Name: _____   **Period: _____**

The Lake Washington Story Reading Guide

Introduction: This guide will help you understand the ecological concepts within the reading "The Washington Story". You will work within a group to help complete this guide; however, each individual will need to complete it for themselves. These concepts will be the basis for a larger group project relating to studying a different environmental problem.

Procedure: Answer and complete the following either on the sheet itself or by downloading it to your ipad or laptop. Begin by reading The Lake Washington Story to get some background information about the effects of sewage and other pollutants on a freshwater ecosystem and how these problems were addressed here in Lake Washington. You may find it helpful to access the web-site containing this document directly so that you can take advantage of numerous hyperlinks to definitions of vocabulary. Go to:

> http://www.kingcounty.gov/environment/waterandland/lakes/lakes-of-king-county/lake-washington/lake-washington-story.aspx

This information is also available on my website as a Word document.

As you are reading (or after you are done) discuss the following terms with your partners and agree on a definition for each term. Check your answers with members of another group if you are unsure of any terms and feel free to use other internet resources.

Comprehension Questions:

1. Define, in your own words:

Sewage:

sewage diversion:

 algae:

zooplankton:

transparency (of a lake):

2. As a class we will discuss the history of the eutrophication of Lake Washington and the subsequent revival of the lake ecosystem following the diversion of sewage to secondary waste-water treatment plants beginning in 1963. Each individual in your group should be prepared to answer questions and otherwise contribute to this discussion. Answer these questions to help you understand the key parts of the reading:

a) What nutrient was added to the water in Lake Washington that contributed to the increase in cyanobacteria numbers?

b) What was the source of this nutrient?

c) Describe why the microorganism Daphnia dies when there is an abundance of the cyanobacteria Oscillatoria rubescens.

d)Why was there a decline of possum shrimp, Neomysis mercedis?

e) What organism helped to decrease the green algae in lake Washington?

f) What fish probably does not greatly affect Daphnia numbers?

g) What do Rainbow trout feed on (prey on)?

3. Research what **eutrophication** is and define and describe the step by step process. Start with how humans can contribute to the process (include at least 3 ways). Then describe the events that follow. Be sure to include the final harmful effects eutrophication can have on an aquatic ecosystem. Also include a visual aid.
    A. Definition of Eutrophication:

    B. Three ways humans can contribute towards it:
    1.

    2.

    3.

    C. Describe the step by step process of eutrophication. You can include arrows to represent what happen next due to preceding events.

D. What are the final harmful effects of eutrophication in an aquatic ecosystem?

E. Include either a picture from one of your resources or your own drawing depicting the process of eutrophication. Please make it as detailed as possible by including the organisms of Lake Washington (*Daphnia, algae, and fish*).

4.   Create a diagram that illustrates a portion of the food web in Lake Washington which was significant in the ecological recovery of the lake. Be sure to include *Daphnia*, *Oscillatoria* and other algae, *Neomysis*, longfin smelt and trout. Use arrows to show which way matter and energy flows in this food web.