**Ecosystem Type: TUNDRA**

**Category: Clean Air**

1. **Materials**

***Supplier*** – Tundras exchange carbon with the atmosphere, which can support clean air (Fan et al., 1992; Tagesson et al., 2012). These ecosystems are important sinks of carbon because they are often frozen over (Schuur et al., 2009). In fact, mosses in tundra’s accounted for 76% of the carbon dioxide uptake by photosynthesis (Kutzbach, Wille, and Pfeiffer, 2007).

***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*** – The vegetated surfaces of tundra’s mediate the flow of carbon into the atmosphere, which helps control air quality (Whiting et al., 1992).

***Driver*** – not applicable

***Demander*** – not applicable

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

***Supplier*** – Tundra’s exchange and transform carbon to support clean air (Whiting et al., 1992; Fan et al., 1992; Schuur et al., 2009; Tagesson et al., 2012).

***Driver*** – not applicable

***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:**

Fan, S.M. et al. (1992) Micrometeorological measurements of CH4and CO2 exchange between the atmosphere and subarctic tundra. *Journal of Geophysical Research, 97*(D15), 16627-16643. DOI: 10.1029/91JD02531. [abstract only]

Kutzbach, L., Wille, C., and Pfeiffer, E.M. (2007) The exchange of carbon dioxide between wet arctic tundra and the atmosphere at the Lena River Delta, Northern Siberia. *Biogeosciences, 4*(5), 869-890. HAL Id: hal-00297647.

Schuur, E.A.G. (2009) The effect of permafrost thaw on old carbon release and net carbon exchange from tundra. *Nature, 459,* 556-559. DOI: 10.1038/nature08031. [abstract only]

Tagesson, T. et al. (2012) Land-atmosphere exchange of methane from soil thawing to soil freezing in a high-Arctic wet tundra ecosystem. *Global Change Biology, 18*(6), 1928-1940. DOI: 10.1111/j.1365-2486.2012.02647.x. [abstract only]

Whiting, G.J. et al. (1992) Biosphere/atmosphere CO2 exchange in tundra ecosystems: Community characteristics and relationships with multispectral surface reflectance. *Journal of Geophysical Research, 97*(D15), 16671-16680. DOI: 10.1029/91JD01027. [abstract only]