**Ecosystem Type: LAKES AND PONDS**

**Category: Clean Air**

1. **Materials**

***Supplier*** – not applicable

***Driver*** – not applicable

***Demander*** – not applicable

1. **Nutrition**

***Supplier*** – not applicable

***Driver*** -not applicable

***Demander*** - not applicable

1. **Energy**

***Supplier*** – not applicable

***Driver*** – not applicable

***Demander*** - not applicable

1. **Mediation of Waste, Toxics, and Other Nuisances**

***Supplier*** – not applicable

***Driver*** – not applicable

***Demander*** – not applicable

1. **Mediation of Flows**

***Supplier*** – not applicable

***Driver*** – not applicable

***Demander*** – not applicable

1. **Maintenance of Physical, Chemical, and Biological Indicators**

***Supplier*** – Lakes and ponds are sinks of nutrients in their sediments, aquatic plants, and the water itself. This traps nutrients that contribute to air pollutants, such as nitrogen and sulfur (Williamson et al., 2008). Further, allowing sediments to settle at the bottom of a lake creates a carbon sink, which cycles carbon into the soil and prevents it from leaching into the atmosphere (Kling, Kipphut, and Miller, 1991).

***Driver*** – Impervious surfaces can increase the amount of runoff flowing into a lake or pond. Higher discharge into lakes can lead to changes in the physical habitat of the ecosystem (Patz et al., 2008), which effects the benefits that these ecosystems provide to support clean air. For example, intensified discharge may lead to a decrease in the overall residence time water has in a lake if the habitat overflows, reducing a lake’s service of capturing sediment and allowing it to settle into a carbon sink.

***Demander*** – not applicable

1. **Spiritual, Symbolic, Religious, and Social Experiences**

***Supplier*** – not applicable

***Driver*** –not applicable

***Demander*** – not applicable

1. **Physical and Intellectual Interactions w/ Biota, Ecosystems, and Land/Seascapes**

***Supplier*** –not applicable

***Driver*** – not applicable

***Demander*** - not applicable

**Sources:**

Kling, G.W., Kipphut, G.W., and Miller, M.C. (1991) Arctic Lakes and Streams as Gas Conduits to the Atmosphere: Implications for Tundra Carbon Budgets. *Science, 251*(4991), 298-301. DOI: 10.1126/science.251.4991.298. [abstract only]

Patz, J.A. et al. (2008) Climate Change and Waterborne Disease Risk in the Great Lakes Region of the U.S. *American Journal of Preventive Medicine, 35*(5), 451-458. DOI: <https://doi.org/10.1016/j.amepre.2008.08.026>.

Williamson, C.E. et al. (2008) Lakes and streams as sentinels of environmental change in terrestrial and atmospheric processes. *Frontiers in Ecology and the Environment, 6*(5), 247-254. DOI: 10.1890/070140. [abstract only]