Healthy Watersheds throughout Minnesota

Designing a New Division within the Department of Natural Resources to Manage Water, Biodiversity, and Ecosystem Services

Report to the Minnesota Legislature:

Senate Environment, Energy and Natural Resources Budget Division
Senate Environment and Natural Resources Committee
House Environment and Natural Resources Finance Division
House Environment Policy and Oversight Committee
House Game, Fish and Forestry Division

Submitted by the
Minnesota Department of Natural Resources
Office of the Commissioner
Division of Ecological Resources
Division of Waters

Date of Report: April, 2010

Legislative Charge

The statutory requirement for this report is found in Minnesota Session Laws 2009 Chapter 37 Article 1 Section 4 Subdivision 7 which reads in part:
"The commissioner shall not merge ecological services (sic – resources) and waters duties prior to presenting the report to the committees and divisions."

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Executive Summary

These are times of extraordinary change and opportunity for Minnesota's natural resources. Minnesota is experiencing significant changes in our ecology and economy. Population growth, development, and a changing climate are reshaping the natural resource base. Shifts in the energy, manufacturing, retail, and recreational economies are reshaping the conservation financial resource base. Shifts in recreation participation patterns and increasing demands on the State's General Fund are reducing traditional sources of conservation funding. The Minnesota Department of Natural Resources (DNR) Strategic Conservation Agenda 2009-2013 describes these trends and their anticipated impacts on Minnesota's natural resources and our work.

As a Department, we believe that strategic organizational change is necessary to position the DNR to address the trends and their impacts. The DNR is creating a New Division from the existing divisions of Ecological Resources and Waters that focuses on the integrated management of land, water, biodiversity, and ecosystem services. In this context, *water resources* include surface water and groundwater. *Biodiversity* means the variety and variability of species – genetically, in populations, and in ecosystems. *Ecosystem services* are natural processes that provide benefits to humans, such as water purification, flood mitigation, and soil fertility. The New Division will be successful when there are "Healthy Watersheds throughout Minnesota." "Healthy Watersheds" have at least three key attributes:

1. *Sustainable quantities and qualities of water* that ensure clean water is available for Minnesota's people and other biota in the midst of changing conditions;
2. *Sustainable levels of biodiversity* that provide Minnesota species, habitats, and ecosystems with the resilience and adaptive capacities they need to thrive in the midst of changing conditions; and
3. *Well-functioning ecosystem services* that provide Minnesota with economic and ecological security now and into the future (e.g., flood mitigation, soil preservation, water purification, habitat maintenance, and outdoor recreation).

Central to this transformation will be connecting land and water management for benefits to terrestrial and aquatic habitat, fish and wildlife species, and water quality and quantity. What happens on our lands impacts our waters; what happens to our waters impacts our habitats, ecosystems, and biodiversity. While watersheds will be a main focus of planning within the New Division, the Department recognizes that other organizing frameworks will need to be used in complementary ways to manage natural systems, including groundwater delineations and the Ecological Classification System.

At the dawn of this new decade in natural resources conservation, the Department will need to increase its capacity to influence land use practices and resource decisions. This is true for several reasons, including the Department's inability to purchase enough lands to have broad landscape-level benefits; the inherent challenges with regulatory approaches to behavioral change, particularly when it comes to addressing nonpoint sources of pollution; and competing

priorities for decision-makers' attention and financial resources. Thus, while regulations and land acquisition will always be key strategies in the conservation equation, the New Division will build stronger relationships with local partners to affect the natural resources decisions and behavioral changes needed to realize "Healthy Watersheds throughout Minnesota."

The New Division will fill three important niches within the Department's overall mission, which will serve to enhance the Department's protection of the species, systems, landscapes, and ground- and surface-waters of the State.

1. *Conservation Opportunities Niche:* The New Division will lead and support efforts to improve Minnesota's water, biodiversity, and ecosystem services through integrated, collaborative, and community-based actions.
2. *Recreational Opportunities Niche:* The New Division will provide information, education, and outdoor recreation opportunities that will enhance public appreciation of Minnesota's unique water resources and biodiversity.
3. *Commercial Opportunities Niche:* The New Division will support sustainable economic uses of water, biodiversity, and other natural resources by providing excellent information and decision-support tools, and by enforcing effective, appropriate regulations.

The Design Project is still working on the New Division's programmatic and organizational structure. However, the Design Project's work teams have identified four types of work functions that will be necessary to deliver "Healthy Watersheds throughout Minnesota": 1) resource inventory, monitoring, and analysis; 2) conservation assistance and regulation; 3) ecosystem management and protection; and 4) outreach, engagement, and shared services. In addition, the Design Project has identified some guiding design principles for structuring the New Division's field operations at the regional and area levels, including: 1) creating a strong, customer-service focus; 2) conducting planning and management efforts at the watershed level but delivering program services at the local government unit level; 3) supporting an adaptive, systems approach to problem solving ; 4) facilitating cross-disciplinary collaboration; and 5) enabling science to shape work priorities, planning efforts, and legislation. The Department feels strongly that these four core work functions, combined with an effective, community-engaged field operation, will better protect Minnesota's biodiversity, ground and surface waters, and the multiple benefits they provide to people (i.e., ecosystem services).

The New Division Design Project is using a highly participatory approach to develop and review its strategic framework for "Healthy Watersheds." The approach has engaged the staff from both of the existing divisions through five regional meetings, regular project updates, and the participation of more than 75 DNR staff on 10 project work teams. Externally, Design Project leaders have discussed the New Division with 70 stakeholders during a series of 12 focus group meetings. The Department intends to finalize the design for the New Division by June 2010, and begin implementation in July. The New Division will continually evaluate and adjust the design as its leaders use the unique skills and professional talents of staff to focus on the New Division's work.

Introduction

Reasons for Organizational Change

These are times of extraordinary change and opportunity for Minnesota's natural resources, for those who use and enjoy them, and for those who manage them. Minnesota is experiencing significant changes in our ecology and economy. Shifts in recreation participation patterns and increasing demands on the State's General Fund are reducing traditional sources of conservation funding. Population growth, development and a changing climate are reshaping the natural resource base.

The quality and quantity of our water resources are being stressed by current demands. Our native biodiversity is being diminished due to habitat loss and invasive species. These challenges will be magnified as our human population grows and our demand for land and water increases. The Minnesota Department of Natural Resources (DNR) Strategic Conservation Agenda 2009-2013 describes these trends and their anticipated impacts on Minnesota's natural resources and our work.

Identifying changes is not enough to effectively manage for them. In order to implement the strategies we believe will move Minnesota toward its natural resource management goals and sustainable, secure natural resources economies, the DNR must now re-align itself—internally, with its external partners, and with other state and federal agencies—so Minnesota will be well positioned to address the new realities.

Key Trends Shaping Natural Resources

Minnesota's natural resources—and our ability to manage them wisely—are being shaped by three key trends described in DNR's Strategic Conservation Agenda (Exhibit 1)—changes in growth and development; energy and climate; and outdoor recreation participation.

Trend One: Landscape changes from growth and development

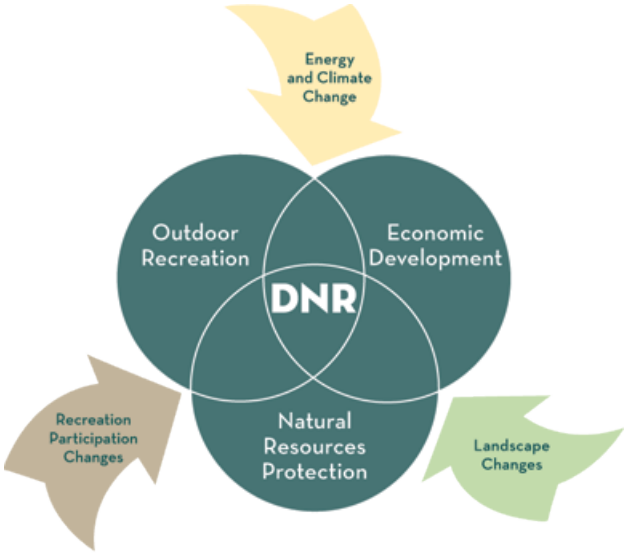
With a projected 20-year population growth of one million people, demands on Minnesota's natural systems—our lakes and rivers, forests and grasslands, wetlands and shorelands—will impact our quality of life. These natural systems support a diversity of fish and wildlife habitats and ecosystems, which form the foundation for agriculture, timber production, mineral extraction, human health, and recreation. They also provide a spectrum of low cost – high value ecosystem services, including water purification, erosion control, and carbon sequestration (to name but a few).

In many ways, water is Minnesota's most threatened natural resource. Abundant clean water is essential for human life, healthy populations of fish and wildlife, and sustaining the ecological patterns and processes upon which all life depends. Clean water sustains Minnesota homes, farms, businesses, and communities. Today, both *demand* for water and *degradation* of its quality are increasing. At this time, with regards to water, we are not living within sustainable

thresholds, if sustainability means “meeting current needs without sacrificing the ability of future generations to meet their needs.”

The integration of the DNR divisions of Ecological Resources and Waters will accelerate the development of more integrated approaches to improving land and water health at local, landscape, and watershed scales through: 1) more integrated and coordinated delivery of conservation assistance; 2) new partnerships within an interconnected network of sustainably-managed natural and working lands; and 3) new science-based tools to help us better understand and manage inter-related hydrologic and ecological systems.

Exhibit 1: DNR Mission Circles and Key Trends Impacting Management Ability and Strategy



DNR'S CONSERVATION MISSION: To work with citizens to **conserve and manage** the state's natural resources, to **provide outdoor recreation** opportunities, and to **provide for commercial uses** of natural resources in a way that creates a sustainable quality of life.

Trend Two: Changes related to energy and climate

Since the early 1980s, Minnesota’s average annual temperature has risen slightly over 1˚F in the southern part of the state, and a little over 2˚F in much of the northern part. Climate change will dramatically alter our land and water resources over the next 50 to 100 years. Warmer temperatures will have several direct and inter-related impacts on our natural world: affecting growing conditions; altering vegetation patterns (e.g., the spread of invasive species); changing lake water levels and stream flows; and influencing fish and wildlife populations (e.g., a reduction in coldwater resources). Climate change will likely also result in more extreme events such as severe windstorms, heavy rains, extended droughts, and wildfires.

In view of the magnitude and ubiquity of the hydroclimatic change apparently now under way, however, we assert that stationarity [the idea that natural systems fluctuate within an unchanging envelope of variability] is dead and should no longer serve as a central, default assumption in water-resource risk assessment and planning. Finding a suitable successor is crucial for human adaptation to changing climate.

Milly et al 2008

As renewable, conservation-based energy sources (e.g., biofuels and windpower) are sought to mitigate the root causes of these impacts (i.e., reduced use of fossil fuels), DNR resource managers will be challenged to find new ways to sustain the health, diversity, and productivity of ecosystems in the face of both climate change and energy development. An organizational structure that encourages multi-disciplinary management and problem-solving is necessary to: 1) investigate land asset management strategies that will enhance greenhouse-gas storage capacity; 2) adapt management actions so they improve ecosystem resilience to climate change (e.g., creating wildlife corridors, improving habitat connectivity); 3) monitor and evaluate how effective different management strategies are at maintaining "Healthy Watersheds"; and 4) increase energy efficiency in DNR operations.

An improved approach to integrated resource management will be necessary to effectively address these issues at multiple scales within Minnesota's interdependent, systems: groundwater aquifers; surface watersheds; ecological subsections; and local, county, and state political boundaries. Ecology and hydrology must be collaboratively integrated within the DNR in order to develop new system models and management strategies capable of addressing the impacts of climate change in Minnesota.

Trend Three: Changes in outdoor recreation participation

Outdoor recreation participation is declining on a per capita basis in Minnesota and across the nation. The primary driving factor behind these declines is that young adults and their children are not participating in traditional outdoor recreation activities at the same levels young families have in the past. In addition, as we serve older, more urban-based populations, demand for recreational opportunities will continue to change.

Participation in outdoor recreation enriches lives in many ways, from boosting physical and mental health to strengthening family ties. Outdoor recreation also benefits communities, the state, and society by stimulating the economy and building enduring support for natural resources. Healthy, functioning watersheds and ecosystems are the very basis of a whole host of high-quality outdoor recreation activities across Minnesota—from bird watching and canoeing to hunting, fishing, and motorized and non-motorized trail use. Now more than ever, the DNR must think strategically about how to optimize outdoor recreation opportunities while

protecting the very resources upon which these quality experiences depend. The Department must also explore ways to transform enthusiasm for various forms of outdoor recreation into engaged concern for protecting and sustaining Minnesota's water and ecological resources.

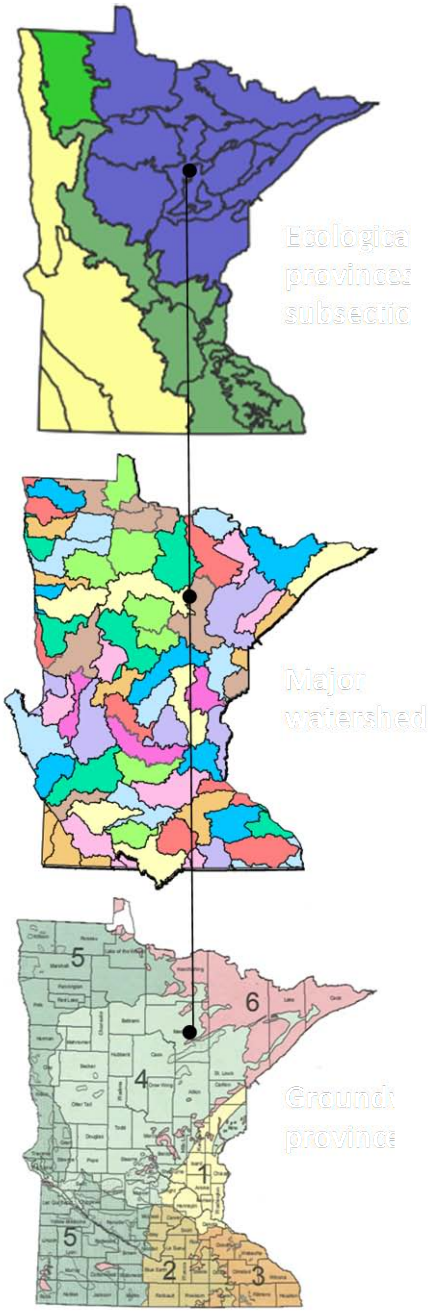
Connecting Land and Water Management within Watersheds

The DNR is creating a New Division focused on the integrated management of water, land, biodiversity, and ecosystem services. The New Division will be successful when there are "Healthy Watersheds throughout Minnesota." "Healthy Watersheds" have, at least, three key attributes:

1. *Sustainable quantities and qualities of water* that ensure clean water is available for Minnesota's people and other biota in the midst of changing conditions;
2. *Sustainable levels of biodiversity* that provide Minnesota species, habitats, and ecosystems with the resilience and adaptive capacities they need to thrive in the midst of changing conditions; and
3. *Well-functioning ecosystem services* that provide Minnesota with economic and ecological security now and into the future (e.g., flood mitigation, soil preservation, water purification, habitat maintenance, and outdoor recreation).

In order to achieve "Healthy Watersheds," the New Division must effectively address the three key trends identified in the DNR Strategic Conservation Agenda, enhance its partnerships within watersheds, and invest its staff and organizational resources to support and influence individual citizen actions, private sector growth, and local government decisions. This transformation will require significant change in our organization, so we will transform our programs, operations, and research to enhance the support for "Healthy Watersheds." Central to this transformation will be

Exhibit 2: Connecting Management within Hierarchical Landscape Systems



connecting land and water management for benefits to terrestrial habitat, fish and wildlife species, and water quality and quantity. What happens on our lands impacts our waters; what happens to our waters impacts our habitats, ecosystems, and biodiversity.

Why focus on watersheds? A few compelling reasons include:

1) Watershed boundaries are stable landscape features and can be delineated on multiple scales;
2) Biodiversity and many ecosystem functions are heavily influenced by the hydrology of a landscape (i.e., the watershed);
3) Land use and terrestrial habitat alterations impact surface and ground water quality, quantity and availability, as well as the biological diversity within watersheds; and
4) Most Clean Water Legacy initiatives are organized by watersheds, and our partnering agencies, in particular the Minnesota Pollution Control Agency (MPCA), are also organizing their planning and work around watersheds.

While watersheds will be a main focus of the New Division, the Department recognizes that other organizing frameworks need to be used in managing natural systems, including groundwater delineations and the provinces, sections and subsections of the Ecological Classification System. The New Division will use these frameworks in complementary, rather than competing ways. The DNR will be better positioned to address the multiple pressures facing Minnesota's land, water, fish and wildlife, and ecological resources by using multiple, complementary systems of analysis.

Minnesotans have voiced unprecedented support for our state's land, water, and wildlife with the 2008 Legacy Amendment, strongly affirming DNR's efforts to provide healthy habitat, clean water, outstanding outdoor recreational opportunities, and a strong natural resource-based economy. With that support came an expectation that DNR would work with our private, public, and nonprofit partners to improve conservation delivery within a 25-year funding timeframe. As a Department, we believe that this strategic organizational change is necessary to position the DNR to meet that expectation.

Increasing Capacity to Influence Change

The idea that the real "end game" for conservation is to change people's ethics about the land—and how it is managed—is a not new one. Aldo Leopold gave voice to it in his *Sand County Almanac*. The Minnesota legislature gave voice to it in Minn. Stat., sect. 103A.206 ("Land occupiers have the responsibility to implement practices that conserve the soil and water resources of the state."). In an era when 75 percent of Minnesota's land is held in private ownership, the urgency of supporting Minnesotans as they move toward a more sustainable land and water ethic has never been more urgent. The land and water use decisions and actions of private landowners and local governments directly impact the state's ability to protect and conserve Minnesota's natural resources. In the face of Minnesota's projected population growth, much of our remaining natural resources are at risk unless we make conservation the integral element of private land management and local planning.

The basic problem is to induce the private landowner to conserve on his own land, and no conceivable millions or billions for public land purchase can alter that fact. The real end of conservation is a universal symbiosis with land, economic and esthetic, public and private.

Leopold 1933

The Minnesota DNR has come to recognize that there are three key conservation strategies for a public agency: 1) supporting and influencing citizens, businesses, and governments to use sustainable land and water management practices; 2) regulating land and water management actions; and 3) owning and managing land and water.

At the dawn of this new decade in natural resources conservation, the Department finds itself needing to increase focus on the first of these strategies—influencing citizens and decision makers to make decisions that promote long-term resource sustainability. This is true for several reasons.

First, the Department recognizes that the public cannot buy its way out of habitat loss and degradation of water. While land ownership and easements will always be some part of the conservation equation (e.g., Scientific and Natural Areas, prairie easements, Wildlife Management Areas, State Parks), it is not practical or desirable for the DNR to buy enough land (for the public) to have landscape-level impacts across the state.

Second, the Department's history with regulatory approaches have taught us that, while absolutely necessary, regulation also has its limitations and must be viewed as only one part of an overall conservation strategy. Minnesota statute and rule are only as flexible as the language in them, and only as adaptable as the political will to update them according to current circumstances and technology. Regulations are also constrained by funding for local enforcement. Experience has demonstrated that regulations tend to produce a minimal level of compliance and have, thus far, not been effective in addressing nonpoint sources of pollution. The current status and long-term trends of our water and ecological resources suggest that minimal compliance will not be enough to attain resilient watersheds and secure natural resources economies; the state's resources need a more robust commitment by private citizens to conservation and sustainable use on private lands.

Finally, we live in an era where citizens and decision-makers are bombarded with information. The DNR produces a tremendous amount of data and information for our customers—inventories, maps, new research, management plans, real-time monitoring data, and the latest information about best management practices and technologies to implement them. This information will result in better decision making at all levels of government and society—but only if it is delivered in a usable and meaningful manner. As an agency, we need to better package and present information resources and decision-support tools. We need to better engage decision-makers in Minnesota communities and help them apply these tools and

information resources to their unique local contexts. We need to invest in new communications technology and enhance the communication skills of DNR professionals.

The New Division will need to enhance relationships with local communities, private landowners, developers, and other partners to conserve natural resources, support economic growth, and ensure clean water, abundant biodiversity, and "Healthy Watersheds" that provide sustainable ecological, economic, and recreational benefits.

New Division Mission Niche and Transformative Vision

Mission Niche. Within the context and circumstances described above, the Minnesota DNR is creating a New Division by combining the existing divisions of Ecological Resources and Waters in order to better deliver integrated conservation of water, biodiversity and ecosystem. This division will fill three important niches within the Department's overall mission (see Exhibit 1, p. 4), and its activities will be focused by a transformative vision: "Healthy Watersheds throughout Minnesota."

The New Division niches include:

A. **Conservation Opportunities Niche:** The New Division will lead and support efforts to improve and sustain Minnesota's water, biodiversity, and ecosystem services through integrated, collaborative and community-based actions.

B. **Recreational Opportunities Niche:** The New Division will provide information, education, and outdoor recreation opportunities that will enhance public appreciation of Minnesota's unique water resources and biodiversity.

C. **Commercial Opportunities Niche:** The New Division will support sustainable economic uses of water, biodiversity, and other natural resources by providing excellent information and decision-support tools, and by enforcing effective regulations.

Transformative Vision. The New Division will focus on an overarching vision of "Healthy Watersheds throughout Minnesota." "Healthy Watersheds" include 1) sustainable quantities and qualities of water; 2) sustainable levels of biodiversity; and 3) well-functioning ecosystem services.

Pursuing the vision of "Healthy Watersheds throughout Minnesota" begins with the integration of two existing DNR divisions: Ecological Resources and Waters.

Overview of the Process for the New Division Project

New Division Project structure

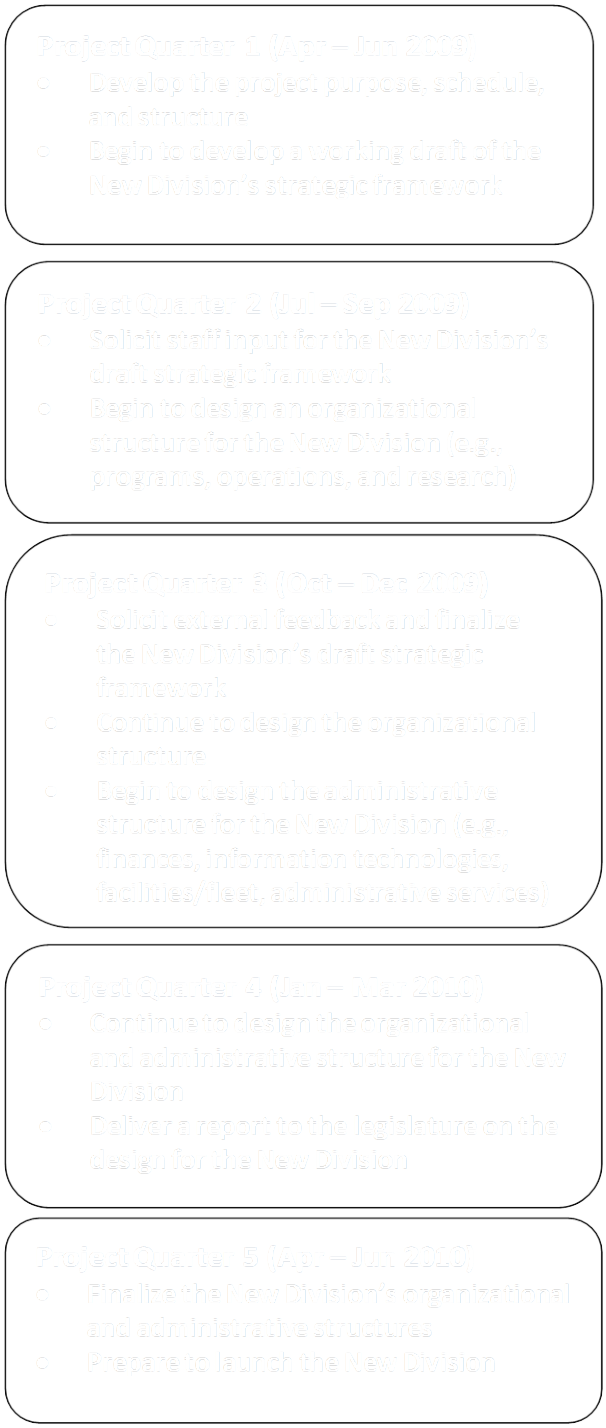
From start to finish, the New Division Project will last roughly 14 months (See Exhibit 3). Begun in April 2009, the DNR intends to launch the New Division in July 2010. After launch, the New Division will begin to implement the design, and it is anticipated to take three to five years for all the changes to be fully implemented.

The Project has been highly participatory in its structure and process. The Project has involved over 75 staff members from across the divisions and the Department in specific Project Teams.

The specific Project Teams include the following.

- **The Transformation Team** is organizing the project; acting as a liaison to other project teams; discussing and refining the design for change; and organizing staff and stakeholder focus group meetings.
- **The Executive Support Team** is ensuring consistent Department support and direction for the project.
- **The Strategic Planning Team** is developing tools and processes that stimulate strategic thinking in the Project and the Department.
- **The Programs Team** is analyzing existing programs and proposing a new integrated programmatic design.
- **The Research Team** is analyzing existing data collection and research activities and proposing a new integrated approach to information development and delivery.

Exhibit 3: Project Timeline



- **The Operations Team** is analyzing existing supervisory chains of command and is proposing a new integrated organizational structure.
- **The Human Resources Team** is working to ensure that the stress and strain for members of the two divisions that stem from organizational change are effectively addressed.
- **The Communications Team** is supporting the flow of information about the Project to potentially affected interests.
- **The Business Functions Team** has just begun its work of designing an integrated financial management system for the New Division.
- **The Information Technology Team** will design an integrated information technology system for the New Division.

Stakeholder and Staff Engagement

The DNR developed a draft strategic framework for the New Division with input from 15 internal and three external strategic thinking sessions, which were held throughout the state in July and August 2009. These ideas also reflect the collaborative effort of many DNR staff who are working on the New Division design as part of a specific Project Team.

The New Division Project held 12 stakeholder focus group meetings and five DNR staff meetings in October and November 2009. The focus group meetings were organized and facilitated by consultants from Minnesota Management and Budgets' Management Analysis and Development Division. The focus group meetings solicited input on draft design ideas from more than 70 external stakeholders. The DNR staff meetings (managed by DNR planners) were held throughout the state to solicit input about the draft design ideas and the New Division Project. Over 250 staff attended these meetings.

Implementation Expectation

The Department intends to finalize the design for the New Division by June of 2010. The New Division will begin to implement the new design in July 2010. The New Division will evaluate progress, learn from experience, and adjust the design as the unique skills and professional talents of staff focus on the New Division's new work.

Existing Division Structures: Ecological Resources and Waters

Ecological Resources Division Overview

The Division of Ecological Resources works to ensure that present and future Minnesotans benefit from healthy and resilient ecosystems. These benefits include opportunities for high-quality outdoor recreation, such as hunting, fishing, and wildlife observation. The division protects and manages a wide variety of aquatic and terrestrial wildlife species, native plants, and natural communities (e.g., prairies, wetlands). Ecological Resources addresses serious

threats to Minnesota's natural resources, such as contaminants, invasive species, and degradation of lakes, rivers and wetlands. The division conducts biological assessments, provides technical assistance to decision makers, and protects a diversity of land types and special features. The division's programs are organized around four core areas: Nongame & Rare Resources; Lakes & Rivers; Ecosystem Health; and Integrated Conservation Information.

Exhibit 4: Overview of Work in the Division of Ecological Resources

Nongame & Rare Resources	Lakes & Rivers	Ecosystem Health	Integrated Conservation Information
• MN County Biological Survey • Natural Heritage & Endangered Species • Nongame Wildlife • Wildlife Education & Project WILD • Prairie Stewardship • Scientific & Natural Areas • State Wildlife Action Plan • Landowner Incentive Program	• Aquatic Invertebrates • Aquatic Plants • Clean Water Legacy • Lake Habitat Protection • Mississippi River Management • Nongame Fish • Stream Habitat Protection	• Invasive Species: Aquatic & Terrestrial • Fish Contaminants • Natural Resource Damage Assessment	• Statewide Environmental Review • Natural Heritage Review • Data Services & Management • Communication, Outreach & Education • Planning & Coordination

Nongame & Rare Resources

Programs in this category protect and manage elements of Minnesota's biological diversity (e.g., nongame wildlife and native plant communities) with an emphasis on rare and declining resources. The FY 2010-2011 operating budget for this program area is $18.8 million, or 38% of the division's total operating budget.

The objectives of Nongame & Rare Resources programs include the following:

a. Manage and conserve Minnesota's rare species and wetland, forest, and prairie ecosystems so that native biodiversity and ecosystem services and functions are maintained into the future.

b. Preserve and perpetuate the ecological diversity of Minnesota's natural heritage* for scientific study and public edification, and as components of a healthy environment. (Note: "natural heritage" includes landforms; fossil remains; plant and animal communities; rare and endangered species; and significant biotic features and geological formations.)
c. Promote the conservation of native biological diversity and the management of natural communities.
d. Provide healthy, stable populations of all native wildlife species through the protection of habitat health.
e. Systematically collect and interpret data on the distribution and ecology of native plant communities, plants, and animals to provide a foundation for the conservation of Minnesota's biological diversity and functional landscapes.

The programs included in this work area include the following:

- **Nongame Wildlife—**works to protect some 500 species of Minnesota wildlife through special research and management projects (e.g., loon monitoring, trumpeter swan restoration project); habitat protection and restoration; outreach and education; and the wildlife grant program
- **Project WILD—**an interdisciplinary pre-K-12 conservation and environmental education program, Project WILD provides wildlife-based education training to teachers so they can help learners develop awareness, knowledge, skills and commitment to Minnesota wildlife
- **Wetland, Forest and Prairie Policy—**promotes ecosystem conservation by coordinating and implementing statewide division involvement in ecosystem regulatory and policy programs including forest policy, prairie policy, and wetland regulation and policy
- **State Wildlife Action Plan—**a collaborative strategic planning effort between DNR and other local, state and federal conservation organizations that sets priorities for managing Minnesota's 292 "species in greatest conservation need" (i.e., the plan directs federal funding for these species using State Wildlife Grants)
- **Natural Heritage & Endangered Species—**collects, manages, and interprets information about animals, native plants and plant communities to promote the wise stewardship of these resources (e.g., maintains the Natural Heritage Information System; administers endangered and threatened species permitting)
- **Minnesota County Biological Survey—**systematically collects, interprets, and delivers baseline data on the distribution and ecology of rare plants and animals, native plant communities, and functional landscapes so that decisions are made with these important natural features in mind
- **Scientific & Natural Areas (SNA)—**preserves natural features and rare resources of exceptional scientific and educational value through land protection, management, education, research and assistance to private landowners
- **Prairie Stewardship—**works with private land owners to protect the less-than-one percent of Minnesota's native prairie that remains (over half of which is located on

private land) through the Native Prairie Bank and Native Prairie Tax Exemption programs

- **Landowner Incentive Program—**implements a federal grant program from the USFWS that provides technical and financial assistance to private landowners who enhance habitat for target species on their land

Lakes & Rivers

Programs in this category conserve Minnesota's lakes, rivers, and shoreland resources with an emphasis on systems ecology, in-stream resources, aquatic plants, aquatic invertebrates, and nongame fish. The FY 2010-2011 operating budget for this program area is $7 million, or 14% of the division's total operating budget.

The objectives of the Lakes & Rivers programs include the following:

a. Protect the beneficial functions of aquatic vegetation while allowing riparian property owners to obtain reasonable access to public waters. Plan, implement, conduct, and direct research, inventory, and data management activities related to aquatic plant communities throughout the state.
b. Provide information that protects and enhances nongame fish populations, particularly those that are rare, so that it is more effectively and consistently included in natural resource and land management decisions and so that the public's knowledge and appreciation of nongame fish populations increases.
c. Assess aquatic invertebrate communities through collection, identification, and analysis of invertebrates; provide technical specialized information and expertise about aquatic ecosystem health based on research findings.
d. Understand river and stream systems; increase the appreciation and understanding of ecosystems; and promote the use of science in decisions affecting natural ecosystems for the benefit of present and future generations.
e. Provide information and technical assistance on key resources to river management entities and other decision-makers so that they can make more informed decisions concerning management of multiple-use, large river ecosystems.
f. Provide technical information and guidance to natural resource managers and local governments on lake and lakeshore protection that includes policy, protocol options, and permitting to safeguard critical fish and wildlife habitat.
g. Support the broad inter-agency effort to restore and preserve the quality of Minnesota's aquatic resources.

The programs included in this work area include the following:

- **Stream Habitat Protection—**gathers and manages information on Minnesota's 90,000 miles of rivers and streams, and provides technical assistance for stream restoration projects that benefit recreation, fish and wildlife habitat, and economic and ecological functions

- **Clean Water Legacy—**works with the Minnesota Pollution Control Agency (MPCA) to insure that all of Minnesota's lakes, streams, and wetlands have water quality conditions that are sufficient to provide for healthy fish, wildlife and native plant communities
- **Aquatic Plants & Invertebrates —**provides a variety of services to support the continuing vitality of aquatic plants and animals through programs (e.g., aquatic plant surveys, aquatic invertebrate lab), publications (e.g., lake vegetation reports), and other resources (e.g., statewide mussel survey)
- **Nongame Fish—**collects information on nongame fish and provides recommendations to protect and restore fish communities and their habitats
- **Lake Habitat Protection—**conducts shoreland surveys to identify species in greatest conservation need and sensitive lakeshore habitats; provides technical assistance for lake and stream surveys, hatchery monitoring, and other aquatic habitat assessment projects statewide; and manages the lake aeration program
- **Mississippi River Long-Term Resource Monitoring—**a 20-year-old, federally funded and coordinated effort to provide long-term trend information (e.g., water quality, aquatic vegetation, fish, macroinvertebrates) to inform management of the Upper Mississippi River (the Lake City field station is one of six along the river from Minnesota south to Missouri)

Ecosystem Health

Programs in this category monitor, assess, and reduce the impacts of threats to Minnesota's natural resources from harmful invasive species, contaminants, fish diseases, and hazardous material spills. The FY 2010-2011 operating budget for this program area is $13.5 million, or 28% of the division's total operating budget.

The objectives of the programs in the Ecosystem Health work area include the following:

a. Prevent introductions of new invasive species into Minnesota, prevent the spread of invasive species, and reduce the impacts from invasive species where they are already established.
b. Support critical human health and environmental protection programs by providing information for fish consumption advice; programs on mercury cycling, trend analysis, and water-quality standards development; and analysis of potential harm from newly identified bio-accumulative pollutants (in partnership with the Minnesota Department of Health, MDH; the MPCA; and the Minnesota Department of Agriculture, MDA).
c. Identify the causes of mortality to fish or wildlife populations, help coordinate spill response efforts and develop/update contingency plans, work cooperatively with MPCA to compensate Minnesota for the natural resources and the services that are lost or injured by spills involving the release of oil or hazardous substances; and help coordinate implementation of restoration projects to offset the lost or injured services.

The programs included in this work area include the following:

- **Aquatic and Terrestrial Invasive Species—**prevents introductions of new, and the spread of existing, invasive species in Minnesota by preparing long-range plans for invasives management; adopting rules to classify invasives for regulatory purposes; implementing management activities to reduce the impacts caused by invasives ; and conducting public awareness activities
- **Fish Contaminants—**determines the levels and distribution of mercury and polychlorinated biphenyls (PCBs) in Minnesota fish populations by developing an annual monitoring plan that specifies which water bodies to sample and which fish and contaminants to analyze
- **Natural Resource Damage Assessment—**identifies the causes of mortality to fish or wildlife populations, coordinates spill response efforts and development of contingency plans, works cooperatively with MPCA to compensate Minnesota for the natural resources and their services that are lost or injured by spills involving the release of oil or a hazardous substance, and coordinates implementation of restoration projects to offset the lost or injured services

Integrated Conservation Information

Programs in this category manage an up-to-date information system; interpret ecological data; develop management tools; deliver educational products to targeted audiences that inform land use planning; guide resource decisions; and influence long-term conservation of Minnesota's natural resources. The FY 2010-2011 operating budget for this program area is $9.8 million, or 20% of the division's total operating budget.

The objectives of the programs in the Integrated Conservation Information work area include the following:

a. Advance the understanding and implementation of the Department's strategic vision for sustaining the state's natural resources by developing products and activities to show how connections among ecological, economic, and social values form a basis for building sustainable communities.
b. Prepare environmental documents for public review to enhance understanding of the environmental consequences of proposed projects such as housing developments, water control structures, mining operations, and feedlots.
c. Provide strategic planning, meeting facilitation, and stakeholder engagement services focused on ecological resource management.
d. Ensure that staff has the necessary technology skills; applications and technology tools; data; and information technology support to effectively carry out the mission of the division.

The programs included in this work area include the following:

- **Environmental Review—**provides information to project proposers and government decision makers for a wide variety of public and private development projects by reviewing environmental documents and permit applications, soliciting resource impact information from other DNR divisions, and making recommendations for project modifications that will better conserve natural resources
- **Natural Heritage Environmental Review—**provides information on Minnesota's rare plants, animals, native plant communities, and other rare features through the Natural Heritage Information System, a continually updated database that provides the most complete source of data on Minnesota's rare or unique species
- **Strategic Support Services—**ensures that the division has appropriate funding, information technology, data delivery, strategic planning and public participation support to carry out its mission and support its staff; and coordinates the development and delivery of natural resource information and products to provide technical assistance to resource managers in the public, private, and non-profit sectors

Ecological Resources Organization & Administration

The Division of Ecological Resources was established in 2000 when the DNR created three divisions from the three sections of the former Division of Fish and Wildlife. The Section of Ecological Services had provided statewide program services to the division and department, with most staff located in the central office, so it did not have an extensive statewide field structure like its sister sections of Fisheries and Wildlife.

Becoming an independent division has required evolving the organizational structure of Ecological Resources to strengthen its field presence and representation on regional management teams. In 2006, four Ecological Resources regional manager positions were established. Since that time, the division has regionalized most of its programs to provide better services at the regional level, and has been in the process of enhancing its area level presence.

Ecological Resources Funding

The Division's Operating Budget for the Fiscal Year 2010-2011 biennium is $49.1 million, which comes from the following sources:

Source	$millions	Percentage
General Fund	$12.4	25.3%
Natural Resources Fund	$8.0	16.3%
Game & Fish Fund	$7.9	16.1%
Clean Water Fund	$1.0	2.0%
Special Revenue Fund	$11.5	23.4%
Federal Fund	$5.0	10.2%
Environmental Trust Fund	$3.3	6.7%

Waters Division Overview

The division has been in existence in various forms since the 1930s. The most recent change was in 1976 when the Division of Waters, Soils, and Minerals was split to form two separate Divisions of Minerals and Waters.

The mission of the Division of Waters is to work with decision-makers to ensure the future of Minnesota's water resources. As such, the division works to balance the conservation and preservation of water and related land resources with the desire to utilize water and related land resources for economic benefit and with the need to protect public health and safety. The Division of Waters carries out this mission by monitoring the state's water resources and climatic conditions (e.g., precipitation); providing data, technical assistance, and decision-support tools to local, state and federal decision-makers; setting minimum standards and administering permitting and other regulatory programs concerning public waters; providing input and recommendations on ground and surface water planning initiatives; contributing hydrologic expertise to the environmental review of various kinds of development projects; and conducting outreach and education activities that promote water resources stewardship and protection. The division's core priorities in trying to manage these competing demands fall into three categories: Public Waters Protection, Water Supply Management, and Technical Information for Decision-Making.

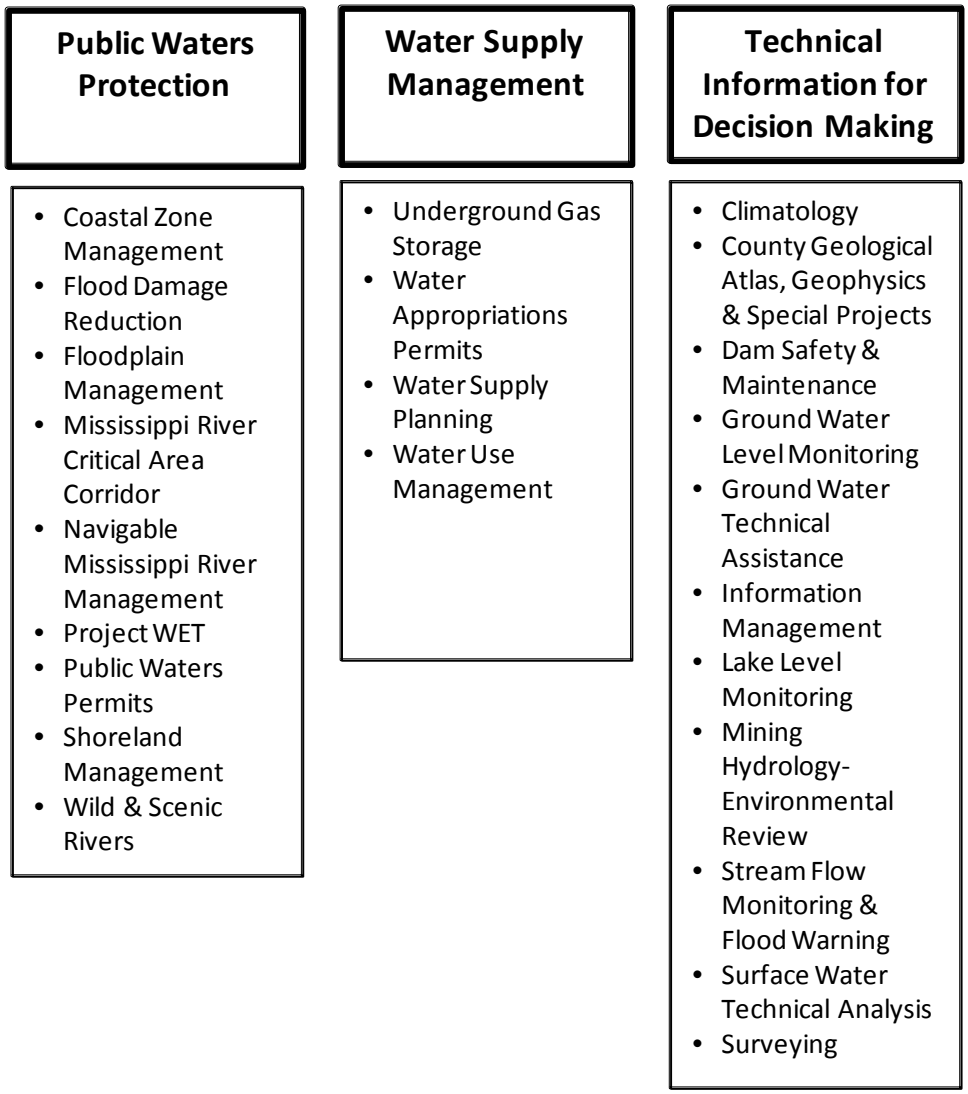
Public Waters Protection

Programs in this work area help manage and protect the state's public water resources to promote resource conservation and sustainability, as well as to protect Minnesota citizens from the changing conditions of our water resources (e.g., flood, drought). The FY 2010-2011 operating budget for this program area is $16.3 million, or 35% of the division's total operating budget.

The objectives of the Public Waters Protection work area include the following:

a. Educate stakeholders on the factors affecting the condition of public water resources.
b. Provide data to local governments that focuses attention on the effects to public waters of local land use decisions.
c. Focus water resource management on the impacts to public waters from activities conducted in the whole watershed rather than just those occurring in lakes, streams and wetlands.
d. Analyze public waters protection programs to determine which level of government will most effectively provide oversight to the activities affecting public waters.
e. Continue to focus the state administration of water resource protection programs on those activities best managed at the state level.

Exhibit 5: Overview of Work in the Division of Waters



The programs included in this work area include the following:

- **Public Waters Permits—**manages activities that alter the course, current or cross-section of public waters in order to protect public water resources of the state
- **Floodplain Management—**prevents loss of life and reduces property damages due to flooding by promoting state and FEMA floodplain regulations, coordinating the National Flood Insurance Program, and improving the quality of floodplain mapping
- **Flood Damage Reduction—**provides technical and financial assistance to local governmental units for conducting flood damage reduction studies and planning and implementing flood damage reduction measures

- **Shoreland Management—**provides technical assistance and the statewide minimum standards that local governmental units must adopt into their land use controls to provide for the orderly development and protection of Minnesota's shorelands (both rivers and lakes)
- **Mississippi River Critical Area Corridor—**establishes and oversees local implementation of standards to protect the biological, aesthetic, transportation, and other values of the Mississippi River corridor in the Twin Cities metropolitan area
- **Wild and Scenic Rivers—**establishes standards for and oversees the selection, classification, management, and control of wild, scenic, and recreational rivers and their land use districts, including the federally designated Lower St. Croix National Recreational Riverway
- **Navigable Mississippi River Management—**coordinates DNR and state involvement with interstate and interagency issues related to commercial navigation on the Upper Mississippi River System
- **Project WET (Water Education for Teachers)—**provides training, materials, and support to classroom (pre-K – 12) and other educators who want to teach hands-on, interactive lessons that improve understanding and increase stewardship of Minnesota's water resources
- **Coastal Zone Management—**provides coordination and federal grant assistance to local partners to preserve, protect, develop, restore and enhance coastal resources along and around Lake Superior

Water Supply Management

Programs in this work area help protect surface and ground water resources and manage the use of these resources in a manner that ensures current and future needs can be met. The FY 2010-2011 operating budget for this program area is $6.9 million, or 15% of the division's total operating budget.

The objectives of the Water Supply Management work area include the following:

a. Incorporate groundwater sustainability into Minnesota laws and rules so improved protection standards can be implemented under the water appropriation permitting process.
b. Identify and set protection standards for monitoring all aquifers and groundwater resources that are at risk of overuse or contamination.
c. Develop greater public understanding of surface waters; aquifer systems; surface water-ground water interactions; and aquifer limitations in sensitive areas.
d. Manage the appropriation permit program to insure that necessary data is collected and the program is effectively implemented in areas where water resource conflicts exist.
e. Coordinate with local units of government to identify and protect at-risk water supply sources; implement aquifer sustainability standards; and support water conservation planning and water supply decision making.

The programs included in this work area include the following:

- **Water Appropriation Permits—**manages and protects surface and ground water resources and their use to ensure that current and future water needs are met
- **Water Supply Planning—**provides public water suppliers with technical guidance to address projected water demands, to encourage water conservation strategies, and to identify potential water sources for future needs
- **Water Use Management—**collects and analyzes water use data; guides the resolution of water well interferences; coordinates with other agencies on water use issues; and provides water use-related information to the public
- **Underground Gas Storage—**monitors the limestone formation in southern Minnesota, in which a local energy company stores a large volume of natural gas, to ensure that gas is not leaking into water supplies

Technical Information for Decision Making

Programs in this work area partner with local, state, and federal entities to improve water and land use decisions by collecting, managing, analyzing, and disseminating the hydrologic data needed for making good decisions. The FY 2010-2011 operating budget for this program area is $23.0 million, or 50% of the division's total operating budget.

The objectives of the Technical Information work area include the following:

a. Analyze the effectiveness of data collection programs to ensure that they meet priority needs and involve appropriate field staff in data collection and analysis.
b. Gather data efficiently by using the most cost-efficient and effective equipment and processes available and partnering with other agencies and stakeholders whenever possible.
c. Ensure that existing and new data collection and analysis support work are covered under the core priorities and provide summary information at a watershed scale, when appropriate.
d. Market water resources data and information products in a manner that facilitates better understanding of water resources and generates wider support for water resource protection activities.
e. Increase dialog, coordination and training opportunities between DNR and local government units to ensure mutual understanding of issues and concerns related to water resources and their management.

The programs included in this work area include the following:

- **Dam Safety and Maintenance—**protects public safety by regulating dam construction, operation, and maintenance; maintains the public benefits provided by properly functioning dams; and restores river environments by removing obsolete dams or adding rock rapids at low-head river dams

- **Stream Flow Monitoring and Flood Warning—**establishes monitoring sites, collects data, and disseminates information on stream flows in order to establish baselines, provide flood warnings, and manage surface water appropriations
- **Surface Water Technical Analysis—**analyzes water level and flow problems using computer models; delineates watershed boundaries using digital elevation models and GIS tools; provides technical support to Department team projects; and provides technical training for field hydrologists
- **Surveying—**collects and organizes data, and provides information that is needed to effectively carry out DNR statutory responsibilities and water resource management programs, including surveying; determining ordinary high water (OHW) levels; providing drafting and graphics services; and developing technical support and information
- **Lake Level Monitoring—**maintains a statewide water information system to gather, process and distribute data on lake levels and other lake characteristics
- **Climatology—**brings precipitation data (including snow) from a variety of sources together into a single resource, so researchers and resource managers can investigate the impacts of precipitation on physical and biological processes and socioeconomic activities
- **County Geological Atlas, Geophysics, Special Projects—**works with the Minnesota Geological Survey and local county sponsors to provide coordinated reports of geology, hydrogeology, and pollution sensitivity that impact such things as groundwater supply, the siting of wells, and identification of water feeding springs
- **Ground Water Level Monitoring—**collects baseline data on ground water level fluctuations and trends, which are used to investigate the impacts of ground water pumping; to analyze ground water – surface water interactions; and to evaluate appropriation permit applications
- **Ground Water Technical Analysis—**manages the state's aquifers sustainably; conducts studies of ground water availability and ground water supply; conducts studies of ground water – surface water interactions; and investigates disputes concerning ground water use
- **Mining Hydrology-Environmental Review—**provides hydrologic and environmental review for proposed new mining projects and for modifications to existing mining operations
- **Information Management—**provides information in an accessible, understandable, and useable form through computer hardware and software acquisition and support and database and GIS development

Waters Organization & Administration

The Division of Waters is currently organized into two sections in the central office, with four regions and 30 areas providing water and related land resource management products and

services to individuals, local governments, businesses, and a variety of interest groups throughout the state.

The two sections of the central office are the Water Management Section and the Technical Resources Section. The Water Management Section, supervised by the Assistant Director, is responsible for developing policy and providing program guidance and staff support for all of the water permit and land use management programs that are implemented by the division. Water permit programs include water appropriation permits, water use management, water supply plans, and public waters permits. The land use management programs include the Floodplain Management Program and its integral components of floodplain analysis, mapping and FEMA coordination; the Shoreland Management Program; the Wild and Scenic Rivers Program; and the Critical Area Program.

The Technical Resources Section, supervised by the Section Administrator, is responsible for most of the basic resource data collection and monitoring; surveying; technical analysis; engineering; and information management activities of the division. These activities include establishing new gauging sites for streams, lakes, groundwater, and precipitation; manually or electronically collecting the data from these sites; establishing ordinary high water elevations for public waters; conducting technical analysis for surface and ground water issues; mapping and analyzing aquifer characteristics and boundaries; permitting and inspecting dams; mapping watersheds; developing database and GIS tools for analyzing resources; and publishing water resources information in a variety of media.

The regional and area hydrologists are responsible for actual program delivery within their respective regions and areas. They serve as the first point of contact for all of the Waters programs at the local level. There are also some specialists that are located in various regional or area offices to address specific water resource management needs (e.g., mining).

This structure has provided the Division of Waters with strong program and policy development at the central office and an extensive network of localized program delivery out of the regional and area offices. Much of the orientation of Water's regulatory programs has been at the community level (e.g., minimum standards for local zoning ordinances) or at the individual landowner or business level (e.g., public waters permits). While these approaches have a strong basis in law and in rule, they sometimes hinder the Department's ability to adequately address cumulative impacts to our water resources, because establishing appropriate standards for cumulative impacts is difficult.

The Division of Waters has strong data collection and monitoring programs for a wide variety of water resources characteristics. Unfortunately, the information systems needed to manage, analyze, and interpret all of this information have lagged behind our ability to collect the information. The division's information systems and data base capabilities are beginning to catch up, which will greatly improve our analysis and interpretation capabilities.

Waters Funding

The Division's Operating Budget for Fiscal Year 2010-2011 biennium is $46.2 million, which is derived from the following sources:

Source	$millions	Percentage
General fund	$22.8	49.3%
Natural Resources Fund	$0.6	1.3%
Clean Water Fund	$13.5	29.2%
Special Revenue Fund	$0.3	0.6%
Federal Fund	$5.7	12.5%
Environmental Trust Fund	$3.3	7.1%

New Division Overview

From its conception, the integration of work from the existing divisions of Ecological Resources and Waters was envisioned to be much greater than a merger of two divisions into one functioning work unit within the DNR. The very explicit intention, from the outset, has been to use this New Division to help facilitate systems thinking throughout the entire Department. For more than a decade, researchers and policy analysts have recognized that one of the fundamental challenges to systems-oriented natural resources management is the very structure of our natural resources agencies and partnerships. In short, natural resource agencies were created around single-species/single problem management strategies or the special interests of key constituents; organized along traditional programmatic chains of command; and lacking in the organizational feedback loops needed to meet the emerging cross-disciplinary demands and challenges of resource management.

Resource agencies have been structured not so much to be responsive to new learning, but to maintain control over resources, information and people … adaptive organizations construct networks for information sharing, train and encourage messengers, reward bridge builders, and welcome new learning.

Grumbine 1997

Many of today's most complex, non-linear natural resource problems don't conform easily to traditional approaches. For example, mapping of a rural groundwater aquifer might lead to its increased use for drinking water or industrial use, which might in turn complicate protection efforts for a rare species in a nearby calcareous fen. On the other hand, realigning a stream to restore the natural geomorphic processes that improve water quality could create unintended side benefits for invertebrate, fish and bird populations or for flood damage mitigation. In these circumstances, and hundreds of other like them, it is

imperative that work units within and across governmental agencies be well coordinated and adaptive.

Therefore, the DNR has set out to create this New Division using design principles that will maximize our ability to be adaptive to the current and emerging trends facing natural resources management in the Twenty-First Century. To initiate this Department-wide transformation toward systems management, the New Division will focus its attention on our most threatened natural resources: water, biodiversity, and ecosystem services. The essential outcome of this integrated management approach will be "Healthy Watersheds throughout Minnesota" (see pg. 8). By focusing our work around the central vision of "Healthy Watersheds," we believe the DNR can deliver even stronger protections for biodiversity and water resources (both ground and surface) than we are currently structured to provide, because together we can also shape our management goals and strategies around protection and maintenance of vital ecosystem services—the natural processes that provide benefits to humans, such as water purification, biodiversity maintenance, flood mitigation, and soil fertility.

Mission

With this integrated, systems approach at the forefront of our minds, the New Division will not have its own, stand-alone mission, as DNR divisions have sometimes developed in the past. Rather, the New Division has instead identified the unique niches within the existing Department mission (p. 6, Exhibit 1) that the New Division will fill.

The New Division will fill a critical Conservation Opportunities Niche**,** where the division will work with others to protect, restore and sustain Minnesota's inter-related watershed and aquifer functions; biodiversity and its adaptive potential; and the ecosystem benefits water and biodiversity provide for people, plants, and animals. The New Division will fill this watershed conservation niche by integrating resource inventory, monitoring, interpretation, and protection strategies across watersheds—emphasizing the connections between areas of key expertise in the New Division including, shorelands, wetlands, native prairies, rare wildlife, native plants, streams, lakes, aquifers, floodplains, and invasive species.

While regulating and owning will still be critical aspects of the conservation equation, the New Division will place renewed emphasis on engaging our conservation partners (from individual landowners to large public and corporate landowners) to manage Minnesota's key resources across large contiguous landscapes; to develop integrated protection, restoration, and management incentives around system improvement benchmarks; and to support the implementation of certification and other performance-based management systems across ownerships. Where regulation is necessary (as it certainly will be), the New Division will move toward regulating whole resources and addressing cumulative impacts (not just individual projects or activities); integrating the development, delivery, and enforcement of both land and water regulations; and collaborating with the implementing units of government to enhance compliance with regulations through technical assistance, incentives, and education.

The New Division will also fill a Recreational Opportunities Niche**,** where the New Division will work with others to provide information, education, and outdoor recreation opportunities that enhance public appreciation of Minnesota's water, biodiversity, and the benefits they provide. The New Division will increase awareness about the interconnections between land and water ecosystems through strategic combinations of experiential water and wildlife education programs and high-quality outdoor recreation opportunities on public lands throughout the state. Opportunities to enrich these connections for Minnesota citizens abound, with collaborative potential through green infrastructure planning in urban areas and high-growth corridors, and with numerous opportunities to collaborate with other DNR divisions.

Finally, the New Division will fill a Commercial Opportunities Niche, where the New Division will work with others to support sustainable uses of natural resources by providing excellent information and decision support tools that will help minimize the negative impacts of invasive species; support sustainable natural resource economies (e.g., sustainable use of water by commercial and residential interests); and help achieve other core DNR objectives, such as excellent fishing and hunting, and sustainable commercial forestry. The New Division's key role will be to support local planning efforts by bringing relevant natural resources data, pertinent research, and practical tools to the planning table in an integrated, accessible fashion. The New Division will increase awareness of the interconnections between land and water ecosystems by engaging governmental, nonprofit, private sector, and citizen groups in targeted discussions about which kinds of local decisions will best foster sustainable natural resources economies.

Where Department review of development projects is concerned, the New Division will seek to integrate permitting and review processes, which will move the Department and our local partners toward a whole-systems view of individual project proposals, as well as evaluation and mitigation of the cumulative impacts to communities from various types of development projects. The division will explore and support new ways to incentivize low-impact development and work with local communities to ensure that local, socially relevant concerns and issues are appropriately addressed in comprehensive planning and environmental review processes.

Guiding Principles

In order for the New Division to effectively fill these mission niches and to be truly adaptive and systems-oriented in its approach to "Healthy Watersheds," the DNR has identified eight guiding principles that will be fundamental to the way the New Division operates. While some of these principles already guide the way DNR currently conducts its business, the creation of this New Division provides an opportunity for the Department to articulate and implement these principles in new and enhanced ways, with a focus on a systems approach that supports our vision of "Healthy Watersheds throughout Minnesota."

First and foremost, the New Division will ***support the DNR mission with clearly articulated division objectives*** that explore, identify, and implement the most effective strategies for

achieving Department outcomes. By clearly articulating our niches within the DNR mission, the New Division can identify its conservation objectives and set meaningful goals to benchmark progress toward achieving the outcomes identified in existing strategic management plans. Toward that end, the New Division will fully embrace the DNR mission and goals as articulated in *A Strategic Conservation Agenda 2009-2013*, identify the most effective leverage points for achieving the desired goals therein, and refocus its staff and resources toward meeting those goals.

New Division Guiding Principles

Support the DNR mission

Enhance collaboration

Integrate whenever appropriate

Use a systems approach

Be a community-engaged organization

Maintain a motivated work force

Reach out to others

Adapt as an organization

Second, the New Division will seek to ***enhance our collaboration*** with other DNR divisions, other agencies, local governments, organizations, and citizens. No one organization can realize the vision of "Healthy Watersheds throughout Minnesota." Successful collaboration will require excellent communication and conflict management skills, stakeholder engagement strategies, and most importantly, courageous leadership and creative followership. Therefore, the New Division will foster stronger coordination with other state agencies and programs involved in watershed habitat issues; establish new levels of coordination with local governments (e.g., cities, counties, conservation districts, and watershed districts) to ensure that these governance organizations have the information and support needed for making sustainable land use decisions; and encourage meaningful engagement from Minnesota citizens, businesses, corporations, and nonprofit organizations to help us achieve "Healthy Watersheds."

Third, whenever appropriate the New Division will ***integrate programs, information, and organizational structures*** to ensure that the right resources are available to address problems, to take advantage of emerging opportunities, and to overcome barriers to achieving "Healthy Watersheds." The New Division will strive for seamlessness—so that eventually there will be no distinction between members of the former Ecological Resources and Waters divisions. Over time, many staff will be cross-trained to have working knowledge of ecology, water resources, and the multiple interfaces that can enhance their protection. The New Division will also support the professional development of specialists who can bring cutting-edge science to DNR work. The New Division will collaborate extensively with other DNR divisions and programs so that the agency speaks with one voice and interacts more effectively both internally and with our external partners. The New Division will ultimately be structured to deliver project review, permitting, data analysis, and conservation assistance to local communities, with feedback loops that foster continuous improvement in the New Division's functions.

Fourth, the New Division will ***use a systems approach for problem identification, analysis, and management action***. Holistic solutions will arise from a systemic approach, developed and implemented at multiple scales and system hierarchies (e.g., individual – population – community scales; specific place– sub-watershed – watershed – basin scales; region – division – department scales). The New Division will develop frameworks and models to enhance understanding and application of a systems approach to "Healthy Watersheds"; examine groundwater-surface water interactions; identify and address cumulative effects of land use decisions; and use watersheds to engage a systems approach.

Fifth, the New Division will ***be truly adaptive as an organization*** by continually monitoring progress toward its goals; utilizing innovative tools and technology; and changing our strategies as needed. While increased opportunities for staff and stakeholders to exchange ideas and to learn from one another will nourish innovation and creativity, the New Division will regularly re-examine our niches within the Department mission to ensure that we are making progress toward objectives and evolving as needed to achieve results. The New Division will be structured so DNR can provide for rapid responses to problems when they arise and adapt to address public needs (e.g., implementing new technologies to improve work efficiencies).

Sixth, the New Division will ***be a community-engaged organization*** that sustains strong relationships with local stakeholders, organizations, communities, and decision makers. The New Division must develop and maintain strong relationships that will tolerate the stress of sometimes unpopular, but necessary resource management decisions. As such, the New Division will be a community-based and community-engaged organization, providing the Department with additional key field contacts within communities that can adequately support sustainable land use and water resources decision making.

Seventh, the New Division will ***engage others with communication strategies and educational experiences*** that foster understanding, stewardship, and appreciation for Minnesota's natural resources. The New Division will have a diverse outreach and engagement strategy that includes specialists and well-trained field and programs staff. The New Division's engagement strategy will move beyond one-way agency communications to encourage more meaningful dialog between the DNR and our stakeholders—from our very youngest citizens to our most influential decision- and policy-makers. In order to be successful, this strategy must help Minnesotans reach a shared understanding of the complex ecological relationships and hydrologic systems that underlie difficult management decisions; increase public trust in DNR's integrated, systems approach to "Healthy Watersheds"; and foster the next generation's stewardship ethics and participation in outdoor recreation experiences.

Finally, the New Division will ***maintain a motivated work force*** by rewarding excellence, recruiting diverse staff, and providing professional training that develops the skill sets we need to achieve our goals. Workloads will be achievable with a geographic distribution of services that increases efficiency and effectiveness in communities. The New Division will embrace a serious commitment to training and recruitment of staff so needed skill sets are available throughout the organization (e.g., cross training, technology, economics, communication,

marketing, information sharing, leadership). Perhaps most importantly, the New Division leadership will be supportive and sensitive to our staff as we reallocate resources and change programs to meet the goals of the New Division.

Protecting Species, Groundwater, and Surface Waters of the State

The legislation that calls for this report also requires that it include "…projected outcomes and goals for protecting species in all ecological provinces and the quantity and quality of groundwater and surface water of the state, including but not limited to, protecting rare and endangered species, native prairies, and wetlands …". The following sections of the report address these topics and are intended to fulfill this requirement.

Protecting Biological Diversity in All Ecological Subsections

The New Division intends to lead the DNR's efforts to improve Minnesota's water, biodiversity, and ecosystem services through an integrated, collaborative, and community-based approach that focuses on achieving "Healthy Watersheds throughout Minnesota."

"Healthy Watersheds" will ensure that biodiversity at all levels (genetic, species, habitat, and ecosystem) is maintained. We cannot reach the goal of well-functioning ecosystems, which includes sustainable levels of biodiversity, without clean abundant water supplies.

The importance of cross-disciplinary conservation strategies cannot be more evident than in the prairie-wetland complexes of western Minnesota. Conservation of the less-than-one percent of Minnesota's remaining native prairies and their associated prairie wetlands, will continue to be a high priority for the New Division and the DNR. Prairies support numerous species of rare plants and wildlife and are important for comprehensive, watershed-wide management, serving as buffers to the adjacent waterways by improving water quality and controlling water quantity. Prairie wetlands provide flood and erosion control; serve as natural filters; recharge groundwater sources; and provide habitat for fish, wildlife, and threatened and endangered species. The conservation and management of all the components of prairie landscapes is critical to terrestrial and aquatic ecosystem quality.

Several protections and directives are in place within the State of Minnesota to protect the rich biological diversity that characterizes Minnesota and forms the basis of our natural resources economies and unique quality of life. With leadership from the New Division, the DNR will work collaboratively *across all of its work units* to ensure that Minnesota's biodiversity is maintained and enhanced. The New Division will continue and build upon the following biodiversity protections already in place in Minnesota.

Minnesota Environmental Policy Act (MEPA) establishes the State's responsibilities for protecting biodiversity in Minnesota Statutes 2004, Chapter 116D:

> Subd. 2. State responsibilities. In order to carry out the policy set forth in Laws 1973, chapter 412, it is the continuing responsibility of the state government to use all practicable means, consistent with other essential considerations of state policy, to improve and coordinate state plans, functions, programs and resources to the end that the state may:
>
> [key points listed in this subdivision that directly pertain to biodiversity]
>
> (3) discourage ecologically unsound aspects of population, economic and technological growth, and develop and implement a policy such that growth occurs only in an environmentally acceptable manner;
>
> (4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever practicable, an environment that supports diversity, and variety of individual choice;
>
> (7) define, designate, and protect environmentally sensitive areas;
>
> (10) preserve important existing natural habitats of rare and endangered species of plants, wildlife, and fish, and provide for the wise use of our remaining areas of natural habitation, including necessary protective measures where appropriate

Minnesota's Endangered Species Statute (Minnesota Statutes, Section 84.0895) as codified requires the DNR to adopt rules designating plant and animal species meeting the statutory definitions of endangered, threatened, or species of special concern. The state Endangered Species Statute also authorizes the DNR to adopt rules that regulate treatment, take, import, transport, or sale of any portion of an endangered or threatened species. The New Division will continue to meet these statutory requirements, and be better positioned to manage critical habitats using watersheds as a frame of reference.

Minnesota's State Wildlife Action Plan identifies wildlife species in greatest conservation need, their associated habitats, and priority conservation actions to address the conservation of these resources (MN DNR 2006). Wetlands and prairies are both designated in the plan as key habitats on which to focus conservation efforts. Minnesota receives more than $1 million annually in State Wildlife Grant funds to implement priority conservation actions in the plan. These federal funds must be matched 1:1, for a total direct implementation effort of more than $2 million annually focused on rare wildlife and habitats. The State Wildlife Action Plan has also been used to guide investment of other programs within the Division of Ecological Resources and will continue to in the New Division. The United States Fish and Wildlife Service (USFWS) monitors the allocation of these funds to ensure that they are used to implement the State Wildlife Action Plan.

Minnesota's County Biological Survey (MCBS) systematically collects, interprets, and delivers baseline data on the distribution and ecology of rare plants, rare animals, native plant communities, and functional landscapes. The survey is underway or complete in most Minnesota counties. Rare species, communities, and natural features are entered into the DNR's *Natural Heritage Information System (NHIS),* which is continually updated as new information becomes available. NHIS is the most complete source of data on Minnesota's rare or otherwise significant species, native plant communities, and other natural features. The data from these two tools will continue to be used by the New Division for land conservation programs, environmental review, local planning efforts, land management decision making, ecological research, and education.

The Minnesota County Atlas - Regional Assessment Program develops County Geologic Atlases and Regional Hydrogeologic Assessments. It is a joint program with the Minnesota Geological Survey (MGS). Together with MGS, the County Atlas - Regional Assessment Program prepares map-based reports of counties (County Geologic Atlases) and multicounty regions (Regional Hydrogeologic Assessments) to convey geologic and hydrogeologic information and interpretations to governmental units at all levels, but particularly to local governments. This information and these interpretations contribute to sound planning and management of the state's land and water resources, in particular calcareous fens in prairie landscapes.

While ***Minnesota's Wetland Conservation Act (WCA)*** is administered by local units of government with oversight from the Board of Water and Soil Resources, the New Division will continue to regulate all work done below the ordinary high water level on designated type 3, 4, and 5 public waters wetlands (as defined in USFWS Circular No. 39, 1971 edition) that are 10 acres or more in size and located in unincorporated areas, or that are 2.5 acres or more in size and located in incorporated areas (Minnesota Statutes Section 103G.005, subd. 17b, Wetland Type). The WCA (Minnesota Rules 8420) establishes regulatory provisions

A) to achieve no net loss in the quantity, quality, and biological diversity of Minnesota's existing wetlands;
B) to increase the quantity, quality, and biological diversity of Minnesota's wetlands by restoring or enhancing diminished or drained wetlands;
C) to avoid direct or indirect impacts from activities that destroy or diminish the quantity, quality, and biological diversity of wetlands; and
D) to replace wetland values where avoidance of activity is not feasible and prudent.

The DNR Wetland Programs were established to address the WCA regulatory provisions by coordinating the review of wetland replacement plans; providing maps and technical assistance to local governments and landowners for wetland mitigation; and promoting wetland conservation by providing science-based recommendations to the state's development of state wetland regulations, programs, and policies. A group of state and federal agencies have developed a comprehensive wetland assessment, monitoring, and mapping strategy (Minnesota Comprehensive Wetland Assessment, Monitoring and Mapping Strategy Steering Committee 2006), for which the New Division will continue to oversee several core

components: 1) monitoring wetland status and trends ; 2) updating the national wetland inventory; 3) mapping public waters wetlands and permitting activities below their ordinary high water level; and 4) developing the statewide comprehensive wetlands management plan (MN DNR 1997).

The ***DNR Prairie Protection Strategies*** include the Native Prairie Bank and Native Prairie Tax Exemption programs. The Minnesota state legislature created the Native Prairie Bank program in 1987 as part of the Reinvest in Minnesota legislation. This program allows landowners to protect native prairie on their property through a conservation easement with the DNR. As further incentive for protecting native prairies, the DNR can also enroll the most high-quality of these rare landscapes in a program that exempts the landowner from property taxes on native prairies. The New Division will continue to place emphasis on protecting and managing these native prairie gems as integral parts of larger landscape matrixes.

Protecting Ground and Surface Waters

The DNR believes that the sustainability of Minnesota's ground and surface waters will depend on the unified and comprehensive vision of "Healthy Watersheds throughout Minnesota" promoted by the New Division Project. The Division of Waters submitted a report to the legislature entitled, "Long-Term Protection of the States Surface Water and Groundwater Resources" dated January 2010. The present report will defer to that report for a comprehensive treatment of the long-term protection recommendations for the state's surface water and groundwater resources and the funding of programs necessary to provide for that protection. Here, we reiterate some of the main points from that report, and address how we believe the New Division will be better positioned to deliver on the report's recommendations.

As the report asserts, Minnesota has two powerful water policy laws (Minn. Stat., sect. 103A.205, promoting the retention of rainwater in the areas where it falls; and Minn. Stat., sect. 103A.206, asserting that land occupiers have the responsibility to implement practices that conserve the soil and water resources of the state), which if fully implemented with existing laws and rules, will address many of our water sustainability problems. In addition, groundwater quality protection policy is expressed in Minnesota Statutes Chapter 103H (degradation prevention), while the policy on groundwater and surface water sustainability is contained in Minnesota Statutes 103G.265 (to meet long-range seasonal requirements). Finally, in 2009 the legislature also defined "water sustainability" in terms of managing activities in a manner that does not harm ecosystems, degrade water quality, nor compromise the ability of future generations to meet their own needs.

To meet these challenges, the report states, "we must move forward in coordinated ways to manage the health of both our lands and waters as a system. It will take a common vision, shared goals and integrated efforts among federal, state and local governments to begin effective implementation strategies."

The New Division, organized around the shared vision of "Healthy Watersheds," positions the Department to deliver on several of the report's recommendations (italicized in the text below) for creating sustainable ground and surface water management for current and future generations:

- The New Division's commitment to engaging local communities through a field-oriented program delivery structure will *encourage local government units to engage in management, pollution prevention and demonstration efforts.* The community engagement principle will also ensure that the Department is responsive to local conditions and needs, *answering key questions and meeting key information needs.*
- The New Division's emphasis on adaptive management and extensive, user-friendly data delivery will foster development of *up-to-date protection tools and recommended best management practices* that integrate information from multiple systems—ecological and hydrologic—at multiple scales of watershed delineation. This adaptive management approach will also *enhance data collection and sharing and simplify public access to data,* as well as encourage continual *evaluation of the legal and policy frameworks for water resource protection*, which will provide for update of these regulatory tools if barriers to sustainable water resources management are identified to be a result of suboptimal statutes, rules, and policies.
- The New Division's watershed approach will *encourage integrated groundwater and surface water management and protection strategies in a watershed context as a comprehensive hydrologic-ecologic system*, and will enable the Department and our water-quality partners to *adopt a long-term focus for monitoring and prevention activities.*
- The New Division's focus on provision of vital ecosystem services, combined with a systems approach, will also facilitate the *evaluation of risks of action and inaction, including the risk of unintended consequences.*

Progress toward Programmatic & Organizational Design

The organizational structure of the New Division is still being designed as of the date of this report; however, the New Division Project has analyzed existing division programs and functions. From that analysis, it is clear that that delivery of "Healthy Watersheds throughout Minnesota" will require four types of work functions: 1) resource inventory, monitoring, and analysis (e.g., data collection and mapping); 2) conservation assistance and regulation (e.g., permitting, environmental review, and conservation/technical assistance); 3) ecosystem management and protection (e.g., land and water restoration projects); and 4) outreach, engagement and shared services (e.g., outreach, communication, and financial management). In addition, the Project has identified some guiding design principles for structuring the New Division's field operations at the regional and area levels.

The New Division's organizational design will continue to build on DNR's strong regional and local presence in each of four administrative regions:

- ***Northwest:*** 23 counties in the Prairie Parkland, Aspen Parklands, Eastern Broadleaf and Laurentian Mixed provinces, encompassing all or part of 33 major watersheds

- ***Northeast:*** 9 counties in the Laurentian Mixed province, encompassing all or part of 25 major watersheds
- ***Central:*** 23 counties in the Eastern Broadleaf and Laurentian Mixed provinces, encompassing all or part of 23 major watersheds
- ***Southern:*** 32 counties in the Prairie Parkland province, encompassing all or part of 24 major watersheds

The DNR has realized excellent statewide service from its other divisions, which are organized around an area structure that follows county administrative boundaries. The New Division will organize its statewide operations to align the delivery of division services with local government units. Planning and systems analysis will take place at the watershed and landscape level, however, requiring area and regional staff to collaborate frequently on multi-functional teams that will regularly span administrative boundaries (i.e., DNR regions and areas, as well as local government boundaries).

The Division Design Project has identified several guiding principles to help shape the new functions and structures.

- **Create a strong, customer-service focus**, with a clear organizational structure; reasonable spans of control for managers and supervisors; and where staff focus their energy on providing those services that the DNR does best (i.e., services that other agencies cannot, or do not, provide)
- **Conduct planning efforts at the watershed level; but deliver program services at the local government unit level**, where DNR staff are best positioned to effectively respond to local needs, to influence decisions, and to anticipate emerging issues that need resolution at a higher system level
- **Support an adaptive, systems approach to problem solving** (rather than focusing on single system component or issue) by directing staff through collaborative processes and building in feedback loops for on-going program, evaluation
- **Facilitate cross-disciplinary collaboration**, where teams can call upon a wide variety of staff expertise as needed, and can be flexible enough to address emerging issues as they arise
- **Enable science to shape work priorities, planning efforts, and legislation,** but also recognize that some priorities will be set by statutory and legislative requirements

As mentioned above, the Department intends to finalize the design for the New Division by June 2010. The New Division will begin to implement the new design in July 2010. It is anticipated to take three to five years for all the changes to be fully implemented. The New Division will evaluate progress, learn from experience, and adjust the design as the unique skills and professional talents of staff focus on the New Division's work.

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