



# Black Creek Watershed Situation Assessment

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**NC STATE UNIVERSITY**





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## **Black Creek Watershed Issue Assessment - Executive Summary**

The Black Creek watershed, which begins in downtown Cary, NC and flows into Lake Crabtree through northern Cary, has seen rapid growth in residential and commercial development in recent years. This growth has put various stakeholders at odds with each other. A recent conflict regarding a move of the popular Black Creek Greenway to accommodate a new apartment complex left trust badly strained between lower watershed residents, development interests, and Town of Cary elected officials. However, this Situation Assessment reveals that residents, developers, and other watershed stakeholders are interested in coming together to search for innovative solutions to the problems impacting Black Creek.

Black Creek is rated *impaired* on the NC Division of Water Quality (NCDWQ) 303(d) list. This means Black Creek is not supporting its appropriate aquatic life. NCDWQ regards non-point source pollution from stormwater runoff as the likely cause of impairment, and suggests that removal Black Creek from the 303(d) list will require the joint effort of many stakeholders.

To address the rising social and ecological crises in the watershed, NC State University in partnership with the Town of Cary received a US Environmental Protection Agency grant to involve the community in a watershed assessment and restoration planning process. The project began with a Situation Assessment to determine the community's concerns in the watershed, and how to most effectively proceed with collaborative watershed planning. The assessment involved interviewing 20 representatives of a cross section of watershed interests, summarizing responses, and making recommendations for moving forward.

Development is the greatest concern for most respondents. Residents are concerned development may be degrading the environment; developers are concerned that regulations may impair their ability to develop in economically sound and environmentally innovative ways. This issue was brought into focus with the recent Black Creek Greenway conflict. Stakeholders are concerned about increasing populations, accompanying traffic increases, and residential practices impacting water quality and recreation. PCB contamination in Lake Crabtree also ranks high among concerns, as well as concerns about other unknown potential toxins in the watershed. Finally, respondents are concerned about the overall ecological health of the watershed, including its ability to provide healthy wildlife habitat.

Almost all stakeholder groups interviewed expressed interest in participating in a collaborative watershed planning process through the formation of a watershed association. Respondents made the following suggestions for the process: provide education; conduct unbiased research; produce a measurable specific product, include broad participation; and provide a safe, neutral climate for building trust and negotiations. Their willingness to engage one another allows participants to seek opportunities for mutual gain if careful attention to process is followed by NCSU facilitators and participants alike. NCSU will follow these recommendations while convening a collaborative watershed association for the Black Creek watershed. Important principles to be adhered to include: 1) science-informed decision-making (a technical watershed analysis is currently underway), 2) mutual education, 3) collaborative decision making, and 4) neutral facilitation. This will allow participants' to learn from one another and make decisions for restoring the watershed while also meeting their individual needs.



## **Introduction**

### ***Black Creek Watershed***

Black Creek is located in northern Cary, NC. The 3.3 square mile Black Creek watershed drains to Lake Crabtree, a flood control reservoir. The Town of Cary's popular Black Creek Greenway runs adjacent to most of Black Creek. The Greenway connects to Umstead State Park and Crabtree County Park, and experiences heavy use.

Black Creek is listed on the state's 303(d) list as biologically impaired. The 2002 NCDWQ Neuse River Basinwide Plan indicates habitat degradation from urban runoff as a likely cause of impairment, stating that great effort will be needed to reduce impacts from urban runoff. The watershed is approaching build-out with residential, commercial, industrial, and municipal parkland uses, although several forested parcels are yet to be developed. Future plans include development of a private Veteran's Memorial Park, as well as commercial, industrial, and residential throughout the watershed.

### ***Purpose***

This Situation Assessment is part of a larger project, the *Black Creek Watershed Assessment, Monitoring, and Restoration Planning Program*. The project is sponsored by North Carolina State University (NCSU) and the Town of Cary, and funded through the US Environmental Protection Agency (EPA).

The purpose of the Situation Assessment is (1) to identify stakeholders, members of the community with a stake in the Black Creek watershed, (2) to learn what the stakeholders see as problems, and (3) to learn what the stakeholders may wish to gain by participating in a watershed planning process. The results of the Situation Assessment will help determine a public involvement process to best meet stakeholder needs while creating a sustainable watershed management team.

The EPA grant was received through the NC Division of Water Quality Section 319 Non Point Source Grant Program. Section 319 refers to the US Clean Water Act. Non Point Source (NPS) refers to any pollution that does not have a discreet source. The main source of NPS is polluted runoff from stormwater. Watershed Education for Communities and Officials (WECO), a NC Cooperative Extension program housed in the NCSU Department of Agricultural and Resource Economics, and the NCSU Department of Forestry and Environmental Resources received this grant in partnership with the Town of Cary. NCSU and the Town of Cary are also contributing funds to this project. The project timeline is January 2006-December 2008, and involves two components:

1. Convene a watershed association of representative stakeholders to collaboratively develop community supported recommendations for watershed management and restoration.
2. Conduct a watershed assessment and monitoring program to determine the causes of Black Creek's impairment and identify practices that will improve the its health.

## ***Methods***

Stakeholders were identified through a *snowball sampling method*, which relies on referrals from initial subjects to generate additional subjects. Initial subjects included known stakeholders who have been actively involved with Black Creek issues. WECO interviewed twenty one stakeholders including residents, developers, and government staff, representing a cross-section of interests. For example, the team did not speak to every resident identified, but tried to interview people from upper, middle, and lower watershed neighborhoods. Responses have not been attributed to specific individuals. Appendix A contains the questions used as guidance during the interviews.

The results of the interviews are summarized in this report, including the project team's recommendations for moving forward.

Stakeholder interests represented include:

- Cary Academy
- Town of Cary Departments of Engineering; Planning; Parks, Recreation and Cultural Resources
- Homeowners associations (HOAs) including Silverton, Beechtree, Wessex, and Harrison Trace, and the North Cary Community Coalition (NC3)
- Neighborhoods not represented by HOAs in middle and upper watershed
- Commercial land development and management companies
- Non-profit organizations
- Reedy Creek Middle School
- Wake County Parks, Recreation and Open Space (Lake Crabtree County Park)
- Wake County Cooperative Extension
- Wake County Soil & Water Conservation District
- Division of Water Quality, NC Department of Environment and Natural Resources (NCDENR)
- Ecosystem Enhancement Program, NCDENR

This report intends to:

- identify issues of importance to the local community,
- identify organizations and individuals who can influence watershed decisions or are influenced by watershed decisions,
- determine how best to bring diverse interested stakeholders together, and
- begin the process of learning about and understanding individuals' interests in the watershed.
- assist the technical team in addressing research questions that concern the stakeholders.

This report does *not* intend to provide a quantitative, statistically accurate analysis of the issues, but rather a summary of the issues identified.

This report also does *not* include feedback received during a public meeting held in March 2006. The meeting results, including a survey, can be found on the WECO website. [<http://www.ces.ncsu.edu/weco>]

## **Characterizations of Black Creek Watershed**

### ***How does the community use the watershed?***

The Black Creek Greenway, one of the most extensive trails maintained by the Town of Cary is located in the watershed. Respondents cited recreation along the greenway (walking, running, biking, wading, and fishing) as a primary use of the watershed. The greenway is also an important location for socializing by neighborhood walking, biking, and even religious groups. The greenway serves as a transportation corridor from residential areas to shopping areas and parks, including Lake Crabtree County Park, North Cary Park, and Umstead State Park.

Stakeholders cited preserving natural ecosystems and wildlife as an important function of the watershed. The greenway allows for some natural connectivity for wildlife habitats, and open space maintained by the Town of Cary within the watershed can also provide important habitat for wildlife in the area.

The watershed's location makes it a promising target for development. The watershed contains commercial, office, industrial, and residential development. Developers noted that property in the Black Creek watershed is valuable for future development.

### ***Compared to Other Watersheds***

Several stakeholders feel the health of Black Creek is about what should be expected for an urban watershed. The general consensus is that while the Black Creek watershed is not ideal, there are worse situations in surrounding areas. New Hope Creek in Durham County was suggested as a reference watershed. It is similar in size and location but has less bank erosion since the undeveloped Duke Forest comprises some of the drainage area, thereby reducing runoff.

Government staff pointed out other bodies of water in or near Cary are also impaired or may soon be identified as impaired. These include Jordan Lake, Swift Creek, Crabtree Creek, and Walnut Creek. Improvements in Black Creek could serve as a model for other watersheds.

It was identified that there are more regulatory requirements for development in nearby Briar Creek than in Black Creek, making Black Creek watershed a better candidate for economic development. Briar Creek watershed contains the Ward Transformer site. This EPA-designated Superfund site is releasing PCBs into Briar Creek, which also flows into Lake Crabtree.

## **Stakeholders**

This section identifies the major stakeholder groups with interests in the watershed. These include the residents; recreationists; and commercial, non-profit, and government interests. No local environmental non-profits were found to be active in the watershed, although regional environmental organizations with some interest may include

the Neuse River Foundation and the Umstead Coalition. Many residents expressed environmental interests, so the lack of an active environmental organization in the neighborhood does not indicate a lack of representation of environmental interests.

### ***Residents***

Residents have recently engaged in civic activities about watershed development issues including greenway impacts, the Veteran's Freedom Park, and flooding. This interest may indicate that residents are interested in getting involved in a watershed planning process.

It is important to distinguish between the headwaters and the lower watershed, as the issues and demographics are distinct. Most residential development in the lower watershed is recent and high-end, with organized homeowner's associations (HOAs). The Black Creek Greenway was built concurrently with many of the developments in the lower end of the watershed, and has been one of the attractive selling points of the area. Residents in this part of the watershed have been vocal about issues relating to the greenway. Several HOAs in this area are organizing a larger umbrella organization, called North Cary Community Coalition (NC3). NC3 currently provides a communication network in the lower watershed, but they hope to include the headwater neighborhoods.

The upper watershed, or headwaters, was developed earlier, which may give rise to more concerns over maintenance issues (such as leaking sewer systems) than new development issues. These older developments typically have no formal HOAs. Additionally, there are many multifamily residences throughout the watershed, which were mentioned as a difficult target for education and involvement. Government staff mentioned past difficulties in communicating with Hispanic populations as well.

### ***Recreationists***

People travel from other areas to bike, walk, and run on the greenway. Other recreational facilities in the watershed include Godbold Park, which has a dog park and outdoor skateboarding facility, and North Cary Park which includes sports fields. Residents and local government staff noted the importance of including visiting recreationists' viewpoints in watershed decisions, but indicated that local recreationists may be able to represent this group in watershed planning activities.

### ***Commercial Interests***

Overall, respondents viewed development as having the greatest impact on the watershed. Residential, commercial, parkland, and industrial projects are in different stages of development throughout the watershed.

Even after listing several current construction projects, developers and some residents feel the area is nearly "built-up" with the focus soon to shift from large developments to smaller in-fill developments. It was noted that this transition generally favors local development companies over national companies, with the potential for some developers to stay active in the area.

The headwaters of Black Creek are located in downtown Cary. The redevelopment plans for the Town Center Area of Cary may therefore affect the watershed.

Major business areas located in the watershed include Weston Business Park in the lower watershed, Chatham Street in the headwaters, and several strip-mall commercial centers throughout. Businesses in these areas may see this project as an opportunity to explore stormwater best management practices, or they may see it as a threat which may cause increasing environmental regulation.

Finally, many residential and commercial areas have professional landscaping and lawn care. Because fertilizer runoff is one of the major concerns of the residents interviewed, lawn care professionals may be an important stakeholder group to target in this watershed, although their business offices may be located elsewhere.

### ***Government***

Government agencies with the authority to make decisions to affect, Black Creek or have resources to benefit, Black Creek include:

- US Environmental Protection Agency (EPA)
- North Carolina Department of Environment and Natural Resources (NCDENR)
  - Division of Water Quality (DWQ)
  - Ecosystem Enhancement Program (EEP)
- Wake County
  - Soil and Water Conservation District (SWCD)
  - Lake Crabtree County Park
  - Cooperative Extension
- Town of Cary
  - Department of Parks, Recreation and Cultural Resources
  - Department of Engineering
  - Department of Planning

(See Appendix C for government agency roles.)

Some government staff expressed an interest in working more with the public, but also expressed that it was difficult to generate public input or enthusiasm for past town projects. Some residents expressed concern that there may be a conflict of interest involving the Town Council, opining that Council appears to side with development over residents on many issues. However, it was unclear whether these residents were disgruntled with the entire Town of Cary government, or just the elected Council.

### **Concerns**

#### ***Development***

Nearly every stakeholder interviewed considers development to be one of the primary issues in the watershed. Several respondents point out that most of the land has already been developed. The transition from large development plans to in-fill development is suggested to be challenging due to the topography of the area.

Many stakeholders, primarily residents, point out negative environmental impacts from development including: increased stormwater run-off, creek bank erosion, sediment in streams, flooding, and habitat destruction through clear cutting. One resident observed upstream of a nearby construction site the stream was clear, but downstream of the site it ran orange. Stakeholders from all interest groups recognize that development increases impervious surface area, which increases storm water runoff impacts on downstream properties and natural resources. One respondent said we have two parallel watersheds that function differently: the natural one and the one made with cement.

Some residents expressed frustration that government was not providing enough of a check on development, while others expressed mixed feelings towards development. They appreciate the new amenities such as nearby shopping, but they also want to see more forested areas preserved.

Respondents with development interests expressed concern that they were unfairly blamed for environmental degradation. They noted stricter regulations increase development costs and can impede economic development. They pointed out many existing regulations they must abide by, such as the Neuse River Nutrient and Buffer Rules, and commented that the general public may not be aware of regulations that developers must follow. They are concerned that unfounded blame will lead to stricter regulations, and also pointed out that some regulations contradict environmental best management practices. For example, to comply with the Americans with Disabilities Act, greenways must be paved for wheelchair accessibility, which increases impermeable surface area.

Government staff from various agencies expressed some frustration regarding environmental regulations. They worry that while most new developments are required to put in stormwater best management practices (BMPs), many settle for the cheapest solution, including unattractive retaining ponds that may not provide optimum environmental benefits. Residents and government staff both expressed concern over unattractive BMPs, and how confusion regarding innovative development techniques and BMPs can be a deterrent to using them.

### ***Human Health Risks***

Several stakeholders expressed concern about toxins in the watershed, such as PCBs and the potential for other yet unidentified toxins. Because Black Creek and Briar Creek both drain into Lake Crabtree, and PCBs are a problem in Briar Creek, many people are concerned that PCBs could travel up into Black Creek from Lake Crabtree. Currently, fish in Lake Crabtree and downstream Crabtree Creek are designated as unsafe for consumption. Developers are concerned that if PCBs are found in the watershed, EPA regulations for developers will become more strict, as they are in Briar Creek. Residents are concerned the water may not be safe for their dogs to drink or for their kids to play in. Concerning air quality, one respondent worried that increased particulate matter released during construction grading activities may pose a health hazard.

### ***The Black Creek Greenway***

The Black Creek Greenway is operated by the Town of Cary Parks, Recreation and Cultural Resources (PRCR) Department, and connects several private trails such as homeowners association access ways. New greenway construction is primarily

concentrated in the headwaters, while greenway maintenance is the focus in the lower watershed.

In 2004-2005, the Black Creek Greenway was the focal point of conflict between developers, residents, greenway users, and the Town of Cary. A site at the mouth of Black Creek, adjacent to the greenway, was rezoned for a new apartment complex. As a condition of the rezoning, the developer offered to move the greenway away from the apartment complex, with the purpose of providing space between the greenway and the apartment property, and increasing the distance between the apartments and the adjacent municipal sewage treatment plant. This move would bring the greenway closer to the creek. Residents learned of this change after the rezoning was approved, too late to provide input, and subsequently organized efforts to prevent the movement of the greenway. While able to generate a great deal of grassroots support, the residents were unable to change the approved development plans for either the apartments or the greenway.

The major result from this interaction is that trust between the various groups is badly strained. Developers are frustrated that they were vilified even though they followed regulations and worked out a zoning agreement with municipal staff and elected officials. Residents feel the Town of Cary elected officials are too influenced by the power of development interests. Government staff, at both the local and state level, express frustration at being drawn into the conflict without having viable options for addressing it. Although the substantial issues regarding development of a recreational and natural resource were at the forefront, process issues compounded the frustration. Much of the residents' frustration likely stemmed from a lack of meaningful input in the process, since the rezoning was approved before they were aware of it. The Town of Cary Dept. of PRCR was left dealing with the inflamed public conflict, since the only means of input left for residents was to comment on the details of the greenway design. Residents realize the PRCR was unfairly left holding the bag, so trust with this department remains high. Trust of Town of Cary elected officials did not fair as well.

### ***Residential Practices***

Residential stormwater runoff containing fertilizers, pesticides, and motor oil is a likely contributor to water quality impairment. Government staff indicated that this may be a greater problem than most people think. They also acknowledge the difficulty of educating about cumulative impacts from household practices. While residents recognized they could be contributing to the problem, they did not know what they could do to improve the situation.

### ***Demographics***

Development in the watershed has led to population increases in the area. Respondents are concerned the increase in residents means an increase in traffic. More traffic can lead to pressure to widen roads, thus increasing impermeable surface. Population increase also means more traffic on the greenway, which may increase complaints about continued development according to one respondent. Some respondents also noticed increased litter in the greenway and creek.

The changing demographics have also put the headwaters (upper watershed) and lower watershed at odds over what the priorities should be. Neighborhoods in the

headwaters are older, and are concerned about flooding and broken sewer connections that result from an aging utility infrastructure. Respondents noted more cases of illegal dumping in the headwaters area. Town resources are split between maintaining the current quality of life in the headwaters and incorporating the new developments in the lower watershed. While residents in the headwaters may have a disproportionate impact on Black Creek, residents in the lower watershed are more likely to notice changes in the water quality. Some respondents also believe development activities in headwater (tributary) streams impact Black Creek less than development near the main body of the creek. This likely misconception may stem from the fact that more people see development adjacent to the greenway so respond more negatively to it. It also may stem from a lack of watershed education, concerning the effects of nonpoint source pollution on smaller streams and tributaries.

### ***Ecological Health and Wildlife***

Several respondents are concerned about the ecological health of the watershed. One mentioned considerable woody debris along the greenway and on footbridges after big storms, and thought it may indicate the creek is becoming more prone to flash flooding. Residents express concern about the small amount of natural or open space remaining. Some respondents are concerned about the amount of streambank erosion they see. They attribute this to disturbance of the natural hydrology of the watershed, and resulting channelization (straightening) of Black Creek. One respondent was concerned that acid rain may be a problem.

Residents and government staff note that changes in the environment may be impacting local wildlife. A resident pointed out that water quality decline may explain why blue herons have not visited a local pond in recent years. Another noted a decline of kingfisher activity in the area over the last couple years. Conversely, Lake Crabtree Park staff noted the positive attribute of a nesting pair of bald eagles near Black Creek, but thought (and hoped) they obtained some of their food from marshes nearby that are not polluted with PCBs.

Respondents from all groups recognize that ecological health is tied to economic health for the area. Developers and government staff pointed out that a good greenway system with natural space increases local property values. One resident worried that poor environmental health would lower property values, saying no one wants to move into a neighborhood where birds are dying and aquatic animals are unhealthy.

### **Watershed Planning**

Watershed planning involves the formulation of a plan based not on municipal boundaries, but on hydrologic boundaries. Local watershed planning assesses the climatological conditions, water resources, and current and future uses of a watershed and incorporates the ecological and socioeconomic demands for those resources. It relies heavily on local data and local input. A local watershed plan will include recommendations for sustaining and improving the watershed.

### ***Visions for the Black Creek Watershed***

Identifying what stakeholders would like to see in the Black Creek watershed can help a watershed planning group set priorities.

Respondents expressed a desire for Black Creek to be:

- Safe enough for dogs to drink from.
- Safe enough for children to play in.
- Clean enough to support wildlife.
- Able to maintain natural hydrology, and not be channelized.

Ideas for the greenway system include:

- Environmental information displayed on signs along the greenway to educate the public.
- Enough traffic, lighting, etc. for women and children to feel safe using the greenway.
- A dog waste program to help dog owners take care of their pets wastes.
- A large enough natural corridor to connect wildlife habitats.

In terms of development, suggestions include:

- Environmental practices should be adopted by the construction workers, and not just the corporate offices.
- Installed stormwater BMPs should work better and be aesthetically pleasing.
- Development in the lower watershed should be balanced between residential and retail, to help balance the demands on the traffic infrastructure.

Additionally, respondents commented on how Black Creek efforts could benefit the region:

- Black Creek should be a model stream for others in the area.
- Education in Black Creek should benefit Lake Crabtree downstream.

### ***Questions for Scientific Research Studies***

To complement the watershed planning efforts, a study will be conducted by scientists from NC State University. Stakeholders asked that the study address the following research questions:

- Where is pollution in Black Creek coming from?
- Can you pay close attention to the Chatham Street area when sampling?
- How safe is the water in Black Creek?
- Are there any effects caused by using reclaimed water for irrigation?
- Where can we put aesthetically pleasing BMPs?
- Can you check erosion using aerial photos?
- What are the cumulative effects of small polluting events (like car fluid spills)?
- Can you check the nutrients and metals in the stream?
- Is the creek subject to flash flooding?
- Do fish migrate from Lake Crabtree to Black Creek?
- Can the researchers use input models to provide specific recommendations for management practices upstream?
- Are there endangered species in the watershed?

### ***Willingness to Participate in Watershed Planning / Alternatives to Negotiations***

To determine how to get various parties to the negotiating table, it is important to recognize alternative routes which various stakeholder groups have for achieving their goals.

Residents of the lower watershed have tried to influence policies in the watershed by organizing community grassroots efforts and petitioning the Town Council. The various HOAs are capable of acting on their own or in concert with the newly-formed neighborhood organization, North Cary Community Coalition (NC3) to organize educational programming and political action. A resident who has been trying to negotiate better stormwater management practices with a developer commented that residents may be in a weak bargaining position. In the headwaters, residents may call the Town of Cary and make complaints about flooding and dumping. Although residents could continue this pattern of organizing, petitioning, and filing complaints, some of the residents expressed frustration that these actions have not resulted in change. Therefore, they are interested in participating in a watershed planning group as a new option.

Land developers can follow the regulations required by city, state, and federal ordinances. They may have little incentive to go beyond these minimum requirements. In some cases, developers have financial incentives to seek waivers to environmental regulations. For example, the Neuse Rules allow developers to pay a fee to develop in protected areas or to remove a lesser amount of nutrients from runoff. Those fees go into a state fund that is used by the NC Ecosystem Enhancement Program to install restoration practices throughout the Neuse Basin, exchanging increased local degradation for benefits in other, usually downstream, areas. Developers must apply to the Town of Cary, but can also appeal to the State if Cary rejects requests for waivers. Before developers (and other landowners) are willing to negotiate, they may need to believe:

- a) *not* participating could result in an unfavorable change in regulations, or
- b) earning the good faith of the community will aid them in pursuing other business ventures in the community, or
- c) participating could yield new options that will enhance development products at no additional cost.

While government agencies see public involvement as part of their mission, they have the option of following the minimum public notice and hearing requirements for planning, zoning, and regulatory changes. Time sensitive opportunities such as purchasing an available tract of land for conservation may require them to act without consulting a watershed planning board. However, all government staff contacted are interested in some level of participation, as they recognize the potential educational benefits for the community, the possibilities for finding innovative ways to improve ecological health and recreation, and the potential for the watershed to serve as a model for other similar troubled streams in the region.

### ***Visions of the Process***

Respondents made recommendations for the watershed planning process, including:

Provide education: Respondents believe the group could provide an educational opportunity for both adults and schoolchildren. Several residents feel they need a better understanding of basic watershed issues before knowing which questions

they want answered. Topics mentioned include watershed science and residential best management practices to protect water quality. In addition, some think the process can be an opportunity to educate local elected officials, government staff, and developers about the value the residents place on the watershed.

Conduct unbiased research: Residents are interested in the scientific study portion of this project, especially in identifying the type and source of any pollutants. Respondents mentioned the need for unbiased water quality studies, to include long term trends and solutions.

Produce a measurable specific product: Both government and commercial interests feel a watershed planning group should produce measurable outcomes, with specific action plans for remediation projects rather than vague recommendations.

Include broad participation: Respondents recognize the importance of capturing a representative cross-section of interests, including headwaters and lower watershed representation, commercial landowners, Hispanic residents, and schools.

Provide a safe, neutral climate for building trust and negotiations: Respondents hope this will be an opportunity to renew faith between developers and the community. They noted that trusting the watershed planning process would require proper moderation by a neutral third party.

Additional stakeholder recommendations concerning current resources and potential solutions can be found in Appendix B.

## **Recommendations for Proceeding**

The results from interviews confirm the project team's conjecture that interest in participating in a watershed planning process is high. The level of interest expressed is actually greater than anticipated. Respondents raised a number of concerns, some of which may appear contradictory or intractable (development impacts on Black Creek vs. environmental regulations stifling development). However, all respondents interviewed expressed a curiosity about the issues, and are open (some with trepidation) to working with other participants who may not share the same views. This willingness to engage with each other allows participants to seek opportunities for mutual gain, rather than win-lose solutions, which has been the case in recent activities in the watershed.

Careful attention to the watershed planning process will be necessary to enable stakeholders to feel comfortable and interested in participating. Some principles that need to be adhered to include:

### ***Science-informed decision-making***

People are interested in seeing the results of the technical watershed analysis. However, if the study results seem to contradict participants' beliefs, they may feel less inclined to want to base their recommendations on it. For this reason, it is crucial that the watershed group participates in the research project as it moves forward, by hearing interim results and questioning researchers' assumptions. Ongoing participation will increase the likelihood that watershed group members will accept the results.

***Mutual education of each others interest and values***

Collaborative skills training and team building will create a group environment where participants can hear each other's concerns and work together to address those concerns.

***Meeting participants' process, psychological, and substantial needs***

Participants must feel:

1. they are being heard,
2. their input will influence watershed plan recommendations, and
3. these recommendations will result in specific, measurable actions.

The facilitators must be neutral and unbiased, and ground rules should be adopted and enforced by the group.

By adhering to respondents' vision for the project and these recommended principles, the Black Creek Watershed planning process will be best equipped for success.

## **Appendix A: Situation Assessment Interview Script**

1. What is your connection to the Black Creek Watershed? How do you and your family, friends, coworkers use the watershed? What plans does your organization have within the watershed?
2. Do you involve this community in your activities? Are you involved in community activities?
3. How do other people in the community use the watershed?
4. What groups do you know about in the watershed?
5. Do you belong to a homeowners association in the watershed?
6. Do you know if you have a town Block Leader, and who that is?
7. Who has authority to make decisions about the watershed?
8. What are the biggest issues facing the Black Creek Watershed? What issues in the watershed affect your organization?
9. Do you think it is a healthy watershed? Why or why not?
10. Can you share any specific observations about insects, fish, odors, flooding, etc.?
11. What information should we collect to determine the health/environmental quality of Black Creek?
12. Are there any imminent changes to the watershed that you think might impact Black Creek, either positively or negatively?
13. What do you think can and should be done concerning the Black Creek Watershed?
14. Where do you get information about local environmental issues?
15. What questions would like answered about the Black Creek Watershed?
16. Would you like to be kept informed of this Black Creek Watershed project?
17. Would you be interested in participating in a watershed planning group? Representing what interest? Who could represent your org? How do you see your organization involved in the watershed-what do you bring to the table (during the planning & implementation phases)?
18. What would you like this group to accomplish?
19. Who else should we interview?
20. Before we leave, is there any other issue you want to talk about?



## **Appendix B: Opportunities and Potential Solutions**

Stakeholders made many suggestions for how the watershed planning group could take advantage of current resources to improve Black Creek. These suggestions will be considered during the watershed planning process.

Distributing information:

- NC3, an organization of HOAs, has a communication network and would be willing to pass on announcements to residents in the watershed.
- The Herb Young Community Center is a convenient location for posting notices and holding meetings in the watershed.
- Announcements in the Cary News or The News and Observer are helpful.

Potential sources of collaboration:

- The Town of Cary has a series of workshops “Gardening for Transplants” which would be a good format to teach environmentally sound lawn care.
- The Town of Cary has begun a study of stormwater run-off on the greenway.
- The Town of Cary Area Planning (TCAP) group may be interested in collaborating for retrofitting opportunities in the headwaters.
- Lowe’s Home Improvement Store offers gardening classes. They may be willing to offer a class on environmentally sound lawn care.
- Lake Crabtree Park has a network of local teachers that may be interested in getting involved in environmental programs.
- Lake Crabtree County Park staff are willing to collaborate on educational activities and scientific sampling.
- Cary Academy may be interested in collaborating on a stream monitoring program.
- The EPA is conducting PCB studies in Lake Crabtree and may be willing to collaborate on monitoring toxin levels at the mouth of Black Creek.
- Wake County’s Extension Service is willing to conduct education and outreach programs on raingardens, bioretention ponds, and other BMPs.
- The Army Corps of Engineers is working on a stream restoration project in West Cary/Apex, and may want to collaborate.
- Culturitas Unidas is a local nonprofit that may help with outreach to Spanish-speaking residents.
- Researchers at NC State studying urban streams with and without buffers may be able to provide assistance.
- The Neuse River Foundation may be willing to provide financial or organizational support.

Development opportunities:

- The transition to in-fill development may allow for more Low Impact Development (LID) because the economy of scale is not active any more.
- There are several locations where retrofitting may be appropriate.

## Black Creek Situation Assessment

- The Town of Cary owns some land that may be made into an easement to help filter nitrogen.
- Neuse River Buffer and Nutrient mitigation resources may be available.

### Watershed association activities:

- The Town of Cary's Stormwater program has a drain stenciling program.
- Big Sweep is an Annual event for litter pick-up, and the Lake Crabtree coordinators could include areas in the Black Creek watershed.
- Waterfest is an annual event at Lake Crabtree where environmental information can be distributed to interested visitors.

## Appendix C: Government Agencies and Roles

Government agencies with the authority to make decisions to affect, Black Creek or have resources to benefit, Black Creek include:

- US Environmental Protection Agency (EPA): Creates federal regulations through the US Clean Water Act that are passed on to NCDENR to implement, and provides funding for watershed protection and restoration. EPA is funding the Black Creek watershed planning process.
- State of North Carolina, Department of Environment and Natural Resources (NCDENR)
  - Division of Water Quality (DWQ): Oversees EPA grants, planning at the basin level (Neuse), and enforces state regulations that impact Black Creek, including the Neuse Buffer and Nutrient rules, and the new Phase II Stormwater Rules
  - Ecosystem Enhancement Program (EEP): Charged with mitigating for construction impacts by using funds generated by NCDOT road construction and mitigation fees from Neuse Buffer and Nutrient Rule payments. Funds can be used for stream and wetland restoration and stormwater best management practices.
- Wake County:
  - Soil and Water Conservation District (SWCD): Has responsibility for water quality in all County watersheds, including Black Creek. SWCD can help with watershed planning and implementation.
  - Lake Crabtree County Park: Oversees recreation in Lake Crabtree, which is impacted by Black Creek water quality. The greenway is part of a connection of park facilities that includes the Crabtree County Park.
  - Cooperative Extension: Has expertise in stormwater management that they can share with the community
- Town of Cary: The entire Black Creek watershed is contained within the Town of Cary's (TOC) borders. Town staff value improving the quality of life for Cary citizens and also meeting state and federal regulations.
  - Parks, Recreation and Cultural Resources: Plan, build, and maintain park facilities, including greenways.
  - Engineering: Contains the Town's Stormwater and Erosion Control programs. Responsible for overseeing stormwater management and implementing state and town stormwater regulations.
  - Planning: Responsible for planning the Town's growth and reviewing rezoning requests and site development plans.