US Army Corps
Of Engineers
Wilmington District

PUBLIC NOTICE

Issue Date: July 27, 2007
Comment Deadline: August 27, 2007
Corps Action ID #: 2007-1676-031

All interested parties are hereby advised that the Wilmington District, Corps of Engineers (Corps) has received an application for work within jurisdictional waters of the United States. Specific plans and location information are described below and shown on the attached plans. This Public Notice and all attached plans are also available on the Wilmington District Web Site at www.saw.usace.army.mil/wetlands

Applicant: Dr. David Fussell
Post Office Box 756
Rose Hill, North Carolina 28458

AGENT : Southern Environmental Group, Inc.
Attn: Ms. Angie Pennock
5315 S. College Road, Suite E
Wilmington, North Carolina 28412

Authority

The Corps will evaluate this application and a decide whether to issue, conditionally issue, or deny the proposed work pursuant to applicable procedures of Section 404 of the Clean Water Act (33 USC 1344).

Location

The perennial stream (Indian Branch also locally called Reedy Branch) proposed to be impounded is bordered by 4 family farms (Fussell, Cooper, Bradshaw, and Long) and is physically located on the southwest corner of the intersection between Interstate 40 and SR 1102 (Charity Road), east of Rose Hill, in Duplin County (34.8205° N, -77.9991° W). Indian Branch is a tributary to Island Creek, which is a tributary to the Northeast Cape Fear River, which flows into the Cape Fear River and ultimately enters the Atlantic Ocean at the mouth of the Cape Fear River in Brunswick County near Bald Head Island. The subject perennial system is located within Hydrologic Unit Code 03030007, Cape Fear River Basin.

Existing Site Conditions

The subject site is located in the Lower Coastal Plain of southeastern North Carolina and in the Carolina Flatwoods section of the Middle Atlantic Coastal Plain Eco-region. The Lower Coastal Plain near the Atlantic Ocean is under strong development pressure while the interior portions of this region, which more accurately describes the review area, are predominately agricultural and is not experiencing rapid urbanization. The inner Counties of the Lower Coastal Plain are characterized with greater variation in topography resulting in farms located along sandy ridges separated by low, hardwood swamps surrounding flowing tributaries.

Duplin County is the 9th largest county in North Carolina by land area (819 square miles) and the second largest hogs and pigs producer in the United States. The population of Duplin County was 49,063 people according to the 2000 Census. The population grew by 4.3% to 51,181 in 2003 making it the 27th fastest growing of North Carolina's 100 counties. Duplin County is sparsely populated and dominated by an agrarian culture.

The land around the review area is currently or proposed to be utilized for the production of crops including collards, kale, turnip salad greens, Mustard salad greens, turnip roots, cabbage, sweet corn, and Muscadine grapes. There is a small orchard area on the property owned by the Duplin Winery, Fussell Property. The Cooper property (located south of Indian Branch) has approximately 20 acres in production, the Bradshaw farm (located west of the review area) has approximately 40 acres in production, and the Duplin Winery property will have approximately 10 acres in production. It appears the Long Farm has some sort of crop rotation but it is not disclosed as to whether or not irrigation is needed for this farm. The Cooper and Bradshaw properties are farmed by Mr. Vernon Rouse of Rouse Brothers Produce. Currently, they grow "truck crops" which are harvested, immediately loaded onto refrigerated trucks, and delivered to fresh markets in the northeastern United States. The Cooper and Bradshaw Farms are producing all of the crops listed above with the exception of grapes. Currently on the Duplin Winery land, there are 3 acres in production including 1 acre of fruit trees and 2 acres of Muscadine grapes.

There existed a millpond at the proposed project location from as early as 1892 to 1913 when the State breached the pond during a malaria outbreak. The remnant earthen dam remains in place with the center breach measuring 30 feet in width. The remains of the mill pond dam are approximately 20 feet by 110 feet on the north side and 20 feet by 200 feet on the south side. Several colonies of beavers have constructed lodges near the narrow breach until the dams were removed by the applicant within the last year and half.

Interstate 40 is located on the eastern side of the property. The highway sits approximately 15 to 20 feet above the existing grade at the base of the old mill pond dam and fill footprint of the highway is approximately 200 feet wide. Indian Branch leaves the review area as it flows under the Interstate via a single 8-foot by 8-foot box culvert. There are three old borrow ponds on the applicant's property which were originally utilized for borrow to construct Interstate 40. The three ponds from east to west have the

following dimensions 500'(l) x 380'(w) x 20'(d), 325'(l) x 275'(w) x 20' (d), and 325'(l) x 200'(w) x 20'(d). According to the applicant, these ponds have clay bottoms which are not conducive to a quick recharge. According to the applicant's agent there is an old pond excavated in the 50's on the Bradshaw property that measures 219'(l) x 63' (w) x 8' (d). According to the USGS topographic survey and older aerial photography there appears to be a small pond located on the Long property to the south.

The area surrounding the project area is typical of former beaver impoundments in southeastern North Carolina. The riparian area, which measures anywhere from 150' to 200'wide along the perennial system depending on the run of the creek, has been cleared to prevent the reestablishment of beavers. Prior to the clearing of the riparian zone the area would have been described as flooded bottomland hardwood forest. Typical bottomland hardwood systems are characterized as seasonally inundated with a closed tree canopy and well-developed shrub and vine layer. According to pictures provided by the applicant, this system was fairly typical despite the flooding and its effects on the vegetation. The result of the flooding was tree die back and the establishment of new shrub layer that could sustain a longer hydro period. Bottomland hardwood systems are valuable for water storage, stabilization, and pollutant removal. The stream side floodplains help to slow and retain floodwaters, which in return reduces steam bank stabilization and sediment transfer. Currently, the vegetation through out the cleared area is comprised of *Juncus effuses*, *Saururus cernuus*, *Peltandra virginica*, and *Polygonum hydropiperoides*.

The north side of Indian Branch is flat through the wetlands and rises smoothly to the high ground. This area is vegetated with a canopy of *Salix nigra* and *Liriodendron tulipifera*; and a shrub layer of *Ligustrum sinense* and *Leucothoe racemosa*. These species were found above the impoundment area. The underlain soil type, Mucalee (poorly drained), as mapped in the USDA Duplin County Soil Survey, is listed in "Hydric Soils of the United States."

On the south side of the channel, spoil mounds are found intermittently along the stream banks. These are the remnants of past channelization efforts. The upland and wetland systems on this side of the stream are similar to those on the north side. The total area of wetlands found within the project area is approximately 14 acres. The resources found on the southside are similar to those found on the north side.

Indian Branch is second order, perennial stream that has been impounded and channelized. The system was permanently impounded as described earlier until 1913 and has been colonized by beavers for various lengths of time between 1913 and present. Based on the vegetation growing on the old spoil piles it appears that the last channelization of the system likely occurred 20 plus years ago. The average width of the channel from ordinary high water to ordinary high water is approximately 3.5 feet and the length of channel within the project area is approximately 2450 linear feet. Evidence of an ordinary high water mark includes shelving, changes in the substrate, destruction of terrestrial vegetation, and obvious impressions in the banks. The easternmost half of the channel is relatively straight while the western half remains sinuous. The entire channel

is incised approximately 2 to 5 feet. There is some *Alternanthera philoxeroides* growing in some spots within the channel below the ordinary high water level. Based on a field survey of the subject stream by several staff, the Stream Quality Assessment Worksheet rates the system on the western half as a 63 out of 100 and closer to the relic dam a 71 out of 100.

Since this project will involve the surrounding farms, the applicant has approximated the wetlands boundaries on the adjacent farms utilizing a combination of field review, USGS topo maps, aerial photography, infrared photography, and the county soil survey. Based on these estimations, the Cooper property appears to contain at least one possibly two streams and be ¾ wetland. The Long property located south of the project area appears to be all uplands. The Bradshaw property which borders the Fussell property appears to share a drain near the property boundary and be ½ wetland. The Fussell property has been delineated with the wetland line known along Indian Branch and the aforementioned shared drain along the Bradshaw property line.

Applicant's Stated Purpose

Based on the application and various correspondences from the applicant, there have been a number of purposes described for the creation of this impoundment. The application states that the purpose is to provide an adequate water supply to support the irrigation needs of the farms around the proposed impoundment. Through other received correspondence, two additional purposes discussed were educational and outreach programs utilizing the pond to promote Christianity and to utilize the pond as a training facility for canoeing and kayaking.

As described in the application, the agent describes the uplands purpose on the Fussell property in the following manner; "The overall development of the tract located north of the proposed pond (the property owned by the applicant) is to provide an educational center where people, local and tourists, can learn more about agriculture in southeastern North Carolina. On the high ground portions of the tract, the applicant intends to have experimental orchards, vineyards, row crops, and aquaculture ponds. These areas would show how different types of farming, including organic farming, are accomplished here and would provide data to local farmers on the effectiveness of different growing regimens. A walking trail with educational signage would be constructed throughout the property to allow visitors to walk through the site. This trail would wind down to the pond buffer and provide access to the view corridor. The trail would become an open, elevated wooden walkway over the wetlands and out into the pond terminating in an observation deck."

Project Description

The proposed project is composed of four major steps. Step one is the construction of the irrigation pond. Step two is the completion of the 25-foot buffer. Steps three and four do not include wetland impacts, but are integral elements to the final utilization of the property. The construction of the pond would include building the dam and excavation

of the pond bottom. The dam would be constructed over and waterward of the remains of the dam that was breached in the early 1900s. The proposed dam would be 12 feet tall, two feet taller than the existing dam. It would be 310 feet long with a base width of 105 feet. Not all of this area is located within jurisdictional wetlands. The pond side of the dam would be entirely new construction with a 5:1 slope. The opposite side would include the old dam with a 5:1 slope down to the top of the existing structure then a 2:1 slope following the outline of existing dam. The proposed dam would impact approximately 0.16 acre of jurisdictional wetlands and 40 linear feet of perennial stream.

A spill way that would incorporate a flash board riser and gate valve system would be constructed within the dam footprint. This structure would ensure downstream flow is maintained and could be used for controlled release of water in the impoundment during flooding rain events. It would be constructed of concrete with a base width of 30 feet and a base length of 40 feet. The concrete base would be located beneath the pond and four-foot footings would be installed below the concrete base. Wing walls on either side of the spill way will be approximately 12 feet tall to protect the earthen dam. The spill way would be constructed within the fill footprint of the dam.

The elevation of the proposed pond bottom would be reduced through excavation from between 55 and 59 feet to 54.5 feet. The resulting pond bottom would be 0.5 feet higher than the existing channel bottom and the average depth of the pond would be approximately 5 feet. The proposed impoundment would impact approximately 10.82 acres of jurisdictional wetlands and 2,410 linear feet of perennial stream. Lowering the pond bottom would help the applicant meet the water needs of his and the surrounding farms while reducing the width of the impounded area.

A proposed shelf would be installed along the north and south sides of the pond and will change in elevation by 4 inches across the 25 feet. It would be planted with species grading from those found in shallow open water to those found in a swamp forest. It is the applicant's intent to utilize this area as mitigation for the proposed impacts and he has agreed to place the area on the north side of the pond in preservation with the exception of a view corridor down to the pond. Beyond the 25-foot shelf, an additional 50 feet of buffer would be preserved, again with the exception of a view corridor. The total restored/enhanced buffer would total 75 feet on the north side of the pond. The south side of the pond is not offered as preservation at this time.

To distribute water to the various crops the applicant is proposing to use flexible irrigation hose and small pumps that can be moved as necessary. This system would not result in any permanent impacts nor would it necessitate any special clearing for running large, permanent lines.

Proposed Mitigation: The applicant proposes to create a vegetated buffer around the pond that will incorporate vegetated shallows, swamp forest, and floodplain forest. This buffer would be a littoral shelf 25 feet wide with an elevation change of 4 inches. On the northern side of the pond, this area will be placed in preservation utilizing whichever mechanism the Corps and Division of Water Quality deem appropriate. On the Duplin

Winery property, an additional 50 feet of vegetated buffer will be maintained. This section will grade from floodplain forest to high ground. This area will also be preserved. The applicant would like to maintain a 30-foot wide view corridor with an elevated walkway into the lake that would terminate with an observation platform.

Other Required Authorizations

This notice and all applicable application materials are being forwarded to the appropriate State agencies for review. The Corps will generally not make a final permit decision until the North Carolina Division of Water Quality (NCDWQ) issues, denies, or waives State certification required by Section 401 of the Clean Water Act (PL 92-500). The receipt of the application and this public notice in the NCDWQ Central Office in Raleigh serves as application to the NCDWQ for certification. A waiver will be deemed to occur if the NCDWQ fails to act on this request for certification within sixty days of the date of the receipt of this notice in the NCDWQ Central Office. Additional information regarding the Clean Water Act certification may be reviewed at the NCDWQ Central Office, 401 Oversight and Express Permits Unit, 2321 Crabtree Boulevard, Raleigh, North Carolina 27604-2260. All persons desiring to make comments regarding the application for certification under Section 401 of the Clean Water Act should do so in writing delivered to the North Carolina Division of Water Quality (NCDWQ), 2321 Crabtree Boulevard, Raleigh, North Carolina 27604-2260, Attention: Ms Cyndi Karoly by August 20, 2007.

Essential Fish Habitat

This notice initiates the Essential Fish Habitat (EFH) consultation requirements of the Magnuson-Stevens Fishery Conservation and Management Act. The Corps' initial determination is that the proposed project will not adversely impact EFH or associated fisheries managed by the South Atlantic or Mid Atlantic Fishery Management Councils or the National Marine Fisheries Service.

Cultural Resources

The Corps and the applicant's agent both have consulted the latest published version of the National Register of Historic Places and is not aware that any registered properties, or properties listed as being eligible for inclusion therein are located within the project area or will be affected by the proposed work. Presently, unknown archeological, scientific, prehistoric, or historical data may be located within the project area and/or could be affected by the proposed work.

Endangered Species

The Corps and the applicant's agent both have reviewed the project area, examined all information provided by the applicant and consulted the latest North Carolina Natural Heritage Database. Based on available information, the Corps is not aware of the presence of species listed as threatened or endangered or their critical habitat formally

designated pursuant to the Endangered Species Act of 1973 (ESA) within the project area. There was a historic occurrence of Red-cockaded Woodpeckers (*Picoides borealis*), but according to the applicant's agent there was no evidence of this species or appropriate habitat for this species detected during a site visit. A final determination on the effects of the proposed project will be made upon additional review of the project and completion of any necessary biological assessment and/or consultation with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service."

Evaluation

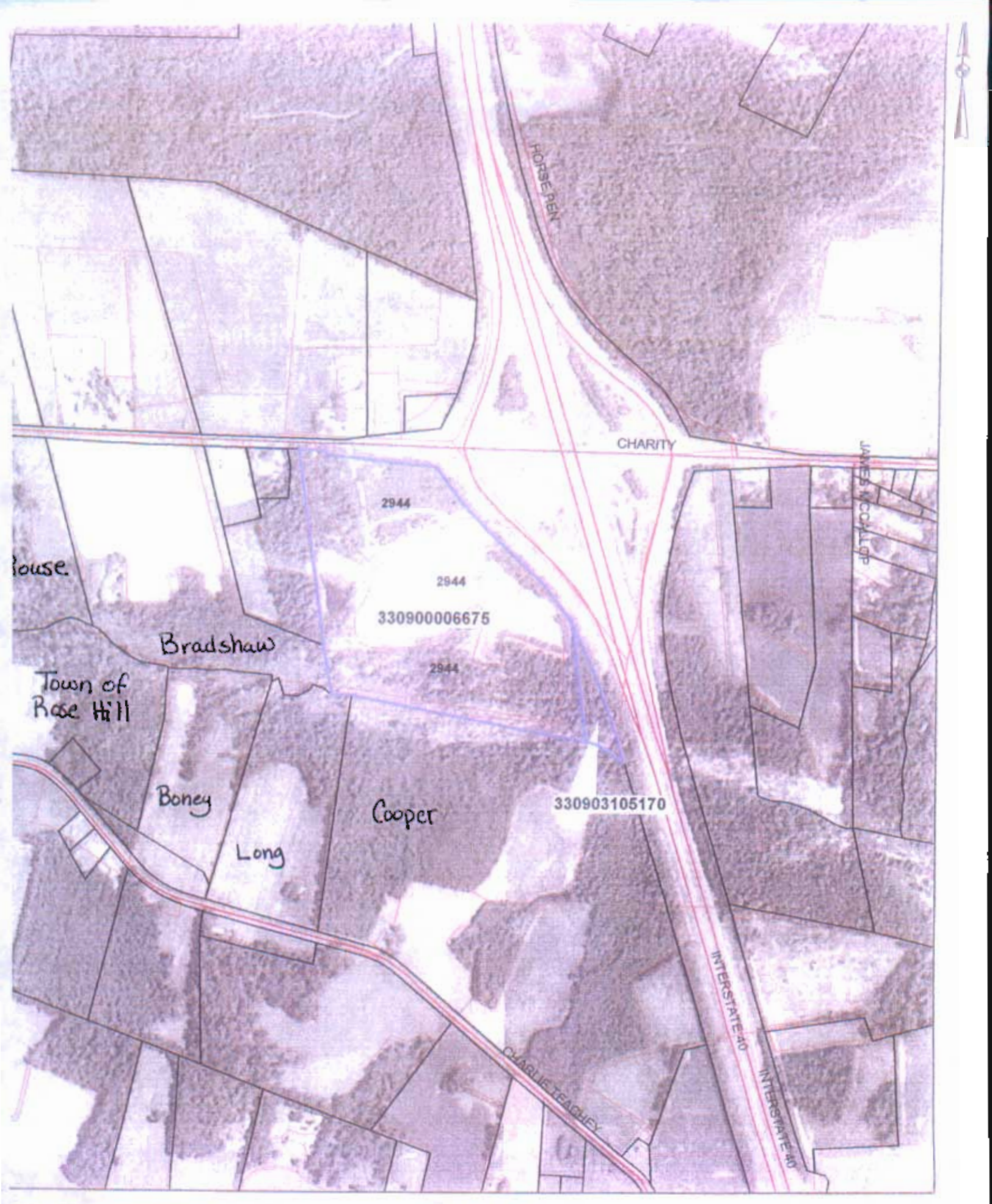
The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, flood plain values (in accordance with Executive Order 11988), land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and, in general, the needs and welfare of the people. For activities involving the discharge of dredged or fill materials in waters of the United States, the evaluation of the impact of the activity on the public interest will include application of the Environmental Protection Agency's 404(b)(1) guidelines.

Commenting Information

The Corps is soliciting comments from the public; Federal, State and local agencies and officials; Indian Tribes and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment (EA) and/or an Environmental Impact Statement (EIS) pursuant to the National Environmental Policy Act (NEPA). Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider the application. Requests for public hearings shall state, with particularity, the reasons for holding a public hearing. Requests for a public hearing shall be granted, unless the District Engineer determines that the issues raised are insubstantial or there is otherwise no valid interest to be served by a hearing.

Written comments pertinent to the proposed work, as outlined above, will be received by the Corps of Engineers, Wilmington District, until 5pm, August 27, 2007. Comments should be submitted to Mr. Brad Shaver of the Wilmington Regulatory Field Office at (910) 251-4611.



PIN NUMBERS

TRACT #

1" = 660'

SEGi

Attachment 3: Approximate Wetlands Map

Approximate Wetland Line and Soils Map

The Wetland Line has been derived using a combination of the known, approved line on the Duplin Winery Property, the USGS Topographic Quad entitled Charity, Aerial Photography, Infrared Photography, and the latest updates to the USDA Duplin County Soil Mapping Project. The latest soils data has not been published yet, but is available on CD in .pdf format from the Duplin County NRCS office.

Approximate Wetland Boundary

_____ Dividing Line Between Soil Series. Each Soil Series is denoted with an abbreviation.
NoA = Norfolk A NoB = Norfolk B Wo = Woodington Ra = Rains
Woodington and Rains are found on the National Hydric Soils List.

Not to Scale Date: June 29, 2007 Project #: 06-023.01 Drawn By: Angie Pennock

Approximate Wetland Determination

Bradshaw Millpond Site

Rose Hill, Duplin County, NC

Southern Environmental Group, Inc.
5315 College Road Suite E
Wilmington, North Carolina 28412
Office (910) 452-2711 Fax (910) 452-2899

Supplemental Information

Location

The proposed project is located on an approximately 20-acre tract owned by the Duplin Winery located on the southwest corner of the intersection between Interstate 40 (I-40) and SR 1102 (Charity Road), east of Rose Hill, in Duplin County, North Carolina (34.8205°N, -77.9991°W). Indian Branch (also known as Reedy Branch) is located along the southern property boundary and is the site of the former Bradshaw Mill Pond. Indian Branch is a tributary to Island Creek, which is tributary to the Northeast Cape Fear River, which is a tributary to the Cape Fear River, which flows into the Atlantic Ocean near Southport, North Carolina. The proposed impoundment would also effect properties owned by the Cooper (to the south), Bradshaw (to the west), and Long (to the west) families. These property owners have agreed to the construction of the pond (please see the Attachment 3). There are approximately 14 acres of jurisdictional wetlands and 2450 linear feet of perennial stream within the proposed project areas including those found on the Duplin Winery, Bradshaw, Cooper, and Long properties (see sheets 6 and 7 of Attachment 5).

Existing Conditions

The proposed project is located in the Lower Coastal Plain of southeastern North Carolina and in the Carolina Flatwoods section of the Middle Atlantic Coastal Plain Ecoregion. The Lower Coastal Plain of North Carolina is under strong development pressure in those communities located near the Atlantic Ocean and along major north/south travel ways close the coast. Interior portions of this region are predominantly agricultural and are not seeing the rapid urbanization that is so prevalent to the east. The inner counties of the Lower Coastal Plain are characterized with greater variation in topography resulting in farms located along sandy ridges separated by low, hardwood swamps surrounding flowing tributaries.

Ecoregions are areas where similarity in ecological systems are found. The Carolina Flatwoods Ecoregion is characterized as a nearly level area where Carolina bays and pocosins are abundant. Pine flatwoods, pine savannas, freshwater marshes, and pond pine woodlands have been largely replaced by siviculture. Loblolly pine plantations and the associated artificial drainage systems are common in this area.

Ecological issues in this region are associated with agricultural and sivicultural practices from the last 200 years. Incidental discharge into local waterways from animal production, the use of chemical fertilizers and pesticides, and the movement of sediments from agricultural fields into tributaries has resulted in degradation to water quality. In addition, the conversion of wetlands for siviculture by the construction of drainage ditches is common in southeastern North Carolina.

Duplin County is the 9th largest county in North Carolina by land area (819 square miles) and the second largest hogs and pigs producer in the United States. The population of Duplin County was 49,063 people according to the 2000 Census. The population grew by 4.3% to 51,181 in 2003 making it the 27th fastest growing of North Carolina's 100 counties. Duplin County is not a coastal county that borders on the Atlantic Ocean and is not currently under strong development pressure. It is sparsely populated and dominated by an agrarian culture.

The section of Duplin County surrounding the proposed project area is predominately agricultural. Murphy Family Farms, a producer of pork products, has a large processing plant in Rose Hill. Hog

Farms and small farms that produce various vegetable crops are abundant in the area. The nearest urban center is the Town of Rose Hill which had a population of 1,330 people according to the 2000 Census. Chicken and turkey house are also abundant in this area and Rose Hill claims to have the largest cast iron fryer as a monument to the chicken industry.

The land around the proposed property is currently or proposed to be utilized for the production of crops including collards, kale, turnip salad greens, Mustard salad greens, turnip roots, cabbage, sweet corn, and Muscadine grapes. There is also a small orchard area on the property owned by the Duplin Winery. The Cooper property has approximately 20 acres in production, the Bradshaw farm has approximately 40 acres in production, and the Duplin Winery property will have approximately 10 acres in production. The Cooper and Bradshaw properties are farmed by Mr. Vernon Rouse of Rouse Brothers Produce. They grow "truck crops" which are harvested, immediately loaded onto refrigerated trucks, and delivered to fresh markets in the northeastern United States. They are producing all of the crops listed above with the exception of grapes. Currently on the Duplin Winery land, there are 3 acres in production including 1 acre of fruit trees and 2 acres of Muscadine grapes.

The first record of a millpond at the proposed project location was 1892. The Bradshaw Millpond was in place until 1913 when the state breached the pond during a malaria outbreak. The earthen mound is still in place on either side of Indian Branch with a breach approximately 30 feet wide in the center. There are no remanents of the old mill house visible on site. The remains of the millpond dam are approximately 20 feet by 110 feet on the north side and 20 feet by 200 feet on the south side. The Bradshaw family has preserved several of the original mill stones and has them in storage on neighboring farms. After the earthen dam was breached, the area was again impounded by beavers (*Castor canadensis*). The narrow breach provided a natural constricture that was utilized by the beavers to build their dam and lodge. Several other smaller dams and lodges were constructed by beaver upstream of the original dam until the dams were removed by Mr. Fussell within the last year.

Interstate 40 is located on the eastern side of the property. It sits approximately 15 to 20 feet above the existing grade at the base of the old mill pond dam and the fill footprint of the highway is approximately 200 feet wide. Indian Branch flows under the Interstate via a single 8-foot by 8-foot box culvert.

There are three excavated ponds on the property that cover approximately 8 acres on the project site. These ponds were excavated by the North Carolina Department of Transportation for borrow necessary for the completion of Interstate 40 in the late 1980s. They are precipitation driven and little to no groundwater water flows into them. The bottoms of the ponds are a dense clay and are located significantly higher than the adjoining wetlands and shallow groundwater table.

The main source of potable water in the North Carolina coastal plain is ground water. It can be used in many parts of this area with minimal treatment and, as a result, relatively cheaply compared to other sources. The Division of Water Resources has collected data that indicate water levels in the Black Creek and Upper Cape Fear aquifers have been declining since the late 1960s. Anecdotal information from the 1920s states that water freely flowed from artesian wells at the time they were constructed. The change, from freeflowing wells to water levels as much as 195 feet below land surface, indicates that current withdrawals of water from these aquifers exceed the available supply that can be used on a sustainable basis. The documented declines in water levels indicate a clear impairment to "renewal or replenishment" of the waters of the Black Creek and Upper Cape Fear aquifers. The most threatened portions of the Black Creek and Upper Cape Fear aquifers lie beneath the following North Carolina counties: Craven, Duplin, Edgecombe, Greene, Jones, Lenoir, Martin, Onslow, Pitt, Wayne and Wilson

(http://www.ncwater.org/Reports_and_Publications/GWMS_Reports/cuainvestigation121598.pdf).

The proposed project is situated above the Black Creek Aquifer. The Black Creek Aquifer is a huge reservoir underneath more than fifteen coastal counties and supplies water to communities such as Greenville, Jacksonville, Kinston, New Bern, and Rose Hill. This aquifer is present at elevations 317 to -1207 feet, averaging -135 feet. It ranges from 18 to 972 feet thick and averages about 175 feet thick (http://www.ncwater.org/Education_and_Technical_Assistance/Ground_Water/AquiferCharacteristics/). Due to low permeability, the Black Creek Aquifer is slow to recharge and growth in this region has surpassed the aquifer's ability to recharge itself naturally. In addition, as water is drawn out of the aquifer the pore spaces it occupied collapse and the storage capacity is further reduced. The Black Creek Aquifer has been labeled as endangered by the North Carolina Division of Water Resources (DWR) and withdraws of greater than 10,000 gallons per day require registration, or for significant withdrawals, permitting.

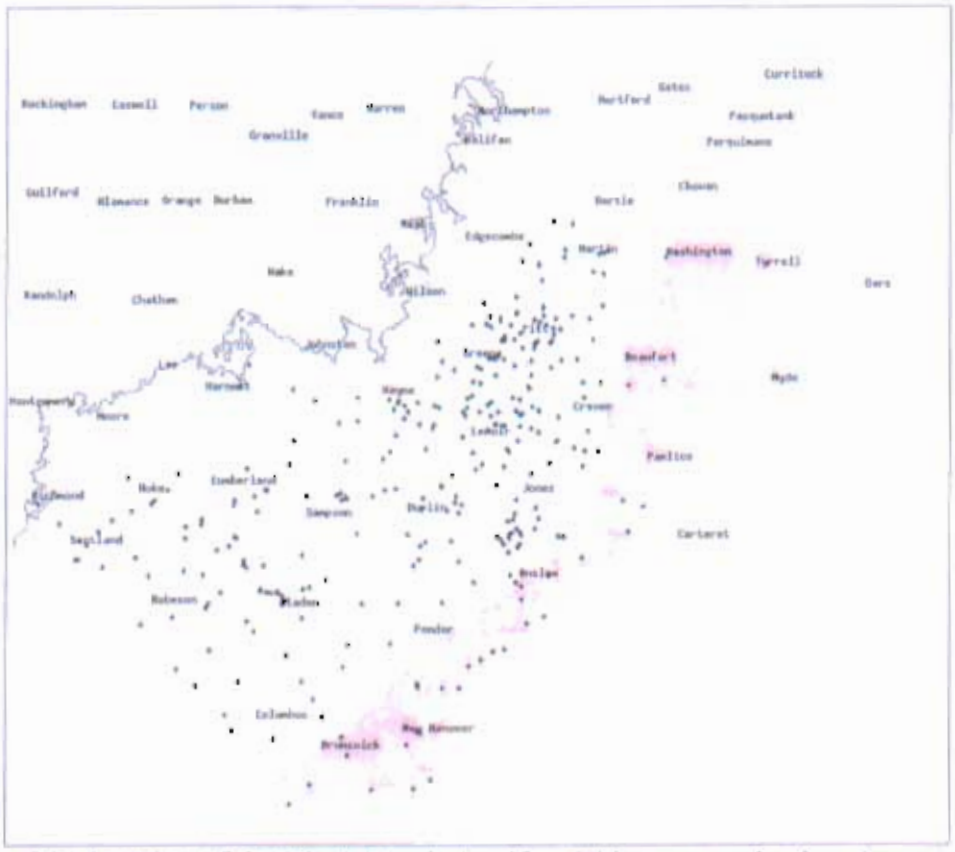


Figure 1. Map of the location of the Black Creek Aquifer. This map can be found out http://www.ncwater.org/Education_and_Technical_Assistance/Ground_Water/AquiferCharacteristics/BCTOP.html. Pink areas denote saltwater intrusion. Light green areas are freshwater.

The area surrounding the proposed project site is typical of former beaver impoundments in southeastern North Carolina. It has been cleared to help prevent reestablishment of a beaver population at the project site, but the prior vegetative communities were documented. Prior to the removal of the beaver dams this area would have been described as a bottomland hardwood forest with an open water pond in the middle. Bottomland hardwood forests are irregularly to seasonally inundated with a closed tree canopy and well-developed shrub and vine layers. They are valuable for water storage, stabilization, and pollutant removal. These stream side floodplains help to slow and retain floodwaters. This helps them to reduce stream bank erosion and reduce sediment transferal.

Figure 2. The proposed project site looking east. The old millpond dam is visible in the background.

Figure 3. The proposed project site looking west. The edge of the former impoundment is demarcated by the tree line. Vegetation is beginning to cover the bottom.

The north side of Indian Branch is flat through the wetlands and rises smoothly to the high ground. This area is vegetated with a canopy of *Salix nigra* and *Liriodendron tulipifera;* and a shrub layer of *Ligustrum sinense* and *Leucothoe racemosa.* These species were found above the impounded area. The underlain soil type, Muckalee (poorly drained), as mapped in the USDA Duplin County Soil Survey (March 1959), is listed in "Hydric Soils of the United States."

High ground on the north side of Indian Branch is vegetated with a canopy of *Acer rubrum*, *Liriodendron tulipifera*, and *Liquidambar styraciflua*; a shrub layer of *Ligustrum sinense* and *Arundinaria gigantea*; and *Vitis rotundifolia* vines. The underlain soil type, Norfolk (well drained), as mapped in the USDA Duplin County Soil Survey (March 1959), is not listed in "Hydric Soils of the United States."

On the south side of the channel, spoil mounds are found intermittently along the stream banks. These are the remanents of past channelization efforts. The upland and wetland systems on this side of the stream are similar to those on the north side. The total area of wetlands found within the project area is approximately 14 acres. A Jurisdictional Determination package was submitted for the north side of Indian Branch on April 27, 2006. The resources found on the south side are similar to those found on the north side. A survey of the wetland boundary is included with the project plans. The applicant is not requesting a signed survey at this time.

Indian Branch is a second order, perennial stream that has been impounded and channelized extensively since the late 1800s. The average width of the channel from ordinary high water to ordinary high water is approximately 3.5 feet and the length of channel within the project area is approximately 2450 linear feet. Evidence of an ordinary high mark includes shelving, changes in the substrate, destruction of terrestrial vegetation, and obvious impressions in the banks. The easternmost half of the channel is straight and the western half retains some sinuosity. The entire channel is incised approximately 2 to 5 feet. There is no vegetation growing in any section of the channel within the project area.

Figure 4. Indian Branch near the center of the site.

There are no known occurrences of federally-listed or state-listed species within the project area. No evidence has been found to suggest the presence of eligible archeaological or historic resources on this property.

Project Description

The proposed project is composed of four major steps. Step one is the construction of the irrigation pond. Step two is the completion of the 25-foot buffer. Steps three and four do not include wetland impacts, but are integral elements to the final utilization of the property. The construction of the pond would include building the dam and excavation of the pond bottom. The dam would be constructed over and waterward of the remains of the dam that was breached in the early 1900s. The proposed dam would be 12 feet tall, two feet taller than the existing dam. It would be 310 feet long with a base width of 105 feet. Not all of this area is located within jurisdictional wetlands. The pond side of the dam would be entirely new construction with a 5:1 slow. The opposite side would include the old dam with a 5:1 slope down to the top of the existing structure then a 2:1 slope following the outline of existing dam. The proposed dam would impact approximately 0.16 acre of jurisdictional wetlands and 40 linear feet of perennial stream.

A spill way that would incorporate flash board riser and gate valve systema would be constructed within the dam footprint. This structure would ensure downstream flow is maintained and could be used for controlled release of water in the impoundment during flooding rain events. It would be constructed of concrete with a base width of 30 feet and a base length of 40 feet. The concrete base would be located beneath the pond and four-foot footings would be installed below the concrete base. Wing walls on either side of the spill way will be approximately 12 feet tall to protect the earthen dam. The spill way would be constructed within the fill footprint of the dam.

The elevation of the proposed pond bottom would be reduced through excavation from between 55 and 59 feet to 54.5 feet. The resulting pond bottom would be 0.5 feet higher than the existing channel bottom and the average depth of the pond would be approximately 5 feet. The proposed impoundment would impact approximately 10.82 acres of jurisdictional wetlands and 2,410 linear feet of perennial stream. By leaving the channel bottom intact, the applicant leaves any future owner of this property the option of restoring the channel without having to guess at its location. In addition, lowering the pond bottom would help the applicant meet the water needs of his and the surrounding farms while reducing the width of the impounded area. This reduces impacts to existing wetlands and allows for the inclusion of a 25-foot wide littoral shelf.

The proposed shelf would be installed along the north and south sides of the pond and will change in elevation by 4 inches across the 25 feet. It would be planted with species grading from those found in shallow open water to those found in a swamp forest. It is the applicant's intent to utilize this area as mitigation for the proposed impacts and he has agreed to place the area on the north side of the pond in preservation with the exception of a view corridor down to the pond. Beyond the 25-foot shelf, an additional 50 feet of buffer would be preserved, again with the exception of a view corridor. The applicant has already placed some native plantings in this area. These would be augmented. The total restored/enhanced buffer would total 75 feet on the north side of the pond. The south side of the pond is not offered as preservation at this time. For complete details on the proposed mitigation package, please refer to Attachment 10.

The overall development of the tract located north of the proposed pond (the property owned by the applicant) is to provide an educational center where people, local and tourists, can learn more about

agriculture in southeastern North Carolina. On the high ground portions of the tract, the applicant intends to have experimental orchards, vineyards, row crops, and aquaculture ponds. These areas would show how different types of farming, including organic farming, are accomplished here and would provide data to local farmers on the effectiveness of different growing regimens. A walking trail with educational signage would be constructed throughout the property to allow visitors to walk through the site. This trail would wind down to the pond buffer and provide access to the view corridor. The trail would become an open, elevated wooden walkway over the wetlands and out into the pond terminating in an observation deck. The walkway and deck would be constructed at least 3 feet above any jurisdictional areas and would not be covered. Educational signage about the history of the site, beaver impoundments, wetlands, and the historic importance of mill ponds would be placed along the walkway and on the observation deck.

Table 1. Summary of proposed impacts for the proposed project. These figures are taken from the plans supplied by Manley D. Carr of Goslee and Associates (Attachement 5).

Proposed Impacts			
Type of System	Type of Impact	Area (acres)	Length (linear feet)
Jurisdictional Wetland	Fill	0.16	
Jurisdictional Wetland	Flooding	10.82	
Perennial Stream	Fill		40
	Flooding		2,410
	Total Impacts	10.97 (rounding error)	2,450

Sequence of events

The applicant would like to begin work on this project as soon as the appropriate authorizations are issued. First the water in the stream channel will be pumped around the work area and a sheet pile coffer dam will be install above the proposed dam site. The coffer dam is necessary to prevent water from upstream beaver impoundments from entering the work site in the event of a heavy rain. Next the sediment and erosion control structures, particularly silt fencing, will be installed. Then the pond bottom and littoral shelf will be graded as detailed in the project description and attached plans. The wetland species selected for this site will be planted just before the pump is turned off and the pond begins to fill. Planting will proceed from the highest elevation down toward the pond bottom. Once the grading and planting has been completed, the pump will be turned off and the pond allowed to fill. Work on high ground including the construction of the nature trail and laying out the experimental crop plots will likely happen concurrently with the construction of the pond. Future work plans will include a pile supported walkway with an observation deck at the end through the wetland fringe into the pond along the view corridor, an education center, and signage along all pathways with information about the type of ecological systems present, plant and animal species present, and experimental farming techniques.

Purpose and Need

The United States Corps of Engineers will determine the appropriate purpose and need for any decision document that would be prepared for the proposed project. The applicant suggests that the basic purpose of the proposed project is to provide a water supply for the adjoining properties. The overall purpose is to insure an adequate water supply to support the irrigation needs of the farms around the

proposed pond site. This project is not water dependent in that there are potential alternatives that would not require the utilization of surface waters.

Irrigation is required to support the crops grown on fields neighboring Indian Branch, particularly in high summer and times of drought. The 2007 Vegetable Crop Handbook for the Southeastern U.S. states that the vegetable crops require 1.5 inches of water per week per acre, fruit trees require 1.5 inches of water per week per acre, and Muscadine Grapes require 12 gallons of water per vine three times a week. On average these crops would require about 6 inches of rainfall each month. According to the State Climate Office of North Carolina, the maximum monthly rainfall average for Duplin County is 3.08 inches (July) (http://www.nc-climate.ncsu.edu/cronos/summaries.php?station=KDPL). The table below details the approximate water budget for those crops that would be irrigated by the proposed pond.

Table 2. Water budget for crops found on the proposed project site and the neighboring farms. The number of gallons required by these plants was determined using recommendations from the North Carolina Cooperative Extension Service which are based on the Southeastern U.S. 2007 Vegetable Crop Handbook.

Crop Type	Approximate Acreage to be Irrigated	Gallons of Water required per week
Vegetables	67	2,728,977
Fruit Trees	1	40,731
Muscadine Grapes	2	3,600
Total Number of Gallons of Water Required per Week		2,773,308

Avoidance and Minimization

- No-Build: The no-build alternative, or that alternative that would not include the construction of any structures for the purposes of irrigation, is to pump water directly from the channel. The base flow of Indian Branch is insufficient to support the water requirements of the adjacent farms. While we do not have specific flow volumes for Indian Branch, based on the dimensions of Indian Branch it is probable that the flow would be insufficient to meet the potential 2.7 million gallons of water that may be needed in a given week. The channel is approximately 3 to 4 feet wide at the bottom and averages 1 foot deep from ordinary high water. The use of water directly from Indian Branch without additional storage area is not a practicable alternative.
- No action: No action alternatives include those project designs that would not require the issuance of a Department of the Army authorization. The applicants have investigated several of these alternatives including utilizing the existing high ground ponds, constructing new high ground ponds, installing wells, and using recirculated water. A discussion of each of these alternatives is as follows:
  - Utilizing the existing high ground ponds: The high ground ponds currently found on the project site were constructed by the North Carolina Department of Transportation during borrow operations associated with the construction of Interstate 40 in the late 1980s. They have a heavy clay bottom and are filled almost exclusively by precipitation. Very little if any groundwater enters the ponds through the dense clay confining layer and the ponds are located well above the elevation of the nearby wetlands making it impossible for them to intercept the shallow groundwater table. During times of drought and those times when evaporation rates would be highest, these ponds would not retain the volumes necessary to irrigate crops on the surrounding farms. In addition, the applicants are proposing to utilize

these ponds for aquaculture, specifically the production of freshwater prawns. While there would be insufficient water in the ponds to pump out and use for irrigation, there would be sufficient water to make them suitable for aquaculture.

- Construction of new high ground ponds on the project site and surrounding farms: The construction of new ponds in high ground on the property owned by Duplin Winery or the adjacent farms would have similar problems to those described for the existing ponds. As the only source for recharge would be rainfall, the ponds would likely not provide sufficient volumes of water during times of drought or during high summer when evaporation rates are at the highest. The construction of new ponds would also remove a significant amount of high ground from the production of valuable crops. The construction of new ponds on high ground will not meet the applicant's stated purpose and need.
- Installation of wells: The project site is located over the Black Creek Aquifer. This reservoir has been declared endangered by the North Carolina Division of Water Resources due to its slow recharge rate and high utilization. The neighboring farmers are currently drawing irrigation water from wells tapping into this aquifer and they understand the need to stop drawing from the Black Creek Aquifer. There are several large users of the Black Creek Aquifer near the project site. These and their daily usage amounts can be found in the table below.

Table 3. The total number of gallons of water withdrawn from the Black Creek Aquifer each day in the vicinity of the proposed project. These number were obtained by David Fussell on March 14, 2007 through personal communication with the water department supervisors at each of these organizations. This table does not include small personal wells or irrigation wells in the area.

Name of Organization	Water drawn from the Black Creek Aquifer (gallons/day)
House of Raeford, Rose Hill Division	550,000
Town of Wallace	866,000
Town of Rose Hill	350,000
Town of Greenevers	60,000
Duplin County	366,000
Total	2,192,000

These numbers plus the unknown volumes being withdrawn by personal wells and irrigation wells show the need for alternate water sources in this region. The installation of additional wells into the Black Creek Aquifer for irrigation would not be a responsible use of this imperiled resource. In addition, it would be a benefit to the resource to close the wells being used on the adjacent farms.

- Recirculated water: The minimum amount of water necessary to meet the needs of the crops in production is used when irrigating fields. There is not a residual volume of water that can be brought back into use. In addition, there are no alternate sources of suitable water that could be reused in the vicinity of the project site.
- Other project designs: As part of the development of this project, the applicant has evaluated the use of a smaller on-line reservoir and a series of smaller high ground storage ponds on the adjacent properties. Water would be pumped from the on-line impoundment to the smaller ponds and then onto the fields when needed. This scenario alleviates part of the recharge problem associated with the high ground ponds. It does not resolve the problem associated with converting valuable crop land to pond. And it is unlikely that in a period of drought or high loss

to evaporation that the water stored on-line would be sufficient to keep refilling the high ground ponds and irrigate the surrounding crops. During times of drought and during high summer when evaporation rates are high, the high ground ponds, with no vegetative buffer, could loose more water than would be stored in the small on-line impoundment. The conversion of even more crop land to buffer for the ponds would make this alternative impracticable. The proposed larger on-line impoundment would have a 25-foot vegetated shallow to wetland buffer around the entire pond and an additional 50-foot wetland to high ground buffer on the northern side. Aside from providing valuable habitat, the buffers will help to shade the pond and reduce losses to evaporation.

The proposed dam location is unique as it is the site of an existing albeit breached dam. There are no other sites along this channel where the dam could be constructed with less impact.

- Other project locations: The applicant also looked at other properties in the area where either an impoundment could be constructed or high ground ponds could be excavated. The water source would need to be close enough to the fields to prevent the need to pump water across roadways or through residential lots. The project site is bounded on the north and east sides by major roads, SR 1102 and I-40, respectively. The properties to the south and west of the site are farms that are proposing to utilize the water from the impoundment. Beyond the southern and western properties are more farms and additional wetlands adjacent to the upstream reach of Indian Branch. There are no alternative project sites within reasonable proximity of the farms where irrigation ponds could be constructed with less impact to jurisdictional waters.
- Minimization: The proposed project site is unique. It is the site of an old mill pond and a large portion of the old dam still exists on site. After the dam was breached during a malaria outbreak shortly after the turn of the last century, the stream was channelized and eventually impounded once again by beaver. Water has been impounded on this site for most of the last 115 years. The applicant has proposed to include the footprint of the old mill dam to reduce the area of fill necessary to construct a new dam. In addition, he is proposing to deepen the pond bottom to reduce the width of the impounded area and help reduce potential losses due to evaporation. Without excavation the pond depth would be approximately 3 feet on average. The average depth with excavation would be approximately 5 feet. This will allow the applicant to achieve the required volume without widening the impact area and absorbing all of the on-site wetlands into the pond. To reduce the footprint of the pond on the land, the applicant is proposing to incorporate a littoral shelf 25 feet wide around the pond perimeter that will grade from a vegetated shallow to swamp forest. This vegetation will improve habitat value of the pond and provide shade that will again help to reduce losses to evaporation. By keeping evaporation losses low, the applicant can maintain sufficient water storage for irrigating without increasing the footprint of the pond.

Proposed Compensatory Mitigation

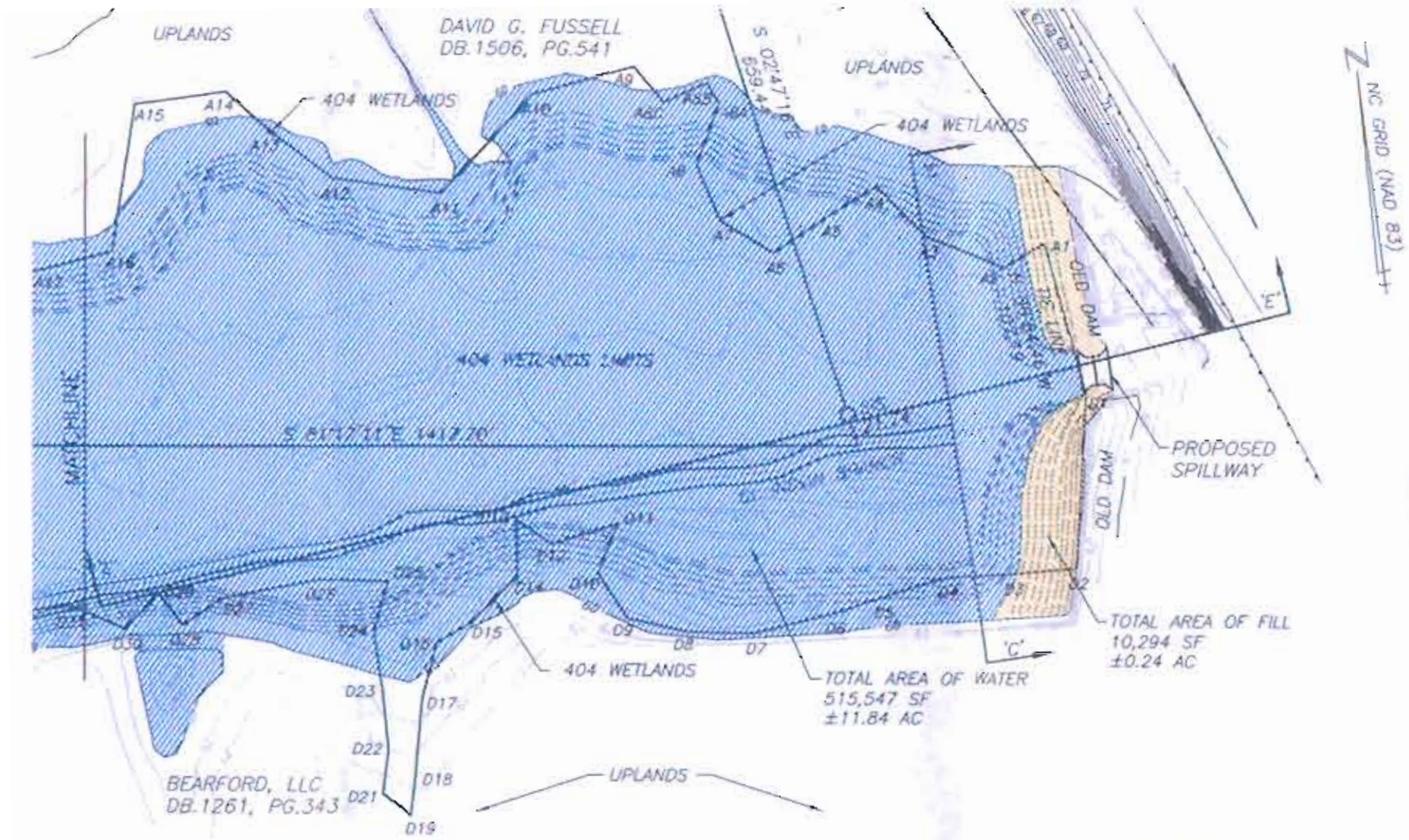
On-site, in kind mitigation is typically preferred for compensatory mitigation. The applicant proposes to create a vegetated buffer around the pond that will incorporate vegetated shallows, swamp forest, and floodplain forest. This buffer would be a littoral shelf 25 feet wide with an elevation change of 4 inches. On the northern side of the pond, this area will be placed in preservation utilizing whichever mechanism the Corps and Division of Water Quality deem appropriate. On the Duplin Winery property, an additional 50 feet of vegetated buffer will be maintained. This section will grade from floodplain forest to high ground. This area will also be preserved. The applicant would like to maintain a 30-foot wide view corridor with an elevated walkway into the lake that would terminate with a observation platform. Please refer to the attached mitigation plan for further details.

SEGi

Attachment 5: Project Plans, Cross-sectional Drawings, and Wetland Survey

POND IMPACT ON WETLANDS	
WATER AREA IN WETLANDS	471,177 SF (±10.82 AC)
DAM AREA IN WETLANDS	6,794 SF (±0.16 AC)
TOTAL	477,971 SF (±10.97 AC)

STREAM IMPACT BY POND	
WATER IMPACT	2,410 LF
DAM IMPACT	40 LF
TOTAL	2450 LF



NOTE:
EXISTING BED OF NATURAL BRANCH
WILL NOT BE EXCAVATED OR DISTURBED.

TOTAL LENGTH OF STREAM IMPACT = 2,450 LF.

ENGINEER:
WYATT E. BLANCHARD, PE, PLS
NC LICENSE NO. 008387, L-2881
103 HILLTOP LANE
HAMPSTEAD, NC 28443

100 0 100 200 300
GRAPHIC SCALE - FEET

PROPOSED POND
FOR
DAVID FUSSELL
OF THE ROADS HILL PROPERTIES

ROSE HILL TOWNSHIP - DUPLIN COUNTY - NORTH CAROLINA
SCALE: AS SHOWN MAY 01, 2007

I, Manley D. Carr, PLS, certify that this plat was drawn under my supervision from an actual field survey made under my supervision (deed description as noted hereon; that the boundaries not surveyed are clearly indicated as drawn from; that the ratio of precision as calculated is 1:10,000+; and that it is correct to the best of my knowledge and belief. Witness my original signature, registration number and seal this 1st day of May, 2007.

Manley D. Carr, PLS
NC License No. L-2580

SEAL L-2580 MANLEY D. CARR LAND SURVEYOR

MANLEY D. CARR, PLS
ROBERT H. GOSLEE & ASSOCIATES, PA
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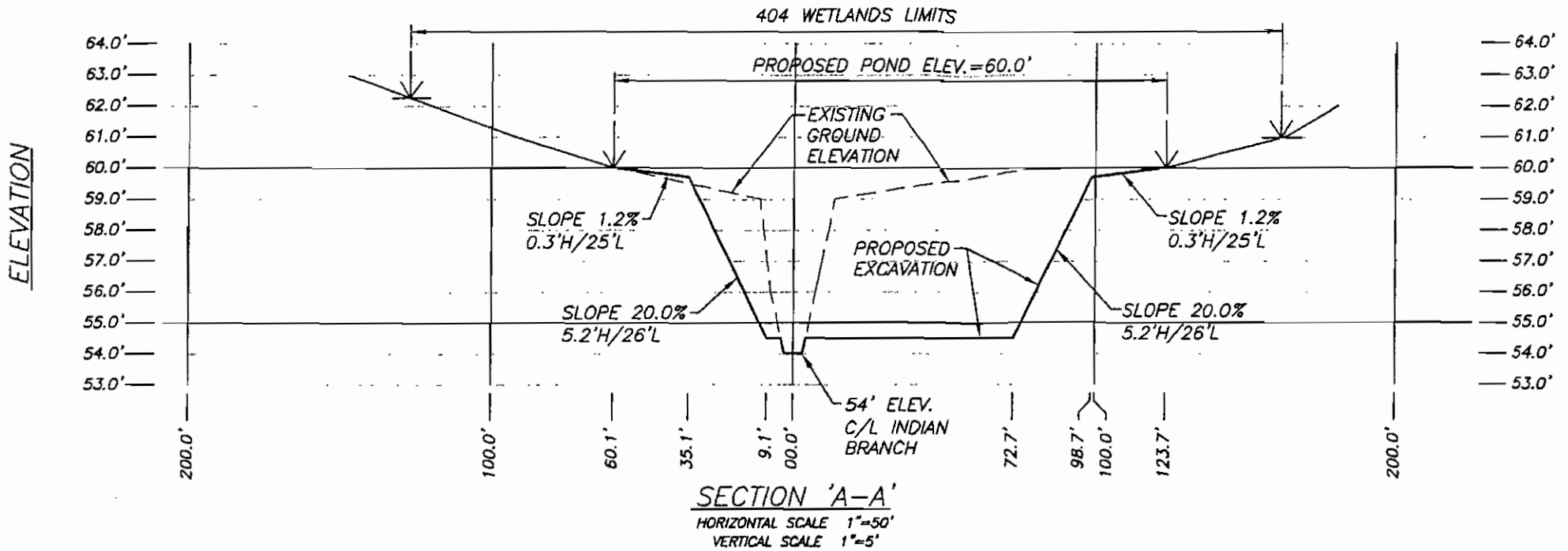
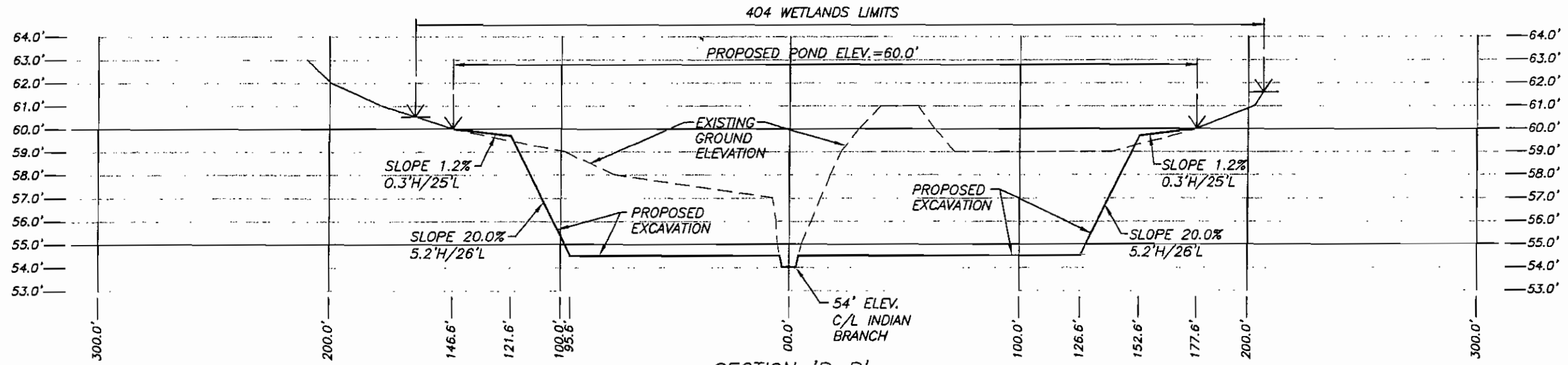
WALLACE, NORTH CAROLINA 28466
910-285-4210
FILE No. DG-1413 POND



SECTION 'A–A'

HORIZONTAL SCALE 1"=50'
VERTICAL SCALE 1"=5'

ELEV. OF INDIAN BRANCH IS 54.0'
BOTTOM OF EXCAVATED POND IS 54.5'



SECTION 'B–B'

HORIZONTAL SCALE 1"=50'
VERTICAL SCALE 1"=5'

ELEV. OF INDIAN BRANCH IS 54.0'
BOTTOM OF EXCAVATED POND IS 54.5'

NOTE:
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WILL NOT BE EXCAVATED OR DISTURBED.

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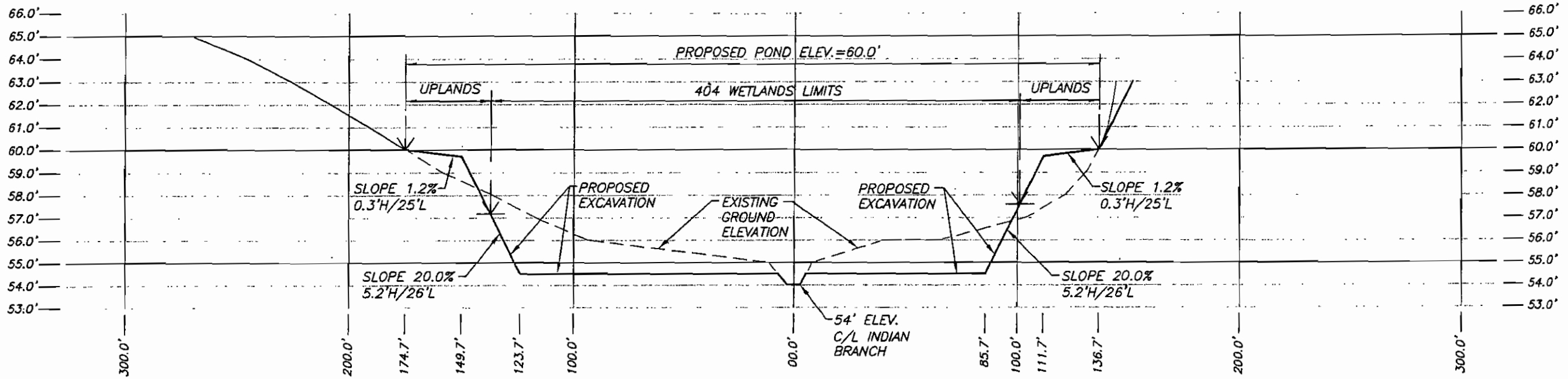
SHEET 3 OF 9



SECTION 'C-C'

HORIZONTAL SCALE 1"=50'
VERTICAL SCALE 1"=5'

ELEV. OF INOIAN BRANCH IS 54.0'
BOTTOM OF EXCAVATED POND IS 54.5'

NOTE:
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WILL NOT BE EXCAVATED OR DISTURBED.

TOTAL LENGTH OF STREAM IMPACT = 2,450 LF.

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HAMPSTEAD, NC 28443

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GRAPHIC SCALE - FEET

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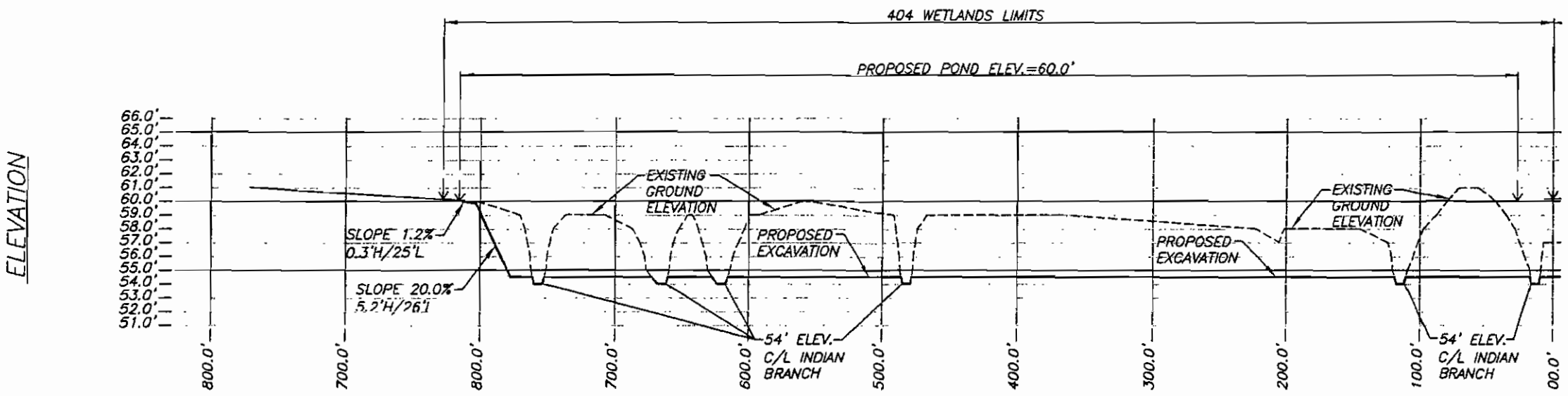

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SECTION 'D-D'

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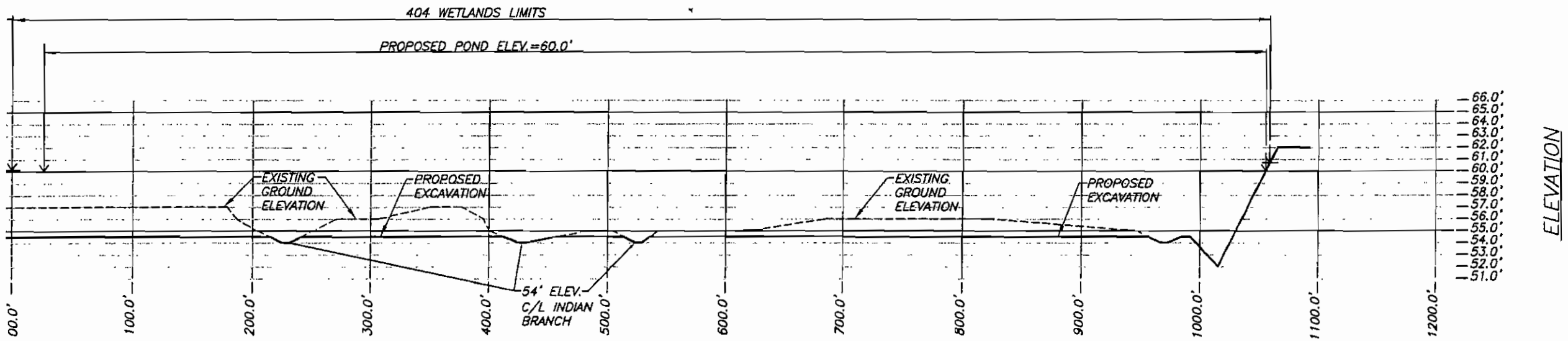
VERTICAL SCALE 1"=10'



SECTION 'E-E'

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SHEET 5 OF 9

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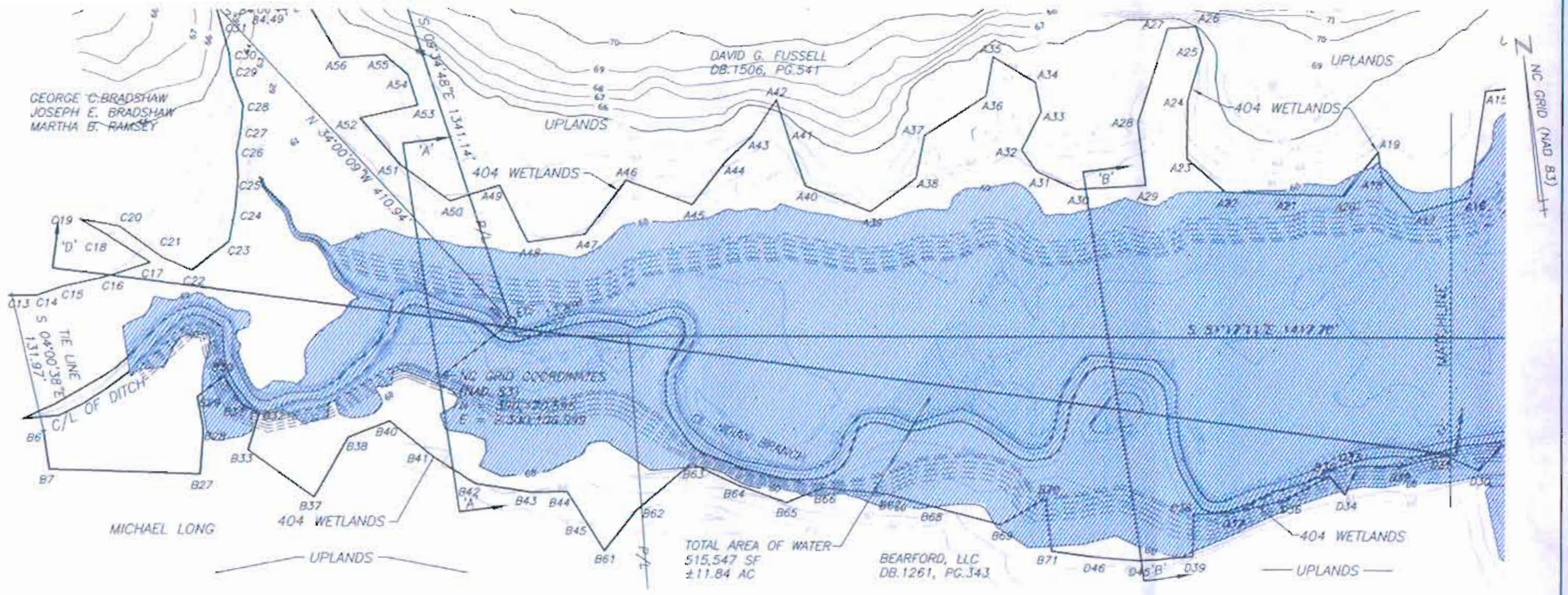

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NC License No. L-2580

SEAL L-2580 LAND SURVEYOR MANLEY D. CARR

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FILE No. 06-1413 POND

Course	Bearing	Distance
L1	S 00°38'25" W	36.82'
L2	S 78°58'23" E	143.20'
L3	N 13°09'56" E	42.19'
L4	N 01°30'52" W	31.60'
L5	N 59°37'34" E	31.74'
L6	S 23°39'43" E	31.92'
L7	S 54°58'56" E	18.86'
L8	S 26°39'57" W	36.37'
L9	S 45°25'40" E	76.95'
L10	N 38°24'15" E	65.32'
L11	N 77°15'41" E	42.23'
L12	S 41°53'37" E	53.95'
L13	S 48°29'06" E	47.08'
L14	S 72°41'31" E	53.84'
L15	S 82°25'59" E	33.80'

Course	Bearing	Distance
L16	S 24°24'38" E	42.18'
L17	S 23°40'02" E	23.80'
L18	N 47°11'07" E	48.28'
L19	N 58°31'04" E	68.91'
L20	S 56°09'03" E	47.73'
L21	S 61°37'56" E	50.36'
L22	N 76°52'34" E	37.68'
L23	S 76°01'28" E	61.11'
L24	S 65°51'40" E	40.93'
L25	S 66°32'07" E	70.11'
L26	N 68°27'04" E	49.62'
L27	S 01°56'37" W	50.16'
L28	S 73°18'47" E	39.37'
L29	S 76°31'00" E	43.21'
L30	S 13°39'51" E	121.97'

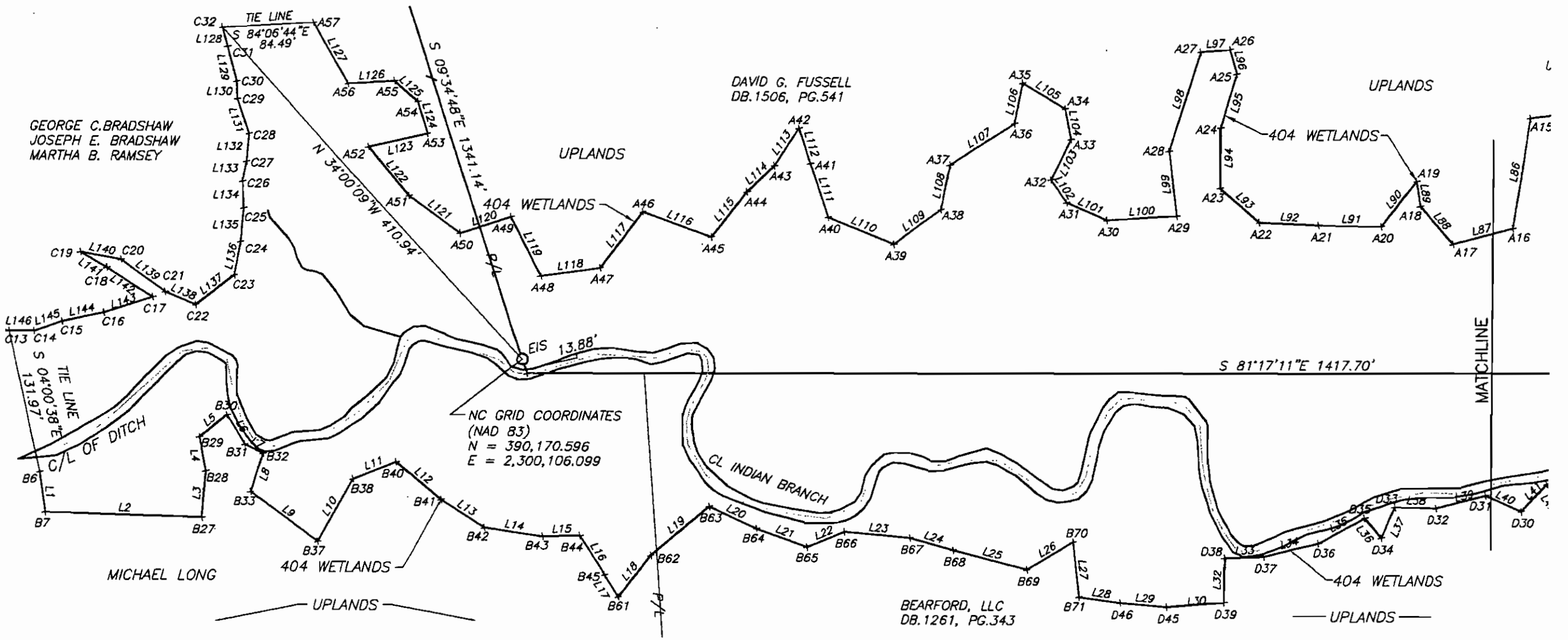
Course	Bearing	Distance
L31	N 05°33'47" W	47.69'
L32	N 09°49'20" E	40.17'
L33	S 83°55'37" E	35.49'
L34	N 85°56'08" E	51.73'
L35	N 70°08'06" E	48.43'
L36	S 31°43'20" E	23.66'
L37	N 32°57'03" E	30.60'
L38	S 79°54'15" E	38.46'
L39	N 84°32'01" E	46.65'
L40	S 57°27'45" E	35.50'
L41	N 51°32'20" E	33.78'

Course	Bearing	Distance
L86	S 17°33'37" W	101.00'
L87	S 83°57'18" W	56.28'
L88	N 32°43'19" W	46.34'
L89	N 00°11'42" W	23.00'
L90	S 47°22'10" W	52.75'
L91	N 80°13'42" W	57.46'
L92	N 78°50'12" W	55.33'
L93	N 40°04'23" W	47.86'
L94	N 08°56'16" E	54.54'
L95	N 24°35'28" E	50.52'
L96	N 06°53'28" W	22.69'
L97	N 85°31'02" W	27.54'
L98	S 26°15'43" W	94.13'
L99	S 01°11'13" W	59.14'
L100	N 84°52'48" W	65.73'

Course	Bearing	Distance
L101	N 57°46'33" W	40.95'
L102	N 26°49'14" W	25.61'
L103	N 35°36'02" E	40.68'
L104	N 02°45'20" W	28.34'
L105	N 50°48'44" W	46.25'
L106	S 19°40'34" W	37.56'
L107	S 66°21'56" W	69.44'
L108	S 19°47'43" W	41.44'
L109	S 62°22'30" W	53.37'
L110	N 59°33'14" W	66.11'
L111	N 10°21'29" W	51.55'
L112	N 09°40'37" W	33.78'
L113	S 42°38'44" W	40.85'
L114	S 55°18'25" W	34.45'
L115	S 46°46'17" W	52.29'

Course	Bearing	Distance
L116	N 61°17'06" W	66.64'
L117	S 46°09'40" W	64.33'
L118	N 89°08'16" W	54.32'
L119	N 17°53'11" W	60.37'
L120	S 80°54'27" W	49.03'
L121	N 45°09'25" W	58.37'
L122	N 31°45'10" W	57.91'
L123	N 86°09'45" E	55.22'
L124	N 08°33'49" W	30.45'
L125	N 40°35'19" W	28.62'
L126	N 84°43'11" W	42.23'
L127	N 22°07'47" W	63.77'
L128	S 07°20'42" E	17.90'
L129	S 06°43'21" E	32.38'
L130	S 06°00'38" W	15.97'

Course	Bearing	Distance
L131	S 11°06'46" E	33.47'
L132	S 13°33'27" W	24.98'
L133	S 20°05'32" W	18.50'
L134	S 06°01'59" W	24.24'
L135	S 13°26'27" W	30.87'
L136	S 19°38'43" W	31.16'
L137	S 61°00'42" W	44.26'
L138	N 58°27'39" W	30.59'
L139	N 44°49'24" W	50.31'
L140	N 70°40'37" W	37.91'
L141	S 50°40'40" E	28.15'
L142	S 48°21'57" E	50.06'
L143	S 81°06'09" W	46.51'
L144	S 87°16'12" W	39.08'
L145	S 79°36'45" W	26.54'
L146	N 81°37'28" W	22.91'



NOTE:
EXISTING BED OF NATURAL BRANCH
WILL NOT BE EXCAVATED OR DISTURBED.

TOTAL LENGTH OF STREAM IMPACT = 2,450 LF

ENGINEER:
WYATT E. BLANCHARD, PE, PLS
NC LICENSE NO. 008387, L-2881
103 HILLTOP LANE
HAMPSTEAD, NC 28443

100 0 100 200 300
GRAPHIC SCALE - FEET

PROPOSED POND
FOR
DAVID FUSSELL
OF THE ROADS HILL PROPERTIES

ROSE HILL TOWNSHIP - DUPLIN COUNTY - NORTH CAROLINA
SCALE: AS SHOWN MAY 01, 2007

I, Manley D. Carr, PLS, certify that this plat was drawn under my supervision from an actual field survey made under my supervision from information as noted hereon; that the boundaries not surveyed are clearly indicated as dashed lines; that the ratio of precision as calculated is 1:10,000+ and is correct to the best of my knowledge and belief. Witness my original Signature, License Number and Seal this day of May, 2007.

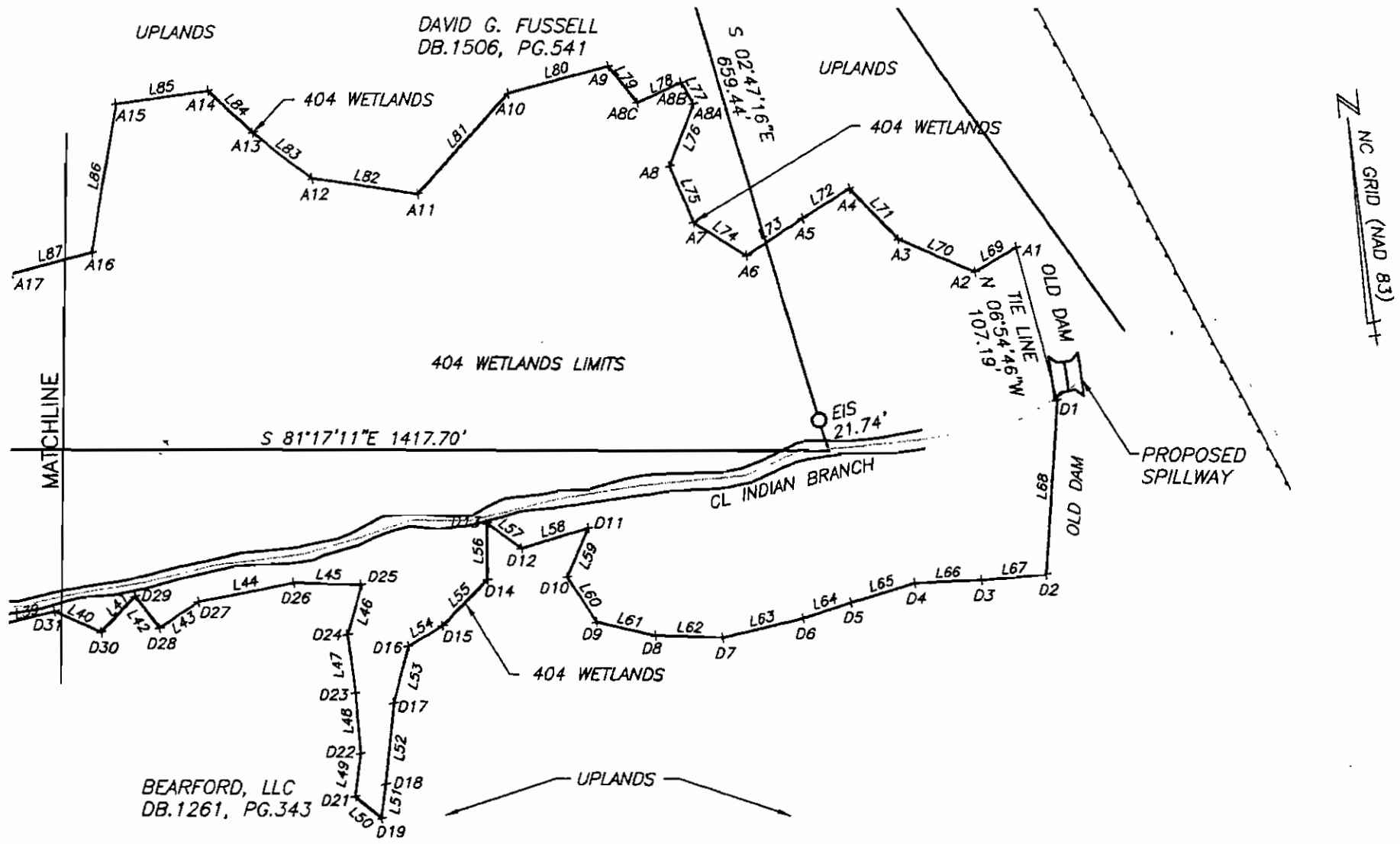
Manley D. Carr, PLS
NC License No. L-2580

NORTH CAROLINA PROFESSIONAL SEAL L-2580 LAND SURVEYOR MANLEY D. CARR

MANLEY D. CARR, PLS
ROBERT H. GOSLEE & ASSOCIATES, PA
LAND SURVEYORS - LAND PLANNERS
756 E. SOUTHERLAND ST. / P.O. BOX 133
WALLACE, NORTH CAROLINA 28466
910-285-4210
FILE No. DG-1413 POND

Course	Bearing	Distance
L39	N 84°32'01" E	46.65'
L40	S 57°27'45" E	35.50'
L41	N 51°32'20" E	33.78'
L42	S 28°58'42" E	27.59'
L43	N 64°30'46" E	32.02'
L44	N 87°29'23" E	67.23'
L45	S 79°39'18" E	47.13'
L46	S 23°51'53" W	35.53'
L47	S 00°02'40" W	40.20'
L48	S 02°51'34" W	41.33'
L49	S 15°44'18" W	29.40'
L50	S 42°48'13" E	24.04'
L51	N 15°06'08" E	23.50'
L52	N 13°26'14" E	55.24'
L53	N 22°42'11" E	40.07'
L54	N 68°07'43" E	27.61'
L55	N 52°55'44" E	44.42'
L56	N 07°48'52" E	38.71'
L57	S 45°43'26" E	29.29'
L58	N 81°43'19" E	47.60'
L59	S 30°53'43" W	36.30'
L60	S 24°27'52" E	37.08'
L61	S 68°26'23" E	41.69'
L62	S 79°37'40" E	45.92'
L63	N 85°04'05" E	56.37'
L64	N 79°56'01" E	34.67'
L65	N 81°29'58" E	45.64'
L66	S 83°50'46" E	45.85'
L67	S 86°30'19" E	44.37'
L68	N 11°44'34" E	119.39'

Course	Bearing	Distance
L69	S 67°53'46" W	32.34'
L70	N 59°22'42" W	57.64'
L71	N 36°08'24" W	48.27'
L72	S 66°41'47" W	37.61'
L73	S 65°11'54" W	46.08'
L74	N 49°27'41" W	42.56'
L75	N 14°59'09" W	41.12'
L76	N 28°53'45" E	44.67'
L77	N 22°02'47" W	16.56'
L78	S 74°59'59" W	32.74'
L79	N 31°29'40" W	31.56'
L80	S 83°45'25" W	70.92'
L81	S 51°11'52" W	92.02'
L82	N 73°25'03" W	74.31'
L83	N 44°37'31" W	52.21'
L84	N 39°57'26" W	41.81'
L85	N 89°11'33" W	62.93'
L86	S 17°33'37" W	101.00'
L87	S 83°57'18" W	56.28'



NOTE:
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ENGINEER:
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103 HILLTOP LANE
HAMPSTEAD, NC 28443

100 0 100 200 300
GRAPHIC SCALE – FEET

PROPOSED POND
FOR
DAVID FUSSELL
OF THE ROADS HILL PROPERTIES

ROSE HILL TOWNSHIP – DUPLIN COUNTY – NORTH CAROLINA
SCALE: AS SHOWN MAY 01, 2007

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NC License No. L-2580

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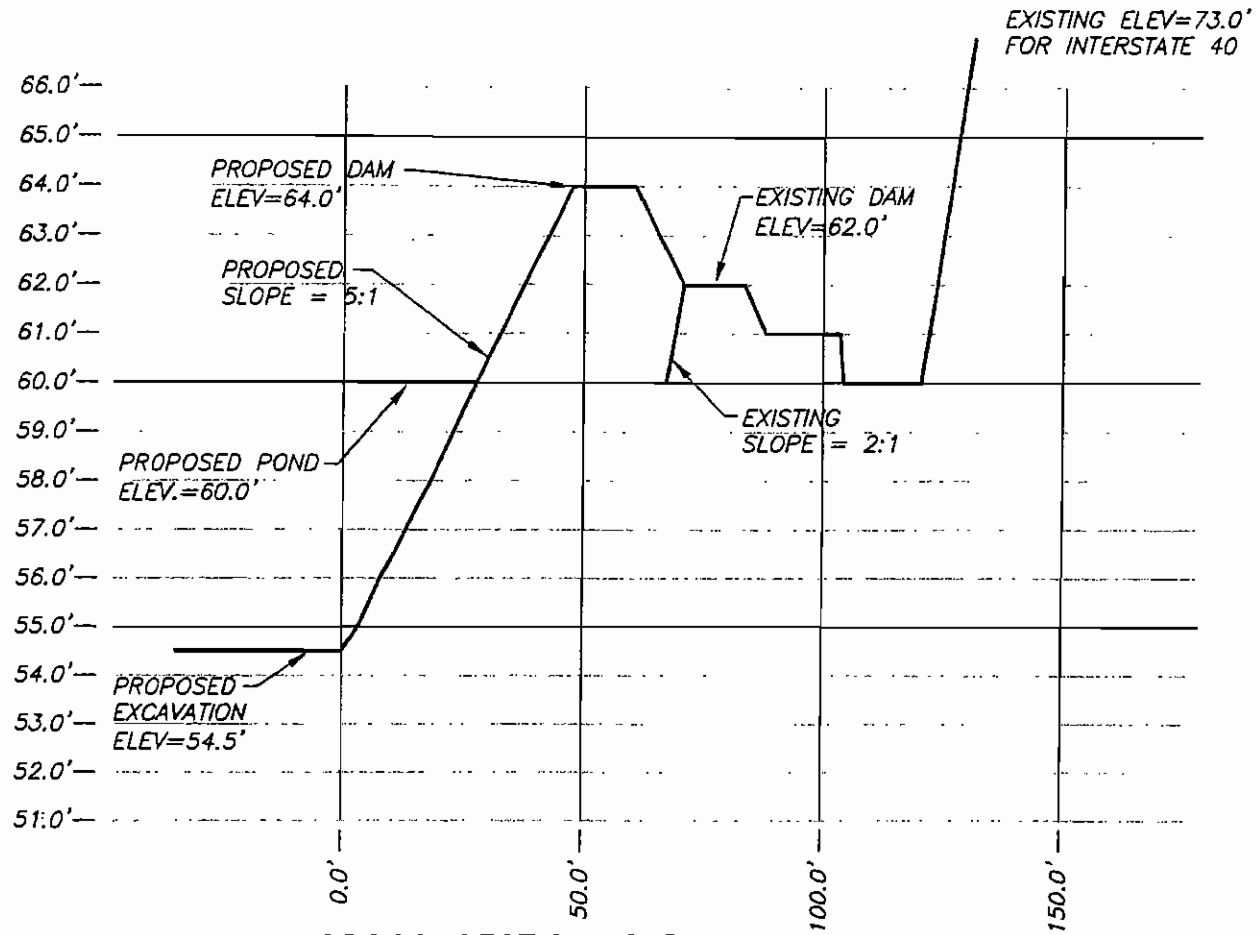
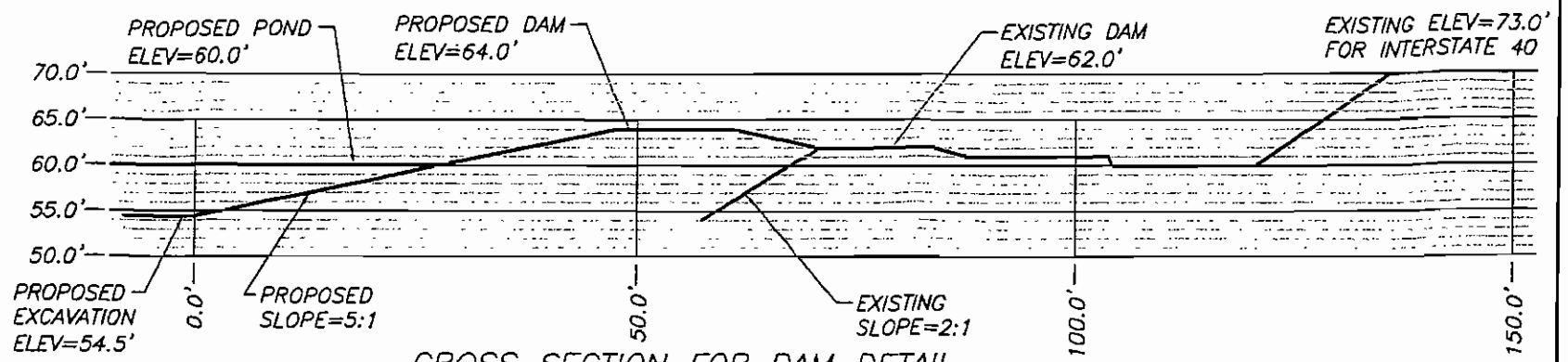
MANLEY D. CARR, PLS
ROBERT H. GOSLEE & ASSOCIATES, PA
LAND SURVEYORS – LAND PLANNERS
756 E. SOUTHERLAND ST. / P.O. BOX 133
WALLACE, NORTH CAROLINA 28466
910-285-4210
FILE No. DG-1413 POND



CROSS SECTION FOR DAM DETAIL
HORIZONTAL SCALE 1"=40'
VERTICAL SCALE 1"=4'



CROSS SECTION FOR DAM DETAIL
HORIZONTAL SCALE 1"=20'
VERTICAL SCALE 1"=20'

NOTE:
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WILL NOT BE EXCAVATED OR DISTURBED.

TOTAL LENGTH OF STREAM IMPACT = 2,450 LF.

ENGINEER:
WYATT E. BLANCHARD, PE, PLS
NC LICENSE NO. 008387, L-2881
103 HILLTOP LANE
HAMPSTEAD, NC 28443

PROPOSED POND
FOR
DAVID FUSSELL
OF THE ROADS HILL PROPERTIES

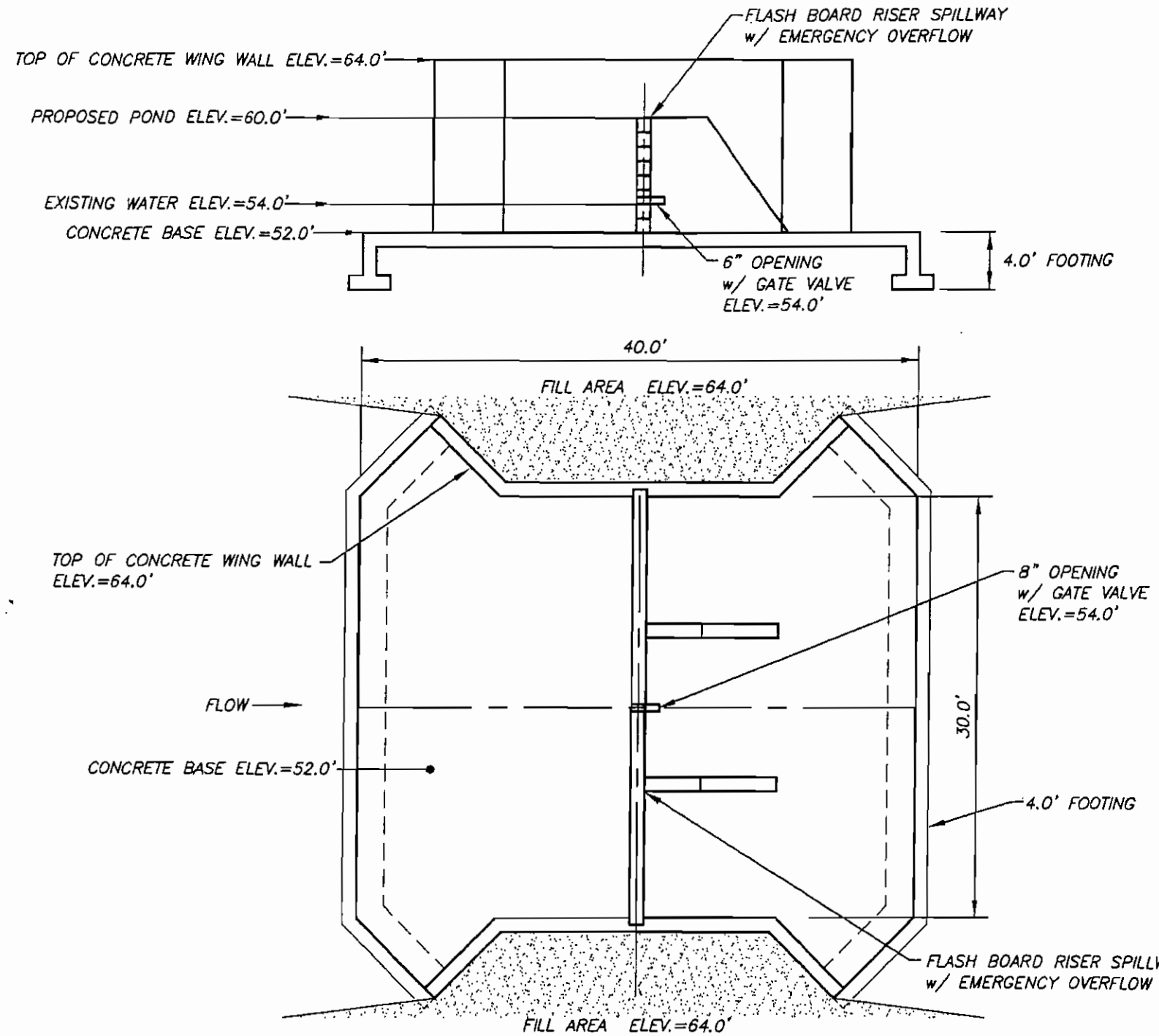
ROSE HILL TOWNSHIP – DUPLIN COUNTY – NORTH CAROLINA
SCALE: AS SHOWN MAY 01, 2007

I, Manley D. Carr, PLS, certify that this plat was drawn under my supervision from an actual field survey made under my supervision from information as noted hereon; that the boundaries not surveyed are clearly indicated as dotted lines; that the ratio of precision as calculated is 1:10,000+; and is correct to the best of my knowledge and belief. Witness my original signature, License Number and Seal this 1st day of May, 2007.

Manley D. Carr, PLS
NC License No. L-2580

NORTH CAROLINA PROFESSIONAL SEAL L-2580 LAND SURVEYOR MANLEY D. CARR

MANLEY D. CARR, PLS
ROBERT H. GOSLEE & ASSOCIATES, PA
LAND SURVEYORS – LAND PLANNERS
756 E. SOUTHERLAND ST. / P.O. BOX 133
WALLACE, NORTH CAROLINA 28466
910-285-4210
FILE No. DG-141J POND



CONCRETE WING WALL & DAM DETAIL
SCALE 1"=40'

NOTE:
EXISTING BED OF NATURAL BRANCH
WILL NOT BE EXCAVATED OR DISTURBED.

TOTAL LENGTH OF STREAM IMPACT = 2,450 LF.

ENGINEER:
WYATT E. BLANCHARD, PE, PLS
NC LICENSE NO. 008387, L-2881
103 HILLTOP LANE
HAMPSTEAD, NC 28443

PROPOSED POND
FOR
DAVID FUSSELL
OF THE ROADS HILL PROPERTIES

ROSE HILL TOWNSHIP – DUPLIN COUNTY – NORTH CAROLINA
SCALE: AS SHOWN MAY 01, 2007

I, Manley D. Carr, PLS, certify that this plat was drawn under my supervision from an actual field survey made under my supervision, (deed information as noted hereon; that the boundaries not surveyed are clearly indicated as dashed lines; that the ratio of precision as calculated is 1:10,000+ and is closed to the best of my knowledge and belief. Witness my original Signature, License Number, and Seal, this 1st day of May, 2007.

Manley D. Carr, PLS
NC License No. L-2580

NORTH CAROLINA PROFESSIONAL SEAL L-2580 LAND SURVEYOR MANLEY D. CARR

MANLEY D. CARR, PLS
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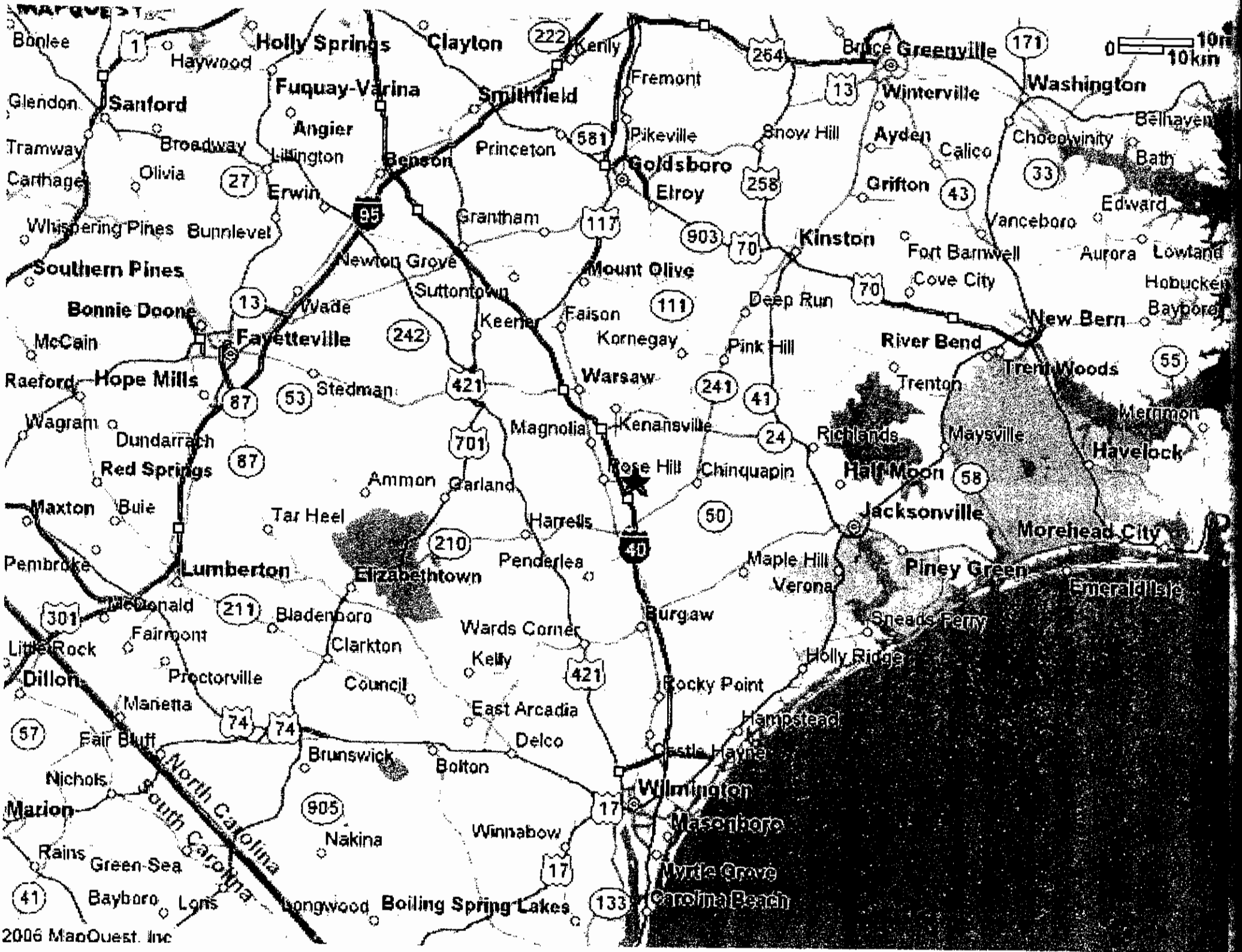
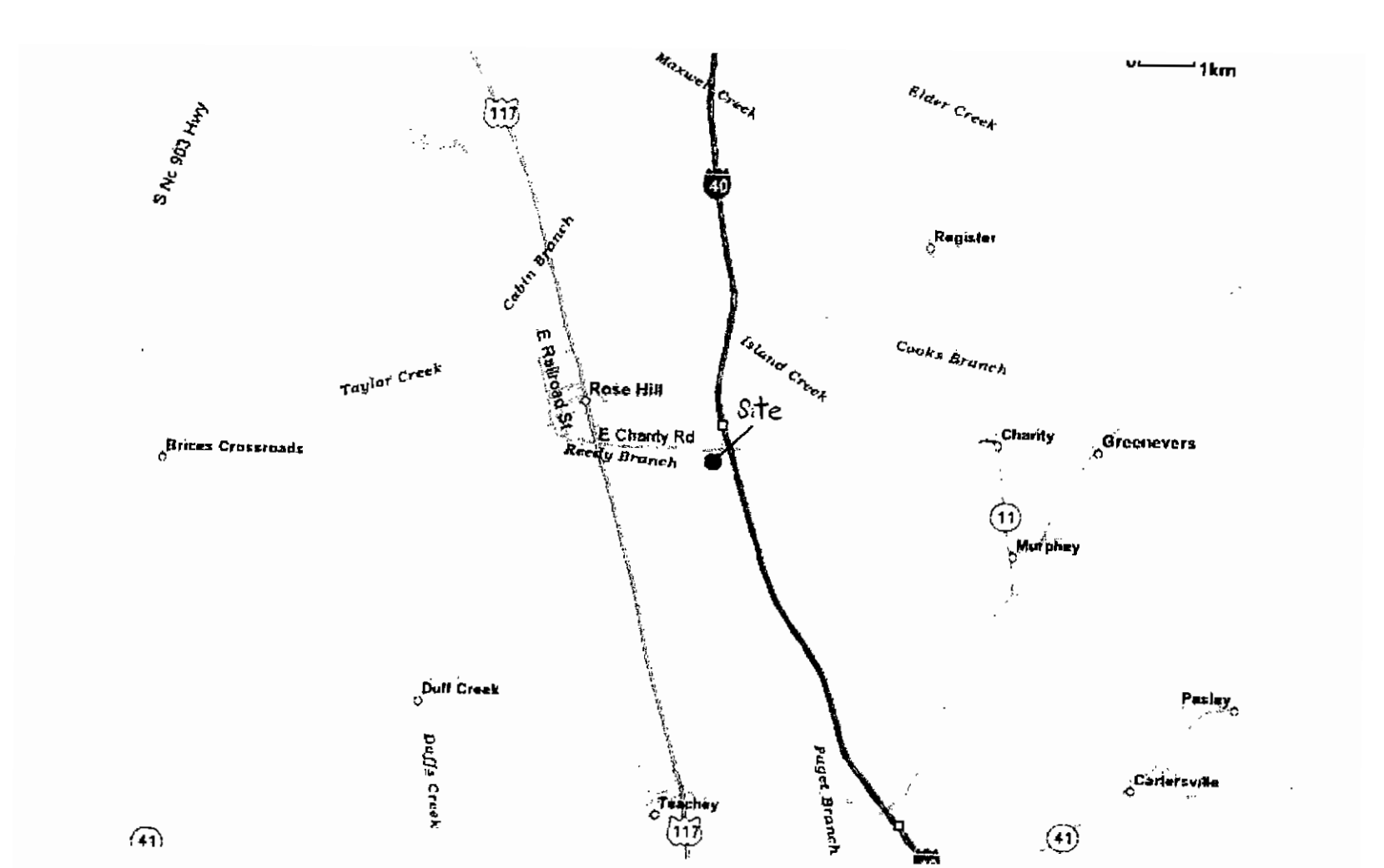
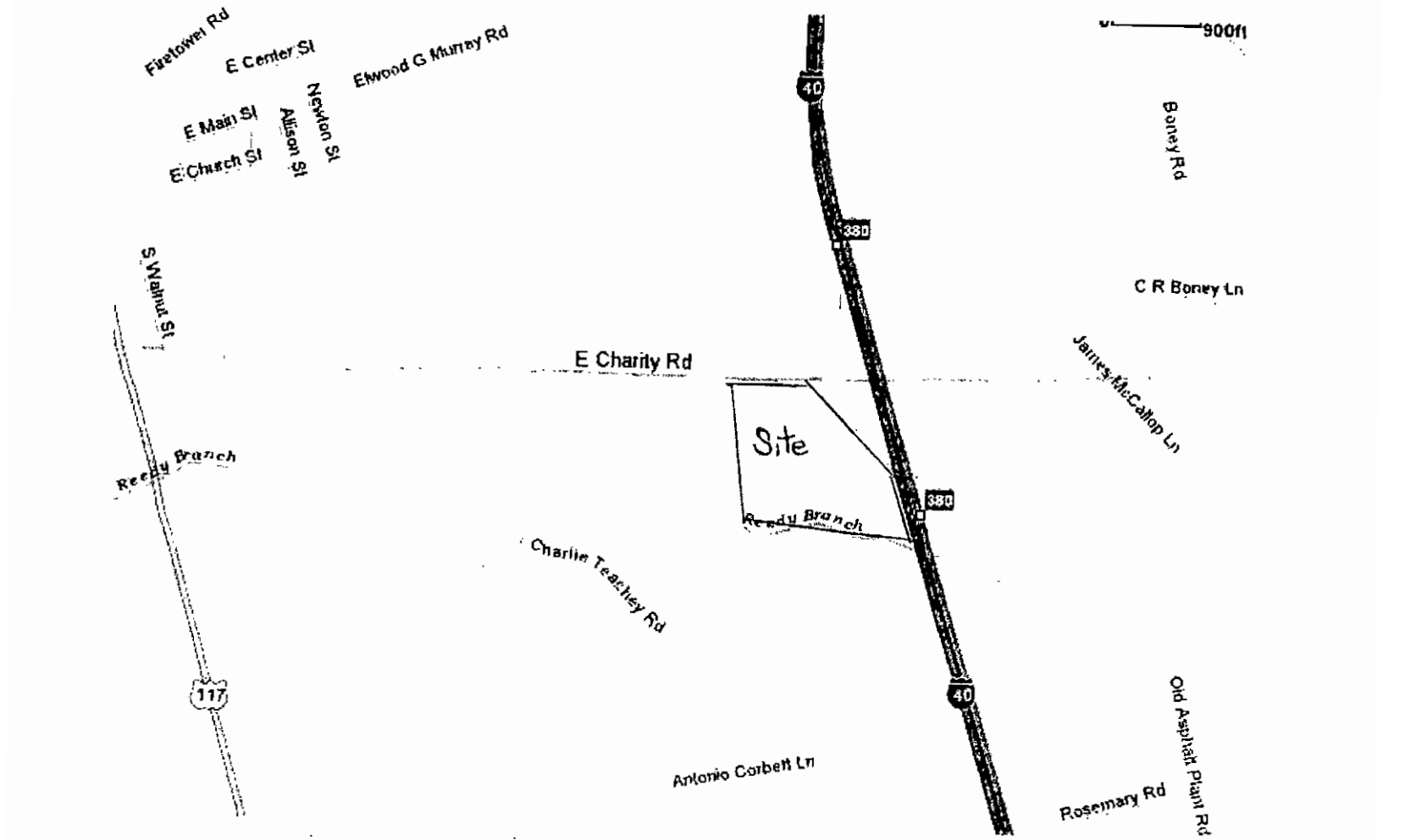
WALLACE, NORTH CAROLINA 28466
910-285-4210
FILE No. DG-1413 POND
SHEET 9 OF 9

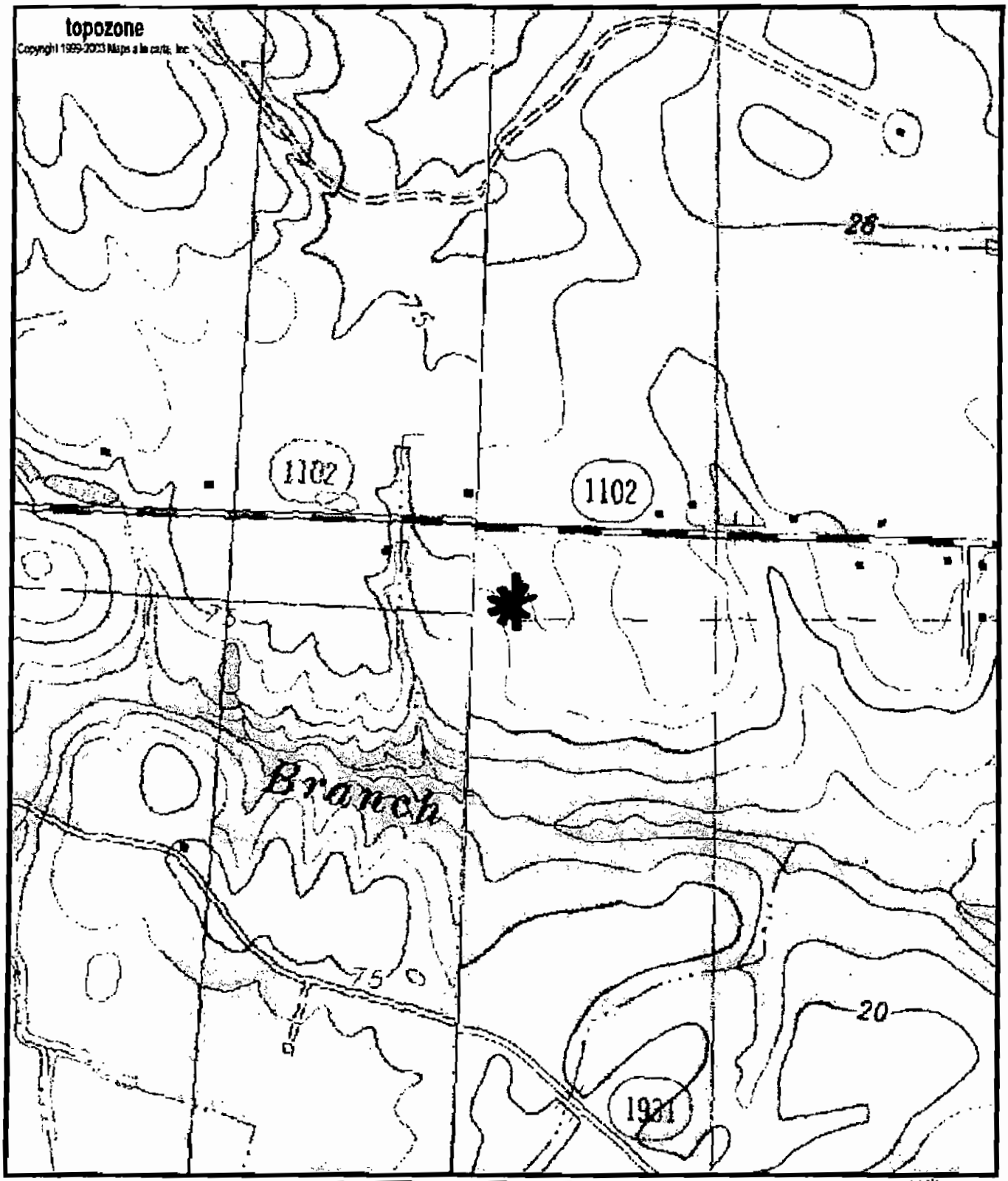
SEGi

Attachment 6: Maps of the Proposed Project Location


Bonlee
Holly Springs
Clayton
Kenly
Bruce
Greenville
Haywood
Fremont
Glendon
Sanford
Fuquay-Varina
Smithfield
Winterville
Washington
Angier
Tramway
Broadway
Princeton
Pikeville
Snow Hill
Ayden
Calico
Bellhaven
Choopyvinity
Bath
Carthage
Olivia
Lillington
Benson
Goldsboro
Grifton
Erwin
Elroy
Edward
Whispering Pines
Bunnlevel
Grantham
Vanceboro
Kinston
Fort Barnwell
Aurora
Lowland
Southern Pines
Newton Grove
Mount Olive
Cove City
Suttontown
Deep Run
Hobucken
Bonnie Doone
Wade
Faison
New Bern
Bayboro
McCain
Fayetteville
Keener
Kornegay
Pink Hill
River Bend
Raeford
Hope Mills
Stedman
Warsaw
Trenton
Trent Woods
Wagram
Dundarrach
Magnolia
Kenansville
Richlands
Maysville
Merrimon
Red Springs
Rose Hill
Chinquapin
Half Moon
Havelock
Maxton
Buie
Ammon
Garland
Tar Heel
Harrells
Jacksonville
Morehead City
Pembroke
Lumberton
Elizabethtown
Penderlea
Maple Hill
Piney Green
Verona
Emerald Isle
McDonald
Bladenboro
Burgaw
Fairmont
Wards Corner
Sneads Ferry
Little Rock
Clarkton
Kelly
Holly Ridge
Dillon
Proctorville
Council
Rocky Point
Marietta
East Arcadia
Hampstead
Fair Bluff
Delco
Brunswick
Castle Hayne
Nichols
Bolton
Wilmington
Marion
South Carolina
North Carolina
Nakina
Winnabow
Masonboro
Rains
Green Sea
Myrtle Grove
Carolina Beach
Bayboro
Lons
Longwood
Boiling Spring Lakes
0
10mi
10km
2006 MapQuest, Inc


1km
S Nc 903 Hwy
117
Maxwell Creek
Rider Creek
40
Register
Cabin Branch
E Railroad St
Island Creek
Cooks Branch
Taylor Creek
Rose Hill
Site
E Charity Rd
Reedy Branch
Brices Crossroads
Charity
Greenevers
11
Murphey
Duff Creek
Paisley
Duffs Creek
Puget Branch
Carlersville
Teachey
117
41
41


900ft
Firetower Rd
E Center St
Elwood G Murray Rd
40
E Main St
E Church St
Allison St
Newton St
Boney Rd
380
S Walnut St
C R Boney Ln
E Charity Rd
James McCallop Ln
Site
Reedy Branch
380
Reedy Branch
Charlie Teachey Rd
117
40
Antonio Corbett Ln
Old Asphalt Plant Rd
Rosemary Rd



Map center is 34.8205°N, 77.9991°W (WGS84/NAD83)
Charity quadrangle - Elevation 73.6 ft / 22.4 m (USGS NED)
Projection is UTM Zone 18 NAD83 Datum

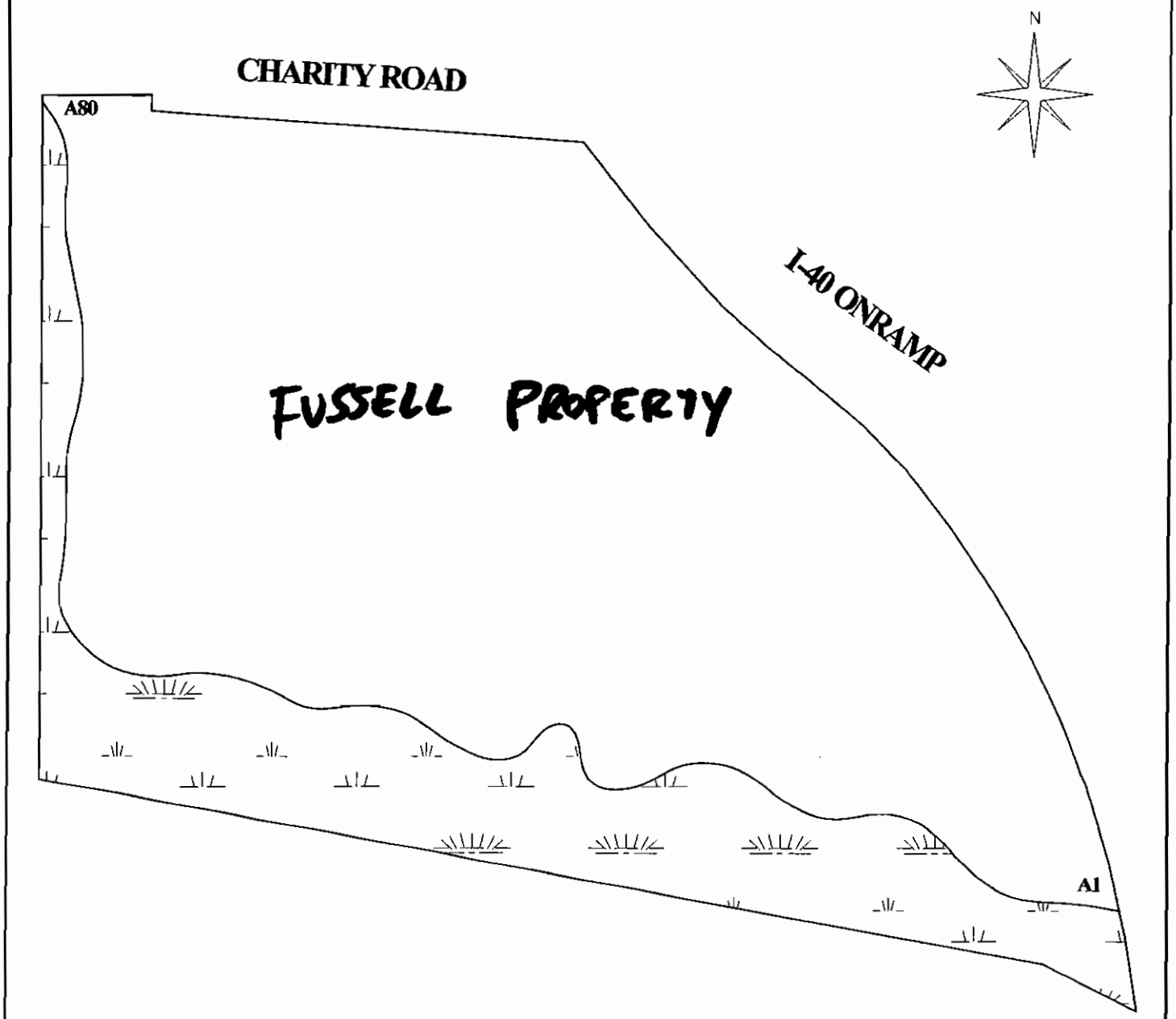
0 0.1 0.2 0.3 0.4 0.5 km

0 0.09 0.18 0.27 0.36 0.45 mi

M *

Map center is 34.8205°N, 77.9991°W (WGS84/NAD83)
Charity quadrangle - Elevation 73.6 ft / 22.4 m (USGS NED)
Projection is UTM Zone 18 NAD83 Datum

M=-9.069
G=-1.714



Not to Scale Date: February 13, 2006 Project # : 06-023.01 Drawn By: David Scibetta

Wetland Delineation

Roads Hill Property

Rose Hill, Duplin County, NC

Southern Environmental Group, Inc.
5315 College Road Suite E
Wilmington, North Carolina 28412
Office (910) 452-2711 Fax (910) 452-2899

DUPLIN COUNTY, NORTH CAROLINA

06-023.01