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Conserving Water In Seattle Parks

One of the three main parts of sustainability is society. If society in a city is thriving, the citizens have a high quality of life. Parks influence society immensely. A park is a place to go and be happy. Although parks are a place to be happy, they can use a lot of water, which is unsustainable. Fortunately, there are ways to use less water. Seattle parks can be more sustainable with efficient irrigation, sustainable toilets, water conservation techniques for golf courses, and drought resistant plants.

Today farmers are able to use new and innovative ideas that are much more sustainable and beneficial to water irrigation management. One way farmers are able to save their water usage is by using crops that are appropriate for that region's climate and weather, especially in arid locations that tend to get more dry seasons and droughts (Heflin). Produce that falls under this category are: olives, Armenian cucumbers, tepary beans, and orach which are all typically native to arid regions (Heflin). By using this technique, farmers are able to save more water while being sustainable and having better management for their crop irrigation. This technique could be used in Seattle parks to conserve water. Another form of crop irrigation farmers use is underground water storage wells or rain collecting ponds. Throughout the year, they collect water which is used to irrigate crops and is easily renewable. If managed correctly some open

storm ponds can attract and create a habitat for local wildlife (Heflin). This is one of the most sustainable ways to collect water because it is renewable and requires minimal energy. Storing water is something Seattle parks could do to conserve water, and create a habitat for wildlife. Farmers and scientists have very innovative techniques not just in America but in different countries thousands of miles away.

Across the world, farmers with ideas relating to improved water sustainability and irrigation management could be having very beneficial changes on today's agriculture. In Syria, which is a typically more arid region, farms are developing new systems of irrigation such as ISI System, which stands for Improved Surface Irrigation System. ISI System can adapt easily to new types of crops and irrigate them accordingly. This method also calculates the amount of water in a field and reducing water salinity ("A New Irrigation Method"). By using these methods across the world millions of gallons of water could be saved. Thousands of innovative ideas such as this are being developed every day, however when they are using it it can have very beneficial impacts on our world's agriculture. Water is a very precious resource, if the techniques in Syria and many other places are used, water sustainability and management will be present not just in Seattle Parks, but throughout the country. Saving water is not just beneficial for crop irrigation but for waste management as well.

Today there are many toilets across the world that make our planet more sustainable. One of these toilets is called the Nano-Membrane Toilet (Balch). It uses a process called pervaporation which uses partial vaporization to separate the waste from the urine. Waste can then be turned into fertilizer for sustainable farming and urine can

be turned into potable drinking and hand-washing water. With this technology, we can not only have better waste management but also solve hygiene and agricultural problems. Nano-membrane toilets can be used in Seattle parks to conserve water. Another toilet that makes the world more sustainable is called the solar-powered toilet (Ayre). Inside of this toilet there are eight mirrors that are used to heat up a chamber that can reach six-hundred degrees Fahrenheit. Once the chamber is hot enough, it creates biochar. Biochar is used as a soil amendment which is important because it attracts and keeps the nutrients in the soil. Solar-powered toilets would reduce the amount of water used by public toilets in Seattle parks. These toilets are very sustainable but there are other toilets that may be even more sustainable.

Many toilets out in the world are used for sustainable uses. One of these is the Toilet for People (TfP) Composting Toilet that uses composting technology. This toilet uses a urine diversion system and is odorless by using a ventilation kit. TfP Composting Toilet is made from recycled Marine grade high-density Polyethylene plastic and weighs around sixty-five pounds. There are different types of toilets for men and boys like a TfP urinal and a TfP Pee Toilet for women and girls ("Composting & Waterless Toilets"). These toilets are important because they are easy to use not only for cabins, RV's, tiny houses, and boats, but also in Seattle parks. The toilet is very portable and affordable for many and this is important because it can be bought and used by many. TfP Composting toilets are very useful when needed and this is important because it can be set up easily and many people can use it. Toilets are very sustainable especially for water and so are some plants that are great for droughts.

As Seattle is affected by global warming the climate will be getting drier and drier. Plants will need to be watered more, because the climate will be so dry. Drought resistant plants will not need to be watered. These plants are native to areas like California (Wilson). California gets less rainfall than Seattle and the plants that naturally grow there do well in dry climates. During the summer Seattle gets hot and dry, like California. The city of Seattle will need to use less water. As a result of that our parks will be more sustainable. There are many sustainable plants that would thrive in Seattle parks.

Plants that need low amounts of water to thrive can help reduce the amount of water parks use, because they do not need to be regularly watered. Artemisia is a small bush with silver and grey leaves. An artemisia plant grows well in a hot dry environment, like Seattle summers ("Artemisia"). If artemisia is planted in Seattle parks they would not need much care, and would not need to be watered often. Yarrow is a bright yellow, three foot tall flowering plant. They grow well in dry soil, and do not need much irrigation ("Plant Database"). These flowers could thrive in Seattle parks even without much watering. Plants like artemisia and yarrow can be planted in Seattle parks and would not need a lot of irrigation. Unlike these plants Seattle golf courses use a lot of water.

A typical golf course uses one hundred thousand to one million gallons of water per week. Multiply that by the number of golf courses in Seattle and that is a lot of water used just in that area. There are many ways to get that number to go down like evaporative transfer and water barrels. Evaporative transfer gets the water usage to go down because it calculates how much water has been evaporated and how much water

is needed to grow the grass. To get this calculation, golf courses would have to install a weather station. This helps golf courses just water the ground that needs to be watered (“The New American Golf Course”). It can be inferred that too much water just trickles through the soil but too little water puts the grass in drought stress. Another way golf courses can use less water is if they store water in water barrels. At some golf courses their irrigation comes from stormwater they collected. There are also ponds that pool rainwater, five ponds can pool forty-nine million gallons of water (“Alternative Water”). It is interesting that golf courses are doing a lot to use less water but they can still do a lot to improve. Golf courses are trying to use less water, they are also planting new grass to help with the problem.

Golf courses use a lot of water. TifTuf can help golf courses use less water and keep the grass safe. TifTuf can withstand foot traffic better than regular grass and is more drought tolerant it even saves thirty eight percent more water than regular grass. It stays greener longer. It makes lawns much more efficient. Although, it is more expensive than regular grass but it pays for itself in water usage (“TifTuf”). This means that it is a more efficient for homes and especially golf courses. Even though it has some negatives it is still a better alternative than regular grass. The turf can save up to 380,000 gallons per week. In the end there are many ways to save water in so many places around the world.

Efficient irrigation, sustainable toilets, water conservation techniques for golf courses, and drought resistant plants are ways that Seattle parks can conserve water and be more sustainable. A park must balance society and environment. The city of

Seattle can make changes so that they both benefit. Future citizens will have parks to enjoy. Society and our environment hold a very important place in our world, and one of the largest mistakes we as humans can make is to take them for granted.

Appendix

Researchers	Xochitl Andrade, Jack Brown, Colby Beck, James Cecil, Margot Cohen, Jora Tillman, and Andreas Derickson
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Works Cited

- 9“Alternative Water Supplies a Win for Golf Courses.” *USGA*,
www.usga.org/articles/2016/10/alternative-water-supplies-a-win-for-golf-courses.html.
- “A New Irrigation Method. Saves Water and Farming Lands in Syria.” *Expo Net*, 3
Feb. 2015,
www.expo2015.org/magazine/en/innovation/a-new-irrigation-method-saves-water-and-farming-lands-in-syria.html.
- “Artemisia.” *Fine Gardening*, www.finegardening.com/mugwort-artemisia.
- Ayre, James. “Solar-Powered Toilet That Can Turn Waste Into Biochar.”
CleanTechnica, 18 Mar. 2014,
cleantechnica.com/2014/03/19/solar-powered-toilet-developed-can-turn-waste-biochar/.
- Balch, Oliver. “The Waterless Toilet That Turns Your Poo into Power.” *The Guardian*,
Guardian News and Media, 7 Feb. 2016,
www.theguardian.com/sustainable-business/2016/feb/07/waterless-toilet-turns-your-poo-into-power-nano-membrane-technology. (Balch)
- “Composting & Waterless Toilets That Last.” *Toilets for People*, 2016,
toiletsforpeople.com/. (“Composting & Waterless Toilets”)

“Frequently Asked Questions about Biochar.” *International Biochar Initiative*,

www.biochar-international.org/biochar/faqs.

Heflin, Janelle. “10 Ways Farmers Are Saving Water.” *CUESA*, 15 Aug. 2014,

cuesa.org/article/10-ways-farmers-are-saving-water.

“Plant Database.” *Lady Bird Johnson Wildflower Center - The University of Texas at*

Austin, www.wildflower.org/plants/result.php?id_plant=acmi2.

“The New American Golf Course.” *The Garden Club Of America*, Feb. 1999.

https://www.gcamerica.org/_uploads/filemanager/publicationsresource/NewAmericanGolfCourseOrig.pdf.

“TifTuf Photo Gallery.” *TifTuf Photo Gallery - TifTuf Bermuda - Bermuda Sod - Sod*,

www.supersod.com/sod/bermuda-sod/tiftuf-bermuda/tiftuf-gallery.html.

Waters, George. “Alternative Water Supplies a Win for Golf Courses.” *USGA*, 13 Oct.

2016,

www.usga.org/articles/2016/10/alternative-water-supplies-a-win-for-golf-courses.html.

html.

Wetherbee, Kris. “Drought Tolerant Plants for the Pacific Northwest, plus Other

Hot-Weather Garden Tips.” *OregonLive.com*, 21 June 2013,

www.oregonlive.com/hg/index.ssf/2013/06/drought_tolerant_plants_for_th.html.

Wilson, Bert. “Salvia Pozo Blue.” *Costa Hummingbird on a Salvia Clevelandii Alpine*.

Native Plants Support Native Birds and Butterflies., 14 Sept. 2013,

www.laspilitas.com/garden/drought.html.

