GE Power & Water
Water & Process Technologies

Creating Effective Incentives for Water Reuse and Recycling

March 2011

Baker & McKenzie LLP is a member of Baker & McKenzie International, a Swiss Verein, and was a key contributor to the content of this White Paper.

Contents:

1. **Executive Summary** 1

2. **Introduction** 1

   2.1 Reuse and recycling incentives have been more successful when implemented as an overlay to a coherent regulatory regime. 1

   2.2 Enhancing public awareness of conservation and water reuse objectives and related government policies is critical. 1

   2.3 Incentive measures can interrelate and complement one another. 2

3. **Water Pricing** 2

   3.1 Tiered Water Rates and Rate Reduction Measures 3

4. **Water Quality and Demand Trading** 4

   4.1 Water Demand Trading 5

5. **Tax Financing and Public Grants** 6

   5.1 Production Tax Credits 6

   5.2 Investment Tax Credits 6

   5.3 Grants 7

6. **Public-Private Partnerships** 8

7. **Conclusion** 8

8. **References** 9

Creating Effective Incentives for Water Reuse and Recycling

1. Executive Summary

In 2008, GE released a White Paper[i] providing a menu of policy options for addressing water scarcity through recycling and reuse. In that White Paper, we discussed how governments in water scarce regions are looking for ways to expand water recycling and reuse, but they often have difficulty finding information on the policy options from which they might choose.

We then provided a menu of policy options, drawing on examples from around the world. That menu of options included the following major types of policies being used to increase water recycling and reuse:

- Education and outreach
- Removing barriers
- Incentives
- Mandates and regulation

This second White Paper builds on that initial effort and further highlights public incentive structures that have been particularly effective in encouraging water reuse.

Among the leaders in providing effective incentives for water reuse around the world are Israel, Singapore, Australia, and the U.S. states of Florida and California. This paper discusses incentive structures used in these jurisdictions and demonstrates the common success of certain incentives in different parts of the world. In short, the portfolio of varied government measures described here have had broad application and have proved, particularly where implemented in combination, to be highly effective at encouraging enhanced water treatment and efficiency.

While this paper is focused on specific policy measures and incentive types, several practical observations can be made at the outset about successful government involvement in this sector.

2. Introduction

2.1 Reuse and recycling incentives have been more successful when implemented as an overlay to a coherent regulatory regime.

Jurisdictions where water policy is overseen by a centralized water authority—e.g., Singapore, Israel, Tunisia—or delegated to specialized basin-level authorities—e.g., Florida—have been particularly successful at encouraging water reuse. Institutional organization, planning, and knowledge sharing in these jurisdictions has led to more effective regulatory development, which in turn creates greater demand for incentives.

2.2 Enhancing public awareness of conservation and water reuse objectives and related government policies is critical.

Particularly in jurisdictions where positive incentives are made available for water reuse, potential beneficiaries need to understand how these policies can affect the economics of water use, or water-related investments. Equally important is government affirmation of the safety of reclaimed water and support for its use in a wide range of applications. In Singapore, public officials often drink reclaimed water at public appearances to assure the public of its safety. Reuse authorities in California and Sydney, Australia, for example, use purple taps and piping to make recycled water sources more recognizable and accessible.

Water reuse efforts often benefit when governments establish effective channels for communication and cooperation among the authorities responsible for different aspects of water reuse policy. Environmental and/or public utility authorities are generally responsible for allocating water rights, setting tariffs and enforcing discharge limits and fees. Health authorities are often responsible for developing and enforcing standards for reclaimed water use in different applications. Where financial incentives are used, Treasury and finance officials may also be involved. Regulators interviewed for this paper cited effective communication between health and environmental authorities more than any other factor as the key to effective water reuse policymaking.

Experience with inter-agency action in this sector to date indicates the importance of:

- Anchoring the coordination within one agency
- Allocating adequate resources to the coordination itself
- Specifying the allocation of authority in a formal document of agreement[ii]

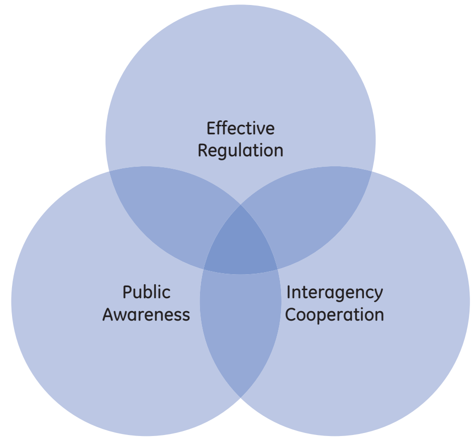

Figure 1. Keys to Government Involvement in the Water Reuse Sector

2.3 Incentive measures can interrelate and complement one another.

A levy imposed on freshwater extraction can help limit demand, as can an exemption from the same measure for companies that reuse water for internal processes. The promulgation of updated standards for effluent use can link water treatment operators and industrial water users with new markets for their treated effluent, while the introduction of tax incentives can hasten technology investments that enable companies to meet the more stringent effluent standards. Water trading and privatization of water goods and services can help to create competitive markets for efficient water use and reuse, while regulatory mandates and quotas can drive competition and establish benchmarks for measuring progress in water use goals.

This paper will discuss effective incentive structures in several policy areas:

- Water pricing and discharge fees
- Water trading
- Tax incentives
- Public-private partnerships and privatization

While the paper highlights effective policies and unique design elements of successful incentives, it generally stops short of prescribing one policy choice over another. Water remains a local issue. While knowledge-sharing and cooperative development will be critical to addressing the world's present and future water challenges, local circumstances and realities must be kept firmly in mind. The appropriate mix of positive and negative incentives to increase water reuse in one demand center may be wholly ineffective or inappropriate in another. Nevertheless, the paper has a clear message: dynamic government involvement and leadership in this area will lead to improved water supply and demand curves around the world. Particularly where governments put innovative combinations in place that mix standards and requirements with positive incentives and opportunities for investment, the practical efficiency and utility of water reuse will be quickly realized.

3. Water Pricing

The primary point of interaction between governments and water users is the price of water in a given jurisdiction. Water pricing can be used to reflect scarcity or to integrate external environmental costs. Where the price of water rises in a given jurisdiction it might be expected to stimulate investment in water reuse measures and technology for certain water users. However, raising water tariffs is not an option in many poor countries—where water scarcity is often most pressing—and is likely to be extremely unpopular and potentially inequitable in other jurisdictions. Even in developed countries with relatively ample water supplies, water tariffs are not always viewed as appropriate policy instruments and efforts to increase water tariffs can often be confronted with significant political resistance. Thus, while water pricing can create a powerful incentive for efficient water use, pricing mechanisms must respond to economic and political realities.

3.1 Tiered Water Rates and Rate Reduction Measures

Tiered water rates, also known as increasing block tariffs (IBTs), are increasingly popular as an alternative to uniform volumetric tariffs, and as a means to encourage conservation. Tiered water rates reflect a user's total demand in the price paid for units of water. For example, a household that uses an average amount of water might pay a much lower cost per unit than a household that uses an excessive amount of water. In order to avoid making tiered structures punitive for large-scale users, some jurisdictions use different tier structures for different user types, also known as adjusted IBTs. Under adjusted IBTs, baseline water use can be set for small, medium and large commercial users and tiered rates only increase as a user moves above its baseline.

IBTs have been credited with helping to halt growth in urban water demand in both Israel and Singapore. In the U.S., this approach is used in the state of Arizona, as well as the city of Tampa Bay and several cities in California.

A 2007-2008 OECD/GWI sample of water tariffs found that 87 of 184 water utilities surveyed in OECD countries were using IBTs. In developing countries, 31 of 94 utilities surveyed were already using IBTs.[iii] Several challenges have been identified with the application of IBTs to marginalized domestic water users in developing countries, including lack of metered water access for all users and failure of the IBT structure to account for large families living within a single dwelling.[iv] However, there are fewer drawbacks linked to the application of an IBT or adjusted IBT structure to large-scale industrial users.

While a traditional IBT clearly creates an incentive for large-scale users to reuse water in order to limit initial demand, it also limits the user's potential reuse applications because it requires reused water to be recycled internally in order to access the tariff's embedded incentive. In jurisdictions where a facility's reused water might be more efficiently treated for and/or utilized by an external reuse application, e.g. irrigation, the reclaiming facility should receive the same tariff benefits as it would if it had limited its own demand. This is particularly the case in jurisdictions where agriculture consumes huge quantities of freshwater, but there is a low willingness among agriculture users to pay for reused water.

In the last 20 years, Singapore has moved from exclusive dependence on rainwater collection and imported water from Malaysia, to an extremely advanced and varied water supply and demand management portfolio that includes the largest non-potable wastewater reuse application in the world.

The Singaporean government (SG) has invested heavily in wastewater treatment to develop a national product called NEWater, high quality reclaimed water that is sold for industrial process use and indirect augmentation of the potable water supply. NEWater now meets close to 15 percent of total demand on the island city-state. Singapore has also begun to invest in desalination to increase supply.

In addition to direct funding for advanced technology, the SG has taken several steps to improve water management. First, the SG introduced key institutional reforms that merged the Public Utilities Board (PUB), which was responsible for water resource management, with the section of the Environment Ministry responsible for sewerage and treatment to create a centralized Ministry of Environment and Water Resources (MOEWR). Working within the MOEWR, the PUB now has authority over the entire water cycle, including reuse. Second, the SG has been rigorous in its application of fines to enforce water regulatory measures. Third, the SG has launched an aggressive campaign to enhance public awareness of water issues, including meeting with industry to assure them of the high quality of NEWater and the appropriateness of the product for their process use. Government officials also frequently drink NEWater at public appearances to assure Singaporeans of its safety.

These measures provide the foundation for the portfolio of positive incentives offered by the SG, discussed throughout this paper and have helped Singapore go from zero water reuse in 1998 to 30 percent reuse in 2010.

Figure 2. Water Supply and Demand Management in Singapore

Rebates and rate reductions for water reuse can be used effectively in conjunction with both uniform volumetric tariffs and IBTs. The table on page 5 provides a comparison of the affordability and embedded reuse incentives of several different tariff structures.

New York City's Comprehensive Water Reuse Program provides a good example of strategic rate reduction in the context of a uniform volumetric tariff. The New York program offers a 25 percent rate reduction on water and sewer charges for buildings in the city that maintain a Comprehensive Water Reuse System (CWRS). Since its inception in 2004, this program has created an effective indirect subsidy for private water reuse systems. It has been estimated that for a large mixed residential and commercial water user, participation in the program would reduce operating costs by more than U.S. $1 million per year by 2012 and close to U.S. $3 million per year by 2015.

A CWRS building may capture, treat and recycle "blackwater," i.e. sanitary wastewater, or "greywater," i.e. wastewater from lavatories, showers, and clothes washers. The CWRS must achieve a 25 percent reduction in a building's baseline demand for potable water. Program rules establish a baseline of 60 gallons per person per day for residential buildings and 10 gallons per employee per day for indoor use in an office building.

Water authorities have also had success with reducing rates for the use of recycled water. Singapore, for example, provides NEWater *(see Figure 2 on page 3)* at a lower rate than regular water and also does not apply its Water Conservation Tax (30 percent of tariff charge for industrial users) or water treatment fees to the sale of NEWater. Singapore also provides specially targeted subsidies for low income families that cannot afford increased water tariffs.

Importantly, any alternative rate structure to encourage water reuse should also be combined with an education and outreach program to ensure water users are aware of the lower rates available for conservation.

4. Water Quality and Demand Trading

Water quality trading programs allow firms with high pollution abatement costs to purchase pollution reductions from other firms or from non-point sources that have lower abatement costs. A 2008 WRI survey found that there are currently around 20 active water quality trading programs in the U.S., and around six active programs outside the U.S. Another 21 programs are under consideration or development around the world.[v]

There are several factors that have helped to encourage an increase in water quality trading programs in the U.S. in recent years. First, EPA explicitly endorsed water quality trading in its 2003 Water Quality Trading Policy as a means to achieve watershed pollution reduction goals. Second, funding has been made available through EPA and the U.S. Department of Agriculture in the form of grants to cover start-up costs of water quality trading programs. The proliferation of limits on nutrient discharges under the Clean Water Act also fostered greater interest in alternative abatement strategies.[vi]

The Cherryfield Creek and Chatfield Reservoir Trading Programs in Colorado use a mixture of trading, offset projects and non-point source reductions to achieve watershed pollution reduction goals. Regulated point sources that are at risk of exceeding permit limits are allowed to purchase water quality credits from other sources, or purchase offset credits from a Watershed Reserve Fund that maintains several ongoing pollution reduction projects. For new or expanding sources, facilities must implement urban nonpoint source projects that reduce pollutant loads in the reservoir. [vii]

In addition to individual permit limits, a watershed can also establish a cap and allocate allowed discharges under the cap based on historical discharge volumes. Allowed discharges decrease each year subject to a declining cap and credits can be traded among different point sources. The Long Island Sound Nitrogen Credit Exchange Program in Connecticut maintains this type of program, limiting nitrogen discharges for 79 point sources. Any new facilities in the program must purchase credits or offsets for 100 percent of their discharge. The program has created a nearly $30 million market for nitrogen credits in the watershed.[viii]

Water quality trading programs encourage higher levels of water treatment as facilities comply with discharge limits and also seek to capitalize on the incentives available for further reductions below those limits. This structure creates a clear incentive for water treatment and reuse in order to generate tradable credits.

4.1 Water Demand Trading

Similar trading programs can also be implemented with respect to a firm's initial water demand. This type of demand trading already occurs in several jurisdictions around the world. When a drought in the Murray-Darling Basin in Australia during the 1980s reduced annual licensed water entitlements to about 10 to 20 percent of their normal volume, farmers quickly opted to trade around the limited allocation they received rather than attempt to plant a crop with insufficient resources. The result was that certain farmers purchased enough water to produce a crop and others were compensated for their reduced supply.[ix] Physical and derivative water trading has now become fairly common among irrigators and various state and local authorities in Australia and takes place over-the-counter, as well as on trading platforms.

Water trading has also been prevalent in Chile for several decades. Under the Chilean Water Code, existing water users receive property rights to both surface and ground water without charge.[x] Any new or unallocated rights must be auctioned off. In situations where demand for water exceeds supply, available water is distributed proportionately. The Chilean case in particular, however, highlights that, while water markets can be used to effectively regulate water use, they can also create ancillary, potentially negative, social and economic impacts. A great deal of tension has arisen in Chile between private companies that have purchased water rights and communities that blame these companies for their own water scarcity. For example, in one Chilean town a mining company was able to acquire 75 percent of the local water rights, making the town itself more dependent on water brought in by trucks.[xi] At the country-level, water markets can also drive economic trends, such as a shift away from agricultural production towards mining.

The challenge inherent to using water markets to incentivize more efficient water use and reuse, as with any of the incentive instruments discussed in this paper, is how to balance potential water use benefits with the potential and social and economic impacts attributable to the same incentive structure.

One extremely innovative approach to leveraging water markets to finance reuse activities was recently demonstrated in Prescott Valley in Arizona. An upgrade to the town's waste-water treatment plant generated a return of 9,127m^3 per day of treated effluent to a local aquifer. This surplus created a new "groundwater credit," which the town chose to offer for sale in a unique price-floor auction. The auction netted the town \$67 million, as the highest bidder agreed to pay \$20.16/m^3 for the right to draw 3.3 million m^3 from the ground each year.

Source: Arizona water rights auction tops \$20/m^3, Global Water Intelligence, Vol 8, Issue 11 (November 2007).

Figure 3. Arizona "Groundwater Credit" Auction

There are several ways in which the principles of water and water quality trading can be applied to effectively encourage greater water reuse. First, a facility that reduces its initial demand or improves the quality of its discharge against an established baseline or cap might trade its excess demand or pollution allocation to another facility. Second, a facility that reclaims water and provides it to an external reuse application, e.g. irrigation or aquifer recharge, might use the corresponding reduction in demand (or increase in supply) to offset its own water intake. Third, a facility might sell off reclaimed water to other water users.

Market-Based Incentives for Reuse	Open Market	Baseline/Cap-and-Trade Markets
	• Lower water costs due to reduced demand • Profits from sale of reclaimed water	• Profits from sale of reduced demand/improved quality • Offset demand through provision of reclaimed water to other users

5. Tax Financing and Public Grants

Governments can also provide incentives and financing for water reuse through tax measures. Tax credits and exemptions, as well as grants, can be used to improve the economics of an investment in water reuse, while tax assessments may be used to help finance public water reuse systems or infrastructure. In recent years, the renewable energy sector in the U.S. has seen significant growth stemming almost exclusively from the availability of tax credits and, more recently, a cash grant available in lieu of certain credits. Tax financing for renewable energy in the U.S. provides an example of a successful positive incentive scheme that can be translated to the water sector.

There are two tax incentives in the U.S. that have been critical to the growth of the renewable energy industry: a production tax credit (PTC) and an investment tax credit (ITC). There is also now a cash grant available in lieu of the ITC.

5.1 Production Tax Credits

The PTC provides an income tax credit for the production of electricity from qualified sources of renewable energy. The current value of the PTC for electricity produced from wind and geothermal sources is $0.02/kWh and applies for the first ten (10) years of project operation. The PTC was initially created under the Energy Policy Act of 1992. The original credit expired in 2001, but has been repeatedly extended. Most recently, in the February 2009 stimulus package, the credit was extended until 2012.

A similar “reclamation tax credit” might also be extended to companies that reclaim water on a per gallon basis. Such a credit could be offered at either the state or local level and might equal roughly the market value of one gallon of either potable or reclaimed water. The equivalent of a reclamation tax credit is offered by the state of Washington under its Public Utility Tax law. The Public Utility Tax is generally levied on gross income of publicly- and privately-owned utilities. The reclamation credit, introduced in 2001, exempts 75 percent of income received for reclaimed water services. In its 2004 Water Reuse Guidelines, EPA notes that many variations on this incentive could be adopted by states, “such as imposing a utility tax directly on large water users and granting exemptions for reclaimed water use.”[xii]

5.2 Investment Tax Credits

The ITC for renewable energy is equal to 30 percent of an investment in renewable energy technology with no stated maximum credit limit and is valid for eight years. The success of the ITC for renewables has stemmed largely from the attraction of “tax equity investors” to renewable projects. Essentially, the ITC was valuable enough to create new financing structures for renewable projects that attracted investors to the industry hoping to capitalize on the credit.

There are several examples of existing and proposed ITCs for water reuse. The state of New Jersey offers a corporate business tax credit for up to 50 percent of the cost of treatment and/or conveyance equipment purchased and operated solely for the purpose of beneficially reusing wastewater effluent in an industrial process. New Jersey also provides a sales tax refund for treatment and/or conveyance equipment purchased and operated solely for the purpose of beneficially reusing wastewater effluent in an industrial process. However, in the several years these credits have been available, few companies have taken advantage of the program. The limited uptake for this incentive program may relate to a lack of awareness of the program among potential beneficiaries.

Singapore also has a tax credit equal to a percentage of fixed capital expenditure on projects or activities that reduce the consumption of potable water. This incentive, provided under the country’s Economic Expansion Incentives (Relief from Income Tax) Act is often negotiated with the Singaporean Economic Development Board as part of an incentive “package” for a particular project.

On September 30, 2010, U.S. Senate Energy & Natural Resources Committee Chairman Jeff Bingaman (D-NM) and Small Business & Entrepreneurship Committee Ranking Member Olympia J. Snowe (R-ME) introduced the **Advanced Energy Tax Incentives Act of 2010 (S. 3935).**

The bill would create direct tax-based incentives for industrial resource efficiency. The proposed legislation would create a new investment tax credit (ITC) for water reuse, recycling, and/or efficiency measures related to process, sanitary, and cooling water. Introducing the bill, Senator Bingaman noted: "The U.S. currently reuses only 6 percent of its water, and there is significant potential for gains in this area. The industrial sector, which is responsible for 45 percent of domestic freshwater withdrawals, is an ideal place to introduce transformative water reuse and water saving technologies. Approximately 3 percent of U.S. electricity use is for pumping, treating and transporting water."

Under the bill, a qualifying efficient industrial process water use project would include any project that replaces or modifies a system for the use of water or steam in the manufacturing sector that is designed to achieve at least a 20 percent reduction in water withdrawal and a 10 percent reduction in water discharge when compared to the existing water use at the site, or vice versa.

The link between energy and water is clearly addressed in the legislation. Energy efficient reuse projects would be eligible for incrementally higher tax credits. For early projects that consume less than 3,000 kilowatt hours per million gallons of water, the credit would cover 10 percent of a project proponent's qualified investment. For projects that consume less than 2,000 kilowatt hours per million gallons of water, the credit would rise to 20 percent of a qualified investment. Projects under 1,000 kilowatt hours per million gallons of water would receive a 30 percent credit.

The ITC for water reuse is intended to provide the same level of incentive for energy-efficient water reuse projects as the renewables ITC has provided in that sector. The bill not only provides a pathway to new funding for reuse projects, it also embeds a clear policy signal in favor of less energy-intensive reuse projects.

5.3 Grants

One current alternative to the ITC for renewable energy is a 30 percent cash grant from the Department of Treasury. Renewable energy investors can apply for this cash grant in lieu of the ITC. The cash grant incentive has become particularly important for recent renewable energy projects as the global economic downturn has reduced the number of investors seeking to take advantage of tax equity in renewable energy projects through the PTC and ITC. For this reason, a cash grant option may be a positive addition to the proposed legislation creating an ITC for water reuse.

The federal government does offer a limited amount of direct financing for water reuse and reclamation projects under Title XVI of the Reclamation Wastewater and Groundwater Study and Facilities Act. Under Title XVI, the Bureau of Reclamation is authorized to conduct feasibility studies for water reclamation and reuse projects and fund up to 25 percent of the costs of such projects after Congressional approval of the appropriation. Unfortunately, the Title XVI program is available only in 17 western states, and has limited funding.

Grants for water reuse and reclamation are also available in some states, including California, Florida, Texas, and Washington. In California, the State Water Resources Control Board (SWRCB) provides funding for the planning, design, and construction of water recycling projects. As under the Title XVI program, SWRCB construction grants are limited to 25 percent of the eligible construction costs of a proposed project. Since the mid 1980s, the SWRCB has distributed more than $100 million in grants and $341 million in low interest loans for water recycling projects. According to the agency, water recycling projects receiving SWRCB funding have increased the use of recycled water by 105,000 acre-feet per year (the amount of water used by 300,000 homes per year).

6. Public-Private Partnerships

Public private partnerships (PPPs) are also increasingly viewed as an effective means of stimulating investment in reuse infrastructure around the world. Public water companies still provide most water and wastewater services worldwide, but the number of people served by private companies grew from 51 million people in 1990 to nearly 300 million by 2002.[xiii] Particularly in areas such as the western United States, where new communities are cropping up in places where basic water infrastructure does not yet exist, private operators can often provide the type of decentralized, ad hoc solutions necessary to meet demand.

Tax-exempt private activity bonds (PABs) are one way of incentivizing private investment in new water reuse technologies. PABs are issued by, or on behalf of local governments and the proceeds of their sale are used to finance private projects, including water infrastructure projects. The bond-holder's return comes directly from revenues from the financed project.

In the United States, many projects that are eligible for PABs are subject to annual volume caps, which restrict the amount of certain PABs that can be sold in any one state. Federal legislation has recently passed in the House of Representatives, and been proposed in the Senate to remove the volume cap for bonds for the furnishing of water and sewage facilities. The legislation notes among its Findings that: "removal of State volume caps for water and wastewater infrastructure will accelerate and increase overall investment in the Nation's critical water infrastructure; facilitate increased use of innovative infrastructure delivery methods supporting sustainable water systems through public-private partnerships that optimize design, financing, construction, and long-term management, maintenance and viability."[xiv]

In jurisdictions with a commitment to public funding and support for PPPs, consideration should be given to ensuring that PPPs receive the same support for efficient resource use, including water reuse as that provided to public utilities. In the United States, the Clean Water State Revolving Fund (SRF)—funded jointly by the federal government (80 percent) and state matching money (20 percent)—provides interest-free loans for wastewater utilities seeking to invest in conservation and reuse projects. However, the SRF does not permit borrowing for privately owned projects, except in rare cases. Removing the SRF's exclusion of PPP projects would allow subsidies to flow to private as well as public investments in reuse and conservation.

7. Conclusion

This paper provides a portfolio of incentive mechanisms that show promise in encouraging water reuse around the globe. Although water reuse and recycling may be driven by regional water scarcity concerns, the success of the reuse policy tools discussed here demonstrate that dynamic government involvement in the sector can result in large-scale water reclamation and reuse, whether or not water availability in a particular jurisdiction is an issue. In sum, governments have an important role in developing renewable water resources in order to meet present and future water challenges.

8. References

i GE Water, Addressing Water Scarcity Through Recycling and Reuse: A Menu for Policymakers (2008).

ii World Health Organization, WHO guidelines for the safe use of wastewater, excreta and greywater, Vol. 1, at 15 (2006).

iii OECD, Managing Water For All: An OECD Perspective on Pricing and Financing, OECD Paris (2009).

iv John J. Boland and Dale Whittington, Water Tariff Design in Developing Countries: Disadvantages of Increasing Block Tariffs (IBTs) and Advantages of Uniform Price With Rebate Designs (2000).

v WRI Issue Brief, Water Quality Trading Programs: An International Overview, World Resources Institute (March 2009).

vi Id.

vii Id.

viii Id.

ix World Wildlife Foundation, Allocating Scarce Water: A primer on water allocation, water rights and water markets (April 2007).

x R. Andreas Kraemer et al., Economic Instruments for Water Management: Experiences from Europe and Implications for Latin America and the Caribbean, Inter-American Development Bank (2003).

xi Edgar Chen and Sarah A. Altschuller, Corporate Accountability and Human Rights in the Age of Global Water Scarcity, Natural Resources & Environment (Winter 2010).

xii EPA, EPA Guidelines for Water Reuse p. 206 (2004).

xiii Gary H. Wolff, P.E., Public or Private Water Management? Cutting the Gordian Knot, Journal of Water Resources Planning and Management (January/February 2004).

xiv Section 2(a)(10).

NOTES

GEA18682 (03/2011)