Orange County's 2009 State of the Environment

OVERVIEW

Critical Issues 3
Highlighted Recommendations 4
Demographics 5

AIR RESOURCES

Introduction 8
Emissions Estimates 9
Emissions from Point Sources 11
Ozone Threshold Exceedances 13
Transportation Modes 15
Commuting Patterns 17
Public Transit (Bus) Ridership 19
Daily Vehicle Miles Traveled 21
Ongoing Concern: Greenhouse Gas Emissions 23

BIOLOGICAL RESOURCES

Introduction 26
Acres of Protected Land 27
Acres of Protected Natural Heritage Sites 31
Prime Forest 33
Acres within the Present Use Value Program 35
Status of Rare Plants and Animals 37
Emerging Concern: Land Application of Biosolids 40

WATER RESOURCES

Introduction 44
Water Usage 47
Public Water System Safe Yields 49
Groundwater Quantity 51
Groundwater Quality 53
Wastewater Treatment and Disposal 55
Surface Water Quality 57
Stream Ratings 59
Ongoing Concern: Radon and Arsenic in Groundwater 62

LANDS LEGACY PROGRAM

Lands Legacy Program 63

CONCLUSION

What can you do to improve the State of Your Environment? 66

Figures

Figure 1: Map of Orange County 1
Figure 2: Population Trends in Orange County, 1930-2007 5

AIR RESOURCES

Figure 3: Inventoried and Projected Emissions by Source, 1997-2018 10
Figure 4: Annual Point Source Air Pollution by Pollutant, 1993-2007 12
Figure 5: Monthly Trends in Ozone Exceedance Days in the Triangle Region, 1997-2008 14
Figure 6: Ozone Monitor Locations in the Triangle Region 14
Figure 7: Means of Transportation to Work in Orange County and North Carolina between 1990 and 2007 16
Figure 8: Percentage of Employed Persons "In-" or "Out-Commuting" in Orange County between 1990 and 2006 18
Figure 9: Annual Bus Ridership, 2002-2008 20
Figure 10: Change in Daily Vehicle Miles Traveled, 1990-2018 22
Figure 11: Percent of Greenhouse Gas Emissions by Sector 24

BIOLOGICAL RESOURCES

Figure 12: Percent of all Land in Orange County that is Protected 28
Figure 13: Protected Lands as of 2008 29
Figure 14: Natural Heritage Sites as of 2008 30
Figure 15: Percent of Protected Natural Heritage Sites as of 2008 32
Figure 16: Orange County Forest Cover Change from 1988 to 2008 34
Figure 17: Acres of Land in the Present Use Value Program, 1993-2008 36
Figure 18: Biosolids Application Sites as of 2008 42

WATER RESOURCES

Figure 19: Water and Sewer Primary Service Areas, Planning and Boundary Agreement, 2001 45
Figure 20: Orange County Watersheds 46
Figure 21: NC-126 Regolith Observation Well Groundwater Level, 1943-2008 52
Figure 22: Caldwell Bedrock Observation Well Groundwater Level, 1970-2008 52
Figure 23: Groundwater Level in Caldwell Well During 2006-2008 Drought 52
Figure 24: Underground Storage Tank Incidents, 1986-2008 54
Figure 25: Total Volume of Wastewater Spills, 1998-2008 56
Figure 26: Septic System Installations and Repairs to Failing Systems 56
Figure 27: Dissolved Oxygen Level Trends, 1988-2008 58
Figure 28: Total Nitrogen Level Trends, 1988-2008 58
Figure 29: Impaired Water Bodies as of 2008 61

LANDS LEGACY PROGRAM

Figure 30: Lands Legacy Projects, 2000-2008 65

Tables

Table 1: Municipal and Unincorporated Populations, 1980-2007 6

AIR RESOURCES

Table 2: Emissions in Tons per Day, 1997-2018 10
Table 3: Point Source Air Pollution, 1993-2007 12
Table 4: Change in Average Travel Time to Work 17
Table 5: Change in "Out-Commuting" in Orange County Between 1990 and 2006 18
Table 6: Change in "In-Commuting" in Orange County Between 1990 and 2006 18
Table 7: Bus Ridership, 2002-2008 20
Table 8: Daily Vehicle Miles Traveled, 1990-2018 22
Table 9: Total State Maintained Road Lane Miles, 1985-2007 22
Table 10: Energy Use 24
Table 11: Greenhouse Gas Emissions by Sector 24

BIOLOGICAL RESOURCES

Table 12: Total Acres of Protected Land in Orange County as of 2008 28
Table 13: Total Acres of Protected Natural Heritage Sites as of 2008 32
Table 14: Total Acreage in the Present Use Value Program, 1993-2008 36
Table 15: Status of Orange County's Rare Plants and Animals as of 2008 38

WATER RESOURCES

Table 16: Reported Water Usage (mgd), 1985-2005 48
Table 17: Percent Change in Water Usage (g/d/p), 1985-2005 48
Table 18: Public Water Supply Safe Yields, 1992-2008 50
Table 19: Average and Maximum Daily Demand Per Year, 1992-2008 50
Table 20: Groundwater Wells Installed, 1991-2007 52
Table 21: Potential Threats to Groundwater Quality 54
Table 22: Wastewater Spills and Associated Permit Violations, 1998-2008 56
Table 23: Water Quality Summary, 1984-2005 60

LANDS LEGACY PROGRAM

Table 24: Lands Legacy Acquisitions, 2000-2008 64