

Summary of Accomplishments & Challenges

Over the past few decades, much of Georgia has grown and prospered. This growth and prosperity has relied, in part, on the state's rich natural resources and the quality of its environment.

At the same time, as demonstrated by the indicators discussed in this report, progress toward EPD's environmental management objectives is evident. A number of environmental challenges continue to face the state, however, and new ones have begun to emerge.

As summarized below, this report highlights the progress that has been made toward three objectives:

- Protecting human health
- Sustaining healthy ecosystems
- Ensuring resources to support a growing economy

This report also highlights the environmental challenges that remain as well as areas of opportunity – where actions can be readily taken to move toward better environmental outcomes while supporting the state's economy and quality of life.

Looking toward the future, Georgia's natural resources and the quality of its environment will continue to be critical to the state's growth and prosperity. With more people and a growing economy, use of our resources will continue to increase and demands on our environment intensify. As Georgia grows, further environmental progress will be necessary to sustain the state's economic progress.

Protecting human health

For air and water resources, the past three decades have seen reductions in the release of pollutants and in the levels of pollution in the environment. While these efforts have been undertaken primarily to protect human health, advancement in this area also helps meet the other environmental objectives.

These reductions have been largely due to controlling point sources – discharges of treated wastewater by municipalities and industries and releases of air pollutants from the smokestacks of power plants, factories and other facilities.

The job of controlling air and water pollution to protect human health, however, is obviously not finished. For both air and water, pollutants still exceed health-based standards or thresholds in many areas of the state some of the time.

As efforts to improve the quality of Georgia's air and water resources continue, three important challenges lie ahead:

Increased impact from smaller, diffuse pollution sources. Over the past three decades, investments in controlling pollution from point sources have paid off by decreasing releases from these sources. As pollution from point sources has decreased, the relative contribution of sources that are smaller, more numerous and widespread has increased. Stormwater that carries pollution off the surface of the

For more information, go to the sections on these indicators or topics:

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Dissolved oxygen in surface water, p. 45
Community water systems meeting drinking water standards, p. 8
Levels of air pollutants, p. 23
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Bacteria levels in surface water, p. 10
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land and emissions from motor vehicles are now the greatest concern for water and air quality, respectively.

Reducing pollution to meet or exceed health-based standards will require more effective solutions for these smaller sources — solutions that will have to be shaped, in part, by land use and transportation policies. The number and distribution of these nonpoint sources in the future will be partially determined by the transportation choices and land use decisions made today.

Changing standards. As scientific knowledge improves, standards may change. These changes may simply reflect a better understanding of pollutants and how to measure them in order to protect human health (e.g., standards for bacteria in surface water). Or, changes may reflect improved information on the impacts of pollutants. Air quality standards have been tightened for this reason, even as air quality has improved.

Tighter standards increase the importance of controlling releases from the smaller sources described above – mobile sources of air pollution and nonpoint sources of water pollution. Tighter standards also make it more difficult to site and issue permits to new point sources of pollutants, including the energy facilities and wastewater treatment plants that may be needed as the state continues to grow.

Contaminants in fish tissue, p. 14
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 Risks from air toxics, p. 28



Additional contaminants of concern. Continued progress toward the objective of protecting human health will require better understanding of the risks from air toxics. It will also require better management of contaminants that can travel long distances and affect a different part of the environment (land, air, water) than the one in which they originated.

These challenges have several implications for the protection of human health. First, government regulation alone cannot do the job. Other tools, such as investments in increased knowledge, incentive programs, technical assistance and education will become increasingly important.

Second, individual citizens, businesses and local governments make many of the decisions that affect air and water resources. EPD and other state agencies must strengthen and expand partnerships with public and private sector organizations in order to encourage decisions that have better environmental outcomes. And, air and water resources have to be considered as plans are laid for the state's transportation, land use and energy futures.

Land contaminated above health-based standards, p. 18
 Scrap tires, p. 21



For land resources, progress has been made in the clean up of contaminated land. The most notable advances have been in cleaning up sites contaminated by underground storage tanks and scrap tire dumps. Contaminated lands, however, continue to be identified and ongoing investment in assessing and cleaning them up will be necessary to maintain progress toward the objective of protecting human health.

Solid waste disposal, p. 20
 Hazardous waste generation, p. 22
 Lands used for solid waste disposal, p. 73



Land resources are also affected by waste generation and disposal. Solid waste disposal, in particular, poses a significant challenge for the state. The amount of solid waste disposed in Georgia has risen steadily in recent years. And, the amount disposed per person is consistently higher than the national average. At the same time, Georgia industries that use recovered materials in their manufacturing processes must import them because there is not an adequate supply within the state.

Some of what is treated as waste in Georgia is actually a resource that industries in the state can use. Addressing this challenge will require expanding Georgia's recycling infrastructure and promoting recycling and waste reduction by citizens and businesses.

Sustaining healthy ecosystems

Georgia's landscape has seen dramatic changes over the years. The ways in which land is used, and the ways in which land has been altered as the state has grown, have affected the health of Georgia's ecosystems.

Over the past three decades, the extent of hardwood forests and forested wetlands, native land covers associated with critical natural habitat, declined steadily. The extent of urban land cover — low-intensity urban cover, in particular — jumped dramatically. The rate of increase in urban land cover between 1974 and 2005 was more than four times greater than the rate of increase in the state's population. Between 1991 and 2005, the amount of impervious cover — surfaces that prevent rain from soaking into the ground and cause stormwater to run off more quickly — increased twice as rapidly as the state's population.

Changing land cover has altered the quality and extent of natural habitat across the state and the condition of the animal and plants species that live in those habitats. The effects are evident in the decline of streamside forests in most of the state's large watersheds, the limited amount of moderate and high quality terrestrial habitat, and an increased number of protected species.

The effects of human activities on the health of Georgia's ecosystems also are apparent in the condition of Georgia's freshwater fish communities. Less than one-quarter of the sites evaluated had fish communities that scored in good or excellent condition; the remainder rated fair, poor or very poor. Freshwater fish communities in poor condition can be attributed, in part, to nonpoint source pollution, including stormwater runoff from impervious surfaces and sediment from land-disturbing activities. Some aquatic habitats along the coast are also degraded due to nonpoint source pollution.

Alteration of natural habitat associated with low-intensity urban land cover and increased impervious surfaces is one of the major long-term threats to Georgia's rich biological diversity. Lands protected by federal, state or local governments, or by private conservation groups, are less subject to habitat conversion. By providing protected habitat for plants and animals, these lands help maintain healthy ecosystems.

Lands with permanently protected natural habitat, however, cover less than 4 percent of the state's area. The vast majority of land in Georgia is subject to conversion and habitat loss, and private landowners hold the vast majority of that land. Voluntary land protection and incentive-based habitat management programs for private lands are becoming increasingly important.

As Georgia continues to grow, the challenge is to shift to development strategies that lead to better environmental outcomes — for low-intensity urban areas, in particular. This includes approaches that protect natural habitat, such as designing developments to maintain natural and open areas. It also includes investing in the identification of critical habitats, as well as actions by private landowners and public land managers to preserve viable examples of all natural habitats in an ecoregion.

Development strategies with better environmental outcomes also include practices that decrease the movement of sediment from land-disturbing activities as well as those that increase pervious surfaces, which allow rain and stormwater to soak into the ground. Stormwater management has traditionally focused on moving stormwater away from roads, buildings and other areas as quickly as possible, an approach that is becoming increasingly expensive. This approach also has environ-

- ▶ Land cover types, p. 36
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- ▶ Streamside forests, p. 42
- ▶ Terrestrial habitat quality, p. 47
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- ▶ Freshwater fish community status, p. 43
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mental costs, with impacts on water quality, the physical structure of streams and the amount of groundwater available to sustain stream flows during dry periods.

Designing developments so that more stormwater soaks into the ground – supporting groundwater levels and contributing to stream flow during dry periods – can be more cost effective and will improve environmental outcomes.

Ensuring resources to support a growing economy

Georgia's water and land resources have supported the state's development over the years and, as the state continues to grow, these resources will continue to be critically important.

Total water use, p. 55

- ▶ For water resources, however, capacities are finite and must be managed to support a variety of uses. These include uses that occur after water is withdrawn from a water body (called offstream uses), such as water supply for household use, commercial and industrial purposes and agricultural production. They also include instream uses that occur within the banks of a water body – assimilation of wastewater, recreation and support of fish and wildlife, among others.

While water use for thermoelectric and industrial purposes was lower in 2005 than in 1980, the amount of water used for public supply increased over this time period. Agricultural use also was higher, although the amount of water used for irrigation varies from year to year with rainfall.

Groundwater levels, p. 60

- ▶ Water withdrawals have affected the viability of some water sources. Groundwater levels in several aquifers (or parts of aquifers) have shown steady declines and the use of some water sources in south Georgia has been restricted.

Pollutants in surface waters, p. 64

- ▶ The capacity to assimilate pollution also has been reached or exceeded in some waters, as demonstrated by the poor water quality found in roughly 60 percent of the stream miles recently evaluated. The most common indicators of poor water quality are high levels of fecal coliform, communities of aquatic animals in poor conditions, low levels of dissolved oxygen, contaminants in fish tissue, and high levels of nutrients.

Nonpoint sources of water pollution, p. 16 and 67

- ▶ In many of the streams, rivers and lakes with poor water quality, pollution from nonpoint sources decreases their capacity to assimilate treated wastewater. It is difficult or impossible to increase discharges of treated wastewater to waters that violate water quality standards, a limitation that can hamper economic development.

Looking ahead, Georgia faces the challenge of decreasing the impacts of nonpoint sources of water pollution, a challenge that will have to be met, in part, by changing land use and transportation policies. EPD, in turn, faces the challenge of improving information on Georgia's water supply and the wastewater capacity of individual water sources – a challenge being addressed under the State Water Plan.

Per capita water use, p. 58
Responding to exceptional drought, p. 59

- ▶ Finally, the state, local governments and water users face the challenge of finding ways to meet the mix of demands for offstream water use that will be placed on each water source, while maintaining the capacity of that source to provide instream use as well. Ultimately, actions to manage water supply and quality, increase the efficiency of water use, and respond to droughts will all be needed.

Lands used for agriculture and forestry, p. 68

- ▶ For land resources, trends in land cover show the dynamic nature of Georgia's landscape and the changes that can occur over relatively short periods of time, in response to economic factors, new technology, and federal and state policies. More than 75 percent of the state's land area currently has forested or agricultural land

cover. The acreage of hardwood forests, however, has declined markedly since 1974. The acreage of evergreen forest and agricultural lands has varied, but both were lower in 2005 than in 1974.

One of the most significant changes taking place today is the conversion of forested and working landscapes to urban landscapes. The Piedmont region has seen the most change in the state, but it is not just the metro Atlanta area being affected. Low-intensity urban land cover has also increased in the state's other major cities, smaller towns and rural areas. This trend reflects decisions made by many individual landowners responding to a complex mix of factors – individual decisions that add up to large changes in the state's landscape.

As with the objective of sustaining healthy ecosystems, the challenge here is to continue the shift to practices that lead to better outcomes for Georgia's water, land and air resources. These include revitalization of brownfields, as well as incentives for maintaining working lands and protecting critical environmental lands. It also includes promoting good stewardship of private lands.

Private landowners hold more than 90 percent of the state's forest and agricultural lands. When under good stewardship, these lands provide a wide range of benefits, including wildlife habitat, water quality protection and maintenance of stream flow. Gaining these benefits will require encouraging landowners to manage their lands for environmental benefits as they also manage for economic benefits.

Conclusion

In summary, as Georgia continues to grow, further progress toward all three environmental objectives will require decreasing pollution from mobile and nonpoint sources, continuing the shift to development approaches that have better environmental outcomes, and ongoing improvement in managing the state's environment.

Improving environmental management will require the use of a broader range of tools in addition to regulation: investing in improved knowledge about the state's resources and their use, providing information and incentives to shift behaviors, and ensuring that technical assistance and education inform the individual decisions that help determine environmental outcomes.

Use of a broader range of tools, in turn, will require stronger and more effective partnerships among state agencies, local governments and private sector organizations.

Finally, environmental factors and planning for energy, land use and transportation must be better integrated. Production and use of energy affects air and water resources, and the condition of air and water resources influences choices regarding energy capacity. Transportation decisions shape changes in land and resource use and these decisions affect, and are affected by, the quality of Georgia's air, land and water resources. Trade-offs and impacts across these sectors must be fully considered as plans are laid for the state's energy, transportation and environmental futures.

A number of steps down these roads already have been taken, but more are needed. Long-term solutions will involve everyone. EPD, our partners in the public and private sectors, and all Georgians can, by working together, ensure the environmental progress that will be necessary for Georgia's continued growth and prosperity.

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