit weight of 120 pcf, the aforementioned soil strength parameters result in the following equivalent fluid pressures for compacted fill against the wall.

TABLE 1 - LATERAL EARTH PRESSURES

Earth Pressure Condition	Earth Pressure Coefficient	Recommended Equivalent Fluid Pressure (psf/ft)
Active	$K_A = 0.36$	43
At-Rest	$K_O = 0.53$	64
Passive (For Soil)	$K_P = 2.75$	330

The equivalent fluid pressures listed are based on a level backfill, no surcharge effects, and the assumption that a functioning drainage system will be provided behind the walls to prevent buildup of hydrostatic pressure. For design of retaining walls below the groundwater table, the buoyant unit weight of the soil should be used to determine the lateral earth pressures, and hydrostatic pressures should be added to these (earth pressures) values. Because significant wall movement is required to develop passive earth pressure, it is recommended that a safety factor of 2 be used in design for passive earth pressure conditions. A coefficient of friction of 0.38 for sliding may be used for the retaining wall design.

Scour Considerations

A scour evaluation was not within United Consulting's scope of services for this project. United Consulting performed 3 grain size and hydrometer tests on selected soil sample from borings B-2, B-8 and B-9. The results of these tests, which are included in the Appendix, may be used for scour evaluation.

We note that the soils encountered at the site, particularly alluvial soils between the mill building and the Alcovy River are considered to be susceptible to scour. PWR and rock are typically considered to be resistant to scour. For retaining wall and/or foundation design considerations, soil strength characteristics (bearing pressure, passive pressure etc.) must be neglected within soils that may be subject to scour.

LIMITATIONS

This report is for the exclusive use of Gwinnett County Department of Community Services (the client) and the designers of this project and may only be applied to this specific project. The conclusions and recommendations have been prepared using the information obtained from the test program as described herein, and generally accepted standards of Geotechnical Engineering practice in the State of Georgia. No other warranty is expressed or implied. United Consulting is not responsible for conclusions, opinions or recommendations of others.

The right to rely upon this report and the data within may not be assigned without UNITED CONSULTING'S written permission.

Our conclusions and recommendations are based upon design information furnished us, data obtained from the previously described exploration and testing program and our past experience. Opinions do not reflect variations in subsurface conditions that may exist intermediate of our borings and in unexplored areas of the site. Should such variations become apparent during construction, it will be necessary to re-evaluate our conclusions and recommendations based upon "on-site" observations of the conditions.

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GENERAL NOTES

The soil classifications noted on the Boring Logs are visual classifications unless otherwise noted. Minor constituents of a soil sample are termed as follows:

Trace	0 - 10%
Some	11 - 35%
Suffix "y" or "ey"	36 - 49%

LEGEND

Split Spoon Sample obtained during Standard Penetration Testing

Relatively Undisturbed Shelby Tube Sample

Groundwater Level at Time of Boring Completion

Groundwater Level at 24 hours (or as noted) after Termination of Boring

w	Natural Moisture Content	
LL	Liquid Limit	
PL	Plastic Limit	Atterberg Limits
PI	Plasticity Index	
PF	Percent Fines (Percent Passing #200 Sieve)	
γ_d	Dry Unit Weight (Pounds per Cubic Foot or PCF	
γ_m	Moist or In-Situ Unit Weight (PCF)	
γ_{sat}	Saturated Unit Weight (PCF)	

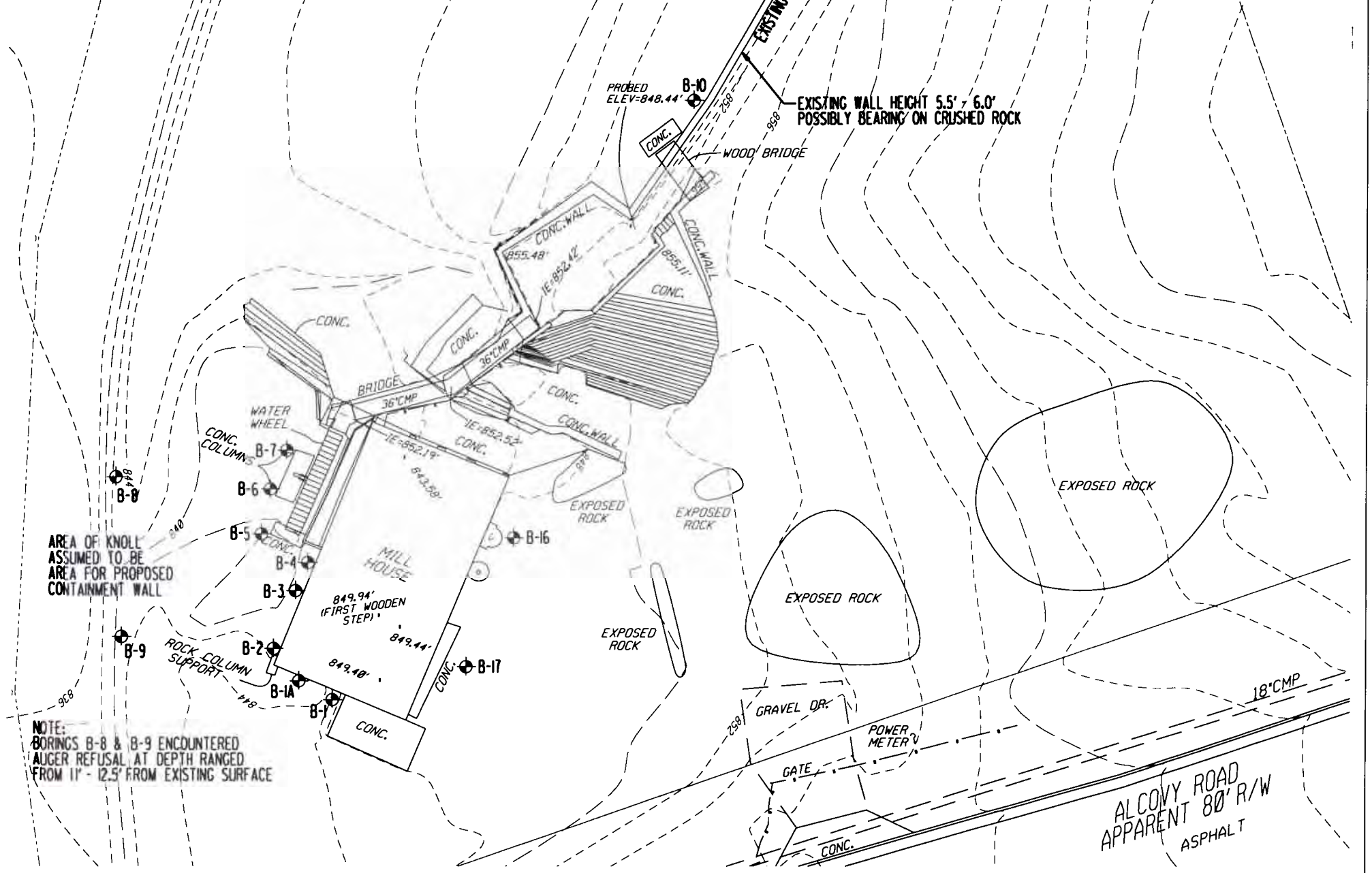
BORING LOG DATA AND NARRATIVE OF DRILLING OPERATIONS

The test borings were made by mechanically advancing helical hollow stem augers into the ground. Samples were covered at regular intervals in each of the borings following established procedures for performing the Standard Penetration Test in accordance with ASTM Specification D-1586. Soil samples were obtained with a standard 1.4" I.D. x 2.0" O.D. split barrel sampler. The sampler is first seated 6" to penetrate any loose cuttings and then driven an additional foot with the blows of a 140 pound hammer freely falling a distance of 30." The number of blows required to drive the sampler each six inches is recorded on the Boring Logs. The total number of blows required to drive the sampler the final foot is designated the "standard penetration resistance." This driving resistance, known as the "N" value, is a measure of the relative density of granular soils and is an indication of the consistency of cohesive deposits.

The following table describes soil consistencies and relative densities based on standard-penetration resistance values (N) determined by the Standard Penetration Test.

	"N"	Consistency
	0-2	Very Soft
	3-4	Soft
	5-8	Firm
Clay and Silt	9-15	Stiff
	16-30	Very Stiff
	Over 31	Hard

	"N"	Relative Density
	0-4	Very Loose
	5-10	Loose
	10-19	Firm
Sand	20-29	Medium Dense
	30-49	Dense
	50+	Very Dense



SCALE: NTS	DATE: 8-16-05	PROJECT NO: 2005.2175.01	TITLE: BORING LOCATION & SITE RECONNAISSANCE PLAN ALCOVY GRIST MILL PARK
PREPARED: VPV	CHECKED:	REVISIONS:	
CLIENT: GWINNETT COUNTY FINANCIAL SERVICES			

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WEB SITE WWW.UNITEDCONSULTING.COM
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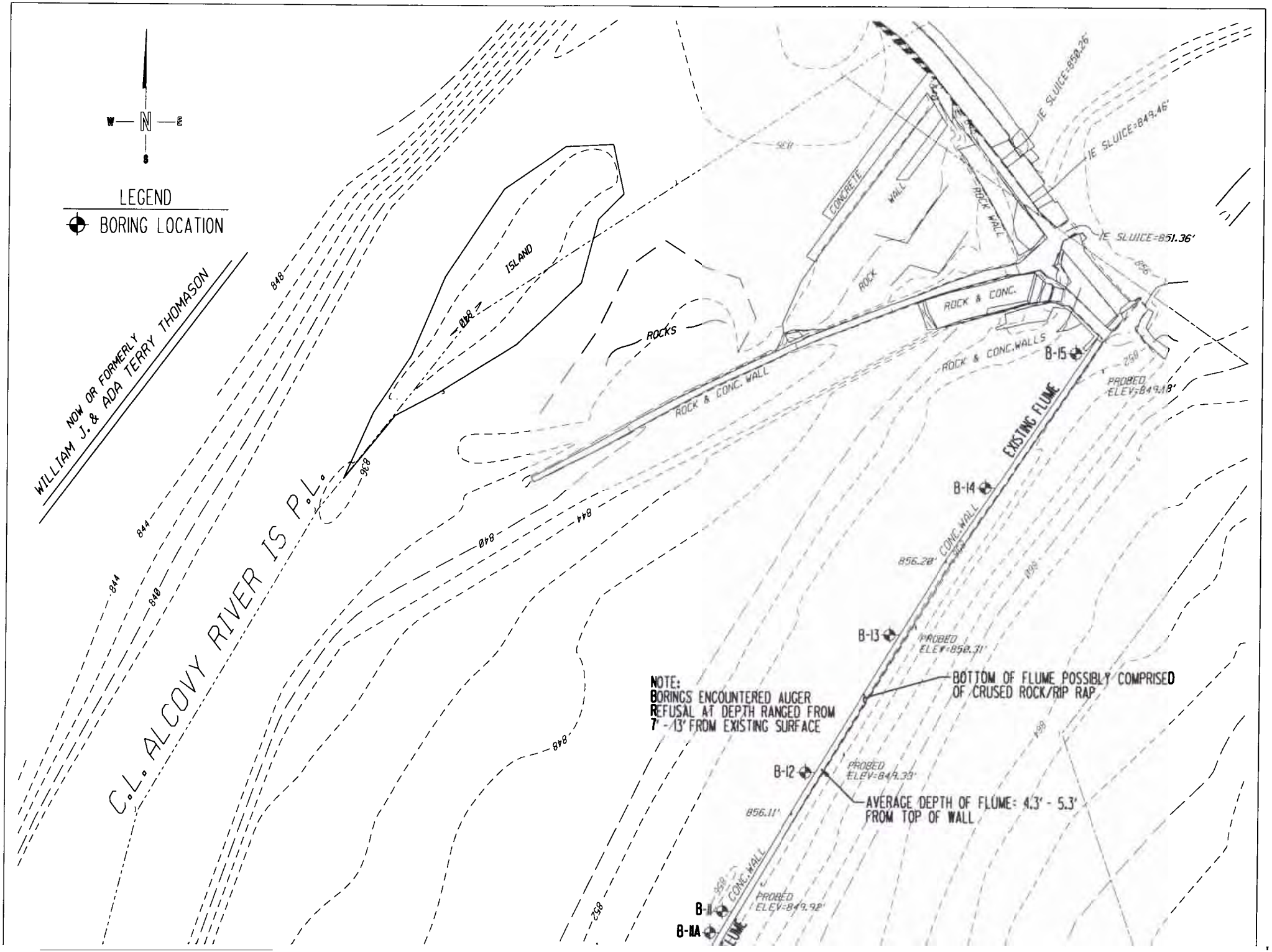
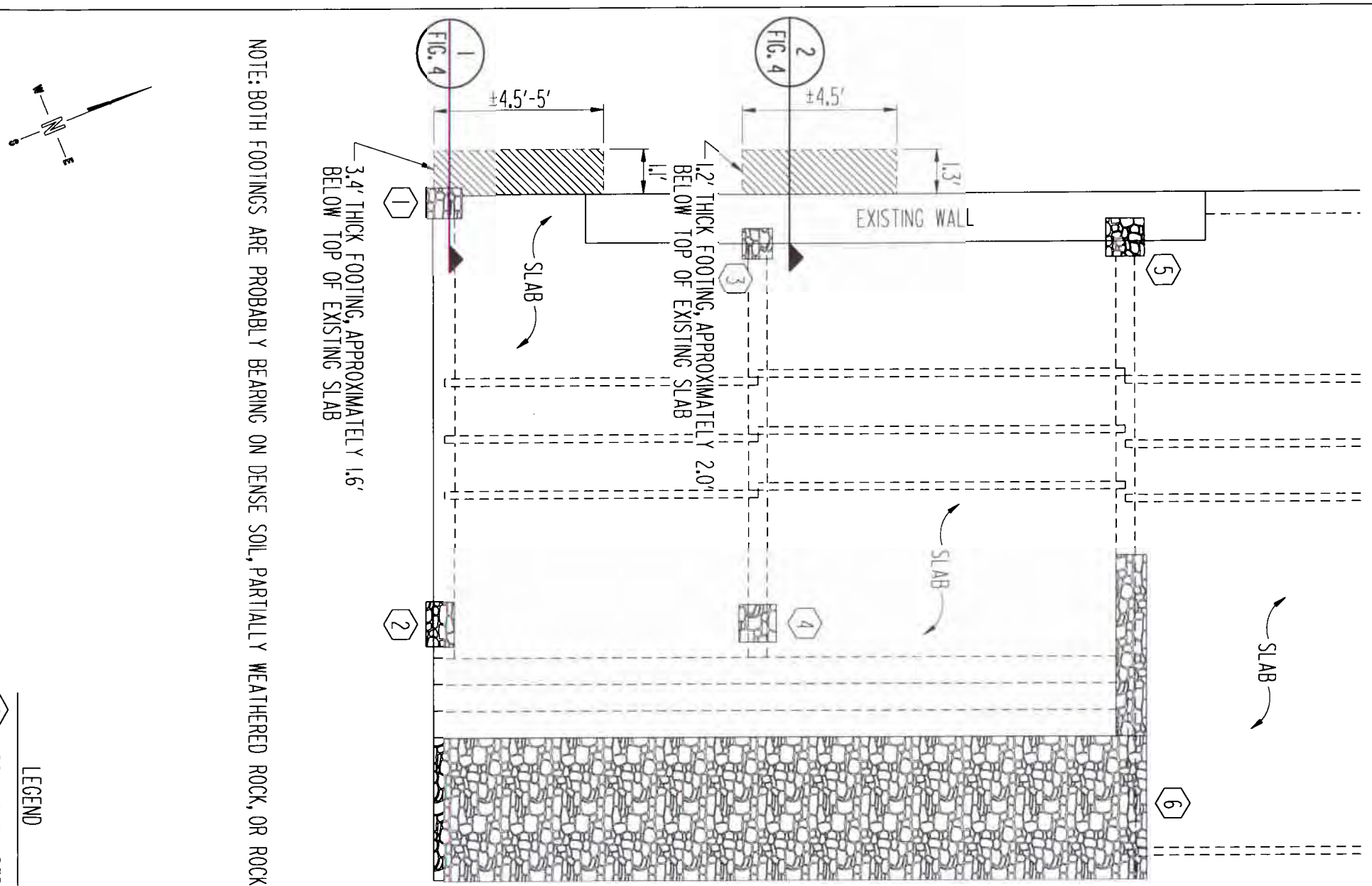
FIG. 1


N
W
E
S
LEGEND
BORING LOCATION
NOW OR FORMERLY
WILLIAM J. & ADA TERRY THOMASON
C.L. ALCOVY RIVER IS P.L.
ISLAND
ROCKS
ROCK & CONC. WALL
ROCK & CONC.
ROCK & CONC. WALLS
CONCRETE WALL
ROCK WALL
ROCK
IE SLUICE=850.26'
IE SLUICE=849.46'
IE SLUICE=851.36'
B-15
PROBED ELEV=849.18'
EXISTING FLUME
B-14
856.28'
CONC. WALL
B-13
PROBED ELEV=850.31'
B-12
PROBED ELEV=849.33'
856.11'
B-11
PROBED ELEV=849.92'
B-11A
NOTE:
BORINGS ENCOUNTERED AUGER REFUSAL AT DEPTH RANGED FROM 7' - 13' FROM EXISTING SURFACE
BOTTOM OF FLUME POSSIBLY COMPRISED OF CRUSED ROCK/RIP RAP
AVERAGE DEPTH OF FLUME: 4.3' - 5.3' FROM TOP OF WALL



NOTE: BOTH FOOTINGS ARE PROBABLY BEARING ON DENSE SOIL, PARTIALLY WEATHERED ROCK, OR ROCK.

LEGEND

(0) COLUMN NUMBER

SCALE: NTS	DATE: 8-16-05	PROJECT NO: 2005.2175.01	TITLE: FOOTING LOCATION PLAN ALCOVY GRIST MILL PARK
PREPARED: VPV	CHECKED:	REVISIONS:	

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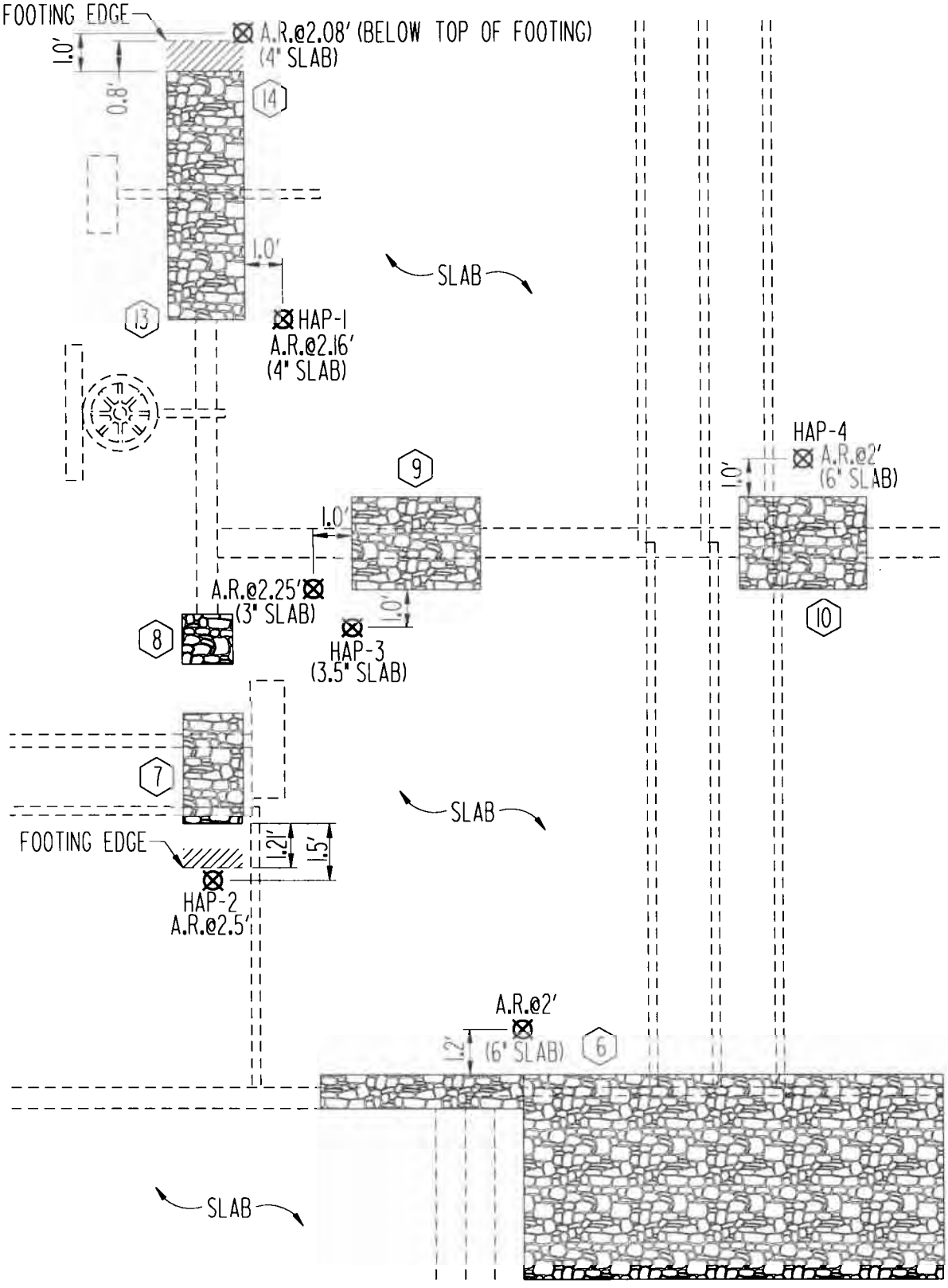
FIG. 2



NOTE: COLUMNS 9, 10, 13, 14 ARE PROBABLY BEARING ON DENSE SOIL, PARTIALLY WEATHERED ROCK, OR ROCK.

LEGEND

⊠	SLAB CORING LOCATION
(0)	COLUMN NUMBER
A.R.	AUGER REFUSAL BELOW TOP OF SLAB - POSSIBLE ROCK

FIG. 3

TITLE: SLAB CORING LOCATION PLAN
AT INTERIOR COLUMNS
ALCOVY GRIST MILL PARK

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PREPARED: VPV | CHECKED:

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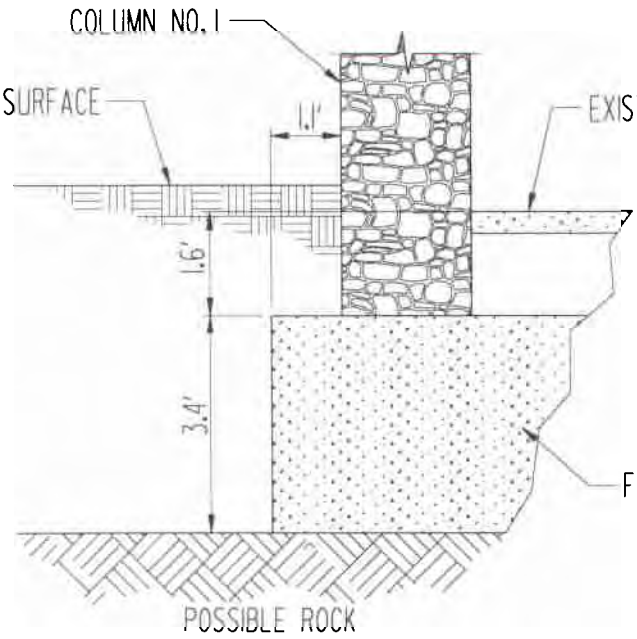
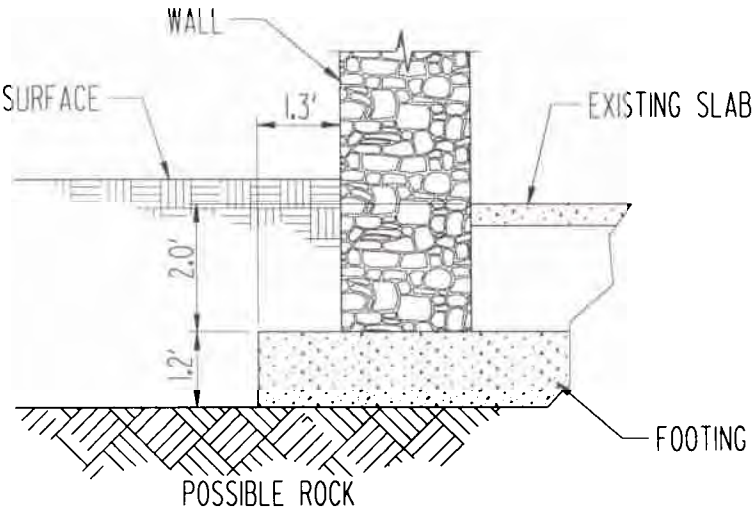


1 / FIG. 4 SECTION AT COLUMN 1
NOT TO SCALE



2 / FIG. 4 SECTION BETWEEN COLUMNS 3 & 5
NOT TO SCALE

NOTE: EXISTING SLAB & FOOTINGS COMPOSED OF CRUSHED STONE BOUND BY MORTAR

FIG. 4

TITLE: FOOTING SECTIONS
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PROJECT NO: 2005.2175.01
REVISIONS:

SCALE: NTS
DATE: 8-16-05
PREPARED: VPV
CHECKED:

CLIENT: GWINNETT COUNTY FINANCIAL SERVICES

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625 HOLCOMB BRIDGE ROAD
NORCROSS, GEORGIA 30071
(770)209-0029, FAX (770)582-2800

BORING LOG

CONTRACTED WITH: Gwinnett County Parks & Recreation
BORING NO.: B-1
PROJECT NAME: Alcovy River Grist Mill
DATE: 7/25/05
JOB NO.: 2005.2175.01 DRILLER: Ronan RIG: CME 55 LOGGED BY: UH

ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES NO.	TYPE	BLOWS/6"	RECOV.	W	NOTES
	Sand-some silt, trace clay, some root hair, very loose, brown (Fill or Alluvial)		1		1-2-1	10		
840		5	2		1-2-2	10		
	Auger refusal at 6 feet							No groundwater encountered at time of boring
835		10						
830		15						
825		20						
820		25						
815		30						
810		35						
805		40						

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BORING LOG

CONTRACTED WITH: Gwinnett County Parks & Recreation
BORING NO.: B-1A
PROJECT NAME: Alcovy River Grist Mill
DATE: 7/25/05
JOB NO.: 2005.2175.01 DRILLER: Ronan RIG: CME 55 LOGGED BY: UH

ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES NO.	TYPE	BLOWS/6"	RECOV.	W	NOTES
	Sand-some silt, trace clay, some root hair, very loose, brown (Fill or Alluvial)		1		2-1-1	6		
840		5	2		1-2-2	8		No groundwater encountered at time of boring
	Auger refusal at 6 feet							
835		10						
830		15						
825		20						
820		25						
815		30						
810		35						
805		40						

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BORING LOG

CONTRACTED WITH: Gwinnett County Parks & Recreation
BORING NO.: B-2
PROJECT NAME: Alcovy River Grist Mill
DATE: 7/25/05
JOB NO.: 2005.2175.01 DRILLER: Ronan RIG: CME 55 LOGGED BY: UH

ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES NO.	TYPE	BLOWS/6"	RECOV.	W	NOTES
840	Sand-some silt, some root hair, very loose, brown (Fill or Alluvial)	5	1		1-1-1	10		
			2		2-1-2	8		
835	Auger refusal at 5 feet	10						No groundwater encountered at time of boring
830		15						
825		20						
820		25						
815		30						
810		35						
805		40						

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BORING LOG

CONTRACTED WITH: Gwinnett County Parks & Recreation
BORING NO.: B-3
PROJECT NAME: Alcovy River Grist Mill
DATE: 7/25/05
JOB NO.: 2005.2175.01 DRILLER: Ronan RIG: CME 55 LOGGED BY: UH

ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES NO.	TYPE	BLOWS/6"	RECOV.	W	NOTES
840	Sand-some silt, some root hair, very loose, brown (Fill or Alluvial)		1		1-1-1	10		
		5	2		1-2-3	8		No groundwater encountered at time of boring
835	Auger refusal at 5 feet	10						
830		15						
825		20						
820		25						
815		30						
810		35						
805		40						

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BORING LOG

CONTRACTED WITH: Gwinnett County Parks & Recreation
BORING NO.: B-4
PROJECT NAME: Alcovy River Grist Mill
DATE: 7/25/05
JOB NO.: 2005.2175.01 DRILLER: Ronan RIG: CME 55 LOGGED BY: UH

ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES NO.	TYPE	BLOWS/6"	RECOV.	W	NOTES
	Sand-some silt, some root hair, very loose, brown (Fill or Alluvial)		1		1-1-1	10		
840								
	Partially Weathered Rock sampled as sand-trace silt, tan	5	2		3-50/1	6		No groundwater encountered at time of boring
	Auger refusal at 5 feet							
835								
		10						
830								
		15						
825								
		20						
820								
		25						
815								
		30						
810								
		35						
805								
		40						

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BORING LOG

CONTRACTED WITH: Gwinnett County Parks & Recreation
BORING NO.: B-5
PROJECT NAME: Alcovy River Grist Mill
DATE: 7/25/05
JOB NO.: 2005.2175.01 DRILLER: Ronan RIG: CME 55 LOGGED BY: UH

ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES NO.	TYPE	BLOWS/6"	RECOV.	W	NOTES
	Sand-some silt, some root hair, very loose, brown (Fill or Alluvial)		1		1-2-2	10		
840	Auger refusal at 4 feet	5						No groundwater encountered at time of boring
835		10						
830		15						
825		20						
820		25						
815		30						
810		35						
805		40						

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BORING LOG

CONTRACTED WITH: Gwinnett County Parks & Recreation
BORING NO.: B-6
PROJECT NAME: Alcovy River Grist Mill
DATE: 7/25/05
JOB NO.: 2005.2175.01 DRILLER: Ronan RIG: CME 55 LOGGED BY: UH

ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES NO.	TYPE	BLOWS/6"	RECOV.	W	NOTES
840	Sand-trace silt, some root hair, very loose, brown (Fill or Alluvial)		1		1-1-1	10		
	Partially Weathered Rock sampled as sand, trace silt and rock fragments, tan	5	2		50/1	1		No groundwater encountered at time of boring
835	Auger refusal at 4 feet	10						
830		15						
825		20						
820		25						
815		30						
810		35						
805		40						
800								

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BORING LOG

CONTRACTED WITH: Gwinnett County Parks & Recreation
BORING NO.: B-7
PROJECT NAME: Alcovy River Grist Mill
DATE: 7/25/05
JOB NO.: 2005.2175.01 DRILLER: Ronan RIG: CME 55 LOGGED BY: UH

ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES NO.	TYPE	BLOWS/6"	RECOV.	W	NOTES
840	Sand-trace silt, some root hair, very loose, brown (Fill or Alluvial)		1		1-1-2	10		
	Partially Weathered Rock sampled as sand, trace silt and rock fragments, tan	5	2		50/1	1		No groundwater encountered at time of boring
835	Auger refusal at 4 feet	10						
830		15						
825		20						
820		25						
815		30						
810		35						
805		40						
800								

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BORING LOG

CONTRACTED WITH: Gwinnett County Parks & Recreation
BORING NO.: B-8
PROJECT NAME: Alcovy River Grist Mill
DATE: 7/25/05
JOB NO.: 2005.2175.01 DRILLER: Ronan RIG: CME 55 LOGGED BY: UH

ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES NO.	TYPE	BLOWS/6"	RECOV.	W	NOTES
	2" topsoil	0						
845	Sand-trace silt, some root hair, very loose, brown (Alluvial)		1		2-2-2	10		
		5	2		2-1-1	10		
840								
	-some silt/clay, trace rock fragments and root hair, loose, grayish tan	▽ 10	3		3-3-3	18		
835	Auger refusal at 12.5 feet							Groundwater encountered at 8.5 feet at time of boring
		15						
830								
		20						
825								
		25						
820								
		30						
815								
		35						
810								
		40						
805								

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BORING LOG

CONTRACTED WITH: Gwinnett County Parks & Recreation
BORING NO.: B-9
PROJECT NAME: Alcovy River Grist Mill
DATE: 7/25/05
JOB NO.: 2005.2175.01 DRILLER: Ronan RIG: CME 55 LOGGED BY: UH

ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES NO.	TYPE	BLOWS/6"	RECOV.	W	NOTES
	2" topsoil	0						
845	Sand-trace silt, some root hair, very loose, brown (Alluvial)		1		1-1-1	10		
		5	2		3-3-3	6		
840								
	-some silt, trace root hair, loose, grayish tan	▽ 10	3		3-3-3	18		
835	Auger refusal at 11 feet							Groundwater encountered at 8.5 feet at time of boring
		15						
830								
		20						
825								
		25						
820								
		30						
815								
		35						
810								
		40						
805								

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BORING LOG

CONTRACTED WITH: Gwinnett County Parks & Recreation — BORING NO.: B-10
PROJECT NAME: Alcovy River Grist Mill — DATE: 7/25/05
JOB NO.: 2005.2175.01 — DRILLER: Ronan — RIG: CME 55 — LOGGED BY: UH

ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES NO.	TYPE	BLOWS/6"	RECOV.	W	NOTES
	2" topsoil	0						
855	Sand-some silt and clay, trace rock fragments, firm, brown (fill)		1		3-5-4	18		
	Partially Weathered Rock sampled as sand, trace silt, tan	5	2		8-50/2	6		
850	Auger refusal at 7 feet							No groundwater encountered at time of boring
		10						
845								
		15						
840								
		20						
835								
		25						
830								
		30						
825								
		35						
820								
		40						
815								

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BORING LOG

CONTRACTED WITH: Gwinnett County Parks & Recreation
BORING NO.: B-11
PROJECT NAME: Alcovy River Grist Mill
DATE: 7/25/05
JOB NO.: 2005.2175.01 DRILLER: Ronan RIG: CME 55 LOGGED BY: UH

ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES NO.	TYPE	BLOWS/6"	RECOV.	W	NOTES
	2" topsoil	0						
855	Sand-trace silt, significant rock fragments, firm, brown (fill)		1		5-6-8	18		
	Auger refusal at 3 feet	5						No groundwater encountered at time of boring
850								
		10						
845								
		15						
840								
		20						
835								
		25						
830								
		30						
825								
		35						
820								
		40						
815								

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BORING LOG

CONTRACTED WITH: Gwinnett County Parks & Recreation — BORING NO.: B-11A
PROJECT NAME: Alcovy River Grist Mill — DATE: 7/25/05
JOB NO.: 2005.2175.01 — DRILLER: Ronan — RIG: CME 55 — LOGGED BY: UH

ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES NO.	TYPE	BLOWS/6"	RECOV.	W	NOTES
	2" topsoil	0						
855	Sand-trace silt, significant rock fragments, firm, brown (fill)		1		5-7-7	18		
	Sand-some silt, medium dense, tan brown (residual)	5	2		8-11-12	18		
850	Auger refusal at 7 feet	10						No groundwater encountered in the boring
845		15						
840		20						
835		25						
830		30						
825		35						
820		40						
815								

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BORING LOG

CONTRACTED WITH: Gwinnett County Parks & Recreation — BORING NO.: B-12
PROJECT NAME: Alcovy River Grist Mill — DATE: 7/25/05
JOB NO.: 2005.2175.01 — DRILLER: Ronan — RIG: CME 55 — LOGGED BY: UH

ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES NO.	TYPE	BLOWS/6"	RECOV.	W	NOTES
	2" topsoil	0						
855	Sand-some silt, significant rock fragments, loose, brown (fill)		1		2-2-3	18		
	-firm	5	2		3-3-4	18		
850								
	Auger refusal at 8.5 feet	10						No groundwater encountered at time of boring
845								
		15						
840								
		20						
835								
		25						
830								
		30						
825								
		35						
820								
		40						
815								

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BORING LOG

CONTRACTED WITH: Gwinnett County Parks & Recreation — BORING NO.: B-13
PROJECT NAME: Alcovy River Grist Mill — DATE: 7/25/05
JOB NO.: 2005.2175.01 — DRILLER: Ronan — RIG: CME 55 — LOGGED BY: UH

ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES NO.	TYPE	BLOWS/6"	RECOV.	W	NOTES
	2" topsoil	0						
855	Sand-clayey, some silt, loose, brown (fill)		1		1-2-2	10		
	-firm	5	2		6-8-6	12		
850								
	Partially Weathered Rock sampled as sand, some silt and rock fragments, light tan	10	3		50/2	2		
845								
	Auger Refusal at 12 feet	15						No Groundwater encountered at time of boring
840								
		20						
835								
		25						
830								
		30						
825								
		35						
820								
		40						
815								

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BORING LOG

CONTRACTED WITH: Gwinnett County Parks & Recreation
BORING NO.: B-14
PROJECT NAME: Alcovy River Grist Mill
DATE: 7/25/05
JOB NO.: 2005.2175.01 DRILLER: Ronan RIG: CME 55 LOGGED BY: UH

ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES NO.	TYPE	BLOWS/6"	RECOV.	W	NOTES
	2" topsoil	0						
855	Sand-some silt and clay, loose, brown (fill)		1		3-4-3	15		
	-some roots	5	2		3-3-3	18		
850								
	Partially Weathered Rock sampled as sand, some silt and rock fragments, light tan	10	3		8-50/1	6		
845								
	Auger Refusal at 12.5 feet	15						No groundwater encountered at time of boring
840								
		20						
835								
		25						
830								
		30						
825								
		35						
820								
		40						
815								

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BORING LOG

CONTRACTED WITH: Gwinnett County Parks & Recreation — BORING NO.: B-15
PROJECT NAME: Alcovy River Grist Mill — DATE: 7/25/05
JOB NO.: 2005.2175.01 — DRILLER: Ronan — RIG: CME 55 — LOGGED BY: UH

ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES NO.	TYPE	BLOWS/6"	RECOV.	W	NOTES
	2" topsoil	0						
855	Sand-some clay, trace silt, very loose, brown (fill)		1		2-2-2	14		
	Sand-silty, medium dense, tan brown (residual)	5	2		6-10-12	18		
850								
		10	3		11-12-9	18		
845								
	Auger Refusal at 12.5 feet	15						No groundwater encountered at time of boring
840								
		20						
835								
		25						
830								
		30						
825								
		35						
820								
		40						
815								

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BORING LOG

CONTRACTED WITH: Gwinnett County Parks & Recreation — BORING NO.: B-16
PROJECT NAME: Alcovy River Grist Mill — DATE: 7/25/05
JOB NO.: 2005.2175.01 — DRILLER: Ronan — RIG: CME 55 — LOGGED BY: UH

ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES NO.	TYPE	BLOWS/6"	RECOV.	W	NOTES
	2" topsoil	0						
	Sand-some clay, trace silt, loose, brown (fill)		1		2-2-3	12		
845		5	2		3-4-4	10		
	Sand-some clay, trace silt, loose, tan brown (residual)							
840		10						
	Auger Refusal at 8.5 feet							No groundwater encountered at time of boring
835		15						
830		20						
825		25						
820		30						
815		35						
810		40						

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BORING LOG

CONTRACTED WITH: Gwinnett County Parks & Recreation
BORING NO.: B-17
PROJECT NAME: Alcovy River Grist Mill
DATE: 7/25/05
JOB NO.: 2005.2175.01 DRILLER: Ronan RIG: CME 55 LOGGED BY: UH

ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES NO.	TYPE	BLOWS/6"	RECOV.	W	NOTES
	2" topsoil	0						
	Sand-some silt/clay, loose, brown (fill)		1		2-3-3	12		
845								
		5	2		3-4-3	10		
	Sand-some clay, trace silt, loose, brown (residual)							
840								
	Auger Refusal at 8.5 feet	10						No groundwater encountered at time of boring
835								
		15						
830								
		20						
825								
		25						
820								
		30						
815								
		35						
810								
		40						

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LOG OF BORING

HAND AUGER

CONTRACTED WITH: Gwinnett County Parks & Recreation BORING NO.: HAP-1

PROJECT NAME: Alcovy River Grist Mill JOB NO.: 2005.2175.01 DATE: 8/4/05

ELEV.	DESCRIPTION	DEPTH in FEET	PENETROMETER TESTS NO.	BLOWS PER 2"	BLOWS PER 1.75"	NOTES
	4" concrete slab	0				
	Sand-some silt, trace root hair, brown (fill)		1	6	4	
		1	2	3	5	
		2	3	3	4	
	Auger refusal approximately at 2'					
		3				
		4				
		5				
		6				
		7				
		8				

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LOG OF BORING

HAND AUGER

CONTRACTED WITH: Gwinnett County Parks & Recreation BORING NO.: HAP-2

PROJECT NAME: Alcovy River Grist Mill JOB NO.: 2005.2175.01 DATE: 8/4/05

ELEV.	DESCRIPTION	DEPTH in FEET	PENETROMETER TESTS NO.	BLOWS PER 2"	BLOWS PER 1.75"	NOTES
	6" concrete slab	0				
	Sand-some silt, trace root hair, brown (fill)		1	3	3	
		1	2	4	3	
		2	3	2	4	
	Auger refusal approximately at 2.5 feet	3				
		4				
		5				
		6				
		7				
		8				

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LOG OF BORING

HAND AUGER

CONTRACTED WITH: Gwinnett County Parks & Recreation BORING NO.: HAP-3

PROJECT NAME: Alcovy River Grist Mill JOB NO.: 2005.2175.01 DATE: 8/4/05

ELEV.	DESCRIPTION	DEPTH in FEET	PENETROMETER TESTS NO.	BLOWS PER 2"	BLOWS PER 1.75"	NOTES
	3.5" concrete slab	0				
	Sand-some silt, trace root hair, brown (fill)		1	3	5	
		1	2	4	3	
		2	3	2	3	
	Auger refusal approximately at 2'-3"	3				
		4				
		5				
		6				
		7				
		8				

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LOG OF BORING

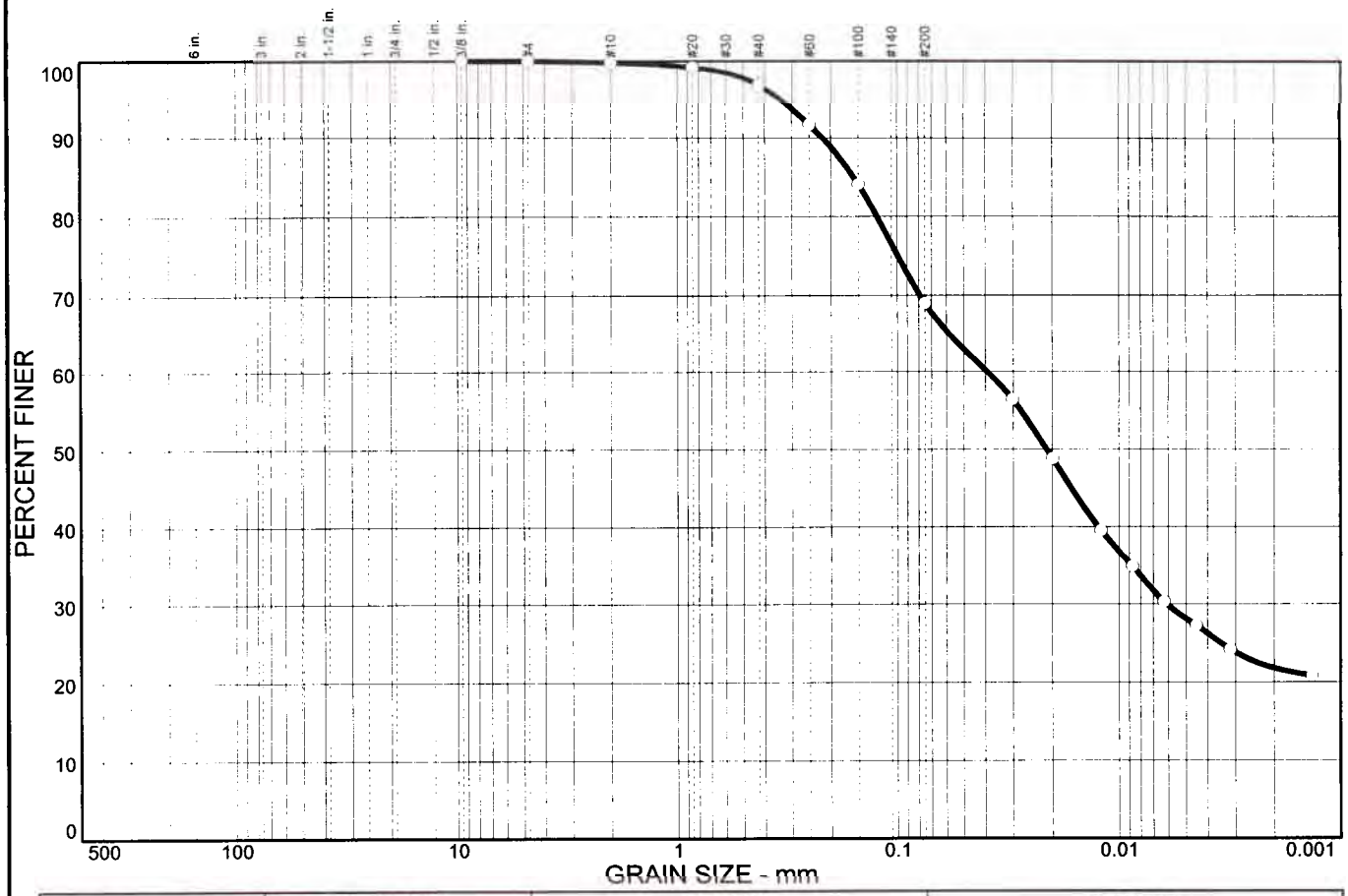
HAND AUGER

CONTRACTED WITH: Gwinnett County Parks & Recreation BORING NO.: HAP-4

PROJECT NAME: Alcovy River Grist Mill JOB NO.: 2005.2175.01 DATE: 8/4/05

ELEV.	DESCRIPTION	DEPTH in FEET	PENETROMETER TESTS NO.	BLOWS PER 2"	BLOWS PER 1.75"	NOTES
	6" concrete slab	0				
	Sand-some silt, trace root hair, brown (fill)		1	3	7	
		1	2	4	3	
		2	3	6	5	
	Auger refusal approximately at 2'					
		3				
		4				
		5				
		6				
		7				
		8				

Grain Size Distribution Curve



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.2	2.9	27.9	40.8	28.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.375 in.	100.0		
#4	100.0		
#10	99.8		
#20	99.2		
#40	96.9		
#60	91.7		
#100	84.1		
#200	69.0		

* (no specification provided)

Soil Description

SILT,SOME SAND AND CLAY,BROWN.

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.157 D_{60}= 0.0393 D_{50}= 0.0212
D_{30}= 0.0061 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

Sample No.: B2 **Source of Sample:** **Date:** 8/09/05
Location: ON SITE **Elev./Depth:** 3.5-5 ft

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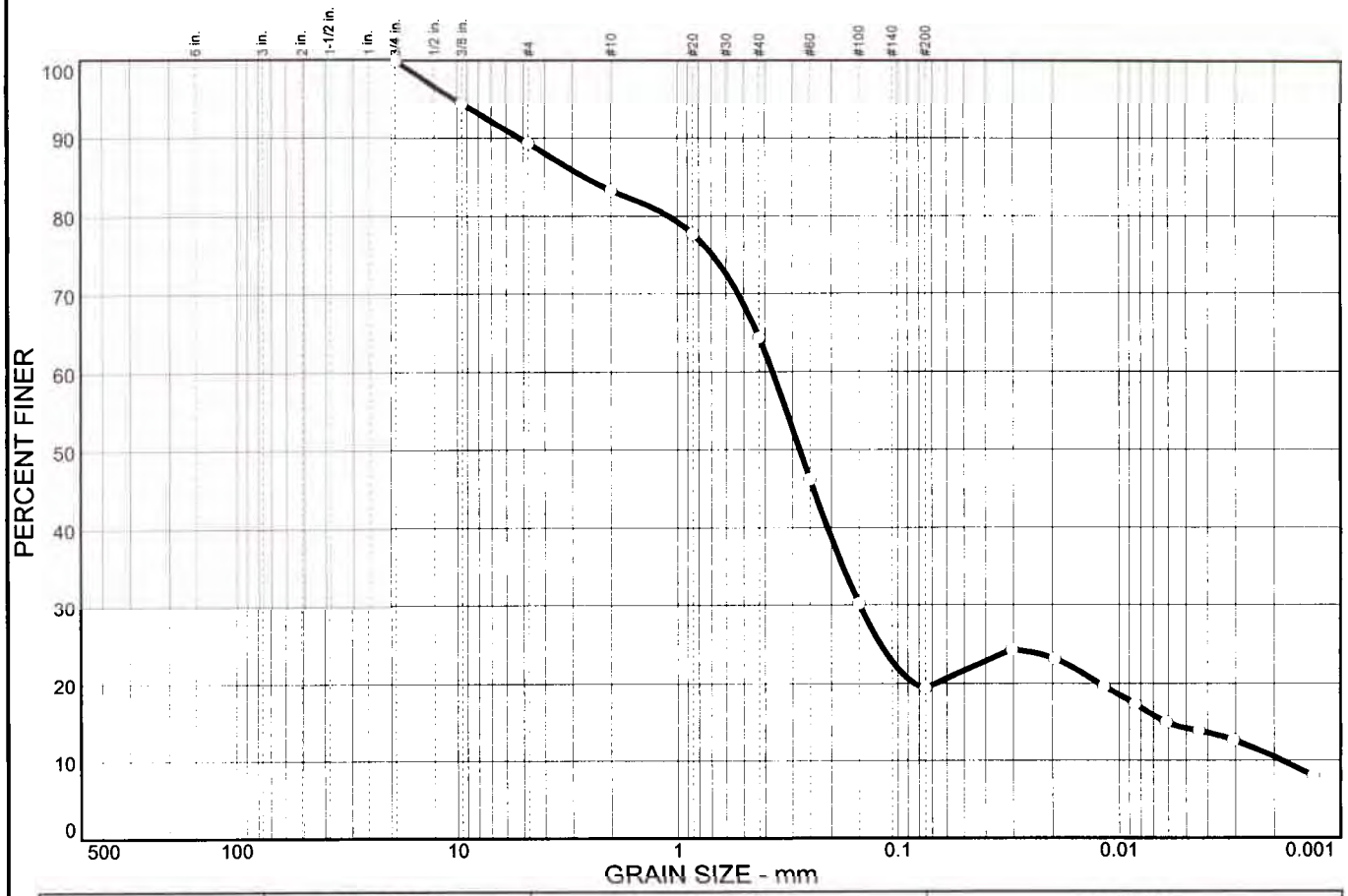
Client: GWINNETT CO. PARK & RECREATIONAL PROJECT
Project: GRIST MILL

Project No: 2005217501 **Figure** 1

Grain Size Distribution Curve



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	10.7	6.0	19.0	44.9	5.3	14.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75 in.	100.0		
.375 in.	94.4		
#4	89.3		
#10	83.3		
#20	77.7		
#40	64.3		
#60	46.2		
#100	30.2		
#200	19.4		

* (no specification provided)

Soil Description

SAND,SOME CLAY,TRACE OF GRAVEL AND SILT, GRAY.

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 2.64 D_{60}= 0.370 D_{50}= 0.278
D_{30}= 0.149 D_{15}= 0.0062 D_{10}= 0.0019
C_u= 199.91 C_c= 32.31

Classification

USCS= AASHTO=

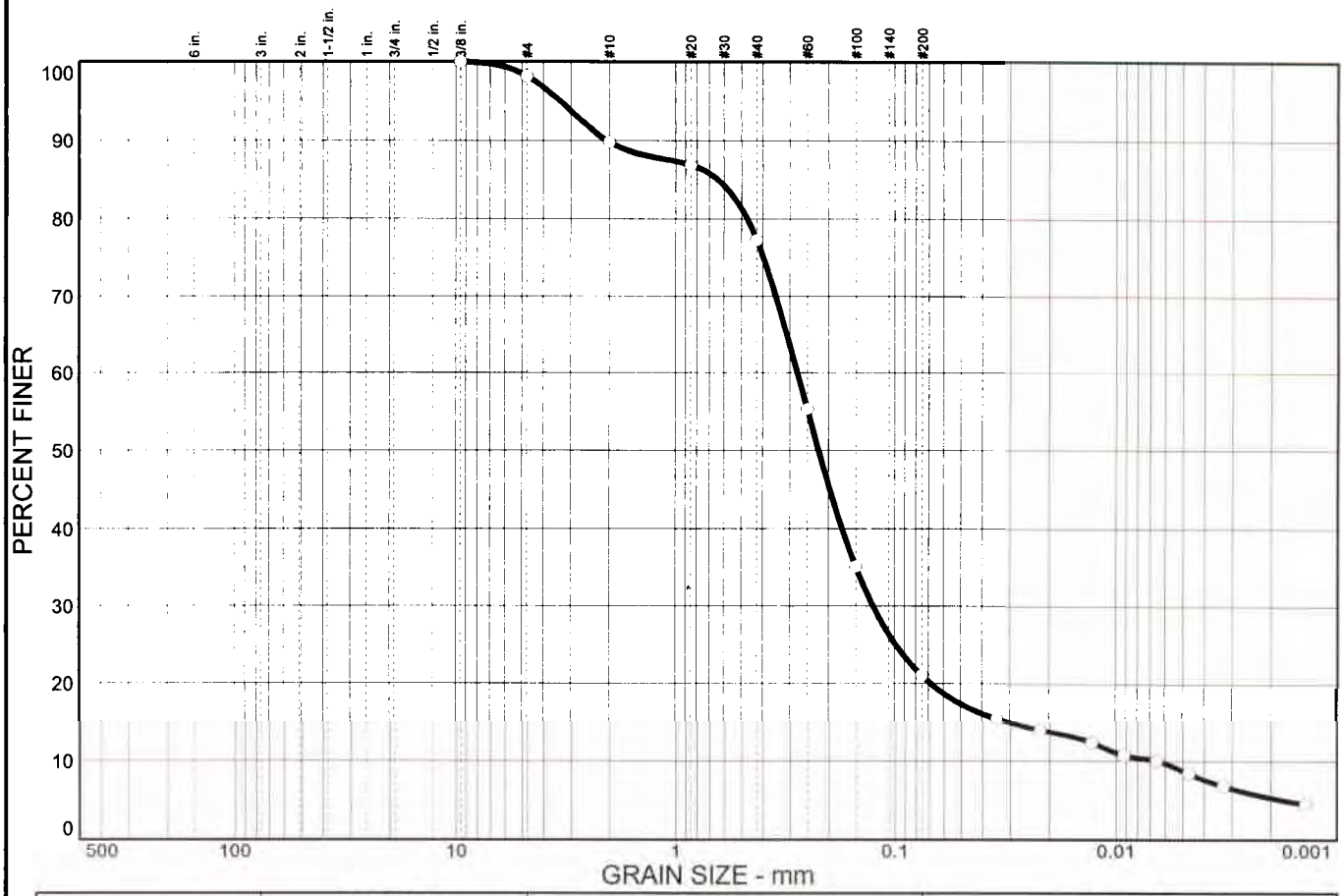
Remarks

Sample No.: B8 **Source of Sample:** **Date:** 8/09/05
Location: ON SITE **Elev./Depth:** 8.5-10 ft

United Consulting

Client: GWINNETT CO. PARK & RECREATIONAL PROJECT
Project: GRIST MILL
Project No: 2005217501 **Figure** 1

Grain Size Distribution Curve



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	1.8	8.4	12.6	56.2	12.3	8.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.375 in.	100.0		
#4	98.2		
#10	89.8		
#20	86.9		
#40	77.2		
#60	55.2		
#100	35.1		
#200	21.0		

* (no specification provided)

Soil Description

SAND,SOME SILT,TRACE SAND AND GRAVEL, BROWN.

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.634 D_{60}= 0.278 D_{50}= 0.222
D_{30}= 0.125 D_{15}= 0.0310 D_{10}= 0.0066
C_u= 42.38 C_c= 8.58

Classification

USCS= AASHTO=

Remarks

Sample No.: B9 **Source of Sample:** **Date:** 8/09/05
Location: ON SITE **Elev./Depth:** 8.5-10 ft

United Consulting

Client: *GWINNETT CO. PARK & RECREATIONAL PROJECT*
Project: GRIST MILL

Project No: 2005217501 **Figure** 1

EXPLORATION PROCEDURES

SPT Borings

Seventeen Standard Penetration Test borings and two offset borings (designated as B-1 to B-17, B-1A and B-11A) were drilled at the approximate locations shown of the Boring Location Plan (Figure 1) in the Appendix. Each boring was drilled to depths where auger refusal occurred, which ranged from 3 to 12.5 feet below the existing grade.

Boring locations were determined in the field by our engineering representative who measured distances and estimated right angles from existing site features. The elevations of the ground surface at the boring locations have been determined by interpolation from the provided topographic site plan. The elevations and boring locations should therefore be considered approximate. Soil samples obtained with the spilt-spoon sampler were examined by a Geotechnical Engineer and classified generally following the visual-manual procedure in ASTM D 2488-90.

Appendix D

New & Used Stone Burr Mills and Related Equipment

Meadows Mills currently has the following new and used stone burr grist mills and related grinding equipment for sale, ready for immediate shipment. Call 1-800-626-2282 ask for Brian, Robert, or Bob for more information.

Reconditioned Meadows 24" Wood Frame Stone Burr Mill

Reconditioned Meadows 24" wooden frame stone burr mill, serial #24-27459-46, with metal hopper, complete v-belt drive with belt guard, and 20-hp 3-phase electric motor with motor mount

$2,900.00

Freight and sales tax charges may apply.

Belt-drive mill similar in function and price range to that previously listed. While this mill is not currently available, similar mills become available on a regular basis.

Reconditioned Meadows 24" Wood Frame Stone Burr Mill

Reconditioned Meadows 24" wooden frame stone burr mill, serial #24-1269, with wooden hopper and 14” x 6” flat belt pulley

$2,900.00

Freight and sales tax charges may apply.

Appendix E

LOSE & ASSOCIATES, INC.
LANDSCAPE ARCHITECTURE • ARCHITECTURE • PLANNING

MEMORANDUM

Date: 8/17/05
To: Rex Schuder
From: Whit Alexander
Re: Wheel Engineering

Per your request, we have investigated several scenarios by which we could engage a small demonstration mill (like the self-contained Mill seen at Hurricane Shoals Park). Using the Meadows Mill which you found online (requiring 10-15 Horsepower to operate), the following is a breakdown of optional methods of generating the necessary power.

Each of the options uses several rules-of-thumb for engineering of horsepower and determining the efficiency of various wheel types as noted by The Waterwheel Factory, a restoration/fabrication company in Franklin, NC, specializing in restoring the operation of old mills, and fabricating new mills for aesthetic purposes. For the purposes of the master plan we utilized the rules-of-thumb noted on the Waterwheelfactory.com website, as well as survey data for the Alcovy River Grist Mill.

These figures should be used to determine the schematic feasibility of the various power generation options. When the time comes to perform the actual engineering for the desired method of demonstration milling, detailed measurements and calculations based on specific location and method of power generation will need to be performed, as well as some field trial-and-error, as was commonly performed in the milling process years ago.

The first option is to utilize the existing mill wheel, sluice, flume, etc., supposing that the required amount of water could be provided. The existing wheel is an 18' diameter breast wheel and various sources note only a 40%-50% maximum efficiency in harnessing the force applied by the water. Assuming that the water could be provided, and the flume pipe would run half-full, a 40% efficiency of head (water force) capture would generate 15.9 horsepower. A 50% efficiency of head capture would generate 19.9 horsepower. In either of these efficiency scenarios, there should be sufficient horsepower to operate the demonstration Meadows Mill.

220 W. Crogan St. Suite 100 Lawrenceville, GA 30045 770-338-0017, 770-338-0397 (f)

The second option would be fabricate a separate water wheel and to perform demonstration milling using the Meadows Mill in a separate location on site. Using an over-shot style wheel, a 75% efficiency of head capture is possible, and is used in these calculations.

Wheel Diameter	Req'd Gallons Per Minute (GPM)	Horsepower Generated
10'	5000	9.28
12'	5000	11.13
	4000	8.87
	3000	6.65
14'	5000	13
	4000	10.38
	3000	7.76
20'	5000	18.56
	4000	14.83
	3000	11.08
	2000	7.39

From this table you can see that a 20' dia. wheel would need 3000 GPM to generate the min. 10 horsepower required to operate the Meadows Mill, and a 12' dia. wheel would need 5000 GPM.

When we consider the amount of water storage needed to produce this amount of water, let's consider a tank that is 20' tall and is 20' in diameter. This tank holds 46,974 gallons, and would afford 9.39 minutes of operation at 5000 GPM. This tank would require a 4 hour recharge using a large commercial pump capable of 200 GPM.

From these calculations, and our discussions with representatives from Waterwheel Factory, the concept of producing a man-made flow of water to generate the necessary horsepower for an extended period of time may be unfeasible. According to our sources, only the volume of water generated by a river can contains the energy needed to produce the required amount of horsepower hydraulically, which is why such mills and dams were originally constructed.

Thank you.

Appendix F

Alcovy River Grist Mill/ **Master Plan**

Assessment of Dam, Sluiceway & Mill Treatment

OJP/Architect, Inc

Historlc Preservation

Architecture & Planning

Atlanta

Introduction

Tasks

- Assess Relationship of Flood Dynamics to Existing Mill, Sluiceway & Dam Characteristics

- Identify Alternatives for Treatment of Each Feature

Alcovy River Grist Mill/ **Master Plan**

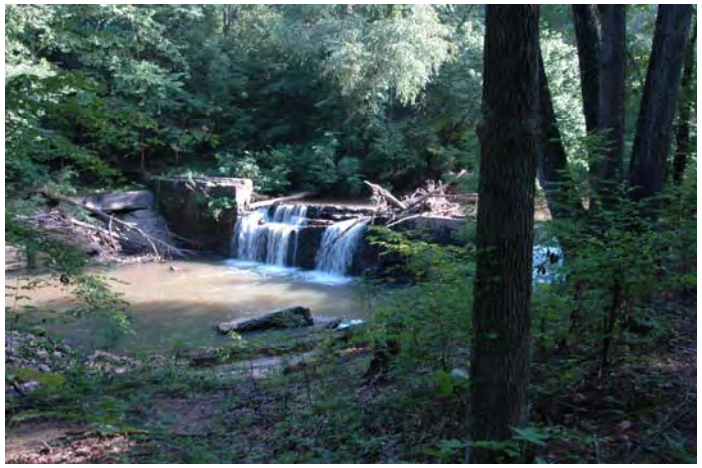
Assessment of Dam, Sluiceway & Mill Treatment

Dam

Three Generations

Pre-Swann

Swann Era



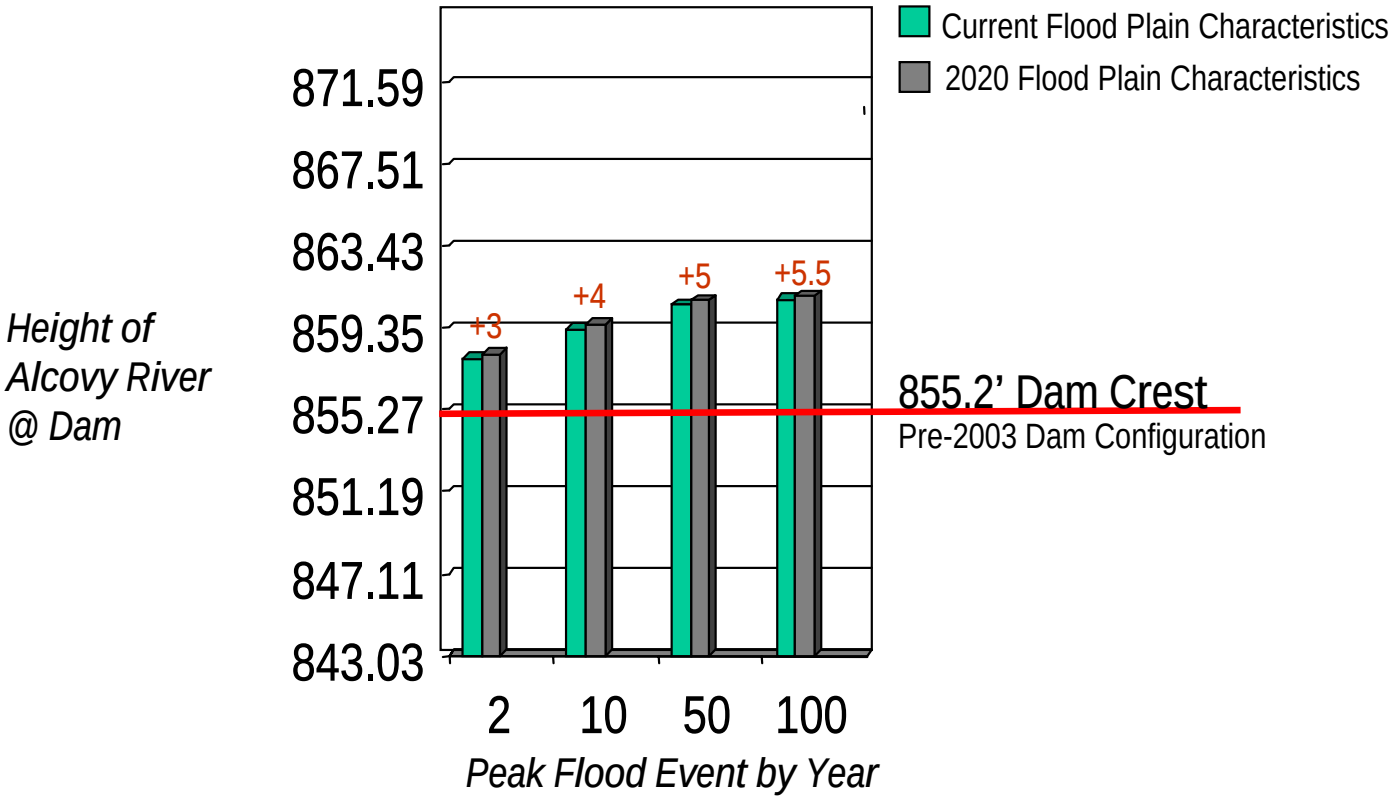
Post '03 Storm

Alcovy River Grist Mill/ **Master Plan**

Assessment of Dam, Sluiceway & Mill Treatment

Dam

Assessment of Characteristics/ *Pre-2003 Dam Configuration*

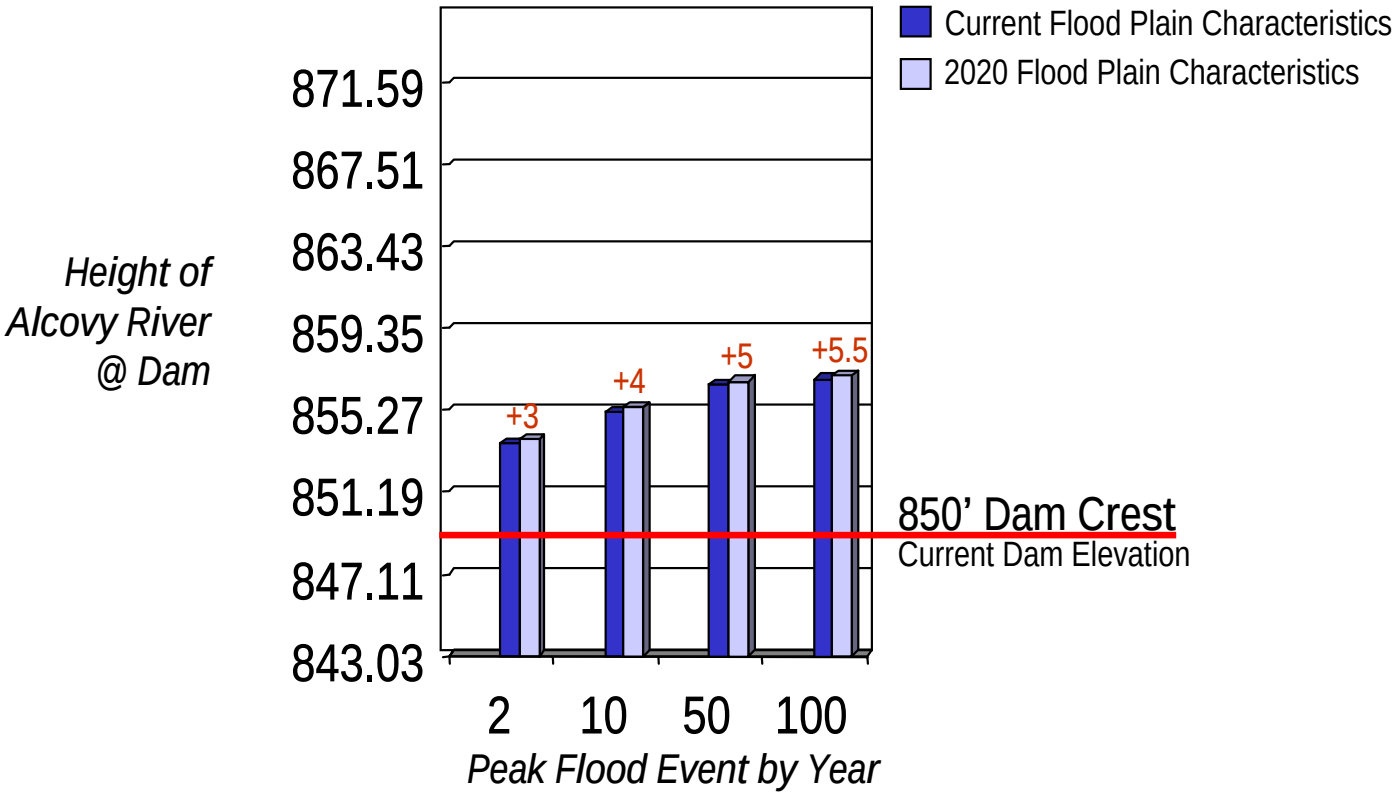


Alcovy River Grist Mill/ **Master Plan**

Assessment of Dam, Sluiceway & Mill Treatment

Dam

Assessment Characteristics / *Current Dam Configuration*



Dam

- Storm events are projected to exceed the top of the dam by 3 feet every 2 years.

Alcovy River Grist Mill/ **Master Plan**

Assessment of Dam, Sluiceway & Mill Treatment

Dam

Options for Treatment

1. Stabilize Dam in Current Configuration
2. Return Dam to Swann Configuration/ Pre-August 2003
3. Raise and Alter Configuration of Dam to Reduce Future Flood Impacts

Dam

Options for Treatment

1. *Stabilize Dam in Current Configuration*

- Stabilization will require some alterations to dam
- Stabilization may allow dam construction to be interpreted
- Stabilization will not substantially increase strength of dam to resist impacts

Dam

Options for Treatment

2. *Return Dam to Swann Configuration/ Pre-August 2003*

- Will be close to historic height
- Will maintain relationship of dam to sluiceway
- Will allow for additional reinforcement
- Will reflect Swann Assembly

Dam

Options for Treatment

3. Raise and Alter Configuration of Dam to Reduce future Flood Impacts

- Produce alterations to flood plain that will impact upstream
- Loss of historic relationship of dam to sluiceway
- Widening of dam across site

Alcovy River Grist Mill/ **Master Plan**

Assessment of Dam, Sluiceway & Mill Treatment

- Stabilize Dam at Existing Height
  - Add short concrete cap to protect / stabilize existing rock elements at top of dam
  - Make no modifications to sluiceway
  - Repair rock arches which support sluiceway at junction with Mill
  - Repair wheel support and wheel to functioning condition
  - Remove silt from pool at base of wheel
  - Add artificial water source (via pump) from within the Mill structure for interpretation
  - Clean and restore all milling components
  - Install debris racks upstream from dam to protect dam against damage from large debris
- Option: Increase span of Alcovy River Bridge?

- Restore Dam Height
  - Add lateral concrete beam to top of dam to achieve height
  - Install new control gates in dam
  - Restore former path and head of sluiceway
  - Install new sluice gates
  - Repair rock arches which support sluiceway at junction with Mill
  - Repair wheel support and wheel to functioning condition
  - Remove silt from pool at base of wheel
  - Clean and restore all milling components
  - Install debris racks upstream from dam to protect dam against damage from large debris
- Option: Increase span of Alcovy River Bridge?

Alcovy River Grist Mill/ **Master Plan**

Assessment of Dam, Sluiceway & Mill Treatment

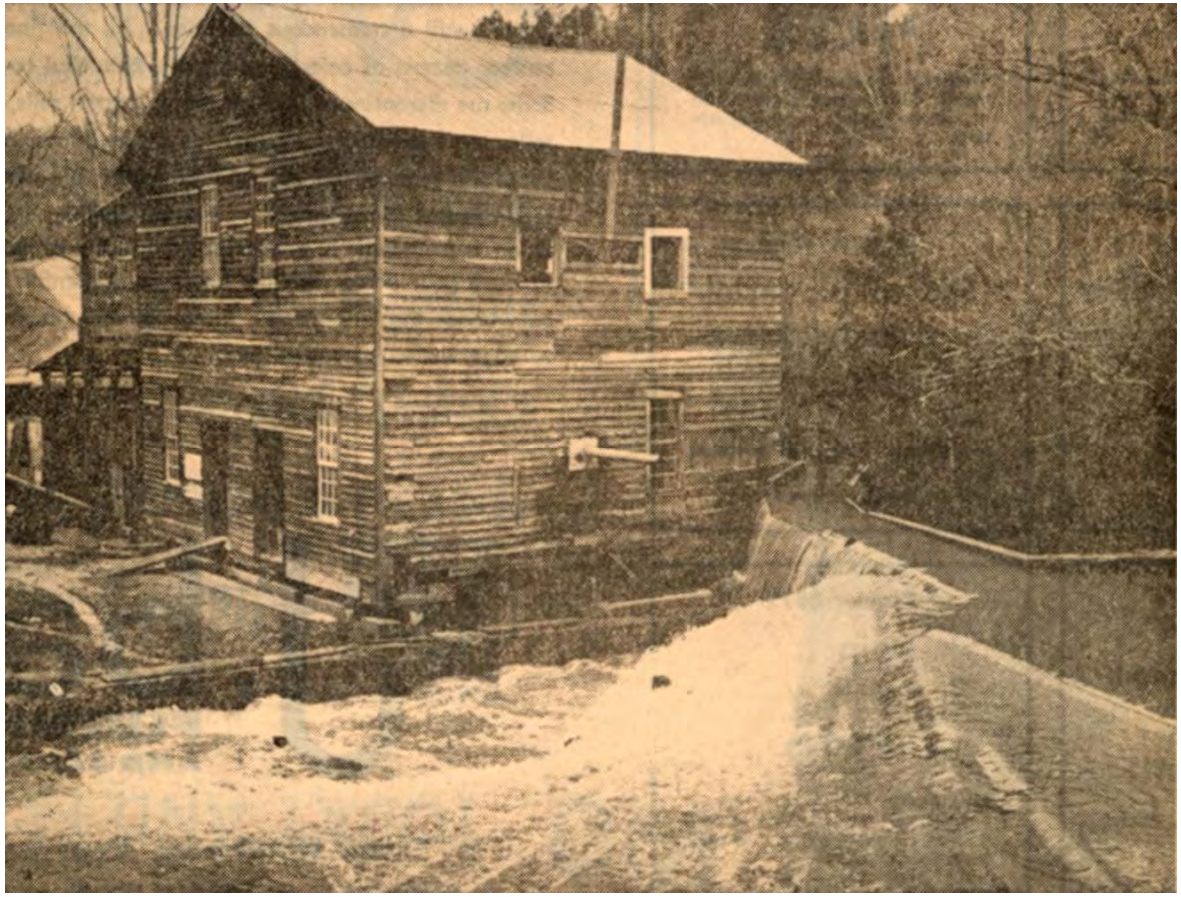
Sluiceway

- Significant Portion Intact
- Primarily Earthen
- Swann Alterations at Mill
- Archeology Upstream of Dam to Locate Sluiceway Origin
- Limited Work to Interpret
- Possibly Remove Steel Pipe at Mill

Alcovy River Grist Mill/ **Master Plan**

Assessment of Dam, Sluiceway & Mill Treatment

Mill



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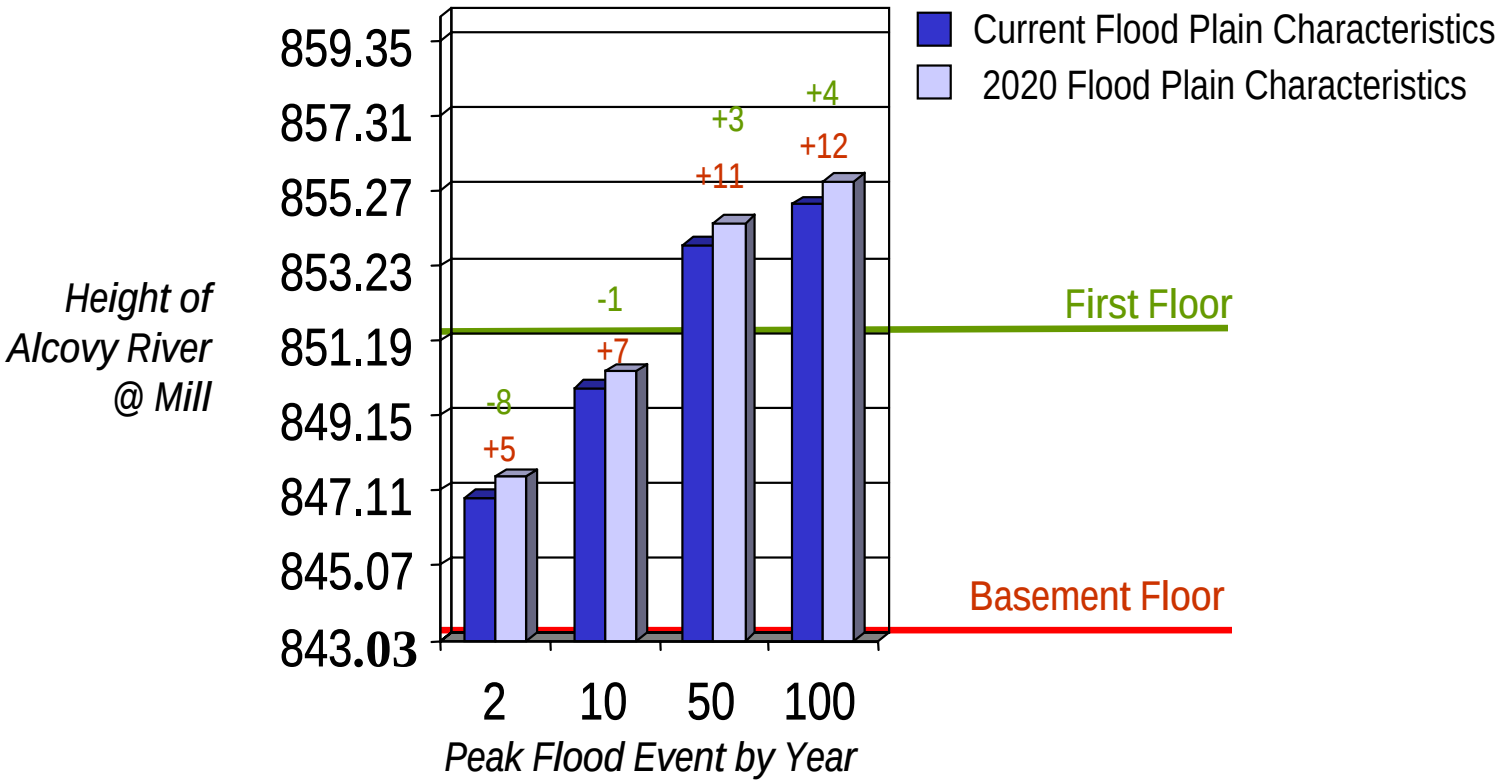
Alcovy River Grist Mill/ **Master Plan**

Assessment of Dam, Sluiceway & Mill Treatment

Mill

Relationship to Projected Flood Characteristics



Mill

Relationship to Projected Flood Characteristics

Mill

- Basement will likely experience flooding every two years
- First Floor will likely flood between every 15-25 years
- Frequency of flooding will increase over time with additional watershed development

Alcovy River Grist Mill/ **Master Plan**

Assessment of Dam, Sluiceway & Mill Treatment

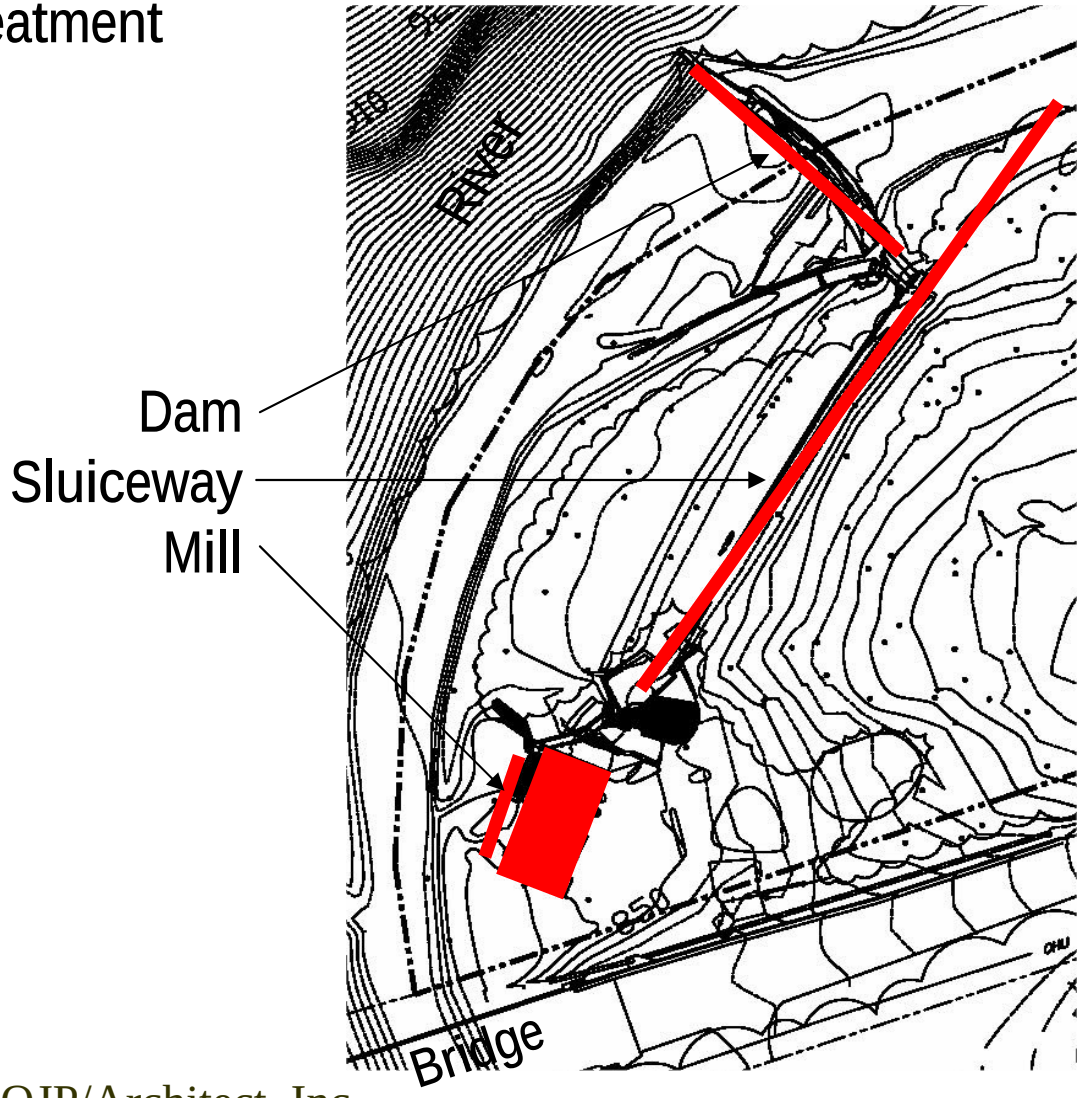
Mill

Approach to Treatment

Preserve

Protect

Relocate



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Alcovy River Grist Mill/ **Master Plan**

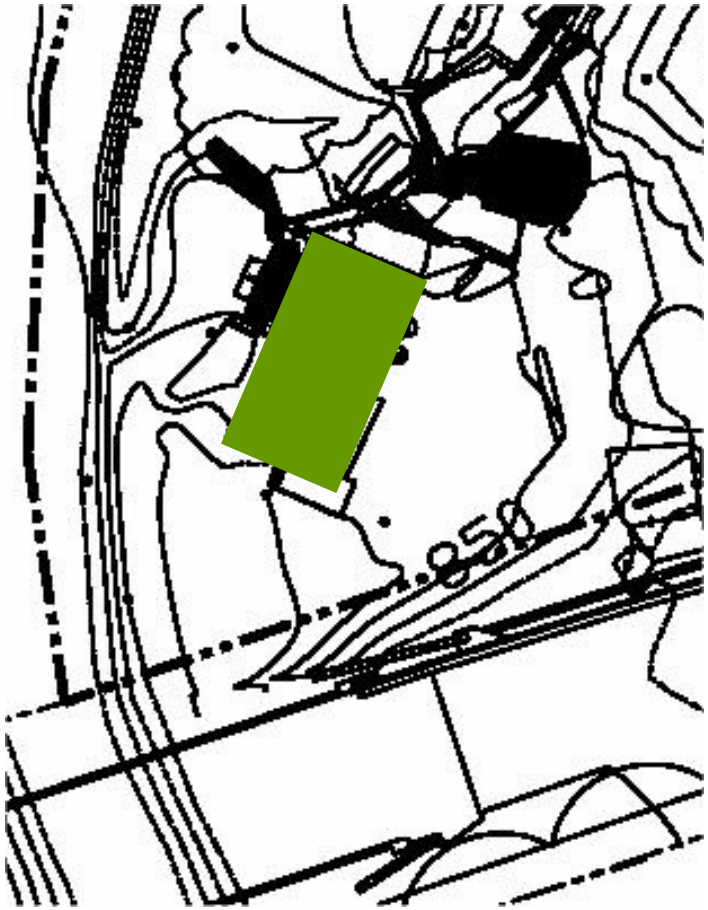
Assessment of Dam, Sluiceway & Mill Treatment

Mill

Preservation Alternative

Dam, Sluiceway & Mill remain in current configuration

- Mill will flood, with increasing frequency
- Substantial ongoing maintenance will be required to keep building clean, sound and functional
- National Register Listing will remain intact



Alcovy River Grist Mill/ **Master Plan**

Assessment of Dam, Sluiceway & Mill Treatment

Mill

Mill Protection Alternative

Construct dike to 5'+ above first floor to prevent flood events from inundating mill building

- Mill building is protected from flood
- Dike will significantly alter historic context.
- Not recommended by HPD and will likely affect Listing on National Register
- Will introduce a new set of management requirements including management of water behind the dike

10 Year Flood Retaining Wall

Alcovy River Grist Mill/ **Master Plan**

Assessment of Dam, Sluiceway & Mill Treatment

Mill

Mill Protection Alternative

50 Year Flood Retaining Wall

50 Year Flood Retaining Wall
With 150’ Bridge

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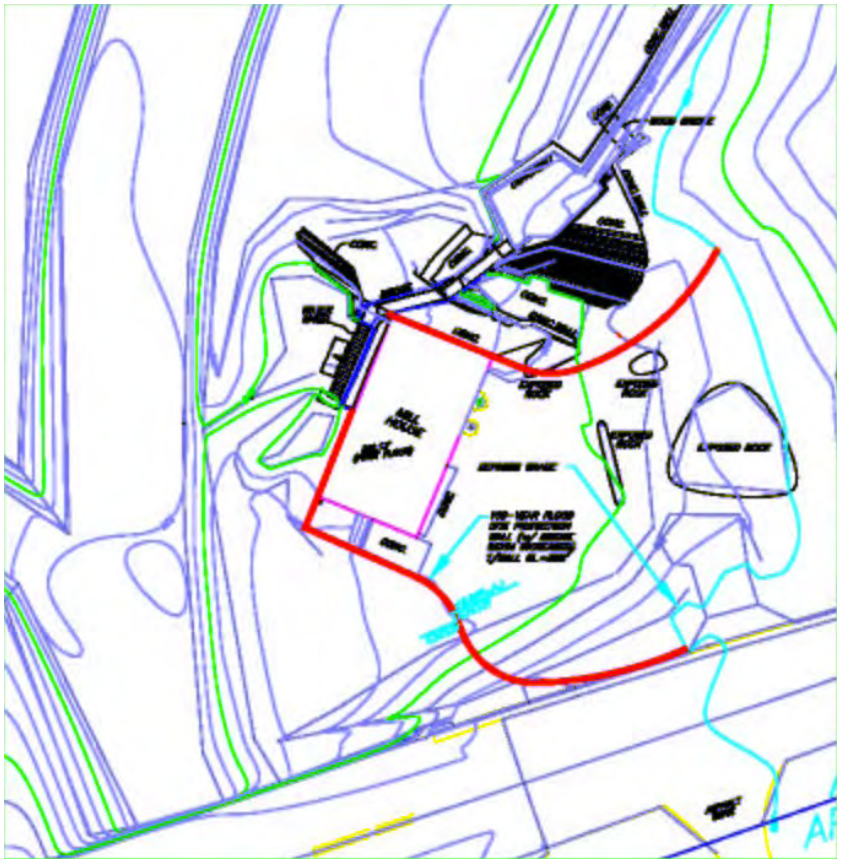
Alcovy River Grist Mill/ **Master Plan**

Assessment of Dam, Sluiceway & Mill Treatment

Mill

Mill Protection Alternative

100 Year Flood Retaining Wall



100 Year Flood Retaining Wall
with 150’ Bridge

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Mill

Relocation Alternative

Mill structure would be raised out of the flood plain. No horizontal movement would take place

- Considered viable option for remaining on National Register by HPD
- Requires new foundations and footings
- Mill and works would remain intact
  - Basement will still flood
- HPD recommends wheel be raised with Mill
- Raising requires site modifications to maintain access

Alcovy River Grist Mill/ **Master Plan**

Assessment of Dam, Sluiceway & Mill Treatment

Mill

Relocation Alternative

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Alcovy River Grist Mill/ **Master Plan**

Assessment of Dam, Sluiceway & Mill Treatment

Mill

Mill wheel can be operable at either the existing elevation or higher elevation

Alcovy River Grist Mill/ **Master Plan**

Assessment of Dam, Sluiceway & Mill Treatment

Mill

Structural Considerations

General

- Remove silt from the basement of the Mill
- Retrofit all structural components found to be deficient

Preserve & Protect Approaches

- Remove silt from the basement of the Mill
- Stabilize existing foundations of Mill with supplemental footings and/or lateral restraints
- Protect all Mill foundations against future scour with riprap placement

Relocate Approach

- Stabilization of Mill for movement, moving plan, lifting and moving of structure to allow for construction of new isolated and footings (preferably below scour elevations) and returning structure to original location
- Construct new retaining wall at road-face of structure
- Construct new columns for support of structure
- Increase height of existing wheel support system

Appendix G

Georgia Department of Natural Resources

Noel Holcomb, Commissioner
Steve Friedman, Chief

REAL ESTATE OFFICE
2 Martin Luther King, Jr. Drive, SE
Suite 1454 East
Atlanta, Georgia 30334-9000
404/656-5165
(FAX) 404/651-9329

August 23, 2005

Mr. Phil Hoskins
Director, Department of Community Services
Gwinnett County Board of Commissioners
75 Langley Drive
Lawrenceville, Georgia 30045-6900

Re: Greenspace Project – The Alcovy River Gristmill Site

Dear Phil:

Mr. Whit Alexander has made a request to the Department on the behalf of Gwinnett County to seek approval to use pervious concrete and asphalt paving materials for parking and other park facilities. Paragraph III of the Greenspace Grant Award Agreement only places limitations on impervious surfaces. Therefore, by default, pervious materials would be acceptable for development of properties acquired with greenspace grant funds.

Although the Agreement does not specify the types of pervious surfaces, the materials that Mr. Alexander described would be acceptable for park development. In addition, products such as these would not have to meet the limitation requirements as stipulated for impervious surfaces.

Hopefully, this explanation addresses the County's concerns. If I can be of further assistance, please let me know.

Sincerely,

Constance Gilliam

Constance Gilliam
Greenspace Program Officer

c: Mr. Whit Alexander

Appendix H

FREEMAN'S MILL MASTER PLAN

INTERPRETIVE SIGNAGE - PROPOSED TEXT AND IMAGES

December 31, 2005

Proposed Themes

- Site Introduction
- Mill History
- Milling in North Georgia and Gwinnett County
- Mill Technology - How Did Freeman's Mill work? (Millhouse)
- Mill Technology - Dam and Millrace
- Wanted: An Experienced Miller
- Sense of Place
- Alcovy River- Its Watershed and Floodplain
- Preserving Freeman's Mill

Site Introduction

Site Introduction Text

Welcome to Freeman's Mill, the last operating gristmill in Gwinnett County. From the late 1860s to 1986, Freeman's Mill provided wheat flour, corn meal and feed meal for the county's residents and their animals. Its pond afforded nearby Alcova Baptist Church a baptismal, and the millhouse itself provided a gathering place for the surrounding rural community. In the 21st century, Freeman's Mill Park offers Gwinnett County residents a sense of its agricultural past.

Grist milling was an important part of farming life in Gwinnett County. In 1840, the county had 33 gristmills. In 1880, there were 30. Once a common site on Georgia's Piedmont rivers, mills such as the Freeman's Mill are rapidly disappearing. The historical significance of this well-preserved mill property was recognized in 1998 when the mill was placed on the National Register of Historic Places.

In 2002, the mill property was acquired by Gwinnett County with funding available from the Georgia Greenspace Program. Gwinnett County recognizes the historical significance of this landmark and invites visitors to tour the mill site and to walk the interpretive trail to the dam and raceway to learn about the only surviving water-powered gristmill in the county.

Suggested images:

- A. Site Plan (Lose & Associates, to be completed)
- B. James Robert Hood family in front of house on Alcovy Road, c. 1914
- C. Annie Greer Welch picking cotton, 1942
- D. Alcova Baptist Church singing class, c. 1915

Mill History

Mill History Text (a)

Freeman's Mill began its life as the Loveless Mill and would possess other names as its ownership changed. Throughout its history it was closely associated with the Loveless, Freeman, Pharr, and Swann Families.

Levi Loveless and his wife, Temperance Jones, were Gwinnett pioneers who came into possession of 650 acres including the mill site after the Cherokee Land Lottery. The Loveless household included 11 children and four slaves. Levi Loveless, a distinguished community leader, served as justice of the peace, county sheriff, state senator, judge, and state representative. The family prospered at farming and industry; they would own a gristmill, cotton mill, and saw mill.

Tax records show that a gristmill was established on Loveless-owned property by 1874, and family history identifies Levi J. Loveless and John Griffin Loveless as the builders. The original milldam was constructed of wood, and the mill was powered by an overshot water wheel. The Loveless Mill did "custom milling," producing 40 barrels of wheat flour, 14,400 pounds of corn meal and 54,000 pounds of feed a year for its customers.

The mill changed hands, becoming Freeman's Mill in 1913. Winfield Scott Freeman and his son Winfield, both millers, acquired and ran the mill. The family lived up the hill, and their family name remains strongly associated with the property. Winfield Freeman did not remain the mill's owner, but he and/or his descendants would continue to operate the mill through the twentieth century. Alice Freeman Tuck, his daughter, and her son, Darrel, operated the mill until its closing.

Mill History Text (b)

Between 1915 and 1946, the mill was one of several owned by the Pharr Family. The original wood dam was replaced in 1918 after a flood with a rock-and-mortared dam almost 20 feet high that created a substantial millpond.

In 1946, Lewis Swann, a Loveless descendant, purchased the mill. Swann, trained as a mechanical engineer, energetically began repairing the mill and making site improvements that reflected his vision of the historic property. His stewardship of the property has helped to preserve the intact mill and has placed his personal stamp on the historic mill and dam property.

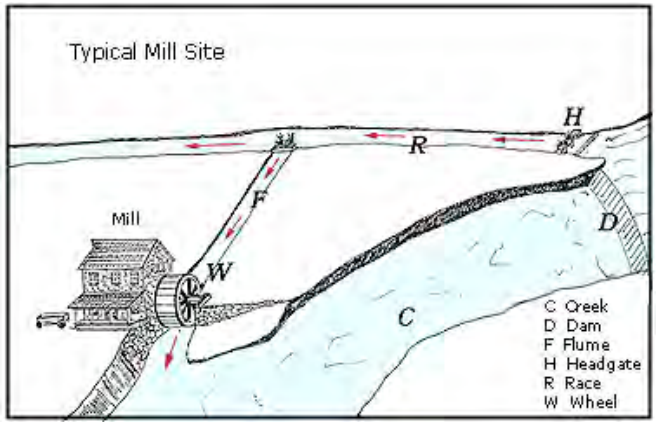
Possible sidebar or use in park design - former mill names

Loveless, Alcovia, Pitman's, Freeman's, Pharr and Pound Mill, Pharr's Mill, Hugh Lowe Mill, Swann Mill, now Freeman's Mill

Suggested images:

John Griffin and John Marion Loveless, c. 1900
Pharr brothers, 1901
N.G. Pharr home and family in Dacula, 1900

Milling in North Georgia and Gwinnett County



- .

Milling in North Georgia Text

Now routinely purchased in stores for home use or feed stores for livestock, flour, grits and corn meal were once produced at rural gristmills that operated at sites located along north Georgia's rivers. The Alcovy, Apalachee and Yellow Rivers and their headwaters provided many sites for early Gwinnett County millwrights and farmers to develop as gristmills.

Typically, a good mill site was where the level of the river dropped. This "fall" could be used and enhanced to provide waterpower. To do so, a millwright would build a dam to store water at the highest point above the mill and a race that could channel water to the water wheel at the mill and then allow it to flow back to the river.

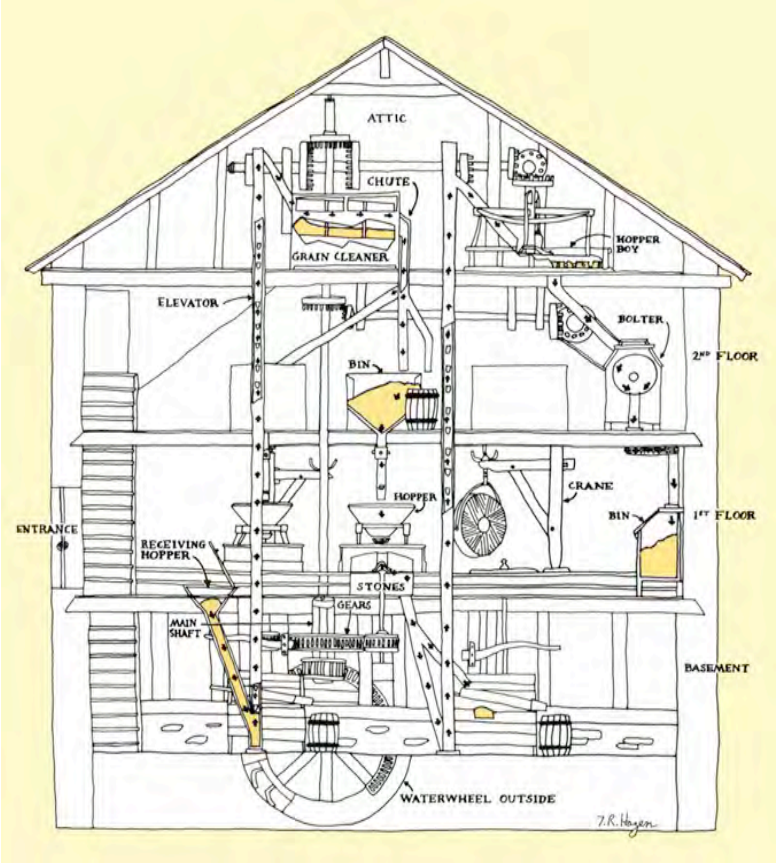
A gristmill is a building where grain is ground into flour, and Gwinnett County had 30 or more in the late 1800s. Water-powered gristmills had an important place in Gwinnett County's historic farming economy in which cotton, corn and wheat were principal crops.

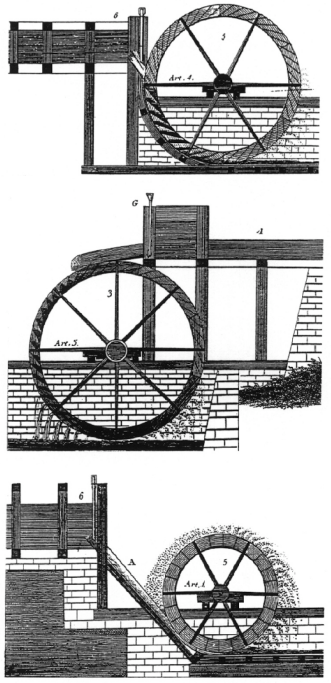
Meals placed on dinner tables on farms and in cities benefited from the bread, biscuits, cereals, grits, and baked goods created from flour and cornmeal. In fact, cornmeal was a household staple. Farmers, who carted their corn and wheat to the neighborhood mill, were the miller's customers. The miller expected a "toll" for his work, 1/5 to 1/8 of each bushel he ground as payment. The farmer kept a part of his ground corn meal for his own use, but his cash profit came from the sale of the meal. Grinding the corn into meal had two advantages: it made it easier to handle and it stayed fresher than un-milled corn. In 1880, Freeman's Mill produced 40 barrels of wheat, 14,400 pounds of corn meal and 54,000 pounds of feed.

Suggested images:

- Diagram of Components in a Mill Site, Thomas Sweeney III and Robert Howard, Typical Mill Site, Hagley Museum, Wilmington, DE
- Men on mill porch
- Agnes Gower in Alcovy River by Brandon Mill, c. 1940s

How Did Freeman's Mill Work?





How Did Freeman's Mill Work? Text

The mill, shown in this diagram, was designed to be run by one person. In the morning, the miller would first open the sluiceway to let water into the millrace. Water rushed through the millrace to the water wheel, putting it in motion. Then inside the mill, the miller would raise the top millstone from the fixed millstone to make room for the grist. The smaller the space raised, the finer the meal was ground.

When a customer approached, his corn was weighed out and the miller's toll box was filled. Then the corn was shelled in a machine that separates kernels from the cob. Kernels were sifted over the receiving hopper to remove any husk or cobs. Only clean grains could be ground. The receiving hopper was attached to a gravity chute that dropped the corn down to the next lower level and belt elevator where it reached the gravity screen.

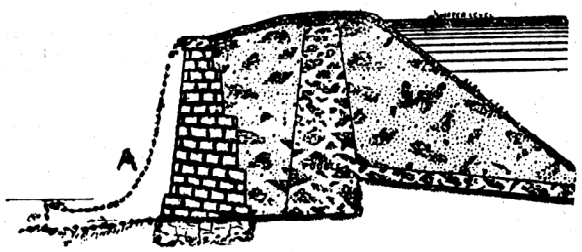
The vertical shaft of water wheel has three gears that run the belt elevator, the millstone and the blower. The belt elevator with attached scoops to hold the corn was contained with a chute that reached from the lowest level to the attic and back down to lowest floor. Corn was grabbed by scoops at the lowest level and then transported up to the attic where it was screened; using gravity, it dropped to the second floor. During the fall, the corn was air blown.

The corn reached the millstones from a gravity chute controlled by the miller to get the right amount of corn to be ground on stones. The corn entered the grinding surface from the middle hole and then was ground along the millstone's furrows.

Ground corn would then drop off the edge of the stone to be bagged for the waiting customer. At the end of the milling day, the miller closed the water gate, lowered the millstone, and closed the sluice at the dam.

Suggested images:
Cutaway of mill house
Diagram of waterwheel types with descriptions. Note earlier over shot but now breastwheel.
Sheller or Machinery detail

Dam and Millrace



Dam and Millrace Text

Dams at historic mill sites are created over time. Vulnerable to flooding, they were rebuilt or repaired to do their job, creating sufficient fall to power a mill. In other cases, dams and their millraces were enlarged or expanded to suit the millwright or owner and his needs. The dam and millrace at Freeman's Mill, you see today, are a product of both a response to a flood event and an energetic engineer.

In 1918, a flood destroyed an existing wood dam at Freeman's Mill. Newt G. Pharr, who owned several county gristmills including Freeman's, replaced it with a V-shaped stone and mortar dam with one sluiceway. The stone was locally quarried. Its height is unknown but it measures 20 feet across and it is wider at its base than at its top. Built to promote stability, the up-river side is angled with a base width of 12 feet and a top width of approximately 2 feet. In contrast, the downriver side of the dam is vertical, allowing for a sheet-like waterfall. The original sluiceway, an opening in the dam that allowed the miller to control water flow, was operated by walking out over the dam and pulling up planks that acted as a gate.

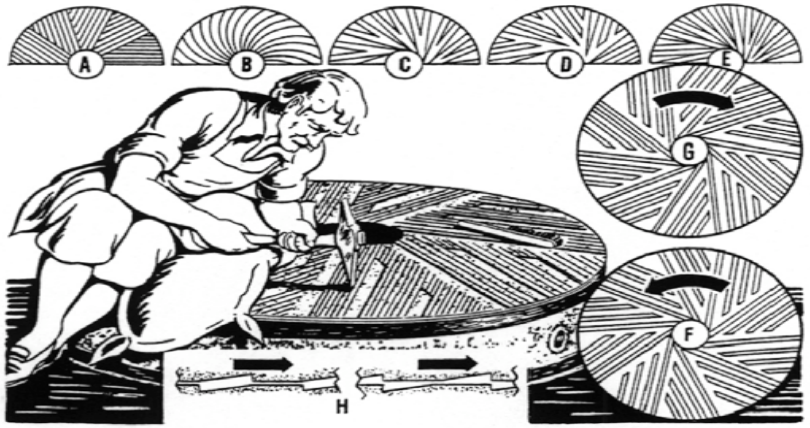
In 1947, Lewis Swann, an engineer by training, added a three-foot concrete and stone cap to the 1918 stone and mortar dam. Silt had collected in the millpond, and Swann wished to build up more head or "fall" to compensate for this. The cap contained several sluiceways with wooden gates to control the water. Swann also added a concrete wall to the raceway. He expanded the millpond, and created an overflow area or waterfall with short concrete steps that fan out and then deliver water to the mill. The stepped area was built for Mr. Swann's enjoyment. He lived across the road and liked to listen to the water moving over the steps.

In 2005, a flood event destroyed the concrete cap as well as portions of the stone and mortar dam below. To protect the dam, repairs were completed and a second cap added, allowing Freeman's Mill dam to evolve in the 21ST century.

Suggested images:

- Site Plan showing dam and race and feature (Lose & Associates)
- Profile line drawing of a dam (photograph of pre-Swann dam [Mr. Tuck])
- Photograph of Swann dam
- 2005 Photograph of dam and Drawing showing cap and on 1918 dam
- Historic View of Dam construction

Wanted: An experienced Miller



A. Late Roman from the fourth century A.D.
B. Nineteenth-century dress
C. Two-furrow "two-quarter" dress
D. "Three-quarter" dress
E. Straight or union dress
F. Left hand stone
G. Right hand stone
H. Relation of lands to furrows

Wanted: An experienced Miller Text

Typically, the mill was open during harvest season (June to October) six days a week. During much of the 20th century, the millers were the Freeman family, who lived on Alcovy Road near the mill. After Winfield Freeman retired, Alice Freeman Tuck, his daughter, and her son, Darrell, ran Freeman's Mill during the 1950s. Known for her strength and focus, Alice Tuck carried on the family business, operating the daytime operation of the mill. Darrell Tuck handled the night operations, beginning his workday after high school. He was the miller when the mill ended operation in 1986.

"Prolific" corn was preferred for milling and sale. The Tucks would scour the surrounding farms for a crop of prolific corn, and one Saturday they made $50, considered a sizeable profit for their labor.

Millers were responsible for the maintenance and upkeep of the mill machinery. The millstones would need to be redressed at least once a year depending on the volume of business. Miller Tuck would use a meat-cleaver-type tool to roughen up the surface and a mill bill to sharpen up furrows. The pattern that each millstone has is a result of dressing, and chipping out furrows with a mill bill (a tool that was shaped like a double-edged wedge with a wooden handle). Different patterns were needed for different types of milling. He would re-hang the millstones and make sure they were balanced.

Suggested images:

Photograph of Alice Tuck
Ears of Prolific corn
Millstone patterns

Sense of Place

Sense of Place text

Gristmills were local landmarks in rural Gwinnett that county farmers and their families would visit each harvest time. The millponds associated with them were also landmarks, serving the neighboring community as baptismal ponds and as swimming holes. Alcova Baptist Church sponsored a number of baptisms at the millpond at Freeman's Mill. In the winter months, newly baptized congregation members could take advantage of the mill building's closeness and warmth. The Freeman's Mill pond also provided local children a place for swimming during the summer months.

Suggested images:

Baptism photographs, Alcova Baptist Church
Swimming photographs (Mr. Tuck)

Alcovy River Watershed and Floodplain Image and Text

A watershed is typically measured by the hilltops and ridges that enclose a stream and the rainfall it absorbs. The Alcovy River has its headwaters in Gwinnett County north of Lawrenceville. It is 80 miles in total length with a watershed that encompasses a total of 168,072 acres of which 41,761 are in Gwinnett County, 87,540 in Walton County and 38,771 in Newton County. Its banks have provided excellent locations for mills where water can be harnessed for power. However, this same closeness to a river has risks, particularly from flooding.

The Alcovy River's floodplain was built by the river. It is the path the river chooses in times of flooding. Freeman's Mill has been situated in that floodplain since its construction and the millhouse and dam have been continually shored up, raised, and repaired in response to historic floods.

Suggested images:

- Alcovy River watershed map
- Historic view showing repair to mill

Preserving Freeman's Mill Image and Text

- Freeman's Mill is a historically significant site, listed on the National Register of Historic Places. Maintained by the Swann Family and operated by the Freeman/Tuck families, it is notable as the last remaining operational gristmill in Gwinnett County. It was purchased by Gwinnett County under the Greenspace Program in 2002, and the county began developing a Master Plan for the millsite's future that was completed in 2005.

- This process included a detailed description of the property, historical research, and an assessment of the current condition of the mill and its site within the Alcovy floodplain. Input from the community, state, and the Gwinnett County Historical Society was gathered. From this study, it was decided to stabilize the dam and to raise the mill building so that it can better withstand future flooding. These preservation efforts will allow 21st century county residents a glimpse of past lifeways from this historically significant millsite.

- Suggested images:

  historic view of mill

  Elevations showing millhouse before and after raising

Appendix I

LOSE & ASSOCIATES, INC.
LANDSCAPE ARCHITECTURE • ARCHITECTURE • PLANNING

MEMORANDUM

Date: 10-22-04

To: Rex Schuder

From: Whit Alexander

Re: Alcovy River Grist Mill Master Plan Citizen Input Meeting 10-21-04

On 10-21-04, a meeting was held at the Rhodes Jordan Community Center to gather public input for the master plan program and to begin to assemble the citizen input committee for the project. Park and Recreation Division staff included Phil Hoskins, Grant Guess, and Rex Schuder. Lose & Associates representatives included Chris Camp and Whit Alexander.

Grant welcomed the citizens in attendance. He noted that the mill property also included the 10.5 acres to the east of the 1.5 acre immediate mill site. He noted that the purpose of the project was to develop a master plan for development for the entire property that would include passive recreation opportunities. He explained that one goal of the meeting was to gather applications from those interested in serving on the citizen input committee.

Chris informed the audience of some of the background data gathered during the historical structure analysis performed in 2003. He noted that the date of the mill's construction was difficult to ascertain, but that it was most likely constructed between 1840 and 1850. Chris noted farming statistics for Gwinnett County during the 1800's, and presented the list of previously existing mills across the county. Using the aerial photographs dating back to 1955, he explained how portions of this site and surrounding properties had been cleared and had recently been reforested. Rex further explained that except for the river valleys, most of Gwinnett County has been repeatedly cleared and reforested.

Rex asked that the citizens fill out their input surveys. He then explained the master planning process and stressed that those wishing to serve on the input committee consider the time commitment required.

There was a brief question and answer period that followed. The following is a synopsis of topics covered.

Comment: Paved trails should be kept to a minimum

Response: ADA regulations require that main access routes be paved. Maintenance of other trails may also require pavement in some locations. Some trails will be left natural as well. Because the property was acquired with the assistance of the Georgia Greenspace Program, only 15% of the total site can be covered with impervious materials.

Question: What is the County's zoning plan for the surrounding properties?

Response: Current zoning is for continued single family residential development and agricultural land.

Question: Is the waterfall on the adjoining stream on the property?

Response: No, it is on the adjoining property to the west.

Comment: Baptisms have been occurring in the pond below the dam for generations. A request is made that this practice be allowed to continue.

Response: It would be expected that this could continue, and will be addressed in the master plan process.

Question: Could community groups/volunteer groups be utilized to help with construction?

Response: If community groups wanted to assist with fundraising, it would be welcomed. Volunteers would also be welcomed to adopt native planting efforts, site maintenance, etc. Because county parks are built to commercial construction standards, volunteer efforts for large construction projects are rare.

Question: When is construction scheduled to begin?

Response: Project development is not currently funded. If the SPLOST program passes in the November election, and portions of the funding are allotted for the project, the project's development would most likely occur in phases.

End of Memo

Thank you.

LOSE & ASSOCIATES, INC.
LANDSCAPE ARCHITECTURE • ARCHITECTURE • PLANNING

MEMORANDUM

Date: 7/25/05

To: Alcovy River Grist Mill Citizen Input Committee

From: Whit Alexander

Re: Mill Tour 7-23-05

On 7-23-05, members of the Alcovy River Gristmill citizen input committee met at the Alcova Elementary School and boarded a bus to tour several mill and park sites in the region. Present were John Adams, Joe Clark, Susie Geyer, Vicki Wilson, Pam Thomason, Michael Nash, Mary Tidwell, Chris Henkins, Joe Sarchet, Jennifer Collins, Rex Schuder and Whit Alexander. Jack Pyburn and Laura Moore were able to attend the visit to Alcovy River Gristmill and Head's Mill. Chip Randall was able to attend the visit to Alcovy River Gristmill.

The group first visited the Alcovy River Gristmill. The group explored the foundations and area underneath the mill. It was demonstrated that most of the mechanical workings present when the mill closed were still in place. It was also demonstrated that silt from the river was building up under the mill building, and that occasional floodwaters were deteriorating the structure. As the group explored the first and second floors, as well as the attic, similar features were pointed out. Most of the mechanical systems were still in place. It was pointed out that the framing, flooring, etc., had been improvised over the years and in some cases might not meet current codes. The group visited the dam location noting the amount of the dam that was removed during the flood event a few years ago. The flume was examined, and it was noted that if water were to be directed into the flume, the current level of the Alcovy River would have to be raised significantly by means of restoring the dam for gravity flow to occur. It was noted that many of the gates and mechanisms necessary to direct the flow were missing. Rex described the character of the remaining site, noting how the river corridor contained mostly a riverine deciduous plant mix, and the upper portions of the site were a loblolly pine re-growth forest. Jack noted that during the preservation effort, preservations vs. restoration issues needed to be carefully considered. The mill we are most knowledgeable about is the current structure with its blend of modern and older features. Few records exist that tell us just which portions or features of the mill were original to specific periods of the nineteenth or early twentieth century, so we cannot, for instance, restore the mill to its year 1875 or 1910 appearance with any real claim to accuracy.

The group then journeyed to Head's Mill in Hall County. This mill was largely void of its mechanical systems. Some recent efforts at stabilization of the structure and site were evident. However, the dam, and portions of the flume were on adjacent properties and were not currently

considered for renovation. The property is owned by Hall County Parks and Recreation, but a local non-profit group had committed to raise funds for the mills restoration. As funds have not been raised, deadlines have been missed and the project was in limbo. One lesson given by this project was that it is very difficult for a small non-profit group in a jurisdiction such as Hall or Gwinnett County to raise the amount of capital funds needed to accomplish a complex historic preservation/restoration project. Another lesson was to show how rich of an asset was available at the Alcovy, given the amount of mechanical system we still have available.

The group then journeyed to Sell's Mill Park in Jackson County. The mill's site had been developed into a park complete with pavilion, restrooms, and playground. Recent renovations to the mill had revived the workability of the wheel, replaced the siding and flooring, relocated a staircase, replaced windows with modern windows, added modern ceiling fans, and added exterior concrete staircases and parking. The original structure under the mill, supporting the main drive wheel and gears, was much more massive and well thought out than at Alcovy. Our mill's wheel supportive structure, by comparison, seemed to be more improvised and less stable. Views across the park site had been opened up to allow views from the playground/pavilion area to the mill, however this meant views of the playground area were obvious from the immediate mill area. Pedestrian access across the site was not available. One lesson given by this project was to show what was possible when decisions could be reached, and progress could occur. The downside to this lesson was that sometimes accuracy is sacrificed for expediency. These lessons were noted in relation to the Alcovy project, which will need a balancing act of historic preservation and upgrade for stability, accessibility and interpretation.

The group then journeyed to Hurricane Shoals Park in Jackson County to visit a gristmill that had been relocated to the site of an old electric power generation plant. The purpose of this visit was to see how the principles of milling could be demonstrated on a small scale. An overshot water wheel sent power by secondary belts to a small, self-contained manufactured mini-gristmill. The small mill fit in a space about 4 feet wide, 6 feet long and 6 feet high. It had two vertical stone mill wheels and was in operation when we arrived.

The group then visited Little Mulberry Park and McDaniel Farm Park in Gwinnett County to see examples of standard Gwinnett County park layout and structures. Rex noted how the placement and separation of the parking lots, play features, restrooms, etc. were all designed to provide self-policing of the parks in an effort to reduce vandalism. Styles of park architecture were contrasted, noting how that of Little Mulberry Park was meant to mimic that of the WPA/CCC projects, and that at McDaniel Farm was designed with a modern style to contrast with that of the old farm structures.

The group returned to Alcova Elementary School, with the explanation that the next weekend tour would be to Hamburg State Park to visit another mill, and there might be the opportunity to visit second mill in the near vicinity.

Thank you.

LOSE & ASSOCIATES, INC.
LANDSCAPE ARCHITECTURE • ARCHITECTURE • PLANNING

MEMORANDUM

Date: 8/15/05

To: Alcovy River Gristmill Park Site Master Plan Steering Committee

From: Whit Alexander

Re: Mill Tour 8/13/05

On 8-13-05, members of the Alcovy River Gristmill citizen steering committee met at the Alcova Elementary School and boarded a bus to travel to the Hamburg State Park Mill and the Ogeechee River Mill. Present were Chip Randall, Joe Sarchet, Terry Thomason, Vicki Wilson, Alex Adams, Chris Jenkins, Ben Satterfield, Joe Clark, Rex Schuder, Grant Guess, Marcie Diaz, and Whit Alexander.

The group first toured the Hamburg State Park Mill. Daniel Hill, the park manager, explained the history of the mill and how it was used for hydroelectric power, grinding of grain, and ginning of cotton. The source of power for this mill was a series of water turbines. Daniel explained methods for balancing the millstones, and was able to engage the series of belts and gears to give an impression of the milling process.

The group also toured the Ogeechee River Mill, owned by Mr. and Mrs. Garner. This mill was also powered by turbine, and had undergone several upgrades to keep it in running condition well into the 1990's.

On the way back, Rex asked the group for programming directives. In addition to the playground, pavilion, restroom building, parking and pedestrian systems that had previously been discussed, we discussed the potential for an interpretive water play feature for children and the potential for a demonstration gristmill of some sort.

Thank you.

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LOSE & ASSOCIATES, INC.
LANDSCAPE ARCHITECTURE • ARCHITECTURE • PLANNING

MEMORANDUM

Date: 9-7-05

To: Alcovy River Grist Mill Citizen Input Committee

From: Whit Alexander

Re: Presentation of Conceptual Plans on 9-7-05

On 9-7-05, the conceptual plans for the Alcovy River Grist Mill master plan were presented at the Gwinnett County Justice and Administration Building. Present were Ben Satterfield, Mary Tidwell, Michael Nash, Joe Clark, Pam Tomason, Vicki Wilson, Joe Sarchet, Chris Jenkins, Rex Schuder, Grant Guess, Jennifer Collins, Phil Hoskins, Courtney Swann, Jack Pyburn, Laura Moore, Mary Beth Reed, Whit Alexander, and Chris Hoitink.

Whit began the meeting by presenting the site analysis of the overall 11-acre site. Whit presented information related to the site's vegetation, soils, slopes, and cultural impacts. The summary of this presentation was that the areas along the Alcovy River were less desirable for development, whereas the upper portions of the site would support development. Whit also presented a detailed hydrologic analysis of the site and the flood impacts that the Alcovy River is having on the Mill and Dam. Most notable was that storm events were flooding the basement of the mill on an every 2-year cycle, and that the first floor of the Mill would be flooded during the 50-year event.

Jack continued the presentation, noting the elevations associated with the various flood events and their effects on the mill. This led into the suggested treatments for the Dam, the Sluiceway, and the Mill itself. After much discussion, the steering committee voted to return the Dam to the Swann-era elevation for aesthetic purposes (vote was 8 to 0 to rebuild the dam) and not to flood the Sluiceway due to safety concerns and the fact that it would continue to deteriorate (vote was 7 to 1 for keeping the sluiceway dry). It was decided that the Mill Building would be raised five feet in place, and that a new foundation system would be built (vote was 8 to 0). The group asked that the Wheel be raised in proportion to the Mill and that the new foundation system have the appearance of a historic foundation system. It was also suggested that the Wheel could be made to turn for aesthetic purposes through an artificial power source. The group also discussed the possibility of removing some of Swann's alterations to the Mill, including the corrugated metal pipes in the flume.

Whit then presented the different concepts for the development of the overall 11 acres. Whit noted the elements that would be required of any park development and presented the list of program elements that had previously been selected by the input committee. Whit presented 3

different conceptual layouts for the vehicular access and parking, a multi-purpose trail network, locations for a playground, locations for a picnic pavilion, locations for a picnic shelter, an option for a separate demonstration mill/museum building, and various options for river and dam interpretative stations. The group discussed the reasoning for the various locations. The group chose to have the vehicular access at the higher elevation, eastern end of the property to reduce conflicts with speeding traffic. They believed that vehicles are moving at a faster rate as they descend towards the bottom of the hill (vote was 7 for to 1 undecided). The group decided to have the rental pavilion and playground at the eastern end of the property, away from the Mill (vote was 8 to 0). The group also decided to have a separate small shelter in this playground area (vote was 7 to 1). The group was advised that the garage structure at the Historic Mill might not be retained, thus eliminating a possible location at the Mill Building for the Demonstration Mill equipment. The committee then voted to include the separate demonstration mill/museum building as shown in concept 3 (vote was 8 to 0). The group wanted to provide access and an interpretive station at the dam itself (vote was 8 to 0), and also liked the idea of a dam overlook/observation deck near the top of the hill in conjunction with the demonstration mill area (vote was 6 to 2). The group also liked the idea of a separate river overlook deck somewhere upstream of the dam (vote was 8 to 0).

Mary Beth then presented various theme topics for the interpretive program. The group liked the topics and it was noted that the relationship of the Mill site and the nearby churches, especially related to the on-site Baptisms, could also be theme worth pursuing.

Thank you.

LOSE & ASSOCIATES, INC.
LANDSCAPE ARCHITECTURE • ARCHITECTURE • PLANNING

MEMORANDUM

Date: 9-8-05

To: Rex Schuder

From: Whit Alexander

Re: Presentation of Conceptual Plans to Gwinnett County Historic Restoration and Preservation Board

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On 9-8-05, the conceptual plans for the Alcovy River Grist Mill master plan were presented at the Gwinnett County Historic Restoration and Preservation Board. Present were Ben Satterfield, John Adams, Kim Hall, Rex Schuder, Grant Guess, Jennifer Collins, Jone Taylor, Phil Hoskins, Courtney Swann, Mary Beth Reed, and Whit Alexander.

Whit began the meeting by presenting the site analysis of the overall 11-acre site. Whit presented information related to the site's vegetation, soils, slopes, and cultural impacts. The summary of this presentation was that the areas along the Alcovy River were less desirable for development, whereas the upper portions of the site would support development. Whit also presented a detailed hydrologic analysis of the site and the flood impacts the Alcovy River was having on the Mill and Dam. Most notable was that storm events were flooding the basement of the mill on an every 2-year cycle, and that the first floor of the Mill would be flooded during the 50-year event.

Courtney continued the presentation, noting the elevations associated with the various flood events and their effects on the mill. This led into the suggested treatments for the Dam, the Sluiceway, and the Mill itself. Rex relayed the citizen input committee's recommendations from the previous evening, including the vote to return the Dam to the Swann-era elevation for aesthetic purposes, not to flood the Sluiceway due to safety concerns and the fact that it would continue to deteriorate, to raise the Mill Building in place with a new foundation system, to raise the Wheel in proportion to the Mill. Rex also relayed that it was determined that the new foundation system have an appropriate surface material, that the Wheel could be made to turn for aesthetic purposes through an artificial power source, and the desire to remove some of Swann's alterations to the Mill (example, corrugated steel pipe in sluiceway). Rex noted that discussion had occurred about removing the garage area of the mill, but that that solution would mean that the demonstration mill could only occur in a separate structure that might not be built in the first phase.

The Historic Restoration & Preservation Board then commented that they saw no need to remove the garage structures, as they appeared in quite old photographs and contributed to the overall

appearance of the structure. Furthermore, the board noted that it would be efficient to have the demonstration mills housed in the Mill Building for the sake of staff performing the interpretive work, and that they saw no reason why the demonstration mill equipment could not be placed in the old garage spaces if those spaces were sufficiently large. Rex then noted that he would be contacting the citizen input committee to discuss an option for allowing demonstration milling within the garage portion of the Mill building itself.

Whit then presented the different concepts for the development of the overall 11 acres. Whit noted the elements that would be required of any park development and presented the list of program elements that had previously been selected by the input committee. Whit presented 3 different conceptual layouts for the vehicular access and parking, a multi-purpose trail network, locations for a playground, locations for a picnic pavilion, locations for a picnic shelter, an option for a separate demonstration mill/museum building, and various options for river and dam interpretative stations. Once again, Rex relayed the citizen input committee's recommendations to have the vehicular access at the eastern end of the property to reduce conflicts with speeding traffic, to have the rental pavilion and playground at the eastern end of the property, away from the Mill, to have a separate small shelter in this playground area, to have a separate demonstration mill/museum building as shown in concept 3, to provide access and an interpretive station at the dam itself and a dam overlook/observation deck near the top of the hill in conjunction with the demonstration mill area, and to provide a separate river overlook deck somewhere upstream of the dam.

Mary Beth then presented various theme topics for the interpretive program noting an additional them could be developed around the relationship of the Mill site and the nearby churches, especially related to the on-site Baptisms.

The Historic Preservation Board recommended that the park be named Freeman's Mill Park, as the mill once had that name and various generations of other families owning the mill were somehow related to the Freeman family.

Thank you.

LOSE & ASSOCIATES, INC.
LANDSCAPE ARCHITECTURE • ARCHITECTURE • PLANNING

MEMORANDUM

Date: 9-28-05

To: Alcovy River Grist Mill Citizen Input Committee

From: Whit Alexander

Re: Presentation of Preliminary Master Plan on 9-27-05

On 9-27-05, the preliminary master plan for the Alcovy River Grist Mill was presented at the Gwinnett County Justice and Administration Building. Present were Vicki Wilson, Ben Satterfield, Alex Adams, Pam Thomason, Susie Geyer, Joe Clark, Joe Sarchet, Rex Schuder, Grant Guess, Jennifer Collins, Jack Pyburn, Laura Moore, Mary Beth Reed, and Whit Alexander.

Jack began the meeting by presenting a method for providing new concrete foundations for the mill and wheel. The new foundations would be tall enough to raise the mill the recommended 5'. On top of the new foundations, the additional height of the existing foundations would remain, and would be made out of materials consistent with the existing foundations (perhaps even using some of the original material). Jack also presented the idea of needing a wall of some sort between the end of the sluice and the mill to protect the mill from overflow from the sluice discharge during large storm events.

Laura then presented methods of restoring the dam. Her concept including leaving the two end pieces of the Swann dam in place, building back the stone masonry to approximately the height of the pre-Swann dam, and placing a concrete cap over the gap between the two Swann sections to create a smooth weir for the water to pour across. The group discussed this option for a while and it was decided that an additional illustrative graphic should be prepared for distribution to the group.

Mary Beth then presented her further refinements of the interpretive package themes. The group felt that she was on the right track. Mary Beth noted that she would interview the last miller and record his discussion for use in future interpretive elements.

Whit then presented the overall park design. Whit explained how the differences in elevation helped to separate necessary elements, and that in the immediate area of the mill, the trees were to remain in an effort to maintain the character of its setting. Whit explained in detail the placement of all the facilities and their notable features. Rex noted that additional discussion had been given to keeping the trail access to the mill at 12' wide, in order to accommodate maintenance vehicles.

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The meeting ended with the group unanimously voting to raise the mill as shown, to continue with the interpretive themes, and to approve the preliminary master plan.

Some dissention was given on the height option provided at the dam, but the majority felt that the basic methodology of a concrete cap with a continuous sheet of water was correct. The majority of the group liked the idea of maintaining the remaining portions of the Swann dam, along with an elevation matching the pre-Swann dam for historic interpretive purposes. The group felt the additional graphic (mentioned above) would help them better understand the exact elevation suggested.

Thank you.

LOSE & ASSOCIATES, INC.
LANDSCAPE ARCHITECTURE • ARCHITECTURE • PLANNING

MEMORANDUM

Date: 10-14-05

To: Alcovy River Grist Mill Citizen Input Committee

From: Whit Alexander

Re: Presentation of Final Master Plan on 10-13-05

On 10-13-05, the final master plan for the Alcovy River Grist Mill was presented at the Gwinnett County Justice and Administration Building. Present were Vicki Wilson, Susie Geyer, Joe Clark, Michael Nash, Chip Randall, Rex Schuder, Grant Guess, Jack Pyburn, Laura Moore, Mary Beth Reed, and Whit Alexander.

Mary Beth began the meeting by presenting her refinements and expansions of the interpretive theme text. She noted that she had recently interviewed the last miller and was using some of his information in the text. The group agreed that the themes, information, images, etc., were appropriate for the project and that all topics had been covered.

Jack continued the meeting by presenting a more detailed description of the mill's foundation system and a more graphic representation of the dam improvements (including an image of what the waterfall at the dam would look like). The group noted that the new graphics better explained the dam suggestions and agreed with the concept of the concrete cap.

Whit continued the meeting by presenting the changes to the mill trail on the master plan. He gave a synopsis of the master plan to several committee members who were not present at the last meeting.

From there, Whit presented the overall opinion of probable cost, and also presented a potential Phase 1 project that included raising the mill and making structural and condition improvements, while also providing vehicle and pedestrian access to the mill. It was explained that the costs would evolve as more detailed design took place, but that the budgets were a good starting point for considering phasing options. The group agreed that the potential Phase 1 project was logical and needed to be pursued.

After the presentations, the committee unanimously approved sending the suggestions to the Recreation Authority for their review. Rex ended the meeting by asking the group if the group felt that had been informed and prepared to make their decisions. The group agreed that they had been. Rex also asked if they would suggest improvements to the process. One committee

member noted that he wished he had more time to review the information before making a decision.

Rex ended the meeting by inviting the committee members to attend the upcoming Recreation Authority and Board of Commissioners' meetings.

Thank you.

LOSE & ASSOCIATES, INC.
LANDSCAPE ARCHITECTURE • ARCHITECTURE • PLANNING

MEMORANDUM

Date: 12-8-05

To: Alcovy River Grist Mill Citizen Input Committee

From: Whit Alexander

Re: Presentation of Final Master Plan to the Gwinnett County Recreation Authority on 11-17-05

On 11-17-05, the final master plan for the Alcovy River Grist Mill (now being called Freeman's Mill Park) was presented to the Gwinnett County Recreation Authority.

Jack Pyburn began the meeting giving a brief synopsis of the effects of the flood data on the mill and dam, and further explained the reasoning behind raising the mill, and how that solution was determined during the planning process.

Whit Alexander continued the meeting giving an explanation of the overall park site. He also presented the theme topics to be covered by the interpretive program, as researched by the project historian, Mary Beth Reed.

During the meeting the Recreation Authority approved the master plan and recommended that it be sent to the Gwinnett County Board of Commissioners for their review and approval.

Thank you.

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LOSE & ASSOCIATES, INC.
LANDSCAPE ARCHITECTURE • ARCHITECTURE • PLANNING

MEMORANDUM

Date: 1-31-06

To: Alcovy River Grist Mill Citizen Input Committee

From: Whit Alexander

Re: Presentation of Final Master Plan to the Gwinnett County Board of Commissioners on 1-3-06

On 1-3-06, the final master plan for the Alcovy River Grist Mill (now being called Freeman's Mill Park) was presented to the Gwinnett County Board of Commissioners.

Jack Pyburn began the meeting giving a brief synopsis of the effects of the flood data on the mill and dam, and further explained the reasoning behind raising the mill, and how that solution was determined during the planning process.

Whit Alexander continued the meeting giving an explanation of the overall park site. He also presented the theme topics to be covered by the interpretive program, as researched by the project historian, Mary Beth Reed.

Thank you.

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