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Perspectives

How Water Utilities Can Spearhead Natural Capital Accounting

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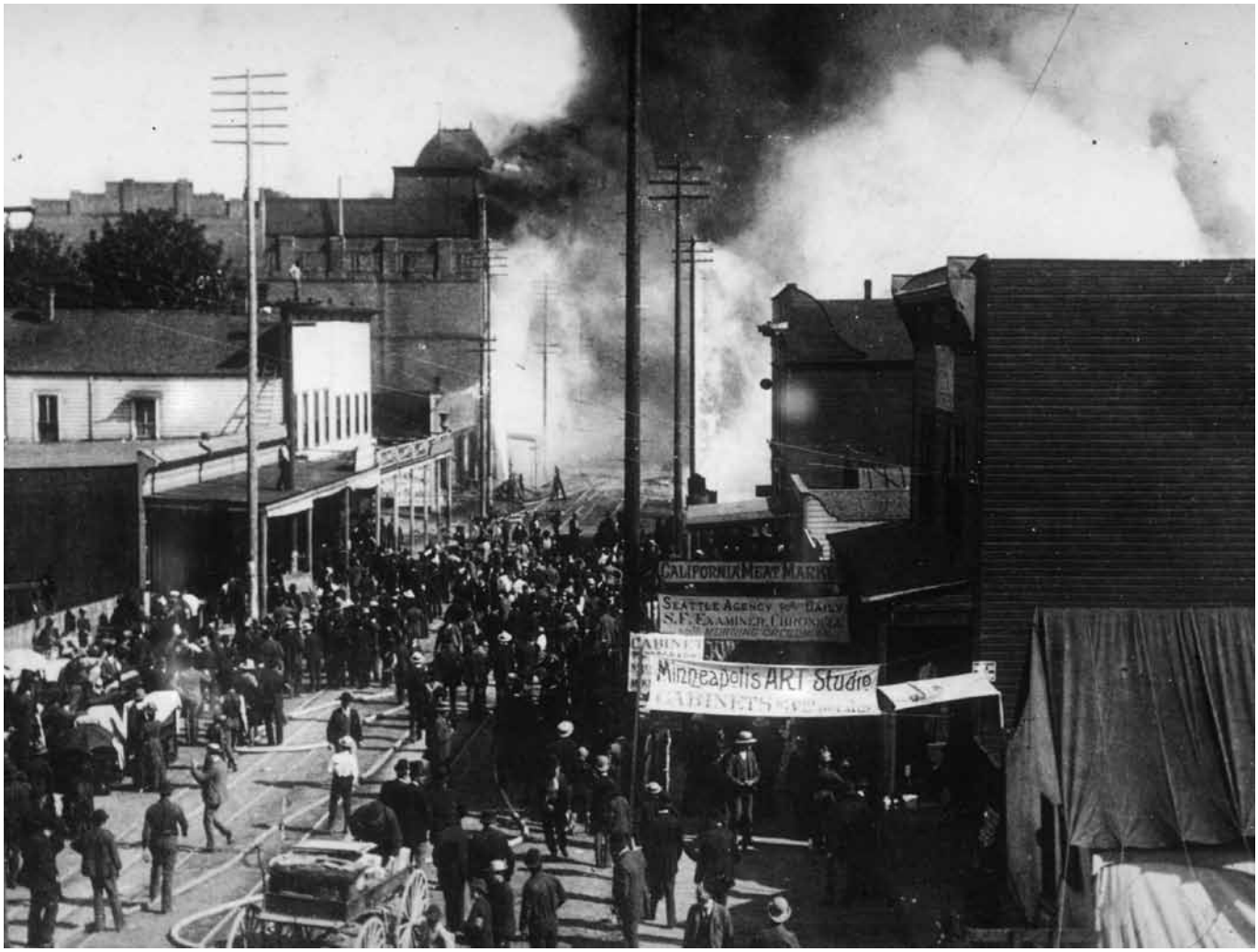


Courtesy of the Seattle Municipal Archives Photograph Collection

The Great Seattle Fire of 1889 destroyed the city's entire business district. Seattle's water supply at the time was insufficient to extinguish the blaze.

In the second half of the nineteenth century, Seattle's water was provided by wells, springs, and private water companies. Lake Washington served as both a source of water and a sink for waste. After epidemics of cholera and typhoid, Seattle became known as one of the unhealthiest cities in the U.S. Finally, the Great Seattle Fire of June 6, 1889 destroyed the entire 64-acre business district due to the lack of water available from the patchwork of private water suppliers.

That same year Seattleites voted to establish Seattle Public Utilities (SPU) to provide water to the city. Seattle purchased the forested Cedar River watershed to provide and filter the community's water. This was a radical and expensive idea at the time. Had the Seattle City Council required a threshold rate of return on investment, it would likely never have justified this unusual project. However, the city's goal was not to maximize "net present value," but to provide safe and reliable drinking water for the people of Seattle for the foreseeable future. By 1901 clean water was flowing, banishing cholera and typhoid.[1] By 1909 Seattle was considered one of the healthiest cities in the United States. Over the long term, this investment turned out to be a magnificent success by any measure. Today, SPU would have to pay an upfront cost of $200 million to build a filtration plant to filter the city's water supply with annual operating and maintenance costs of $3.6 million per year if the forest

did not do this job.[2] Of course, after a century it would likely have been the third or fourth filtration plant to be built. The watershed now provides far more water and value than ever imagined by the original SPU directors.

This case study illustrates three important points:

1. Natural capital tends to provide benefits over a very long period of time (centuries or longer), whereas manmade capital provides benefits in the near term (years to decades).
2. Natural capital appreciates in value over a long period of time due, in part, to increased scarcity, whereas built capital depreciates relatively rapidly.
3. Investments in natural capital with the goal of sustainability can be far better investments over the long term than investments with shorter, but less sustainable benefit flows.

It is obvious that the Cedar River watershed is a huge asset for SPU and that the decision was correct to rely on the forested watershed to protect the purity of the water source instead of building a series of filtration plants. Whether through visionary design or historical luck, other early-twentieth-century North American water utilities have chosen this course of action, including the largest, New York City in 1905. More recently, it has been estimated that New York's decision to invest $1.5 billion in its Catskill watershed has saved $6 billion compared to the cost of a filtration plant plus operating costs.[3]

The Accounting Gap Dilemma

From both an economic and ecological standpoint, however, a fundamental dilemma is faced by SPU, New York City, and other watershed-filtered water utilities in the form of a simple accounting omission. The accounting standards to which SPU must adhere are set by the Governmental Accounting Standards Board (GASB), responsible for state and local government standards in the United States. The problem is that the watershed, which provides and protects the purity of the water supply, is intuitively the utility's greatest asset, yet it does not count as an economic asset in the utility's financial books. Facilities, pipes, vehicles, buildings, roads, computers, copy machines, fences, and pencils all count as assets. If SPU had to install a $200 million filtration plant, it would count as an asset on their books. The value of the forested watershed that meets the same need does not count. Why is this a problem?

Many of the problems we face as a society and a species have their roots in uncontrolled depletion and damage of natural capital as a result of an outdated and inadequate approach to economics.

Consider one big advantage of a valued economic asset: you can invest in it. If SPU needed a filtration plant, they could borrow money through the issue of municipal bonds, invest in the plant, and pay back the loans. In addition, since a filtration plant is an acknowledged asset, a sufficient budget for maintenance and operations is justified. Thus, one problem with not recognizing the watershed as an economic asset is that the utility cannot have a capital improvement project to accomplish needed maintenance and restoration. That is, it cannot borrow money against that asset to pay for improvements. In addition, because the utility's largest asset—the watershed—is not measured as an economic asset beyond the market value of the raw land plus the timber value of the trees, the operations and management budget does not have the same financial justification and therefore risks being inadequate. A couple of interesting ironies of current accounting practice are worth mentioning. First, if a watershed becomes polluted, clean-up costs must be immediately recognized as an expense and recorded as a liability on the utility's financial statements. However, simply having a pristine watershed is not shown on the statements beyond the, typically, very low historical costs of purchasing the watershed. Second, if an old logging road in the watershed needs to be decommissioned to prevent sediment and runoff from entering the reservoir and degrading water quality, the utility's assets will take a write-down. The road is counted as an asset because it was originally an "improvement" to the watershed, even though, in reality, it is an economic liability.

The mission of water utilities is to manage renewable natural resources. Proper management and security of water supply is not only vital for providing clean, safe drinking water, it affects the utility's bottom line and prospects of continuing to borrow money for general capital improvement. A recent analysis by Ceres and Water Asset Management concluded that many water and power utilities in water-stressed regions, which rely on a predictable water supply to repay their debts on the municipal bond market, may in the future find it more expensive

to borrow money, if water scarcity risks should ever be reflected in the pricing or disclosure of the bonds they issue.[4] This is already a key factor reviewed by rating agencies. So the utilities that best protect their natural capital and secure sustainable water supplies may have a distinct advantage.

Simply put, current GASB accounting rules, with their sole focus on historical cost accounting and man-made assets, do not provide an accurate or meaningful picture of water utilities' assets. Because accounting rules have been developed for built capital, which depreciates, they are historically cost based, meaning the value of the watershed is the original amount paid for the land, in the case of SPU, in the nineteenth century. These rules do not permit a water utility to adequately account for or invest in its greatest asset: the watershed itself.

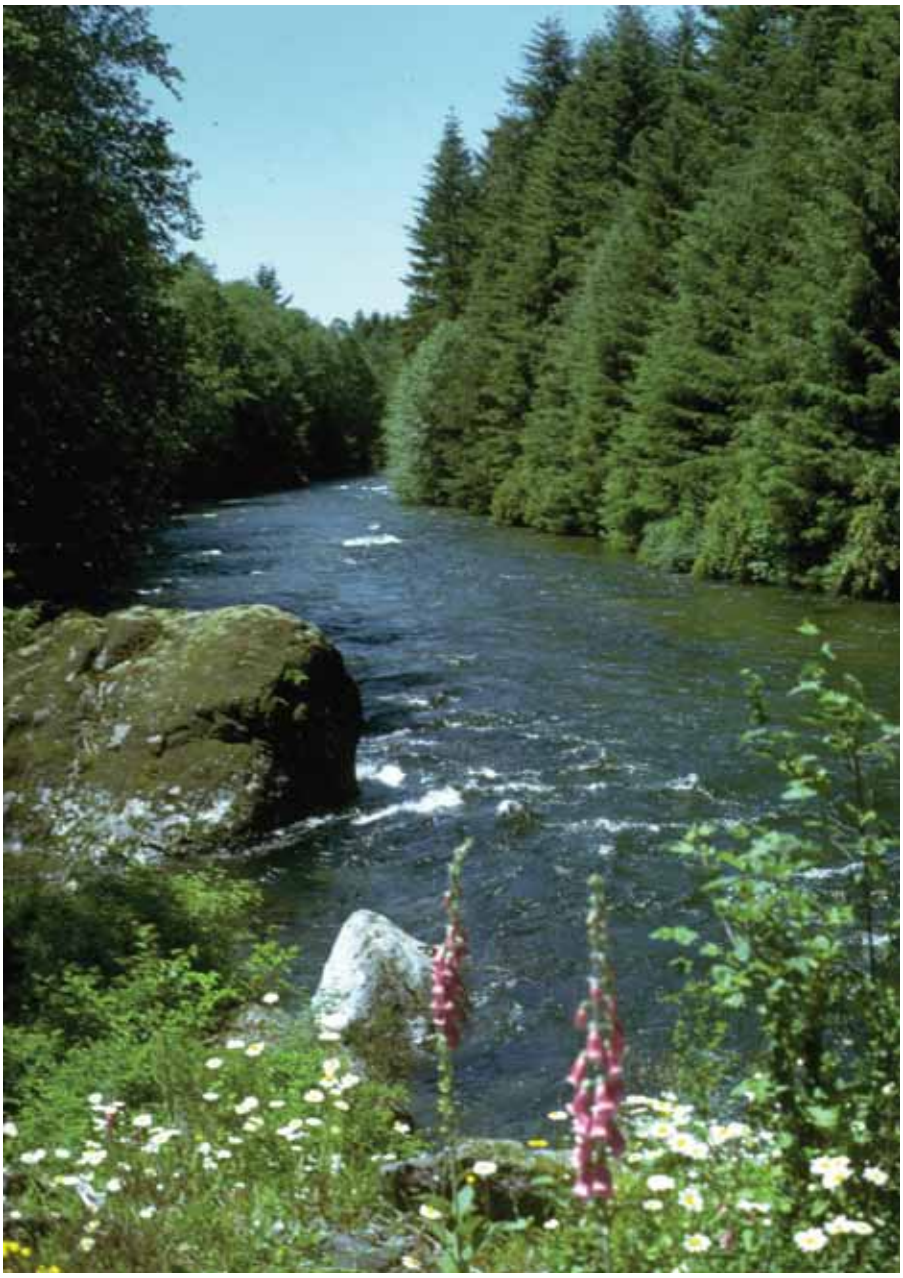
The value of the ecosystem services delivered by the watershed can be estimated by considering how the functions of the watershed would be replaced to provide clean water by other means. This estimation can take into account the construction and maintenance costs of filtration plants, plus the costs of obtaining water from another source, such as desalinization or groundwater pumping. Once a value has been given, utilities will quickly recognize the need to protect, repair, and enhance the function of their watersheds, for example, by fighting invasive plant or insect species, purchasing additional land that is threatened by pollution-generating development, or helping farmers minimize runoff of animal waste and fertilizer into the watershed.

Courtesy of the Seattle Municipal Archives Photograph Collection

In 1889, Seattle purchased the forested Cedar River watershed to secure the city's water supply. This decision, radical at the time, has saved the city hundreds of millions of dollars.

Taking Action

Seven public water utilities from the United States and Canada—New York, San Francisco, Seattle, Tacoma, Portland, Vancouver, BC, and Victoria, BC—have embarked on a path to try and change accounting rules to include natural capital. Following a workshop in Seattle, "Accounting for Natural Capital: The Essential Economics of a Twenty-First-Century Utility," that was cohosted by SPU and Earth Economics, a working group was formed with the mission to propose and justify changes to GASB rules, examine rate structures, review asset management plans, and identify funding mechanisms for watershed management activities. This information should also help water customers understand the value that their watershed's ecosystem services bring to the local and regional economy. These utilities will soon be sharing case studies and best practices and creating an informed and action-oriented agenda to evaluate and, where necessary, upgrade out-dated economic tools.[5]



Courtesy of the Seattle Municipal Archives Photograph Collection

The Cedar River watershed provides Seattle with clean water at less cost. Other cities, including New York, followed Seattle's example and invested in nearby watersheds.

Amending GASB rules represents a relatively simple and painless change in our everyday economics that would have a huge ripple effect in terms of shifting investment to protect and enhance natural capital.

Many of the problems we face as a society and a species have their roots in uncontrolled depletion and damage of natural capital as a result of an outdated and inadequate approach to economics. Conventional economic growth is now colliding with the physical and biological limits of our planet, and now is the ideal time to return to basic principles and develop an economics that results in "the greatest good for the greatest number in the long run," to quote the first chief of the U.S. Forest Service, Gifford Pinchot in 1905.[6] The public water utility model, with its long proven ability to deliver maximum public benefit at least cost, offers a ready foundation from which we can take collective action at a regional scale. Although revising accounting and financial reporting rules isn't the most exciting thing in the world, this may be a necessary and important step as we start our quest to unite economic and environmental sustainability.

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References

1. Seattle Public Utilities. Water System History [online]. www.cityofseattle.net/util/About_SPU/Water_System/History_&_Overview/WATERSYST_2003120209081 56.asp.
2. Batker, DK, Kocian, M, McFadden, J & Schmidt, R. *Valuing the Puget Sound Basin: Revealing our Best Investments* [online] (July 2010). www.eartheconomics.org/Page12.aspx.
3. National Research Council. *Valuing Ecosystem Services: Toward Better Environmental Decision-Making* (National Academies Press, Washington, DC, 2004). Report summary [online]. books.nap.edu/html/valuing_services/reportbrief.pdf.
4. Leurig, S. *The Ripple Effect: Water Risk in the Municipal Bond Market* (Ceres, Boston, 2010) [online]. www.ceres.org/press/press-clips/the-ripple-effect-water-risks-in-the-municipal-bond-market.
5. Earth Economics. The 21st Century Utility: Accounting for Natural Capital [online]. www.eartheconomics.org/Page118.aspx. (For more information about the project, contact Earth Economics at info@eartheconomics.org.)
6. United States Forest Service. Pinchot and Utilitarianism [online]. www.fs.fed.us/greatestgood/press/mediakit/facts/pinchot.shtml.