**Ecosystem Type: BARREN/ROCK AND SAND**

**Category: Clean and Plentiful Waters**

1. **Materials**

***Supplier*** –not applicable

***Driver*** – A study found that the subsoils of deserts have been trapping a large amount of nitrate (Walvoord et al., 2003), which may be contribute by land use changes and nutrient inputs such as manure application. This reservoir of nitrate can be leaching into water resources, negatively affecting the health and quality of the waterways. Sandy ecosystems are also sensitive to fecal bacteria, which can pollute adjacent waters (Alm, Burke, and Spain, 2003).

***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*** – Nitrogen products from human combustion can be fixed by desert plants, which is an example of how these ecosystems mediate wastes from leaching into waterways (Baker et al., 2001).

***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*** – Sandy beaches have the ability to retain nutrients that become resources for plant blooms (McLachlan, 1980), a supply of food for macrofauna that act as filter feeders important for maintaining water quality.

***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:**

Alm, E.W., Burke, J., and Spain, A. (2003) Fecal indicator bacteria are abundant in wet sand at freshwater beaches. *Water Research, 37*(16), 3978-3982. <https://doi.org/10.1016/S0043-1354(03)00301-4>. [abstract only]

Baker, L.A. et al. (2001) Nitrogen Balance for the Central Arizona – Phoenix (CAP) Ecosystem. *Ecosystems, 4*(6), 582-602. <https://doi.org/10.1007/s10021-001-0031-2>. [abstract only]

McLachlan, A. (1980) Exposed sandy beaches as semi-closed ecosystems. *Marine Environmental Research, 4*(1), 59-63. <https://doi.org/10.1016/0141-1136(80)90059-8>. [abstract only]

Walvoord, M.A. et al. (2003) A Reservoir of Nitrate Beneath Desert Soils. *Science, 302(*5657), 1021-1024. DOI: 10.1126/science.1086435. [abstract only]