AAE / ECON / Env. St. 343
Environmental Economics

Homework #4
Due in class on Tuesday, October 21, 2008

Provide short answers to the 7 questions below. Please download the following reading from the course website:

Kaufman, H., Espey, M., and J. Englin. 1998. "No Plane, Big Gain? Airport Noise and Residential Property Values in the Reno-Sparks Area." *Choices*, Third Quarter.

Questions 1 and 2 refer to the Kaufman et al. article.

1. What technique do the authors use to value noise and why is this technique appropriate? The authors mention that they collected data on a house's physical characteristics and the characteristics of its neighborhood. Why is this information useful in estimating the value of noise?
2. In the Kaufman et al. article it is stated that "our estimates suggest, for example, that a $100,000 home half a mile from the airport in the 60-decibal zone would be worth about $98,500 in the 65-decibal zone and about $97,000 in the 70-decibal zone." Using this information, calculate the value of reducing noise to a $100,000 home from 75-decibals to 30-decibals. Is your estimate likely to be an over-estimate, under-estimate, or neither? Explain.

The following information applies to questions 3 and 4. Suppose we have an agricultural valley 10 miles long by 5 miles wide, with a polluting electricity power plant. The power plant causes pollution problems in a narrow strip of land downwind of the plant, 1 mile in length and ½ mile wide, but no problems outside of that area. The pollution reduces the rate of crop growth.

3. If we were to clean up pollution, what would you expect to happen to land prices and wages? Where?
4. If we were to clean up pollution, would the changes in land prices and / or wages fully reflect the benefits of cleaning up pollution? Why or why not?

The following information applies to 5 through 7. Suppose a hiker's annual demand for trips to an outdoor recreation site is given by the following equation:

Demand for trips = $6 - 0.5TC + 0.0001Y + Q$

Trips demanded are zero whenever the equation predicts negative trips. TC is the hiker's travel cost (price), Y is the hiker's annual income, and Q is environmental quality, measured in acres of open space. Assume TC is $10, income is $40,000, and the site has 10 acres of open space.

5. At what price (travel cost) will demand for trips fall to zero if the site has 10 acres of open space? At what price (travel cost) will demand for trips fall to zero if urban expansion has reduced the site's open space to 8 acres?

6. If the price (travel cost) per trip is $10, how many trips are demanded annually and what is the hiker's consumer surplus if the site has 10 acres of open space? What if the site has 8 acres?
7. What is the impact on the hiker's benefits (lost consumer surplus) from reducing open space acreage from 10 to 8? What is the total benefit loss from urban expansion if 10,000 hikers have this demand function?