New report calls for forward-looking analysis and a review of restoration goals for the Everglades

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To ensure the Comprehensive Everglades Restoration Plan (CERP) is responsive to changing environmental conditions like climate change and sea-level rise, as well as to changes in water management, a new report by the National Academies of Sciences, Engineering, and Medicine calls for a re-examination of the program's original restoration goals and recommends a forward-looking, systemwide analysis of Everglades restoration outcomes across a range of scenarios.

This report is the sixth biennial assessment of the CERP, a multibillion-dollar effort between the state of Florida and federal government launched in 2000 to reverse the decline of the Everglades. A large and diverse aquatic ecosystem, the Everglades has been dramatically transformed over the past century owing to the diversion of its waters for urban and agricultural uses. The resulting large-scale changes to the landscape have diminished the natural resources and impacted vegetation and wildlife populations.

The broad goals of the CERP are to re-establish the natural hydrologic characteristics of the Everglades, where feasible, and to create a water system that serves both the ecological needs of South Florida and the needs of its residents. Since the goals of this program were established, the scientific community has gained substantial new knowledge on pre-drainage hydrology, climate change, and sea-level rise that have important implications for the restoration plan. For example, climate

change analyses highlight a need for increased water storage under scenarios of increased or decreased future precipitation.

Additionally, based on new understanding of project feasibility and changes to Lake Okeechobee's water management rules, surface water storage capacity could be reduced by over 1 million acre feet. Reduced water storage could have serious ecological consequences in both the northern estuaries and the Everglades ecosystem if this shortfall is not addressed. Furthermore, estimated feasible underground storage has been reduced by approximately 60 percent of the storage originally envisioned in the CERP, reducing the benefits provided by the CERP in multiyear droughts.

Forward-looking analysis should consider various scenarios for environmental changes and water storage, and study the implications on the ecosystem, the report says. Establishing the alternative future scenarios will better inform decision makers and stakeholders of the effects of short- and long-term decisions. The report states that such analyses should not slow the pace of restoration progress and that implementation of authorized projects should continue.

"Despite important progress on CERP implementation, there has been insufficient attention on refining long-term systemwide goals and objectives and on the need to adapt CERP to radically changing system and planning constraints," said David B. Ashley, professor of engineering practice at the University of Southern California and chair of the committee that conducted the study and wrote the report. "Forward-looking analysis, in conjunction with adaptive management, will ensure that the CERP is based on the latest scientific and engineering knowledge and is robust enough to handle changing conditions."

Since the CERP was launched, a scientific consensus has developed that

the Everglades ecosystem contained much more water historically than previously thought, which means recreating that level of hydrology will require more new water and have different ecological outcomes than first anticipated in the planning. The committee highlighted this information as a pathway to explore new issues and opportunities that need to be considered in future CERP design options. Revised goals would also need to reflect the dynamic nature of the system and developing constraints imposed by climate change and sea-level rise.

Although improved reporting of ecosystem restoration benefits is needed, several CERP projects are starting to show ecosystem benefits, especially in terms of water conditions that are increasingly similar to circumstances prior to building drainage systems. For example, there has been considerable progress in constructing the Picayune Strand Restoration Project, including canal plugging, road removal, and construction of pump stations. The Picayune Strand, the first CERP project under construction, is an area in Southwest Florida that was substantially disordered by a real estate development project, which disrupted the flow into the Ten Thousand Islands National Wildlife Refuge, altered regional groundwater flows in surrounding natural areas, and drained a large expanse of wetland habitat. Overall, the documented hydrologic improvements from the CERP to date involve a small proportion of the overall CERP footprint and are located on the periphery of the remnant Everglades. However, the large-scale Central Everglades restoration project was recently authorized by Congress. Additionally, according to the report, three major non-CERP projects that are essential to CERP progress are nearing completion in the next five years and are anticipated to provide large-scale benefits.

Even though the restoration funding outlook has improved modestly in the last two years, the report finds that the funding pace remains slower and the project costs are greater than originally envisioned by the CERP, which could delay the completion of the program. In the first 16 years of

the restoration project, originally planned for approximately 40 years, only 16 percent to 18 percent of the estimated total CERP cost has been funded, suggesting that substantial additional investment is needed to complete the project as envisioned.

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