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Southern Orange County
Stormwater Management Program Analysis

Appendix

Identified Stormwater Management Problems	Entity	Current Programs or Regulations	Jurisdiction/Responsibility Assessment	Strategy to Meet Goals	Goals Addressed	Responsible Party
I. Flooding Related Issues						
a. Development in or near FEMA floodplain	University	The Stormwater Master Plan ensures all development complies with floodplain regulations. RCD Ordinance - No building within the roadway and 2 feet higher than the regulatory floodplain elevation unless meets permitted uses or no-rise conditions. National Flood Insurance Program participant. Out-dated maps need replacement.	Adequate	To adhere to the requirements of the Stormwater Master Plan. Utilize Development Ordinance revisions for RCD revisions and utilize new digital flood maps for development and mitigation activities.	Goal 3, 4 and 5	UNC-CH Facilities Planning & Construction Town of Chapel Hill
	Chapel Hill		(Revised Development Ordinance provisions stated to re-define RCD "buffer zones" and permitted uses. Town to coordinate with FEMA and partner (CTP) with Town of Carrboro.		Goal 2, 3 and 5	
	Carrboro	Section 15-254 No building within the roadway and no building within the floodplain unless deprived of all uses of the property.	Adequate	Continue with existing regulation	Goal 3 and 5	Town of Carrboro
	Orange County	In State-classified protected watersheds no development is allowed within floodplains or within a stream buffer which is fifty feet minimum measured from the FEMA boundary. Outside of the 12 mile radius line, there are currently no mandated stream buffers; however a text amendment is before the BOCC to mandate a minimum 50 ft. stream buffer measured from the bank on each side of perennial and intermittent streams anywhere within the County.	Adequate	Continue enforcing current regulations		Orange County
b. Development near intermittent streams or tributaries. This is in anticipation of future Cape Fear Basin Buffer rules established by the NC Environmental Management Commission.	University	Continue to comply with RCD regulations	Adequate	Follow existing policy	Goal 1, 2, and 5	UNC-CH Facilities Planning & Construction Town of Chapel Hill
	Chapel Hill	RCD Ordinance - Intermittent streams not addressed	Intermittent streams should be identified and regulated with minimum buffer widths	Develop Policy and Regulation	Goal 2,3 and 5	
	Carrboro	Section 15-289 Requires a 60 foot buffer from the centerline of the intermittent stream (w/o a FEMA flood hazard area, and drains less than 640 acres but more than 50 acres)	Adequate	Continue with existing regulation	Goal 2,3 and 5	Town of Carrboro
	Orange County	In State-classified protected watersheds no development is allowed within floodplains or within a stream buffer which is fifty feet minimum measured from the FEMA boundary. Outside of the 12 mile radius line, there are currently no mandated stream buffers, however a text amendment is before the BOCC to mandate a minimum 50 ft. stream buffer measured from the bank on each side of perennial and intermittent	Adequate	Continue enforcing current regulations		Orange County
c. Nuisance flooding	University	Development is being designed to ensure the rate of runoff, the total volume of runoff and quality not be negatively impacted. Nuisance flooding issues resulting from prior development will be addressed in the stormwater master plan.	In Implementation Phase Just beginning but will be adequate when program is implemented.	Implement creative solutions such as porous pavement, green roofs, etc.	Goal 2, 3, 4, 5, 7	UNC-CH Facilities Planning & Construction

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Identified Stormwater Management Problems	Entity	Current Programs or Regulations	Infrastructure/Staff Assessment	Strategy to Meet Goals	Goals Addressed	Responsible Party
	Chapel Hill	Drainage Assistance Program/CHIP: Assists private property owners with 50/50 cost-share drainage assistance projects and provides for limited public right-of-way maintenance.	Very limited program currently.	Provide more comprehensive programs through funding and prioritization.	Goal 2,3 and 5	Town of Chapel Hill
	Chapel Hill	Citizen Assistance Services - Provides technical assistance to citizens and staff covering drainage, maintenance, etc.	Citizen complaint/concern response efficiency is low. Assistance typically limited to technical assistance.	Provide more comprehensive programs through funding and prioritization.	Goal 2,3 and 5	Town of Chapel Hill
	Carrboro	Section 15-269 Requires a 30 foot buffer from the centerline of minor intermittent streams (drains less than 50 acres) plus a storm water management plan is required of all developments. Section 15-263 Currently cooperating with FEMA to identify and "re-map" areas of concern. Addressed on an as needed basis. Specific needs will be addressed in the stormwater master plan.	Adequate	Continue with existing regulation	Goal 2,3 and 5	Town of Carrboro
	Orange County University	The public drainage system maintenance is primarily limited to existing rights-of-way. Inadequate systems are generally addressed on an ad-hoc basis with maintenance or capital improvements. Funding is primarily through bonding and general revenue.	Adequate	Continue with existing practice	Goal 2,3, and 5	Orange County
d. Inadequate drainage infrastructure (old, ill-maintained systems).	Chapel Hill	The public drainage system maintenance is primarily limited to existing rights-of-way. Inadequate systems are generally addressed on an ad-hoc basis with maintenance or capital improvements. Funding is primarily through bonding and general revenue.	Drainage system inventory needed	Correct drainage problems as needed. Map infrastructure in GIS.	Goal 1,2	UNC-CH Facilities Planning & Construction Town of Chapel Hill
	Carrboro	The public drainage system is primarily limited to existing rights-of-way. Inadequate systems are generally addressed on an as needed basis.	The public and private drainage system inventory is currently being conducted. It is revealing the need for additional maintenance and improvements throughout town on both public and private locations.	Improve planning, prioritization, funding and staff resources for the Capital Improvements and drainage maintenance programs on both public and private properties. Improvements on private property would remain in private easement.	Goal 1 and 2	Town Engineer
	Orange County University	Orange County does not have a storm drainage system and does not anticipate installing one.	Under Assessment. A drainage system inventory is currently being conducted	Modify Capital Improvements Program to address deficiencies	Goals 2,3,4,5,6 (Neuse only)	Orange County
e. Increased discharges off of developed sites not previously regulated	University	A stormwater master plan for all watersheds and sub-basins on main campus is being developed. This plan will address runoff volume, rate and quality issues from new construction and will mitigate many of the problems from past construction.	In implementation phase. Just beginning but will be adequate when program is implemented.	Keep impervious surface to a minimum	Goals 2,3,4,5,7	UNC-CH Facilities Planning & Construction
	Chapel Hill	All commercial and industrial developments must provide detention for the 25-yr. storm event.	Post-development runoff controls not required for single-family development and overall release rate criteria needs review.	Address in Development Ordinance stormwater management revisions	Goal 1,2,3,4 and 5	Town of Chapel Hill
	Carrboro	Section 15-263 All developments shall be constructed and maintained so that they do not cause stormwater related damage to upstream or down stream properties.	Adequate	Continue with existing regulation	Goal 2,3 and 5	Town of Carrboro

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Identified Stormwater Management Problems	Entity	Current Programs or Regulations	Assessment	Strategy to Meet Goals	Goals Addressed	Responsible Entity
	Orange County	Impervious surface is limited to the maximum expansion under the ordinance. That is no expansion of impervious surface if the current exceeds the maximum	Adequate	Continue with existing regulation	Goal 2,3, 5 & 6 (Neuse only)	Orange County
II. Water Quality Issues						
a. Lack of stream data						
	University	Benthic and fish studies conducted in Meeting of the Waters and Battle Branch Summer 2001 and every 6 months thereafter. Wet weather samples twice a year. Dry weather samples twice a year. Hourly chemical monitoring and flow gauging on Meeting of the Waters.	Adequate	Exceeds Federal and State mandates. Additional sampling may be conducted for specific illicit discharge detection.	Goals 1,2,5, and 7	UNC-CH Environment, Health & Safety
	Chapel Hill	Ambient sampling since 1993. Ad-hoc benthic studies. One USGS funded gauge on Morgan Creek & one on Battle Branch.	Limited ambient data interpretation and follow-up. Comprehensive benthic program recommended for TMDL's and intensive surveys program needed for NPDES Phase 2 mandated illicit discharge identification and elimination program. Precipitation and stream gauges recommended.	Needs expanding for illicit discharge enforcement and TMDL's monitoring.	Goal 1,2,5 and 7	Town of Chapel Hill
	Carboro	4 benthic studies during FY 00-01 with 1 per year thereafter along Bolin Creek, 2 grab samples per month-Toms Creek and Bolin Creek (Since 8/94)	Adequate but remote water quality sampling would be ideal. Benthic studies along Morgan Creek may be beneficial.	Exceeds Federal and State mandates but may need expanding for illicit discharge enforcement	Goal 1,2,5 and 7	Town of Carboro
	Orange County	Orange County does not have a stream monitoring program now. The Neuse River Basin rules will require formulation of a monitoring program for TSS and nitrogen.	Will need new monitoring program to meet Neuse River Basin rules.	Formulate new monitoring program to meet Neuse River Basin rules.	Goal 1,2,5, and 7	Orange County
b. Lack of precipitation data						
	University	A rain gauge was recently installed on UNC-CH property.	Adequate	Meets requirements	Goal 3, 4, and 7	UNC-CH Environment, Health & Safety
	Chapel Hill	The Town uses rain gauge data provided upon request by OWASA, Horrace Williams Airport and RDU.	Each gauge provides limited information. Additional continuous output gauges throughout area would be beneficial for flooding analysis.	Additional gauging is necessary for accurate modeling and precipitation, discharge and pollutant information Very useful for public education.	Goal 3, 4, 6 and 7	Town of Chapel Hill
	Carboro	The Town uses rain gauge data provided upon request by OWASA.	Adequate but additional remote gauges throughout would be desirable	Meets Requirements	Goal 3,4 and 7	Town of Carboro
	Orange County	The Planning Department is not aware of any precipitation data gathered	Can start requiring rain gauges on construction sites		Goal 3, 4, and 7	Orange County

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Identified Stormwater Management Problems	Entity	Current Programs of Regulations	Sufficiency Assessment	Strategy to Meet Goals	Goals Associated	Responsible Party
c. Not considering development from a regional perspective.	University	A stormwater master plan for all watersheds and sub-basins on main campus is being developed. This plan will address runoff from new construction and will mitigate many of the problems from past construction.	IN IMPLEMENTATION PHASE Just beginning but will be adequate when program is implemented.	Will meet NPDES requirements	Goal 3, 4, and 7	UNC-CH Facilities Planning & Construction
	Chapel Hill	Revised digital flood study underway by NCDWM, with Carboro/Chapel Hill in the FEMA Cooperative Technical Partnership.	ADEQUATE In meeting minimum NFIP standards, improvements necessary for proposed programs	Meets basic federal and state requirements.	Goal 1, 3, 4, 6 and 7	Town of Carboro, Chapel Hill, NCDWM, FEMA and others
	Carboro	Build out Hydros model of upper Bolin Creek completed with assistance from Chapel Hill in 1992, flood plain study underway, with Chapel Hill in the FEMA Cooperative Jurisdiction Program.	Adequate	Meets basic NPDES requirements unless joint applications for NPDES Permits are mandated	Goal 3, 4 and 7	Town of Carboro, Chapel Hill, FEMA and others
	Orange County	University lake Watershed limited to a maximum of 6% impervious surface. Non watershed, (Rural buffer) no restrictions	Adequate	Meets basic federal and state requirements.	Goal 3 & 5	Orange County
d. Sedimentation	University	Sedimentation issues are enforced by the NCDENR.	Adequate	Meets NPDES requirements	Goal 2 and 5	NCDENR
	Chapel Hill	Town Erosion Control Ordinance provides for the permitting and enforcement of the Ordinance by the Orange Co. Soil and Erosion Control Officer.	Adequate to the extent that inspection and enforcement activities remain to be effective.	Meets Town Ordinance & NPDES Phase 2 requirements.	Goal 1, 2, 4, 5 and 6	Town of Chapel Hill & Orange Co. Erosion Control
	Carboro	Section 15-264 provides for the enforcement of the Orange County Soil and Erosion Control Ordinance by the Orange Co. Soil and Erosion Control Officer.	Adequate	Meets NPDES requirements	Goal 2 and 5	Orange Co. Erosion Control
	Orange County	All sites greater than 20,000 sq. ft must apply for permit. Sites greater than 10,000 sq. ft within the University Lake protected watershed must apply for permit. Any site causing off-site sedimentation, or that has the potential for causing off-site sedimentation may be covered under program.	Adequate. Does not need enhancement	Meets NPDES requirements	Goal 1, 2, 4, 5 and 7 (plus goal 6 in Neuse basin)	Hillsborough, Mebane, Carboro and Chapel Hill are all included in this program at this time
e. TMDL listed streams (State list)	University	Listed streams are within UNC-CH jurisdiction.	No monitoring of sediment loads has been done.	Monitor sediment loads and reduce sedimentation into campus streams by practicing better erosion control practices.	Goals 1, 2, and 5	UNC-CH Facility Planning & Construction, UNC-CH Environment, Health & Safety, NCDENR
	Chapel Hill	Several stream reaches in Chapel Hill are on list.	Watershed/stream assessments required with the intent to programmatically have the streams removed from the EPA 303(g) list.	Monitor stream health (see Section II. A above).	Goal 1, 2 and 5	NCDWQ, Town of Chapel Hill and Orange Co. Erosion Control
	Carboro	No 303(d) list streams are within Carboro's jurisdiction (except for about 800 feet of Morgan Creek below Smith Level Road)	Adequate with monitoring of sediment loads below Smith Level Road.	Continue to monitor sediment loads and erosion control devices	Goal 1, 2 and 5	Town of Carboro and Orange Co. Erosion Control

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Identified Stormwater Management Problems	Entity	Current Programs or Regulations	Surrounding Area Assessment	Strategy to Meet Goals	Goals Addressed	Responsible Party
f. Biological impairment / loss of diversity	Orange County University Chapel Hill	If listed stream is in a protected watershed the stream buffer requirements stated above apply. Benthic studies are conducted on Meeting of the Waters and Battle Branch See Section II. A. above	No Position Adequate Limited benthic analysis with new initiatives underway. Consider expanding benthic studies on Morgan Creek	Use data to identify water quality problems and to guide solutions. Comprehensive benthic program under planning stage. Test results are used to define problems and for the design of possible solutions	Goal 1, 2, and 5 Goal 1, 2 and 5 Goal 1, 2 and 5	Orange County UNC-CH Environment Health & Safety Town of Chapel Hill
g. Loss of stream buffers	Orange County University Chapel Hill	Benthic studies (3) are conducted along Bolin Creek to monitor the biological diversity of the creek. No Position Continue to comply with RCD regulations RCD Ordinance allows permitted uses in buffer of perennial streams.	No Position Adequate Permitted uses should be revised. Intermittent streams program should be developed. Adequate	No Position Follow existing policy Address in Development Ordinance revisions	Goal 1, 2 and 5 Goal 1, 2, and 5 Goal 1, 2 and 5	Orange County UNC-CH Facilities Planning & Construction Town of Chapel Hill
h. Increasing impervious surfaces resulting in more runoff and pollution	Orange County University Chapel Hill	Section 15-268 (d) requires buffer to be replaced or the establishment of vegetation if needed. Buffers required within protected watersheds that extend outward from edge of floodplain based on slope calculations. Subdivisions outside protected watersheds and the Neuse River Basin do not have buffer requirements at this time. A text amendment is under consideration by the BOCC that will set minimum stream buffers for areas not in a protected watershed. A stormwater master plan for all watersheds and sub-basins on main campus is being developed. This plan will address runoff volume, rate and quality issues from new construction and will mitigate many of the problems from past construction.	BOCC reviewing. Goals are met within protected watersheds and the Neuse River Basin. In implementation phase. Just beginning but will be adequate when program is implemented.	Changes to ordinance to include all areas of Orange County have been proposed, but not adopted. Implement creative solutions such as porous pavement, green roofs, etc.	Goal 1, 2 and 5 Goal 2, 3, 4, 5, 7	Orange County UNC-CH Facilities Planning & Construction Town of Chapel Hill
	Chapel Hill	Jordan Lake Watershed Protection District is limited to 24% (low density option) or 50% (high density option); other areas are not based on impervious surface determinations.	Town-wide impervious surface restrictions should be considered. Release rate criteria for all development should be considered. Adequate	Address in Development Ordinance revisions	Goal 1, 2 and 5	Town of Chapel Hill
	Carboro	Section 15-268 limits impervious surface in the University Lake Watershed to 4% residential and 6% commercial (24% w/BMP's). Jordan Lake Watershed Protection Area is limited to 24% (36% with swales), all areas subject to a storm water management plan that limits impervious surfaces in accordance with ability to manage stormwater.		Continue with existing policy	Goal 1, 2 and 5	Town of Carboro

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Problem	Priority	Current Status of Program	Program Development Needed	Program Description	Goals	Responsible Agency
	Orange County	Highly restricted impervious surface limits within protected watersheds, and critical areas, as well as requirements for infiltration of first inch of stormwater runoff	Program Development needed	Changes to ordinance to make program more easily understandable; additional cooperation needed between staff members to ensure all plans are compliant	Goal 1, 2 and 5	Orange County
I. NPDES Phase II permitting requirements	University	Public education, illicit discharge detection, post-construction runoff control, and pollution prevention / goodhousekeeping programs on-going.	Work with other governments on education and sharing of information.	Work with other units of government on education and sharing of information.	Goal 1 and 7	UNC-CH Facility Services and UNC-CH Environment, Health & Safety
	Chapel Hill	Currently performing portions of permit application standards such as inventory, public education and illicit discharges.	Planning and permit development required. Many aspects of permit currently underway locally.	Work with other governmental units on education and illicit discharge components.	Goal 1, 6 and 7	Town of Chapel Hill and neighboring units of government.
	Carboro	Permit Application in progress with inventory and housekeeping components being developed	Need to complete inventory, illicit discharge, education program components	Work with other governmental units on education and illicit discharge components.	Goal 1 and 7	Town of Carboro and neighboring units of government.
	Orange County	Public education, illicit discharge detection, post-construction runoff control, and pollution prevention / goodhousekeeping programs on-going in Neuse. Working with Hillsborough to enforce in their ETJ.	Need additional Staff resources	Public education component contracted through triangle council of governments. Request Hillsborough address illegal discharge component	Goal 1 and 7	Orange County
J. Lack of equity between existing and new development	University	Stormwater master plan does address this issue	In implementation phase. Just beginning but will be adequate.	Implement stormwater master plan	Goal 1, 2, 3	UNC-CH Facility Services
	Chapel Hill	Current Stormwater management plans account for existing conditions. Re-development plans requires that additional runoff be managed.	Adequate. New development must meet higher level of regulation, based on best available information.	Continue with existing policy to revise Ordinance as needed.	Goal 1, 2 and 3	Town of Chapel Hill
	Carboro	Current Stormwater management plans account for existing conditions. Redevelopment accepts existing but not additional runoff.	Adequate	Continue with existing policy	Goal 1, 2 and 3	Town of Carboro
	Orange County	In Neuse River only, retro fit is a Component in the Stormwater ordinance	Need Staff	In process of identifying three retro fit sites and apply for funding.	Goal 1, 2 and 5	Orange County
III. Adequacy of Current Programs /Policies						
a. Lack of water quality and stream discharge data	University	An sampling program implemented in 2001 which includes stream discharge data.	Adequate	Continue with the existing program	Gal 1, 2, 5, and 7	UNC Environment, Health & Safety
	Chapel Hill	Ambient sampling since 1993. Ad-hoc Morgan Creek. Intensive survey program recommended	Ambient data sampling since 1993. Limited data interpretation and follow-up.	Expand upon existing intensive survey (gauges, field and lab analysis, pollutant identification and elimination and enforcement)	Goal 1, 2, 5, and 7	Town of Chapel Hill

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Identified Stormwater Management Problems	Entity	Current Programs or Regulations	Current Program Assessment	Strategy to Meet Goals	Goals Addressed	Responsible Party
	Carboro	4 benthic studies during FY 00-01 with 1 per year thereafter along Bolin Creek, 2 grab samples per month-Tomis Creek and Bolin Creek (Since 8/94)	Adequate but remote water quality sampling would be ideal, benthic studies along Morgan Creek may be beneficial.	Continue with existing program and add additional benthic studies to include Morgan Creek if possible.	Goal 1,2,5 and 7	Town of Carboro
	Orange County	Collaborate with professor Seth Reics (UNC Biology Dept.0 on ongoing water quality studies	Adequate	Continue with the existing program. Share data with all other local government's as it becomes available	Goal 1,2,5 and 7	Orange County
b. Expectations of community for stream water quality are high	University	Sedimentation, TMDL's, illicit discharges are key issues	Requires additional attention in the future	See III.A. above	Goal 1,2 and 6	UNC Environment, Health & Safety
	Chapel Hill	Sedimentation, TMDL's, illicit discharges are key issues.	Requires program development.	See III.A. above	Goal 1,2 and 6	Town of Chapel Hill
	Carboro	Section 15-263 (a)1 regulates water quality (no damage)	Adequate	Continue with existing program	Goal 2	Town of Carboro
	Orange County	Citizen expectations vary depending on the part of the county the development is located	Requires attention.	Continue to work with NC State to improve Sediment basins	Goal 1,2. & 5	Orange County
c. Inventory of stormwater infrastructure is partially complete	University	Infrastructure mapping is included as part of the bond funded stormwater project.	In implementation phase. Implementation of the mapping effort will lead to having and adequate inventory	Continue with implementation of mapping project	Goal 1 and 2	Facilities Planning & Construction
	Chapel Hill	Inventory using a GIS data base is underway	Comprehensive stormwater GIS data and map management desired	Underway	Goal 1	Town of Chapel Hill
	Orange County	No Stormwater Infrastructure	NA	NA	NA	Orange County
	Carboro	Inventory using a GIS data base is underway	Adequate	Underway	Goal 1	Town of Carboro
d. Maintenance of infrastructure: 1. Funding (resources) for maintenance of stormwater infrastructure	University	University bond program includes monies for extensive infrastructure repair/maintenance	Requires additional attention and investment in the future	The need to comply with the requirements of the O-4 zoning, development plan and NPDES Phase II will lead the University to increase the investment.	Goal 1 and 4	UNC Facilities Services, UNC Facilities Planning & Construction
	Chapel Hill	General revenue, bonds, grants	Recommend other source, including impervious surface based rating system	Not guaranteed or continuous. Need new source or allocation.	Goal 1 and 4	Town of Chapel Hill
	Carboro	Existing structure maintained through current public works procedures	Adequate	Continue with existing program	Goal 1 and 4	Town of Carboro
	Orange County	NA	NA	NA	NA	Orange County
	University	See D.1 above	Current CIP is limited	Continue to identify and prioritize projects.	Goal 1,3 and 4	Town of Chapel Hill
2. Deteriorated condition of stormwater infrastructure	Chapel Hill	Extensive current and anticipated problems	Adequate	Complete inventory and address on an as need basis	Goal 1 and 4	Town of Carboro
	Carboro	Evaluation underway to determine extent of deterioration (part of stormwater inventory)	NA	N/A		Orange County
	Orange County	Not applicable (N/A)	NA	N/A		Orange County
3. Privately owned stormwater-right to enter	University	Not applicable	NA	N/A		

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Identified Stormwater Management Problems	Entity	Current Programs or Regulations	Program/Policy Status	Strategy to Meet Goals	Goals Addressed	Responsible Party
	Chapel Hill	Requires temporary easement from property owner	Adequate	Continue policy and revise Development Ordinance as required.	Goal 1, 4 and 6	Town of Chapel Hill
	Carboro	State Legislation requested to authorize "right to enter"	Legislation Pending	Seek legislation authorizing "right to enter"	Goal 1 and 4	State Legislature
	Orange County	Homeowner's Association normally is required by condition of approval to have ingress, egress and regress rights to	Adequate	Continue with current requirements		Orange County
e. Inadequate basis for policy making (mapping, watershed approach)	University	Watershed approach is being used in the development of the University's stormwater master plan.	Under development	Implementation of the stormwater master plan with result in an adequate program.	Goal 1, 6 and 7	UNC Facilities Planning & Construction
	Chapel Hill	NFIP Flood Hazard Maps are 25 yrs old and being used for new and existing development decisions.	Under development	Continue to work towards digital re-mapping products to manage locally.	Goal 1, 3 and 6	Town of Chapel Hill
	Carboro	Basic GIS is adequate but Topos are needed for accurate stream buffer and basin mapping and stormwater modeling.	INADEQUATE Need TOPOS	Continue to work with the county land records office to obtain topo maps	Goal 6 and 7	Town of Carboro and Orange County
	Orange County	Watershed approach is used for stormwater infiltration and detention. In a joint effort by County, State and FEMA, new floodplain maps due Nov. 2001. County wide 1988 orthophotos	Adequate	Zoning enforced, some free standing ordinances. Enforcement laborious and eats staff time	Goal 1, 2, 3, 4 & 5	Orange County
f. Pre and post development requirements	University	Fully addressed in the OI-4 zoning and development plan.	Adequate	Ensure development complies with all requirements.	Goal 1, 2, and 3	UNC Facilities Planning & Construction
	Chapel Hill	25-yr. pre/post release rate criteria in current ordinance for commercial and industrial only	Recommend multiple release rate criteria for all development	Make revisions in Development Ordinance	Goal 1, 2, and 3	Town of Chapel Hill
	Carboro	Appendix I of the Land Use Ordinance requires that post development should not exceed pre-development 10 year runoff.	Adequate	Continue with existing policy	Goal 1, 2, 3, 4, and 5	Town of Carboro
	Orange County	Various . 5% to 25% impervious based on watershed and zoning. For Neuse development, no net increase in peak flow	Adequate	Continue with existing policy	Goal 1, 2, 3, 4, and 5	Orange County
g. Local development ordinances fragmented:	University	OI-4 ordinance requirements meet or exceed NPDES Phase II requirements.	Adequate	Ensure development complies with all requirements.	Goal 1, 2, and 3	UNC Facilities Planning & Construction
	Chapel Hill	Ordinance requirements meet or exceed NPDES requirements and local needs	Adequate	Current revisions underway	Goal 1, 2, 3, 4, and 5	Town of Chapel Hill
	Carboro	Ordinance requirements meet or exceed NPDES requirements	Adequate	Continue with existing program	Goal 1, 2, 3, 4, and 5	Town of Carboro
	Orange County	Many ordinances in conflict; the more strict applies.	No Position	Rewrite ordinances in a comprehensive approach to the problems		Orange County
h. Conflict between local ordinance and/or state requirements	University	No conflicts of significance at this time	Adequate			University
	Chapel Hill	No Conflicts	Adequate	Amend Development Ordinance if necessary to resolve conflicts	Goal1	Town of Chapel Hill
	Carboro	Conflicts minimal if any	Adequate	Amend Land Use Ordinance if necessary to resolve conflicts	Goal1	Town of Carboro
	Orange County	Conflicts are minimal, generally Orange wants to exceed State Statutes	Adequate			Orange County
i. More uniformity in stormwater management (i.e.: ordinance provisions)	University	N/A	N/A			University

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Identified Stormwater Management Problems	Entity	Current Programs or Regulations	Programmatic Assessment	Strategy to Meet Goals	Goals Addressed	Responsible Party
	Chapel Hill	Ordinance language review required	Adequate	Continue to work regionally where specific cases or areas dictate.	Goal 1, 6, and 7	Town of Chapel Hill
	Carrboro	Stormwater Management required of all projects	Adequate	Continue with existing program	Goal 1	Town of Carrboro
	Orange County	Consistency needed in current regulations	Not programmed.	Review recommended by County	Goal 1	Orange County
j. Resource Conservation District (RCD) standards (stream buffers)	University	N/A	N/A			University
	Chapel Hill	See RCD above.	Buffer restrictions exist and are under revision.	Need buffer rules in revised ordinance	Goal 1, 2, 3, and 5	Town of Chapel Hill
	Carrboro	Stream Buffers required throughout the Town's jurisdiction.	Adequate	Continue with existing program	Goal 1, 2, 3, and 5	Town of Carrboro
	Orange County	Nuesse Basin Rules	County program under consideration.	Program to meet Neuse Rules required.	Goal 1, 2, 3, and 5	Orange County
k. Need to examine development ordinance concerning impervious surface per Chapel Hill Comprehensive Plan	University	Not applicable, University does not have its own RCD standards, but in the past has met the Town's RCD requirements.	Adequate	Continue with existing program	Goal 1, 2, 3, and 5	UNC Facilities Planning & Construction
	Chapel Hill	Development Ordinance Intensity Regulations Sec. 13.11	Adequate	Continue with existing program	Goal 2	Town of Chapel Hill
	Carrboro	N/A				Carrboro
	Orange County	Ordinances are adequate in places and not so in others	Developing program.	Ordinances will be consolidated and rewritten where necessary		Orange County
i. BMP's regarding water quality need to be implemented as requirements with a Design Manual and Standards	University	Appropriate BMP's will be incorporated into all University development projects.	Adequate	Ensure designs meet the requirements of the OI-4 zoning and the development plan.	Goal 1, 2, 3, 5, and 6	UNC Facilities Planning & Construction
	Chapel Hill	Currently under development and verbal requirement by development community	Ad-hoc design guidelines.	Revised Development Ordinance provisions. Needs detailed attention.	Goal 1, 2, 3, 5, and 6	Town of Chapel Hill
	Carrboro	BMP's that meet the States' standards may be used to meet the Town's water quality standards	Adequate	Continue with existing program	Goal 1, 2, 3, and 5	Town of Carrboro
	Orange County	BMP's generally do not permit increase in impervious surface. They are allowed to provide greater stormwater protection.	Adequate	Continue with existing program		Orange County
m. Review Public Works department's role and activities in maintaining stormwater infrastructure	University	Street maintenance done by NC DOT or the Town of Chapel Hill as appropriate. Street sweeping needs to be done more frequently to reduce stormwater sediment loading.	Program Development needed	Seek additional resources to reinforce the street sweeping program.	Goal 1, 2, and 5	UNC Facilities Planning & Construction
	Chapel Hill	Street sweeping, street maintenance, drainage projects on a scheduled or CIP basis	Programs developed and operational	Drainage projects subject to limited resources	Goal 1, 2, 3, and 4	Town of Chapel Hill
	Carrboro	Street sweeping, street maintenance, drainage projects on a scheduled or CIP basis	Adequate	Continue with existing program	Goal 1, 2, 3, and 5	Town of Carrboro
IV. Strategies for Improvement						
a. Establish clear goals with measurable outcomes	University	To be developed as part of the application for a NPDES Phase II permit	Master Plan under development	Develop comprehensive program for stormwater management.	All goals.	UNC Environment, Health & Safety
	Chapel Hill	Under development	Under development	Develop comprehensive program for stormwater management.	All goals.	Town of Chapel Hill
	Carrboro	Established by current stormwater management policy	Adequate	Re-examine periodically	Goal 1 and 7	Town of Carrboro

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Identified Stormwater Management Problems	Entity	Current Programs or Regulations	Jurisdictional Staff Assessment	Strategy to Meet Quality	Goals Addressed	Last Update Party
b. Develop performance measures related to BMP's	Orange County	Established by current stormwater management policy	Adequate but short staffed	Requesting Commissioners for additional staff FY 2002	Goal 1-6	Orange County
	University	To be developed as part of the application for a NPDES Phase II permit and implement the development plan. On-going monitoring will measure performance.	Adequate	Meet the standards set forth in the development plan and continue the monitoring program.	Goal 1, 2, 3, 4, 5, and 6	UNC Environment, Health & Safety
	Chapel Hill	Under development	Under development	Develop comprehensive program for stormwater management.	All goals	Town of Chapel Hill
	Orange County	Stormwater management Program for Lands Within the Neuse River	Good Ordinance, need staff	existing program, Received approval from EMC Oct 2001	All goals	Orange County
	Carrboro	Post development shall not exceed redevelopment conditions	Adequate	Continue with existing policy	Goal 2,3,4, and 5	Town of Carrboro
c. Review Town's comprehensive plans:						
1. Conservation development principle	University Chapel Hill	Not applicable Natural environment considerations	Adequate	Continue to implement policy	Goal 2,3,4, and 5	University Town of Chapel Hill
	Carrboro	Natural constraints, 40% open space and net density requirements based on developable area.	Adequate	Continue with existing policy	Goal 2,3,4, and 5	Carrboro
2. Low Impact development (minimize disturbance of natural areas, etc.)	University	Not applicable				University
	Chapel Hill	Comprehensive Plan guidelines for cluster development	Adequate	Development Ordinance revisions to provide further guidance	Goal 2,3,4, and 5	Town of Chapel Hill
	Carrboro	Primary and secondary constraints (floodway/floodplain, stream buffers, steep slopes, hardwood etc) limit development.	Adequate	Continue with existing policy	Goal 2,3,4, and 5	Town of Carrboro
3. Water quality performance review process	University	Water quality information will be shared with local government	Adequate	Cooperate fully with local officials in evaluating available water quality information.	Goal 2,3,4, and 5	UNC Environment, Health & Safety
	Chapel Hill	Monitoring at 14 sites	Monthly sampling of ambient and benthos baseline data collection	Develop comprehensive program for stormwater management.	Goal 2,3,4, and 5	Town of Chapel Hill
	Carrboro	Stormwater management plans required for new developments to show post construction does not exceed pre construction conditions	Adequate	Continue with existing policy	Goal 2,3,4, and 5	Town of Carrboro
d. Formalized comprehensive public education program is needed	University	To be developed as part of the NPDES Phase II process.	Needs to be developed	Cooperate fully with local officials to ensure a comprehensive program is implemented.	Goal 1, 6 and 7	Town of Carrboro Town of Chapel Hill, Orange County, UNC, T.J COG, & State
	Chapel Hill	Ad-hoc elementary education program	Needs to be developed	Work with neighboring jurisdictions for comprehensive education program.	Goal 1, 6 and 7	Town of Carrboro Town of Chapel Hill, Orange County, UNC, T.J COG, & State
	Carrboro	Work with neighboring jurisdictions on a joint education program and work on a local stream watch and catch basin stencil program	Needs to be developed	Continue to work with neighboring jurisdictions	Goal 1, 6 and 7	Town of Carrboro Town of Chapel Hill, Orange County, UNC, T.J COG, &

Southern Orange County
Stormwater Management Program Analysis

Identified Stormwater Management Problems	Entity	Current Programs or Regulations	Programs/Measures in Progress	Strategy to Meet Goals	Goals Addressed	Responsible Party
e. Monitoring targets and indicator i.e. measurable goals in NPDES Phase 2 permit	Orange County	Has been developed with regard to Neuse River Basin.	Adequate	Continue with existing guidelines	Goal 1, 6, and 7	Orange County
f. Develop funding sources and annual budget required to carry out goals and requirements (user fees, grants, bonds, other)	University Chapel Hill	To be developed as part of the application for a NPDES permit Under development	Needs to be developed	Complete as part of application	Goal1	UNC Environment, Health & Safety Town of Chapel Hill
	Carboro	To be developed as part of the application for a NPDES permit	Needs to be developed	Complete as part of application	Goal1	Town of Carboro
	University	The bond funded stormwater project in place, funding for on-going activities to be identified.	Future needs remain unfunded	Seek funding from all possible sources.	All goals.	UNC Environment, Health & Safety, UNC Facilities Services, and UNC Facilities Planning & Construction
	Chapel Hill	General revenue, bonds, grants	Reliable funding source needed	User fee based on impervious surface recommended to consideration.	All goals.	Town of Chapel Hill
	Carboro	Programs, projects and cost need to be determined first	Assessing	Assessing	All goals.	Town of Carboro
g. Identify Federal and State funding opportunities (water resources grants)	Orange County University	One time Stormwater review fee (Neuse only) Requires continuing attention to ensure opportunities are not missed.	Adequate	As grant possibilities are identify, we will pursue them.	All goals.	Orange County UNC Environment, Health & Safety, UNC Facilities Services, and UNC Facilities Planning & Construction
	Chapel Hill	Grants have been awarded to Chapel Hill	Ad-hoc grant writing program	Pursue grants comprehensively.	All goals.	Town of Chapel Hill
	Carboro	Programs, projects and cost need to be determined first	Assessing			Town of Carboro
	Orange County University	Identified retrofit funding, primarily Hillsborough via Neuse Rules	Assessing	State mandate, has to be done	Goal 4, 5, 6	Orange County
h. Comprehensive mapping and modeling (manage up-coming NFIP models locally)	University Chapel Hill	Continue to work with the State with regard to mapping updates	Adequate	Partnership with Carboro and FEMA for improved management	All goals.	UNC Facilities Planning & Construction Town of Chapel Hill
	Carboro	Continue to work with the State with regard to mapping updates	Developing program.	Partnership with Chapel Hill and FEMA for improved management	All goals.	Town of Carboro
	Orange County University	Continue to work with the State with regard to mapping updates	No Position	No Position		
i. NPDES compliance (6 minimum measures and local needs)	University Chapel Hill	Six minimum measures to be developed over a multi-year period. Current programs meet several measures.	In Progress.	To be developed.	All goals.	UNC Environment, Health & Safety
	Chapel Hill	Six minimum measures to be developed over a multi-year period. Current programs meet several measures.	In Progress.	To be developed.	All goals.	Town of Chapel Hill

Southern Orange County
Stormwater Management Program Analysis

Major Stormwater Management Problems	Entity	Current Status of Program	Program Objectives	Strategy to Meet Objectives	Goals	Responsible Party
	Carboro	Measures and needs have been identified and efforts are underway to complete the stormwater inventory, devise house keeping programs, an illicit discharge discovery and response program and a education program	Development Ordinance seems adequate. Efforts to concentrate on inventory, illicit discharge, education, and house keeping	Work with neighboring jurisdictions to devise an education and an illicit discharge program. Complete housekeeping and inventory programs.	Goal 1	Town of Carboro and other units of Govt.
	Orange County	By implementing Stormwater ordinance County wide can achieve NPDES compliance	No staff for Countywide At this time	Request additional staff	Goal 1	

*Jurisdictional/Staff Assessment Note:

The following staff members contributed to the assessment comments:

- The University of North Carolina at Chapel Hill - Jim Mergner, Sharon Myers
- Town of Carboro - Roy Williford
- Town of Chapel Hill - Fred Royal, Richard Terrell
- Orange County - Ren Mins