Testimony of
Marc Levinson
Economist, JPMorgan Chase
Subcommittee on Energy and Environment
House Committee on Science and Technology
May 14, 2008

Thank you, Mr. Chairman. My name is Marc Levinson, and I'm an economist at JPMorgan Chase in New York. I appreciate the opportunity to speak with you today about water-supply risks and their impact on investors.

First, let me explain just where I fit in the Wall Street ecosystem. I specialize in economic issues, including environmental regulation, and my clients are institutional investors who buy publicly traded stocks and bonds. I have no connection whatsoever to our loan officers or to our investment bankers. My perspective is strictly that of investors in public companies.

In my opinion, investors are much less concerned about water supply risks than they should be. We recently published a report contending that water-supply risks are far more important to many companies than investors believe. We also found that very few companies seem fully aware of these risks. While many companies now produce public relations brochures that tell how they are reducing water use per unit of production, almost none of these companies thoroughly assesses what we call its water "footprint," the total usage of water in the production and consumption of its product. Investors have no way of evaluating the risk of business disruption due to water scarcity, or of comparing risks among companies.

We think these risks take three forms. The most obvious is physical risk, which means an actual lack of water. This could have heavy costs for an industry such as semiconductor manufacturing, which needs massive quantities of clean water. Intel Corporation alone uses as much water each year as a city the size of Rochester, New York. We estimate that a single production interruption at a semiconductor plant could cost $200 million in lost revenue and badly hurt the company's share price. The customers waiting for those semiconductors would suffer financial losses as well.

Physical risk is more common than generally realized. In 2007, for example, the Tennessee Valley Authority was forced to shut a nuclear plant because there simply wasn't enough acceptable cooling water in the Tennessee River. We don't think the TVA is the only utility that will experience this problem.

The second set of risks that companies face is regulatory. Regulatory risks involve government decisions to allocate and price water in response to scarcity. Perhaps the best US example occurred in 2001, when lack of water in the Columbia and Snake Rivers caused the Bonneville Power Administration to curtail electricity sales to aluminum smelters in Montana, Oregon, and Washington. In the short run, US aluminum production plummeted. In the long run, the aluminum industry is leaving the region, because regulators responded to water scarcity by raising price of a key input, electricity. In 2001, there were 10 aluminum smelters in the Northwest. Today, there are only three.

The third set of corporate risks arising from water shortage is reputational. In a number of places around the world, consumers are taking environmental considerations

into account in deciding which goods and services to buy. We think companies that are perceived as "bad actors" by wasting water face a serious risk of consumer backlash.

The risks of water scarcity are not evenly spread through the economy. In addition to semiconductors and power generation, water sensitivity is particularly acute in food processing and in oil and gas production.

The food processing sector requires large amounts of water in its supply chain, principally for crop production. Getting one pound of beef to the consumer's table in the United States requires, on average, about 2,200 gallons of water. Higher input costs, due in part to increased competition for and uncertainty about water supply, already are hurting food manufacturers.

In the oil-and-gas sector, there is a lot of excitement now about shale formations. Shales contain rock with very small pores, such that the oil and gas within the rock cannot readily migrate to wells. A technology called fracture stimulation can help recover these resources—but it does so by injecting large amounts of water under high pressure. Water scarcity is already limiting the development of energy shales in several parts of the country.

The committee has asked me what the federal government might do to facilitate the equitable and efficient allocation of water supplies. Here are a few thoughts.

If you look at the aggregate numbers, US water use has been fairly flat since the 1980s, at about 400 billion gallons per year. But there are disturbing trends. An increasing share of those 400 billion gallons per year is groundwater rather than surface water. Annual groundwater withdrawals rose 14% between 1985 and 2000, while surface water withdrawals were flat. This suggests that many rivers and reservoirs are being fully utilized, so water users are increasingly relying on groundwater, which is subject to less regulation. This shift will probably continue, because climate change is expected to reduce the flow of surface water, especially in the Southwest.

Irrigation accounts for about two thirds of US groundwater withdrawals. Government promotion of biofuels has led to large increases in corn plantings in some fairly arid states, especially on the Great Plains, and it's likely that a lot of this increased acreage is irrigated. This means even more demands on groundwater.

There more than 100,000 irrigation wells in the US, and only one-seventh of them have meters. An unmetered well is likely to be a well that a farmer can use without paying for the water. Of course, there is little incentive to conserve something that is free. When the Department of Agriculture asked farmers about barriers to reducing energy use or conserving water, the most common response was that conservation would not save enough money to cover its own costs. The second most common response was that conservation measures are not affordable. Both of these responses are ways of saying that water is so cheap that it's not worth conserving.

I recognize that state law, rather than federal law, usually governs groundwater. But excessive use of groundwater clearly affects interstate commerce, so there is a federal interest here. In my view, it would be useful for Congress to encourage the states to adopt methods of pricing groundwater withdrawals to stimulate conservation. Pricing should apply not just to agriculture, but to all users withdrawing groundwater.

A second subject in which Congressional involvement might be useful is localized water treatment. Almost all of our public water supplies are treated in centralized treatment plants. As a result, drinking water is being used to water rose

bushes and wash down parking lots. This represents a large waste of resources. It might be more cost effective to treat water at individual buildings rather than centrally, so that only water needed for human consumption is treated. Several companies are looking into technologies for decentralized water treatment, and this may be an area in which federal research funds or changes in federal water-treatment regulations would be helpful.

There is one other subject I want to touch on, and that is power generation. I know there is a great deal of talk on Capitol Hill about federal loans or loan guarantees for new-generation nuclear plants and for coal plants with carbon capture and sequestration. Both of these technologies require very large amounts of water. I think it is important that the social cost of those large water withdrawals be reflected in the prices users pay for electricity from those plants. It's simply bad policy for the government to be subsidizing water usage, and that applies just as much to power plants as to agriculture and other industries.

Thank you for the opportunity to testify this morning.