

**Exam I**  
(100 points)

- (6 pts) 1. What does "ground water ranching" mean and under what legal doctrines might it be conducted?
- (16 pts) 2. Depending on circumstances, the secondary economic effects that accompany a policy may or may not be legitimate to count as a policy benefit or cost. Usually they are not legitimate. (i) Give a real-world, water-associated example of a secondary economic effect. (ii) Choose any single reason for excluding this secondary economic effect in analysis and explain.
- (24 pts) 3. One of the basin's water users cheated last year by taking more water than she was entitled to. She has been found guilty and must pay damages. Last year's demand for natural water (in terms of \$/unit) by all other permitted owners was  $mb=1000 - 40w^{0.5}$ . They were allowed to take 676 units of water according to their total permits. Because of the cheater, they could only take 576 units of water. What is your assessment of the damages?
- (24 pts) 4. A donor-funded Environmental Organization (EO) and a State Agency (SA) are in dispute, and the dispute has moved to the courtroom where testimony is to be heard by a panel of judges. The Agency has been supporting two large interbasin water transfer projects by offering to pay 20% of their costs. Projects must pass SA's NPV test prior to winning support. SA's prior analysis found a good NPV measure using a 10% real discount rate and is therefore supporting both projects. EO argues that SA did not discharge its responsibilities properly due to 2 problems: environmental incommensurables are at stake and the selected discount rate underweights future development losses in the areas of origin. Choose a side and provide that legal team with a list and explanation of the economic points you would emphasize for their case.
- (30 pts) 5. A well managed Aquifer Authority (AA) understands that the water it manages is being depleted. Residents of the region (several towns and cities, many irrigators) voted to grant AA the power to meter and regulate pumpage. AA decided to rely on a pair of policies and has been conducting them for several years: (1) each year MUC is computed and all ground water users must pay this charge on every unit of pumped water and (2) AA has been aggressively investing this revenue because it will eventually apply its funds to the development of surface water supplies when the time is right. Things have been operating smoothly even though the MUC charge is publicly disliked.

A new problem caused by a doubling of the market price of oil has recently occurred. This has raised the value of biofuels, especially ethanol, and caused large increases in both irrigated corn acreage and ag water pumping.

Discuss and illustrate the implications of this change for the rate of depletion and AA's two policies. In your judgment, do these consequences represent a policy disappointment and why/not?