

## ***We Have Enough Water, but Not Enough to Waste: Solutions to Securing LA's Water Future***

### **Introduction**

There has been much discussion recently of Los Angeles being in the midst of a drought. Although this type of dramatic language is good for capturing the attention of the public, it is ultimately misleading. Depicting the current water situation as a drought implies that Los Angeles is facing a temporary water shortage, an abnormal situation that will pass in time. This is not the case. Years of low rainfall tend to sound alarm bells amongst the public, but for Southern California, dry years are actually more common than wet ones. Most of the city is in a semi-arid Mediterranean climate with generally low annual rainfall that can fluctuate from year to year. Moreover, the effects of climate change have caused the fluctuation in annual rainfall to increase: both the wettest and driest years of record for the Los Angeles region have occurred in just the past eight years.

Los Angeles draws its water supply from a variety of sources. However, many of these are now oversubscribed, and several face serious water quality problems. LA's sources of imported water can no longer supply the city at the level they once did, due to legally mandated environmental mitigation programs and increased demand from other communities that share these resources. LA's local water sources also face problems such as pollution, overuse, and the danger of seawater infiltration into underground freshwater basins.

In spite of all this, there is still hope for LA's water future, but city officials and residents must look for sustainable solutions, rather than crisis-driven band-aid fixes that will only exacerbate the problems in the long term. Central to such a sustainable approach is first acknowledging that for LA to continue to thrive, it will need to reduce its dependence on imported water.

Necessary strategies to increase LA's local water supplies include:

- Manage the entire greater Los Angeles watershed using a holistic regional approach.
- Aggressively pursue all water conservation, efficiency, and recycling options on individual, business, and industrial levels by pursuing water education, water efficiency solutions, greywater and rainwater capture systems, drought resistant landscaping, incentives for conservation, and low impact development.
- Require that all new development be water neutral by requiring the use of the best conservation, efficiency, and recycling practices.
- Repair aging water infrastructure, require water system audits, and expand water-recycling infrastructure.
- Mandate groundwater clean-up efforts and tighter pollution controls to deter further degradation.

By taking these actions to preserve and protect LA's local water supplies, the city can also fight environmentally unsound and expensive water distribution trends such as water privatization and the over reliance on bottled and vended water.

These changes will also create new employment and development opportunities for local communities. The implementation of water-saving technologies, retrofitted infrastructure, and new LID development practices is a chance to create new jobs in this time of economic crisis. It's also an important opportunity to redevelop low-income communities in a responsible way, making sure they aren't left behind in these efforts and providing them with better infrastructure and public space.

Implementing these solutions is a priority that can't wait. If both the city government and residents act now, Los Angeles has an opportunity to maximize its local water resources to secure a safe water supply for a sustainable future.

### **Water Supply**

The water supply for the Los Angeles region comes from a variety of local and imported sources, and as the population has grown over time, LA's reliance on imported water has increased. The city currently imports about 65 percent of its water. State and federal courts have reduced LA's allocations from these non-local sources in recent years. Exploring and investing in ways to maximize local resources will be the best way to offset these

supply reductions.

### **Imported Water Sources**

The Los Angeles Aqueduct carries water from the Owens Valley and Mono Lake. It is controlled by the LA Department of Water and Power (LADWP) and provides water solely to the City of Los Angeles. Currently, the aqueduct supplies the city with 11 to 32 percent of its annual water supply.

The Colorado River Aqueduct carries water from the Colorado River to many different parts of Southern California and supplies 37 to 46 percent of the water used in this region. It is controlled by the Metropolitan Water District (MWD), a public water wholesaler made up of 26 member agencies that together provide drinking water to some 19 million people in parts of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties, a combined area of over 5,000 square miles.

Los Angeles shares the Colorado River with six other states upstream (Utah, Wyoming, Colorado, New Mexico, Arizona, and Nevada) and with Mexico downstream. California has been allocated 4.4 million acre-feet per year from this aqueduct, but due to surpluses in years past, MWD had been using more than its allocation by about 800,000 acre-feet. Because of increased demand from other states upstream, the Secretary of the Interior is forcing California to reduce its take of Colorado River water back to its 4.4 million acre-feet allocation.

The third source of imported water for Southern California is the California State Water Project. The California Aqueduct, at 444 miles long, is the largest aqueduct in the world. All the pumping of water out of the Delta and over the Tehachapi mountains makes the State Water Project the largest single consumer of energy in California. The State Department of Water Resources administers the project and through it supplies water from the Feather River and the Sacramento and San Joaquin River Delta in Northern California to the Bay Area, the Central Valley, and much of Southern California. In spite of its scale and energy consumption, the State Water Project has never provided as much water as it was supposed to. The state is contracted to deliver 4.2 million acre-feet per year but only delivers an average of 1.86 million acre-feet a year, less than half. The State Water Project could see its ability to deliver water further hindered by such impacts of climate change as the greater frequency of dry years, a sea level rise requiring additional fresh water releases from reservoirs into the Delta to maintain water quality, and a corresponding curtailing of pumping water south of the Delta.

Already the diversion of so much water from the Sacramento and San Joaquin River Delta has caused an environmental disaster in the region. Due to overdrawing water for agricultural and urban uses, increased water salinity, and pollution, the balance of a vital ecosystem is being seriously damaged. The most obvious and inexpensive solution to stop the degradation and begin to restore the Delta is to decrease the Central Valley and Southern California's reliance on the Delta as a water source by maximizing reliance on local water sources.

### **Local Water Sources**

The Los Angeles region currently gets about 35 percent of its water supply from local water sources. However, many of these sources are under-utilized for various reasons.

#### **Surface Water**

About 20 percent of LA's water supply comes from local surface water: near-by rivers, streams, lakes, and reservoirs. The water for all of these sources originates from rainwater and snowmelt from surrounding mountains. Almost all rainwater is diverted to storm drains that send the water out to sea. Most rivers and streams in the LA area have been engineered to flush out water to the ocean, since these have been channeled and paved to prevent flooding. However, some rainwater is stored in man-made lakes (or reservoirs) to later be diverted to spreading basins. These are ponds where rainwater is allowed to spread and slowly percolate back into the groundwater table, increasing the city's groundwater supply. There are also some parts of the Los Angeles River and other streams that have not been paved, where water can seep back into the ground.

#### **Ground Water Basins**

The Los Angeles region receives about 15 percent of its water from groundwater basins. There are six major groundwater basins in the LA area, of which the San Fernando Basin is the largest, alone providing about 80 percent of the local groundwater supplies. These basins are replenished through spreading, the percolation of surface water back into the ground, and also through injection. Injection, where wells pump water down into the aquifer, is normally used in places where the basins have been oversubscribed or there is a danger of salt-water

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Miguel Luna - January 21, 2010 - Page 2 of 9

intrusion or sinkage. These groundwater basins hold large quantities of water and could be a much bigger water source for the LA area. However, not all of the groundwater in the basins can be used. Numerous basins have been contaminated with industrial waste from World War II era rocket fuel, such as chromium 6 and perchlorate, which has taken them out of use for drinking water. Additionally, many of the basins are polluted by agricultural run-off and leaking septic systems, which result in water quality issues.

#### Water Recycling

Water recycling, the process through which wastewater undergoes multiple levels of treatment so that it can be safely reused, is another important opportunity for increasing local water supplies. Currently, treated wastewater is used in Los Angeles for a variety of purposes, such as landscaping, industrial use, artificial bodies of water, and injection into underground water basins to prevent salt water infiltration. Recycled water is carried by its own separate plumbing infrastructure, purple pipes, and is not used for drinking purposes in LA County. Recycled water may be used on individual, institutional, and industrial scales.

There are three main levels of treatment for municipal wastewater. Primary treatment involves the removal of sewage solids through sedimentation. Secondary treatment uses biological processes to further remove organic compounds, with microorganisms using the oxygen in aeration tanks to consume the compounds as their food. Tertiary treatment combines chemical disinfection using chlorine, sedimentation, and filtration. Recycled water that has gone through all three stages of treatment may be used in for irrigating golf courses and parks. The California Department of Health Services closely monitors and enforces health requirements for the use of recycled wastewater.

Los Angeles began water recycling in 1979 for irrigation and industrial uses. While LA currently uses about 4,600 acre-feet of recycled water—saving enough potable water for about 9,200 homes—this only represents around 3 percent of LA's total water use. Recently golf courses like Woodley Golf Course and schools like Loyola Marymount University have begun using recycled water for their irrigation.

#### Conservation

A most promising source of local water is the water that Los Angeles saves through local conservation measures, both through individual residential and business efforts with government incentives. Although the LA region has managed to reduce its water consumption a great deal, there are still untapped opportunities to conserve a lot more. Using local water resources more efficiently is the best and least expensive way for Los Angeles to increase its water supply and achieve regional water independence. The city has already made great strides in conserving water. Despite population growth of 35 percent since 1970, Los Angeles has experienced a mere 7 percent jump in water consumption. During that same period individual per capita water usage dropped by 15 percent. More recently, after 5 months of mandatory water rationing, the LADWP announced in December 2009 that they had reduced water consumption by 18.4 percent.

#### **Watershed Management**

Watershed management may also help safeguard clean water supplies and identify recycling and conservation opportunities. A watershed is the area of land where all the water in it or on top of it, from rainfall, snowmelt, and melting ice, drains downhill into a single destination such as a lake or ocean. Water does not stay still. It flows both above and below ground, and even when held in lakes and seas, it evaporates into the atmosphere and falls again as rain. Thinking in terms of watersheds enables one to understand how seemingly distinct water sources such as individual rivers, lakes, and aquifers are in fact linked together by virtue of flowing toward the same destination. According to the Environmental Protection Agency (EPA) there are 2,110 watersheds in the continental United States—2,267 including Hawaii, Alaska, and Puerto Rico.

Watershed management approaches thus seek to view both land and water resources as they are connected to one another in the watershed and to manage them accordingly. Such a management approach is essential to both identifying sources of existing groundwater pollution and preventing further pollution. It is also necessary to navigate the intricacies of conflicting water supply and water rights demands. Watershed management requires the collaboration of anyone taking water from or putting water back into the watershed, thus looking at the overall water quality and quantity implications throughout a watershed of land use, development, industry, agriculture, and other activities.

The main watersheds in the Los Angeles area are the Los Angeles River Watershed, covering an area of over

834 square miles, the San Gabriel River Watershed, covering about 640 square miles, and the Santa Clara River Watershed, covering an area of 1,600 square miles.

## **Facing Los Angeles' Water Supply Problems**

### **Problem: Groundwater Pollution**

In Los Angeles there are numerous ground wells, however, we can only use one fourth of the existing wells. Drawing uncontaminated water from polluted basins increases the risk of the polluted plumes migrating to other basins and thereby spreading the contamination. Such is the case with the Main San Gabriel Valley Basin, which is contaminated with chromium 6 and perchlorate. The Department of Defense has fought for years to avoid funding significant clean up by stating that they would not act until the EPA set national standards for permissible levels of perchlorate contamination in drinking water, while simultaneously fighting for broad exemptions from federal environmental laws. The California State Legislature created the San Gabriel Basin Water Quality Authority, but its efforts have been hamstrung by lack of federal funding.

### **Solution: Groundwater Clean Up**

Polluted groundwater in the Los Angeles region represents a huge source of water that cannot be fully utilized. LADWP's attempts to further groundwater clean up by filtering recycled water into polluted basins should be studied and pursued rather than taken off the table. Pressure must be put on the responsible parties, including the Department of Defense, to fulfill their legal duty to clean up superfund sites in our groundwater basins. Previous legislative efforts by California federal representatives such as then Rep. Hilda Solis stalled in Washington during the Bush Administration. A broad coalition of local, state, and federal officials should aggressively pursue clean up funds through Congress and the Obama Administration. The EPA should prioritize making its final regulatory determination for perchlorate and ensure that public safety is the paramount criterion in the determination. To prevent future groundwater contamination, stricter legislative standards must be devised and enforced for capturing polluted runoff and preventing dangerous chemicals from entering the watershed.

### **Problem: Unsustainable Development**

Population increases will place additional strains on Los Angeles' water supply. However, it is necessary to first distinguish between development built to meet the demands of a growing population and development meant to create demands where they do not exist. Several mass development projects such as Tejon Ranch depend entirely on imported water supplies that critics claim can be found only on paper.

### **Solution: Water Neutral Development**

While development may be inevitable, it is urgent that it be done responsibly and in areas that can sustain the growth. In Water Neutral Development the local water supplier would require new developments to include the most water efficient design, fixtures, and landscaping to draw down new water demand. Any new demand brought online by the project would be mitigated in the adjacent residential areas. For example, the developer could pay into a water conservation or mitigation fund as a means to offset new demand. The fund would provide a new revenue stream for conservation programs that are regionally based and not contingent on bond funds or the state budget. Not only does this form of development help an area grow and be sustainable, it also provides a new funding stream for conservation programs such as MWD's WaterSmart program that is pending cancellation.

- Require new residential and commercial developments that are subject to CEQA to incorporate cost-effective water efficiency measures.
- Require that any water use in the new development be fully mitigated through water efficiency measures in existing communities or by developing local water supplies.
- Require that 40% of the benefits from mitigation projects be directed to disadvantaged communities that otherwise would not be able to afford efficiency and adaptation measures.
- Require that a portion of the work is done with community based organizations who have gone out of business during the drought!
- Begin the manufacturing of water saving equipment in Los Angeles to provide jobs and economic

development

**Problem: Aging Infrastructure**

Aging water mains waste tremendous amounts of water through leaks and spills, but can also cause great damage when they break.

**Solution 1: Repairing and Replacing Old Infrastructure**

System-wide inefficiencies such as leaky infrastructure are an easily preventable source of waste in the Los Angeles region. By retrofitting old plumbing systems in homes and businesses LA can achieve substantial water savings. Local water agencies should take a proactive role in repairing and replacing the city's old infrastructure rather than waiting for large breaks to occur. The city must increase the rate of replacement of infrastructure repair and rehabilitation.

**Solution 2: System Audits**

System audits should apply to residential and commercial users. Similar to the energy assessment that DWP provides to its customers, water audits should also be provided. For example, in Australia the water company can monitor the water use of any single customer, or across a particular area. They installed special meters that are connected remotely to a computer system. This allows monitoring of specific locations or areas and makes it easier to target outreach where it is most needed. This should be done at no charge to LADWP lifeline rate customers.

**Solution 3: Expand Recycled Water Infrastructure**

Existing infrastructure should be expanded so that the use of recycled water can become more widely utilized. Its use in new developments for purposes like landscaping or toilets should also be mandated.

**Problem: Wasting Good Water**

In spite of the progress that has been made, there are still many unexplored opportunities for water conservation in Los Angeles. The Pacific Institute estimates that more than 2.3 million acre-feet of water (or one third of current urban usage) could be saved statewide through better implementation of existing conservation technologies for homes and businesses that range from more efficient toilets, showers, washing machines, and dishwashers, to fixing leaks and changing impermeable turfs to native landscaping. Eighty-five percent of those savings could be achieved at costs lower than those required to tap new water sources. Excessive levels of personal water use, for domestic and landscaping purposes, also represent a large source of unnecessary consumption. An aging water infrastructure exacerbates the problem, while an unwillingness to fully exploit resources like rainwater and greywater further frustrates conservation efforts.

**Solution 1: Education**

- Prioritize educational outreach. LADWP should partner with the Los Angeles Unified School District to educate students about conservation and engage them in water audits through existing programs such as the Infrastructure Academy to improve water conservation in schools.
- Provide workshops and assistance for customers to use existing dual meter programs for landscape watering and provide rebates to make it more affordable.
- Increase outreach for purchasers for recycled water.
- Increase and advertise California Friendly Landscape workshop for LADWP customers in multiple languages.
- Distribute conservation program materials in high traffic areas like markets and malls to ensure renters get the information.
- City officials should model behavior by stringently following the city's water conservation ordinance

**Solution 2: Water Efficiency Solutions**

New technologies represent a huge source of potential water savings. Many of the technologies aimed at individual consumers are readily available and easy to install. Low flow high efficiency toilets and

showerheads address some of the larger sources of domestic water use. Water-efficient washing machines and dishwashers tackle another area of significant water consumption. Point of use water heaters without tanks save on water consumption and energy usage by reducing wait times for hot water. Consumers can also cut back on the biggest source of domestic water consumption — outdoor usage — through the installation of smart irrigation technology. Smart irrigation systems eliminate over watering by automatically adjusting the timing and volume of water use to reflect actual needs. Conservation technologies aimed at the business and public sectors can also yield impressive results. In addition to the opportunities described above, water can also be conserved with waterless urinals and the retrofitting of car washes.

- Meter apartment complexes and use dual plumbing in retrofits and new buildings for the use greywater for toilets and other non-potable uses.
- Retrofit existing public buildings for water efficiency and implement low impact development strategies in new and redeveloped buildings.
- Include water efficiency standards in building ordinances.
- Continue to explore ways to maximize water recycling.
- Dual landscape meters
- ET irrigations controllers- implement the existing Prop. 84 grant with CBO's

### **Solution 3: Greywater and Rainwater capture systems**

Greywater and rainwater capture systems are two ways to make use of water resources that would otherwise go to waste. With greywater systems, wastewater from sources like washing machines, hand sinks, and showers is captured on site and reused in toilets and landscape irrigation systems. Greywater is defined as wastewater that, although not potable, does not contain sewage, significant food residue, or dangerous concentrations of chemicals. As 50 to 80 percent of residential wastewater is greywater, these systems represent huge potential water savings. Rainwater capture systems do exactly what their name suggests, capture and store rainwater for use in irrigation. These systems cut down on water consumption but also provide an additional ancillary benefit: by using captured rainwater for landscaping purposes, the rainwater then filters through the ground and helps replenish local groundwater basins.

- The city should expand its current rainwater barrel pilot program and provide education and incentives for greater implementation of rainwater capture systems citywide, particularly in environmental justice communities and provide information about the program in multiple languages.
- The city should provide greywater guidelines and workshops in multiple languages making use of new state guidelines.

### **Solution 4: Drought Resistant Landscaping**

Outdoor water usage represents the greatest amount of residential urban water consumption, as much as 60 percent of urban water consumption in LA goes to landscaping and other outdoor use. Although Southern California is a semi-arid climate, many home and business owners choose to landscape their properties with traditional lawns or imported tropical plants, evidencing deeply set cultural preferences. Both of these landscaping choices require more water to survive than the Los Angeles area can naturally provide. One square foot of turf uses approximately 50 gallons of water per year. Moreover roughly 50 percent of water used for irrigating lawns and gardens is wasted due to over watering and evaporation. Over watering also washes significant amounts of pesticides and fertilizers into storm drains, tributaries, creeks, groundwater supplies, and ultimately into the ocean.

By contrast, many California native plants (or plants from other Mediterranean regions) are well adapted to the dry Southern California climate and are able to thrive on comparatively little or no water. According to the results of a study by the City of Santa Monica's Office of Sustainability and the Environment, maintaining a traditional lawn requires almost ten times the amount of water needed to support a sustainable landscaped lawn (57,000 gallons of water per year for a typical single family home versus 6,000 gallons per year).

Sustainable landscaping, which uses native grasses, shrubs, flowers, cacti, and other plants instead of typical lawn grasses like St. Augustine Grass or Buffalo Grass, also creates a wealth of other environmental benefits. According to the same Santa Monica study, yard waste is significantly reduced with sustainable landscaping (250 pounds per year versus 670 pounds), as are maintenance hours (15 hours per year versus 80 per year). Planting California native plants also creates habitat for native fauna like birds and butterflies whose numbers are rapidly dwindling due to habitat destruction. State law requires that all cities and counties adopt by January 1, 2010 the Department of Water Resources Model Water Efficient Landscape Ordinance. The ordinance does not apply to new or rehabilitated landscape projects that cover an area less than 1000 square feet or that exceed 1000 square feet but do not require a building permit.

- Switch to sustainable, native landscaping.
- Install remote meters for easy monitoring of water consumption. Make use of existing landscape or outdoor meter program by providing incentives and notifying customers.
- Although MWD has a California friendly landscape and gardening classes program through the *Be Water Wise* conservation campaign, MWD, LADWP, and other water agencies need to be more aggressive in providing individuals and businesses with education and incentives to replace their lawns.
- Sustainable landscaping should be compulsory for all city properties and the city should consider mandating native landscaping for all new developments.
- The city should be the leader in native landscaping in their parks and public spaces.

#### **Solution 5: Incentives for Conservation**

- Provide more incentives to LADWP customers to conserve by extending and increasing the rebates for efficient washers, smart controllers, rotating nozzles, low-flow toilets, and turf removal not less than 250 square feet. Make it easier for DWP customers to access rebates.
- Improve enforcement of water use restrictions.
- Tiered pricing should be increased without impacting the lifeline rate to four or five tier pricing levels to provide incentive for customers to use less water, especially by reducing lawn maintenance: the more water used the more it costs.
- Ensure that MWD expands the water conservation credit program.

#### **Solution 6: Low Impact Development (LID)**

Low Impact Development is a term used to refer to development practices that seek to capture a larger percentage of rainwater runoff. By capturing the water onsite it can be released back into the groundwater table where it replenishes underground basins. This process allows air pollution and other particulate matter to be filtered out of the water as it percolates down through the soil.

In LID practices, rainwater is diverted from roofs and paved areas to landscaping, planter boxes, and bio-retention areas, instead of storm drains and rainwater capture systems like underground cisterns where soils do not allow permeability. Cement and asphalt surfaces are replaced with porous pavement that allows water to filter through to the ground. Bio-retention areas, zones that retain rainwater, and run off allow soil and plant-based filtration to clean water before it percolates into ground water. These bio-retention areas can also double as public green space, as is the case with Pan Pacific Park and Park La Brea which serve as retention areas, during times of heavy rain.

In addition to yielding environmental benefits, LID practices are actually more cost effective over time. Because LID is more sustainable and makes use of better materials, fewer repairs are required. Widespread implementation of LID practices will also reduce the need to replace storm water drainage infrastructure.

Related to LID is the City of Los Angeles' Green Streets Initiative. The Green Streets design strategies, which have already been implemented in a number of test projects, call for:

- Increased use of permeable surfaces on sidewalks and streets, allowing for a higher degree of water

infiltration and

- Landscape systems such as vegetated swales, flow-through planters, and storm water curb extensions that capture and filter storm water.

Green Street developments also serve the additional function of beautifying neighborhoods with new landscaping. This can be of particular value in creating new green space for LA's many park-poor communities.

On January 15, the Los Angeles Board of Public Works unanimously approved the draft LID ordinance requiring that 100 percent of the rainfall from a three-quarter inch storm at newly built houses, developments, and certain redevelopments either be captured and reused or infiltrated on site, or that developers pay a stormwater mitigation fee to help fund offsite LID projects like Green Streets.

- Push for an expansion of the city's current Green Streets pilot programs that have already proven effective. Particular effort should be made to provide funding and incentives for this type of redevelopment in low income areas, so that they are not left behind.
- Install mini-water treatment plants and onsite water treatment plants

### **Solution 7: Other Watershed Solutions**

Other efforts can help to improve the quality and availability of drinking water within our local watershed. Restoring natural bottoms to some parts of Los Angeles' many channeled waterways will help a greater degree of storm-water runoff to filter down into groundwater basins rather than emptying into the ocean. Increased conjunctive use of surface water to store winter and spring surpluses will also increase local water supplies for future use. To bolster this effort greater emphasis should be put on exploring new potential sites for spreading basins.

### **Problem: Over consumption of Bottled and Vended Water**

Encouraging people to use tap water, rather than bottled water, will also help the water situation in our region. It is a commonly held misconception that the tap water in Los Angeles is not fit for drinking. In fact, LA's water not only meets or exceeds all federal and state safety standards, but in 2008 MWD also tied for the gold medal in the Berkeley Springs International Water Tasting Award for best testing municipal water. Despite these facts many Los Angeles residents still choose to rely on bottled or vended water for their drinking water needs.

Bottled and vended water are a waste of both money and resources. In California, the price of bottled water represents a 10,000 percent markup from the cost of tap water. Bottled and vended water is also environmentally damaging, not only because of the amount of trash generated, but also because of the resources required to transport this water over long distances. Purchasing bottled water also helps to accelerate the process of water privatization that is occurring in many parts of the world. As industry takes control of more fresh water sources communities that once relied on these resources are finding their access curtailed.

Finally, there are also safety concerns with vended water. In 2000, the Los Angeles County Environmental Toxicology Bureau found that 33 percent of the 279 water vending machines they tested failed to meet the EPA standard for trihalomethanes, a by-product of water chlorination. Vended water machines throughout the city are largely unregulated. Water machine operators are only required to test machines for trihalomethanes once a week and fecal coliform bacteria once every 6 months. However, many operators fail to comply with even those meager regulations. This is a real problem for Los Angeles residents, especially in low income communities, where they pay a disproportionate amount of their income for water they think will be superior to tap water, when often it is of far inferior quality.

### **Solutions:**

To remedy our city's reliance on bottled and vended water it is first necessary to change public perceptions regarding the safety of tap water. In 1999, MWD embarked on a public campaign to inform Latinos that MWD's water is clean and safe for drinking. The DWP can learn from MWD's experience to expand its own outreach efforts in this area. The mayor has already issued a memo to LA city

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Miguel Luna - January 21, 2010 - Page 8 of 9



departments regarding their wasteful expenditures for bottled water. It is important that he now hold them accountable for their continued bottled water use by banning bottled water in all city departments. The City of San Francisco banned bottled water within all branches of city government, successfully reducing city bottled water purchases from about \$500,000 a year to zero. Lastly the city and county public health departments should collaborate with the state Department of Health Services to inspect vending water machines and stores.

### **Conclusion**

There are many factors that play into the current state of the water in the Los Angeles region, but it is clear now that this is a permanent problem that city government and residents will have to face now and into the future. The solutions proposed here are low hanging fruit that both officials and residents can use to maximize local water resources with the lowest monetary and environmental costs. Conservation, better watershed management, recycled water, and avoiding vended water and water privatization are all easy solutions that can have big effects. These solutions will both provide enough water for the Los Angeles region and provide economic benefits such as green jobs and community redevelopment. Availability of clean drinking water and water for nature is a growing problem and if the city does not implement these measures now, it will become harder and harder to reach the population's water needs and achieve the regional water independence necessary for the city's future.