## McDowell Creek Watershed Management Plan



Completed by: Charlotte-Mecklenburg Storm Water Services Version 4
March 2, 2008

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Date Completed:
February 7, 2007
Revised March 2, 2008

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## Executive Summary

The McDowell Creek Watershed is located in northwest Mecklenburg County and drains portions of the Towns of Huntersville and Cornelius. General statistics regarding the McDowell Creek Watershed are provided in Table 1 on page 2 of this document. McDowell Creek empties into Mountain Island Lake at McDowell Creek Cove, which is just upstream of a drinking water intake owned and operated by Charlotte Mecklenburg Utilities. An average of 80 million gallons of raw drinking water a day is pumped from this intake for the citizens of Charlotte-Mecklenburg. As such, most of the watershed has been designated as a Water Supply, which requires new development to observe certain impervious, buffer and storm water quality and detention requirements. McDowell Creek Cove has some of the worst water quality conditions of any of the reservoirs (Lake Norman, Mountain Island Lake and Lake Wylie) comprising Mecklenburg County's western border. McDowell Creek has been listed by the North Carolina Department of Environment and Natural Resources as being biologically impaired, which means that populations of aquatic insects are not diverse and/or plentiful. Because of the degraded conditions in McDowell Creek and McDowell Creek Cove, a proactive Water Quality Ordinance was developed and implemented by the Town of Huntersville, which places strict storm water runoff treatment requirements on all new development beyond what is required by the water supply watershed requirements. The ordinance was designed to prevent continued degradation of the creek and cove; however, pre-existing sources of pollution from development that occurred prior to the implementation of the Water Quality Ordinance was not mitigated. In order to address the pre-existing sources of pollution, watershed management efforts, including production of this Watershed Management Plan, have been undertaken. Already, several cooperative efforts between public and private interests have resulted in five (5) Best Management Practice (BMP) retrofit projects. This plan will provide information regarding assessment of upland and in-stream sources of pollution and guide the continued implementation of BMPs and restoration efforts to mitigate existing sources of pollution in the McDowell Creek Watershed.

In order to identify the cause of impairment of McDowell Creek and McDowell Creek Cove and to guide effective implementation, the watershed was segmented into approximately one square mile catchments. Each of the catchments was evaluated for pollutant loading, extent of stream buffer impact and overall catchment imperviousness. The catchments were then ranked to identify those areas with the most potential for negative water quality impacts. The most impacted areas are clustered in five (5) "Focus Areas," which are situated around Sam Furr Road, Downtown Cornelius, Old Statesville Road, Gilead Road and Central Piedmont Community College - North Campus. Mecklenburg County staff will conduct a windshield survey of each of the five (5) focus areas to determine location, practicality and feasibility of projects. An assessment of instream sources of pollution was completed in December, 2006. This assessment was focused on documenting riparian conditions and management needs. Data collection and subsequent analysis, which are presented in the retrofit and restoration plan, will allow for the prioritization of the worst reaches of stream for future enhancements. Validation of the measurements will be performed using bank pin measurements and full crosssection surveys at five (5) long term monitoring sites that best represent the McDowell

Creek Watershed. The assessment included performing Bank Erosion Hazard Index (BEHI) and Near Bank Stress (NBS) measurements, habitat assessments, and geomorphic assessments on approximately 80 miles of stream channel in the McDowell Creek Watershed. In addition to the aforementioned analysis, a parcel level pollutant loading analysis was conducted for all publicly owned parcels in the McDowell Creek
Watershed. Each property was evaluated for BMP feasibility and effectiveness. Of the 41 publicly owned parcels, 14 were identified as "high" priority for BMP retrofits and 17 were identified as "high" priority for S.W.I.M. Buffer restoration. Mecklenburg County Storm Water staff members are currently pursuing funding to implement the findings of the McDowell Creek Watershed Management Plan through grants and public - private partnerships.

Table 1: General McDowell Creek Watershed Statistics.

| McDowell Creek Watershed Population |  | $330 \%$ <br> Increase |
| :---: | :---: | :---: |
|  | 1990 4731 |  |
|  | 2000 15,633 |  |
| McDowell Creek Watershed Area | 18,283 acres ( $28.6 \mathrm{miles}^{2}$ ) |  |
| Stream Miles (Draining > 50 acres) | 73.8 miles |  |
| Dominant Land Uses | Vacant/Forest | 5,514 ac (30\%) |
|  | Rural Residential | 3,892 ac (21\%) |
|  | Transportation | 1,968 ac (11\%) |
|  | Medium Density Residential | 2,635 ac (14\%) |
|  | Low Density Residential | 968 ac (5\%) |
| Major Political Jurisdictions | Cornelius | $\begin{aligned} & \text { 3,386 ac. (18.5 \% } \\ & \text { of Watershed) } \end{aligned}$ |
|  | Huntersville | $\begin{aligned} & 14,897 \mathrm{ac} .(81.5 \\ & \% \text { of Watershed) } \end{aligned}$ |
| Major Streams in the McDowell Creek Watershed | Caldwell Station | 1.03 miles |
|  | McDowell Creek | 10.71 miles |
|  | McDowell Creek Trib \#1 | 0.84 miles |
|  | McDowell Creek Trib \#2 | 0.55 miles |
|  | Torrence Creek | 3.30 miles |
|  | Torrence Creek Trib \#1 | 2.53 miles |
|  | Torrence Creek Trib \#2 | 1.56 miles |

## SECTION 1. INTRODUCTION

### 1.1 Purpose

The purpose of this Watershed Management Plan is to guide restoration, retrofit and preservation efforts aimed at achieving specific goals for improving water quality conditions in McDowell Creek and McDowell Creek Cove such that these waters meet or exceed their State designated uses and are no longer rated as impaired on 303(d) lists.

This Watershed Management Plan seeks to:

1. Summarize important information regarding the McDowell Creek Watershed relative to water quality.
2. Describe current and historical water quality conditions/trends in the watershed.
3. Describe current efforts underway in the watershed to protect and restore water quality.
4. Describe water quality goals for the watershed.
5. Prioritize areas for restoration, retrofit and preservation efforts aimed at achieving water quality goals.
6. Describe the process forward for implementing water quality efforts.

The ultimate goal after complete implementation of this Watershed Management Plan is a fully functioning and supporting stream ecosystem in McDowell Creek and a safe and secure water supply downstream in McDowell Creek Cove and Mountain Island Lake.

### 1.2 Background

The McDowell Creek Watershed is located in the northern portion of Mecklenburg County and lies predominantly within Huntersville's jurisdiction with a small portion of the headwaters in Cornelius' jurisdiction. Figure 1 shows the location of the McDowell Creek Watershed in Mecklenburg County along with its jurisdictional boundaries. McDowell Creek drains to Mountain Island Lake at McDowell Creek Cove, which is directly upstream of the main Charlotte Mecklenburg Utilities' water intake. Water quality conditions in McDowell Creek Cove are among the worst in the reservoirs that comprise the western boundary of Mecklenburg County (Lake Norman, Mountain Island Lake and Lake Wylie). The major features within the McDowell Creek Watershed, including the Charlotte Mecklenburg Utilities water intake, are shown in Figure 2. Also shown in Figure 2 are the main-stem of McDowell Creek and many of the tributaries draining to it.


Figure 1: Mecklenburg County Watershed and Jurisdictional Boundaries.


Figure 2: Special Features Within the McDowell Creek Watershed. Note: MC4, MC2A1, MC3E and MC2A denote Mecklenburg County water quality monitoring sites.

Historically, land in the McDowell Creek Watershed was used for agriculture. However, the construction of I-77 through much of the headwaters and the recent growth of the Charlotte region has resulted in a significant increase in land development activities in the watershed which has dramatically altered the landscape (see Figure 3). In addition to the recent changes brought about by urbanization, drastic changes to the stream system have occurred in the last century. At some point in the past, the stream was straightened, most likely by the U.S. Army Corps of Engineers, either to prevent flooding or to improve the land for agricultural uses (Charlotte-Mecklenburg Storm Water Services, 1997). Spoils piles from this process can still be seen along several of the stream reaches (Figure 4). Additionally, during recent years mining of the creek bed for sand was conducted. Mecklenburg County staff describe long sections of the bed material of McDowell Creek as sandy. It is possible that the bed for portions of McDowell Creek has always been sandy, which may limit the effectiveness of stream restoration efforts.


Figure 3: Urbanization Around I-77 at Exit 25 in the McDowell Creek Watershed.


Figure 4: McDowell Creek Showing Spoils Piles from Channel Straightening.

McDowell Creek is listed in the 2004 Draft of the North Carolina 303(d) list (North Carolina, 2004) as having "Overall" "Impaired biological integrity: stressors not identified." A total of 9.8 miles of McDowell Creek are identified in the list, which includes the entire stream from its source to Mountain Island Lake. Typically streams are listed on the 303(d) list dependant upon their intended uses. Intended uses are generally determined through the stream class. Figure 5 shows the main segments of McDowell Creek and its tributaries color coded by Stream Class. Table 2 lists stream classes appropriate for McDowell Creek and the associated description. In North Carolina, surface water quality regulations are defined for particular classes of use support. For instance, Class C waters must support aquatic life and secondary recreation (infrequent human body contact), while Class B waters must support aquatic life and primary recreation (frequent human body contact or swimming). Individual streams, lakes, and reservoirs (or portions of each) are assigned one or more classes. All of the contributing streams to a body of water receive the same designation when they are not specifically defined. Each class has a set of regulations, including water quality standards associated with it. If chemical/physical water quality monitoring reveals that a stream is not meeting a water quality standard, then it is considered "Impaired." If biological monitoring indicates a lack of abundance and/or diversity of aquatic life in a stream, then it is considered as having "Impaired biological integrity." Impaired streams are placed on the 303 (d) list and a restoration method is specified such as the development of a total maximum daily load or TMDL.


Figure 5: McDowell Creek Stream Classes.

Table 2: McDowell Creek Stream Class Descriptions.

| Stream <br> Class | Description |
| :--- | :--- |
| C | Freshwaters protected for secondary recreation, fishing, aquatic life <br> including propagation and survival, and wildlife. All freshwaters shall <br> be classified to protect these uses at a minimum. |
| WS-IV- CA | Water Supply IV - Critical Area: Area within $1 / 2$ mile of the normal <br> pool elevation of a water supply reservoir where risk associated with <br> pollution is greatest. Freshwaters protected as a water supply in <br> moderate to highly developed watersheds. Local governments required <br> to control non-point sources of pollution. |
| WS-IV-PA | Water Supply IV - Protected Area: Adjoining and upstream of the <br> critical area up to 5 miles from the normal pool elevation or ridgeline, <br> whichever is less. Freshwaters protected as a water supply in moderate <br> to highly developed watersheds. Local governments required to control <br> non-point sources of pollution. |

## SECTION 2. CURRENT AND HISTORICAL CONDITIONS

### 2.1 Previous Work

### 2.1.1 McDowell Creek Watershed HSPF Model

In June 2000, Mecklenburg County contracted with Tetra Tech, Inc. to perform a detailed analysis of McDowell Creek with the ultimate goal of providing a watershed based water quality model. The HSPF model eventually developed by Tetra Tech was used to compare the potential range of water quality in McDowell Creek and McDowell Creek Cove under existing and future land use conditions. The model was developed using a number of data sources, including meteorological, water quality, and land use data from Mecklenburg County, stream gaging and water quality data from USGS, and several other sources of information needed to fully parameterize and calibrate the model. Details of the model, its calibration, and the results are available in a previous report (Tetra Tech, 2002). The results of the model indicated massive increases in sediment and nutrient loading as well as peak flow rates and runoff volume. An increase in each of the indicators was expected to cause continued degradation of water quality conditions in McDowell Creek and McDowell Creek Cove as the watershed continues to develop. The results of the model were presented to the Huntersville Town Board, which subsequently adopted the Huntersville LID ordinance (Section 2.3.3) to mitigate the water quality impacts of expected development.

### 2.1.2 USGS

The USGS performed a series of studies in Mecklenburg County during the 1990's which included the McDowell Creek watershed (Bales, Weaver, and Robinson, 1999; Robinson, Hazell, and Garrett, 1996; Robinson, Hazell, and Garrett, 1998; Sarver, Hazell, and Robinson, 1999; Ferrell, 2001). The USGS also undertook a detailed study of Mountain Island Lake (Bales, Sarver and Giorgino, 2001). The North Carolina Division of Water Quality performed a study of the influence of the WWTP on McDowell Creek and Mountain Island Lake (NCDWQ, 1996). Two of the aforementioned studies most pertinent to the McDowell Watershed Management Plan are discussed below:

Bales, Sarver and Giordino (2001): This report characterized ambient hydrologic and water quality conditions in Mountain Island Lake including McDowell Creek Cove. The study established the direct linkage between the water quality of Mountain Island Lake and pollutant loading from Lake Norman as well as McDowell Creek. In other words, although Cowans Ford Dam supplies more than $80 \%$ of the flow in Mountain Island Lake pollutant loadings from McDowell Creek are disproportionately important to the water quality in McDowell Creek Cove.

Bales, Weaver and Robinson (1999): This report characterized storm water runoff at several sites throughout Mecklenburg County, including McDowell Creek at Beatties Ford Road (USGS Site 44). Results indicated that developing watersheds such as the McDowell Creek Watershed typically produce higher loads of nutrients, metals and
sediment than do stable watersheds. These results support the need for post-construction controls on development as well as mitigation of existing sources of pollution in McDowell Creek.

### 2.1.3 Charlotte-Mecklenburg Storm Water Services

In January 2002, Watershed Concepts issued the McDowell Creek Watershed Preliminary Engineering Report (Watershed Concepts, 2002). This report described the condition of the stream channel using the Rosgen Stream Classification System. The conclusions from this report are presented in Section 2.2.3.

### 2.1.4 North Carolina Wetlands Restoration Program

In 2003, CH2MHill completed a planning initiative for the North Carolina Wetlands Restoration Program (CH2Mhill, 2003). The planning initiative focused on several watersheds in the Charlotte, NC region, of which the McDowell Creek Watershed was included. The initiative included analysis and prioritization of restoration needs and opportunities in each watershed. The analysis, which consisted mostly of office level screening, involved the scoring of areas based upon GIS characteristics such as soils, vegetation, air photos, hydrology and land-use. A modeling component was also included in the study. From this study, 13 potential restoration sites were identified in the McDowell Creek Watershed, which are shown in Figure 6. Figure 6 also illustrates that several of the restoration sites lie partially, or fully, within publicly owned land.


Figure 6: Restoration Sites Identified by CH2Mhill (2003).

### 2.2 Existing Conditions

### 2.2.1 Water Chemistry

Mecklenburg County collects storm water samples from McDowell Creek at monitoring site MC4, which is located at Beatties Ford Road in Huntersville's jurisdiction (Figure 2). The monitoring site receives runoff from portions of Huntersville and Cornelius. The CMU wastewater treatment plant in the McDowell Creek Watershed is located downstream of MC4 and therefore does not influence the storm water samples collected from the site. Approximately $59 \%$ of the samples analyzed for total nitrogen (TN) and $37 \%$ of those analyzed for total phosphorus (TP) exceeded the Mecklenburg County action level, which is indicative of a water quality problem. High levels of fecal coliform bacteria were typically detected. Zinc was detected above the action level in approximately $58 \%$ of samples collected (Table3). Estimates of total suspended solid (TSS) loads in McDowell Creek have increased steadily since 2000, in spite of several drought years. Likely causes of the increase in estimated TSS loads are increased construction activity and in-stream erosion caused by an increase in storm water runoff volume and velocity. Tetra Tech, Inc. (2004) estimated TN, TP and TSS loading rates for the McDowell Creek watershed at $4.60 \mathrm{lbs} / \mathrm{ac} /$ year, $0.72 \mathrm{lbs} / \mathrm{ac} /$ year and 574 $\mathrm{lbs} / \mathrm{ac} / \mathrm{year}$ respectively. These values are consistent with near-by watersheds. Note that these values are for upland sources only, which includes storm water runoff from the watershed and does not include wastewater treatment plant (WWTP) effluent or other point or in-stream sources.

Table3: Storm Water Chemistry Statistics for MC4.

| Monitoring Site: MC4 | Total N | Total P | Fecal Coliform | Zinc |
| :--- | :---: | :---: | :---: | :---: |
| Action Level: | 1.5 ppm | 0.4 ppm | $1000 \mathrm{cfu} / 100 \mathrm{Ml}$ | $50 \mathrm{ug} / \mathrm{L}$ |
| Sample size | 22 | 19 | 5 | 19 |
| MIN | 0.68 | 0.06 | 900 | 0.04 |
| MAX | 3.36 | 1.88 | 89000 | 395.00 |
| MEAN | 2.10 | 0.53 | 21020 | 81.39 |
| MEDIAN | 2.14 | 0.25 | 3000 | 65.00 |
| \% samples over Action Level | 59.09 | 36.8 | 100 | 57.89 |

McDowell Creek baseflow samples are collected from MC3E, MC4, MC2A-1 and MC4A (Figure 2). The data presented includes sample results from site MC4A, which is downstream of the McDowell WWTP. The McDowell Creek WWTP uses advanced technology to control levels of nutrients released from the plant. Most of the watershed drains Huntersville's jurisdiction with a small part of the headwaters draining Cornelius. TN exceedances during baseflow were detected $1 \%$ of the time and TP exceedences were detected $32 \%$ of the time. Exceedances of TN were below the county average whereas exceedances of TP were above the county average. Fecal coliform concentrations in excess of 1000 c.f.u. $/ 100 \mathrm{ml}$ were detected approximately $22 \%$ of the time, which is somewhat less than the countywide average (Table4). The number of exceedances, which has been limited to TN, TP and Fecal Coliform, has decreased steadily since 1988 (Figure 7). The WQI values have also tended to improve since 1988 and have remained in the "Good" range with occasional "Good/Excellent" ratings (Figure 8). The most
notable reason for improved water quality is improved nutrient removal systems at the McDowell Creek WWTP. Construction of the removal systems at the WWTP was completed in November 1998 and the systems were fully operational by March 1999. The nutrient limits placed on the facility were $1.0 \mathrm{mg} / \mathrm{L}$ for TP and $10.0 \mathrm{mg} / \mathrm{L}$ for TN .

Table 4: Baseflow Water Chemistry Statistics.

| Monitoring Sites: MC3E, <br> MC4, MC2A-1, MC4A | Total N | Total P | TSS | Fecal Coliform | Zinc |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Action Level: | 1.5 ppm | 0.4 ppm | 50 | $1000 \mathrm{cfu} / 100 \mathrm{Ml}$ | $50 \mathrm{ug} / \mathrm{L}$ |
| Sample size | 455 | 454 | 55 | 457 | 107 |
| MIN | 0.06 | 0.01 | 1 | 10 | 0.01 |
| MAX | 5.20 | 2.60 | 74 | 9000 | 20.00 |
| MEAN | 0.44 | 0.27 | 6 | 821 | 0.46 |
| MEDIAN | 0.32 | 0.06 | 3 | 400 | 0.03 |
| \% samples over Action Level | 1.32 | 32.16 | 1.82 | 22.10 | 0 |
| Countywide \% samples over <br> action level | 27.7 | 18.6 | 1.3 | 27.1 |  |



Figure 7: Historical Water Chemistry Data for McDowell Creek.


Figure 8: Historical Baseflow Water Quality Index Values.

### 2.2.2 Biological

The benthic macroinvertebrates in McDowell Creek are monitored annually by Mecklenburg County at Gilead Road (site MC2A-1) and at Beatties Ford Road (site MC4), and in Torrence Creek at Bradford Hill Drive (site MC3E) (see Figure 2). The EPT taxa richness was generally below 7 species for all samples taken since 1994 in McDowell Creek and was slightly higher in Torrence Creek. Figure 9 presents the benthic macrinvertebrate scores for McDowell Creek since 1994. As can be discerned from the graph, MC3E (Torrence Creek) has exhibited a steady decline in its macroinvertebrate population. None of the sites are ranked "Fully Supporting" for macroinvertebrates. These results are expected in a stream that lacks a stable habitat such as McDowell Creek, which has a shifting sand bottom and lacks riffles and other stable substrate. The McDowell Creek watershed is rapidly changing from a rural watershed to a suburban watershed, as the area is experiencing extensive development.


Figure 9: McDowell Creek Benthic Macroinvertebrate Scores.

Mecklenburg County last monitored the fish in McDowell Creek in 1996 at Gilead Road (site MC2A-1), at Beatties Ford Road (site MC4) and at Neck Road (site MC4A). In Torrence Creek, fish are monitored at Bradford Hill Drive (site MC3E). Based on this monitoring, McDowell and Torrence Creeks were rated as Fully Supporting.

The N.C. Department of Environment and Natural Resources (NCDENR) performs biological monitoring for benthic macroinvertebrates and fish in McDowell Creek. Benthic macroinvertebrate monitoring is performed at Beatties Ford Road and McDowell Creek (same as Mecklenburg County monitoring site MC4). Fish monitoring is performed at Gilead Road and McDowell Creek (same as Mecklenburg County monitoring site MC2A-1). In the N.C. Basinwide Assessment Report prepared by NCDENR in 2003, the results of their biological monitoring activities are summarized. In general, the report describes a substantial decline in fish populations in McDowell Creek. In 1997, the fish community in McDowell Creek was rated as Fair and in 2002 the rating declined to Poor. In five (5) years, the North Carolina Index of Biotic Integrity (NCIBI), which is a measure of total fish species diversity and abundance, dropped 18 points from 40 to 22 . The NCIBI scale ranges from 1 to 60 ; therefore, 18 points represents almost $30 \%$ of the scale which is an alarming decline in only five (5) years. The report attributes this decline to substantial decreases in total species diversity (from 15 in 1997 to 5 in 2002) and abundance (from 157 in 1997 to 81 in 2002). The number of fish collected in McDowell Creek by NCDENR was the lowest of any stream monitored in the Catawba River Basin in 2002. McDowell Creek was also the only creek in the Basin where the bluehead chub was not collected. In addition, suckers, a species known to be intolerant of pollutants, and piscivores were absent. Between 1997 and 2002, the report indicates that the percentage of pollution tolerant fish species and insectivores increased substantially from 39 to 63 percent and from 53 to 100 percent, respectively. This decline in pollution intolerant species and increase in pollution tolerant species is indicative of an overall decline in water quality conditions in McDowell Creek.

The 2003 N.C. Basinwide Assessment Report indicates a similar decline in the benthic macroinvertebrate community based on NCDENR's monitoring. In 1990, McDowell Creek rated as Good-Fair for macroinvertebrates. Sampling in 2002 indicated a decline to Fair with a significant decrease in the number of species collected. The creek was reported to be extremely sandy ( 85 percent) with minimal habitat. Species absent in 2002 that were common or abundant in 1990 included the mayflies. There were also three (3) species of long-lived intolerant stoneflies collected in 1990 that were not collected in 2002. NCDENR data supports McDowell Creek's 303(d) list ranking of "Biologically Impaired" and it is apparent that conditions are getting worse and not better.

### 2.2.3 Physical

In January 2002, Watershed Concepts issued the McDowell Creek Watershed Preliminary Engineering Report (MCSWS Project No. 28001). The Rosgen stream classification system was utilized to provide an initial assessment of the morphology of McDowell Creek. The Rosgen system uses field measurements of stream features to
describe a stream by morphologic type. An array of stream types is presented under the system that is delineated by slope, channel materials, width/depth ratio, sinuosity and entrenchment ratio. For the assessment of McDowell Creek, the stream type is described at the geomorphic characterization level (Level I) of the hierarchical system of classification. At this level of inventory, the channel pattern, shape and slope are described. Information utilized as a part of this classification included field observations, aerial photography, USGS quadrangle maps, and other digital topographic information for investigation of the channel pattern and valley form. The low sinuosity of the channel is primarily due to the installation of the sewage main line and straight alignment of the stream in many reaches. Generally, the channel displays a low width/depth ratio, low sinuosity and relatively low channel slope. However, after careful examination of the tendencies within the creek, the majority of McDowell Creek was classified as a type G channel with some reaches possibly being classified as type F. Indicators of a new bankfull flow line were observed below the historic top-of-bank, which imply that the channel has incised within the historic floodplain. Channel incision is significant in some areas (see Figure 10). This has most likely resulted from a combination of urbanization of the watershed and manual re-grading of the channel. The historic floodplain, which was formed as an alluvial plain bounded by gentle slopes of upland soils, currently forms a terrace that confines the channel. The channel bank slopes are relatively steep with the slopes ranging from $1: 1$ to vertical. Channel widening is resulting in an evolutionary transition to a type F channel. There are occasional reaches where the channel has developed sufficient belt width to begin to form a meandering pattern with stable point bars. The channel profile appears to be relatively stable and not subject to excessive degradation or aggradation. There is evidence, however, of a significant sediment load that is being transported by the stream (see Figure 11). Depositional features such as mid-channel bars, side bars and embryonic point bars are evident along many reaches of the stream. It is likely that the primary source of this depositional material is from construction activities within the watershed and that this material is being transported though the stream system without significant aggradation of the channel bed.


Figure 10: Significant Channel Incision (Scour) on McDowell Creek.


Figure 11: Sediment Transported Down McDowell Creek into Mountain Island Lake.
Analyses performed of McDowell Creek by Tetra Tech in 2004 as part of the postconstruction ordinance development process demonstrate a significant potential for further stream degradation. Tetra Tech predicted that approximately $14 \%$ of McDowell Creek draining greater than one square mile was at risk for morphic instability and habitat degradation. It is important to note that the only portion of McDowell Creek included in the analysis was that portion draining more than a square mile.

### 2.2.4 Stream Flow

A watershed will generate larger volumes of storm water runoff and discharge this runoff at higher rates as the amount of imperviousness increases as a result of development. The stream channels that receive the additional runoff are exposed to increased hydraulic forces that can lead to morphologic instabilities through erosion - a process that reduces the availability and quality of aquatic habitat. Aquatic species are dependent upon the channel boundary for shelter, foraging, reproduction, and rest. When boundary materials regularly erode, the aquatic habitat is impacted and unlikely to support a diverse, healthy aquatic community. Therefore, addressing the source of the habitat degradation, additional storm water runoff in this case will help reduce impairment to in-stream biological communities (Tetra Tech, 2004)

### 2.2.5 Land Use/Land Cover

The land-use/land-cover data set used for this Watershed Management Plan was developed by Tetra Tech Inc. (2004) for the post-construction ordinance development process. The data set was developed through interpretation of a combination of parcel information, aerial photographs, and tree canopy data. The process is more thoroughly described in Tetra Tech Inc. (2004). The land-use data set provides a distribution and classification of all land-uses in the McDowell Creek Watershed. The land-use categories represented in the McDowell Creek Watershed are presented in Table 5 and the distribution of the land-uses for the McDowell Creek Watershed is shown in Figure 12.

Table 5: McDowell Creek Land Use Categories.

| Land Use Class | Abbreviation |
| :--- | :---: |
| Agriculture | AG |
| Heavy Commercial | COMM-H |
| Light Commercial | COMM-L |
| Forest | FRST |
| Golf Course | GC |
| High Density Residential | HDR |
| High Density Multifamily Residential | HMFR |
| High Density Mixed Urban | HMX |
| Heavy Industrial | IND |
| Institutional | INS |
| Interstate Corridor | INTERSTATE |
| Low Density Residential | LDR |
| Medium Density Residential | MDR |
| Meadow | MEADOW |
| Multi Family Residential | MFR |
| Medium Low Density Residential | MLDR |
| Mixed Urban | MX |
| Office/Industrial | OI-H |


| Light Office/Light Industrial | OI-L |
| :--- | :---: |
| Park | PARK |
| Rural Residential | RR |
| Ultra High Density Mixed Urban | UHMX |



Figure 12: Distribution of Land Uses in the McDowell Creek Watershed.

### 2.2.6 Soils

The distribution of soils within the McDowell Creek Watershed was determined through the Soil Survey of Mecklenburg County (USDOA - SCS, 1980). The hydrologic soil types found in the McDowell Creek Watershed are B, C and D. A description of each soil type and distribution within the watershed are shown in Table 6. Figure 13 shows the location of the hydrologic soil groups in the McDowell Creek Watershed.

Table6: Hydrologic Soil Groups Found Within McDowell Creek Watershed.

| Hydrologic <br> Soil Group | Description (USDOA -SCS, 1980) | Distribution with <br> McDowell Creek <br> Watershed |
| :---: | :--- | :--- |
| B | Soils having a moderate infiltration rate when thoroughly wet. <br> These consist chiefly of moderately deep or deep, moderately <br> well drained or well drained soils that have moderately fine <br> texture to moderately coarse texture. These soils have a <br> moderate rate of water transmission | 11,180 acres (61\% of <br> watershed) |
| C | Soils having a slow infiltration rate when thoroughly wet. <br> These consist chiefly of soils that have a layer that impedes the <br> downward movement of water of soils that have moderately fine <br> texture or fine texture. These soils have a slow rate of water <br> transmission. | 6830 acres (38\% of <br> watershed) |
| D | Soils having a very slow infiltration rate (high runoff potential) <br> when thoroughly wet. These consist chiefly of clay soils that <br> have a high shrink-swell potential, soils that have a permanent <br> high water table, soils that have a claypan or clay layer at or <br> near the surface, and soils that are shallow over nearly <br> impervious material. These soils have a very slow rate of water <br> transmission. | 225 acres (1\% of <br> watershed) |



Figure 13: Distribution of Hydrologic Soil Groups in McDowell Creek Watershed.

### 2.3 Current Watershed Protection Efforts

### 2.3.1 Watershed Protection Ordinance

In 1992, North Carolina passed a law requiring local governments located in water supply watershed areas (WS classification) to develop regulations aimed at protecting water quality from non-point source pollutants associated with post-construction. Regulatory standards were established by the State and local governments were required to pass regulations which at a minimum complied with these standards. Most jurisdictions in Mecklenburg County adopted more stringent watershed regulations and incorporated them into subdivision, land development and/or zoning ordinances. A majority of these regulations address the following three issues: (1) development density (amount of built upon or impervious area), (2) buffer widths and (3) landuse. The Watershed Protection Ordinance for the McDowell Creek Watershed (as applied to the Mountain Island Lake Watershed) is summarized in Table7. Figure 14 shows the distribution of the Watershed Protection Zones within the McDowell Creek Watershed.

Table7: Watershed Protection Ordinance for the McDowell Creek Watershed.

| Zone | Zoning Jurisdiction | Built Upon Area | Lake/Stream Buffer |
| :--- | :--- | :--- | :--- |
| Protected Area (PA) | Cornelius | $\leq 24 \%$ - Low Density <br> $\leq 50 \%$ - High Density | 50 Feet <br> 100 Feet |
| Protected Area 1 <br> (PA1) | Huntersville | $\leq 24 \%$ - Low Density <br> $\leq 70 \%$ - High Density | 50 Feet <br> 100 Feet |
| Protected Area 2 <br> (PA2) | Huntersville | $\leq 24 \%$ - Low Density <br> $\leq 70 \%$ - High Density | 30 Feet <br> 100 Feet |
| Protected Area - <br> Minimum <br> Requirements | North Carolina - <br> Statewide | $\leq 24 \%$ - Low Density <br> $\leq 70 \%$ - High Density | 30 Feet <br> 100 Feet |
| Critical Area 1 (CA1) | Huntersville | $\leq 6 \%$ - Low Density | lon Feet or 100 yr. <br> Floodplain <br> (whichever is <br> greater) |
| Critical Area 2 (CA2) | Huntersville | $\leq 12 \%$ - Low Density | 100 Feet or 100 yr. <br> Floodplain <br> (whichever is <br> greater) |
| Critical Area 3 (CA3) | Huntersville | $\leq 12 \%$ - Low Density | 100 Feet or 100 yr. <br> Floodplain <br> (whichever is <br> greater) |
| Critical Area 4 (CA4) | Huntersville | $\leq 24 \%$ - Low Density | 100 Feet or 100 yr. <br> Floodplain <br> (whichever is <br> greater) |
| Critical Area - <br> Minimum <br> Requirements | North Carolina - <br> Statewide | $\leq 24 \%$ - Low Density |  |
| 30 Feet |  |  |  |
| 100 Feet |  |  |  |



Figure 14: Distribution of Watershed Protection Zones Within the McDowell Creek Watershed.

### 2.3.2 S.W.I.M. Buffer Ordinance

A countywide stream buffer system was established in 1999 as part of the Surface Water Improvement and Management (S.W.I.M.) strategy, otherwise known as S.W.I.M. buffers. According to S.W.I.M., streams have the primary natural function of conveying storm and ground water, storing floodwaters and supporting aquatic and other wildlife. The buffer is the vegetated land adjacent to the stream channel, which functions to protect water quality by filtering pollutants and to provide both storage for floodwaters and suitable habitat for wildlife.

Required stream buffer widths vary from 35 to 100 feet or more based on the size of the upstream drainage basin. In Cornelius and Huntersville, S.W.I.M. buffer requirements begin at a point where the stream drains 50 acres. Approximately 1,686 acres (9.2\%) of the McDowell Creek watershed is S.W.I.M. buffer. Table 8 presents the S.W.I.M. buffer requirements for both Huntersville and Cornelius. Figure 15 shows the extent of the S.W.I.M. buffers in the McDowell Creek Watershed.

Table 8: S.W.I.M. Buffer Requirements for Cornelius and Huntersville.

| Jurisdiction | Date Ordinance Adopted | Total Buffer Widths |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  | $\geq 640$ acres | $\geq 300$ acres | $\geq 50$ acres |
| Cornelius(2) | 12/6/99 | total $=$ entire floodplain but no less than 100 feet | total $=50$ feet no zones | total $=35 \mathrm{ft}$ no zones |
| Huntersville(1) | 10/19/99 | total $=$ floodway + $100 \%$ of floodfringe but no less than 100 ft streamside $=30 \mathrm{ft}$ managed use $=45 \mathrm{ft}$ upland $=$ remainder | $\begin{aligned} & \text { total }=50 \text { feet } \\ & \text { streamside }=20 \mathrm{ft} \\ & \text { managed use }=20 \mathrm{ft} . \\ & \text { upland }=10 \mathrm{ft} \end{aligned}$ | $\begin{aligned} & \hline \text { total }=35 \mathrm{ft} \\ & \text { streamside }=20 \mathrm{ft} \\ & \text { managed }=\text { none } \\ & \text { upland }=15 \mathrm{ft} \end{aligned}$ |

All buffers are measure horizontally on a line perpendicular to the surface water, landward from the top of the bank on each side of the stream.
(1) Function, vegetative targets and uses for each of the buffer zones correspond to the buffer plan developed by the S.W.I.M. Panel dated April 20, 1999.
(2) No buffer zones have been designated. The entire buffer area is designated in the Ordinance as "UNDISTURBED."


Figure 15: Approximate Extent of McDowell Creek Watershed S.W.I.M. Buffers.

### 2.3.3 Huntersville Water Quality Ordinance

The Huntersville Water Quality Ordinance was implemented to prevent surface water quality degradation in the streams and lakes within Huntersville and its extraterritorial jurisdiction. The ordinance seeks to limit water quality impacts from new development and re-development through controlling and treating storm water runoff. Specifically, storm water runoff must be treated with water quality BMPs and storm water volumes and rates must be controlled. The ordinance requires the following:

1. All storm water treatment systems used to meet these Performance Criteria shall be designed to achieve average annual $85 \%$ Total Suspended Solids (TSS) removal for the developed area of a site. Areas designated as open space that are not developed do not require storm water treatment. All sites must employ LID practices to control and treat runoff from the first inch of rainfall.
2. LID practices or a combination of LID and conventional storm water management practices shall be used to control and treat the increase in storm water runoff volume associated with post-construction conditions as compared with pre-construction (existing) conditions for the 2-year frequency, 24-hour duration storm event in the Rural and Transitional Zoning Districts. For all other Zoning Districts, LID practices or a combination of LID and conventional storm water management practices shall be used to control and treat the increase in storm water runoff volume associated with post-construction conditions as compared with pre-construction (existing) conditions for the 1 -year frequency, 24 -hour duration storm event. This may be achieved by hydrologic abstraction, recycling and/or reuse, or other accepted management practice as described in Section 6 of the Huntersville Water Quality Design Manual.
3. Where any storm water BMP employs the use of a temporary water quality storage pool as a part of its treatment system, the drawdown time shall be a minimum of 48 hours and a maximum of 120 hours.
4. Peak storm water runoff rates shall be controlled for all development above $12 \%$ imperviousness. The peak storm water runoff release rates leaving the site during post-construction conditions shall be equal to or less than the pre-development peak storm water runoff release rates for the 2-year frequency, 24-hour duration storm event and 10 -year frequency, 24 -hour duration storm event. The emergency overflow and outlet works for any pond or wetland constructed as a storm water BMP shall be capable of safely passing a discharge with a minimum recurrence frequency of 50 years. For detention basins, the temporary storage capacity shall be restored within 72 hours. Requirements of the Dam Safety Act shall be met when applicable.
5. No one BMP shall receive runoff from an area greater than five (5) acres. However, the total drainage area from BMPs used in series (i.e., integrated) can exceed this five (5) acre maximum.

For the purpose of this Watershed Management Plan, it is assumed that the Huntersville Water Quality Ordinance will mitigate future impacts to water quality from new development. For this reason, the remainder of the Plan and the recommendations listed are focused upon reducing pollution sources from existing development where limited or no water quality mitigation efforts have been required.

### 2.3.4 BMP Retrofits and Land Acquisition

An aggressive land acquisition initiative has been underway in the Mountain Island Lake Watershed since 1991 resulting in the expenditure of approximately $\$ 29,000,000$ in Mecklenburg County Park Bonds. As of 2005, approximately 1,000 acres have been purchased in the McDowell Creek Watershed as part of this program. Properties are currently still being considered for future acquisitions. These properties will be preserved as open space with passive recreation and could be used as potential BMP locations. They were targeted for acquisition due to their potential water quality benefit or their environmental significance. The County and Towns of Cornelius and Huntersville all own property in the watershed that has various uses such as public works facilities, libraries, parks, recycling centers, schools, etc. These publicly owned properties are also possible locations for future BMP retrofit opportunities. Figure 16 shows the location of funded retrofit and restoration projects.


Figure 16: Currently Funded BMP Retrofit and Stream/Wetland Restoration Projects.

In order to address water quality issues in the McDowell Creek Watershed from previously developed properties, Mecklenburg County is actively pursuing grants and other funding sources to assist in the installation of BMP retrofit projects. There are
currently three (3) active water quality projects in the watershed as described below. All three (3) projects are within the same general vicinity in the upper watershed area near I77 and Sam Furr Rd. This area has been designated as a high priority for future restoration.

## Caldwell Station Wetland Restoration

This project involves the restoration of wetlands along Caldwell Station Creek just east of Highway 21. The project is being funded by the North Carolina Ecosystem Enhancement Program (NCEEP) and is currently in the design phase. The Town of Cornelius hopes to provide amenities to the site by making it an outdoor classroom "Eco-Park." No Charlotte- Mecklenburg Storm Water Services' funds will be used to finance this project.

## McDowell BMP Retrofit Project

This project involves six different properties totaling 90 acres. The properties involved include the Northcross Shopping Center, Target, Food Lion Shopping Center, Charlotte Hospital Authority, and Monteith Park subdivision. The majority of the project drains to Caldwell Station Creek, with the exception of one property which drains to a tributary of Torrence Creek. The project involves installing up to 70 bioretention BMPs in parking lots and other strategic locations as well as installing two (2) storm water wetlands. The project budget is approximately $\$ 2.1$ million and is being partially funded by grants from the N.C. Clean Water Management Trust Fund and the N.C. 319 Program totaling approximately $\$ 1.1$ million. Charlotte- Mecklenburg Storm Water Services will contribute $\$ 1,030,366$ through its Capital Improvement Program. The project is currently in the design phase with construction planned for the fall of 2006.

## McDowell Creek Stream Restoration

The main stem of McDowell Creek near Birkdale Village will be restored from Sam Furr Rd. to Westmoreland Rd. This encompasses approximately $11 / 2$ miles of restoration and habitat improvement. This particular reach of McDowell Creek is severely eroded and aquatic habitat is lacking. The project goals are to improve stream sinuosity and habitat by creating riffles and water quality features for aquatic life. This project is funded primarily by the NCEEP, although $\$ 95,000$ was awarded through a grant by the North Carolina Natural Resources Conservation Service. Charlotte- Mecklenburg Storm Water Services will contribute $\$ 105,000$ through its Capital Improvement Program. The Mecklenburg County Parks and Recreation Department is also planning a greenway along the western side of the stream. Including the greenway, this project will cost approximately $\$ 3.8$ million.

## SECTION 3. WATERSHED INDICATORS AND GOALS

### 3.1 Upland

### 3.1.1 Upland Water Quality Indicators

Upland water quality is associated with pollutants in storm water runoff from the watershed draining to McDowell Creek. The upland water quality indicators selected for this Watershed Management Plan are Total Suspended Sediment (TSS), Total Phosphorus (TP) and Total Nitrogen (TN). These pollutants are indicative of the impact that contaminated storm water runoff has on water quality. Moreover, they are capable of being accurately simulated with relatively simple methods (unlike temperature or fecal coliform) and are indicators of other parameters of concern.

### 3.1.2 Upland Water Quality Goals

Tetra Tech (2004) conducted an analysis of watershed scale upland loading rates for existing conditions for all watersheds in Mecklenburg County for TSS, TN and TP. They correlated the loading rates back to biological health and scored each watershed based upon the results. They were able to determine that watersheds capable of sustaining a fully supporting biological community displayed very similar upland pollutant loading rates for TSS, TN and TP. The upland loading rates for these fully supporting watersheds are presented in Table9.

Table 9: Upland Pollutant Loading Rate Goals.

| Upland Pollutant Loading Rate Goals |
| :--- |
| 1. $\mathrm{TN} \leq 4 \mathrm{lbs} / \mathrm{ac} /$ year |
| 2. $\mathrm{TP} \leq 0.6 \mathrm{lbs} / \mathrm{ac} /$ year |
| 3. $\mathrm{TSS} \leq 0.22 \mathrm{tons} / \mathrm{ac} /$ year |

The goals presented in Table 9 are appropriate to be applied to retrofit BMP projects as a catchment wide design standard. In other words, retrofit BMP projects in a particular catchment should strive to meet the goals in Table 9; however, it is recognized that each individual project may not meet the goals.

### 3.2 In-Stream

### 3.2.1 In-Stream Water Quality Indicators

In-stream water quality is associated with pollutants in the stream channel. The in-stream water quality indicator selected for this Watershed Management Plan is TSS. This indicator will provide an indication of the TSS pollutant load conveyed by the channel.

### 3.2.2 In-Stream Water Quality Goals

Tetra Tech, Inc. (2002) summarized several reports pertaining to sediment production
and biological health. Simmons (1993) summarized sediment characteristics of 152 North Carolina streams and rivers (including 100 within the Piedmont region) from data taken during the 1970s. Crawford and Lenat (1989) provide estimates of annual sediment yield from three (3) Piedmont watersheds near Raleigh, N.C., including 0.13 ton/acre for a predominantly forested watershed, 0.31 ton/acre from an agricultural watershed, and 0.59 ton/acre from an urban watershed. In both studies, sediment yield was estimated from in-stream suspended sediment concentrations, so the annual areal sediment yields reflect not only sediment from the land surface but also in-stream sediment transport and sediment from bank erosion/collapse. Crawford and Lenat (1989) performed extensive biological sampling in the three watersheds they studied and calculated metrics for taxa richness, abundance, and pollution tolerance for invertebrates and fish. In summarizing their biological data, they rated the forested watershed as having high measures of biotic characteristics, the agricultural watershed as having medium to high measures, and the urban watershed as having low measures. Under North Carolina water quality regulations, streams and lakes must be able to support aquatic life. A rating of Fair or Poor for Benthic Invertebrate Bioclassification or Fish Community Structure prevents a water body from being rated as "fully supporting" under Section 305(b) of the Clean Water Act. Based on the two studies investigated by Tetra Tech, Inc., an approximate instream sediment load goal of 0.30 ton/acre/year is recommended as a goal.

Currently, in-stream data allowing assessment of the sediment load goal of 0.30 tons/acre/year is not available in the McDowell Creek Watershed. In order to determine progress toward the goal, it is proposed that three (3) long term sediment monitoring stations be installed in the McDowell Creek Watershed. These sites should coincide with long term monitoring sites established for assessing channel properties (permanent cross sections, etc.). Additionally, these sites should also be monitored for macroinvertebrates and fish. Data collected at these sites will allow the development of a yearly sediment versus flow curve. Each year will be compared against previous years to determine if the sediment carrying characteristics of McDowell Creek (and hence the sediment loads) are improving. Also, the data collected will be used to estimate progress toward attaining the overall goal of 0.30 tons/acre/year. Table 10 presents the in-stream water quality goals.

Table 10: In-Stream Water Quality Goals.

| In-Stream Water Quality Goals |
| :--- |
| 1. TSS $\leq 0.3$ tons/ac/year |
| 2. Benthic Macroinvertebrates = Fully Supporting |
| 3. Fish $=$ Fully Supporting |

Monitoring to determine compliance with these goals is presented in Appendix A.

### 3.3 Channel

### 3.3.1 Stream Channel Indicators

Channel stability reflects the ability of the stream, over time, to transport the flows and sediment from its watershed in such a manner that the dimension, pattern and profile of
the stream are maintained. Monitoring bank pins and permanent cross-sections can help quantify stability by evaluating whether the stream is aggrading or degrading and whether changes are occurring in stream bed materials, bank erosion and morphological evolution.

Stream channel stability is assessed by monitoring three categories of indicators:

1. Vertical Stability (aggradation/degradation)

The surveying of permanent cross-sections helps determine whether the stream is downcutting, filling or stable. The rate, magnitude and direction of vertical change can be determined from subsequent monitoring. Specifically, monumented crosssections provide an elevation reference to depict changes. Bank Height Ratio and Entrenchment Ratio are used to express vertical stability (Rosgen, 1996).
2. Lateral Stability

To determine the rate and magnitude of bank erosion, bank pins were installed at representative monitoring reaches. Bank pins are surveyed following runoff events to obtain measured stream bank erosion rates. Measured streambank erosion rates can be expressed in feet/year, cubic yards/year, and tons per acre for a given flow or for a runoff season. BEHI will be performed when bank pins are measured to assess lateral stability.
3. Channel Material

Composition of the stream bed material is a good indicator of changes in stream character, channel form, hydraulics, erosion rates and sediment supply. Pavement and subpavement bulk samples give a quantitative description of the bed material. Samples were collected using methods described by Jessup (2002). Bulk samples and/or a Wolman pebble count (Wolman, 1954) will be performed during subsequent monitoring events.

### 3.3.2 Stream Channel Goals

Induced change in channel stability can be determined by implementing a quantitative, comparative analysis approach that compares measurements before versus after management activity. Therefore, it is necessary to set quantitative goals so as to determine the success of restoration and enhancement efforts. There are several channel characteristics measured at cross-sections that will be used to determine the impact of upstream enhancement as described below. These measurements are designed to help identify and evaluate existing conditions and to predict the response of the stream to imposed change. The relative stability of the bed, banks, and materials of the stream provide valuable interpretations and assessments.

1. Entrenchment Ratio is used to describe the vertical stability and degree of incision of a stream channel (i.e., width of the flood prone area at an elevation twice the
maximum bankfull depth/bankfull width). Entrenchment describes the relationship of the stream to its valley and landform features. Large entrenchment ratios indicate the presence of a well-developed floodplain (i.e., $>2.2$ ). Lower entrenchment ratios indicate channel incision (i.e., <2.2). Goal-Ratio of 2.2 or greater
2. Width/Depth Ratio indicates the shape of the channel cross-section (ratio of bankfull width/mean bankfull depth). The width/depth ratio is key to understanding the distribution of available energy within a channel, and the ability of various discharges occurring within the channel to move sediment. Measurement of the width/depth ratio is also valuable for describing channel cross-section shape. A comparison of ratio values can be used to interpret shifts in channel vertical and lateral stability following disturbances. A stream with a ratio less than 1.0 is actively incising. A continual increase in the ratio is indicative of a stream widening. A stream in equilibrium will exhibit a stable ratio greater than 1.0. Goal - Ratio that exhibits very little change over time and is 1.0 or greater
3. Bank Height Ratio is a measurement of vertical stability. The ratio is the height of the lowest bank divided by the maximum bankfull depth. This parameter identifies changes in streambed elevation caused by aggradation or degradation. Stream reaches of 1.1 and less are considered to be a stable system. Goal - Ratio of 1.1 or less
4. Dominant Channel Materials - a selected particle size index value representing the most prevalent of one of six channel material types or size catergories, as determined from a channel material size distribution analysis. While channel bed and bank materials influence the cross-sectional shape, they also determine the extent sediment transport and provide the means of resistance to hydraulic stress. Additionally, an assessment of the nature and distribution of channel materials is critical for interpreting the biological function and stability of streams. Goal- A coarsening of substrate over time would be an indication of a reduction in sedimentation (i.e., an increase in the D50 particle size).
5. Bank Erosion Rate is determined by re-surveying the stream bank profile following a runoff event. Measured stream bank erosion rates are a measurement of lateral stability and can be expressed in feet/year, cubic yards/year, and total tons/stream reach for a given flow or for a runoff season. In McDowell Creek Watershed, erosion rates exceeding 1.6 cubic feet/linear foot are very unstable. Rates of 1.26 to 1.59 are generally unstable, where as from 0.76 to 1.25 is stable and less that 0.76 is very stable. Goal - Erosion Rate of 1.26 cubic feet/linear foot or less

## SECTION 4. WATERSHED ASSESSMENT

### 4.1 Upland Characterization

In order to prioritize areas of the McDowell Creek Watershed, an upland characterization methodology was developed based upon work completed by Tetra Tech, Inc. (2004) for the post-construction ordinance stakeholder group. The resulting prioritization will be used to guide property acquisition for installation of water quality BMPs and to focus efforts on voluntary retrofitting of existing upland sources of pollution.

The upland characterization was completed through an evaluation of existing levels of pollutant loading, impervious cover and buffer impacts. Specifically, the indicators used were Total Phosphorus (TP), Total Nitrogen (TN), Total Suspended Sediment (TSS), impervious percentage of the catchment and percent of the stream buffer currently unforested. The information presented in this Section of the Watershed Management Plan deals only with existing sources of pollution in the McDowell Creek Watershed. For the purpose of this document, it was assumed that future sources of pollution will be attenuated through implementation of the Huntersville LID Ordinance, which is presented in Section 2.3.3.

### 4.1.1 Methodology

The basis for the upland characterization presented herein is an existing land-use dataset developed by Tetra Tech Inc. (2004). The land-use data set was developed through interpretation of a combination of parcel information, aerial photographs, and tree canopy data. The process is more thoroughly described in Tetra Tech Inc. (2004). The land-use data set provides a distribution and classification of all land-uses in the McDowell Creek Watershed. The land-use categories represented in the McDowell Creek watershed are presented in Table 11.

Table 11: McDowell Creek Land Use Categories.

| Land Use Class | Typical Lot <br> Size | Percent <br> Impervious | Abbreviation |
| :--- | :---: | :---: | :---: |
| Agriculture | NA | 0 | AG |
| Heavy Commercial | Variable | 85 | COMM-H |
| Light Commercial | Variable | 45 | COMM-L |
| Forest | NA | 0 | FRST |
| Golf Course | NA | 8 | GC |
| High Density Residential | $0.125-0.25 \mathrm{ac}$ | 41 | HDR |
| High Density Multifamily Residential | Variable | 70 | HMFR |
| High Density Mixed Urban | Variable | 70 | HMX |
| Heavy Industrial | Variable | 66 | IND |
| Institutional | Variable | 40 | INS |
| Interstate Corridor | NA | 36 | INTERSTATE |
| Low Density Residential | $2-5$ ac | 9 | LDR |
| Medium Density Residential | $0.25-0.5 \mathrm{ac}$ | 30 | MDR |
| Meadow | NA | 0 | MEADOW |


| Land Use Class | Typical Lot <br> Size | Percent <br> Impervious | Abbreviation |
| :--- | :---: | :---: | :---: |
| Multi Family Residential | $<0.125$ | 60 | MFR |
| Medium Low Density Residential | $0.5-2 \mathrm{ac}$ | 19 | MLDR |
| Mixed Urban | Variable | 60 | MX |
| Office/Industrial | Variable | 72 | OI-H |
| Light Office/Light Industrial | Variable | 30 | OI-L |
| Park | NA | 9 | PARK |
| Rural Residential | $>5 \mathrm{ac}$ | 4 | RR |
| Ultra High Density Mixed Urban | Variable | 90 | UHMX |

The distribution of the land-uses for the McDowell Creek watershed is shown in Figure 17.


Figure 17: Distribution of Land Uses in the McDowell Creek Watershed.
The land-use data for the McDowell Creek Watershed was sub-divided into catchments using GIS software. The catchments were delineated using the Watershed Information System (WISe) with an approximate drainage area of 100 acres per catchment.
Catchments with very small drainage areas ( $<1$ acre) were merged into nearby catchments to reduce the number of reporting units. A total of 131 catchments were delineated for the McDowell Creek Watershed. Figure 18 shows the distribution of the catchments in the McDowell Creek Watershed.


Figure 18: McDowell Creek Watershed Catchments.
The upland pollutant loading rates by land-use were adopted from Tetra Tech Inc. (2004) and are listed in Table 12. Catchment loading rates were determined by multiplying the area of each land-use in the catchment by the appropriate loading rate and summing the total for all land-uses within the catchment.

Table 12: Upland Pollutant Loading Rates by Land-Use.

| LAND-USE | TN <br> (lbs/ac/year) | TP <br> (lbs/ac/year) | TSS <br> (tons/ac/year) |
| :--- | :--- | :--- | :--- |
| AG | 5.06 | 0.32 | 0.33 |
| COMM-H | 19.44 | 2.85 | 0.76 |
| COMM-L | 12.44 | 1.88 | 0.69 |
| FRST | 2.5 | 0.4 | 0.15 |
| GC | 5.17 | 0.83 | 0.47 |
| HDR | 8.73 | 1.4 | 0.47 |
| HMFR | 11.67 | 1.83 | 0.34 |
| HMX | 16.82 | 2.49 | 0.71 |
| IND | 16.12 | 2.39 | 0.71 |
| INS | 8.63 | 1.39 | 0.48 |
| INTERSTATE | 7.81 | 1.25 | 0.4 |
| LDR | 4.1 | 0.66 | 0.28 |
| MDR | 7.61 | 1.24 | 0.52 |
| MEADOW | 2.39 | 0.38 | 0.13 |
| MFR | 10.65 | 1.68 | 0.39 |


| LAND-USE | TN <br> (lbs/ac/year) | TP <br> (lbs/ac/year) | TSS <br> (tons/ac/year) |
| :--- | :--- | :--- | :--- |
| MHP | 9.03 | 1.45 | 0.46 |
| MLDR | 6.5 | 1.07 | 0.57 |
| MX | 15.07 | 2.24 | 0.71 |
| OI-H | 11.87 | 1.86 | 0.34 |
| OI-L | 7.61 | 1.24 | 0.52 |
| PARK | 4.18 | 0.68 | 0.3 |
| RR | 3.59 | 0.59 | 0.3 |
| UHMX | 20.31 | 2.97 | 0.73 |

Note: See Table 11 for abbreviation descriptions.
The percent of impacted buffer in the McDowell Creek Watershed was also characterized. The characterization was completed using tree canopy data for Mecklenburg County intersected with the FEMA floodplain delineation and the S.W.I.M. and Watershed buffer coverages. The resulting GIS dataset, which depicts the presence or absence of tree canopy within stream buffers, was intersected with the catchment coverage to determine the percent of un-forested buffer within each catchment. Figure 19 shows the distribution of forested and un-forested buffer within the McDowell Creek Watershed.


Figure 19: Distribution of Forested and Un-forested Stream Buffers Within the McDowell Creek Watershed.

Levels of impervious area, which are indicative of level of development, for the McDowell Creek Watershed were characterized by catchment. Impervious percentages by catchment were determined by multiplying the area of each land-use within the catchment by the appropriate impervious percentage (Table 11) and summing the resulting impervious areas for the entire catchment.

### 4.1.2 Results

Results for each of the catchments for each indicator evaluated were ranked to determine the catchments with the highest level of impairment. For brevity, only the 20 most impaired catchments for each indicator are listed in Table 13, which is presented below.

Table 13: Results of Upland Impairment Characterization. Note: Higher rank indicates increasing level of impairment.

| Basin ID | TN | TP | TSS | Overall |
| :--- | :---: | :---: | :---: | :---: |
| MDCS10 | 131 | 131 | 131 | 131 |
| MDT1-3 | 128 | 128 | 130 | 130 |
| MDCS13 | 129 | 129 | 129 | 129 |
| MDCS11 | 130 | 130 | 127 | 128 |
| MD17 | 127 | 127 | 117 | 127 |
| MDT1-2 | 122 | 121 | 126 | 126 |
| MDTC16 | 126 | 126 | 115 | 125 |
| MD5 | 125 | 125 | 111 | 124 |
| MDTC14 | 123 | 122 | 109 | 123 |
| MDCS14 | 116 | 116 | 121 | 122 |
| MDTC5 | 117 | 117 | 114 | 121 |
| MDCS12 | 119 | 119 | 106 | 120 |
| MD2 | 112 | 114 | 120 | 119 |
| MD1 | 110 | 110 | 123 | 118 |
| MDTC10 | 108 | 107 | 124 | 117 |
| MD19 | 124 | 124 | 91 | 116 |
| MD20 | 107 | 108 | 125 | 115 |
| MD4 | 114 | 113 | 110 | 114 |
| MD7 | 121 | 120 | 94 | 113 |
| MDTC6 | 120 | 123 | 90 | 112 |

Figures $20-25$ present the overall ranking based upon the results of the upland characterization for TN, TP, TSS, Imperviousness, Level of Buffer Impact and Overall Pollutant Load respectively. Note that darker colors indicate increased levels of impairment.


Figure 20: TN Ranking.


Figure 21: TP Ranking.


Figure 22: TSS Ranking.


Figure 23: Degree of Impacted Stream Buffer.


Figure 24: Degree of Catchment Imperviousness.


Figure 25: Overall Impairment (based upon upland pollutant load).

### 4.2 Stream Channel Characterization

In order to prioritize areas of the McDowell Creek Watershed for stream channel restoration, enhancement and preservation, a characterization methodology was developed by Buck Engineering, PA (Buck). The characterization was completed through an evaluation of existing stream channel conditions that allowed reach-level prioritization based on biological integrity and geomorphic stability, as well as predicted bank erosion rates.

### 4.2.1 Methodology

Mecklenburg County provided base data in GIS format, including recent aerial photography, stream locations, roads and parcel boundaries. Using GIS, the McDowell Creek Watershed was divided into 21 basins and the stream channels were segmented into study reaches (Figure 26). For the purposes of this study, Buck defines a reach as a discrete segment of stream that consistently exhibits a set of physical features that appear to be significantly different from its contiguous upstream and downstream segments. Twelve basins were chosen for assessment that appeared to represent a range of stream conditions and land uses found throughout the watershed. Basins containing the five Retrofit BMP Focus Areas were included. Because only perennial streams were to be assessed, streams receiving 100 acres or greater of drainage were chosen, which resulted in 95 reaches approximating 30 miles of stream for direct assessment.

## Stream Classification

Each reach was visually classified according to the Rosgen classification system (Rosgen, 1994). This heirarchial methodology categorizes streams based on geomorphic features that describe channel geometry in the three dimensions of planform, cross-section and longitudinal profile. Most of these parameters are expressed as dimensionless ratios such as width/depth. The use of dimensionless ratios allows categorization and comparison of streams of varying sizes.

## Bank Erosion

Streambank erosion rates were determined by measuring the Bank Erosion Hazard Index (BEHI) and Near Bank Stress (NBS) (Rosgen, 2001) throughout each study reach. This semi-quantitative method is widely used in North Carolina and is based on measured values and visual estimates made at discrete sections of streambank. BEHI provides results in adjective ratings, ranging from very low to extreme. BEHI is based on the following:

- bank height/bankfull height
- root depth/bank height
- root density (\%)
- bank angle
- surface protection (\%)
- bank materials and stratification

NBS provides a measurement of the distribution of flow through a cross section. The near bank region is that third of stream cross section nearest a bank being studied. Rosgen (1996) correlated the ratio of shear stress in the near bank region to mean shear stress and developed an adjective rating system for reporting. Reasonably accurate estimates of NBS can be made quickly using professional judgment.

Erosion rates have been associated with the adjective ratings for bank erodibility and near-bank stress based on data collected from Colorado. Data collected at the Mitchell River in North Carolina supports the use of the Colorado data (Rosgen, 2001). The erosion rate was then multiplied by the height and length of the streambank. Rates are expressed as cubic feet of sediment eroded annually per linear foot of streambank. Total tons per year were also calculated for each study reach.

## Channel Evolution

Simon's Channel Evolution Model (1989) was used to assign one of the six stages listed below to each reach based on field observations.

- Stage I: The waterway is a stable, undisturbed natural channel.
- Stage II: The channel is disturbed by some drastic change such as forest clearing, urbanization, dam construction, or channel dredging.
- Stage III: Instability sets in with scouring of the bed.
- Stage IV: Destructive bank erosion and channel widening occur by collapse of bank sections.
- Stage V: The banks continue to cave into the stream, widening the channel. The stream also begins to aggrade, or fill in, with sediment from eroding channel sections upstream.
- Stage VI: Aggradation continues to fill the channel, re-equilibrium occurs, and bank erosion ceases. Riparian vegetation once again becomes established.


## Channel Evaluation

Buck Channel Evaluation Forms were completed by field staff characterizing biological integrity, geomorphic stability, channel evolution, feasibility, and enhancement recommendations. Scores from 0 to 4 were assigned to the following five indicators with 0 being poor and 4 being excellent:

- habitat
- existing riparian vegetation
- human impacts
- erosion
- incision

An accumulative score was derived from the five indicators and thus provides a Total Channel Evaluation Score per study reach from 0 to 20. Constraints on construction activities were determined initially by field observations and recorded on the form. Feasibility was further addressed through subsequent GIS analyses.

## Permanent Cross-Sections

Five permanent cross-sections were installed in the McDowell Creek watershed from which to document changes in vertical and lateral channel dimension over time (Figure 26). Changes in channel dimension made apparent from subsequent surveys can be evaluated to determine a movement toward a more unstable condition (e.g., downcutting or erosion) or a movement toward increased stability (e.g., settling, vegetative changes, deposition along the banks, or decrease in width/depth ratio). Cross-section locations consisted of stream reaches within sub-watersheds having a variety of scenarios based on land use, drainage area, and build-out capacity in order to characterize the existing geomorphic conditions of the entire watershed representatively. Table 1 summarizes the scenario associated with each sub-watershed containing a permanent cross-section.

Table 14. Scenarios of Sub-watersheds Containing Cross-sections

| Sub-watershed | Scenario |
| :--- | :--- |
| F | Active/Recent Development |
| I | Nearing Built-out Capacity |
| M | Rural Land Use |
| N | Largest Drainage Area |
| P | Mixed Land Use \& Intermediate Drainage Area |

Each cross-section was established at a riffle cross-section and was classified using the Rosgen Stream Classification System. Each cross-section was marked on both banks with permanent rebar pins set in concrete to establish the exact transect used. The rebar pins were used as common benchmarks from which to originate the survey at each crosssection to facilitate easy comparison of year-to-year data. The cross-section survey includes points measured at all breaks in slope, including top of bank, bankfull, inner berm, edge of water, and thalweg, if the features are present.

## Bank Pins

Bank pins were installed at five stream reaches within the McDowell Creek watershed having the highest erosion rates as determined from BEHI field assessments (Figure 26). These pins are three foot sections of rebar driven into the bed and bank from which changes in bank dimension can be documented. They accurately measure streambank erosion or lateral accretion rates and can be used to verify the lateral stability prediction made using BEHI. Data collected from the bank pins, in addition to accurately measuring actual erosion rates, can help determine the usefulness of the Colorado data (used for BEHI) as a prediction tool in North Carolina.


Figure 26: McDowell Creek Stream Characterization Sub-basins.

## Channel Materials

Pavement and sub-pavement samples were collected at each of the six permanent riffle cross sections. Samples were collected using methods described by Jessup (2002). The pavement/subpavement samples were returned to the Buck Engineering soils lab, sieved, and a grain size distribution developed. Using these samples, the critical depth for particle sediment transport for the study reaches was calculated and combined with the longitudinal profiles to perform an aggradation/degradation analysis on the study reaches.

### 4.2.2 Results

A total of 95 study reaches were delineated and assessed. Reach lengths varied from several hundred feet to over 7000 feet. The number of reaches per basin ranged from three to seventeen. Once in the field the predetermined reach lengths (based on drainage) were sometimes broken into smaller reaches or combined into larger reaches based on field observations. For example, if the land use adjacent to the stream channel changed significantly (e.g., forest to industrial) a new reach would begin. Due to the large number of study reaches, data was also compiled and presented per basin (Table 15) to aid in management efforts.

Table 15: Results of Stream Channel Characterization by Basin.

| Basin | Total <br> Reaches <br> Per <br> Basin | Average <br> Erosion <br> Rate <br> $(\mathrm{ft} 3 / \mathrm{ft})$ | Average <br> Channel <br> Evaluation <br> Score | Total <br> Tons of <br> Sediment |
| :--- | :--- | :--- | :--- | :--- |
| A | 10 | 0.89 | 11.48 | 594.35 |
| B | 14 | 1.95 | 9.45 | 1280.4 |
| E | 3 | 0.67 | 9.77 | 364.87 |
| F | 8 | 0.79 | 10.57 | 863.88 |
| I | 7 | 1.81 | 9.37 | 870.3 |
| K | 4 | 1.30 | 9.43 | 496.3 |
| L | 4 | 1.12 | 8.76 | 483.86 |
| M | 9 | 2.35 | 10.02 | 1282 |
| N | 6 | 0.88 | 10.60 | 1059.1 |
| O | 5 | 0.73 | 11.11 | 591.95 |
| P | 8 | 1.13 | 9.85 | 1320.08 |
| U | 17 | 1.48 | 11.93 | 1528.7 |

A single erosion rate was calculated for each of the 95 reaches based on BEHI/NBS. The erosion rate per basin is an average erosion rate of the total reaches per basin. In McDowell Creek Watershed, erosion rates exceeding 1.6 cubic feet/linear foot are very unstable. Rates of 1.26 to 1.59 are generally unstable, where as from 0.76 to 1.25 is stable and less that 0.76 is very stable. The total Buck Channel Evaluation score for all of the reaches for a given basin were divided by its total reach number to obtain the Average Channel Evaluation Score. The Average Erosion Rate and Average Channel Evaluation Score are useful for prioritizing the worst basin-wide degradation (Figures 27 \& 28; Tables 16 \& 17).

Table 16: Ranking Based on Average Erosion Rate Per Reach by Basin.

| Basin | Average <br> Erosion <br> Per <br> Reach <br> $(\mathrm{ft} 3 / \mathrm{ft})$ | Total <br> Erosion <br> Rate <br> $(\mathrm{ft} 3 / \mathrm{ft})$ | Total <br> Reaches <br> Per <br> Basin |
| :--- | :--- | :--- | :--- |
| M | 2.35 | 21.11 | 9 |
| B | 1.95 | 27.28 | 14 |
| I | 1.81 | 12.65 | 7 |
| U | 1.48 | 25.21 | 17 |
| K | 1.30 | 5.21 | 4 |
| P | 1.13 | 9.07 | 8 |
| L | 1.12 | 4.47 | 4 |
| A | 0.89 | 8.85 | 10 |
| N | 0.88 | 5.26 | 6 |
| F | 0.79 | 6.31 | 8 |
| O | 0.73 | 3.65 | 5 |
| E | 0.67 | 2.02 | 3 |



Figure 27: Basin Ranking based on Predicted Erosion Rates

Table 17: Ranking Based on Average Channel Evaluation Per Reach by Basin.

| Basin | Average <br> Channel <br> Evaluation <br> Score | Total <br> Channel <br> Evaluation <br> Score | Total <br> Reaches <br> Per <br> Basin |
| :--- | :--- | :--- | :--- |
| L | 8.76 | 35.03 | 4 |
| I | 9.37 | 65.57 | 7 |
| K | 9.43 | 37.7 | 4 |
| B | 9.45 | 132.27 | 14 |
| E | 9.77 | 29.3 | 3 |
| P | 9.85 | 78.8 | 8 |
| M | 10.02 | 90.16 | 9 |
| F | 10.57 | 84.57 | 8 |
| N | 10.60 | 63.57 | 6 |
| O | 11.11 | 55.57 | 5 |
| A | 11.48 | 114.83 | 10 |
| U | 11.93 | 202.85 | 17 |



Figure 28. Basin Ranking based on Channel Evaluation Scores

The six cross sections were surveyed at stable stream locations. This is confirmed by their Rosgen Stream type of E. There is however evidence of departure from stability according to collected data. Sub-basin P cross section (P-XS), Sub-Basin N cross section ( $\mathrm{N}-\mathrm{XS}$ ), Sub-Basin F cross section, and Sub-Basin I cross sections have bank height ratios greater than 1.1. This parameter identifies vertical instability in their streambed elevations most likely caused by aggradation. Stream reaches of 1.1 and less are considered to be a stable system. According to cross-sectional data, none of the six cross sections exhibit entrenchment or lateral instability. Bed material data collected at the six cross sections demonstrate that the dominant channel material is sand. Tables 18 and 19 describe the observed stream types, channel stability parameters, and channel materials for all six permanent cross sections. Full documentation of the results can be found in the Appendices.

Table 18. Summary of Cross-section Data

| Geomorphic Parameters | F-XS | I-XS | M-XS | N-XS | P-XS | Gage-XS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Rosgen Stream Type | E | E | E | $\mathrm{E} / \mathrm{Gc}$ | E | E |
| Bankfull Width (ft) | 12.69 | 19.32 | 12.92 | 35.45 | 18.49 | 40.01 |
| Bankfull Mean Depth (ft) | 2.54 | 1.89 | 1.43 | 4.76 | 2.07 | 5 |
| Width/Depth Ratio | 4.99 | 10.2 | 9.05 | 7.45 | 8.94 | 8 |
| Bankfull Area (sq ft) | 32.29 | 36.61 | 18.44 | 168.72 | 38.23 | 200.22 |
| Bankfull Max Depth (ft) | 3.37 | 3.34 | 1.95 | 5.72 | 2.81 | 6.49 |
| Width of Floodprone Area (ft) | 114.31 | 116.99 | 43.54 | 135.02 | 77.9 | 119.48 |
| Entrenchment Ratio | 9.01 | 6.05 | 3.37 | 3.81 | 4.21 | 2.99 |
| Bank Height Ratio | 1.49 | 1.41 | 1 | 1.59 | 1.95 | 1 |

Table 19. Summary of Bed Material Analyses

| Size Distribution (mm) | F-XS | I-XS | M-XS | N-XS | P-XS | Gage-XS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| D16 | 0.55 | 0.36 | 0.3 | 0.51 | 0.57 | 0.53 |
| D35 | 0.73 | 0.6 | 0.45 | 0.72 | 0.95 | 0.65 |
| D50 | 0.9 | 0.78 | 0.58 | 0.9 | 1.35 | 0.78 |
| D84 | 1.75 | 1.75 | 0.97 | 1.7 | 2.2 | 1.5 |
| D95 | 2.2 | 3 | 1.8 | 1.95 | 4.5 | 1.8 |

## SECTION 5. CANDIDATE RESTORATION, RETROFIT AND PRESERVATION SITES

### 5.1 Upland BMP Retrofit Sites

The intent of this section is two fold:

1. Identify publicly owned parcels that are significant sources of pollution that would benefit from BMP retrofit.
2. Identify catchments for detailed field investigation to identify privately owned parcels that are significant sources of pollution and appropriate for BMP retrofit.

All retrofit BMPs installed in the McDowell Creek Watershed should be designed with the Upland Pollutant Loading Rate Goals (Table 9) as a design standard.

### 5.1.1 Priority Catchments

Based upon the upland pollutant load analysis, BMP retrofit efforts should be concentrated on or downstream of the most impacted catchments. The 20 most impacted catchments tended to concentrate in five (5) key focus areas of the McDowell Creek Watershed. Figure 29 shows the extent of the focus areas within the McDowell Creek Watershed. The following Section discusses each BMP Focus Area in detail.


Figure 29: Retrofit BMP Focus Areas Within the McDowell Creek Watershed.

## Focus Area 1 (Sam Furr Road)

Focus Area 1 has the highest pollutant loads in the entire McDowell Creek Watershed. Figure 30 shows the extent of Focus Area 1 (Note: BMP Retrofits have been funded for the areas outlined in yellow - see Section 2.3.4). The combination of high intensity commercial and residential development on Sam Furr Road at Exit 25 off of I-77 combines to cause the high pollutant loads. The Focus Area is comprised of catchments MD20, MD19, MD17, MDCS14, MDCS11, MDCS13, MDCS10 and MDCS12. There appears to be minimal opportunity for land acquisition in Focus Area 1. Moreover, there are no public properties within the area. There are several restoration and retrofit projects currently underway in Focus Area 1, including the Pizagalli Project, Eco-Park Project, Northcross Raingarden Retrofit and stream restoration (Sam Furr to Westmoreland Road). Retrofit efforts will need to focus on working cooperatively with existing land owners to install BMPs into the existing landscape in a similar way to the Northcross Raingarden Project (See Section 2.3.4).


Figure 30: Focus Area 1 (Note: Northcross Raingarden Project Areas shown in yellow, wetland restoration shown in pink and stream restoration in light blue).

## Focus Area 2 (Cornelius)

Figure 31 displays the extent of Focus Area 2 (Note: Publicly owned parcels are shown in green). Focus Area 2 is located entirely within the Town of Cornelius and comprises almost the entire headwater area of McDowell Creek. It is bisected by I-77 North and is just South of the West Catawba Avenue exit. Focus Area 2 is comprised of catchments MD7, MD4, MD5, MD2 and MD1. There is opportunity for land acquisition in this watershed, particularly within catchments MD2 and MD7, moreover there is deeded open space in catchment MD1. Additionally, several parcels are publicly owned and are discussed in the next section.


Figure 31: Focus Area 2 (Note: Publicly owned parcels shown in green).

## Focus Area 3 (Old Statesville Road)

Figure 32 shows the extent of Focus Area 3. Focus Area 3 is comprised of catchments MDT1-2 and MDT1.3 and is dominated by the Huntersville Hardwoods facility and the Harvest Pointe subdivision. Focus Area 3 has large tracts of publicly owned property and it is likely the Upland Pollutant Loading Rates (Table 9) can be met through the retrofit of this public property.


Figure 32: Focus Area 3 (Note: Publicly owned property shown in green).

## Focus Area 4 (Gilead Road)

Figure 33 shows the distribution of Focus Area 4, which is located to the South of Gilead Road and is bisected by I-77. It is comprised of catchments MDTC16 and MDTC10 and it is dominated by old residential development build in the early 1960's. Focus Area 4 also contains newer warehouse, commercial and business park land uses. There may be opportunity for land acquisition downstream of MDTC10 in catchment MDTC11. Alternately, cooperative retrofit opportunities may exist in catchment MDTC16 among the commercial tenants and businesses. There is no publicly owned property in Focus Area 4.


Figure 33: Focus Area 4.

## Focus Area 5 (CPCC North)

Figure 34 depicts the distribution of Focus Area 5, which is comprised of catchments MDTC14 and MDTC5. Focus Area 5 has large sections of publicly owned land, including the CPCC North Campus which can be retrofitted with BMPs. I-77 is the dominant land-use in the Focus Area and is likely a significant contributor of the pollutant load.


Figure 34: Focus Area 5 (Note: Publicly owned parcels shown in green).

### 5.1.2 Public Parcels

The intent of this Section is to identify publicly owned parcels for BMP retrofit. Specifically, publicly owned parcels that are significant sources of pollution and are located in one of the "Focus" areas have been assigned the highest priority.

There are currently 96 parcels in public ownership in the McDowell Creek Watershed. These parcels are located throughout the watershed, but are mainly focused in areas directly adjacent to McDowell or Torrence Creeks. Where beneficial to water quality, these properties should be further investigated to determine the final suitability for BMP
installation using this report as a guide. Figure 35 shows the distribution of the parcels in public ownership in the McDowell Creek Watershed. The parcels were evaluated and prioritized using the following criteria:

1. Position either on or downstream of a catchment with a high or moderately high overall rank for upland pollutant loading.
2. Proximity to the stream. Parcels directly adjacent to the stream were ranked higher.
3. Parcels with adequate space for installation of reasonably sized BMPs were ranked higher. If there did not appear to be enough space for a BMP, the parcel was disqualified.
4. Parcels receiving runoff from more than two square miles were disqualified.
5. Parcels able to treat high concentrations of impervious area, regardless of size were ranked higher.

Of the 96 public parcels in the McDowell Creek Watershed, 41 meet the criteria listed above. The 41 Priority Parcels are presented in Table 20. Figures $36-41$ are aerial photos of the High Priority Parcels.


Figure 35: McDowell Public Parcels Meeting BMP Criteria and Overall Pollutant Rank.

Table 20: Public Parcels Meeting BMP Criteria and Priority.

| Parcel | Owner Info. | Priority |
| :---: | :---: | :---: |
| 00518302 | MECKLENBURG COUNTY | High |
| 00527206 | MECKLENBURG COUNTY | High |
| 00911119 | MECKLENBURG COUNTY | High |
| 00911130 | MECKLENBURG COUNTY | High |
| 01741116 | MECKLENBURG COUNTY | High |
| 01720401 | MECKLENBURG COUNTY | High |
| 01742110 | MECKLENBURG COUNTY | High |
| 00516678 | MECKLENBURG COUNTY | High |
| 01720403 | MECKLENBURG COUNTY | High |
| 00537162 | MECKLENBURG COUNTY | High |
| 00317401 | MECKLENBURG COUNTY | High |
| 01706207 | CHARLOTTE MECKLENBURG | High |
| 01712113 | CHARLOTTE MECKLENBURG BOARD OF EDUCATION | High |
| 00520129 | CHARLOTTE MECKLENBURG BOARD OF EDUCATION | High |
| 00918166 | MECKLENBURG COUNTY | Medium |
| 00918396 | MECKLENBURG COUNTY | Medium |
| 00918456 | MECKLENBURG COUNTY | Medium |
| 00918399 | MECKLENBURG COUNTY | Medium |
| 01535245 | MECKLENBURG COUNTY | Medium |
| 01537148 | MECKLENBURG COUNTY | Medium |
| 01538197 | MECKLENBURG COUNTY | Medium |
| 01530299 | MECKLENBURG COUNTY | Medium |
| 01532132 | MECKLENBURG COUNTY | Medium |
| 01529301 | MECKLENBURG COUNTY | Medium |
| 01510499 | MECKLENBURG COUNTY | Medium |
| 01510498 | MECKLENBURG COUNTY | Medium |
| 01510484 | MECKLENBURG COUNTY | Medium |
| 01535199 | MECKLENBURG COUNTY | Medium |
| 01308105 | CHARLOTTE-MECKLENBURG BOARD OF EDUCATION | Medium |
| 00935101 | CITY OF CHARLOTTE | Medium |
| 01323105 | CITY OF CHARLOTTE | Medium |
| 01325599 | MECKLENBURG COUNTY | Low |
| 00507112 | MECKLENBURG COUNTY | Low |
| 01529351 | MECKLENBURG COUNTY | Low |
| 01510515 | MECKLENBURG COUNTY | Low |
| 01509104 | MECKLENBURG COUNTY | Low |
| 01510104 | MECKLENBURG COUNTY | Low |
| 01325548 | MECKLENBURG COUNTY | Low |
| 01747131 | MECKLENBURG COUNTY | Low |
| 01741117 | MECKLENBURG COUNTY | Low |
| 01715307 | CITY OF CHARLOTTE | Low |



Figure 36: Aerial Photo of Parcels 017-41-116, 017-42-110, 017-20-401, 017-20-403 and 017-06-207.


Figure 37: Aerial Photo of Parcels 005-18-302 and 005-27-206.


Figure 38: Aerial Photo of Parcel 005-16-678.


Figure 39: Aerial Photo of Parcels 009-11-119 and 009-11-130.


Figure 40: Aerial Photo of Parcel 017-12-113.


Figure 41: Aerial Photo of Parcels 005-20-129 and 003-17-401

Projects on these sites should be designed to meet the Upland Pollutant Loading Rate Goals presented in Table 9.

### 5.2 Stream Channel Management Opportunities

Three stream channel management opportunities were evaluated from field reconnaissance and GIS: preservation, restoration and enhancement.

For the purposes of mitigation credit, the US Army Corps of Engineers defines restoration and enhancement as follows (USACE, 2003):

Restoration - the process of converting an unstable altered or degraded stream corridor, including adjacent buffers and flood prone areas, to its natural stable condition. Restoration is based on reference conditions and includes restoring the appropriate channel dimension, pattern and profile. For impacts to fair or poor quality waters, the mitigation credit ratio is generally 1.0 (i.e. for every 100 feet of stream impact, 100 feet of stream restoration would be required for mitigation).

Enhancement Level I - mitigation category that includes improvements to the stream channel and riparian zone that restore dimension and profile, but do not address pattern. required for every 100 feet of impact).

Enhancement Level II - mitigation category for measures that improve channel stability, water quality and habitat, but fall short of restoring both dimension and profile. Examples include bank stabilization, vegetating riparian buffers and using in-stream structures to enhance stability and habitat.

The three most degraded basins based on rank (Table 21) are Sub-Basins I, B, and M. In the case of a tie, the sub-basin exhibiting the higher erosion rate was prioritized. Lower scores signify a higher category. Only reaches located in one of the three sub-basins were considered. Reaches were ranked based on erosion rates and Buck Channel Evaluation score. These prioritizations are need based only and do not account for feasibility.

The narrative below identifies potential projects based on recommendations for the three basins ranked highest. In order to create viable projects in scope and size, local reaches with the same recommendations and similar impairments were combined when applicable. Consult the Master Plan located in the Appendix C for complete ranking of reaches based on feasibility and need.

Table 21: Basin Rank for McDowell Creek Watershed.

| Basin | Average <br> Erosion <br> Rate | Average <br> Channel <br> Evaluation | Overall <br> Rank |
| :---: | :---: | :---: | :---: |
| I | 3 | 2 | 1 |
| B | 2 | 4 | 2 |
| M | 1 | 7 | $3($ Tie $)$ |
| K | 5 | 3 | $3($ Tie $)$ |
| L | 7 | 1 | $3($ Tie $)$ |
| P | 6 | 6 | 6 |
| U | 4 | 12 | 7 |
| E | 12 | 5 | 8 |
| N | 9 | 9 | $9($ Tie $)$ |
| F | 10 | 8 | $9($ Tie $)$ |
| A | 8 | 11 | 11 |
| O | 11 | 10 | 12 |

## Sub-Basin I

Sub-Basin I is approximately located within the southeastern quadrant of the intersection of Sam Furr Road and Statesville Road (Figure 42). Approximately 938 acres of the subbasin drain to headwater tributaries of Torrence Creek. Streambank erosion rates predict approximately 870 tons of sediment a year erode from Sub-Basin I perennial streams. Majority of the impaired channel is adjacent to single-family residences. Several stable reaches are adjacent to North Mecklenburg Park near Old Statesville Road. Additional residential development is scheduled along Stumptown Road in the southern portions of the sub-basin near. Portions of the existing 100 year floodplain extend into the sub-basin. One permanent cross section is located near the western boundary of the sub-basin.


Figure 42. Sub-Basin I Aerial Map.


Figure 43: Study Reach I12A-I14A-I16A Proposed for Preservation.
Study Reach I12A-I14A-I16A was recommended for preservation (Figure 43). The reach is partially to fully shaded riffle/runs system consisting of stable riffles with less stability further downstream. Good variation in pool depths downstream of bedrock and debris jams. Habitat structures are common and include woody debris, undercut banks, and root mats. Mature forested riparian buffer and floodplain are present. Buffer width exceeds 50 feet on both banks. Banks are well-vegetated within the reach limits with herbaceous species, shrubs, and mature trees. Channel has large substrate such as boulders and bedrock that provide grade control. Rosgen stream types transition from G to F to C in a downstream direction. Bank height ratios are relatively low and range from 1.2 to 1.5 . Bank Height Rations above 1.5 are found to be highly unstable (Rosgen, 2001). The reach appears to be in Stage V (aggradation and widening) of Simon's Evolution Model.


Figure 44: Study Reaches I3a, I4a_I5a, and I7a Proposed for Restoration.

Study Reaches I3a, I4a_I5a, and I7a were proposed for restoration (Figure 44). Specifically, Reach I3a was identified by Buck as an immediate viable project for restoration when taking in account feasibility.

Study Reach I3a is a fully exposed channel consisting of infrequent unstable riffles. Pools are shallow and uniform as a result of filling with excess fine sediment. Stream appears to have been channelized in the past. Vertically unstable due the degradation nature of this sediment "starved" system. The channel is completely disconnected from the floodplain and bank height ratios are greater than 2.0. The Rosgen stream type exhibited within the study reach is predominantly a G. The reach appears to be in Stage III of Simon's Evolution Model.

Study Reach I4a_I5a is a well-shaded riffle/run system composed of unstable embedded gravel riffles. Pools are present but are typically short and shallow in depth (pocket pools). Stream appears to have been channelized in the past. Channel has moderate floodplain access and exhibits bank height ratios that range from 1.6 to 1.8 . The Rosgen stream type exhibited within the study reach is predominantly a G. The reach appears to be in Stage V of Simon's Evolution Model.


Figure 45: Study Reach I6a Proposed for Enhancement I.

Study Reach I6a was proposed for Enhancement I (Figure 45). The reach is a partially shaded channel consisting of unstable embedded riffles. Pools are infrequent and typically short and shallow in depth. Channel incision is complete due to multiple grade control structures. Channel has limited floodplain access along alternating flood benches upstream but is primarily disconnected. Bank height ratios range from 1.6 to 1.8. The Rosgen stream type exhibited within the study reach is predominantly a G. The reach appears to be in Stage V of Simon's Evolution Model.

## Sub-Basin B

Sub-Basin B is approximately located within the southeastern quadrant of the intersection of Catawba Avenue and Interstate 77 (Figure 46). Approximately 766 acres of the subbasin drain to headwater tributaries of McDowell Creek. Streambank erosion rates predict approximately 1280 tons of sediment a year erode from Sub-Basin B perennial streams. Majority of the impaired channel is adjacent to single-family residences. The sub-basin is almost exclusively built-out, and, therefore, future development limited. One bank pin cross section is located near the western boundary of the sub-basin. Portions of the existing 100 year floodplain extend into the sub-basin.


Figure 46. Sub-Basin B Aerial Map.


Figure 47: Study Reaches B6a, B11a, B13a, and B14b Proposed for Restoration.
Study Reaches B6a, B11a, B13a, and B14b were proposed for restoration (Figure 47). Study Reach B6a is a partially shaded gravel riffle/run system that has been embedded with fine sediment. Pools are present but are typically short and shallow. Channel has limited floodplain access, but is primarily disconnected. Channel incision is more severe with bank height ratios of 2.0 or greater in the upstream half of the reach. Bank height ratios are less downstream and range from 1.0 to 1.5 . The Rosgen stream type exhibited within the study reach is predominantly a G. The reach appears to be in Stages III, IV, \& V of Simon's Evolution Model.

Study Reach B11a is a partially to fully shaded riffle/pool system composed of gravel that is highly embedded with sand. Pools are infrequent and shallow due to active filling with sediment. Study reach is a vertically unstable system due to multiple headcuts. The channel is disconnected to its floodplain and exhibits high bank height ratios of $>2.0$. The Rosgen stream type exhibited within the study reach is predominantly a G. The reach appears to be in Stages III of Simon's Evolution Model.

Study Reach B13a is a partially shaded upstream but fully exposed further downstream riffle/pool system. Riffles are embedded with fines and pool depths are variable with
large deep pools found along meander bends. Channel has moderate access to the floodplain with bank height ratios ranging from 1.2 to 1.8 . The Rosgen stream type exhibited within the study reach is predominantly a G. The reach appears to be in Stages III to Stage IV of Simon's Evolution Model.

Study reach B14b is a well-shaded riffle/run system. Pools are shallow and actively filling with excessive sediment. The channel has limited access to its floodplain with bank height ratios that range from 1.0 to 2.0 . The Rosgen stream type exhibited within the study reach is predominantly a G/F. The reach appears to be in Stage IV of Simon's Evolution Model.


Figure 48: Study Reaches B1a and B8a Proposed for Enhancement I.
Study Reaches B1a and B8a were proposed for Enhancement I (Figure 48). Study Reach B1a is a partially shaded channel consisting of a few riffles with long, shallow runs. The majority of pool depths are shallow and filled with sediment. Stream appears to have been channelized in the past. The Rosgen stream type exhibited within the study reach is predominantly a G (incised E). The reach appears to be in Stage IV of Simon's Evolution Model.

Study Reach B8a is a partially shaded riffle/run system composed of cobbles and gravel embedded with fine sediment. Good variation in pool depths with large pools in meander bends. Stream appears to have been channelized in the past. Channel incision is severe with bank height ratios of 1.8 to 2.0 . Channel has limited access to the floodplain at midreach. Numerous log and debris jams provide some grade control. The Rosgen stream type exhibited within the study reach is predominantly a G. The reach appears to be in Stage IV of Simon's Evolution Model.


Figure 49: Study Reaches B2a, B21a, B9b_B10a, and B18a_B19a Proposed for Enhancement II.

Study Reaches B2a, B21a, B9b_B10a, and B18a_B19a were proposed for Enhancement II (Figure 49). Study Reach B2a contains a stream bed that is well-shaded due to incised banks and an invasive specie understory. Riffles and pools are infrequent with pools concentrated downstream of debris jams. Stream appears to have been channelized in the past. Channel incision is severe with bank height ratios of 1.8 to 2.0 . Channel has limited access to the floodplain at mid-reach but is primarily disconnected throughout the remainder of the reach. Rosgen stream type exhibited within the study reach is predominantly a G. The reach appears to be in Stage III of Simon's Evolution Model.

Study Reach B21a is a fully shaded riffle/run system with cobble and gravel present. Pools are present and exhibit a variety of pool depths. The channel is generally disconnected with the floodplain and exhibits bank height ratios of 2.0. Bank height ratios were observed to range from 1.6 to 1.8 further downstream. Rosgen stream type exhibited within the study reach is predominantly a G. The reach appears to be in Stage III of Simon's Evolution Model.

Study Reach B9b_B10a is a partially shaded riffle/pool system composed of primarily cobble and gravel. Channel has moderate floodplain access along alternating flood benches. Bank height ratios ranging from 1.8 to 2.0 were observed. The Rosgen stream type exhibited within the study reach is predominantly a G. The reach appears to be in Stage V of Simon's Evolution Model.

Study B18a_B19a is a partially to fully shaded channel consisting of a few short, unstable riffles with long shallow runs. Pools are present but are typically short and shallow in depth with the occasional deep plunge pool below debris jams. Channel has limited access along alternating floodplain benches. Bank height ratios range from 1.5 to 1.8.

The Rosgen stream type exhibited within the study reach is predominantly a G. The reach appears to be in Stage III of Simon's Evolution Model.

## Sub-Basin M

Sub-Basin M is approximately located within the northeastern quadrant of the intersection of Beatties Ford Road and McIlwaine Road (Figure 50). Approximately 718 acres of the sub-basin drain to tributaries of McDowell Creek. Streambank erosion rates predict approximately 1282 tons of sediment a year erode from Sub-Basin M perennial streams. Majority of the impaired channel is associated with agriculture. The sub-basin is single-family residential south of Bud Henderson Road. Agriculture is predominant north of Bud Henderson Road, however future single-family residential development has been approved. One permanent cross section is located near the southern boundary of the sub-basin. Portions of the existing 100 year floodplain extend into the sub-basin.


Figure 50. Sub-Basin M Aerial Map.


Figure 51: Study Reaches M1, M8b, and M4_M3a Proposed for Restoration.
Study Reaches M1, M8b, and M4_M3a were proposed for Restoration (Figure 51). Specifically, M1 and M8b were identified by Buck as reaches that represent viable projects for restoration when taking in account feasibility and should be prioritized.

Study Reach M1 is a partially shaded channel consisting of a few riffles with long, shallow runs. The majority of pool depths are shallow and actively filling with sediment. The stream appears to have been channelized in the past. Cattle crossings are present throughout the reach indicating that livestock has total access to the creek. Banks are steep and raw with minimal root mass in outside meander bends and channel constrictions. Mid channel bars are forming and pools are actively filling in with sediment. Channel is disconnected from the floodplain except within the downstream portion of reach where flood access is limited to small bankfull benches. Bank height ratios range from 1.5 to 2.0 . The Rosgen stream type exhibited within the study reach is predominantly a G (incised E). The reach appears to be in Stage IV (degradation and widening) of Simon's Evolution Model.

Study Reach M8b is partially to fully shaded channel consisting of a few riffles with long, shallow runs. The stream appears to have been channelized in the past. Exclusive livestock access to the channel. Upstream and mid-reach the channel is actively downcutting. Limited floodplain access and high bank height ratios are evident. Few log and debris jams provide some grade control. The Rosgen stream type exhibited within the study reach is predominantly a G. The reach appears to be in Stages IV \& V (aggradation) of Simon's Evolution Model.

Study Reach M4_M3a is a fully shaded gravel riffle/run system with riffles moderately embedded with fine sediment. Pools are present but are actively filling with eroded sediment. Channel is primarily disconnected from its floodplain. Channel incision is more severe with bank height ratios ranging from 1.8 to greater than 2.0. The Rosgen
stream type exhibited within the study reach is predominantly a G. The reach appears to be in Stage III (degradation) of Simon's Evolution Model.


Figure 52: Study Reach M8a Proposed for Enhancement I.
Study Reach M8a is a partially to fully shaded riffle/run system composed of gravel riffles embedded with fine sediment (Figure 52). Pools are shallow and uniform and are actively filling with sediment. Stream appears to have been channelized in the past. The channel is disconnected from the floodplain and exhibits high bank height ratios ranging from 1.8 to greater than 2.0. The Rosgen stream type exhibited within the study reach is predominantly a G. The reach appears to be in Stages IV and V of Simon's Evolution Model.


Figure 53: Study Reach M3b Proposed for Enhancement II.
Study Reach M3b is well-shaded due to incised banks and a mature woody canopy (Figure 53). Riffles and pools are common with pools concentrated on the outside of meander bends. Riffles are slightly embedded and pools are being filled with fine sediment. Bank height ratios range from 1.3-2.0. Upstream the channel has limited access to the floodplain and alternating floodplain benches. Downstream the channel is more stable but filled with sediment. A depositional wetland system is present before a large box culvert. The Rosgen stream type exhibited within the study reach is predominantly a G. The reach appears to be in Stage VI and V of Simon's Evolution Model.

### 5.3 Stream Buffer Restoration Areas

The intent of this section is to identify catchments with the highest percentage of impacted (un-forested) stream buffer. Furthermore, this section identifies public parcels most in need of buffer reforestation.

### 5.3.1 Priority Catchments

The results of the buffer analysis were intersected with the catchments' coverage to determine the areas most in need of S.W.I.M. buffer restoration. Priority was given to the catchments where $50 \%$ or more of the stream buffer was un-forested. Seventeen of the 131 catchments meet the criteria. Table 22 lists the 17 catchments and the associated percent of S.W.I.M. Buffer that is un-forested. Figure 54 presents the catchments prioritized for S.W.I.M Buffer Restoration. Figures $55-60$ present air photos for catchments with less than $25 \%$ of forested buffer intact. These catchments should be re-
forested as soon as possible with the highest priority given to those catchments in Table 22 with the highest percentage of un-forested S.W.I.M. Buffer.

Table 22. Priority Catchments for S.W.I.M. Buffer Restoration.

| Catchment ID | \% of Un-Forested S.W.I.M. Buffer |
| :---: | :---: |
| MD42 | 50 |
| MD15 | 51 |
| MD38 | 52 |
| MD31 | 52 |
| MD11 | 54 |
| MD20 | 55 |
| MDTC17 | 57 |
| MDM2-4 | 61 |
| MD5 | 64 |
| MD17 | 66 |
| MDCS13 | 67 |
| MD16 | 72 |
| MDCS14 | 74 |
| MD19 | 77 |
| MDT1-10 | 79 |
| MD28 | 81 |
| MDTC28 | 88 |



Figure 54: Catchments Prioritized for S.W.I.M. Buffer Enhancement.


Figure 55: Re-Forestation Priority Catchment MD19.


Figure 56: Re-Forestation Priority Catchment MDT1-10.


Figure 57: Re-Forestation Priority Catchment MD28.


Figure 58: Re-Forestation Priority Catchment MDTC28 (Note: Almost all of the un-forested buffer in this catchment is publicly owned).

### 5.3.2 Public Parcels

The results of the buffer analysis were intersected with publicly owned parcels in McDowell Creek to identify publicly owned property in need of buffer reforestation. A total of 65 acres spread across 13 parcels was identified through this analysis. Figure 59 shows the distribution of the parcels, priority and un-buffered areas in the McDowell Creek Watershed. The parcels were prioritized as High, Medium or Low based upon the following criteria:

- High Priority: Much of the property surrounding the confluence of McDowell and Torrence Creeks is owned by various public entities. In order to shade and stabilize this confluence these parcels have been given the highest priority for buffer reforestation.
- Medium Priority: Public parcels with un-forested buffer areas directly adjacent to McDowell Creek not located at the confluence of McDowell and Torrence Creeks were given medium priority.
- Low Priority: Public parcels not located at the confluence of McDowell and Torrence creek and with forested areas directly adjacent to the creek (i.e. Un-forested areas are located landward) or parcels with minimal area to re-forest were given a low priority.

Table 22 presents a list of the publicly owned parcels in need of buffer restoration and their priority. Figure 59 illustrates the high priority buffer restoration sites.


Figure 59: Public Parcels in Need of S.W.I.M. Buffer Re-Forestation.

Table 22: Public Parcels in Need of Buffer Restoration.

| Parcel ID | Owner | Priority |
| :--- | :--- | :--- |
| $015-35-245$ | MECKLENBURG COUNTY | High |
| $015-38-197$ | MECKLENBURG COUNTY | High |
| $015-09-104$ | MECKLENBURG COUNTY | High |
| $015-35-199$ | MECKLENBURG COUNTY | High |
| $005-07-112$ | MECKLENBURG COUNTY | Medium |
| $015-09-107$ | MECKLENBURG COUNTY | Medium |
| $005-37-162$ | MECKLENBURG COUNTY | Medium |
| $015-39-198$ | MECKLENBURG COUNTY | Medium |
| $009-35-101$ | CITY OF CHARLOTTE | Medium |
| $009-11-119$ | MECKLENBURG COUNTY | Low |
| $013-18-101$ | MECKLENBURG COUNTY | Low |
| $023-22-111$ | MECKLENBURG COUNTY | Low |
| $017-15-307$ | CITY OF CHARLOTTE | Low |



Figure 60: High Priority Buffer Restoration Sites.

### 5.4 Master Planning for Restoration, Retrofit and Preservation Projects

A minimum of two (2) detailed Master Plans will be developed to guide restoration, retrofit and preservation projects in the McDowell Creek Watershed. The goal of these Master Plans is to restore McDowell Creek to a fully functioning and supporting stream ecosystem and ensure a safe and secure water supply downstream in McDowell Creek Cove and Mountain Island Lake. The Master Planning process will start in the Focus Areas identified in Section 5.1.1 where the most impaired catchments are located. The
planning process will begin with a thorough evaluation of all properties (including public and private) located in these Focus Areas to identify specific opportunities for restoration, retrofit and preservation projects, including properties to be recommended for acquisition by the County due to their water quality benefit. Secondly, an evaluation will be conducted of stream segments in McDowell Creek with un-forested S.W.I.M. Buffers at $50 \%$ or greater as identified in Table 22. Thirdly, the McDowell Creek Watershed Riparian Zone Management Plan will be completed by July 2006 and the areas identified for stream channel restoration will be identified. The highest priority will be given to potential projects (including BMP retrofits, buffer reforestations and stream channel restorations) located on publicly owned properties. Consideration will be given to the initiation of these projects as soon as possible. Once potential projects have been identified, a draft budget will be developed and funding sources specified. If grants will be included as a funding source, the grants and funding cycles will be specified as well as the necessary local match. At a minimum, the Master Plan will include the following:

- Specific location of all recommended projects (include on map).
- Detailed description of the projects, including type, size, etc. (include preliminary design sketches of the projects)
- Water quality benefit of the projects, including an estimate of pollutant removal capabilities.
- Budgets and funding sources for the projects.
- Individual project prioritization.

The Master Plan for the Focus Areas, property acquisition and preservation, buffer reforestation and channel restoration projects as described above is scheduled to be completed and incorporated into Version 2 of the Watershed Management Plan by December 2006. Implementation of this Master Plan will begin in January 2007 and continue through 2020 with the highest priority given to publicly owned properties.

The second Master Planning effort will be initiated in January 2008 with an evaluation of the medium to high priority public parcels listed in Table 14 that are located outside the Focus Areas. Potential projects will be identified and prioritized and a Master Plan developed by December 2008 (Version 3 of the Watershed Management Plan) with implementation planned for January 2009 and continuing through 2020. Following the development and implementation of the two (2) Master Plans described above, careful consideration will be given as to whether additional projects will be needed and a third Master Plan developed to include the medium to low priority catchments in the McDowell Creek Watershed. This determination will be based on a careful analysis of water quality trend data and whether the goals specified in Table 17 are being fulfilled.

An important component of maintaining water quality conditions in McDowell Creek is ensuring the proper operation and maintenance of BMPs installed to date to mitigate impacts from existing development as well as retrofit BMPs installed through the implementation of the Master Plans. This effort will begin in January 2006 and continue through December 2006 and will include the identification and inspection of all existing BMPs in the watershed. Deficiencies detected will be reported to responsible parties for correction. A regular schedule of BMP inspections in the watershed will be developed and implemented for both public and private BMPs.

## SECTION 6. MEASURING SUCCESS AND ADAPTIVE MANAGEMENT

### 6.1 Establishing an Ongoing Water Quality Monitoring Program

As discussed in Section 2.2, Mecklenburg County has historically collected storm water samples from McDowell Creek at monitoring site MC4, which is located at Beatties Ford Road in Huntersville's jurisdiction (see Figure 61). McDowell Creek baseflow samples are collected from MC3E, MC4, MC2A-1 and MC4A (see Figure 2). Benthic macroinvertebrate and fish samples are collected at all the baseflow monitoring sites with macroinvertebrates collected annually and fish samples collected every five (5) years. Historically there has been one (1) USGS flow gauging station located on McDowell Creek at MC4 at Beatties Ford Road. There has been a continuous automated monitoring station in operation at this location since July 2005. In the spring of 2006, USGS installed two (2) additional gauging stations upstream in the watershed at McCoy Road on Torrence Creek and Gilead Road on McDowell Creek. In October 2006, two (2) additional continuous automated monitoring stations were installed at each of these new USGS gauging stations. A thorough evaluation has been completed of the historical chemical, physical and biological monitoring activities in the watershed and a new "McDowell Creek and Cove Water Quality Monitoring Plan" (see Appendix A) has been developed and implemented to ensure that the effectiveness of restoration efforts is being accurately measured for meeting the goals described in Section 3 and summarized in Table 23 below. In addition, goals and monitoring techniques for assessing the stream channel will be developed and implemented in October 2006.

Table 23: Watershed Restoration Goals.

## Upland Pollutant Loading Rate Goals (for BMPs)

1. $\mathrm{TN} \leq 4 \mathrm{lbs} / \mathrm{ac} / \mathrm{yr}$
2. $\mathrm{TP} \leq 0.6 \mathrm{lbs} / \mathrm{ac} / \mathrm{yr}$
3. $\mathrm{TSS} \leq 0.22$ tons $/ \mathrm{ac} / \mathrm{yr}$

## In-Stream Water Quality Goals

1. $\mathrm{TSS} \leq 0.3$ tons $/ \mathrm{ac} / \mathrm{yr}$
2. Benthic Macroinvertebrates = Fully Supporting
3. Fish = Fully Supporting

## Stream Channel Goals (to be set following completion of channel assessment)

1. Entrenchment Ratio
2. Width/Depth Ratio
3. Dominant Channel Materials
4. Bank Erosion Rate

### 6.2 Annual Status Report

By December 31 of every year beginning in 2006 and continuing through the completion of the Watershed Management Plan (anticipated for December 31, 2020), the Mecklenburg County Water Quality Program will complete a McDowell Creek Watershed Management Plan Annual Status Report to at a minimum include the following information:

- Status of compliance with goals identified in Table 17.
- Status of compliance with the schedule included in Table 18.
- Status of all projects underway in the watershed.
- Recommended changes to Watershed Management Plan.

This report will be made available to all the key players involved in the implementation of the Watershed Management Plan, including the Director of Water \& Land Resources, Manager of Storm Water Engineering, Manager of the Water Quality Program, Supervisor of the Catawba Section, Modeler for the Water Quality Program and a representative from the Town of Huntersville. This group will serve as the "Watershed Management Evaluation Team."


Figure 61: Water Quality Monitoring Site at MC4 along Beatties Ford Road.

### 6.3 Adaptive Management

The Watershed Management Evaluation Team described in Section 6.2 above will meet at least annually following the completion of each Watershed Management Plan Annual Status Report to evaluate the effectiveness of the Plan at meeting the goals described in Table 23 above. This evaluation will be based on the data and information contained in the Report as well as other pertinent facts and information provided regarding the
effectiveness of the Plan at meeting established goals. During these meetings, consideration will also be given as to the effectiveness of the goals at measuring the effectiveness of the Plan. It may be necessary that goals be changed or that changes be made to the Plan. These changes will be reflected in the Watershed Management Plan and will become effective immediately.

## SECTION 7. PROCESS FORWARD

The three (3) phase process for restoring the McDowell Creek Watershed is described in Table 24 below.

Table 24: McDowell Creek Watershed Restoration Process and Schedule.

| $\begin{gathered} \text { Task } \\ \# \\ \hline \end{gathered}$ | Task Description | Schedule | Staff Lead |
| :---: | :---: | :---: | :---: |
| Phase I: Assessment \& Master Planning (2006) |  |  |  |
| 1. | Install automated turbidity monitoring equipment on Torrence and McDowell Creeks and begin data collection. Implement other enhanced water quality monitoring activities as necessary to fully assess the effectiveness of the Watershed Management Plan and include these enhancements in Appendix A of the Plan. Monitoring activities to continue throughout project. | January 2006 <br> - June 2006 | David Caldwell |
| 2. | Conduct intensive survey of the Focus Areas identified in Section 5.1.1. | January 2006 <br> - July 2006 | David Kroening |
| 3. | Complete an evaluation of stream segments in catchments with un-forested S.W.I.M. Buffers at $50 \%$ or greater as identified in Table 15. | January 2006 <br> - July 2006 | Brian Sikes |
| 4. | Conduct in-stream channel assessments and complete the McDowell Creek Watershed Riparian Zone Management Plan (Section 3.3). Integrate this Plan into Appendix B of the Watershed Management Plan, including setting stream channel goals and identifying restoration projects. Monitoring activities to continue throughout project. | $\begin{aligned} & \text { January } 2006 \\ & \text { - October } \\ & 2006 \end{aligned}$ | Brian Sikes |
| 5. | Develop a Master Plan for the Focus Areas, buffer enhancements and channel restoration projects based on results from Tasks \#2, \#3 and \#4 above. As a component of the Master Plan, estimate costs and identify funding sources (develop budget). The purpose of the Master Plan is to identify and prioritize mitigation projects. Include the Master Plan into Appendix C of the Watershed Management Plan. | $\begin{aligned} & \text { August } 2006 \\ & \text { - December } \\ & 2006 \end{aligned}$ | David Kroening |
| 6. | Conduct watershed-wide mapping of existing BMP structures. Inspect BMPs and require maintenance/repairs as necessary. Develop and implement a routine inspection program for BMPs in the watershed. | $\begin{aligned} & \text { January } 2006 \\ & \text { - December } \\ & 2006 \end{aligned}$ | David Caldwell \& Heather Davis |


| $\begin{gathered} \text { Task } \\ \# \end{gathered}$ | Task Description | Schedule | Staff Lead |
| :---: | :---: | :---: | :---: |
| Phase II: High Priority Mitigation \& Restoration (2007-2020) |  |  |  |
| 1. | Implement findings of the Master Plan developed in Phase I, Task \#5 above by mitigating existing upland pollution sources on public properties identified in Section 5.1.1. | $\begin{aligned} & \text { January } 2007 \\ & \text { - December } \\ & 31,2015 \end{aligned}$ | David Kroening |
| 2. | Implement findings of the Master Plan developed in Phase I, Task \#5 above by replanting impacted buffers on public properties identified in Table 15. | January 2007 <br> - December <br> 31, 2015 | David Kroening |
| 3. | Implement findings of the Master Plan developed in Phase I, Task \#5 above by implementing channel restoration projects. | $\begin{aligned} & \text { January } 2007 \\ & \text { - December } \\ & 2015 \end{aligned}$ | David Kroening |
| 4. | Implement findings of the Master Plan developed in Phase I, Task \#4 above by completing Phase II tasks \#1, \#2 and \#3 on private property. | $\begin{aligned} & \text { January } 2007 \\ & \text { - December } \\ & 2020 \end{aligned}$ | David Kroening |
| Phase III: Medium-High Priority Assessment \& Mitigation (2008-2020) |  |  |  |
| 1. | Conduct intensive survey of the medium to high priority public parcels listed in Table 14 that are located outside the Focus Areas. | January 2008 <br> - July 2008 | David Kroening |
| 2. | Develop a Master Plan for the medium to high priority catchments based on survey results to identify and prioritize mitigation projects. As a component of the Master Plan, estimate costs and identify funding sources (develop budget). Integrate the Master Plan into Appendix D of the McDowell Creek Watershed Management Plan. | August 2008 <br> - December <br> 2008 | David Kroening |
| 3. | Implement Master Plan developed in Phase III, Task \#2 above on public and private property. | $\begin{array}{\|l\|} \hline \text { January } 2009 \\ \text { - December } \\ 2020 \\ \hline \end{array}$ | David Kroening |
| Ongoing Efforts for all Phases |  |  |  |
| 1. | Continue monitoring efforts and assess progress toward meeting the upland, instream and channel goals described in Table 17. The establishment of a turbidity/sediment relationship will need to occur following at least one (1) year of flow data from the new USGS flow gaging sites to be installed on McDowell Creek in 2006. | $\begin{aligned} & \text { January } 2006 \\ & \text { - December } \\ & 2020 \end{aligned}$ | David Caldwell |


| Task <br> $\#$ | Task Description | Schedule | Staff Lead |
| :--- | :--- | :--- | :--- |
| 2. | Continue the inspection of BMPs in the <br> McDowell Creek Watershed. New BMPs <br> installed as a component of the <br> implementation of Master Plans will also <br> need to be maintained and inspected on a <br> regular basis. | January 2006 <br> - December <br> 2020 | David <br>  <br> Heather Davis |
| 3. | Produce written annual progress reports on <br> the implementation of McDowell Creek <br> Watershed Management Plan, including at a <br> minimum the mitigation projects completed <br> and a summary of the upland, in-stream and <br> channel monitoring results as well as a trend <br> analysis to assess compliance with goals <br> (Table 17). | January 2006 <br> - December <br> 2020 | David <br> Kroening |
| 4. | Conduct annual adaptive management <br> sessions with key Plan participants. Review <br> data contained in the annual reports and adapt <br> the McDowell Creek Watershed Management <br> Plan as necessary to enhance effectiveness. | January 2006 <br> - December <br> 2020 | Droening <br> Kavid |
| 5. | Continue to work with Real Estate \& Property <br> Management to acquire important parcels in <br> the McDowell Creek Watershed. These <br> parcels will be identified as part of the Master <br> Planning process. | January 2006 <br> - December <br> 2020 | David <br> Kroening |

## SECTION 8. CONCLUSION

The McDowell Creek Watershed is biologically impaired and McDowell Creek Cove is impacted from storm water runoff and wastewater treatment plant effluent. Historical watershed protection efforts, such as the adoption of the water supply watershed protection regulations, were ineffective at protecting stream and cove water quality. Implementation of the Huntersville Water Quality Ordinance is designed to prevent continued degradation of stream and lake water quality from new development; however, pre-existing sources of pollution remain partially or completely un-mitigated. In order to restore the water quality in McDowell Creek and McDowell Creek Cove, pre-existing sources of pollution will need to be mitigated and in-stream stressors to benthic macroinvertebrate life removed. In this way Mecklenburg County can achieve its ultimate goal for McDowell Creek of improving water quality conditions such that designated uses are met and the creek and cove are no longer impaired. The effective implementation of this Watershed Management Plan will enable this to be accomplished but it will take time. It is currently anticipated that this process will take a minimum of 15 years between 2006 and 2020. Protecting our downstream drinking water supply in Mountain Island Lake and restoring an important natural resource in McDowell Creek will be the end result, which is well worth the effort.

## Appendix A McDowell Creek and Cove Water Quality Monitoring Plan

## Background

A comprehensive management plan has been developed for the McDowell Creek Watershed to restore water quality conditions throughout the watershed. The McDowell Watershed encompasses approximately 30 square miles in northwestern Mecklenburg County. The majority of the watershed is within the Town of Huntersville jurisdiction, while the upper portion is within Cornelius. The two named tributaries of McDowell Creek are Torrence Creek and Caldwell Station Creek. The watershed has approximately 80 miles of streams. McDowell Creek drains into Mountain Island Lake upstream of Charlotte Mecklenburg's primary drinking water intake. The majority of the McDowell Creek watershed is classified as WS-IV waters. In 2000, numerous portions of McDowell Creek were listed on the State's 303d list of impaired waters. The current DRAFT 2006 303d list still includes McDowell Creek as being impaired due to biological integrity. Data collected by Mecklenburg County supports the listing due to the loss of biological habitat which has occurred from increased sediment loads in the stream. Sediment sources are attributed to upland loads from increased development and construction, as well as in-stream loads from unstable stream banks which are also related to increased flow caused by increased impervious area throughout the watershed.

## Purpose

The purpose of this monitoring plan is to specify the activities and methods that will be implemented for monitoring the watershed in a way that will be supportive to the overall McDowell Creek Watershed Management Plan. The monitoring of the watershed will support the Management Plan by providing data and information to assess the Plan's overall effectiveness at obtaining the water quality goals.

## Water Quality Goals

Section 3 of the McDowell Creek Watershed Management Plan outlines the watershed indicators and goals. The following summarizes these goals.

## Upland Goals

These goals are appropriate to be applied to retrofit BMP projects as a catchment wide design standard. Monitoring to achieve these goals will be achieved through individual project monitoring plans. Table 1 lists the upland goals.

Table 1: Upland Pollutant Loading Rate Goals.

| Parameter | Goal |
| :--- | :--- |
| Total Nitrogen | $\leq 4$ pounds/acre/year |
| Total Phosphorus | $\leq 0.6$ pounds/acre/year |
| Total Suspended Solids | $\leq 0.22$ tons/acre/year |

## In-Stream Goals

These goals reflect the desired water quality in the stream itself. Monitoring for compliance with these goals will be achieved through numerous strategies discussed later in this plan. Table 2 contains the in-stream water quality goals

Table 2: In-Stream Water Quality Goals.

| Parameter | Goal |
| :--- | :--- |
| Total Suspended Solids | $\leq 0.3$ tons/acre/year |
| Benthic Macroinvertebrates | Fully Supporting |
| Fish | Fully Supporting |

## Stream Channel Goals

These goals will relate to the physical condition of the stream channel. These goals have not yet been established since data is still being collected through the assessment of the stream channels. The goals will likely be based upon various geomorphic channel measurements such as Entrenchment Ratios, Width/Depth Ratios, Dominant Channel Matrix, and Bank Erosion Rates.

## Monitoring Strategy

As mentioned above, this plan does not address monitoring for adherence to the upland loading rates. This will be accomplished through the monitoring of specific projects on a case by case basis. The purpose of this plan is to outline the monitoring necessary to measure adherence to the In-Stream Water Quality Goals and the Stream Channel Goals (when they are established). This will be accomplished through various monitoring techniques such as Continuous Flow Monitoring, Continuous Rainfall Monitoring, Continuous Monitoring \& Alert Notification Network (CMANN), TSS Monitoring, Fixed Interval Grab Sampling, Bacteria Monitoring, Benthic Macroinvertebrate / Fish Monitoring and Habitat Assessment, Geomorphic Stream Channel Assessments, and Lake Monitoring. Since the stream is impaired due to biological integrity, the monitoring program is geared towards providing routine checks on the diversity and abundance of aquatic organisms, as well as thoroughly assessing the primary pollutant (sediment) which is the primary cause of the aquatic habitat loss throughout the watershed. A table summarizing all of the monitoring is provided in Table 8, along with a site map (Map 1) at the end of this document.

## Continuous Flow Monitoring

The monitoring of stream flow throughout the watershed is critical to the success of the monitoring program. Without flow data, an accurate assessment of pollutant loads cannot be obtained. Pollutant concentration data only provides a snap shot of the pollution in the stream at that particular location. Flow data accompanying concentration data provides a more thorough evaluation of watershed conditions.

In order to adequately assess flow throughout the watershed, three (3) flow gauges are located in the watershed. These gauges are owned and maintained by the United States Geological Survey (USGS). Mecklenburg County will continue to contract with the USGS to provide the necessary maintenance and data collection at these gauges. The gauges collect flow data 24 hours a day, 7 days a week and real-time data is available via the USGS web site. Table 3 below indicates the location of the flow gauges within the McDowell Watershed. The gauges at Gilead Road and McCoy Road were recently added in 2006.

The addition of a new gauge at McDowell Creek at Sam Furr Road is proposed during FY 07-08. This will allow a more accurate evaluation of stream conditions in the upper watershed, below the area identified as Focus Area 2 in the Watershed Management Plan.

Table 3: Flow Gauges.

| USGS Site ID | Location | Coordinates | MCWQP Site ID |
| :--- | :--- | :--- | :--- |
| 02142654 | McDowell Creek at | 35.24 .26 | MC2A-1 |
|  | Gilead Road | 80.53 .26 |  |
| 0214266000 | McDowell Creek at | 35.23 .23 | MC4 |
| (CSW10) | Beatties Ford Road | 80.55 .16 |  |
| 02142658 | Torrence Creek at | 35.24 .04 | MC3E-1 |
|  | McCoy Road | 80.52 .12 |  |
|  | McDowell Creek at |  | MC2 (**) |
|  | Sam Furr Road |  |  |
| $(* *)$ Indicates proposed new site for 2007 |  |  |  |

## Continuous Rainfall Monitoring

Rainfall is an important component of assessing the water quality in the watershed since most of the pollution originates from non-point sources. More rainfall has historically meant higher pollutant loads in the streams from upland sources, more bank full stream events and more stream bank erosion.

Rainfall data is collected through the USGS rain gauge network which collects continuous rainfall data 24 hours a day and 7 days a week. The USGS maintains the rain gauge network. Data is available through the USGS web site. Mecklenburg County will continue to contract with the USGS to provide this data. Table 2 provides the location of the rain gauges within the McDowell Watershed.

Table 4: Rain Gauges

| USGS Site ID | Location | Coordinates | MCWQP Site ID |
| :--- | :--- | :--- | :--- |
| 02142651 (CSW09) | McDowell Creek at | 35.27 .50 | $\mathrm{n} / \mathrm{a}$ |
|  | Westmoreland Road | 80.52 .35 |  |
| 0214266000 | McDowell Creek at | 35.23 .23 | MC 4 |
| (CSW10) | Beatties Ford Road | 80.55 .16 |  |
| 352523080535545 | Cooks Dairy Farm | 35.25 .23 | $\mathrm{n} / \mathrm{a}$ |
| (CRN62) |  | 80.53 .55 |  |


| USGS Site ID | Location | Coordinates | MCWQP Site ID |
| :--- | :--- | :--- | :--- |
| 352440080505045 | Huntersville Elementary | 35.24 .40 | $\mathrm{n} / \mathrm{a}$ |
| (CRN43) | School | 80.50 .47 |  |

## Continuous Monitoring \& Alert Notification Network (CMANN)

The CMANN network is a custom monitoring program developed by the Mecklenburg County Water Quality Program. The McDowell Watershed has three (3) CMANN sites as indicated in Table 5 below. Each site is equipped with a YSI multi probe sonde which constantly measures Temperature, Dissolved Oxygen, Conductivity, pH and Turbidity. The sites are powered with batteries accompanied by solar panels and include a data logger and dial out system. The CMANN sites collect data at 15 minute increments. Real time and historical data is available at a secure web site. USGS flow gauge sites are located at all CMANN sites in order to provide correlation of data. The CMANN program provides a critical component to the monitoring program through the use of its turbidity data. This turbidity data (collected at 15 minute increments) will be correlated with Total Suspended Solids (TSS) concentrations at various flows. This correlation provides the necessary data to measure success as compared to overall in-stream TSS goals discussed earlier. In addition, the CMANN sites are programmed to alert Water Quality staff in case of exceedances of predetermined action levels so that potential pollution sources can be identified and eliminated.

A new CMANN site is proposed for FY 07-08 at Site MC2. This site will allow a more accurate evaluation of stream conditions in the upper watershed, below the area identified as Focus Area 2 in the Watershed Management Plan.

Table 5: CMANN Sites.

| Location | Coordinates | MCWQP Site ID |
| :--- | :--- | :--- |
| McDowell Creek at Gilead Road | 35.24 .26 | MC2A-1 $\left(^{*}\right)$ |
|  | 80.53 .26 | MC4 |
| McDowell Creek at Beatties Ford Road | 35.23 .23 | MC3E-1 $\left(^{*}\right)$ |
|  | 80.55 .16 | MC2 $\left(^{* *}\right)$ |
| Torrence Creek at McCoy Road | 35.24 .04 |  |
|  | 80.52 .12 |  |
| McDowell Creek at Sam Furr Road |  |  |
| $\left({ }^{*}\right)$ Indicates new site for 2006 |  |  |
| $\left({ }^{* *}\right)$ Indicates proposed new site for 2007 |  |  |

## Total Suspended Solids (TSS) \& Turbidity Monitoring

A critical component of being able to accurately assess the current TSS loading values in the watershed is the ability to maintain an accurate Turbidity / TSS relationship. Since the CMANN sites will collect field turbidity data throughout a given flow regime, TSS grab samples will also be routinely collected at all CMANN sites at a range of turbidity levels. In FY06-07 a total of 24 grab samples will be collected at each site, one grab sample at various increments between 100 NTU and up to 1500 NTUs (as measured by
the CMANN turbidity probe). These samples will also be analyzed for turbidity by the lab in order to evaluate the CMANN field turbidity accuracy. The frequency of sampling will be evaluated as monitoring occurs and the turbidity/TSS relationship is developed, and modified if necessary to maintain an accurate relationship.

## Fixed Interval Grab Sampling

The Fixed Interval Grab Sampling program is designed to assess water quality by collecting grab samples at a fixed date each month, regardless of the flow conditions. Fixed Interval Grab Samples will be collected only at Site MC4. Samples are analyzed for a full suite of parameters, as listed in Table 6 below.

Table 6: Fixed Interval Grab Sampling Parameters.

| Temperature (field) | Total Phosphorus |
| :--- | :--- |
| Dissolved Oxygen (field) | Total Suspended Solids (TSS) |
| Conductivity (field) | USGS Suspended Sediment Test (SSC) |
| pH (field) | PSD- Particle Size Distribution |
| Fecal Coliform Bacteria | Turbidity |
| E-Coli Bacteria | Copper |
| Ammonia Nitrogen | Zinc |
| Total Nitrogen | Chromium |
| Total Kjeldahl Nitrogen | Lead |

## Bacteria Monitoring

Bacteria in streams is a significant concern from a public health standpoint. The purpose of the Bacteria Monitoring Program is to quickly identify potential health related issues and eliminate them. The majority of the McDowell Creek Watershed is served by the Charlotte Mecklenburg Utilities sanitary sewer system. Although the Utilities Department has a preventive maintenance program, sewer lines often become clogged with grease and debris and can overflow into nearby streams. Failing septic systems can also be sources of bacteria. Monthly grab samples for fecal coliform bacteria and E-Coli are collected at the sites indicated in Table 7. This sampling occurs during base flow (dry weather) conditions.

Table 7: Bacteria Monitoring Sites

| Location | Coordinates | MCWQP Site ID |
| :--- | :--- | :--- |
| McDowell Creek at Gilead Road | 35.24 .26 | MC2A-1 |
|  | 80.53 .26 |  |
| McDowell Creek at Beatties Ford Road | 35.23 .23 | MC4 |
|  | 80.55 .16 | MC3E-1 $\left(^{*}\right)$ |
| Torrence Creek at McCoy Road | 35.24 .04 |  |
|  | 80.52 .12 | MC2 |
| McDowell Creek at Sam Furr Road |  | MC4A |
| McDowell Creek at Neck Road |  |  |
| Indicates new site for 2006 |  |  |

## Benthic Macroinvertebrate / Fish Monitoring / Habitat Assessment

Since McDowell Creek is listed on the State's 303d list due to biological integrity, macroinvertebrate monitoring is an important component of the monitoring plan. The presence of a diverse, pollution intolerant macroinvertebrate community is a sign of a healthy stream. Available habitat, as well as water chemistry is a key to maintaining a macroinvertebrate community. Excess sediment has jeopardized aquatic habitat in the majority of the McDowell Watershed.

The monitoring of fish populations and diversity are also an important indicator of a stream's health. The presence of a diverse population of fish is also influenced by water chemistry and available habitat and food. Like benthic macroinvertebrates, fish are sensitive to changes in water quality and will reflect the impacts of pollution on a water body. Fish are also extremely mobile and able to quickly vacate an area if conditions are not suitable.

In order to assess aquatic habitat, the Mecklenburg County Habitat Assessment Protocol is used to evaluate aquatic habitat and riparian zones at the benthic macroinvertebrate sampling sites. Habitat information is important for evaluating the physical and chemical effects on a stream. It is also a critical factor to consider when evaluating the benthic macroinvertebrate community at a site. Habitat is evaluated and scored annually at each site using the protocol.

In order to adequately assess macroinvertebrates in the McDowell Watershed, samples will be collected and processed annually at the sites indicated in Table 8 below. Fish samples will be collected once every five years at the same sites.

Table 8: Benthic Macroinvertebrate and Fish Sampling Sites

| Location | Coordinates | MCWQP Site <br> ID |
| :--- | :--- | :--- |
| McDowell Creek at Gilead Road | 35.24 .26 | MC2A-1 |
|  | 80.53 .26 |  |
| McDowell Creek at Beatties Ford Road | 35.23 .23 | MC4 |
|  | 80.55 .16 |  |
| Torrence Creek at McCoy Road | 35.24 .04 | MC3E-1 (*) |
|  | 80.52 .12 |  |
| McDowell Creek at Sam Furr Road (below | MC2 (*) |  |
| Caldwell Station) |  |  |
| $\left(^{*}\right)$ Indicates new site for 2006 |  |  |

## Geomorphic Stream Channel Assessments

Stream channel stability reflects the ability of the stream, over time, to transport the flows and sediment from its watershed in such a manner that the dimension, pattern and profile of the stream is maintained. By monitoring the stream channel, we can quantify stability by evaluating whether the stream is aggrading or degrading and whether changes are
occurring in stream bed materials, bank erosion and morphological evolution. Channel stability will be assessed by the following three monitoring indicators.

1. Vertical or Bed Stability (aggradation/degradation)

Cross-sections and scour chains are used to determine if the stream is downcutting, filling or is stable. The rate, magnitude and direction of vertical change will be determined. Specifically, monumented cross-sections are helpful in providing an elevation reference to depict changes. Scour chains installed vertically in the stream bed will provide scour depths for various storm events. Often the stream bed will scour, then if the channel is stable, it will return to the pre-flooded elevation. Using a combination of scour chains and cross-sections can provide key data not only for vertical stability but also for sediment transport relations and biological interpretations.
2. Lateral Stability

To determine the rate and magnitude of bank erosion, bank pins will be installed at representative stream sites to provide a profile of the stream. Pins will be re-surveyed following runoff events to obtain measured stream bank erosion rates. Measured stream bank erosion rates can be expressed in feet/year, cubic yards/year, and total tons/stream reach for a given flow or for a runoff season. Rosgen's Bank Erodibility Hazard Index (BEHI) will be used to assign a score for each bank at the cross-section.
3. Bed Material Size Distribution

Composition of the stream bed is a good indicator of changes in stream character, channel form, hydraulics, erosion rates and sediment supply. A pebble count gives a quantitative description of the bed material. Pebble counts will be performed at the permanent cross sections.

The above monitoring will be conducted annually at the sites indicated in Table 9 below.
Table 9: Stream Channel Assessment Sites

| Sites | Coordinates | Location |
| :--- | :--- | :--- |
| M1 |  | Unnamed Tributary <br> McDowell downstream of <br> Bud Henderson Road |
| N1 |  | McDowell Creek <br> downstream of Gilead Road |
| B1 |  | McDowell Creek upstream <br> of Hwy 21 (Cornelius) |
| F1 | Caldwell Station upstream <br> of Hwy 21 (Exit 25 area) |  |
| P1 | Torrence Creek upstream of <br> Huntersville Business Park <br> (Exit 23 area) |  |
| R1 (MC4) | 35.23 .23 | McDowell Creek @ <br> Beatties Ford Road |

## Lake Monitoring (McDowell Creek Cove on Mountain Island Lake)

Although not addressed in the McDowell Creek Watershed Management Plan and not listed on the State's 303d list of impaired waters, McDowell Creek Cove on Mountain Island Lake has shown significant signs of impairment over the last 15 years. The cove, which is relatively shallow and wide routinely reflects the impacts from the watershed in the form of elevated nutrients and chlorophyll-a levels. An improvement has been observed since 1998 due to nutrient removal systems being installed at Charlotte Mecklenburg Utilities McDowell Creek Wastewater Treatment Plant, which discharges into McDowell Creek just above the cove. Chlorophyll-a continues to be the parameter of concern in the cove.

Water chemistry samples are collected in McDowell Creek Cove on a monthly basis from May through September and every other month during the fall and winter. Samples are collected in the cove at two sites, MC3B (middle cove) and MC3 (rear cove). See Map 2 on page 76. Parameters analyzed are listed below in Table 10. Algal Densities are also analyzed and identified.

Table 10: Lake Sampling Parameters

| Temperature (field) | Total Phosphorus |
| :--- | :--- |
| Dissolved Oxygen (field) | Total Suspended Solids (TSS) |
| Conductivity (field) | Orthophosphorus |
| pH (field) | Chlorophyll-a |
| Secchi (field) | Alkalinity |
| Fecal Coliform Bacteria | Turbidity |
| E-Coli Bacteria | Toxic and Mineral Metals(annually) |
| Ammonia Nitrogen | VOCs (annually) |
| Total Nitrogen | Algal Density |
| Total Kjeldahl Nitrogen |  |

## Additions to Lake Monitoring Program

In FY 07-08, a CMANN site will be added to the rear of McDowell Creek Cove to monitor constant Chlorophyll-a levels, along with other field parameters. This will allow a closer look at algal changes throughout the year which will help to better understand the dynamics of the changing watershed.

Sediment traps in McDowell Creek Cove will be utilized to better evaluate cumulative sediment deposition from the watershed.

In FY 07-08, Mecklenburg County will investigate the use of the CE-Qual2 reservoir model recently developed by Duke Power for Mountain Island Lake. This model includes a predictor for chlorophyll-a, among other things, and was designed for Mountain Island Lake. It may be helpful for predicting future impacts to the lake.

## Quality Assurance / Quality Control

All data discussed above will be collected by Mecklenburg County Water Quality Program staff, with the exception of Flow and Rainfall data which is collected by the USGS. All sample and data collected by Mecklenburg County staff is collected in strict adherence to the following documents:

Charlotte-Mecklenburg Surface Water Quality Sampling Procedures Manual, 2005
Mecklenburg County Stream Bioassessment Operating Procedures, 2003
Mecklenburg County Stream Habitat Assessment Protocols, 2000
CMANN Policy and Procedure Manual, 2005
Mecklenburg County Water Quality Program QA/QC Data Tracking, 2006
Mecklenburg County holds the following permits associated with monitoring:
NC Division of Water Quality Laboratory Certification Program - 5235
This permit is associated with the collection of samples, field parameters and instrumentation.

NC Division of Water Quality Biological Certification Program - 036
This permit is associated with the collection and identification of benthic macroinvertebrates.

## Reporting \& Adaptive Management

Any exceedance of an Action Level by any parameter will be immediately reported to the supervisor who will assign the necessary follow up action to identify and eliminate the pollution source(s). In addition, at the end of each fiscal year, all monitoring data collected throughout the watershed will be reviewed and compiled into a yearly report. The report will summarize all data and indicate the program's current position as it relates to the watershed goals.

Adaptive management meetings will be held as needed and at least annually to discuss yearly reports, progress and goal status. Modifications will be made as necessary.

## Conclusion

The McDowell Watershed Monitoring Plan is a key component in the implementation of the McDowell Watershed Management Plan. The management plan outlines specific instream water quality goals that must be measured accurately in order to gauge success. The monitoring plan uses a combination of physical, chemical and biological strategies to adequately assess the watershed. The monitoring plan is meant to be a living document and will be revised as needed when new information is obtained. At a minimum, the plan will be reviewed annually prior to the adoption of the new Water Quality Program Work Plan.
McDowell Creek Watershed Monitoring Plan ...................................... August 2006

| SITES | Flow | Rainfall | CMANN | TSS | Fixed Interval | Bacteria | Macroinvertebrate/ Fish/Habitat | Stream <br> Morphology | Lake <br> Monitoring |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| MC2 | X (2) |  | X (2) | X (2) |  | X | X (1) |  |  |
| MC2A-1 | X |  | X (1) | $\mathrm{X}_{(1)}$ |  | X | X |  |  |
| MC3E-1 (1) | $\mathrm{X}_{(1)}$ |  | $\mathrm{X}_{(1)}$ | $\mathrm{X}_{(1)}$ |  | X (1) | $\mathrm{X}(1)$ |  |  |
| MC4 | X | X | X | $\mathrm{X}_{(1)}$ | X | X | X | X (1) |  |
| MC4A |  |  |  |  |  | X |  |  |  |
| CSW09 |  | X |  |  |  |  |  |  |  |
| CRN43 |  | X |  |  |  |  |  |  |  |
| CRN62 |  | X |  |  |  |  |  |  |  |
| M1 |  |  |  |  |  |  |  | X (1) |  |
| N1 |  |  |  |  |  |  |  | X (1) |  |
| B1 |  |  |  |  |  |  |  | $\mathrm{X}(1)$ |  |
| F1 |  |  |  |  |  |  |  | X (1) |  |
| P1 |  |  |  |  |  |  |  | X (1) |  |
| MC3 |  |  | X (2) |  |  |  |  |  | X |
| MC3B |  |  |  |  |  |  |  |  | X |
| (1) Indicate (2) Indicate | $\begin{aligned} & \text { new } \mathrm{m} \\ & \text { new pr } \end{aligned}$ | itoring fo posed mon | $\begin{aligned} & 2006 \\ & \text { toring for } 2 \end{aligned}$ |  |  |  |  |  |  |



Map 2. McDowell Creek Watershed<br>Lake Monitoring Sites



## Appendix B <br> References

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## Appendix C McDowell Creek Retrofit and Restoration Master Plan

The purpose of this BMP Master Plan for the McDowell Creek Watershed is to present retrofit and restoration opportunities throughout the watershed targeted at existing sources of pollution. Complete implementation of this plan is designed to remediate the existing sources of pollution resulting in removal of the watershed from the North Carolina State 303(d) list. This document, in combination with the stream assessment and prioritization portion of the McDowell Watershed Management Plan, will guide future restoration efforts within the Watershed. This document is intended to be modified and amended as new projects are created and current projects are completed. The basic structure of this document presents each focus area and, subsequently, each catchment within the focus area. Each BMP recommendation within the catchment is then documented. At the beginning of each section the 2 highest priority projects are listed and any existing projects are presented.

This BMP Master Plan was prepared through intensive windshield surveys of each of the focus areas. The focus areas were a result of the modeling exercise presented in the McDowell Creek Watershed Management Plan. The focus areas were the most polluted areas as predicted by the model.

## I. Load Comparison

The relative contribution of sediment to McDowell Creek was able to be estimated through evaluation of the results of the Buck Stream Assessment and the calculated upland load (presented in the McDowell Creek Watershed Management Plan). The following table presents the estimated annual sediment production by category:

| System | Total Length <br> (miles) | Estimated Annual <br> Sediment Load <br> (tons) | Percent <br> Breakdown |
| :---: | :---: | :---: | :---: |
| Major Stream <br> System | 30.4 | 14568.7 | $29 \%$ |
| Minor Stream <br> System | 93.0 | 30060.0 | $59 \%$ |
| Upland | NA | 6162.61 | $12 \%$ |
| Total |  | 50791.3 | $100 \%$ |

The following chart shows the relative contributions graphically:

The In-Stream Water Quality goal for TSS is 0.3 tons/acre/year. If this goal is multiplied by the area of the watershed (18,283 acres) the goal can be expressed as an overall annual load of 5485 tons. Comparison of this goal with the existing conditions presented above is presented in the following table:


| Existing TSS Load in tons/year (from above) | 50,791 |
| :---: | :---: |
| In-Stream TSS Goal Expressed in tons/year | 5,485 |
| Load Reduction Required (tons) | 45,306 |
| Load Reduction Required in percent | $89 \%$ |

## II. Cost Analysis

A detailed cost analysis comparing BMP installation, minor system stream enhancement and major system stream enhancement was prepared to guide budgetary and planning decisions. The analysis compared typical installation costs for various types of BMPs with rule of thumb estimates for stream restoration. The results were distilled down to cost per pound of sediment removed in order to compare stream restoration with BMP installation. Not included in the cost estimates was the cost of land or easement acquisition however, design and planning are included.

## A. Stream Restoration

A cost of $\$ 300$ per linear foot (LF) for stream restoration was used to estimate the overall stream restoration project cost. To estimate the amount of stream to be restored the results of the Buck investigation were used. Sediment loading per reach was obtained from the BEHI sediment load estimates and divided by the length of reach to obtain sediment loading per LF for both major and minor system. It was also assumed that upon
restoration the sediment load from the stream bank would approach zero. These values were assumed to be typical of the entire McDowell Creek Watershed. The results of the evaluation are as follows:

| System | Assessed <br> Length <br> (feet) | Assessed <br> Sediment <br> Load (tons) | Assessed <br> Sediment <br> Load <br> (tons/LF) | Cost of Stream <br> Restoration/LF | Cost per <br> pound of <br> sediment <br> removed |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Major | 62811.6 | 5704.8 | 0.0908 | $\$ 300$ | $\$ 1.65$ |
| Minor | 93083.5 | 8458.0 | 0.0909 | $\$ 300$ | $\$ 1.65$ |

The resulting cost (\$1.65/pound removed) is likely a very conservative estimate. Not all assessed reaches will require full stream restoration to eliminate bank erosion, which will reduce cost significantly (stream maintenance is estimated at \$50/LF). Surprisingly, the calculated assed sediment load per LF was almost identical for both the major and minor system. This may be an indicator of very similar levels of degradation in both systems.

## B. BMP Retrofits

In order to estimate the relative cost/benefit of BMP retrofits several typical BMPs were analyzed along with several typical land uses in the McDowell Creek Watershed. For the analysis, commercial, high density residential, medium density residential and institutional land-uses were analyzed. BMP cost per acre of land treated and TSS removal efficiencies were obtained from research prepared for Mecklenburg County's Post Construction process. Sediment loading per acre of land-use values were obtained from Tetra Tech reports prepared for the Post Construction Ordinance Process. The results of the analysis are as follows:

| BMP Type | Cost/ac <br> Treated | TSS Removal <br> Efficency | Average \$/lb <br> TSS removed |
| :---: | :---: | :---: | :---: |
| Sand Filter | $\$ 20,000$ | $85 \%$ | $\$ 24.43$ |
| Wet Pond | $\$ 22,000$ | $65 \%$ | $\$ 35.15$ |
| Wetland | $\$ 31,500$ | $65 \%$ | $\$ 50.33$ |
| Rain Garden | $\$ 16,000$ | $85 \%$ | $\$ 19.55$ |
| Extended <br> Detention | $\$ 31,500$ | $47 \%$ | $\$ 69.60$ |
| WQ Swale | $\$ 3,000$ | $80 \%$ | $\$ 3.89$ |
| Filter Strip | $\$ 3,000$ | $50 \%$ | $\$ 6.23$ |
| Pond Retrofit | $\$ 6,700$ | $35 \%$ | $\$ 19.88$ |

## C. Conclusions of the Cost/Benefit Analysis

From the aforementioned analysis it is evident that stream restoration is the most cost effective method of removing sediment from the McDowell. It is more than 2 times cheaper to remove a pound of sediment through stream restoration than from the most cost effective BMP (WQ Swale), which may not be appropriate in many situations. Stream restoration appears to be the most expedient method of removing sediment from McDowell Creek, however BMPs will continue to play a role in attenuating temperature and removing hydrocarbons from built upon areas.

## III. Approach

Review of Sections I and II of this document reveal that stream restoration is the most cost effective means of controlling sediment in the McDowell Creek Watershed. Moreover, unstable reaches also appear to be the largest source of sediment in the watershed (almost $90 \%$ ). Therefore, reduction of TSS load in the McDowell Creek Watershed will focus upon stream restoration and enhancement. However, sediment is not the only reason for the impaired macroinvertebrate population in the watershed. Habitat, water temperature and toxic pollutants (such as hydrocarbons) are also likely causes of the impairment. For this reason, BMP retrofits listed in subsequent sections will focus upon reducing runoff and stream temperature and sources of toxic pollutants. This will be accomplished as follows:

1. Conduct stream restoration and enhancement in the major and minor systems.
2. Retrofit currently untreated concentrations of impervious cover with BMPs designed to reduce temperature and toxic pollutants. BMP type will be determined on a site by site basis with the purpose of the device being to attenuate first flush temperature and hydrocarbon runoff. Because the BMPs are focused on the first flush of runoff, they only need to be designed to treat 0.25 inches of rainfall and not the 1 inch of rainfall currently specified in design manuals.
3. Reforest buffers as needed to attenuate temperature spikes through providing additional shade for the stream corridor. An ancillary and unaccounted for benefit from buffer restoration may be further reduction of sediment load from the near stream environment.
4. Design stream restoration and enhancements to focus upon improving habitat in addition to limiting sediment load.
5. When possible and cost effective, retrofit existing ponds to provide additional TSS removal and, if possible, temperature attenuation. Each project should be evaluated prior to design for the possible improvements in TSS loading, runoff volume and velocity and temperature.

## IV. Stream Restoration

Stream reaches assessed by Buck within the McDowell Creek watershed were prioritized based on need and feasibility for restoration using the data matrix. Using the SWIM buffer GIS layer, assessed reaches were coded by drainage system type so minor system and major system reaches could be prioritized independently. Reaches coinciding with a SWIM buffer width of 100 feet were coded as major system reaches and all other reaches were considered to be part of the minor system.

The need for restoration alone was represented by the total score from the data matrix (channel evaluation sheet) with lower scores signifying a higher need. However, such a ranking scheme completely neglected a feasibility component. Therefore, feasibility levels from the data matrix were assigned weights (Table below) which were multiplied by the data matrix total score per reach to arrive at a prioritized list of reaches incorporating both the feasibility component with the need for restoration. Once again, lower scores signify a higher priority. This methodology generally enabled reaches having a higher cost/benefit ratio to be promoted to higher priorities ahead of reaches where vast improvements are hindered by constraints and constructability issues.

Feasibility Weights per Level

| Feasibility Level | Weight |
| :---: | :---: |
| Minimal Constraints | 0.50 |
| Moderate Constraints | 0.75 |
| Significant Constraints | 1.00 |

After carefully reviewing the results of prioritized reaches from the major and minor systems, at least five reaches were selected from each system that represent the most viable projects in terms of restoration implementation based on our best professional judgment. Results from the prioritization of major and minor system reaches are presented in Table 1.1 and 1.2 respectively. Highlighted reaches indicate those that Buck has recommended as the highest priority. Description of each column header in the subsequent tables is as follows:

RANK (NEED \& FEASIBILITY): Describes the priority of the project (or reach). Complete description can be found above.

REACH: Corresponds to the Buck reach nomenclature found in the McDowell Creek Watershed Management Plan

RECOMMENDATION: Corresponds to the type of activity need for the reach. A detailed description of each activity can be found in Section 5.2 of the McDowell Creek Watershed Management Plan.

FEASIBILITY: Described above.
ASSESSED LENGTH: Stream Length of particular reach.
RANK: Described above.

BASIN: Corresponds to the Buck sub-basin nomenclature described in the McDowell Creek Watershed Management Plan.

SEDIMENT LOAD REMOVED: Describes the anticipated annual sediment load in tons that will be removed from McDowell Creek after completion of the project.

APPROXIMATE COST: Project cost estimate associated with either maintenance or restoration of the stream reach. Wetland restoration costs, where noted, are assumed to be incidental and included in the cost of stream restoration or maintenance. Rates for stream maintenance and restoration are as follows:

Enhancement I = \$150/linear foot
Enhancement II = \$50/linear foot
Restoration $=\$ 300 /$ linear foot

Property owners for each of the reaches listed below are included with this document as Attachment 1.
McDowell Creek Watershed Management Plan Version 4......................March 2, 2008
Major System Stream Restoration Prioritization List

| RANK (NEED \& FEASIBILITY) | REACH | RECOMMENDATION | FEASIBILITY | ASSESSED <br> LENGTH (ft) | RANK (NEED) | BASIN | Sediment Load Removed (tons/year) | Approximate Cost |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | B1a | Enhancement I | Minimal | 433 | 5 | B | 54.7 | \$64,950 |
| 2 | P14b | Restoration | Minimal | 2,137 | 7 | P | 2.73 | \$641,100 |
| 3 | 14a_15a | Restoration | Minimal | 1,132 | 8 | 1 | 115.7 | \$339,600 |
| 4 | O47a | Restoration | Minimal | 7,395 | 9 | 0 | 371.1 | \$2,218,500 |
| 5 | P14a | Restoration | Minimal | 1,663 | 11 | P | 97.73 | \$498,900 |
| 6 | 17a | Restoration - Wetland Enhancement | Minimal | 680 | 12 | 1 | 53.9 | \$204,000 |
| 7 | K7a | Restoration | Moderate | 2,795 | 2 | K | 240.07 | \$838,500 |
| 8 | M3c | Enhancement II | Minimal | 1,710 | 18 | M | 110.7 | \$85,500 |
| 9 | O44 | Enhancement II | Minimal | 1,228 | 19 | O | 55.1 | \$61,400 |
| 10 | K7d | Restoration | Moderate | 1,171 | 3 | K | 100.7 | \$351,300 |
| 11 | U28a | Restoration | Moderate | 2,017 | 4 | U | 132.1 | \$605,100 |
| 12 | B7a | Restoration | Significant | 2,101 | 1 | B | 84.6 | \$630,300 |
| 13 | N29a | Restoration | Moderate | 8,843 | 10 | N | 905.5 | \$2,652,900 |
| 14 | K7b | Restoration | Moderate | 2,122 | 13 | K | 109.97 | \$636,600 |
| 15 | P13a | Restoration | Moderate | 1,373 | 14 | P | 90.3 | \$411,900 |
| 16 | F30a | Enhancement I | Moderate | 4,150 | 15 | F | 167.92 | \$622,500 |
| 17 | K7c | Restoration | Moderate | 1,688 | 16 | K | 45.56 | \$506,400 |
| 18 | U14 | Restoration | Moderate | 1,955 | 17 | U | 147.3 | \$586,500 |
| 19 | E18a | Enhancement II | Significant | 4,766 | 6 | E | 247.58 | \$238,300 |
| 20 | F13a | Restoration upstream / Enhancement II downstream | Moderate | 2,521 | 20 | F | 83.98 | \$756,300 |

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Minor System Stream Prioritization List

| $\begin{gathered} \text { RANK (NEED } \\ \text { \& } \\ \text { FEASIBILITY) } \\ \hline \end{gathered}$ | REACH | RECOMMENDATION | FEASIBILITY | ASSESSED <br> LENGTH (ft) | RANK <br> (NEED) | BASIN | Sediment Load Removed (tons/year) | Approximate Cost |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 13a | Restoration | Minimal | 1,200 | 1 | I | 115.3 | \$360,000 |
| 2 | M1 | Restoration / Fence out cattle | Minimal | 1,430 | 10 | M | 153 | \$429,000 |
| 3 | N13d | Restoration | Minimal | 654 | 13 | N | 32 | \$196,200 |
| 4 | 111a | Restoration | Minimal | 844 | 14 | I | 62.1 | \$253,200 |
| 5 | M8b | Restoration / Fence out cattle | Minimal | 1,006 | 16 | M | 162.8 | \$301,800 |
| 6 | B18a_B19a | Enhancement II | Minimal | 603 | 18 | B | 48.6 | \$30,150 |
| 7 | E15a | Restoration | Minimal | 2,655 | 30 | E | 110.48 | \$796,500 |
| 8 | P15b | Restoration | Minimal | 707 | 31 | P | 707.6 | \$212,100 |
| 9 | B21a | Enhancement II | Minimal | 1,020 | 35 | B | 92 | \$51,000 |
| 10 | B11a | Restoration | Minimal | 680 | 37 | B | 64.3 | \$204,000 |
| 11 | P17a | Restoration | Minimal | 1,196 | 38 | P | 83.11 | \$358,800 |
| 12 | M9 | Enhancement II | Minimal | 2,029 | 41 | M | 142.7 | \$101,450 |
| 13 | N13b | Restoration | Minimal | 577 | 46 | N | 10.1 | \$173,100 |
| 14 | A8a | Enhancement II | Minimal | 820 | 48 | A | 14.46 | \$41,000 |
| 15 | U10 | Restoration | Minimal | 1,196 | 51 | U | 72.4 | \$358,800 |
| 16 | M6 | Restoration / Fence out cattle | Moderate | 1,617 | 5 | M | 117.3 | \$485,100 |
| 17 | A5b | Enhancement II | Minimal | 844 | 52 | A | 46.42 | \$42,200 |
| 18 | B9b_B10a | Enhancement II | Minimal | 1,034 | 55 | B | 95.3 | \$51,700 |
| 19 | A13b_A16a | Bank Stabilization | Minimal | 348 | 56 | A | 21.22 |  |


| $\begin{gathered} \text { RANK (NEED } \\ \& \\ \text { FEASIBILITY) } \end{gathered}$ | REACH | RECOMMENDATION | FEASIBILITY | ASSESSED <br> LENGTH (ft) | $\begin{aligned} & \text { RANK } \\ & \text { (NEED) } \end{aligned}$ | BASIN | Sediment Load Removed (tons/year) | Approximate Cost |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 20 | P23a | Enhancement II / <br> Improvement to culverts at sanitary sewer crossings to accommodate bankfull flows and sediment transport | Minimal | 1,800 | 57 | P | 36.26 | \$90,000 |
| 21 | B13a | Restoration | Moderate | 1,293 | 9 | B | 92.1 | \$387,900 |
| 22 | U8b | Enhancement II | Minimal | 722 | 61 | U | 50.2 | \$36,100 |
| 23 | A21a | Restoration | Moderate | 2,296 | 11 | A | 194.06 | \$688,800 |
| 24 | F11b | Enhancement I | Moderate | 2,001 | 12 | F | 109.11 |  |
| 25 | A5a_A18a | Enhancement II | Significant | 1,720 | 2 | A | 137.24 | \$86,000 |
| 26 | U17a | Restoration | Moderate | 1,206 | 17 | U | 81.8 | \$361,800 |
| 27 | U20 | Enhancement II | Minimal | 225 | 65 | U | 11.8 | \$11,250 |
| 28 | F8a | Buffer Enhancement | Minimal | 4,198 | 66 | F | 135.39 |  |
| 29 | F28b | Enhancement I | Significant | 2,208 | 3 | F | 120.27 | \$331,200 |
| 30 | B8a | Enhancement I | Moderate | 1,604 | 19 | B | 226.2 | \$240,600 |
| 31 | L3a | Bank Stabilization upstream of Statesville Rd. I Restoration downstream | Moderate | 2,220 | 20 | L | 145.8 |  |
| 32 | A13a | Enhancement II | Minimal | 807 | 67 | A | 21.2 | \$40,350 |
| 33 | F5a | Enhancement I | Moderate | 3,920 | 22 | F | 119.74 |  |
| 34 | B6a | Restoration | Moderate | 1,332 | 23 | B | 157.3 | \$399,600 |
| 35 | N13c | Enhancement II | Moderate | 431 | 24 | N | 7.9 | \$21,550 |
| 36 | B2a | Enhancement II | Significant | 407 | 4 | B | 43.9 | \$20,350 |

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|  <br> FEASIBILITY) | REACH | RECOMMENDATION | FEASIBILITY | ASSESSED <br> LENGTH (ft) | RANK <br> (NEED) | BASIN | Sediment Load <br> Removed (tons/year) | Approximate Cost |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 37 | 16a | Enhancement I | Moderate | 2,548 | 25 | I | 237.6 | \$382,200 |
| 38 | M8a | Enhancement I | Moderate | 1,072 | 26 | M | 151 | \$160,800 |
| 39 | U9a | Removal of large CMPs deposited in the channel | Moderate | 691 | 28 | U | 40.4 |  |
| 40 | B17a | Enhancement II | Moderate | 581 | 29 | B | 40.4 | \$29,050 |
| 41 | A1b | Buffer Enhancement | Moderate | 465 | 33 | A | 6.92 | \$23,250 |
| 42 | N8a | Restoration | Moderate | 1,317 | 34 | N | 72.4 | \$395,100 |
| 43 | B5a_B9a | Enhancement II | Moderate | 1,479 | 36 | B | 110.4 | \$73,950 |
| 44 | N13a | Enhancement II | Minimal | 648 | 69 | N | 31.2 | \$32,400 |
| 45 | M4_M3a | Restoration | Moderate | 769 | 39 | M | 112.9 | \$230,700 |
| 46 | L2a | Enhancement I | Significant | 1,322 | 6 | L | 34.07 | \$198,300 |
| 47 | O30b | Enhancement II | Moderate | 886 | 43 | O | 21.6 | \$44,300 |
| 48 | P18a | Restoration | Significant | 2,948 | 7 | P | 254.45 | \$884,400 |
| 49 | M12 | Restoration | Moderate | 1,177 | 44 | M | 181 | \$353,100 |
| 50 | O30c | Enhancement I | Significant | 2,643 | 8 | O | 143.55 | \$396,450 |
| 51 | B14a | Restoration | Moderate | 474 | 45 | B | 13.7 | \$142,200 |
| 52 | U15 | Enhancement I | Moderate | 490 | 47 | U | 60.4 | \$73,500 |
| 53 | L7a | Restoration upstream of Sherwood Drive / Improvement to Sherwood Drive culvert / Bank Stabilization downstream of Sherwood Drive | Significant | 1,369 | 15 | L | 52.16 | \$410,700 |
| 54 | B14b | Restoration | Moderate | 1,479 | 50 | B | 156.9 | \$443,700 |
| 55 | U29a | Enhancement II | Moderate | 1,443 | 53 | U | 166.7 | \$72,150 |


|  <br> FEASIBILITY) | REACH | RECOMMENDATION | FEASIBILITY | ASSESSED <br> LENGTH (ft) | RANK <br> (NEED) | BASIN | Sediment Load Removed (tons/year) | Approximate Cost |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 56 | U9b | Enhancement I | Moderate | 1,097 | 54 | U | 125.3 | \$164,550 |
| 57 | P15a | Enhancement II | Significant | 1,357 | 21 | P | 47.9 | \$67,850 |
| 58 | U3 | Enhancement I | Moderate | 1,639 | 58 | U | 74.7 | \$245,850 |
| 59 | F11a | Enhancement II | Moderate | 1,908 | 59 | F | 55.38 | \$95,400 |
| 60 | M3b | Enhancement II | Moderate | 1,513 | 62 | M | 150.6 | \$75,650 |
| 61 | U5b | Enhancement I | Moderate | 1,477 | 63 | U | 184.7 | \$221,550 |
| 62 | L5a | Enhancement I upstream / Restoration downstream | Significant | 3,004 | 27 | L | 251.83 | \$450,600 |
| 63 | U6 | Enhancement I | Moderate | 2,085 | 64 | U | 202 | \$312,750 |
| 64 | A20a | Bank Stabilization | Significant | 2,232 | 32 | A | 135.58 | \$111,600 |
| 65 | E8a | Enhancement II | Significant | 1,864 | 40 | E | 6.81 | \$93,200 |
| 66 | U16a | Restoration | Moderate | 1,730 | 68 | U | 126 | \$519,000 |
| 67 | 19a | Enhancement I | Significant | 1,090 | 42 | I | 55.7 | \$163,500 |
| 68 | F28a | Enhancement II | Significant | 2,434 | 49 | F | 72.09 | \$121,700 |
| 69 | U5a | Buffer Enhancement | Significant | 538 | 60 | U | 29.5 | \$26,900 |

## V. BMP Retrofits

Preparation of the Focus Area 1 portion of the McDowell Retrofit and Restoration plan has been delayed until an accurate accounting of all existing BMPs in the focus area. This is scheduled to be completed by June 30, 2007.

## A. Focus Area 2

Priorities for Focus Area 2 centered around retrofitting existing impervious area not currently treated by BMPs. BMPs proposed are to be designed to mitigate temperature impacts to the stream as well as chronic pollutants and sediment. At a minimum, BMPs should be designed to treat the "first flush" and safely bypass larger flows.

## Priority and Existing Projects in Focus Area 2:

Priority 1 Project: Willow Pond at Lake Norman<br>Parcel \# 005-17-178<br>Priority 2 Project: $\quad$ Silicon Drive Partners LLC and Beacon Partners LLC Parcel \# 005-27-302<br>Existing Project: Ange Project



Focus Area 1

1. Catchment MD1

Catchment MD1 is located in the Town of Cornelius. It is comprised of older single family residential, multifamily residential and some commercial land use. The Ange project, which is just downstream of the catchment, will be designed to treat the runoff from catchment MD1.


Catchment MD1, Focus Area2
2. Catchment MD2


Catchment MD2, Focus Area 2
Parcel: $\quad 005-20-129$
Owner: Charlotte/Mecklenburg Board of Education
Description: Site excellent candidate for treating surface and downspout drainage via rain-gardens and grass swales. Several open/grassed areas that can be converted to WQ treatment devices directly adjacent to buildings and parking lots.
Cost: $\quad \$ 128,000$
Priority: Medium
Parcel: 005-25-599
Owner: Mecklenburg County
Description: Ainge project site. This project is essential for treating both catchments MD1 and MD2 effectively. Conceptual designs prepared by Mecklenburg County indicate proposed storm water wetlands will be capable of achieving necessary pollutant removal from runoff from upstream areas. Project site is also ideally situated for stream restoration.
Cost: $\quad$ Grant obtained Fall, 2006; David Woodie - Project Manager
Priority: High
3. Catchment MD4

Catchment MD4 drains south from Catawba avenue and contains a portion of I-77 in its drainage area. The catchment also contains a portion of Statesville Road and built-up areas at I-77 and Statesville road. The catchment is primarily residential with some commercial/retail along Statesville Road. Critical retrofit elements in this watershed include water quality grass swales in the DOT ROW along Statesville Road and enhancement of an existing on-line pond.


Catchment MD4, Focus Area 2
Parcel: 005-18-306
Owner: Amend DMC Properties, Inc.
Description: Commercial site draining to Statesville Road. Excellent opportunity for enhanced grass swale in DOT ROW along Statesville Road. The area in the ROW should be evaluated for treatment of upstream parcels as well. A more intensive evaluation of the immediate upstream areas is required to properly determine the size of device.
Priority: Medium
Cost: $\quad \$ 32,000$
Parcel: 005-18-307
Owner: Amend DMC Properties, Inc.

| Description: | Commercial site draining to Statesville Road. Excellent opportunity for enhanced grass swale in DOT ROW along Statesville Road. |
| :---: | :---: |
| Priority: | Medium |
| Cost: | \$32,000 |
| Parcel: | 005-18-309 |
| Owner: | Lake Norman Hotel, Inc. |
| Description: | Commercial site draining to Statesville Road. Excellent opportunity for enhanced grass swale or rain garden in DOT ROW along Statesville Road. |
| Priority: | Medium |
| Cost: | \$6,000 |
| Parcel: | 005-18-302 |
| Owner: | ABC Board of Mecklenburg County |
| Description: | Commercial site draining to Statesville Road. Excellent opportunity for enhanced grass swale or rain garden in DOT ROW and ABC property along Statesville Road. |
| Priority: | Medium |
| Cost: | \$6,000 |

Parcel: 005-17-178
Owner: Willow Pond at Lake Norman Homeowners Association
Description: PRIORITY 1 PROJECT. On-line pond. This pond is essential to overall strategy for Catchment MD4. Upstream of pond is a possible natural wetland area (may be a result of pond construction), downstream spillway is undercut and maintenance of downstream corridor has been heavily rip-rapped in the past. This may be an indication of severe instream erosion. Pond does not appear to have any detention component as outlet structure is simply a spill way. Pond does not currently have any specific water quality benefit and appears to be an excellent opportunity for pond enhancement to include a water quality and detention component.
Priority: Medium
Cost: $\quad \$ 500,000$

## 4. Catchment MD5

Catchment MD5 drain a portion of I-77 near Catawba Avenue in Cornelius as well as a portion of Statesville Road in Cornelius. The catchment is dominated by I-77 and commercial property along I-77. The catchment is highly impervious and apart from the grass swales along I-77 no water quality treatment is present. Runoff entering the catchment from other areas will be treated by upstream BMPs, therefore, treatment in this catchment can be focused upon local sources.


Catchment MD5, Focus Area 2
Parcel: 005-13-201
Owner: William and Sara Talley
Description: Commercial site draining to Statesville Road. Excellent opportunity for enhanced grass swale or rain garden in DOT ROW along Statesville Road.
Priority: Medium
Cost: $\quad \$ 6,000$
Parcel: 005-41-209
Owner: Lakeside Automotive, Inc
Description: Commercial site draining to Statesville Road. Excellent opportunity for enhanced grass swale or rain garden in DOT ROW along Statesville Road. Site also drains South to McDowell Creek directly. There is minimal buffer on the site. Linear treatment, such as a rain garden or WQ swale is critical to overall Catchment health.
Priority: Medium
Cost: $\quad \$ 18,000$

Parcel: 005-41-238
Owner: Thomas Archer and Martha Cashion

Description: Commercial site draining to Statesville Road and directly to McDowell Creek. Potential opportunity to treat on site runoff with rain garden or water quality swale.
Priority: Medium
Cost: $\quad \$ 18,000$
Parcel: 005-41-245
Owner: MNLN LLC
Description: Commercial site draining to I-77 ROW. Opportunity for installation of rain garden at back corner of property.
Priority: Low
Cost: $\quad \$ 16,000$

## 5. Catchment MD7

Catchment MD7 drains the portion of the Town of Cornelius West of I-77 and South of Catawba Avenue. The catchment is typified by intensive commercial and some light industrial development. This development nearly $100 \%$ impervious and opportunity for retrofitting this watershed is largely situated in the DOT ROW along I-77 service road on the West side of I-77. The undeveloped portion of the watershed is largely undergoing active development and these parcels will be treated by BMPs. There are BMPs on two of the developed parcels, however, enhancement and/or maintenance of these devices should be a priority. Moreover, the storm water infrastructure in this catchment needs to be accurately mapped. Particularly, the piped infrastructure along Liverpool Parkway needs to be accurately documented (drop inlets, pipes, outfalls and surface swales). After the infrastructure is properly documented, there may be additional BMPs requirements to treat runoff from Liverpool Parkway.


Catchment MD7, Focus Area 2
Parcel: 005-27-201
Owner: BB\&T
Description: Commercial site draining to drop inlet in center of property. Good opportunity for rain garden at drop inlet.
Priority: Medium
Cost: $\quad \$ 16,000$

Parcel: 005-27-202
Owner: $\quad$ South Central Oil Company, Inc.
Description: Commercial/retail/strip mall site. Front parking lot drains to grassed swale at North-west corner of property. Excellent opportunity for rain garden and/or water quality grassed swale in parking lot and DOT ROW. Back side of strip mall is all impervious with no opportunity for retrofit. Treatment of these areas will have to occur downstream.
Priority: Medium
Cost: $\quad \$ 16,000$

Parcel: 005-27-206

| Owner: | Mecklenburg County - EMS Station |
| :---: | :---: |
| Description: | Commercial site draining to I-77 service road. Excellent opportunity for small rain garden at front of property, which would also treat some of the back side of 005-27-202. |
| Priority: | Medium |
| Cost: | \$3,000 |
| Parcel: | 005-27-205 |
| Owner: | TT of Cornelius Automotive Management Services Inc. |
| Description: | Highly impervious car dealership. Excellent opportunity for enhanced grass swale or rain garden in DOT ROW along I-77 Service Road. |
| Priority: | Medium |
| Cost: | \$48,000 |
| Parcel: | 005-27-211 |
| Owner: | TT of Cornelius Automotive Management Services Inc. |
| Description: | Highly impervious car dealership. Excellent opportunity for enhanced grass swale or rain garden in DOT ROW along I-77 Service Road. |
| Priority: | Medium |
| Cost: | \$48,000 |
| Parcel: | 005-13-127 |
| Owner: | TT of Cornelius Automotive Management Services Inc. |
| Description: | Highly impervious car dealership. Excellent opportunity for enhanced grass swale or rain garden in DOT ROW along I-77 Service Road. |
| Parcel: | 005-13-128 |
| Owner: | Geehoon Investment LLC |
| Description: | Highly impervious restaurant site. Good opportunity at this site for rain garden along southern property line. |
| Priority: | Medium |
| Cost: | \$32,000 |
| Parcel: | 005-27-302 |
| Owner: | Silicon Drive Partners LLC and Beacon Partners LLC |
| Description: | PRIORITY 2 PROJECT. Highly impervious office/light industrial site (Lake Norman Commerce Center). Excellent opportunity for rain gardens at this site. Existing dry detention appears to be failing, heavily eroded on down stream side of spillway. All drainage is to perimeter of parcel thru curb cuts and drop inlets with short pipe sections to drainage swale. Drainage swale could easily be converted to a water quality swale. This is a high priority site. |


| Priority: | High <br> Cost: |
| :--- | :--- |
| \$148,800 |  |
| Parcel: | $005-27-313$ <br> Owner: |
| Mescription: | Highly impervious automotive repair shop (NASCAR shop?). Good <br> opportunity for linear BMP at downstream end of parking lot. Water <br> quality swale or linear rain garden are the best option. Northwest corner <br> of site is currently under construction. This area of the site should be <br> evaluated for rain garden when construction is completed. |
| Priority: | Medium <br> \$6,000 |
| Cost: | $005-27-107$ |
| Parcel: | Karpenisi Associates LLC |
| Owner: |  |
| Description: | Highly impervious restaurant site. Grass swale at front of property should <br> be converted to rain garden or water quality swale. Opportunity exists to <br> treat some of upstream drainage. |
| Priority: | Medium <br> Cost: |
| \$6700 |  |

## B. Focus Area 3

Focus Area 3 is located within Huntersville's jurisdiction and is roughly split by Old Statesville Road. The land use within the focus area contains industrial, commercial, institutional (park and church properties) and single family residential. Fortunately, there is a great deal of public property in the watershed downstream of the highly developed properties.

Priority 1 Project: Mecklenburg County Park Property
Parcel \# 009-11-119


Focus Area 3

## 1. Catchment MDT1-2

Catchment MDT1-2 is dominated by industrial land uses. There appears to be space within most of the industrial parcels to treat runoff at the source, however, downstream from them is park property, which may be able to be used to locate a semi-regional BMP.


Catchment MDT1-2, Focus Area 3

Parcel: 011-02-115
Owner: Huntersville Hardwoods, Inc.
Description: Large industrial site. Entire site drains to the railroad spur on the Western edge of the property. Good opportunity for the installation of water quality swale and rain garden or pocket wetland. Treatment of the runoff from this site and the downstream concrete site are critical to the restoration of this catchment.
Priority: Medium
Cost: \$54,000

Parcel: 011-02-111
Owner: CCC Building Supply LLC
Description: Highly impervious concrete mixing facility. BMP location at downstream edge of property appears feasible. Pocket wetland would be the best solution in this situation.
Priority: High
Cost: $\quad \$ 33,500$

Parcel: 009-11-119
Owner: Mecklenburg County
Description: PRIORITY 1 PROJECT. Park. Excellent opportunity to treat runoff from Parking lots at the source with the installation of rain gardens. Moreover, the park site may be suitable for the installation of a semiregional BMP to treat the runoff from the upstream industrial sites.
Priority: High
Cost: $\quad \$ 40,000$

## 2. Catchment MDT1-3

Catchment MDT1-3 is comprised primarily of institutional and residential land uses. The main water quality concern for this catchment is the runoff from the residential areas and the runoff from the church site along with runoff from the impervious areas of the park. Much of the watershed is in public ownership, which provides a great deal of flexibility in treating the runoff.


Catchment MDT1-3, Focus Area 3
Parcel: 009-11-119

| Owner: | Mecklenburg County |
| :---: | :---: |
| Description: | PRIORITY 1 PROJECT. Park. Excellent opportunity to treat runoff from Parking lots at the source with the installation of rain gardens. Moreover, the park site appears to have a wetland downstream of the baseball fields. This should be investigated by staff with wetland delineation training. |
| Priority: | High |
| Cost: | \$40,000 |
| Parcel: | 009-11-130 |
| Owner: | Mecklenburg County |
| Description: | Currently undeveloped parcel. Parcel is well situated for the treatment of runoff from residential development on the southern end of catchment. Installation of pocket wetlands or rain gardens at end of pipe from neighborhood is the most viable solution as there does not appear to be enough room in the neighborhood for the installation of BMPs. |
| Priority: | Low |
| Cost: | \$472,500 |

## C. Focus Area 4

Focus Area 4 is located in the Town of Huntersville and drains the older portion of the town. It is dominated by older residential land as well as retail/commercial land use. There is intensive commercial land use bracketing I-77, however, these parcels were developed with water quantity (quality?) treatment ponds. Because of this, retrofit efforts are focused upon areas to the east of Statesville Road, South of Gilead Road and west of Old Statesville Road. Because of the age of the development and the absents of public property, this focus area will be the most challenging to retrofit with BMPs.

Priority 1 Project: 017-11-402
Huntersville Methodist Church


Focus Area 4

## 1. Catchment MDTC10

Catchment MDTC10 is largely older single family residential with commercial/retail development at the perimeter of the catchment. There is no public property within the catchment. All projects will need to be done on private property or land will have to be acquired for the installation of BMPs.


Catchment MDTC10, Focus Area 4

Parcel: 017-11-615
Owner: Cross Chevrolet Co.
Description: Currently a Subaru Dealership. Parcel is well situated for the treatment of runoff generated by the site with the installation of a linear water quality BMP along the back of the property. This type of device would capture the downspouts as well as the surface runoff from the back of the parcel.
Priority: Low
Cost: $\quad \$ 20,000$
Parcel: 019-04-303
Owner: Huntersville Presbyterian
Description: Church site. Highly impervious parcel with limited opportunity for the installation of rain gardens to treat downspout and parking lot runoff.
Priority: Low
Cost: $\quad \$ 20,000$

Parcel: 017-11-402

Owner: Huntersville Methodist Church
Description: Church site. This site is very important to the overall strategy for the catchment. Piped drainage is "daylighted" on this parcel, which provides an opportunity to direct upstream runoff into a treatment device on site. A rain garden may be overwhelmed by the drainage area, however the landowners will probably not agree to installation of a larger device.
Priority: High
Cost: $\$ 32,000$

## 2. Catchment MDTC16

Catchment MDTC16 is largely comprised of commercial development along both sides of I-77. Much of the development is already treated by some sort of BMP, however there are several opportunities to enhance the existing structures. Moreover, the DOT ROW along Statesville Road provides and excellent opportunity to treat runoff from the adjacent parcels. There may also be opportunities along the I-77 corridor to treat runoff generated by the roadbed itself.


Catchment MDTC16, Focus Area 4
Parcel: 017-44-108
Owner: Hallmark of Statesville, Inc.

Description: Hotel site. Existing dry detention (?) on hotel property. Does not appear to be functioning properly. Excellent opportunity to retrofit dry detention with water quality components.
Priority: Medium
Cost: $\quad \$ 16,000$
Parcel: $\quad$ DOT ROW along Statesville Road
Owner: $\quad$ Several - NC DOT owns ROW
Details: $\quad$ Critical aspect of treating water quality in this catchment is working cooperatively with NC DOT to install water quality treatment devices along Statesville Road. Currently drainage is thru swales, which could be converted to water quality swales or stepped rain gardens.
Priority: High
Cost: $\quad \$ 3,000 /$ acre treated

## D. Focus Area 5

Focus Area 5 is the least impacted of the 5 focus areas. Work within this catchment will focus upon working with NC DOT to treat runoff from the I-77 and Statesville Road corridors in combination with focused efforts to treat runoff from specific sites.

Priority 1 Project: The Bowman Group Property
Parcel \# 017-45-101
Priority 2 Project: Mecklenburg County Park Property
Parcel \#017-42-110


Focus Area 5

1. Catchment MDTC14

Catchment MDTC14 is dominated by I-77 and a transportation firm.


Catchment MDTC14, Focus Area 5
Parcel: 017-45-101
Owner: The Bowman Group
Description: PRIORITY 1 PROJECT. Transportation site. Good opportunity for the installation of a rain garden at the downstream end of the site. Site is dominated by overland drainage from a gravel lot. Swales will need to channel runoff into the rain garden cell.
Priority: High
Cost: $\quad \$ 64,000$
2. Catchment MDTC10

Catchment MDTC10 is dominated by the I-77 corridor and multiple commercial/institutional sites. Runoff should be treated on-site.


Catchment MDTC5, Focus Area 5

| Parcel: | 017-42-110 |
| :---: | :---: |
| Owner: | Mecklenburg County |
| Description: | PRIORITY 2 PROJECT. Park site. Good opportunity for the installation of a rain garden at the downstream end of the parking lot perpendicular to flow. |
| Priority: | High |
| Cost: | \$32,000 |
| Parcel: | 017-41-115 |
| Owner: | Mecklenburg County |
| Description: | Institutional Site. Good opportunity for the installation of a rain garden at the downstream end of the parking lot perpendicular to flow. |
| Priority: | High |
| Cost: | \$32,000 |
| Parcel: | 017-41-115 |
| Owner: | Pal-A-Roo's Properties LLC |

Description: Commercial Property. Good opportunity for the installation of a rain garden at the downstream end of the parking lot perpendicular to flow.
Priority: Medium
Cost: $\quad \$ 16,000$

## VI. Buffer Re-Forestation

Buffer reforestation in the McDowell Creek watershed is a critical component of returning McDowell Creek to a condition of fully supporting its designated uses. Specifically, a forested buffer provides shade for the creek, which limits heating of the stream during summer months. Also, a forested buffer provides treatment of direct runoff to the stream as well as organic material in the form of leaf litter during the fall. There are 320 different parcels with un-forested buffer area in excess of 0.1 acres totaling 438 acres. Ownership of these areas is spread across 229 land owners. The top 20 land owners of un-forested buffer are presented below:

| Owner | Un-forested <br> Area |
| :--- | :---: |
| MECKLENBURG COUNTY | 52.016 |
| BIRKDALE GOLF ASSOCIATES LLC | 27.918 |
| CARRINGTON RIDGE LLC | 26.524 |
| ARVIDA MID-ATLANTIC HOMES INC | 16.943 |
| CLARK REGINALD L | 15.940 |
| MCAULAY FARMS LLC | 15.681 |
| COOK E H JR | 15.490 |
| PIZZAGALLI PROPERTIES LLC | 15.137 |
| BANK OF AMERICA | 14.874 |
| BANKS RICHARD TORRANCE | 13.681 |
| BROWN WILLIAM VERNON | 13.190 |
| CITY OF CHARLOTTE | 11.591 |
| HORTON D R INC-TORREY | 9.614 |
| HUNTERSVILLE BUSINESS PROPERTY | 8.680 |
| HENDERSON PARK HOMEOWNER`S | 7.158 |
| HUNTERSVILLE DEVELOPMENT LLC | 6.855 |
| DOUGLAS HELEN KIDD $\quad$ B/E | 5.313 |
| HILLS COMMUNITIES OF CHARLOTTE | 5.123 |
| BELLINGHAUSEN CARL | 4.788 |
| COOK INVESTMENTS L P U/A |  |

For the purpose of this plan, only publicly owned property with at least 0.5 acres of unforested buffer will be targeted for reforestation. For all cost calculations re-forestation of buffers is estimated to cost $\$ 1430 /$ acre. This value was developed assuming mixed
hardwood trees (seedlings) would be planted on eight-foot grid. Specific parcel information on publicly owned parcels to be reforested is as follows:

| Priority | PID | Parcel Area | Un-forested Area (ac) | OWNER | Cost |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 01538197 | 14.804 | 13.115 | MECKLENBURG COUNTY | \$18,754 |
| 2 | 01509104 | 24.893 | 8.144 | $\begin{gathered} \text { MECKLENBURG } \\ \text { COUNTY } \\ \hline \end{gathered}$ | \$11,646 |
| 3 | 01535199 | 13.081 | 7.881 | MECKLENBURG COUNTY | \$11,270 |
| 4 | 00935101 | 151.300 | 7.332 | CITY OF CHARLOTTE | \$10,485 |
| 5 | 01509107 | 13.000 | 7.068 | MECKLENBURG COUNTY | \$10,107 |
| 6 | 01323105 | 111.930 | 3.727 | CITY OF CHARLOTTE | \$5,330 |
| 7 | 00507112 | 100.596 | 3.556 | MECKLENBURG COUNTY | \$5,085 |
| 8 | 01318101 | 0.000 | 2.775 | MECKLENBURG COUNTY | \$3,968 |
| 9 | 01535245 | 11.709 | 1.770 | MECKLENBURG COUNTY | \$2,531 |
| 10 | 00504219 | 1.520 | 1.754 | TOWN OF CORNELIUS | \$2,508 |
| 11 | 01325599 | 13.520 | 1.530 | MECKLENBURG COUNTY | \$2,188 |
| 12 | 01325548 | 7.530 | 1.495 | MECKLENBURG COUNTY | \$2,138 |
| 13 | 01505199 | 17.652 | 1.319 | MECKLENBURG COUNTY | \$1,886 |
| 14 | 01543103 | 19.127 | 0.608 | MECKLENBURG COUNTY | \$869 |

McDowell Creek Watershed Management Plan Version 4.

| parcelid | Restoration | $\underset{\substack{\text { OWNER, FIRST } \\ \text { NAME }}}{\text { N }}$ | COWNER, FIRST NAME | COWNER, LAST NAME |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| PARCELID | OWNER, LAST NAME | NAME | FIRST NAME | NAME | Houseno | STDIR | STNAME | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MALADDR2 | CITY | State | ZIPCODE |
| 00910126 | $\underset{\text { MONTEITH HOLDINGS }}{\text { LLC }}$ |  |  |  |  | N | STATESVILLE | RD |  | HUNTERSVILLE | $\underset{310}{\substack{\text { AMITY RTE STE } \\ \hline}}$ |  | CHARLOTTE | NC | 28211 |
| 00910127 | MONTEITH HOLDINGS <br> LLC |  |  |  |  |  | BANKSIDE | DR |  | HUNTERSVILLE | 13777 BALLANTYNE CORP PLZA\#32 |  | CHARLOTTE | NC | 28277 |
| 00910593 | MONTEITH HOLDINGS LLC |  |  |  |  |  | SHINNER | DR |  | HUNTERSVILLE | 310 <br> 501 S. SHARON AMITY RD STE 310 |  | CHARLOTTE | NC | 28211 |
| 00924398 | FIVE-H LAND COINC |  |  |  |  |  | dELANCEY | LN |  | HUNTERSVILLE | 6805 FAIRVIEW RD STEC |  | CHARLOTTE | NC | 28210- <br> 270 |
| 00934104 | MONTEITH HOLDINGS LLC |  |  |  |  |  | STUMPTOWN | RD |  | HUNTERSVILLE | 501 S. SHARON AMITY RD | STE 310 | CHARLOTTE | NC | 28211 |
| 00934198 | $\underset{\text { LLC }}{\text { MONTEITH HOLDING }}$ |  |  |  |  |  | STUMPTOWN | RD |  | HUNTERSVILLE | 501 SHHARON AMITY RD \#310 |  | CHARLOTTE | NC | 28211 |
| 00934687 | MONTEITH HOLDINGS LLC |  |  |  |  |  | WATERFRONT | DR |  | HUNTERSVILLE | 501 SOUTH SHARON AMITY RD \#310 |  | CHARLOTtE | NC | 28211 |

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| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 01504101 | ARVIDA MID ATLANTIC |  |  |  |  |  |  |  |  |  | 7900 GLADES |  |  |  |  |
| 01504101 | HOMES INC |  | ATE | \% HANKE | 7300 |  | GLEAD | RD |  | HUNTERSVILLE | RD \#200 |  | boca raton | FL | 33434 |
| 01504135 | ARVIDAMID-AILANTIC HOMES INC |  | BEATE | \% HANKE |  |  | DARBLAY | ST |  | HUNTERSVILLE | ${ }_{\text {la }}^{\text {7900 GLADES }}$ R200 |  | boca raton | FL | 434 |
| 01504136 | HIRACH | KATHRYN |  |  | 8009 |  | BAY | DR |  | HUNTERSVILLE | 8009 BAYLIS DRIVE |  | HUNTERSVILLE | NC | 28078 |
| 01543103 | MECKLENBURG COUNTY |  |  | \% REAL ESTATE /FINANCE DEPT | 8147 |  | MCILWAINE | RD |  | HUNTERSVILLE | 600 EAST 4TH ST 11TH FLOOR |  | CHARLOTTE | NC | 28202 |

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FEASIBLITY)

| RECOMMENDATION |
| :---: |
| PARCEL ID |
| 00911105 |
| 00911119 |

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FEASIBLITY)
recommendation
McDowell Creek Watershed Management Plan Version 4....................March 2, 2008

| PARCEL ID | OWNER, LAST NAME | OWNER, FIRST NAME | COWNER, FIRST NAME | COWNER, LAST NAME | HOUSENO | STDIR | STNAME | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MAILADDR2 | CITY | STATE | ZIPCODE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 01502113 | BARNETTE | AGNES B |  | (ET-AL) | 7107 |  | $\begin{gathered} \text { BUD } \\ \text { HENDERSON } \end{gathered}$ | RD |  | HUNTERSVILLE | $\begin{gathered} 7107 \text { BUD } \\ \text { HENDERSON } \\ \text { RD } \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 01502124 | FREENEY | STEPHEN P | KARRIS | FREENEY | 14442 |  | BEATTIES FORD | RD |  | HUNTERSVILLE | $\begin{gathered} \text { 16735-A } \\ \text { CRANLYN RD } \\ \# 124 \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| REACH RANK (NEED \& FEASIBILITY) RECOMMENDA | B18a_B19a <br> 6 <br> Enhancement II |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| PARCEL ID | OWNER, LAST NAME | OWNER, FIRST NAME | COWNER, FIRST NAME | COWNER, LAST NAME | HOUSENO | STDIR | STNAME | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MAILADDR2 | CITY | STATE | ZIPCODE |
| 00514402 | RAYMER | $\begin{gathered} \text { JOHN MCLAIN } \\ \text { JR } \\ \hline \end{gathered}$ | EVELYN K | RAYMER | 18628 |  | STATESVILLE | RD |  | CORNELIUS | PO BOX 588 |  | HUNTERSVILLE | NC | $\begin{gathered} 28070- \\ 0588 \end{gathered}$ |
| 00516678 | $\underset{\substack{\text { MECKLENBURG } \\ \text { COUNTY }}}{\text { R }}$ |  |  | \% REAL ESTATE /FINANCE DEPT | 20243 |  | FLORAL | LN |  | CORNELIUS | $\begin{aligned} & 600 \text { E 4TH ST } \\ & 11 \mathrm{TH} \text { FLOOR } \\ & \hline \end{aligned}$ |  | CHARLOTTE | NC | $\begin{gathered} 28202- \\ 2816 \end{gathered}$ |
| 00529170 | LOPARDI | JOSEPH A | ERIN | MCELROY | 20110 |  | COACHMANS WOOD | LN |  | CORNELIUS | TRACE LN |  | CORNELIUS | NC | 28031 |
| 00529171 | HOWEY | RANDOLPH E | ELEANOR Y | HOWEY | 20106 |  | $\begin{aligned} & \text { COACHMANS } \\ & \text { WOOD } \\ & \hline \end{aligned}$ | LN |  | CORNELIUS | $\begin{gathered} 20106 \\ \text { COACHMANS } \\ \text { WOOD LN } \\ \hline \end{gathered}$ |  | CORNELIUS | NC | 28031 |
| 00529172 | KALOS | ARTHUR C | CHRISTINE L | KALOS | 20102 |  | COACHMANS WOOD | LN |  | CORNELIUS | $\begin{gathered} 20102 \\ \text { COACHMANS } \\ \text { WOOD LN } \end{gathered}$ |  | CORNELIUS | NC | 28031 |
| 00529173 | $\underset{\text { THE }}{\text { TOWN OF CORNELIUS }}$ |  |  |  | 20100 |  | $\begin{aligned} & \text { COACHMANS } \\ & \text { WOOD } \end{aligned}$ | LN |  | CORNELIUS | PO BOX 399 |  | CORNELIUS | NC | 28031 |

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| 00930114 | HUGHES PLUMBING SUPPLY LTD |  |  |  | 16235 | NORTHCROSS | DR | HUNTERSVILLE | ONE HUGHES WAY | ORLANDO | FL | 32805 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 00930C99 | CHERRY | JOHN R | JUNE B | CHERRY | 16501 | NORTHCROSS | DR | HUNTERSVILLE | $\begin{gathered} 16501 \\ \text { NORTHCROSS } \\ \text { DR STE A1 } \\ \hline \end{gathered}$ | HUNTERSVILLE | NC | $\begin{gathered} 28078- \\ 5086 \end{gathered}$ |
| 00930C99 | COOL BROKERS | LLC |  |  | 16315A | NORTHCROSS | DR | HUNTERSVILLE | $\begin{gathered} 16315 A \\ \text { NORTHCROSS } \\ \text { DR } \end{gathered}$ | HUNTERSVILLE | NC | 28078 |
| 00930C99 | DIAGNOSTIC SERVICES INC |  |  |  | 16507 | NORTHCROSS | DR | HUNTERSVILLE | $\begin{gathered} 16507 \\ \text { NORTHCROSS } \\ \text { DR \#C } \end{gathered}$ | HUNTERSVILLE | NC | 28078 |
| 00930C99 | DIXON 2 INC |  |  |  | 16507 | NORTHCROSS | DR | HUNTERSVILLE | $\begin{gathered} 16507 \\ \text { NORTHCROSS } \\ \text { DR STE D } \\ \hline \end{gathered}$ | HUNTERSVILLE | NC | $\begin{gathered} 28078- \\ 5082 \\ \hline \end{gathered}$ |
| 00930C99 | ENGEL | WILLIAM J |  |  | 16405 | NORTHCROSS | DR | HUNTERSVILLE | 16405 NORTHCROSS DR STE D | HUNTERSVILLE | NC | $\begin{gathered} 28078- \\ 5006 \\ \hline \end{gathered}$ |
| 00930C99 | FOURNIER | DUANE K | VICKIE L | FOURNIER | 16419E | NORTHCROSS | DR | HUNTERSVILLE | $\begin{gathered} 10321 \\ \text { CLUBHOUSE } \\ \text { VIEW LN } \end{gathered}$ | CHARLOTTE | NC | 28277 |
| 00930C99 | FOX | RUSSELL |  |  | 16507 | NORTHCROSS | DR | HUNTERSVILLE | $\begin{gathered} 16507-G \\ \text { NORTHCROSS } \\ \text { DR } \end{gathered}$ | HUNTERSVILLE | NC | 28078 |
| 00930C99 | GOODMAN A |  |  |  | 16419F | NORTHCROSS | DR | HUNTERSVILLE | $\begin{gathered} 13000 \\ \text { MOORESVILLE } \\ \text { RD } \\ \hline \end{gathered}$ | DAVIDSON | NC | 28036 |
| 00930C99 | HOUCK | M E | CATHY G | HOUCK | 16419 | NORTHCROSS | DR | HUNTERSVILLE | $\begin{gathered} 119 \text { SAILVIEW } \\ \text { RD } \end{gathered}$ | MOORESVILLE | NC | 28117 |
| 00930C99 | $\underset{\text { KLC }}{\text { KALEY PROPERTIES }}$ |  |  |  | 16405 | NORTHCROSS | DR | HUNTERSVILLE | $\begin{gathered} 20617 \\ \text { BETHELWOOD } \\ \text { LN } \\ \hline \end{gathered}$ | CORNELIUS | NC | 28031 |
| 00930C99 | KELLAM | W J JR |  | W CHRIS <br> PARNELL | 16419 | NORTHCROSS | DR | HUNTERSVILLE | $\begin{gathered} 2901 \\ \hline \text { COLTSGATE RD } \\ \text { STE } 102 \\ \hline \end{gathered}$ | CHARLOTTE | NC | $\begin{gathered} 28211- \\ 3572 \end{gathered}$ |
| 00930C99 | KILKO PROPERTIES INC |  |  |  | 16405 | NORTHCROSS | DR | HUNTERSVILLE | $\begin{gathered} 20617 \\ \text { BETHELWOOD } \\ \text { LN } \end{gathered}$ | CORNELIUS | NC | 28031 |
| 00930C99 | LE | MARK M |  | LE NORTH RECTION, LLC | 16415F | NORTHCROSS | DR | HUNTERSVILLE | 17705 SPRING WINDS DRIVE | CORNELIUS | NC | $\begin{gathered} 28031- \\ 7591 \\ \hline \end{gathered}$ |
| 00930C99 | LE FAMILY ENTERPRISES II LLC |  |  |  | 16511 | NORTHCROSS | DR | HUNTERSVILLE | 17705 SPRINGWIND DR | CORNELIUS | NC | 28031 |
| 00930C99 | LE FAMILY <br> ENTERPRISES III LLC |  |  |  | 16501 | NORTHCROSS | DR | HUNTERSVILLE | 17705 SPRINGWOOD DR | CORNELIUS | NC | 28031 |
| 00930C99 | LE FAMILY <br> ENTERPRISES IV LLC |  |  |  | 16501 | NORTHCROSS | DR | HUNTERSVILLE | $\begin{gathered} 17705 \\ \text { SPRINGWIND } \\ \text { DR } \end{gathered}$ | CORNELIUS | NC | 28031 |
| 00930C99 | LE FAMILY ENTERPRISES VILLC |  |  |  | 16419C | NORTHCROSS | DR | HUNTERSVILLE | 17705 SPRINGWIND DR | CORNELIUS | NC | 28031 |
| 00930C99 | MARQUIS HOME BUILDERS, INC |  |  |  | 16419D | NORTHCROSS | DR | HUNTERSVILLE | 16419 NORTHCROSS DRIVE D | HUNTERSVILLE | NC | 28078 |
| 00930C99 | $\begin{gathered} \text { MOCK PROPERTIES } \\ \text { LLC } \\ \hline \end{gathered}$ |  |  |  | 16325 | NORTHCROSS | DR | HUNTERSVILLE | 19529 MARY ARDREY CR | CORNELIUS | NC | 28031 |
| 00930C99 | PIFER | DOROTHY T |  |  | 16409 | NORTHCROSS | DR | HUNTERSVILLE | 16409-A NORTHCROSS DR | HUNTERSVILLE | NC | 28078 |
| 00930C99 | TRIPLE H REAL ESTATE LLC |  |  |  | 16507 | NORTHCROSS | DR | HUNTERSVILLE | 16507 NORTHCROSS DR \#E | HUNTERSVILLE | NC | 28078 |
| 00930C99 | VPC CAPITAL LLC |  |  |  | 16409 | NORTHCROSS | DR | HUNTERSVILLE | PO BOX 36938 | CHARLOTTE | NC | 28236 |
| 00930C99 | WACHOVIA SBA LENDING INC |  |  |  | 16405 | NORTHCROSS | DR | HUNTERSVILLE | $\begin{gathered} 1620 \mathrm{E} \\ \text { ROSEVILLE PKY } \\ \hline \end{gathered}$ | ROSEVILLE | CA | 95661 |
| 00930C99 | WALTERS | JAMES L | ENEIDA | WALTERS | 16507 | NORTHCROSS | DR | HUNTERSVILLE | 16507-A NORTHCROSS DR | HUNTERSVILLE | NC | 28078 |
| 00930C99 | WASKIN | JOHN A | CHERYLL | WASKIN | 16507 | NORTHCROSS | DR | HUNTERSVILLE | 18435 PENINSULA COVE LN | CORNELIUS | NC | 28031 |

McDowell Creek Watershed Management Plan Version 4.....................March 2, 2008

McDowell Creek Watershed Management Plan Version 4....................March 2, 2008

| PARENDAT | Enhancement II | OWNER, FIRST NAME | COWNER, | COWNER, LAST NAME | houseno | STDIR | stanm | STTYPE | STSUFFIX | MUNICIPALITY | MALLADDR1 | MALLADDR2 | CITY | STATE | ZIPCODE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 01501114 | baRnette | BERTRAM A III | JULIEP | BARNETTE |  |  | BEATTES FORD | RD | stsumx | HUNTERSVILLE | 14700 BEATTIES FORD RD | MALADDR2 | huntersvile | NC | 28078 |
| 01501198 | barnette | BERTRAM Alll | JULE P | barnette |  |  | BEATTES FORD | RD |  | HUNTERSVILLE | 14700 BEATTIES FORD RD |  | huntersvilie | nc | 28078 |
| 01502113 | baRnette | Agnes b |  | (ET-AL) | 7107 |  | BUD HENDERSON | RD |  | HUNTERSVILLE | $\begin{gathered} \text { T107 BUD } \\ \text { HENERSON } \\ \text { RD } \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 01502128 | QUAN | WILLIAM SHANE | TERESAF | QUAN |  |  | BEATTIES FORD | RD |  | HUNTERSVILLE | 14422 BEATTIES FORD RD |  | HUNTERSVILLE | NC | 28078 |
| 01540102 | LINDERMAN | CLIFTON EARL |  | ROGERC LINDERMAN (B/W) | 14520 |  | BEATTIES FORD | RD |  | HUNTERSVILLE | 242 MEADOW OAKS DR |  | STATESVILLLE | NC | 28625 |
| 01541111 | COOK FARMS LLC |  |  |  |  |  | GILEAD | RD |  | HUNTERSVILLE | 7602 OLIVER HAGER RD |  | HuNTERSVILLE | NC | 28078 |
| REACH RANK (NEED \& FEASIBILITY) RECOMMENDATION |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| PARCELID | OWNER, LASt NAME | OWNER, FIRST NAME | COWNER, | COWNER LAST | houseno | STDIR | stname | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MALLADDR2 | CITY | State | ZIPCODE |
| 01503101 | STEPHENS RIDGE LLC | \% NEW SOTH |  |  |  |  |  | RD |  | HUNTERSVILLE | 15188AST 3RD ST\#200 |  | CHARLOTTE | NC | 28204 |
| 01504106 | ARVIDA MID-ATLANTIC HOMES INC |  | beate | \% HANKE | 7930 |  | BUD HENDERSON | RD |  | HUNTERSVILLE | $\underset{\substack{7900 \text { glades } \\ \text { RD } \# 200}}{ }$ |  | boca raton | FL | 33434 |
| 01504111 | ARVIDA MID-AALANTIC HOMESINC |  | beate | \% HANKE | 7926 |  | BUD HENDERSON | RD |  | HUNTERSVILLE | ${ }_{\text {7900 GLADES }}^{\text {RD \#20 }}$ |  | boca raton | FL | 33434 |
| 01504112 | ARVIDA MID-ALLANTIC HOMESINC |  | beate | \% HANKE |  |  | DARBLAY | ST |  | huntersville | 7900 GLADES RD \#200 |  | bocaraton | FL | 33434 |

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\begin{gathered}
\text { A8a } \\
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\end{gathered}
$$

Enhancement II

| PARCEL ID | OWNER, LAST NAME | OWNER, FIRST NAME | COWNER, FIRST NAME | COWNER, LAST NAME | HOUSENO | STDIR | STNAME | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MAILADDR2 | CITY | STATE | ZIPCODE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 00512111 | kNOX | WALTER LEE | SUSAN | KNOX | 19610 |  | WEST CATAWBA | AV |  | CORNELIUS | 9718 OLD GATE |  | MATTHEWS | NC | 28105 |
| 00512149 | ONE NORMAN SQUARE IP | ATTN: HARRIS HASTON |  |  | 19400 |  | ONE NORMAN | BV |  | CORNELIUS | 3301 WEST END |  | NASHVILLE | TN | 37203 |
| 00527301 | CORNELIUS DEVELOPMENT LLC |  |  |  | 19425 |  | LIVERPOOL | PY |  | CORNELIUS | 1050 EAGLES LANDING PARKWAY | SUITE 300 | STOCKBRIDGE | GA | 30281 |

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Restoration

| STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MAILADDR2 | CITY | State | ZIPCODE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| BV | EAST | HUNTERSVILLE | $\begin{gathered} \text { REIS NCL } 00211 \\ 07 \end{gathered}$ | BANK OF AMERICA PLAZA \#11 | CHARLOTTE | NC | $\begin{gathered} 28255- \\ 0131 \\ \hline \end{gathered}$ |
| BV |  | HUNTERSVILLE | REIS NCL 07 00211 | BANK OF AMERICA PLAZA \#11 | CHARLOTTE | NC | $\begin{array}{r} 28255- \\ 0131 \\ \hline \end{array}$ |


McDowell Creek Watershed Management Plan Version 4.....................March 2, 2008

| COMMENDAT | cattle |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| PARCEL ID | OWNER, LAST NAME | NAER, FIRST | $\xrightarrow{\text { COWNER, }}$ | COWNER, LAST NAME | Houseno | STDIR | STNAME | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MALLADDR2 | CITY | State | ZIPCODE |
| 01502113 | BARNETTE | AGNES B |  | (ET-AL) | 7107 |  | $\begin{aligned} & \text { BUD } \\ & \text { HENDERSON } \end{aligned}$ | RD |  | HUNTERSVILLE | 7107 BUD HENDERSON RD |  | HUNTERSVILLE | NC | 28078 |
| 01502128 | QUAN | WILLIAM <br> SHANE | TERESAF | QUAN |  |  | BEATTIES FORD | RD |  | HUNTERSVILLE | 14422 BEATTIES FORD RD |  | HUNTERSVILLE | NC | 28078 |
| 01540101 | LINDERMAN | AMARYLIIS V |  |  | 14532 |  | BEATTIES FORD | RD |  | HUNTERSVILLE | 14512 BEATTIES FORD RD |  | HUNTERSVILLE | NC | 28078 |
| 01540102 |  | CLIFTONEARL |  | ROGER C LINDERMAN (B/W) | 14520 |  | BEATTIES FORD | RD |  | HUNTERSVILLE | 242 MEADOW OAKS DR |  | STATESVILLLE | NC | 28625 |
| 01540104 | GORDON LAND- NASSAR INVESTMENTS | JOINT VENTURE |  |  |  |  | BEATTIES FORD | RD |  | HUNTERSVILLE | 10100 PARK CEDAR DR\#180 |  | CHARLOTTE | NC | 28031 |

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17

| PARCEL ID | OWNER, LAST NAME | OWNER, FIRST NAME | COWNER, FIRST NAME | COWNER, LAST NAME | HOUSENO | STDIR | STNAME | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MAILADDR2 | CITY | STATE | ZIPCODE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 00512149 | ONE NORMAN SQUARE LP | ATTN: HARRIS HASTON |  |  | 19400 |  | ONE NORMAN | BV |  | CORNELIUS | $\begin{gathered} 3301 \text { WEST END } \\ \text { AV \#200 } \\ \hline \end{gathered}$ |  | NASHVILLE | TN | 37203 |
| 00526108 | YOUNG | DONNA W |  |  | 19211 |  | DUTCH IRIS | LN |  | CORNELIUS | $\begin{gathered} 19211 \text { DUTCH } \\ \text { IRIS LN } \\ \hline \end{gathered}$ |  | CORNELIUS | NC | 28031 |
| 00526109 | KILLIAN | JAMES E | CYNTHIA B | KILLIAN | 19219 |  | DUTCH IRIS | LN |  | CORNELIUS | PO BOX 1218 |  | NEWTON | NC | 28652 |
| 00526309 | GARRICK | JONATHAN G |  |  | 19230 |  | DUTCH IRIS | LN |  | CORNELIUS | $\begin{gathered} 19230 \text { DUTCH } \\ \text { IRIS LN } \end{gathered}$ |  | CORNELIUS | NC | 28031 |
| 00526310 | PARK | FAMILY TRUST |  |  | 8851 |  | MAGNOLIA ESTATES | DR |  | CORNELIUS | 8851 MAGNOLIA ESTATES DR |  | CORNELIUS | NC | $\begin{gathered} 28031- \\ 7847 \\ \hline \end{gathered}$ |
| 00527301 | CORNELIUS DEVELOPMENT LLC |  |  |  | 19425 |  | LIVERPOOL | PY |  | CORNELIUS | 1050 EAGLES LANDING PARKWAY | SUITE 300 | STOCKBRIDGE | GA | 30281 |

REACH
RANK (NEED \&
FEASIBILITY) RECOMMENDATION
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Enhancement II

| PARCEL ID | OWNER, LAST NAME | OWNER, FIRST NAME | COWNER, FIRST NAME | COWNER, LAST NAME | HOUSENO | STDIR | STNAME | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MAILADDR2 | CITY | STATE | ZIPCODE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 00514101 | RNA INVESTMENT |  |  |  | 18820 |  | STATESVILLE | RD |  | CORNELIUS | $\begin{gathered} 11343 \text { FOX HILL } \\ \text { DR } \end{gathered}$ |  | CHARLOTTE | NC | $28269-$ |
| 00514114 | LACKEY | NANCY L |  |  |  |  | STATESVILLE | RD |  | CORNELIUS | 103 PIER 33 DR UNIT 216 |  | MOORESVILLE | NC | $\begin{gathered} 28117-1 \\ 5533 \\ \hline \end{gathered}$ |
| 00516679 | TOWN OF CORNELIUS |  |  |  | 20300 |  | FLORAL | LN |  | CORNELIUS | PO BOX 399 |  | CORNELIUS | NC | 28031 |
| 00517106 | OUTDOORS REAL ESTATE LLC |  |  |  | 19020 |  | STATESVILLE | RD |  | CORNELIUS | $\begin{gathered} 19020 \\ \text { STATESVILLE } \\ \text { RD } \end{gathered}$ |  | CORNELIUS | NC | $\begin{array}{r} 28031- \\ 6847 \\ \hline \end{array}$ |
| 00517147 | FLETCHER | FRANK S | PEGGY A | FLETCHER | 20301 |  | WILLOW POND | RD |  | CORNELIUS | $\begin{gathered} 20301 \text { WILLOW } \\ \text { POND RD } \\ \hline \end{gathered}$ |  | CORNELIUS | NC | 28031 |
| 00517148 | MALINOVSKY | HOLLIE M |  |  | 20303 |  | WILLOW POND | RD |  | CORNELIUS | $\begin{gathered} 20303 \text { WILLOW } \\ \text { POND RD } \\ \hline \end{gathered}$ |  | CORNELIUS | NC | 28031 |
| 00517149 | ZIMMERMAN | JEFFREY GLEN | CAROL J | ZIMMERMAN | 20307 |  | WILLOW POND | RD |  | CORNELIUS | $\begin{gathered} 20307 \text { WILLOW } \\ \text { POND RD } \\ \hline \end{gathered}$ |  | CORNELIUS | NC | 28031 |
| 00517178 | $\underset{\text { LAKE }}{\text { WILLOW POND AT }}$ | $\begin{aligned} & \text { NORMAN } \\ & \text { HOMEOWNERS } \\ & \text { ASSOC } \end{aligned}$ |  |  |  |  | WILLOW POND | RD |  | CORNELIUS | GENERAL <br> DELIVERY |  | CORNELIUS | NC | 28031 |
| 00517182 | JJF ENTERPRISES LLC |  |  |  | 19010 |  | STATESVILLE | RD |  | CORNELIUS | 215 LAWTON RD |  | CHARLOTTE | NC | 28216 |
| 00517183 | BLUEWATER INVESTMENT LLC |  |  |  |  |  | STATESVILLE | RD |  | CORNELIUS | 21320 BLAKNEY |  | CORNELIUS | NC | 28031 |
| 00529173 | $\underset{\text { THE }}{\text { TOWN OF CORNELIUS }}$ |  |  |  | 20100 |  | $\begin{aligned} & \text { COACHMANS } \\ & \text { WOOD } \end{aligned}$ | LN |  | CORNELIUS | PO BOX 399 |  | CORNELIUS | NC | 28031 | REACH

RANK (NEED \&
FEASIBILITY)
recommendation
McDowell Creek Watershed Management Plan Version 4....................March 2, 2008
McDowell Creek Watershed Management Plan Version $4 .$.
FEASIBLITY)
FEASIBLLTY)
RECOMMEND


| REACH <br>  <br> FEASIBILITY) | P23a |
| :---: | :---: |
| RECOMMENDATION | 20 <br> Enhancement II/ / <br> Improvement to culverts <br> at sanitary sewer <br> crossings to <br> alommodate bankfull <br> flows and sediment <br> transport |
| PARCEL ID | OWNER, LAST NAME |
| 01707201 | BEAZER HOMES CORP |
| 01707226 | RANSON |
| 01707227 | SANDERS |
| 01707242 | GOOD |
| 01707501 | BEAZER HOMES CORP |

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FEASIBILITY)
RECOMMENDATION
REACH
RRANK (NEED \&
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PARCELID
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$\stackrel{0}{\circ}$
$\stackrel{0}{8}$ 00525513
00525514
00525515
00525517
0052518
00525519
둥웅
00525599
REACH
RANK (NEED \&
FEASIBILITY)
McDowell Creek Watershed Management Plan Version 4......................March 2, 2008

| PARCEL ID | OWNER, LAST NAME | OWNER, FIRST NAME | COWNER, FIRST NAME | COWNER, LAST NAME | HOUSENO | STDIR | STNAME | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MAILADDR2 | CITY | STATE | ZIPCODE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 01719102 | BANK OF AMERICA | (BY MERGER) |  | \% SUSAN MELTON | 13620 |  | REESE | BV | EAST | HUNTERSVILLE | $\begin{gathered} \text { REIS NCL } 00211 \\ 07 \end{gathered}$ | BANK OF AMERICA PLAZA \#11 | CHARLOTTE | NC | $\begin{gathered} 28255- \\ 0131 \\ \hline \end{gathered}$ |
| 01719301 | N C STATE HIGHWAY | \& PUBLIC WKS COMMISSION |  |  | 12101 |  | MT HOLLYHUNTERSVILLE | RD |  | HUNTERSVILLE | $\begin{gathered} 1119 \text { E SUGAR } \\ \text { CREEK RD } \\ \hline \end{gathered}$ |  | CHARLOTTE | NC | $\begin{gathered} 28205- \\ 1448 \\ \hline \end{gathered}$ |
| 01719302 | BANK OF AMERICA | (BY MERGER) |  | \% SUSAN MELTON |  |  | REESE | BV |  | HUNTERSVILLE | REIS NCL 00211 | BANK OF AMERICA PLAZA \#11 | CHARLOTTE | NC | $\begin{gathered} 28255- \\ 0131 \\ \hline \end{gathered}$ |

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A21a
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## F11b

$\begin{array}{lc}\text { FEASIBILITY) } & 24 \\ \text { Enhancement I }\end{array}$
REACH
RANK (NEED \&
FEASIBILITY)

PARCEL Restoration | PARCEL ID | OWNER, LAST NAME |
| :---: | :---: |
| 00511103 | WESTMORELAND |
| COMMUNITIES LLC |  |



|  |  |
| :---: | :---: |
| 00541105 | CAR SON LNB SHOP |

REACH
RANK (NEED \&
FEASIBILITY)
RECOMMENDATION

| PARCEL ID | OWNER, LAST NAME |
| :---: | :---: |
| 00535103 | BROTHERTON T L INC <br> DR HORTON INC - <br> TORREY |
| 00535106 | DR HORTON INC- <br> TORREY |
| 00535295 | DR HORTON INC- <br> TORREY |
| 00535601 | DR HORTON INC- <br> TORREY |
| 00535602 | DR HORTON INC- <br> TORREY |
| 00535603 | CALDWELL STATION <br> HOMEOWNERS |
| 00535609 | ILER |
| 00535622 | BONE |
| 00535623 | HARTEL |
| 00535624 | CRESPI |
| 00535625 | PANN |
| 00535626 | MCINTOSH |
| 00535627 | PIERCE |
| 00535628 | HUSKEY |
| 00535629 | LILJA |
| 00535630 | SCHNEIDER |
| 00535631 |  |



| DR HORTON INC - |  |  |  | 323 |
| :---: | :---: | :---: | :---: | :---: |
| TORREY <br> D R HORTON INC - |  |  |  | 17327 |
| PERKINSON | suzannek | Anthony P | thompson | 9850 |
| CALDWELL STATION HOMEOWNERS | ASSOCIATION <br> INC |  |  |  |
| CALDWELL STATION HOMEOWNERS | ASSOCIATION |  |  |  |
|  | CHRISTOPHER | Istina |  |  |
| PHILIPS |  | christina | PHILIPS | 16926 |
| hampton ridge | charlotte |  |  |  |

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Enhancement II OWNER, LAST NAME
WESTMORELAND
COMMUNITIES LLC BLAKELY
BLAKELY
YOUNG KILLIAN

STEPHENSON
GARRICK PARK CRIFASI NOAN3Y ERDT DIETRICH REYNOLDS

 ISAKSON BELK BELK
FOURNET

RANK (NEED \&
FEASIBIIITY)
RECOMMENDATIO

RECOMMENDATION PARCEL ID 00511103 90LEIS00 00513121 00526108 6019ZS00 8089ZG00 $60 \varepsilon 9 Z 900$ 01E9ZG00 | $\stackrel{\rightharpoonup}{0}$ |
| :---: |
| $\stackrel{0}{6}$ |
| 8 | Z1E9ZG00

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00526321

| 00535632 |
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| 00535633 |
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| 00535647 |
| 00535805 |
| 00544415 |
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REACH
RANK (NEE
FEASIBIITM

| PARCEL ID | OWNER, LAST NAME | OWNER, FIRST NAME | COWNER, FIRST NAME | COWNER, LAST NAME | HOUSENO | STDIR | STNAME | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MAILADDR2 | CITY | STATE | ZIPCODE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 00511103 | WESTMORELAND COMMUNITIES LLC |  |  |  | 18644 |  | ROSALYN GLEN | RD |  | CORNELIUS | $\begin{gathered} 6707 \text { FAIRVIEW } \\ \text { RD \#B } \\ \hline \end{gathered}$ |  | CHARLOTTE | NC | $\begin{gathered} 28210- \\ 3354 \\ \hline \end{gathered}$ |
| 00513106 | BLAKELY | ANNIE L |  |  |  | N | 1-77 | HY |  | UNINC | $\begin{gathered} 21132 \\ \text { BRINKLEY ST } \end{gathered}$ |  | CORNELIUS | NC | 28031 |
| 00513121 | BLAKELY | JAMES R | ANNIE L | BLAKELY |  | N | 1-77 | HY |  | UNINC | $\begin{gathered} 21132 \\ \text { BRINKLEY ST } \\ \hline \end{gathered}$ |  | CORNELIUS | NC | 28031 |
| 00526108 | YOUNG | DONNA W |  |  | 19211 |  | DUTCH IRIS | LN |  | CORNELIUS | $\begin{aligned} & 19211 \text { DUTCH } \\ & \text { IRIS LN } \\ & \hline \end{aligned}$ |  | CORNELIUS | NC | 28031 |
| 00526109 | KILLIAN | JAMES E | CYNTHIA B | KILLIAN | 19219 |  | DUTCH IRIS | LN |  | CORNELIUS | PO BOX 1218 |  | NEWTON | NC | 28652 |
| 00526308 | STEPHENSON | $\begin{aligned} & \text { RANDOLPHE } \\ & \hline \end{aligned}$ |  |  | 19238 |  | DUTCH IRIS | LN |  | CORNELIUS | $\begin{aligned} & 19238 \text { DUTCH } \\ & \text { IRIS LN } \\ & \hline \end{aligned}$ |  | CORNELIUS | NC | 28031 |
| 00526309 | GARRICK | JONATHAN G |  |  | 19230 |  | DUTCH IRIS | LN |  | CORNELIUS | $\begin{gathered} 19230 \text { DUTCH } \\ \text { IRIS LN } \\ \hline \end{gathered}$ |  | CORNELIUS | NC | 28031 |
| 00526310 | PARK | FAMILY TRUST |  |  | 8851 |  | MAGNOLIA ESTATES | DR |  | CORNELIUS | 8851 MAGNOLIA ESTATES DR |  | CORNELIUS | NC | $\begin{gathered} 28031- \\ 7847 \\ \hline \end{gathered}$ |
| 00526311 | CRIFASI | RICHARD P |  | GERALDINE CRIFASI (H/W) | 8861 |  | MAGNOLIA ESTATES | DR |  | CORNELIUS | 8861 MAGNOLIA ESTATES DR |  | CORNELIUS | NC | 28031 |
| 00526312 | KENYON | BRIAN R | MARIE E | KENYON | 8907 |  | MAGNOLIA ESTATES | DR |  | CORNELIUS | 8907 MAGNOLIA ESTATES DR |  | CORNELIUS | NC | 28031 |
| 00526313 | ERDT | MICHAEL J |  |  | 8915 |  | MAGNOLIA ESTATES | DR |  | CORNELIUS | 8915 MAGNOLIA ESTATES DR |  | CORNELIUS | NC | 28031 |
| 00526314 | DIETRICH | CHRISTINE L |  |  | 8923 |  | MAGNOLIA ESTATES | DR |  | CORNELIUS | 8923 MAGNOLIA ESTATES DR |  | CORNELIUS | NC | 28031 |
| 00526315 | REYNOLDS | LISETTE N | ROBERT | REYNOLDS | 8931 |  | MAGNOLIA ESTATES | DR |  | CORNELIUS | 8931 MAGNOLIA ESTATES DR |  | CORNELIUS | NC | 28031 |
| 00526316 | HARRISON | $\underset{\mathrm{R}}{\text { CHRISTOPHER }}$ | GRETCHEN M | YOUNG | 8939 |  | MAGNOLIA ESTATES | DR |  | CORNELIUS | 8939 MAGNOLIA ESTATES DR |  | CORNELIUS | NC | 28031 |
| 00526317 | LAMBERT | ALLEN MICHAEL |  |  | 8947 |  | MAGNOLIA ESTATES | DR |  | CORNELIUS | 8947 MAGNOLIA ESTATES DR |  | CORNELIUS | NC | $\begin{gathered} 28031- \\ 7849 \\ \hline \end{gathered}$ |
| 00526318 | ISAKSON | KARL R |  |  | 19201 |  | ENGLISH DAISY | DR |  | CORNELIUS | 19201 ENGLISH DAISEY DR |  | CORNELIUS | NC | 28031 |
| 00526319 | BELK | B V JR |  |  | 19205 |  | ENGLISH DAISY | DR |  | CORNELIUS | 4508 E INDEPENDENCE BV | \#207 | CHARLOTTE | NC | 28205 |
| 00526320 | BELK | B V JR |  |  | 19207 |  | ENGLISH DAISY | DR |  | CORNELIUS | 4508 E INDEPENDENCE BV | \#207 | CHARLOTTE | NC | 28205 |
| 00526321 | FOURNET | WILLIAM D | TERRI H | FOURNET | 19206 |  | ENGLISH DAISY | DR |  | CORNELIUS | $\begin{gathered} 19206 \text { ENGLISH } \\ \text { DAISY CT } \\ \hline \end{gathered}$ |  | CORNELIUS | NC | $\begin{gathered} 28031- \\ 7875 \\ \hline \end{gathered}$ |

[^0]McDowell Creek Watershed Management Plan Version 4....................March 2, 2008
McDowell Creek Watershed Management Plan Version 4.......................March 2, 2008

| 01742108 | CPCC | (TRUSTEES) |  |  | 11930 |  | VERHOEFF | DR |  | HUNTERSVILLE | PO BOX 35009 |  | Charlotte | NC | 28235 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 01742109 | CENTRAL PIEDMONT | COMMUNITY COLLEGE |  | \%TRUSTEES |  |  | VERHOEFF | DR |  | HUNTERSVILLE | PO BOX 35009 |  | CHARLOTTE | NC | 28235 |
| 01742110 | MECKLENBURG | CHRONIC DISEASE |  | \% REAL ESTATE IFINANCE DEPT |  |  | VERHOEFF | DR |  | HUNTERSVILLE | 600 E ${ }_{11}$ TH ST FL |  | CHARLOTTE | NC | $\begin{gathered} 28202- \\ 2816 \end{gathered}$ |
| REACH RANK (NEED \& FEASIBILITY) RECOMMENDATIO | U20 <br> 27 <br> Enhancement II |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| PARCEL ID | OWNER, LAST NAME | OWNER, FIRST NAME | COWNER, FIRST NAME | COWNER, LAST NAME | HOUSENO | STDIR | STNAME | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MAILADDR2 | CITY | STATE | ZIPCODE |
| 01736102 | STANCIL | $\begin{gathered} \text { SYDNEY } \\ \text { WHITENER } \end{gathered}$ |  |  |  |  | OLD STATESVILLE | RD |  | HUNTERSVILLE | PO BOX 1576 |  | HUNTERSVILLE | NC | $\begin{gathered} 28070 \\ 1576 \\ \hline \end{gathered}$ |
| 01742109 | CENTRAL PIEDMONT | COMMUNITY COLLEGE |  | \%TRUSTEES |  |  | VERHOEFF | DR |  | HUNTERSVILLE | PO BOX 35009 |  | CHARLOTTE | NC | 28235 |
| 01742110 | MECKLENBURG COUNTY | CHRONIC DISEASE |  | \% REAL ESTATE /FINANCE DEPT |  |  | VERHOEFF | DR |  | HUNTERSVILLE | $\begin{aligned} & 600 \text { E 4TH ST FL } \\ & \hline 11 \end{aligned}$ |  | CHARLOTTE | NC | $\begin{gathered} 28202- \\ 2816 \\ \hline \end{gathered}$ |

F8a
RANK (NEED \&
RANK (NEED \&
FEASIBILITY)
RECOMMENDAT

| PARCEL ID | OWNER, LAST NAME | OWNER, FIRST NAME | COWNER, FIRST NAME | COWNER, LAST NAME | HOUSENO | STDIR | STNAME | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MAILADDR2 | CITY | STATE | ZIPCODE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 00502109 | FREEMAN | J SMITH |  | $\begin{gathered} \hline \text { COTTON'S COVE } \\ \text { LLC } \\ \hline \end{gathered}$ | 18121 |  | $\begin{gathered} \text { OLD } \\ \text { STATESVILLE } \end{gathered}$ | RD |  | UNINC | 5326 ROBINHOOD RD |  | CHARLOTTE | NC | 28211 |
| 00502114 | GULBRANSON | ROBERTE |  | KIMBERLY M MUELLER | 18045 |  | $\begin{gathered} \text { OLD } \\ \text { STATESVILLE } \end{gathered}$ | RD |  | UNINC | $\begin{gathered} 18045 \text { OLD } \\ \text { STATESVILLE } \\ \text { RD } \end{gathered}$ |  | CORNELIUS | NC | 28031 |
| 00502116 | HOWARD | $\begin{gathered} \hline \text { JOHN CLARK } \\ \text { JR } \\ \hline \end{gathered}$ |  | BETTY BAKER |  |  | $\begin{gathered} \text { OLD } \\ \text { STATESVILLE } \\ \hline \end{gathered}$ | RD |  | UNINC | PO BOX 1056 |  | CORNELIUS | NC | 28031 |
| 00502117 | HOWARD | $\begin{gathered} \hline \text { JOHN CLARK } \\ \text { JR } \end{gathered}$ |  | BETTY BAKER | 18021 |  | $\begin{gathered} \text { OLD } \\ \text { STATESVILLE } \end{gathered}$ | RD |  | UNINC | PO BOX 1056 |  | CORNELIUS | NC | 28031 |
| 00502118 | BAKER | HOWARD H JR | JOYCE P | BAKER | 18009 |  | OLD STATESVILLE | RD |  | UNINC | $\begin{gathered} 18009 \text { OLD } \\ \text { STATESVILLE } \\ \text { RD } \\ \hline \end{gathered}$ |  | CORNELIUS | NC | 28031 |
| 00502125 | CRESCENT ELECTRIC MEMBERSHIP | CORP |  |  | 18019 |  | $\begin{gathered} \text { OLD } \\ \text { STATESVILLE } \end{gathered}$ | RD |  | UNINC | PO BOX 1150 |  | STATESVILLE | NC | $\begin{gathered} 28687- \\ 1150 \\ \hline \end{gathered}$ |
| 00502202 | TORREY <br> D R HORTON INC- |  |  |  | 18004 |  | CALDWELL TRACK | DR |  | CORNELIUS | $\begin{gathered} 1100 \text { S TRYON } \\ \text { ST \#100 } \end{gathered}$ |  | CHARLOTTE | NC | 28203 |
| 00502210 | D R HORTON INCTORREY |  |  |  |  |  | CALDWELL TRACK | DR |  | CORNELIUS | 1100 S TRYON ST SUITE 100 |  | CHARLOTTE | NC | 28203 |
| 00535103 | BROTHERTONTLINC |  |  | \%SHEILA KERR, SECRETARY | 10350 |  | BAILEY | RD |  | UNINC | $\begin{aligned} & 13223 \text { WILLOW } \\ & \text { BREEZE LN } \end{aligned}$ |  | HUNTERSVILLE | NC | 28078 |
| 00535201 | D R HORTON INC- TORREY |  |  |  | 18411 |  | TRAIN STATION | DR |  | CORNELIUS | $\begin{gathered} 1100 \text { S TRYON } \\ \text { ST \#100 } \\ \hline \end{gathered}$ |  | CHARLOTTE | NC | 28203 |
| 00535202 | D R HORTON INC- TORREY |  |  |  | 18417 |  | TRAIN STATION | DR |  | CORNELIUS | $\begin{gathered} 1100 \text { S TRYON } \\ \text { ST \#100 } \\ \hline \end{gathered}$ |  | CHARLOTTE | NC | 28203 |
| 00535203 | D R HORTON INC- TORREY |  |  |  | 18421 |  | TRAIN STATION | DR |  | CORNELIUS | $\begin{gathered} 1100 \text { S TRYON } \\ \text { ST \#100 } \\ \hline \end{gathered}$ |  | CHARLOTTE | NC | 28203 |
| 00535204 | D R HORTON INC- TORREY |  |  |  | 18427 |  | TRAIN STATION | DR |  | CORNELIUS | $\begin{gathered} 1100 \text { S TRYON } \\ \text { ST \#100 } \\ \hline \end{gathered}$ |  | CHARLOTTE | NC | 28203 |
| 00535205 | D R HORTON INC- TORREY |  |  |  | 18431 |  | TRAIN STATION | DR |  | CORNELIUS | $\begin{gathered} 1100 \text { S TRYON } \\ \text { ST \#100 } \end{gathered}$ |  | CHARLOTTE | NC | 28203 |
| 00535275 | D R HORTON INC- TORREY |  |  |  |  |  | CALDWELL TRACK | DR |  | CORNELIUS | 1100 S TRYON ST SUITE 100 |  | CHARLOTTE | NC | 28203 |
| 00535295 | D R HORTON INC- TORREY |  |  |  | 11000 |  | BAILEY | RD |  | CORNELIUS | 1100 S TRYON ST SUITE 100 |  | CHARLOTTE | NC | 28203 |
| 00535709 | D R HORTON INC- TORREY |  |  |  | 18115 |  | TRAIN STATION | DR |  | CORNELIUS | $\begin{gathered} 1100 \text { S TRYON } \\ \text { ST \#100 } \\ \hline \end{gathered}$ |  | CHARLOTTE | NC | 28203 |
| 00535710 | D R HORTON INC- TORREY |  |  |  | 18119 |  | TRAIN STATION | DR |  | CORNELIUS | $\begin{gathered} 1100 \text { S TRYON } \\ \text { ST \#100 } \end{gathered}$ |  | CHARLOTTE | NC | 28203 |

$\begin{array}{lc}\text { REACH } & \text { F28b } \\ \text { RANK (NEED \& } & 29 \\ \text { FEASIBILITY) } & \text { Enhancement I }\end{array}$
McDowell Creek Watershed Management Plan Version 4..........................arch 2, 2008

| PARCELID | OWNER, LAST NAME | OWNER, FIRST NAME | COWNER, FIRST NAME | $\underset{\substack{\text { COWNER, LAST } \\ \text { NAME }}}{ }$ | Houseno | STDIR | STNAME | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MALADDR2 | CITY | STATE | ZIPCODE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 00503219 | TOWN OF CORNELUS |  |  |  |  | N | STATESVILLE | RD |  | HUNTERSVILLE | ро вох 339 |  | CORNELIUS | NC | 28031 |
| 00503219 | $\underset{\text { THE }}{\text { TOWN OLIUS }}$ |  |  |  |  |  | STATESVILLE | RD |  | UNINC | ро Box 399 |  | CORNELIUS | NC | 28031 |
| 00532123 | STANDISH | том |  |  | 17642 |  | CAMBRIDGE GROVE | DR |  | HUNTERSVILLE | $\begin{aligned} & 17742 \\ & \text { CAMBRIDGE } \\ & \text { GROVE DR } \end{aligned}$ |  | HUNTERSVILLE | NC | 28078 |
| 00532124 | WOHLLEBER | EMILY S | EDWARD P | WOHLLEBER | 17640 |  | CAMbridge GROVE | DR |  | HUNTERSVILLE | $\begin{aligned} & 17640 \\ & \text { CAMBRDGE } \\ & \text { GROVE DR } \end{aligned}$ |  | HUNTERSVILLE | NC | 28078 |
| 00532125 | MARCELA | MICHAEL R | $\underset{H}{\text { MARSALENE }}$ | marcela | 17634 |  | CAMBRIDGE GROVE | DR |  | HUNTERSVILLE | $\begin{aligned} & 17634 \\ & \text { CAMBIDGE } \\ & \text { GROVE DR } \end{aligned}$ |  | HUNTERSVILLE | NC | 28078 |
| 00532126 | BIAS | mark R |  | ANNE CLAGG BIAS (HM) | 17628 |  | CAMbRIDGE GROVE | DR |  | HUNTERSVILLE | $\begin{gathered} 17628 \\ \text { CAMBRIDGE } \\ \text { GROVE DR } \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 00532127 | SHULTZ | MATTHEW A |  | MELISSA L SHULTZ (H/W) | 17622 |  | CAMBRIDGE GROVE | DR |  | HUNTERSVILLE | $\stackrel{17622}{\text { CAMBIDGE }}$ GROVE DR |  | HUNTERSVILLE | NC | 28078 |
| 00532128 | BEAL | CLYDER JR |  | $\begin{gathered} \text { SHELBY M BEAL } \\ (H / W) \end{gathered}$ | 17616 |  | CAMBRIDGE GROVE | DR |  | HUNTERSVILLE | CAMBRIDGE GROVE DR |  | HUNTERSVILLE | NC | 28078 |
| 00532129 | GIGNAC | fred | JLL | GIGNaC | 17610 |  | CAMbridge GROVE | DR |  | huntersvilie | $\begin{aligned} & 17610 \\ & \text { CAMBRIDGE } \\ & \text { GROVE DR } \end{aligned}$ |  | HUNTERSVILLE | NC | 28078 |
| 00532130 | NASIFE | SAMUEL NJR | JOSIE L | NASIFE | 17604 |  | CAMBRIDGE GROVE | DR |  | HUNTERSVILLE |  GROVE DR |  | HUNTERSVILLE | NC | 28078 |
| 00532131 | RISLEY | DEREKL | kAREN S | RISLEY | 17526 |  | CAMBRIDGE GROVE | DR |  | HUNTERSVILLE | 17526 CAMBRIDGE GROVE DR |  | HUNTERSVILLE | NC | 28078 |
| 00532132 | bates | $\underset{R}{\text { CHRISTOPHER }}$ | KRISTIA | martin | 17520 |  | CAMBRIDGE GROVE | DR |  | HUNTERSVILLE | 17520 CAMBRIDGE GROVE GROVE DR |  | HUNTERSVILLE | NC | 28078 |
| 00532133 | PASOLA | DANIEL | CHRISTINA | PASOLA | 17514 |  | CAMbridge GROVE | DR |  | HUNTERSVILLE | 17514 CAMBRIDGE GROVE DR |  | HUNTERSVILLE | NC | 28078 |
| 00532134 | Lang | dianaw |  |  | 17508 |  | CAMBRIDGE GROVE | DR |  | HUNTERSVILLE | ${ }_{\substack{828 \text { CATHEY } \\ \text { ROAD }}}$ |  | Charlotte | NC | 28214 |
| 00532135 | TALBOYS | MICHAEL W | marilyna | TALBOYS | 17502 |  | CAMBRIDGE GROVE | DR |  | HUNTERSVILLE | 17502 CAMBRIDGE GROVE GROVE DR |  | HUNTERSVILLE | NC | 28078 |
| 00532136 | HLL | RICHARDE |  |  | 17440 |  | CAMbRIDGE GROVE | DR |  | HUNTERSVILLE | $\begin{aligned} & 17400 \\ & \text { CAMBRIDGE } \\ & \text { GROVE DR } \end{aligned}$ |  | HUNTERSVILLE | NC | 28078 |
| 00532137 | MURPHEY | JAMES N |  | ELIZABETHA MURPHEY (HW) | 17434 |  | CAMBRIDGE GROVE | DR |  | HUNTERSVILLE | 17434 CAMBIDGE GROVE DR |  | HUNTERSVILLE | NC | 28078 |
| 00532138 | PAUL | Roger | LORETTA A | PAUL | 17428 |  | CAmbridge GROVE | DR |  | HUNTERSVILLE | $\begin{aligned} & 17428 \\ & \text { CAMBRIDGE } \\ & \text { GROVE DR } \end{aligned}$ |  | HUNTERSVILLE | NC | 28078 |
| 00532139 | mostert | BRENT ROSS | Lorettaa | SUSAN Jane | 17422 |  | CAMBRIDGE GROVE | DR |  | huntersvilie | CAMBRIDGE GROVE DR |  | HUNTERSVILLE | NC | 28078 |
| 00532140 | SMITH | JEFFREY W II |  |  | 17414 |  | CAMBRIDGE GROVE | DR |  | HUNTERSVILLE | GROVE DR <br> 17414 CAMBRIDGE |  | HUNTERSVILLE | NC | 28078 |
| 00532141 | HYLTON | DIANE | RoNald | HYLTON | 17406 |  | CAMBRIDGE GROVE | DR |  | HUNTERSVILLE | ${ }_{\text {GLASSFIELD DR }}^{17326}$ |  | HUNTERSVILLE | NC | 28078 |
| 00532170 | BORCICH | MEREDITH | CHRISTOPHER L \% V FISHER | BORCICH | 17259 |  | GLASSFIELD | DR |  | HUNTERSVILLE | 4534 ICARD RIDGE RD |  | HICKORY | NC | 28601 |
| 00532171 | Herold | ERIC $C$ | ANN $\mathrm{E}^{\text {e }}$ | HEROLD | 17301 |  | GLASSFIELD | DR |  | HUNTERSVILLE | ${ }_{\text {GLASSFIELD DR }} 17301$ |  | HUNTERSVILLE | NC | 28078 |
| 00532172 | KIM | John J | JULET |  | 17307 |  | GLASSFIELD | DR |  | HUNTERSVILLE | GLASSFFIELD DR |  | HUNTERSVILLE | NC | 28078 |
| 00532173 | DORN | VERNONFJR |  | THERESAA | 17313 |  | GLASSFIELD | DR |  | HUNTERSVILLE | $\begin{aligned} & 17313 \\ & \text { GLASSFIELD DR } \end{aligned}$ |  | HUNTERSVILLE | NC | 28078 |
| 00532174 | BREUNIG | CHAD O | ERINL | BREUNIG | 17319 |  | GLASSFIELD | DR |  | HUNTERSVILLE |  |  | huntersvilue | NC | 28078 |
| 00532175 | RUTZINSKI | JASONL | SUSANNE G | RUTZINSKI | 17409 |  | GLASSFIELD | DR |  | HUNTERSVILLE | 17409 |  | HUNTERSVILLE | NC | 28078 |

McDowell Creek Watershed Management Plan Version 4.......................March 2, 2008

®
30 OWNER, LAST NAME ROBERTSON
WOJTOWICZ NASH
DIXON ESTRIDGE
 PAUK
COUNTENBURG
COUNTY

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 REACH
RANK (NEED \& RECOMMENDATION PARCEL ID 00516661 00516663 00516664 $\stackrel{4}{8}$
$\stackrel{!}{\circ}$
$\stackrel{t}{8}$ 00516666
00516667 00516668 00525510 00525511長 00525513
 00525515 00529162 00529163 00529173 00529174
 00529177
McDowell Creek Watershed Management Plan Version 4.....................March 2, 2008

| 00529178 | GANDY PROPERTIES |  |  |  | 20125 |  | COACHMANS | LN |  | cornelus | PO BOX 2326 |  | CORNELIUS | NC | 28031 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 00529179 | MIKE JOCOY CUSTOM HOMES LLC |  |  |  | 19842 |  | $\underset{\text { TRACE }}{\text { COACHMAN'S }}$ |  |  | CORNELIUS | 19135 RUFFNER DR |  | CORNELIUS | NC | 28031 |
| 00529197 | WEATHERSTONE MANOR OWNERS | $\begin{gathered} \text { ASSOCIATION } \\ \text { INC } \end{gathered}$ |  | $\begin{gathered} \text { C/O WILLOW } \\ \text { CREEK OF NC } \\ \text { LLC } \\ \hline \end{gathered}$ |  |  | COACHMANS WOOD | LN |  | CORNELIUS | $\begin{gathered} 8508 \text { PARK RD } \\ \# 188 \end{gathered}$ |  | CHARLOTTE | NC | 28210 |
| 00529198 | AMERICAN LUMBER CO LLC |  |  |  |  |  | COACHMAN'S TRACE |  |  | CORNELUS | 5914 HANNA CT |  | CHARLOTTE | NC | 28212 |
| REACH | L3a |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| FEASIBLITY) | $\begin{gathered} 31 \\ \begin{array}{c} \text { Bank Stabilization } \\ \text { upstream off Statesville } \\ \text { Rd./ Restoration } \end{array} \end{gathered}$ Rd./ Restoration downstream |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| PARCEL ID | OWNER, LASt Name | OWNER, FIRST NAME | COWNER, <br> FIRST NAME | COWNER, LAST NAME | houseno | STDIR | stiame | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MALADDR2 | CITY | State | ZIPCODE |
| 01712105 | triangle real <br> ESTATE OF | gastonia inc |  | \% HEATHER <br> INGRAM | 10604 |  | HUNTERSVILLE COMMONS | DR |  | HUNTERSVILLE | 3500 AMERICAN BOULEVARD WEST | SUITE 500 | bloomington | MN | 55431 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 01712141 | ARAHOVA LLC |  |  |  |  | N | STATESVILLE | RD |  | HUNTERSVILLE | TURNERSBURG HWY |  | STATESVILLE | NC | 28625 |
| 01714402 | PATEL | dinesh AMBALA | LEENA D | PATEL | 14601 |  | MARUTI | AV |  | HUNTERSVILLE | $\begin{gathered} \text { 4526 } \\ \text { WILKINSON } \\ \text { BLVD } \end{gathered}$ |  | CHARLOTTE | NC | $\begin{gathered} 28208 \\ 5531 \end{gathered}$ |
| 01714410 | PATEL | DINESH AMBALA |  | $\underset{(\text { HW })}{\text { LEENAD PATEL }}$ |  |  | MARUTI | AV |  | HUNTERSVILLE | $\begin{gathered} 4526 \\ \text { WILKINSO } \\ \text { BLVD } \\ \hline \end{gathered}$ |  | CHARLOTTE | NC | $\begin{aligned} & 28208 \\ & 5531 \\ & \hline 50 \end{aligned}$ |
| 01715307 | CITY OF CHARLOTTE |  |  |  |  | N | STATESVILLE | RD |  | HUNTERSVILLE | ${ }^{600 \text { EAST 4TH }}$ ST |  | CHARLOtTE | NC | 28202 |
| 01715308 | ENCAR REALTY LLC |  |  |  | 531 |  | HUNTERSVILLE GATEWAY | BV |  | HUNTERSVILLE | $\begin{gathered} 11145 \\ \text { METROMONT } \\ \text { PKWY } \end{gathered}$ |  | Charlotte | NC | 28269 |
| 01735109 | ZYK | PETER F |  |  | 111 |  | CAMBRIDGE | RD |  | HUNTERSVILLE | 111 CAMBRIDGE RD |  | HUNTERSVILLE | NC | $\begin{gathered} 28078 \\ 9007 \end{gathered}$ |
| REACH <br>  <br> FEASIBILITY) <br> RECOMMENDATIO | $\begin{gathered} \text { A13a } \\ 32 \end{gathered}$ <br> Enhancement II |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| PARCEL ID | owner, LASt Name | OWNER, FIRST NAME | COWNER, FIRST NAME | $\underset{\text { NAME }}{\substack{\text { COWNER } \\ \text { NAST }}}$ | houseno | STDIR | STNAME | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MALADDR2 | CITY | State | ZIPCODE |
| 00511103 | WESTMORELAND COMTUNITIES LLC |  |  |  | 18644 |  | ROSALYN GLEN | RD |  | CORNELIUS |  |  | charlotte | NC | ${ }_{\substack{28310-}}^{\text {334 }}$ |
|  | WESTMORELAND |  |  |  |  |  | rosalkolen |  |  |  | RD\#B |  | Charlote |  |  |
| 00511319 | COMMUNITIES LLC |  |  |  |  |  | Rosaly glen | RD |  | UNINC | RD\#B |  | charlotte | NC | 3354 |
| REACH <br> RANK (NEED \& FEASIBILITY) RECOMMENDATIO | $\begin{gathered} \text { F5a } \\ 33 \\ \text { Enhancement } \mathrm{I} \end{gathered}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| PARCELID | owner, LASt name | OWNER, FIRST NAME | COWNER, FIRST NAME | $\underset{\substack{\text { COWNER, LAST } \\ \text { NAME }}}{ }$ | houseno | STDIR | stanme | STTYPE | STSUFFIX | MUNICIPALITY |  | MALADDR2 | CITY | State | ZIPCODE |
| 00522207 | AUTEN | JAMES L JR | KAREN $Z$ | AUTEN | 10436 |  | BALLEY | RD |  | UNINC | 10436 BAILEY |  | CORNELIUS | NC | 28031 |
| 00522208 | BROTHERTON | THOMASLJR | MARIAN J | BROTHERTON | 10416 |  | BAILEY | RD |  | UNINC | 10416 BAILEY RD |  | CORNELUS | NC | 28031 |
| 00522213 | DMC PROPERTIES INC |  |  |  | 18624 |  | NORTHLINE | DR |  | Cornelius | PO BOX 1629 |  | BELMONT | NC | 28012 |
| 00522214 | PADGETT | JAMES W |  | PHILIPW SAFRIET | 18612 |  | NORTHLINE | DR |  | cornelus | PO BOX 1480 |  | CORNELUS | NC | 28031 |
| 00522217 | LANCTO | JoN A | GAYLE C | LANCTO | 18623 |  | NORTHLINE | DR |  | CORNELIUS | $\begin{aligned} & \text { P05 STATIT80 } 12 \\ & \hline \text { ST } \\ & \hline \end{aligned}$ |  | SULLIVANS | sc |  |
| 00533110 | P\&M ASPLAND LLC |  |  |  | 18626 |  | STARCREEK | DR |  | CORNELIUS | PO BOX 31457 |  | CORNELIUS | NC | $\begin{gathered} 28831-1 \\ 9203 \\ 920 \end{gathered}$ |
| 00533111 | Qкт LLC |  |  |  | 18610 |  | Starcreek | DR |  | CORNELIUS | 18610 |  | CORNELUS | NC | 28031 |


McDowell Creek Watershed Management Plan Version 4．．．．．．．．．．．．．．．．．．．．．．．．．．arch 2， 2008



| ¢ | 응 | 응 | $\stackrel{\text { ¢ }}{0}$ | 앙 응 | 잉 응 | 앙 |  |  |  | ¢ | 잉 |  |  | 응 응 | $\stackrel{\text { ¢ }}{\circ}$ | 응 응 | \％¢ ¢ | ¢ ¢ ¢ ¢ | 응 응 | 응 | $\stackrel{\text { r }}{\sim}$ | $\stackrel{\text { ¢ }}{\sim}$ |  |  |  | ） | ¢ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  | $\begin{aligned} & \stackrel{1}{2} \\ & \frac{1}{2} \\ & \stackrel{1}{0} \\ & \frac{1}{2} \end{aligned}$ |  | $\begin{aligned} & \stackrel{\rightharpoonup}{u} \\ & \sum_{1}^{1} \\ & \frac{\rightharpoonup}{0} \\ & \stackrel{\rightharpoonup}{2} \end{aligned}$ | $\begin{aligned} & \sum_{2}^{u} \\ & \stackrel{1}{2} \\ & \stackrel{\rightharpoonup}{0} \\ & \stackrel{2}{2} \end{aligned}$ |  |  |  |  |  |  |  | $\begin{aligned} & \text { 岂 } \\ & 2 y_{2}^{2} \\ & 0 \\ & 0 \\ & 0 \end{aligned}$ |  |  | $\begin{aligned} & \stackrel{u}{2} \\ & \stackrel{\rightharpoonup}{2} \\ & \stackrel{\rightharpoonup}{0} \\ & \stackrel{0}{2} \end{aligned}$ | $\begin{aligned} & \stackrel{u}{2} \\ & \sum_{1}^{2} \\ & \stackrel{1}{2} \\ & \frac{0}{2} \end{aligned}$ |  |  |  |  |
| $\begin{aligned} & \stackrel{\circ}{\otimes} \\ & \underset{\sim}{2} \end{aligned}$ | $\stackrel{\text { ® }}{\substack{1 \\ \hline}}$ | $\stackrel{\bullet}{\otimes}$ | $\begin{aligned} & \stackrel{\bullet}{\mathbf{D}} \\ & \stackrel{0}{2} \end{aligned}$ |  |  | $\begin{aligned} & \stackrel{\circ}{\mathbf{O}} \\ & \hline \end{aligned}$ |  | $\begin{aligned} & \stackrel{\ddot{8}}{\stackrel{\otimes}{\sim}} \end{aligned}$ |  | $\begin{array}{r} \stackrel{\bullet}{8} \\ \stackrel{\otimes}{~} \end{array}$ | $\stackrel{\stackrel{\rightharpoonup}{\mathbf{e}}}{\stackrel{\circ}{2}}$ |  |  |  | $\begin{aligned} & \stackrel{\bullet}{\mathbf{Q}} \\ & \stackrel{\rightharpoonup}{+} \end{aligned}$ | $\begin{aligned} & \stackrel{\ddot{\circ}}{\stackrel{\rightharpoonup}{\bullet}} \\ & \hline \end{aligned}$ |  |  |  | $\begin{aligned} & \stackrel{\ddot{8}}{\stackrel{\rightharpoonup}{\bullet}} \end{aligned}$ | $\begin{array}{r} \stackrel{\bullet}{0} \\ \stackrel{\otimes}{-} \end{array}$ | $\begin{array}{r} \stackrel{\bullet}{0} \\ \stackrel{\otimes}{-} \end{array}$ | $\begin{aligned} & \stackrel{\circ}{\mathbf{o}} \\ & \stackrel{y}{2} \end{aligned}$ |  |  | $\begin{array}{\|} \stackrel{\ddot{\otimes}}{\stackrel{\otimes}{6}} \end{array}$ | $\stackrel{\text { ® }}{\text { ¢ }}$ |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | ¢ |
|  | $\begin{aligned} & \text { 咅 } \\ & \text { 空 } \end{aligned}$ |  |  |  |  | ¢ |  |  |  |  |  |  |  | 㡲 |  |  |  | － | ¢ |  |  | $\underset{\substack{I \\ \hline \\ \hline}}{ }$ | $\begin{aligned} & \substack { 1 \\ \sum_{0}^{\mathbf{O}} \\ \begin{subarray}{c}{x{ 1 \\ \sum _ { 0 } ^ { \mathbf { O } } \\ \begin{subarray} { c } { x } } \end{aligned}$ |  |  | 岃 |  |
|  | 容 |  |  |  | 3 2 2 2 2 | $\stackrel{\substack{x \\ \frac{x}{4}}}{\substack{4}}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\stackrel{0}{\Delta}$ | $\stackrel{3}{3}$ |  |  | $\sum_{i}^{\text {en }}$ | $\stackrel{\text { 2 }}{\text { ¢ }}$ |
|  |  | 0 0 0 0 0 0 1 |  |  |  |  |  | $\begin{aligned} & 0 \\ & \underset{y}{9} \\ & \text { y } \end{aligned}$ |  | $\sum_{\underset{4}{\infty}}^{\substack{0}}$ |  |  |  |  |  |  |  |  | $\begin{aligned} & \text { 山己 } \\ & \vdots \end{aligned}$ |  |  |  |  |  |  | N | \％ |
|  | $\begin{aligned} & \stackrel{\circ}{0} \\ & \stackrel{\tilde{y y}}{0} \\ & \stackrel{y}{8} \end{aligned}$ | $\begin{aligned} & \stackrel{\circ}{\circ} \\ & \stackrel{\tilde{\overleftarrow{H}}}{\mathbf{\circ}} \end{aligned}$ |  | $\begin{aligned} & \stackrel{\circ}{0} \\ & \stackrel{\rightharpoonup}{0} \\ & \hline 8 \end{aligned}$ |  |  |  |  |  |  |  |  |  | $\begin{aligned} & \stackrel{\infty}{0} \\ & \stackrel{\text { ®̈og}}{o} \end{aligned}$ | 然 | Bix |  | $\stackrel{\circ}{\circ}$ | $\left\lvert\, \begin{gathered} \stackrel{\circ}{0} \\ \stackrel{\tilde{\theta}}{8} \\ \mid \end{gathered}\right.$ |  | 유웅 |  | $\begin{aligned} & \stackrel{\circ}{\circ} \\ & \stackrel{\tilde{y}}{\circ} \end{aligned}$ |  |  | \％ | \％ |

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|  | $\begin{aligned} & \ddot{0} \\ & \stackrel{0}{0} \\ & \hline \end{aligned}$ |  | $\stackrel{\ddot{\circ}}{\stackrel{\otimes}{\bullet}}$ | $\begin{array}{\|l\|l} \hline \stackrel{\circ}{8} \\ \stackrel{\rightharpoonup}{0} \end{array}$ | $\stackrel{\bullet}{\otimes}$ | $\begin{aligned} & \stackrel{\leftrightarrow}{0} \\ & \stackrel{\rightharpoonup}{\sim} \end{aligned}$ |  | $\stackrel{\bullet}{0}$ | $\stackrel{\stackrel{\rightharpoonup}{\circ}}{0}$ | $\stackrel{\circ}{\stackrel{\circ}{\circ}}$ | $\stackrel{\circ}{\circ}$ |  | $\stackrel{\circ}{\circ}$ | $\stackrel{\circ}{\stackrel{\circ}{\circ}}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{gathered} \stackrel{a}{4} \\ \stackrel{\rightharpoonup}{x} \end{gathered}$ |  |  | $\begin{array}{r} w \\ 0 \\ \stackrel{u}{8} \\ \hline \end{array}$ |  |  |  |  |  |  |  |  | $\stackrel{0}{0}$ |  |
|  |  |  |  | $\begin{aligned} & \underset{\sim}{z} \\ & \stackrel{\rightharpoonup}{s} \\ & \hline \end{aligned}$ |  |  |  |  |  |  |  |  | 辱 |  |
|  |  |  | $\stackrel{\text { 最 }}{\text { E }}$ | $\begin{aligned} & \text { ò } \\ & \stackrel{\text { on }}{ } \end{aligned}$ | $\begin{gathered} \substack { 8 \\ \begin{subarray}{c}{6{ 8 \\ \begin{subarray} { c } { 6 } } \\ {\hline} \end{gathered}$ |  |  | B |  |  | $\begin{aligned} & \text { 寀 } \\ & \stackrel{4}{4} \end{aligned}$ |  | $\underset{0}{2}$ |  |
|  |  |  |  | $\begin{gathered} \stackrel{u}{0} \\ \underset{y}{*} \end{gathered}$ | $\begin{array}{r} \stackrel{\rightharpoonup}{\omega} \\ \stackrel{\rightharpoonup}{3} \\ \hline \end{array}$ | $\begin{aligned} & \frac{3}{3} \\ & \stackrel{y}{3} \\ & \stackrel{\omega}{3} \end{aligned}$ | $\begin{aligned} & \stackrel{0}{6} \\ & \stackrel{0}{6} \\ & \frac{0}{3} \end{aligned}$ |  |  | 鬲 | 主 |  | $\stackrel{\circ}{0}$ |  |
| $\begin{aligned} & \stackrel{\otimes}{0} \\ & \stackrel{\tilde{y y}}{\circ} \end{aligned}$ | © $\stackrel{\text { N్0 }}{0}$ |  | $\begin{aligned} & \stackrel{\circ}{\circ} \\ & \stackrel{\tilde{W}}{\circ} \\ & \hline \end{aligned}$ | $\begin{aligned} & \infty 0_{6}^{2} \\ & \stackrel{\tilde{y}}{8} \end{aligned}$ | $\begin{aligned} & \infty \\ & \stackrel{\otimes}{0} \\ & \stackrel{\rightharpoonup}{0} \\ & \hline \end{aligned}$ |  |  |  | Bicc: | $\begin{aligned} & \stackrel{\otimes}{0} \\ & \stackrel{\text { 犬̈d }}{0} \end{aligned}$ | $\begin{aligned} & \stackrel{\circ}{0} \\ & \stackrel{\rightharpoonup}{0} \\ & \hline 8 \end{aligned}$ |  | $\begin{aligned} & \stackrel{\otimes}{0} \\ & \stackrel{\tilde{H}}{8} \end{aligned}$ | $\begin{aligned} & \stackrel{8}{0} \\ & \underset{\tilde{y}}{0} \end{aligned}$ | B6a 34

Restoration Restoration RECOMMENDATION

## REACH RANK（NEED \＆ FEASIBLIITY）

| RECOMMENDATION |
| :---: |
| PARCEL ID |
| 00515423 |
| 00515424 |
| 00515425 |
| 00515426 |
| 00515427 |
| 00515428 |
| 00521263 |
| 00521 C95 |
| 00521 C95 |
| $00521 C 95$ |
| 00521 C95 |
| 00521 c95 |


| 00521 C95 | NEAL | JAMES TJR |  |  | 19735 |  | FERIBA | PL |  | CORNELIUS | $\begin{gathered} 19735 \mathrm{FERIBA} \\ \hline 1072 \mathrm{PL}_{2} \mathrm{LDIIDA} \end{gathered}$ |  | CORNELIUS | NC | 28031 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 00521 C95 | TAYLOR | TAMMY L |  |  | 19733 |  | FERIBA | PL |  | CORNELUS | $\begin{gathered} 19733 \text { FERIBA } \\ \hline \end{gathered}$ |  | CORNELIUS | NC | 28031 |
| REACH RANK (NEED \& FEASIBILITY) RECOMMENDATIO | $\begin{gathered} \mathrm{N} 13 \mathrm{c} \\ 35 \\ \text { Enhancement II } \end{gathered}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| PARCEL ID | OWNER, LAST NAME | OWNER, FIRST NAME | COWNER, FIRST NAME | COWNER, LAST NAME | houseno | STDIR | StNAME | STTYPE | stsuffix | MUNICIPALITY | MAILADDR1 | MALLADDR2 | CITY | STATE | ZIPCODE |
| 01503101 | STEPHENS RIDGE LLC | $\underset{\substack{\text { \% NEW SOTH } \\ \text { PROP }}}{\substack{\text { n }}}$ |  |  |  |  | $\begin{gathered} \text { BUD } \\ \text { BENERSON } \end{gathered}$ | RD |  | HUNTERSVILLE | 1518 EAST 3RD ST \#200 |  | CHARLOTTE | NC | 28204 |
| 01504101 | ARVIDA MID ATLANTIC HOMES INC |  | beate | \% HANKE | 7300 |  | GILEAD | RD |  | HUNTERSVILLE | ${ }_{\substack{\text { 7900 GLADES } \\ \text { RD \#20 }}}^{\text {des }}$ |  | bocaraton | FL | 33434 |
| 01504106 | ARVIDA MID-ATLANTIC HOMES INC |  | beate | \% HANKE | 7930 |  | $\begin{gathered} \text { BUD } \\ \text { HENDERSON } \end{gathered}$ | RD |  | HUNTERSVILLE |  |  | bocaraton | FL | 33434 |
| 01504111 | ARVIDA MID-ATLANTIC HOMES INC OMES INC |  | BEATE | \% HANKE | 7926 |  | BUD HENDERSON | RD |  | huntersville | 7900 GLADES R \#20 |  | bocaraton | FL | 33434 |
| 01504112 | ARVIDA MID-ATLANTIC HOMES INC |  | BEATE | \% HANKE |  |  | darblay | ST |  | HUNTERSVILLE |  |  | bocaraton | FL | 33434 |
| 01504113 | ARVIDA MID-ATLANTIC |  | BEATE | \% HANKE |  |  | DARBLAY | ST |  | HUNTERSVILLE |  |  | bocaraton | FL | 33434 |
| 01504114 | ARVIDA MID-ATLANTIC HOMESINC |  | beate | \% HANKE | 6811 |  | dUNTON | ST |  | HUNTERSVILLE | 7900 GLADES RD \#20 |  | boca raton | FL | 33434 |
| 01504133 | CULLER | MIRINDA |  |  | 6904 |  | DUNTON | ST |  | HUNTERSVILLE | cen $\begin{aligned} & \text { 6904 DUTON } \\ & \text { ST }\end{aligned}$ |  | BOCARATON | NC | 33434 |
| 01504134 | FISHER | JOYCE B |  |  | 6830 |  | DUNTON | ST |  | HUNTERSVILLE | ${ }^{6830} \mathrm{DUNTON}_{\text {ST }}$ |  | HUNTERSVILLE | NC | 28078 |
| 01504135 | HOMESINC <br> ARVIDA MID-ATLANTIC HOMES INC |  | beate | \% HANKE |  |  | DARBLAY | ST |  | HUNTERSVILLE | 7900 GLADES RD $\# 200$ |  | BOCA RATON | FL | 33434 |
| 01504136 | HIRACH | KATHRYN |  |  | 8009 |  | BAYLIS | DR |  | HUNTERSVILLE | 8009 BAYLIS DRIVE |  | huntersville | NC | 28078 |


| COMMENDATION | Enhancement II |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| PARCEL ID | OWNER, LAST NAME | OWNER, FIRST NAME | CIRST NAME | NAME | Houseno | STDIR | STNAME | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MAILADDR2 | CITY | STATE | ZIPCODE |
| 00523411 | BURRIS | RODDY DEAN |  | CRYSTAL YVETTE | 19631 |  | HEARTLAND | ST |  | CORNELUS | $\begin{aligned} & \text { A9631 ST } \\ & \text { HEARTAND } \end{aligned}$ |  | CORNELIUS | NC | $\begin{gathered} 28031-1 \\ 92266 \end{gathered}$ |
| 00525404 | FESPERMAN | G Laverne |  |  | 19600 |  | DERBY | CT |  | CORNELUS | 19600 DERBY CT |  | CORNELIUS | NC | 28031 |
| 00525405 | woods | LAURA PHYLLIS |  |  | 19603 |  | DERBY | CT |  | CORNELUS | ${ }^{19603 \text { DERBY }}$ |  | CORNELUS | NC | 28031 |
| 00525407 | HALWEG | JAMES |  |  | 10330 |  | DANESWAY | LN |  | CORNELUS | $\stackrel{10330}{\text { DANESWAY LN }}$ |  | CORNELUS | NC | 28031 |
|  |  |  |  |  |  |  |  |  |  |  | ${ }_{\text {danESWAY LN }}^{1036}$ |  |  |  |  |
| 00525408 | WISE | LESSIE B |  |  | 10326 |  | DANESWAY | LN |  | CORNELUS | DANESWAYLN |  | CORNELIUS | NC | 28031 |
| 00525409 | FRECHETTE | EARLF | SANDRAM | FRECHETTE | 10320 |  | DANESWAY | LN |  | CORNELUS | dANESWAY LN |  | CORNELUS | NC | 28031 |
| 00525410 | GOLDMAN | MALCOLM R |  |  | 203 |  | CONISTAN | PL |  | CORNELUS | CONISTAN PL |  | CORNELUS | NC | 28031 |
| 00525411 | THOMASSON | CLYDEH |  |  | 10209 |  | CONISTAN | PL |  | CORNELIUS | $\begin{array}{r} 10209 \\ \text { CONISTAN PL } \\ \hline \end{array}$ |  | CORNELIUS | NC | 28031 |
| 00525412 | SCHUERMANN | FRANCESJ |  |  | 10213 |  | CONISTAN | PL |  | CORNELUS | $\begin{gathered} 10213 \\ \text { CONSTAN PL } \end{gathered}$ |  | CORNELIUS | NC | 28031 |
| 00525413 | MASSIMINI | JOHN | CHRISTINA | MASSIMINI | 10217 |  | CONISTAN | PL |  | CORNELUS | 19218 RUFFNER DR |  | CORNELUS | NC | 28031 |
| 00525414 | LETTA | JOSEPH A |  |  | 10221 |  | CONISTAN | PL |  | CORNELUS | $\begin{gathered} 1021 \\ \text { CONISTAN PL } \\ \hline \end{gathered}$ |  | CORNELIUS | NC | 28031 |
| 00525415 | CRADIT | STEVEN |  |  | 10227 |  | CONISTAN | PL |  | CORNELUS | $\stackrel{\text { ONISTAN }}{1027}$ |  | CORNELIUS | NC | 28031 |
| 00525416 | AMERSON | LISAM | JOSEPH A | AMERSON | 10301 |  | CONISTAN | PL |  | CORNELUS | CONISTAN PL |  | CORNELIUS | NC | 28031 |
| 00525417 | MBUTHIA | ALEXA | CHARITY | MBUTHIA | 10305 |  | CONISTAN | PL |  | CORNELUS | $\begin{aligned} & 10305 \\ & \text { CONISTAN PL } \end{aligned}$ |  | CORNELIUS | NC | 28031 |
| 00525418 | Lewis | PAMELAC |  |  | 10309 |  | CONISTAN | PL |  | CORNELUS | 10309 |  | CORNELIUS | NC | 28031 |
|  |  |  |  |  |  |  |  | 2 |  |  |  |  |  |  |  |


McDowell Creek Watershed Management Plan Version 4......................March 2, 2008

|  |  |  |  |  |  |  |  |  |  |  | WAY |  |  |  | 6458 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 00942135 | LAMB | WILLARD BRADLEY | ANGELA D | LAMB | 10022 |  | BAYART | WY |  | HUNTERSVILLE | 10022 BAYART WY |  | CHARLOTTE | NC | 28078 |
| 00942136 | COOPER | EDDIE D | ANNETTE | COOPER | 10016 |  | BAYART | WY |  | HUNTERSVILLE | $\begin{gathered} 10016 \text { BAYART } \\ \text { WAY } \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 00942137 | ROUSE | CRAIG C | SHELLY | ROUSE | 10010 |  | BAYART | WY |  | HUNTERSVILLE | 10010 BAYART WAY |  | HUNTERSVILLE | NC | 28078 |
| 00942138 | DIXON | ROBERTE | SHARONB | DIXON | 10002 |  | BAYART | WY |  | HUNTERSVILLE | $\begin{gathered} 10002 \text { BAYART } \\ \text { WAY } \\ \hline \end{gathered}$ |  | HUNTERSVILLE | NC | $\begin{gathered} 28078- \\ 6458 \\ \hline \end{gathered}$ |
| 00942139 | HECKLER | MATTHEW S | CHRISTIE L | HECKLER | 9932 |  | BAYART | WY |  | HUNTERSVILLE | 9932 BAYART WAY |  | HUNTERSVILLE | NC | $\begin{gathered} 28078- \\ 4900 \end{gathered}$ |
| 00942140 | GAMBILL | ROBERT S | KERRI | GAMBILL | 9924 |  | BAYART | WY |  | HUNTERSVILLE | $\begin{aligned} & 9924 \text { BAYART } \\ & \hline \end{aligned}$ |  | HUNTERSVILLE | NC | $\begin{gathered} 28078- \\ 4900 \\ \hline \end{gathered}$ |
| REACH <br> RANK (NEED \& FEASIBILITY) RECOMMENDATION | M8a 38 Enhancement I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| PARCEL ID | OWNER, LAST NAME | OWNER, FIRST NAME | COWNER, FIRST NAME | COWNER, LAST NAME | HOUSENO | STDIR | STNAME | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MAILADDR2 | CITY | STATE | ZIPCODE |
| 01502113 | BARNETTE | AGNES B |  | (ET-AL) | 7107 |  | $\begin{gathered} \text { BUD } \\ \text { HENDERSON } \\ \hline \end{gathered}$ | RD |  | HUNTERSVILLE | 7107 BUD HENDERSON RD |  | HUNTERSVILLE | NC | 28078 |
| 01502124 | FREENEY | STEPHEN P | KARRIS | FREENEY | 14442 |  | BEATTIES FORD | RD |  | HUNTERSVILLE | 16735-A CRANLYNRD $\# 124$ |  | HUNTERSVILLE | NC | 28078 |
| 01502128 | QUAN | $\begin{aligned} & \text { WILLIAM } \\ & \text { SHANE } \end{aligned}$ | TERESAF | QUAN |  |  | BEATTIES FORD | RD |  | HUNTERSVILLE | $\begin{gathered} \text { 14422 BEATTIES } \\ \text { FORD RD } \\ \hline \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |

[^1]| PARCEL ID | OWNER, LAST NAME | OWNER, FIRST NAME | COWNER, FIRST NAME | COWNER, LAST NAME | HOUSENO | STDIR | STNAME | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MAILADDR2 | CITY | STATE | ZIPCODE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 01720101 | BAUMAN | ROBERT N | PAMELA G | BAUMAN | 12117 | N | STATESVILLE | RD |  | HUNTERSVILLE | $\begin{gathered} 2235 \text { TOWNSHIP } \\ \text { RD } \\ \hline \end{gathered}$ |  | CHARLOTTE | NC | 28273 |
| 01721201 | CFI PROPERTIES LLC |  |  | PATRICK HIGHWAY 49 LLC | 12025 | N | STATESVILLE | RD |  | HUNTERSVILLE | $\begin{gathered} 255 \text { CHEROKEE } \\ \text { RD } \\ \hline \end{gathered}$ |  | CHARLOTTE | NC | 28207 |
| 01721212 | CFI PROPERTIES LLC |  |  | $\begin{gathered} \text { PATRICK } \\ \text { HIGHWAY } 49 \mathrm{LLC} \\ \hline \end{gathered}$ | 12019 | N | STATESVILLE | RD |  | HUNTERSVILLE | $\begin{gathered} 255 \text { CHEROKEE } \\ \text { RD } \\ \hline \end{gathered}$ |  | CHARLOTTE | NC | 28207 |


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McDowell Creek Watershed Management Plan Version 4.....................March 2, 2008


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42 42
Restoration

| PARCEL ID | OWNER, LAST NAME | OWNER, FIRST NAME | COWNER, FIRST NAME | COWNER, LAST NAME | HOUSENO | STDIR | STNAME | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MAILADDR2 | CITY | STATE | ZIPCODE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 01506290 | HOMEOWNERS ASSOCIATION FOR | STONEGATE SUBDIVISION INC |  |  |  |  | ROLLING MEADOWS | LN |  | HUNTERSVILLE | P OBOX 350 |  | MINERAL SPRINGS | NC | 28108 |
| 01506321 | RAMIREZ | HUGO J | SARAH E | SHOE | 7930 |  | ROLLING MEADOWS | LN |  | HUNTERSVILLE | 7930 ROLLING MEADOWS LN |  | HUNTERSVILLE | NC | 28078 |
| 01506322 | RUSSELL | KENNETH C |  |  | 7924 |  | ROLLING MEADOWS | LN |  | HUNTERSVILLE | 7924 ROLLING MEADOWS LN |  | HUNTERSVILLE | NC | 28078 |
| 01506398 | HOMEOWNERS ASSOCIATION | $\begin{gathered} \text { FOR } \\ \text { STONEGATE } \\ \text { SUBDIVISION } \end{gathered}$ |  |  |  |  | ROLLING MEADOWS | LN |  | HUNTERSVILLE | PO BOX 113 |  | MINERAL SPRINGS | NC | 28108 |
| 01507108 | WATERS | WILLIAM W |  |  | 8113 |  | MCILWAINE | RD |  | HUNTERSVILLE | $\begin{gathered} 3850 \\ \text { SHARONVIEW } \\ \text { RD } \\ \hline \end{gathered}$ |  | CHARLOTTE | NC | 28226 |
| 01507110 | SHAW | RICHARD DONALD |  | DIXIE LEE HUFFMAN | 7807 |  | MCILWAINE | RD |  | HUNTERSVILLE | $\begin{gathered} 7807 \\ \text { MCILWAINE RD } \\ \hline \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 01507113 | GUIGNARD | CHARLES S |  |  | 7821 |  | MCILWAINE | RD |  | HUNTERSVILLE | PO BOX 1766 |  | HUNTERSVILLE | NC | 28070 |
| 01539198 | $\begin{gathered} \text { MECKLENBURG } \\ \text { COUNTY } \\ \hline \end{gathered}$ |  |  |  |  |  | LEISURE | LN |  | HUNTERSVILLE | $\begin{gathered} 600 \mathrm{E} \text { FOURTH } \\ \text { ST } \end{gathered}$ |  | CHARLOTTE | NC | 28202 |
| 01543103 | $\underset{\text { COUNTY }}{\text { MECKLENBURG }}$ |  |  | \% REAL ESTATE /FINANCE DEPT | 8147 |  | MCILWAINE | RD |  | HUNTERSVILLE | $\begin{aligned} & \text { 600 EAST 4TH } \\ & \text { ST 11TH FLOOOR } \end{aligned}$ |  | CHARLOTTE | NC | 28202 |


| REACH |
| :--- |
|  |
| FEASIBILITY) |
| RECOMMENDAT |

PARCELID
01506290
01506322
01506398

| 01507108 |
| :--- |
| 01507110 |
| 01507113 |
| 01539198 |
| 01543103 |

REACH
RANK (NEED \&
FEASIBILITY)
B5a_B9a
43
Enhancement II
OWNER, LAST NAME
CDH VENTURES LLC KAROON INC
CHARLOTTE CHURCH
INC THE

RECOMMENDATION
PARCEL ID
00517102
00517118

| PARCEL ID | OWNER, LAST NAME | OWNER, FIRST NAME | COWNER, FIRST NAME | COWNER, LAST NAME | HOUSENO | STDIR | STNAME | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MAILADDR2 | CITY | STATE | ZIPCODE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 00517101 | BLAKELY | JF |  | \% ANN BLAKLY |  |  | STATESVILLE | RD |  | CORNELIUS | $\begin{gathered} 21132 \\ \text { BRINKLEY ST } \end{gathered}$ |  | CORNELIUS | NC | 28031 |
| 00517102 | CDH VENTURES LLC |  |  |  | 19300 |  | STATESVILLE | RD |  | CORNELIUS | $\begin{gathered} 18531 \\ \text { HARBORSIDE } \\ \text { DR } \end{gathered}$ |  | CORNELIUS | NC | 28031 |
| 00517115 | KAROON INC |  |  |  | 19400 |  | STATESVILLE | RD |  | CORNELIUS | PO BOX 2276 |  | CORNELIUS | NC | 28031 |
| 00517118 | CHARLOTTE CHURCH INC THE |  |  |  |  |  | STATESVILLE | RD |  | CORNELIUS | $\begin{aligned} & 1200 \text { SOUTH } \\ & \text { GRAHAM ST } \end{aligned}$ |  | CHARLOTTE | NC | 28203 |

McDowell Creek Watershed Management Plan Version 4......................March 2, 2008

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| 01531238 | PEAY | JOHN W |  | JACQUELINE CARSON | 12301 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 01531239 | RENCKENS | TIMOTHY T | SUSAN G | RENCKENS | 12305 |
| 01531240 | FENSTERMACHER | ROBERT PAUL |  |  | 9106 |
| 01531241 | RUSSELL | DANIELJ | LAURA A | RUSSELL | 9100 |
| 01531242 | RINEHARDT | WALTERS |  | LARA EAKER | 9101 |
| 01531250 | CEDARFIELD | HOMEOWNERS ASSOC INC |  |  |  |
| 01531251 | CEDARFIELD PLANTATION | HOMEOWNERS ASSOC INC |  |  |  |
| 01531256 | RUST | CHRISTOPHER | ANN C | RUST | 12400 |
| 01531257 | AXE | G RANDALL | KATHY P | AXE | 12401 |
| 01531258 | MARKHAM | daniel g | JO C | MARKHAM | 12405 |
| 01531265 | FLANAGAN | WILLIAM FRANKLIN | MIRIAM EVANS | FLANAGAN |  |

[^2]${ }^{8+}$
P18a
Restoration

| OWNER, LAST NAME |
| :---: |
| CHUMLEY |
| $\begin{array}{c}\text { KAZAKOS BROTHERS } \\ \text { PROPERTIES }\end{array}$ |
|  |

REACH
RANK (NEED \&
FEASIBILITY)
RECOMMENDAT

| PARCEL ID | OWNER, LAST NAME | OWNER, FIRST NAME | COWNER, FIRST NAME | COWNER, LAST NAME | HOUSENO | STDIR | STNAME | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MAILADDR2 | CITY | STATE | ZIPCODE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 01708101 | CHUMLEY | MELANIE R | THOMAS M | CHUMLEY | 13701 |  | ALEXANDER | LN |  | HUNTERSVILLE | $\begin{gathered} 13701 \\ \text { ALEXANDER LN } \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 01708102 | KAZAKOS BROTHERS |  |  |  | 13400 | N | STATESVILLE | RD |  | HUNTERSVILLE | $\begin{gathered} 534 \\ \text { TURNERSBURG } \\ \text { HWY } \end{gathered}$ |  | STATESVILLE | NC | $\begin{gathered} 28625- \\ 2722 \end{gathered}$ |
| 01708103 | TAYLOR | MARJORIE |  |  | 510 |  | mt hollyHUNTERSVILLE | RD |  | HUNTERSVILLE |  |  | HUNTERSVILLE | NC | 28078 |
| 01708104 | JOHNSON | EVELYN |  |  | 514 |  | MT HOLLYHUNTERSVILLE | RD |  | HUNTERSVILLE | 13011 MT HOLLY- HUNTERSVILLE RD |  | HUNTERSVILLE | NC | 28078 |
| 01708109 | MLLEER | WILLIAM BANKS,JR | SARA | MLLLER | 13125 |  | IRIS | DR |  | HUNTERSVILLE | 13125 IRIS DR |  | HUNTERSVILLE | NC | 28078 |
| 01708110 | PLYLER | WILLIAM G | JANE D | PLYLER | 13131 |  | IRIS | DR |  | HUNTERSVILLE | 13131 IRIS DR |  | HUNTERSVILLE | NC | 28078 |
| 01708113 | KAZAKOS BROTHERS PROPERTIES |  |  |  |  |  | ALEXANDER | LN |  | HUNTERSVILLE | $\begin{gathered} 534 \\ \text { TURNERSBURG } \\ \text { HWY } \\ \hline \end{gathered}$ |  | STATESVILLE | NC | $\begin{array}{r} 28625- \\ 2722 \end{array}$ |
| 01708114 | ROSS | MELANIE LEE \%WM L ROSS | $\begin{aligned} & \text { MELANIE } \\ & \text { ROSS } \end{aligned}$ | CHUMLEY |  |  | ALEXANDER | LN |  | HUNTERSVILLE | $\begin{gathered} 13701 \\ \text { ALEXANDER LN } \\ \hline \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 01708201 | PRICE | DONALD | APRIL | PRICE | 319 |  | HILLCREST | DR |  | HUNTERSVILLE | $\begin{gathered} 319 \text { HILLCREST } \\ \text { DR } \\ \hline \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 01708202 | JoLly | CHARLES M |  |  | 13628 |  | ALEXANDER | LN |  | HUNTERSVILLE | PO BOX 311 |  | HUNTERSVILLE | NC | 28270 |
| 01708221 | KERNS | PEGGY S |  |  | 308 |  | GREENWAY | ST |  | HUNTERSVILLE | POBOX 172 |  | HUNTERSVILLE | NC | $\begin{gathered} \hline 28070- \\ 0172 \\ \hline \end{gathered}$ |
| 01708222 | HUBBARD | ROBERT CLAY | NORMA F | HUBBARD | 306 |  | GREENWAY | ST |  | HUNTERSVILLE | PO BOX 192 |  | HUNTERSVILLE | NC | $\begin{gathered} 28070- \\ 0192 \\ \hline \end{gathered}$ |
| 01708223 | BEARD | GRADY M | FRANCES | BEARD | 304 |  | GREENWAY | ST |  | HUNTERSVILLE | $\begin{gathered} 304 \text { GREENWAY } \\ \text { DR } \end{gathered}$ |  | HUNTERSVILLE | NC | $\begin{gathered} 28078- \\ 7265 \\ \hline \end{gathered}$ |
| 01708224 | NICHOLS | MARTIN M III |  |  | 302 |  | GREENWAY | ST |  | HUNTERSVILLE | $\begin{gathered} \hline 302 \text { GREENWAY } \\ \text { DR } \\ \hline \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 01708225 | FREEZE | CR |  | (L/E BN) | 300 |  | GREENWAY | ST |  | HUNTERSVILLE | PO BOX 252 |  | HUNTERSVILLE | NC | $\begin{gathered} 28070- \\ 0252 \\ \hline \end{gathered}$ |
| 01708226 | KERNS | ROBERT N | ELAINE E | KERNS | 301 |  | HILLCREST | DR |  | HUNTERSVILLE | $\begin{gathered} 301 \text { HILLCREST } \\ \text { DR } \end{gathered}$ |  | HUNTERSVILLE | NC | $\begin{gathered} 28078- \\ 7855 \\ \hline \end{gathered}$ |
| 01708229 | STEWART | MICHAEL H | PATRICIA | STEWART | 311 |  | HILLCREST | DR |  | HUNTERSVILLE | PO BOX 252 |  | HUNTERSVILLE | NC | 28078 |
| 01708230 | MARTIN | FRANK WAYNE | ALISON J | MARTIN |  |  | HILLCREST | DR |  | HUNTERSVILLE | 402 GREENWAY |  | HUNTERSVILLE | NC | 28078 |

McDowell Creek Watershed Management Plan Version 4......................March 2, 2008


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RECOMMENDATION Enhancement I
REACH
RANK (NEED \&
FEASIBILITY)
RECOMMENDAT

| PARCEL ID | OWNER, LAST NAME | OWNER, FIRST NAME | COWNER, FIRST NAME | COWNER, LAST NAME | HOUSENO | STDIR | STNAME | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MAILADDR2 | CITY | STATE | ZIPCODE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 01510499 | $\begin{gathered} \text { MECKLENBURG } \\ \text { COUNTY } \\ \hline \end{gathered}$ |  |  | \% REAL ESTATE /FINANCE DEPT. |  |  | SHEPPARTON | DR |  | HUNTERSVILLE | $\begin{aligned} & 600 \text { E 4TH ST } \\ & \text { 11TH FLOOR } \\ & \hline \end{aligned}$ |  | CHARLOTTE | NC | $\begin{gathered} 28202 \\ 2816 \\ \hline \end{gathered}$ |
| 01530208 | SEXTON | DAVIDE | BARBARA R | SEXTON | 9001 |  | WILLOW TRACE | CT |  | HUNTERSVILLE | 9001 WILLOW TRACE CT |  | HUNTERSVILLE | NC | 28078 |
| 01530209 | PAGE | KENNETH L |  |  | 9005 |  | WILLOW TRACE | CT |  | HUNTERSVILLE | 9005 WILLOW TRACE CT |  | HUNTERSVILLE | NC | 28078 |
| 01530210 | NASKO | THOMAS J | DONNA L | NASKO | 9011 |  | WILLOW TRACE | CT |  | HUNTERSVILLE | 9011 WILLOW |  | HUNTERSVILLE | NC | $\begin{gathered} 28078- \\ 9154 \end{gathered}$ |
| 01530211 | YOUNG | CRAIG S | CHRISTINA B | YOUNG | 9015 |  | WILLOW TRACE | CT |  | HUNTERSVILLE | 9015 WILLOW TRACE CT |  | HUNTERSVILLE | NC | 28078 |
| 01530212 | MILHOLLAND | DAVID C | DONNA P | MILHOLLAND | 9019 |  | WILLOW TRACE | CT |  | HUNTERSVILLE | 9019 WILLOW TRACE CT |  | HUNTERSVILLE | NC | 28078 |
| 01530218 | HANRAHAN | SHERRY GREEN |  | HSB THOMAS RIKLEY | 9002 |  | MAPLE HILL | CT |  | HUNTERSVILLE | 9002 MAPLE HILL CT |  | HUNTERSVILLE | NC | 28078 |
| 01530219 | AUTEN | BRICE C | SHEILA C | AUTEN | 9000 |  | MAPLE HILL | CT |  | HUNTERSVILLE | 9000 MAPLE HILL CT |  | HUNTERSVILLE | NC | 28078 |


| $\begin{aligned} & \infty \\ & \stackrel{\infty}{\infty} \stackrel{\circ}{\sigma} \\ & \stackrel{\circ}{\sigma} \end{aligned}$ |  | の |  | ¢ | $\begin{aligned} & \stackrel{\infty}{\stackrel{0}{0}} \\ & \stackrel{\sim}{0} \end{aligned}$ | $\stackrel{\infty}{\stackrel{\infty}{\stackrel{0}{0}}}$ | $\stackrel{\stackrel{\sim}{0}}{\underset{\sim}{2}}$ | $\stackrel{\infty}{\stackrel{\infty}{\sim}}$ | $\begin{gathered} \stackrel{\infty}{\stackrel{\circ}{0}} \\ \stackrel{\sim}{0} \end{gathered}$ | $\begin{aligned} & \stackrel{\infty}{\stackrel{\circ}{0}} \\ & \stackrel{\sim}{0} \end{aligned}$ | $\stackrel{\infty}{\infty} \stackrel{0}{0}$ | $\begin{aligned} & \stackrel{\infty}{0} \\ & \stackrel{\otimes}{0} \end{aligned}$ | $\begin{aligned} & \stackrel{\infty}{\stackrel{\circ}{0}} \\ & \stackrel{\sim}{0} \end{aligned}$ | $\stackrel{\infty}{\infty} \stackrel{0}{0}$ | $\begin{aligned} & \stackrel{\infty}{0} \\ & \stackrel{\sim}{\circ} \end{aligned}$ | $\stackrel{\infty}{\stackrel{\infty}{0}} \stackrel{\sim}{0}$ | $\begin{aligned} & \stackrel{\infty}{\stackrel{\circ}{0}} \\ & \stackrel{\sim}{0} \end{aligned}$ |  |  | $\begin{gathered} \stackrel{\infty}{\mathbf{o}} \\ \stackrel{\sim}{0} \end{gathered}$ | $\stackrel{\underset{\sim}{N}}{\substack{2}}$ |  |  | $\stackrel{\infty}{\stackrel{\infty}{0}} \stackrel{\sim}{0}$ | $\stackrel{\infty}{0}$ |  |  |  | $\stackrel{\infty}{\stackrel{\infty}{0}} \stackrel{\sim}{0}$ | $\stackrel{\infty}{\sim}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | $\stackrel{1}{2}$ | 2 | 2 | 2 |  | 2 | 2 | 2 | 2 |
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 huntersville

 HUNTERSVILLE






McDowell Creek Watershed Management Plan Version 4......................March 2, 2008

| 01535241 | WEIR | EDWARD |  | JANE B WEIR (H/W) | 9208 |  | OLD BARNETTE | PL |  | HUNTERSVILLE | $\begin{gathered} 9208 \text { OLD } \\ \text { BARNETE PL } \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 01535242 | PARKER | JOHN ANDREW | NATALIE | PARKER | 9204 |  | OLD BARNETTE | PL |  | HUNTERSVILLE | $\begin{gathered} 9204 \text { OLD } \\ \text { BARNETTE PL } \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| REACH RANK (NEED \& FEASIBILITY) RECOMMENDATIO |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| PARCEL ID | OWNER, LAST NAME | OWNER, FIRST NAME | COWNER, FIRST NAME | COWNER, LAST NAME | HOUSENO | STDIR | STNAME | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MAILADDR2 | CITY | STATE | ZIPCODE |
| 00516661 | ROBERTSON | JAMES E | SUSAN E | ROBERTSON | 21108 |  | PINE RIDGE | DR |  | CORNELIUS | $\begin{gathered} 6028 \text { DELTA } \\ \text { CROSSING LN } \\ \text { APT G } \end{gathered}$ |  | CHARLOTTE | NC | $\begin{gathered} 28212- \\ 2371 \end{gathered}$ |
| 00516662 | WOJTOWICZ | JAMES J | MARY E | WHITNEY | 21100 |  | PINE RIDGE | DR |  | CORNELIUS | 2110 PINE RIDGE DR |  | CORNELIUS | NC | 28031 |
| 00525513 | WILLIAMS | MARK A | ELIZABETH P | WILLIAMS | 10219 |  | DANESWAY | LN |  | CORNELIUS | $\begin{gathered} 10219 \\ \text { DANESWAY LN } \\ \hline \end{gathered}$ |  | CORNELIUS | NC | 28031 |
| 00525514 | MISENAR | RYAN S |  | $\underset{(H / W)}{\text { LISA M MISENAR }}$ | 10223 |  | DANESWAY | LN |  | CORNELIUS | $\begin{gathered} 10223 \\ \text { DANESWAY LN } \end{gathered}$ |  | CORNELIUS | NC | 28031 |
| 00525515 | SANFILIPPO | THOMAS JJR | JOAN | SANFILIPPO | 10227 |  | DANESWAY | LN |  | CORNELIUS | $\begin{gathered} 10227 \\ \text { DANESWAY LN } \end{gathered}$ |  | CORNELIUS | NC | 28031 |
| 00525516 | KAZMIERCZAK | JOHN | APRIL | MEADOWS | 10231 |  | DANESWAY | LN |  | CORNELIUS | $\begin{gathered} 10231 \\ \text { DANESWAY LN } \\ \hline \end{gathered}$ |  | CORNELIUS | NC | 28031 |
| 00525517 | GOTTA | MICHAEL P |  | $\begin{gathered} \text { KRISTIN L GOTTA } \\ (H / W) \end{gathered}$ | 10235 |  | DANESWAY | LN |  | CORNELIUS | $\begin{gathered} 10235 \\ \text { DANESWAY LN } \end{gathered}$ |  | CORNELIUS | NC | 28031 |
| 00525518 | LAKE | KELLY |  |  | 10239 |  | DANESWAY | LN |  | CORNELIUS | $\begin{gathered} 10239 \\ \text { DANESWAY LN } \end{gathered}$ |  | CORNELIUS | NC | 28031 |
| 00525599 | $\underset{\substack{\text { MECKLENBUURG } \\ \text { COUNTY }}}{\text { Man }}$ |  |  |  | 10313 |  | DANESWAY | LN |  | CORNELIUS | $\begin{aligned} & \hline 600 \mathrm{EFOURTH} \\ & \hline \text { ST } \\ & \hline \end{aligned}$ |  | CHARLOTTE | NC | 28202 |
| REACH RANK (NEED \& FEASIBILITY) RECOMMENDATIO | U 15 52 Enhancement $\mid$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| PARCEL ID | OWNER, LAST NAME | OWNER, FIRST NAME | COWNER, FIRST NAME | COWNER, LAST NAME | HOUSENO | STDIR | STNAME | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MAILADDR2 | CITY | STATE | ZIPCODE |
| 01706205 | DELLINGER | WILLIAM J |  | (ET-AL) | 12150 |  | HAMBRIGHT | RD |  | HUNTERSVILLE | PO BOX 929 |  | MONROE | NC | $\begin{gathered} 28111- \\ 0929 \\ \hline \end{gathered}$ |
| REACH RANK (NEED \& FEASIBILITY) | L7a <br> 53 <br> Restoration upstream of Sherwood Drive Improvement to Sherwood Drive culvert / Bank Stabilization downstream of Sherwood Drive $\qquad$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| PARCEL ID | OWNER, LAST NAME | OWNER, FIRST NAME | COWNER, FIRST NAME | $\underset{\substack{\text { COWNER, LAST } \\ \text { NAME }}}{\text { N }}$ | HOUSENO | STDIR | STNAME | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MAILADDR2 | CITY | STATE | ZIPCODE |
| 01712222 | FIRST BAPTIST CHURCH OF | HUNTERSVILLE NC INC |  |  | 119 |  | $\begin{gathered} \text { OLD } \\ \text { STATESVILLE } \end{gathered}$ | RD |  | HUNTERSVILLE | PO BOX 331 |  | HUNTERSVILLE | NC | 28078 |
| 01712226 | FIRST BAPTIST CHURCH OF | HUNTERSVILLE NC INC |  |  | 621 |  | $\begin{gathered} \text { OLD } \\ \text { STATESVILLE } \end{gathered}$ | RD |  | HUNTERSVILLE | $\begin{aligned} & \text { 119 NORTTH OLD } \\ & \text { STATESVILLE } \\ & \text { RD } \end{aligned}$ |  | HUNTERSVILLE | NC | 28078 |
| 01712228 | LEHEW | DONALD G | CONSTANCE J | LEHEW | 300 |  | SHERWOOD | DR |  | HUNTERSVILLE | $\begin{gathered} 620 \text { SHERWOOD } \\ \text { DR } \\ \hline \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 01712229 | ROUTH | BEN D | NANCYK | ROUTH | 102 |  | FOREST | CT |  | HUNTERSVILLE | 102 FOREST CT |  | HUNTERSVILLE | NC | 28078 |
| 01712232 | GIBSON | JOHN TRUETT | GLORIAL | GIBSON | 202 |  | SHERWOOD | DR |  | HUNTERSVILLE | PO BOX 513 |  | HUNTERSVILLE | NC | $\begin{gathered} 28070- \\ 0513 \\ \hline \end{gathered}$ |
| 01712233 | MCAULAY | HUGH M | LOUISA | MCAULAY | 104 |  | SHERWOOD | DR |  | HUNTERSVILLE | PO BOX 285 |  | HUNTERSVILLE | NC | $\begin{gathered} 28070- \\ 0285 \\ \hline \end{gathered}$ |
| 01712239 | MAXWELL | JAMES WILSON |  |  | 200 |  | SHERWOOD | DR |  | HUNTERSVILLE | $\begin{gathered} 200 \text { SHERWOOD } \\ \text { DR } \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 01712240 | WALTERS | PAUL S | ESTHER H | WALTERS | 102 |  | SHERWOOD | DR |  | HUNTERSVILLE | $\begin{gathered} 102 \text { SHERWOOD } \\ \text { DR } \\ \hline \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |

McDowell Creek Watershed Management Plan Version 4......................March 2, 2008

McDowell Creek Watershed Management Plan Version 4.
March 2, 2008

| PARCEL ID | OWNER, LAST NAME | OWNER, FIRST NAME | COWNER, FIRST NAME | $\underset{\text { NAME }}{\substack{\text { COWNER, LAST }}}$ | houseno | STDIR | stanme | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MAILADDR2 | CITY | STATE | ZIPCODE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 01720101 | bauman | Robert | PAMELA G | Bauman | 12117 | N | Statesville | RD |  | huntersvile | $\underset{R D}{2235 \text { Townshlp }}$ |  | Charlotte | NC | 28273 |
| 01720102 | HURD | LINDAS |  |  | 12221 |  | STATESVILLE | RD |  | HUNTERSVILLE | $\begin{gathered} 12221 \\ \text { STATESVILLE } \\ \text { RD } \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 01720103 | EDWARDS | RAYMOND H | ANNES | EDWARDS | 12303 | N | STATESVILLE | RD |  | HUNTERSVILLE | $\begin{gathered} \text { RD } \\ \hline \begin{array}{c} \text { RTATESVIILLE } \\ \text { RD } \end{array} \\ \hline \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |

P15a

| PARCEL ID | OWNER, LAST NAME | OWNER, FIRST NAME | COWNER, FIRST NAME | COWNER, LAST NAME | HOUSENO | STDIR | STNAME | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MAILADDR2 | CITY | STATE | ZIPCODE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 01745101 | BOWMAN GROUP THE |  |  |  | 12801 |  | MT HOLLYHUNTERSVILLE | RD |  | HUNTERSVILLE | 10228 GOVERNER LANE BLVD \#3002 |  | WILLIAMSPORT | MD | 21795 |
| 01745102 | G M HOLDINGS LLC |  |  |  | 100 |  | CENTER | LN |  | HUNTERSVILLE | $\begin{aligned} & 119 \text { SILVER } \\ & \text { EAGLE LN } \end{aligned}$ |  | MOORESVILLE | NC | 28117 |
| 01745103 | BERNSTEIN | KENNETH D |  |  |  |  | CENTER | LN |  | HUNTERSVILLE | 103 CENTER LN |  | HUNTERSVILLE | NC | $\begin{gathered} 28078- \\ 9778 \\ \hline \end{gathered}$ |
| 01745104 | BERNSTEIN | KENNETH D |  |  |  |  | CENTER | LN |  | HUNTERSVILLE | 103 CENTER LN |  | HUNTERSVILLE | NC | $\begin{gathered} 28078- \\ 9778 \\ \hline \end{gathered}$ |
| 01745105 | LEWIS | MICHAEL B | JOYCE M | LEWIS |  |  | CENTER | LN |  | HUNTERSVILLE | PO BOX 1030 |  | DAVIDSON | NC | $\begin{gathered} 28036- \\ 1030 \\ \hline \end{gathered}$ |
| 01745106 | PENINSULA <br> INVESTMENTS LLC |  |  |  | 107 |  | CENTER | LN |  | HUNTERSVILLE | 225 HILLSBOROUGH ST |  | RALEIGH | NC | 27603 |
| 01745108 | SMITH | MARK CHARLES | KATHLEEN D | SMITH | 103 |  | CENTER | LN |  | HUNTERSVILLE | 103 CENTER LN |  | HUNTERSVILLE | NC | 28078 |
| 01745199 | PENINSULA INVESTMENTS LLC |  |  |  |  |  | CENTER | LN |  | HUNTERSVILLE | 225 HILLSBOROUGH ST |  | RALEIGH | NC | 27603 |

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58

REACH
RANK (NEED \&
FEASIBILITY)
REACH
RANK (NEED \&
FEASIBILITY)
RECOMMENDAT
57
57
Enhance
58
Enhance
$\begin{array}{lll}0 & z \\ 0 & 0 \\ 2 & 0 \\ & \end{array}$
F11a

| U $\mathbf{O}$ $\mathbf{U}$ $\stackrel{0}{\mathbf{N}}$ | $\begin{gathered} \stackrel{0}{0} \\ \underset{N}{\mid} \end{gathered}$ | $\begin{gathered} \overline{0} \\ \stackrel{\infty}{0} \end{gathered}$ | $\begin{gathered} \infty \\ \stackrel{\infty}{\infty} \\ \stackrel{N}{2} \end{gathered}$ | $\begin{gathered} \overline{0} \\ \stackrel{\sim}{0} \end{gathered}$ | $\begin{gathered} \overline{0} \\ \stackrel{\circ}{0} \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $\stackrel{\underset{4}{6}}{\stackrel{4}{6}}$ | 2 | 2 | 2 | 2 | 2 |
| $\frac{\grave{y}}{\overline{0}}$ |  |  |  | $\begin{aligned} & \infty \\ & \underset{y}{\infty} \\ & \underset{\sim}{\underset{\sim}{0}} \\ & \underset{0}{0} \end{aligned}$ | $\begin{aligned} & 0 \\ & \stackrel{y}{3} \\ & \stackrel{\rightharpoonup}{\underset{\sim}{0}} \\ & 0 \\ & 0 \end{aligned}$ |
|  |  |  |  |  |  |
| $\begin{aligned} & \bar{\alpha} \\ & \frac{\alpha}{c} \\ & \frac{y}{k} \\ & \Sigma \end{aligned}$ |  |  |  |  |  |
|  |  |  |  |  |  |
| $\begin{aligned} & \frac{x}{4} \\ & \frac{4}{4} \\ & \frac{\pi}{3} \\ & \frac{6}{6} \end{aligned}$ |  |  |  |  |  |
|  | $\stackrel{5}{5}$ | ̛ㅡㅇ | $\stackrel{\sim}{0}$ | ¢ | ¢ |
|  |  |  |  |  |  |


| OWNER, FIRST <br> NAME | COWNER, <br> FIRST NAME | COWNER, LAST <br> NAME | HOUSENO | STDIR | STNAME |
| :---: | :---: | :---: | :---: | :---: | :---: |
| JOSHUA <br> THOMAS | ASHLEY S | WORLEY | 18334 |  | FLAGMAN |
| WAYNE J | JOSH | HALL | 18330 |  | FLAGMAN |
| TIMARAL | CORY R | BOLDING | 18326 |  | FLAGMAN |
| JOHN KYLE |  |  | 18320 |  | FLAGMAN |



| 01706201 | MONTEITH | WILLIAM GLENN |  | DON REID MONTEITH | 12001 |  | $\begin{aligned} & \text { OLD } \\ & \text { STATESVILLE } \end{aligned}$ | RD |  | HUNTERSVILLE | $\begin{gathered} 8908 \text { CARLETO } \\ \text { CT } \end{gathered}$ |  | CHARLOTTE | NC | 28214 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 01706202 | HUNTER | WEST P JR |  | BRENDAR HUNTER | 11912 | N | STATESVILLE | RD |  | HUNTERSVILLE | $\begin{gathered} 2430 \\ \text { GALLOWAY RD } \end{gathered}$ |  | CHARLOTTE | NC | 28262 |
| REACH RANK (NEED \& FEASIBILITY) <br> RECOMMENDATION | L5a 62 Enhancement l upstream /Restoration downstream |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| PARCEL ID | OWNER, LAST NAME | OWNER, FIRST NAME | COWNER, FIRST NAME | COWNER, LAST NAME | HOUSENO | STDIR | STNAME | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MAILADDR2 | CITY | STATE | ZIPCODE |
| 01732115 | BAXTER | TIMOTHY |  | $\underset{(H / W)}{\text { GAIL BAXTER }}$ | 403 |  | GLENORA | DR |  | HUNTERSVILLE | $\begin{gathered} 116 \text { PINERIDGE } \\ \text { DR } \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 01732116 | HEETE | CAROLIN |  |  | 404 |  | GLENORA | DR |  | HUNTERSVILLE | $\begin{aligned} & 404 \text { GLENORA } \\ & \text { DR } \end{aligned}$ |  | HUNTERSVILLE | NC | 28078 |
| 01732122 | BURWELL | JAMES L | ELAINE M | BURWELL | 202 |  | REMALLY | LN |  | HUNTERSVILLE | $\begin{gathered} 202 \text { REMALLY } \\ \text { LN } \\ \hline \end{gathered}$ |  | HUNTERSVILLE | NC | $\begin{gathered} 28078- \\ 6009 \\ \hline \end{gathered}$ |
| 01732123 | BALDWIN | MICHAEL S |  | NATALIE D BALDWIN (H/W) | 204 |  | REMALLY | LN |  | HUNTERSVILLE | $\begin{gathered} 204 \text { REMALLY } \\ \text { LN } \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 01732124 | MACLAUGHLIN | ERIC V |  |  | 205 |  | REMALLY | LN |  | HUNTERSVILLE | $\begin{gathered} 205 \text { REMALLY } \\ \hline \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 01732125 | WILLYARD | HARVEY LJR | SUSAN M | WILLYARD | 203 |  | REMALLY | LN |  | HUNTERSVILLE | $\begin{aligned} & 203 \text { REMALLY } \\ & \text { LN } \end{aligned}$ |  | HUNTERSVILLE | NC | 28078 |
| 01733213 | CAMPBELL | JOHN DONALD |  | GATEWOOD PAYNE | 104 |  | INTERLAKEN | PL |  | HUNTERSVILLE | $\begin{gathered} 104 \\ \text { INTERLAKEN PL } \\ \hline \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 01733214 | BEAUMONT | STEPHEN |  |  | 102 |  | INTERLAKEN | PL |  | HUNTERSVILLE | $\begin{gathered} 14535 \text { CORDIAL } \\ \text { LN \#115 } \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 01733215 | BENITEZ | ISAIAS | MAGNOLIA | BENITEZ | 100 |  | INTERLAKEN | PL |  | HUNTERSVILLE | $\begin{gathered} 100 \\ \text { INTERLAKEN PL } \\ \hline \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 01733216 | ELKINS | ROBERT | CAROL | ELKINS | 203 |  | SOUTHLAND | RD |  | HUNTERSVILLE | $\begin{array}{r} 203 \\ \text { SOUTHLAND RD } \end{array}$ |  | HUNTERSVILLE | NC | 28078 |
| 01734105 | MARSICO | MICHAEL |  | DOROTHY KLEIN- | 301 |  | SHERWOOD | DR |  | HUNTERSVILLE | $\begin{gathered} 301 \text { SHERWOOD } \\ \text { DR } \\ \hline \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 01734106 | PATTERSON | WILLIAM R JR |  | ANN B PATTERSON (H/W) | 303 |  | SHERWOOD | DR |  | HUNTERSVILLE | 303 SHERWOOD DR |  | HUNTERSVILLE | NC | 28078 |
| 01734107 | RAMSEY | CHRISTINE |  |  | 305 |  | SHERWOOD | DR |  | HUNTERSVILLE | 305 SHERWOOD DR |  | HUNTERSVILLE | NC | 28078 |
| 01734111 | BROWN | BRUCE $N$ | GALE H | BROWN | 103 |  | PROVIDENCE | LN |  | HUNTERSVILLE | $\begin{gathered} 103 \\ \text { PROVIDENCE } \\ \text { LN } \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 01734112 | RICHARDSON | DONNA L | TIMOTHY S | RICHARDSON | 101 |  | NITSA | LN |  | HUNTERSVILLE | 101 NITSA LN |  | HUNTERSVILLE | NC | 28078 |
| 01734113 | WAGSTROM | GERALD W |  | KATHERINE CARTWRIGHT | 103 |  | NITSA | LN |  | HUNTERSVILLE | 103 NISTA LN |  | HUNTERSVILLE | NC | $\begin{gathered} 28078- \\ 6023 \\ \hline \end{gathered}$ |
| 01734114 | swain | DAN J | JILL M | SWAIN | 105 |  | NITSA | LN |  | HUNTERSVILLE | 105 NISTA LN |  | HUNTERSVILLE | NC | 28078 |
| 01734125 | SKIPPER | $\begin{gathered} \text { CHARLIE LEE } \\ J R \end{gathered}$ |  | TOMMIE EDWARDS | 113 |  | PINERIDGE | DR |  | HUNTERSVILLE | $\begin{gathered} 113 \text { PINERIDGE } \\ \text { DR } \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 01734126 | GIBBS | SUSAN L |  |  | 115 |  | PINERIDGE | DR |  | HUNTERSVILLE | $\begin{gathered} 115 \text { PINERIDGE } \\ \text { DR } \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 01734127 | HOWARD | JAMES C III | CHERYLR | HOWARD | 117 |  | PINERIDGE | DR |  | HUNTERSVILLE | $\begin{gathered} 117 \text { PINERIDGE } \\ \text { DR } \\ \hline \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 01734128 | FARRINGTON | RAYMOND D | SUSAN M | FARRINGTON | 121 |  | PINERIDGE | DR |  | HUNTERSVILLE | $\begin{gathered} 121 \text { PINERIDGE } \\ \text { DR } \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 01734129 | WEAVER | ALEX | KAREN | WEAVER | 123 |  | PINERIDGE | DR |  | HUNTERSVILLE | $\begin{gathered} 123 \text { PINERIDGE } \\ \text { DR } \\ \hline \end{gathered}$ |  | HUNTERSVILLE | NC | $\begin{gathered} 28078- \\ 8928 \\ \hline \end{gathered}$ |
| 01734130 | RUGGLES | DAVID P | ALISON R | RUGGLES | 125 |  | PINERIDGE | DR |  | HUNTERSVILLE | $\begin{gathered} 125 \text { PINERIDGE } \\ \text { DR } \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 01734148 | CASHNER | HOWARDE | ANNE M | CASHNER | 303 |  | SHERWOOD | DR |  | HUNTERSVILLE | $\begin{gathered} \hline 303 \text { SHERWOOD } \\ \text { DR \#A } \\ \hline \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 01734312 | HOOK | MICHAEL J | FRANCES L | HOOK | 201 |  | PROVIDENCE | LN |  | HUNTERSVILLE | $\begin{gathered} 201 \\ \text { PROVIDENCE } \\ \text { LN } \end{gathered}$ |  | HUNTERSVILLE | NC | $\begin{gathered} 28078- \\ 9020 \end{gathered}$ |
| 01734313 | KASAK | HANS E | JULIE | KASAK | 203 |  | PROVIDENCE | LN |  | HUNTERSVILLE | $\begin{gathered} 203 \\ \text { PROVIDENCE } \\ \text { LN } \\ \hline \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 01735109 | ZYK | PETER F |  |  | 111 |  | CAMBRIDGE | RD |  | HUNTERSVILLE | $\begin{gathered} 111 \\ \text { CAMBRIDGE RD } \\ \hline \end{gathered}$ |  | HUNTERSVILLE | NC | $\begin{gathered} 28078- \\ 9007 \\ \hline \end{gathered}$ |
| 01735110 | SIMS | BOBBY E | SYLVIA D | SIMS | 107 |  | CAMBRIDGE | RD |  | HUNTERSVILLE | PO BOX 21 |  | HUNTERSVILLE | NC | 28070 |

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| HUNTERSVILLE | NC | 28078 |
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| HUNTERSVILLE | NC | ${ }_{9076}^{28078-}$ |
| HUNTERSVILLE | NC | ${ }_{\substack{28078-\\ 9076}}$ |



McDowell Creek Watershed Management Plan Version 4.....................March 2, 2008

|  |  |  |  |  |  | estates |  |  | ESTATES DR |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 00526313 | ERDT | MICHAEL J |  | 8915 |  | MAGNOLIA ESTATES | DR | CORNELIUS | 8915 MAGNOLIA ESTATES DR | CORNELIUS | NC | 28031 |
| 00527302 | SILICON DRIVE PARTNERS LLC |  | $\begin{aligned} & \text { \% BEACON } \\ & \text { PARTNERS \#3 } \\ & \text { LLC } \end{aligned}$ | 20488 |  | CHARTWELL CENTER | DR | CORNELIUS | $\begin{aligned} & \text { 9300 HARRIS } \\ & \text { CORNERS PY } \\ & \text { \#100 } \end{aligned}$ | CHARLOTTE | NC | 28269 |
| 00527315 | GANDY | PHIL M JR | QUINTON M GANDY |  | N | 1-77 | HY | CORNELIUS | $\begin{gathered} 123 \\ \text { BRIDGEPORT } \\ \text { DR } \end{gathered}$ | MOORESVILLE | NC | 28115 |


| REACH E8a <br> RANK (NEED \&  <br> FEASIBILITY) 65 <br> RECOMMENDATION Enhancement II |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| PARCEL ID | OWNER, LAST NAME | OWNER, FIRST NAME | COWNER, | COWNER, LAST NAME | HOUSENO | STDIR | STNAME | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MAILADDR2 | CITY | STATE | ZIPCODE |
| 00914117 | BIRKDALE GOLF ASSOCIATES LLC |  |  |  |  |  | BIRKDALE COMMONS | PY |  | HUNTERSVILLE | $\begin{gathered} 4201 \\ \text { CONGRESS ST } \\ \text { SUITE } 410 \\ \hline \end{gathered}$ |  | CHARLOTTE | NC | 28209 |
| 00916127 | KATZ | FRANK | MARY C | KATZ | 16569 |  | KIMBOLTEN | DR |  | HUNTERSVILLE | $\begin{gathered} 16569 \\ \text { KIMBOLTEN DR } \\ \hline \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 00917108 | SHARPE | SAMUEL A |  |  | 16507 |  | GRAPPERHALL | DR |  | HUNTERSVILLE | $\begin{gathered} 1607 \\ \text { GRAPPERHALL } \\ \text { DR } \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 00917109 | HUDNALL | ALFRED A JR | DEBRA D | HUDNALL | 16521 |  | GRAPPERHALL | DR |  | HUNTERSVILLE | $\begin{gathered} 16521 \\ \text { GRAPPERALL } \\ \text { DR } \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 00917121 | EDINGER | ROBERT H JR | BONNIES | EDINGER | 16618 |  | GRAPPERHALL | DR |  | HUNTERSVILLE | $\begin{gathered} 16618 \\ \text { GRAPPERHALL } \\ \text { DR } \end{gathered}$ |  | HUNTERSVILLE | NC | $\begin{gathered} 28078- \\ 8744 \end{gathered}$ |
| 00917122 | BANDIERAMONTE | JOSEPH G | LINDAE | BANDIERAMONTE | 16612 |  | GRAPPERHALL | DR |  | HUNTERSVILLE | $\begin{gathered} 16612 \\ \text { GRAPPERHALL } \\ \text { DR } \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 00917123 | RODGERS | JIMMY |  | Jo ANN | 16608 |  | GRAPPERHALL | DR |  | HUNTERSVILLE | $\begin{gathered} 16608 \\ \substack{\text { GRAPPERALL } \\ \text { DR }} \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 00917124 | FRIDAY | ARTHUR F JR |  |  | 16600 |  | GRAPPERHALL | DR |  | HUNTERSVILLE | $\begin{gathered} 16600 \\ \text { GRAPPERHALL } \\ \text { DR } \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 00917125 | EHLINGER | MICHAEL D | KAREN S | EHLINGER | 16522 |  | GRAPPERHALL | DR |  | HUNTERSVILLE | $\begin{gathered} 16522 \\ \text { GRAPPERHALL } \\ \text { DR } \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 00917126 | HODGE | JEFFREY | SHERRI | HODGE | 16510 |  | GRAPPERHALL | DR |  | HUNTERSVILLE | $\begin{gathered} 16510 \\ \text { GRAPPERHALL } \\ \text { DR } \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 00917128 | BRAMLEY | DOUGLASM |  | SHARON CHRISTINE | 8211 |  | CHANDOS | PL |  | HUNTERSVILLE | 8211 CHANDOS |  | HUNTERSVILLE | NC | 28078 |
| 00917129 | FLOWE | MILTON M | SHIRLEY E | FLOWE | 8215 |  | CHANDOS | PL |  | HUNTERSVILLE | 8215 CHANDOS |  | HUNTERSVILLE | NC | 28078 |
| 00917130 | PRIOR | DAVID |  | $\begin{gathered} \text { LYNDA } \\ \text { FAIRWEATHER } \end{gathered}$ | 8219 |  | CHANDOS | PL |  | HUNTERSVILLE | 8219 CHANDOS |  | HUNTERSVILLE | NC | 28078 |
| 00917152 | POOLE | JIMMY K | WANDAK | POOLE | 16511 |  | BEECH HILL | DR |  | HUNTERSVILLE | $\begin{aligned} & \text { 16511 BEECH } \\ & \text { HILL DR } \\ & \hline \end{aligned}$ |  | HUNTERSVILLE | NC | 28078 |
| 00917153 | FAUST | KENNETH M | CHERYL D | FAUST | 16519 |  | BEECH HILL | DR |  | HUNTERSVILLE | $\begin{aligned} & 16519 \text { BEECH } \\ & \text { HILL DR } \end{aligned}$ |  | HUNTERSVILLE | NC | 28078 |
| 00917154 | HANDY | ROBERT B |  | DEBRA C HANDY | 16527 |  | BEECH HILL | DR |  | HUNTERSVILLE | $\begin{gathered} 16527 \text { BEECH } \\ \text { HILL DR } \\ \hline \end{gathered}$ |  | HUNTERSVILLE | NC | $\begin{gathered} 28078- \\ 8735 \\ \hline \end{gathered}$ |
| 00917165 | GORDON | $\underset{S}{\text { CHRISTOPHER }}$ | KATHERINE | GORDON | 8316 |  | BELLINGHAM | CT |  | HUNTERSVILLE | $\begin{gathered} 8316 \\ \text { BELLINGHAM } \\ \text { CT } \\ \hline \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 00917166 | RODRIGUEZ | RAUL | LORRAINE | RODRIGUEZ | 8312 |  | BELLINGHAM | CT |  | HUNTERSVILLE | $\begin{gathered} 8312 \\ \text { BELLINGHAM } \\ \text { CT } \\ \hline \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| 00917169 | HARDING | CONSTANCE A |  |  | 16520 |  | BEECH HILL | DR |  | HUNTERSVILLE | $\begin{aligned} & 16520 \text { BEECH } \\ & \text { HILL DR } \\ & \hline \end{aligned}$ |  | HUNTERSVILLE | NC | 28078 |
| 00917170 | PANGLE | ANDREA LEE | WILLIAM MICHAEL | RICE | 16512 |  | BEECH HILL | DR |  | HUNTERSVILLE | 16512 BEECH HILI DR HILL DR |  | HUNTERSVILLE | NC | 28078 |
| 00917173 | WEASE | JAMES CONRAD | NANCY P | WEASE | 8311 |  | QUEENSWAY | PL |  | HUNTERSVILLE | $\begin{gathered} 8311 \\ \text { QUEENSWAY } \\ \text { PL } \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |

McDowell Creek Watershed Management Plan Version 4.....................March 2, 2008

| 00917174 | DEARING | TERRY W | SHIRLEY M | DEARING | 8315 | QUEENSWAY | PL | HUNTERSVILLE | $\begin{gathered} 8315 \\ \text { QUEENSWAY } \\ \text { PL } \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 00917182 | BIRKDALE HOMEOWNERS ASSOC INC |  |  |  |  | BIRKDALE COMMONS | PY | HUNTERSVILLE | $\begin{gathered} 4201 \\ \text { CONGRESS ST } \end{gathered}$ | ROTUNDA SUITE \#175 | CHARLOTTE | NC | 28209 |
| 00917183 | BIRKDALE APARTMENTS LLC |  |  | $\begin{aligned} & \text { \% THE } \\ & \text { CROSLAND } \\ & \text { GROUP INC } \end{aligned}$ | 16501 | STONEMASON | DR | HUNTERSVILLE | 227 W TRADE ST \#900 |  | CHARLOTTE | NC | 28202 |
| 00917212 | CAMPIONE | LARRY E | JOANNE E | CAMPIONE | 16150 | COVINGTON POINT | LN | HUNTERSVILLE | $\begin{gathered} 16150 \\ \text { COVINGTON } \\ \text { POINT LN } \\ \hline \end{gathered}$ |  | HUNTERSVILLE | NC | 28078 |


McDowell Creek Watershed Management Plan Version 4.....................March 2, 2008


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| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | ㄷ | 2 |  |  |  | $\bigcirc$ | 8 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |  |
|  | $\begin{aligned} & \overline{5} \\ & \stackrel{y}{0} \\ & \stackrel{u}{3} \end{aligned}$ |  |  |  | $\begin{aligned} & \stackrel{y}{u} \\ & \stackrel{y}{6} \\ & \stackrel{y}{u} \\ & \stackrel{y}{4} \end{aligned}$ |  |  | $\begin{aligned} & \text { 合 } \\ & \sum_{0}^{0} \\ & 0 \end{aligned}$ |  | 容 |  |  |  | $\begin{aligned} & \stackrel{\rightharpoonup}{\hat{\rightharpoonup}} \\ & \stackrel{\rightharpoonup}{\hat{2}} \\ & \stackrel{\rightharpoonup}{\mathrm{t}} \end{aligned}$ |  |  |  |  |  | 年 |  |  |  |  |  |

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McDowell Creek Watershed Management Plan Version 4.....................March 2, 2008

| PARCEL ID | OWNER, LAST NAME | OWNER, FIRST NAME | COWNER, FIRST NAME | COWNER, LAST NAME | HOUSENO | STDIR | STNAME | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MAILADDR2 | CITY | STATE | ZIPCODE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 01706201 | MONTEITH | WILLIAM GLENN |  | DON REID MONTEITH | 12001 |  | $\begin{gathered} \text { OLD } \\ \text { STATESVILLE } \end{gathered}$ | RD |  | HUNTERSVILLE | 8908 CARLETO CT |  | CHARLOTTE | NC | 28214 |
| 01706202 | HUNTER | WEST P JR |  | BRENDA R HUNTER | 11912 | N | STATESVILLE | RD |  | HUNTERSVILLE | $\begin{gathered} 2430 \\ \text { GALLOWAY RD } \\ \hline \end{gathered}$ |  | CHARLOTTE | NC | 28262 |
| 01706205 | DELLINGER | WILLIAM J |  | (ET-AL) | 12150 |  | HAMBRIGHT | RD |  | HUNTERSVILLE | PO BOX 929 |  | MONROE | NC | $\begin{gathered} 28111- \\ 0929 \\ \hline \end{gathered}$ |







| 0097169 | 0.558 | HARDING CONSTANCEA | 16520 BEECH HILL DR |  | HUNTERSVILLE | NC | 28078 | 0.000 | huntersville | 16520 |  | BEECH HILL |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 01724715 | 0.455 | HARDY ACE P | 4320 COLLINGWOOD DR |  | Charlotte | NC | 28209 | 0.000 | HUNTERSVILLE | 12039 |  | LAKEWOOD |
| 00915325 | 0.538 | HARRISON DAVID D JR | 15715 GATHERING OAKS DR |  | HUNTERSVILLE | NC | 28078 | 0.538 | HUNTERSVILLE | 15715 |  | GATHERING OAKS |
| 00504406 | 5.363 | HD DEVELOPMENT OF MARYLAND INC | PO BOX 105842 | $\# 3608$ | ATLANTA | GA | 303485842 | 5.363 | HUNTERSVILLE | 17111 | N | STATESVILLE |
| 01539157 | 9.931 | HENDERSON PARK HOMEOWNER'S | 5601 EXECUTVE CENTER DR | STE 201 | CHARLotte | NC | 282128841 | 9.931 | HUNTERSVILLE |  |  | henderson park |
| 00540102 | 44.080 | HERITAGE PLANTATION INC | POBOX 2326 |  | CORNELIUS | NC | 28031 | 23.480 | CORNELIUS | 19011 |  | OLD STATESVILLE |
| 00507123 | 0.000 | HILLS COMMUNITES OF CHARLOTTE | 4901 HUNT RD | STE 300 | CINCINNATI | ОН | 45242 | 13.560 | MECKLENBURG COUNTY |  |  |  |
| 00507101 | 63.963 | HILLS COMMUNITES OF CHARLOTTE | 4901 HUNT RD | STE 300 | CINCINNATI | OH | 45242 | 63.963 | $\begin{array}{\|l\|} \hline \text { MECKLENBURG } \\ \text { COUNTY } \\ \hline \end{array}$ | 8918 |  | WESTMORELAND |
| 00903216 | 30.960 | HL \& SH BROWN PARTNERSHIP THE | 120 VILLA LN |  | DAVIDSON | NC | 28036 | 30.960 | HUNTERSVILLE |  |  | ERVIN COOK |
| 00905116 | 16.880 | HL \& SH BROWN PARTNERSHIP THE | 120 VILLA LN |  | DAVIDSON | NC | 28036 | 16.880 | HUNTERSVILLE | 14324 |  | ERVIN COOK |
| 00912275 | 0.437 | HOLDER GORDON | 10103 TALLENTLN |  | HUNTERSVILLE | NC | 28078 | 0.000 | HUNTERSVILLE | 10103 |  | TALLENT |
| 00927233 | 1.000 | HOLLY POINTLLC | 101 EWT HARRIS BLVD STE 2320 |  | CHARLOTTE | NC | 282623423 | 1.000 | HUNTERSVILLE | 9604 |  | HOLLY POINT |
| 01506291 | 0.000 | HOMEOWNERS ASSOCIATION FOR | ровох 350 |  | MINERAL SPRINGS | NC | 28108 | 6.730 | HUNTERSVILLE |  |  |  |
| 01506292 | 0.000 | HOMEOWNERS ASSOCIATION FOR | Ровох350 |  | MINERAL | NC | 28108 | 3.450 | HUNTERSVILLE |  |  |  |
| 00535295 | 0.000 | HORTON DRINC-TORREY | 1100 S TRYON ST SUITE 100 |  | Charlotte | NC | 28203 | 29.360 | CORNELIUS |  |  |  |
| 01539198 | 15.720 | HORTON DRINC-TORREY | 5800 <br> 5800 EXECUTIVE CENTER DR \#100 |  | Charlotte | NC | 282128869 | 15.720 | HUNTERSVILLE |  |  | LeIsURE |
| 01715308 | 1.730 | HOUSER JAMES P JR | 2200 PEMBROKE AVE |  | Charlotte | NC | 282072112 | 1.730 | HUNTERSVILLE |  | N | STATESVILLE |
| 00541212 | 1.988 | Howell stevel | 152 RIDGETOP RD |  | MOORESVILLE | NC | 28117 | 2.084 | Cornelius | 18705 |  | STATESVILLE |
| 01510318 | 0.000 | HUDSON MELIISSA | 9128 CULCAIRN RD |  | HUNTERSVILLE | NC | 28078 | 0.000 | HUNTERSVILLE | 9128 |  | CULCAIRN |
| 01718108 | 13.681 | HUNTERSVILLE BUSINESS PROPERTY | 3340 PEACHTREE RD NE STE 610 |  | ATLANTA | GA | 303261065 | 13.681 | HUNTERSVILLE | 10307 |  | REESE |
| 00537199 | 6.050 | HUNTERSVILLE DEVELOPMENT LLC | 50 PUBLIC SQ 1250 TERMINAL | TOWER | CLEVELAND | ОН | 44113 | 9.440 | HUNTERSVILLE |  |  | PENNINGTON |
| 00537699 | 9.000 | HUNTERSVILLE DEVELOPMENT LLC | 50 PUBLIC SQ |  | CLEVELAND | OH | 441132201 | 9.050 | CORNELIUS |  |  | CAMBERLY |
| 00504407 | 2.478 | HUNTERSVILLE SUITES LLC N/C | POBOX9165 |  | HICKORY | NC | 28603 | 2.478 | HUNTERSVILLE |  |  | Caldwell creek |
| 00943378 | 0.330 | HUTCHINSON JOHNR | 15919 STONEMONT RD |  | HUNTERSVILLE | NC | 28078 | 0.330 | HUNTERSVILLE | 15919 |  | STONEMONT |
| 00517183 | 2.520 | JJF ENTERPRISES LLC | 215 LAWTONRD |  | Charlotte | NC | 28216 | 2.520 | CORNELIUS |  |  | STATESVILLE |
| 01744101 | 13.533 | KEFFER PROPERTIES LP | 8200 E INDEPENDENCE BLVD |  | Charlotte | NC | 282277777 | 13.533 | HUNTERSVILLE |  | N | STATESVILLE |
| 00930105 | 2.830 | kENNEDY C RAY | 16701 NORTHCROSS DR |  | HUNTERSVILLE | NC | 28078 | 2.830 | HUNTERSVILLE | 16701 |  | NORTHCROSS |
| 01388126 | 5.760 | KIDD ANTHONY DAVID | 5900 STEPHENS RD |  | HUNTERSVILLE | NC | 28078 | 5.760 | HUNTERSVILLE |  |  | JIM KIDD |
| 01305102 | 194.400 | KIDD EDWARD B F/T | 238 CHAPMAN LOOP |  | P/ PAWLEYS | sc | 29585 | 194.400 | HUNTERSVILLE | 5824 |  | JIM KIDD |
| 01320106 | 6.200 | KIDD FANNE C \%NELLIE AUST B/E | 238 CHAPMAN LOOP |  | PAWLEYS ISLAND | sc | 29585 | 3.510 | HUNTERSVILLE |  |  | JIM KIDD |
| 01320103 | 30.810 | KIDD WILLIAMP | 5730 JIM KIDD RD |  | HUNTERSVILLE | NC | 28078 | 30.810 | HUNTERSVILLE | 5730 |  | JIM KIDD |
| 01714683 | 0.000 | KING CYNTHIA C | 15184 ERIC KYLE DR |  | HUNTERSVILLE | NC | 28078 | 0.000 | HUNTERSVILLE | 15184 |  | ERIC KYLE |
| 00943425 | 0.152 | KIRK LOIS | 16018 STONEMONT RD |  | HUNTERSVILLE | NC | 28078 | 0.152 | HUNTERSVILLE | 16018 |  | Stonemont |
| 0092622 | 0.444 | KITA JERRY | 8939 PRISTINE CT |  | HUNTERSVILLE | NC | 28078 | 0.444 | HUNTERSVILLE | 8939 |  | PRISTINE |
| 00918434 | 0.650 | KLINE MAYNARD H JR | 15111 OXFORD HOLW |  | HUNTERSVILLE | NC | 280785511 | 0.000 | HUNTERSVILLE | 15111 |  | OXFORD HOLLOW |
| 00503219 | 3.530 | KNOX ROBERT FRANKLIN | 13116 MT-HOLLY HUNTERSVILLE RD |  | HUNTERSVILLE | NC | 28078 | 3.530 | HUNTERSVILLE |  | N | STATESVILLE |
| 01714597 | 6.000 | KNOX RUBY BYERS B/E | 4350 RANDOLPH RD |  | ROCK HILL | sc | 29730 | 6.000 | HUNTERSVILLE |  | N | $1-77$ |
| 01539143 | 0.245 | KUCZEK ANN M | 7810 LEISURE LN |  | HUNTERSVILLE | NC | 28078 | 0.245 | HUNTERSVILLE | 7810 |  | LEISURE |
| 00514114 | 3.127 | LACKEY NANCY L B/E | 103 PIER 33 DR UNIT 216 |  | MOORESVILLE | NC | 281175533 | 3.420 | CORNELIUS |  |  | STATESVILLE |
| 00906116 | 0.000 | LAKE FOREST COMMUNITY CHURCH | 20472 CHARTWELL CENTER DR |  | CORNELIUS | NC | 28031 | 19.096 | HUNTERSVILLE |  |  |  |
| 01519111 | 40.000 | LAKE NORMAN PAVILION LLC | POBOX 1496 |  | CORNELUS | NC | 28031 | 40.000 | HUNTERSVILLE |  |  | HAMBRIGHT |
| 00536108 | 1.967 | LAKE NORMAN SLEEP LLC | 2567 UNIVERSITY AVE | SUITE 4000 | MORGANTOWN | wv | 265053432 | 2.517 | HUNTERSVILLE |  |  | NORTHCROSS |



| 01509107 | 13.000 | mecklenburg county | 600 E 4TH ST |  | Charlotte | NC | 28202 | 13.032 | HUNTERSVILLE | 7700 |  | GILEAD |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 01535199 | 13.081 | MECKLENBURG COUNTY | 600 E 4TH ST FL 11 |  | Charlotte | NC | 282022816 | 13.081 | HUNTERSVILLE |  |  | BRADFORD HILL |
| 01509104 | 24.893 | MECKLENBURG COUNTY | 600 EAST 4TH ST |  | Charlotte | NC | 28202 | 24.893 | HUNTERSVILLE | 8200 |  | GILEAD |
| 01538197 | 14.804 | MECKLENBURG COUNTY | 600 E 4TH ST |  | Charlotte | NC | 282022816 | 14.800 | HUNTERSVILLE |  |  | NEW OAK |
| 00513127 | 2.344 | MMR HOLDINGS LLC | 1420 SPRING HILL RD STE 525 |  | Mc lean | VA | 221023041 | 2.704 | CORNELIUS |  | N | $1-77$ |
| 00934101 | 3.554 | MONTEITH GWEN HUCKS B/E | 13832 STUMPTOWN RD |  | HUNTERSVILLE | NC | 28078 | 31.605 | HUNTERSVILLE | 13832 |  | Stumptown |
| 00934104 | 5.001 | MONTEITH HOLDINGS LLC | 13777 BALLANTYNE CORP |  | CHARLOTTE | NC | 28277 | 5.001 | HUNTERSVILLE |  |  | STUMPTOWN |
| 00934102 | 58.340 | MONTEITH HOLDINGS LLC | 501 SOUTH SHARON AMITY RD $\# 310$ |  | Charlotte | NC | 28211 | 58.340 | HUNTERSVILLE | 13650 |  | STUMPTOWN |
| 00910127 | 6.744 | MONTEITH HOLDINGS LLC | 13777 BALLANTYNE CORP PLZA\#\#320 |  | CHARLotte | NC | 28277 | 6.744 | HUNTERSVILLE |  |  | BANKSIDE |
| 00910126 | 5.033 | MONTEITH HOLDINGS LLC | 13777 BALLANTYNE CORP |  | Charlotte | NC | 28277 | 5.033 | huntersville |  | N | BANKSIDE |
| 01747156 | 0.000 | MOONEY WILLAM D | 9312 STAWELL DR |  | Huntersville | NC | 28078 | 0.000 | HUNTERSVILLE | 9312 |  | STAWELL |
| 00523323 | 0.284 | MORAND ANTHONY M | 10601 DANESWAY LN |  | CORNELIUS | NC | 28031 | 0.000 | CORNELIUS | 10601 |  | daneswar |
| 00905111 | 16.040 | MORROW Jo AnN B BML | 9123 MT HOLLY-HUNTERSVILLE <br> RD |  | HUNTERSVILLE | NC | 28078 | 16.040 | HUNTERSVILLE | 14036 |  | ERVIN COOK |
| 0095342 | 8.130 | MOWREY RANDOLPH P | 7829 BABE STILWELL FARM RD |  | HUNTERSVILLE | NC | 280788720 | 8.130 | HUNTERSVILLE | 7829 |  | BABE STILWELL FARM |
| 01719301 | 45.410 | N C STATE HIGHWAY | 1119 E SUGAR CREEK RD |  | Charlotte | NC | 282051448 | 45.410 | HUNTERSVILLE | 12101 |  | MT HOLLY-HUNTERSVILL |
| 01516173 | 0.278 | NEW FORTIS CORP THE | 543577 CENTER DR \#30 |  | Charlotte | NC | 28217 | 0.278 | HUNTERSVILLE | 11840 |  | JOURNEY'S END |
| 01516171 | 0.288 | NEW FORTIS CORPORATION THE | 5435-30 77 CENTER DR |  | Charlotte | NC | 28217 | 0.288 | HUNTERSVILLE | 11850 |  | JOURNEY'S END |
| 01516172 | 0.287 | NEW FORTIS CORPORATION THE | 5435-77 CENTER DR |  | Charlotte | NC | 28217 | 0.287 | HUNTERSVILLE | 11846 |  | JoURNEY'S END |
| 01516698 | 3.490 | NIBLOCK-RIDGELINE LLC | 300 MCGILL AVE NW |  | CONCORD | NC | 280276150 | 3.490 | HUNTERSVILLE |  |  | TANNERS CREEK |
| 01516134 | 56.220 | NIBLOCK-RIDGELINE LLC | 300 MCGILL AVE NW |  | CONCORD | NC | 280276150 | 29.370 | HUNTERSVILLE |  |  | BEATTIES FORD |
| 01516111 | 29.317 | NIBLOCK-RIDGELINE LLC | 4500 CARMERON VALLEY PKWY | \#350 | Charlotte | NC | 282113552 | 29.317 | HUNTERSVILLE |  |  | BEATTIES FORD |
| 01733142 | 0.517 | NORTH MECKLENBURG VOLUNTEER | PO BOX 622 |  | CASAR | NC | 28020 | 0.000 | HUNTERSVILLE | 727 |  | OLD STATESVILLE |
| 00504223 | 11.000 | NORTHCROSS BUSINESS CAMPUS LLC | 125 SCALEYBARK RD |  | Charlotte | NC | 28209 | 11.000 | huntersville |  |  | NORTHCROSS CENTER |
| 00505201 | 2.550 | NORTHCROSS COMMONS LP | 501 E MOREHEAD ST STE 3 |  | Charlotte | NC | 282022630 | 2.550 | HUNTERSVILLE | 17000 |  | NORTHCROSS |
| 00504212 | 16.570 | NORTHCROSS LAND \& DEVELOPMENT | 5950 FAIRVIEW RD \# 200 |  | Charlotte | NC | 282103167 | 16.570 | HUNTERSVILLE |  | N | STATESVILLE |
| 00536109 | 4.011 | NORTHCROSS MASTER ASSOCIATION | 6401 CARMEL RD STE 102 |  | charlotte | NC | 282268364 | 4.011 | HUNTERSVILLE |  |  | SAM FURR |
| 00505208 | 8.770 | NORTHCROSS PROPERTIES LLC | 300 AUCKLAND LN |  | MATTHEWS | NC | 28104 | 8.770 | HUNTERSVILLE |  |  | SAM FURR |
| 00505206 | 1.190 | Northcross rbllc | POBOX 1029 |  | CONOVER | NC | 28613 | 1.190 | HUNTERSVILLE | 9109 |  | SAM FURR |
| 01716601 | 30.902 | NOVANT HEALTHINC | 200 HAWTHORNE LN |  | CHARLOTTE | NC | 28204 | 30.902 | HUNTERSVILLE | 10115 |  | kINCEY |
| 01542105 | 27.940 | OAKLINLLC | 1220 S KINGS DR |  | Charlotte | NC | 282071808 | 28.420 | huntersvile | 7039 |  | mCILWAINE |
| 00919221 | 0.207 |  | 8903 CUMBRIA CT |  | huntersville | NC | 28078 | .000 | HUNTERSVILLE | 8903 |  | CUMBRIA |
| 01514370 | 7.200 | OUR TOWNS OF NORTH MECKLENBURG | POBOX 1088 |  | davidson | NC | 28036 | 7.200 | huntersville |  |  | Palomar |
| 01718505 | 5.328 | PAAK-EM LLC | 4143 RIDER TRL N |  | EARTH CITY | мо | 630451102 | 5.328 | HUNTERSVILLE |  |  | JULIAN CLARK |
| 01510319 | 0.000 | PAGE EDWARD D | 9123 HILSTON RIDGE RD |  | HUNTERSVILLE | NC | 28078 | 0.000 | HUNTERSVILLE | 9123 |  | HILLSTON RIDGE |
| 00917185 | 2.093 | PAPPAS PETER A | 4201 CONGRESS ST STE 175 |  | CHARLOTTE | NC | 282094624 | 2.093 | HUNTERSVILLE |  |  | BIRKDALE COMMONS |
| 01539158 | 0.204 | PARRIS JoEY D | 7638 HENDERSON PARK DR |  | HUNTERSVILLE | NC | 280786365 | 0.204 | HUNTERSVILLE | 7638 |  | HENDERSON PARK |
| 01714402 | 1.680 | PATEL DINESH AMBALA | 4526 WILKINSON BLVD |  | CHARLOTTE | NC | 282085531 | 1.880 | HUNTERSVILLE | 14601 |  | MARUTI |
| 01714410 | 0.850 | PATEL dinesh ambala | 4526 WILKINSON BLVD |  | Charlotte | NC | 282085531 | 0.850 | HUNTERSVILLE |  |  | MARUTI |
| 01510441 | 0.000 | PATTERSON JEFFRY L | 9118 CULCAIRN RD |  | HUNTERSVILLE | NC | 28078 | 0.000 | HUNTERSVILLE | 9118 |  | CULCAIRN |
| 01535101 | 0.656 | PATTON BRADLEY D | 8516 GILEAD DR |  | HUNTERSVILLE | NC | 28078 | 0.724 | HUNTERSVILLE | 8518 |  | GILEAD |
| 01707222 | 4.953 | PELL JOHN NICHOLSON | 13500 MT HOLLY-HUNTVLE RD |  | HUNTERSVILLE | NC | 28078 | 4.953 | HUNTERSVILLE | 13500 |  | MT HOLLY-HUNTERSVILL |
| 00905109 | 9.270 | PENDER HELENB B/WL | 13938 ERVIN COOKE RD |  | HUNTERSVILLE | NC | 280788967 | 9.270 | HUNTERSVILLE |  |  | GILEAD |
| 01510421 | 0.000 | PHAM TOM T | 9420 HILLSTON RIDGE RD |  | HUNTERSVILLE | NC | 28078 | 0.000 | HUNTERSVILLE | 9420 |  | HILLSTON RIDGE |


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| 00503218 | 7.070 | TUCKER SYLVIA S B/E | 10120 BAILEY RD |  | CORNELIUS | NC | 28031 | 7.070 | meCkLenburg COUNTY |  | BAILEY | RD |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 00528199 | 9.030 | TWIN OAKS HOMEOWNERS ASSOC INC | PO BOX 8100 |  | CHARLOTTE | NC | 28203 | 9.030 | CORNELIUS | 19901 | OAK LEAF | CR |
| 01724706 | 0.589 | TYER NEALP B/E | PO BOX 462 |  | HUNTERSVILLE | NC | 28078 | 0.000 | HUNTERSVILLE | 12024 | HILLCREST | LN |
| 01509115 | 1.563 | VANG YING | 8018 MT GILEAD RD |  | HUNTERSVILLE | NC | 28078 | 1.560 | HUNTERSVILLE | 8018 | GILEAD | RD |
| 00919228 | 0.242 | WALKER JANIS | 15129 STONEGREEN LN |  | HUNTERSVILLE | NC | 28078 | 0.000 | HUNTERSVILLE | 15129 | STONEGREEN | LN |
| 00503202 | 2.640 | WASHAM NANCY B | 10140 BAILEY RD |  | CORNELIUS | NC | 28031 | 2.640 | MECKLENBURG COUNTY | 10160 | BAILEY | RD |
| 00503209 | 7.250 | WASHAM ROBERT V | 10000 BAILEY RD |  | CORNELIUS | NC | 28031 | 7.290 | MECKLENBURG county | 10020 | BAILEY | RD |
| 01503109 | 10.680 | WATERS CONSTRUCTION COINC | 7620 BALTURSOLLN |  | CHARLOTTE | NC | 28210 | 10.210 | HUNTERSVILLE | 8033 | BUD HENDERSON | RD |
| 00917173 | 0.433 | WEASE JAMES CONRAD | 8311 QUEENSWAY PL |  | HUNTERSVILLE | NC | 28078 | 0.000 | HUNTERSVILLE | 8311 | QUEENSWAY | PL |
| 00504225 | 1.506 | WELBORNE K MCNEIL | 9700 CALDWELL COMMONS DR |  | CORNELIUS | NC | 28031 | 1.506 | MECKLENBURG COUNTY | 9700 | CALDWELL COMMONS | CR |
| 00507111 | 74.856 | WESTMORELAND HOLDINGS LLC | 728 KLUMAC RD \#102A |  | SALISBURY | NC | 281445713 | 74.856 | MECKLENBURG COUNTY |  | WEST CATAWBA | AV |
| 00532114 | 0.000 | Wheeler nancy b | 17521 CAMBRIDGE GROVE DR |  | HUNTERSVILLE | NC | 28078 | 0.000 | HUNTERSVILLE | 17521 | CAMBRIDGE GROVE | DR |
| 01707221 | 3.862 | WILLIAMS JERRY R | 13520 MT HOLLY-HUNTERSVILLE RD |  | HUNTERSVILLE | NC | 28078 | 3.862 | HUNTERSVILLE | 13520 | MT HOLLY-HUNTERSVILL | RD |
| 00517178 | 4.950 | WILLOW POND AT LAKE | GENERAL DELIVERY |  | CORNELIUS | NC | 28031 | 4.950 | CORNELIUS |  | WILLOW POND | RD |
| 01510442 | 0.000 | WILSON DANIELS | 9114 CULCAIRN RD |  | HUNTERSVILLE | NC | 28078 | 0.000 | HUNTERSVILLE | 9114 | CULCAIRN | RD |
| 01747157 | 0.000 | WINTCHS ADRIAN P | 9306 STAWELL DR |  | HUNTERSVILLE | NC | 28078 | 0.000 | HUNTERSVILLE | 9306 | STAWELL | DR |
| 00912274 | 0.561 | WINTER CHRISTOPHER JOHN | 10025 TALLENT LN |  | HUNTERSVILLE | NC | 28078 | 0.000 | HUNTERSVILLE | 10025 | TALLENT | LN |
| 01714681 | 0.000 | WRIGHT MICHAEL C | 15173 ERIC KYLE DR |  | HUNTERSVILLE | NC | 28078 | 0.000 | HUNTERSVILLE | 15176 | ERIC KYLE | DR |
| 01539156 | 0.185 | WRIGHT PATRICK $N$ | 7641 HENDERSON PARK DR |  | HUNTERSVILLE | NC | 280786366 | 0.185 | HUNTERSVILLE | 7641 | HENDERSON PARK | RD |
| 00926299 | 2.292 | WYNFIELD FOREST HOMEOWNERS | 141 SCALEYBARK RD |  | CHARLOTTE | NC | 28209 | 2.292 | HUNTERSVILLE |  | PRISTINE | CT |
| 00923398 | 8.324 | WYNFIELD FOREST HOMEOWNERS | 141 SCALEYBARK RD |  | CHARLOTTE | NC | 28209 | 8.324 | HUNTERSVILLE |  | WYNFIELD CREEK | PY |
| 00926195 | 6.415 | WYNFIELD FOREST HOMEOWNERS | 141 SCALEYBARK RD |  | CHARLOTTE | NC | 28209 | 6.415 | HUNTERSVILLE |  | LIZZIE | LN |
| 00920303 | 1.140 | WYNFIELD PROPERTY OWNERS | 4324 BARRINGER DR STE 104 |  | CHARLOTTE | NC | 282171500 | 1.140 | HUNTERSVILLE |  | WYNFIELD CREEK | PY |
| 00919273 | 1.840 | WYNFIELD PROPERTY OWNERS | 4324 BARRINGER DR STE 104 |  | CHARLOTTE | NC | 282171500 | 1.840 | HUNTERSVILLE |  | CUMBRIA | CT |
| 00919144 | 3.900 | WYNFIELD PROPERTY OWNERS | 4324 BARRINGER DR STE 104 |  | CHARLOTTE | NC | 282171500 | 3.900 | HUNTERSVILLE |  | WYNFIELD CREEK | PY |
| 00920302 | 5.870 | WYNFIELD PROPERTY OWNERS | 4324 BARRINGER DR STE 104 |  | CHARLOTTE | NC | 282171500 | 5.870 | HUNTERSVILLE | 14301 | WYNFIELD CREEK | PY |


[^0]:    U17a Restoration IWVN ISV7 ‘yヨNMO

    REACH
    RANK (NEED \&
    FEASIBILITY)

    |  |
    | :--- |
    | FEASIBILITY) |
    | RECOMMENDATION |

    PARCEL ID

    | STTYPE | STSUFFIX | MUNICIPALITY | MAILADDR1 | MAILADDR2 | CITY | STATE | ZIPCODE |
    | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |

[^1]:    REACH
    RANK (NEED \&
    EASIBILITY)
    RECOMMENDATION $\begin{gathered}\text { Removal of large CMPs } \\ \text { deposited in the channel }\end{gathered}$

[^2]:    P18a
    48

