



Beyond Recycling: Sustainability at Tualatin Valley Water District November 2003

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Executive Summary

Tualatin Valley Water District, like most water providers, has always employed long range planning. This planning is essential due to the extended timelines needed to design and create the infrastructure to provide adequate water to our customers. These plans have taken into account population growth, capital expenses, age of infrastructure, expected conservation, regulations and many other factors, but they have not consciously embraced the concept of sustainability. It should be said that conservation has been seen as comparable to a source of supply, enabling the deferral of capital improvements and helping us through droughts, but we can enlarge that piece of the long-range puzzle by exploring the broader notion of sustainability.

Integrating sustainability into our forecasting enables us to present a comprehensive vision of the future, and to predict many of the threats and opportunities that may emerge over these long time spans. Sustainability helps us see the world as a whole system and recognize the many ways our organization impacts that system. Conversely, it helps us see how local, regional and global issues are interrelated and how they, in turn, impact our District.

This report contains the following sections:

- **What is Sustainability and Why Pursue It?** begins with an overview of some ways to define and explain sustainability. The three-legged stool of Economy, Environment and Society illustrates the three areas we need to keep strong in order to maintain a sustainable system, and how they relate. Trends, threats and opportunities are examined at the local, regional and global levels. At all levels, water supply and distribution are critical to environmental, societal and economic viability, and may require some major rethinking to assure water is valued and utilized appropriately. The financial advantages, avoidance of risk and intangible returns associated with pursuing sustainability show us the benefits of capitalizing on our opportunities at the District level and leading by example in the larger community.
- **Accomplishments to Date** takes us through the highlights of TVWD's history of environmentally and socially beneficial efforts. Recognizing that sustainability encompasses more than just the environment, the District has chosen to act based on the wider concept of sustainability. The first steps on that journey are outlined, including
 - formation of a Green Team,
 - the initial Environmental Priorities Analysis conducted by the Green Team, and
 - a sampling of actions already taken and the results of those actions.

- **Strategy for the Future** recommends steps to take to become a more sustainable organization and a proposed timeline for accomplishing our goals.

The suggested elements of the plan are:

1. Continue to identify and pursue sustainable projects
2. Complete LEED™ process for building expansion
3. Revise purchasing policies to include sustainable criteria
4. Conduct “backcasting” process of visioning the future
5. Establish a Sustainability Management System
6. Integrate sustainability criteria into CIP Analysis
7. Integrate sustainability into regular business planning process
8. Identify and achieve regional and national goals, industry leadership, policy influence

Seven appendices follow the report:

Appendix A – Current Actions and Policies Already in Place – itemizes the many actions currently being taken by the District to act more sustainably

Appendix B – Results of Environmental Priorities Analysis – details the process and results of the Green Team’s examination of how our operations affect the environment

Appendix C – Suggested Guiding Principles – a foundation to guide our efforts

Appendices D, E & F refer to the Sustainability Management System element of the plan (#5)

Appendix D – Suggested Sustainability Management System Goals

Appendix E – Suggested Sustainability Management System Indicators

Appendix F – From Goal to Detailed Steps – an example of the SMS at work

Appendix G – Glossary of sustainability-related terms

What is Sustainability and Why Pursue It?

Sustainability provides a conceptual framework that recognizes issues of value to the Earth's inhabitants. Many definitions, images and metaphors exist to help us envision sustainability. Here are a few:

- **The Brundtland Commission definition:** Meeting the needs of the present without compromising the ability of future generations to meet their own needs.
- **The Triple Bottom Line:** Focuses organizations not just on the economic value they add, but also on the environmental and social value they add – or destroy. At its broadest, the term is used to capture the whole set of values, issues and processes that organizations must address in order to minimize any harm resulting from their activities and to create economic, social and environmental value. This involves being clear about the organization's purpose and taking into consideration the needs of all the District's stakeholders – Board members, customers, employees, businesses, other governments, local communities, the water industry and the public.
- **Reaching the point where an organization is no longer a net “taker”** from the Earth, but instead manages its resources, actions and investments so that it becomes at least neutral, and at best, restorative, i.e. giving back more than it takes from the Earth.
- **Three-legged stool:** The stool needs the economy, society and the environment to be healthy to ensure a stable stool. We can't pay attention to one at the expense of the others. If one leg becomes weaker, it puts more stress on the others. On the other hand, if we strengthen one leg, the others benefit, as well.



Take daylighting, for example. If more windows are included in a building, less electric lighting is required. This reduces the electricity needed, and therefore the fossil fuels required to create the electricity. The resulting decrease in mining and emissions clearly benefits the environment. But it also helps society, as studies have shown that workers are happier with natural light and are more productive. This, of course, benefits the economy by resulting in more work produced.

To explore this metaphor a little further, we can examine each of the “legs” separately.

- **Economy –**

- A stable, efficient human economy**

- Tualatin Valley Water District has handled this area extremely well. The District's general and financial management personnel have developed an organization financially well equipped for the future. Long range financial planning is conducted to match resources and expenditures appropriately, smooth out rate impacts, and adhere to the “user pays” principle. The Board of Commissioners sets goals annually that address the economic stability of the District, and staff members work throughout the year to maintain that strength.

- **Environment –**

 - A healthy, viable natural environment**

Again, the District has made some great strides at an organizational level to reduce its negative impacts and broaden its positive ones. Office of Community and Intergovernmental Relations Department staff, in particular, have participated extensively in community events and regional conservation efforts. The District is also becoming more environmentally conscious in its purchasing, and is constructing the current new building expansion to LEED™ (Leadership in Energy and Environmental Design) standards.

- **Society –**

 - A safe, vibrant community**

TVWD has created an exceptional workplace for its employees. Many benefits and policies have been implemented that give employees above average flexibility, recognition and compensation for hard work and creativity. Staff members have been involved with several community projects, but there is definite room for further participation in regional, national and global issues surrounding the supply, quality and distribution of water throughout the world.

To date, much of the District's energy has rightly been focused on local endeavors. We began by looking at our own operations. We still have work to do at that level, and we must also begin to broaden our horizons. While our District has done more than many organizations to minimize our environmental impact and maximize the good we do through our operations and in our community, we are far from sustainable. How can we move closer to sustainability? We can further reduce the waste we produce. We can power our fleet with fuels that do little harm to the environment. We can introduce and promote sustainability to the AWWA and other government entities we work with. Most importantly, we can shift our thinking from that of a linear **Take** (the resources) – **Make** (a product or service) – **Waste** (whatever is left) model to a circular or closed loop approach which uses environmentally benign energy, raw materials and processes, then recirculates what we now call waste into new business activities or back to nature. Bob Doppelt, in his book *Leading Change Toward Sustainability*, calls this a **Borrow – Use – Return** system.

Trends, Threats and Opportunities



TVWD has opportunities to examine and act upon the precepts of sustainability at local, regional and global levels. As we do, we will see trends, threats, and opportunities at each level, many of which specifically relate to the water industry.

At the local level:

- The rate of growth has slowed, and our customers have been conserving the water they use, but there are still enough new people entering the District that overall water use continues to increase.

- Increased security issues will require additional District resources to ensure the safety of water reaching the end users.
- Additional pollutants may reach problematic levels or become regulated, necessitating expanded water quality testing.
- We will need to discover new and different ways to present water conservation that encourage already-conserving customers to further explore wise water use.
- We may be able to encourage the matching of water quality with appropriate usage, as in our new rainwater catchment system for toilet flushing and irrigation.

Regionally, the District can increase its participation and influence in a number of arenas. Some of the trends, threats and opportunities may include the following:

- Discussion regarding legal structures that allow both the private ownership of water rights (separate from property rights) and the tradability of water pollution credits as means to increase the efficiency of water usage and water quality.
- Agricultural runoff and pollution of aquifers as threats to water quality in many areas.
- The effect of regulations, such as those in the Endangered Species Act.
- Conversations regarding the pricing of water and ways to ensure that it is fairly and consistently treated as a valuable commodity.
- Security at regional and national levels.
- Increased awareness about water sustainability and the importance of stewardship, even if it appears that we are not facing water shortages in our own region.
- Consideration of how our industry might expand in coming decades. For instance, if hydrogen fuel cells become the fuel of the future, what will be needed to extract the hydrogen from water, and how might water providers be a part of that?

On a global scale, we must recognize that everything we do is interrelated. The consequences of each decision we make can be tracked throughout the world. In a February 2003 address, Britain's Prime Minister, Tony Blair, put forth these statistics:

"In thirty years' time there will be two billion more people on the planet. Already 40% of the population is short of fresh water; on current trends this will rise to 50% by 2030, in west Asia it will be 90%. One-third of the world's fish stocks and one-quarter of the world's mammals are threatened with extinction. There are already over a billion urban slum dwellers. With the population of the world's cities due to rise by another billion by 2010, this will only increase. The World Bank recently estimated that nearly one fifth of preventable disease in the developing world is caused by environmental factors, such as urban air pollution and unclean water."

Some of the global trends, threats and opportunities, then, are likely to be:

- Population growth, necessitating increased water collection and distribution, and more efficient use of resources in general.
- Lack of safe, fresh water -- and in other areas, surpluses. Canada, for instance, with less than 1% of the world's population but 9% of its fresh water reserves, is exploring the possibility of exporting its excess water.



- Climate change, resulting in shifting needs for water storage and distribution. Temperatures around the world are increasing. According to a 2002 Portland Water Bureau study, this means winter precipitation will increase (although we will see more rain than snow), and late spring and summer precipitation will decrease, requiring us to almost double our storage capacity.
- The treatment of water rights as separate from property rights and the tradability of water pollution credits (see Glossary).
- Prioritization of usage: water for agriculture vs. fish vs. urban demand.

So why should we care about all this? Why do more than we have already done?

1. **Financial advantages** – In many cases, taking the sustainable road does not cost more. Many of our actions to date have actually saved the District money (see pg. 7), or provided us access to funds we would not otherwise be able to obtain. By planning ahead and considering sustainable alternatives we can implement “green” alternatives at their most cost-effective level and avoid costly retrofits.
2. **Risk avoidance** – The cleaner and tighter our operations, the less risk we face in many areas. For example, if we are not using harmful substances we won’t have to worry about being held legally responsible for later problems or be concerned with what we’ll do if those substances are banned. Wise water use allows us to optimize system usage and adjust the timing and size of capital expansions in such a way as to minimize financial risk.
3. **Intangible returns** – Operating our organization in a way that can be sustained indefinitely provides many benefits that are hard to measure. For instance, it helps our image in the local community, provides leadership in the broader water provider community, and allows us to attract better employees.



The District will have opportunities at regional, national and global levels to take a leadership role in transforming our industry into one that recognizes water as a truly valuable and scarce natural resource. That may involve radically increasing conservation and changing the incentives to make that happen. It could require revision of our current business model that rewards us with more income as we sell more water. It might result in greater reuse of water for irrigation and other uses. It will definitely require some innovative thinking, but as water providers know, it’s always better to plan now to be as prepared as possible for whatever is ahead.

Accomplishments to Date

Tualatin Valley Water District has been actively taking environmentally beneficial steps for years. Among the first:

1993 TVWD developed the first demonstration xeriscape (quality landscaping that conserves water and protects the environment) in the Portland Metro area.

Our Conservation Program was introduced, and now consists of knowledgeable staff members who provide speakers and performances for schools and community groups, do outdoor water audits for commercial and residential customers, and coordinate conservation efforts through many avenues – from District rebate programs to region-wide summer marketing campaigns.

- 1994** Replaced essentially all of our indoor and outdoor lighting with more energy efficient bulbs.
- 1999** The District began to encourage public transit by providing free MAX and bus passes to all employees.

Many actions (detailed in Appendix A) such as basic recycling, using bark bags for soil retention, heating the shop with used motor oil, and utilizing programmable thermostats have also been part of TVWD’s operations for a long time, but have not yet been a part of an organized plan.

Dec. 2001 Cheryl Welch became the District’s first Sustainability Coordinator and began devoting time to increasing the District’s internal efforts toward sustainability and developing a Sustainability Plan for the District, as directed by the Board.

Original members of TVWD Green Team

Tina Alexander
 Joel Cary
 Becky Jones
 Scott Page
 Gary Pippin
 Frank Reed
 Carol Lee Shields
 Jim Suter
 Cheryl Welch

Sep. 2002 TVWD became a member of The Oregon Natural Step Network, joining a myriad of other businesses and government entities in adopting the Natural Step framework and its four system conditions (see Glossary) as a way to develop a Sustainability Plan for the District.

Oct. 2002 A nine-member Green Team, consisting of members from each of the District’s five departments, was formed to assist with sustainability endeavors. This team has gone through a basic Natural Step introduction, obtained a BRAG grant to encourage and reward waste reduction ideas among employees, and completed an initial analysis of District operations that looks at environmental impacts and sets priorities based on criteria such as severity, likelihood of change, and potential positive financial impact. See Appendix B for detailed results.

Current Green Team focus

Based on this analysis of District environmental impacts, the Green Team concluded that **energy use, vehicle use, and water use** were the top three issues to tackle, with purchasing and waste generation close behind. We have already taken steps in those areas as shown below:

- New signs and education to encourage employees to turn off lights and computers when not in use
 - Energy use has declined at our main office facility every month for over two years, significantly mitigating the increase in cost per kWh initiated in October of 2001. Had usage stayed at FY 00-01 levels with the new pricing, TVWD would have paid almost \$11,000 more for electricity at this facility.
- Installation of variable frequency drives on two pump stations
 - Reduced energy use by 87,500 kWh between the two pump stations in the first six months of use (January through June 2003), though throughput was essentially the same as January through June of the previous year. This translates to over \$7,500 in savings on our electricity bill.

Top Environmental Issues to Address at TVWD

Energy Use
 Vehicle Use
 Water Use
 Waste Generation
 Purchasing

- Tips in monthly employee newsletter regarding wise energy, vehicle, and water use; and other suggestions to reduce waste and encourage sustainable actions
- Offers of free water saving devices through Conservation Program
- Waste audit, recycling education, and subsequent increase in materials recycled and reduction in waste generated
 - Reduction in container size resulted in decreased cost for garbage service of approximately \$350 per year.
- Awarded \$300 BRAG (Business Recycling Awards Group) grant towards incentives for employees proposing recycled product or waste reduction strategies
- Reduction of green bar reports printed due to programming changes that allow the choice of extracting data to screen or looking at report without printing it
 - Green bar paper cost is up about 6%, but usage is down by about 10% so far, with more decreases planned as mandatory green bar reports are phased out.
- Introduction of recycled products such as copy paper, tablets, plastic desk items and scratch pads made from our printed-one-side unneeded paper
 - We are paying about 8% more for copy paper, but most of the other items are similar in price. Making pads from our own paper eliminated the need to buy scratch pads, and we are working on other ways to reduce the paper we use.
- Introduction of reusable products such as dishes, cups and glasses
 - Initial cost of dishes being recaptured in disposables not purchased
- Switch from using only paper phone books to mostly online directories
 - No cost savings since both are free, but time savings for staff – no need to recycle paper directories, and looking up information on line is usually faster
- Achieving LEED™ Silver certification on our Headquarters Building Expansion will make us eligible for a five-year \$52,000 Business Energy Tax Credit from the Oregon Office of Energy.
 - As a government agency we are allowed to find a pass-through partner with Oregon tax liability to take the credit and pay us the net present value of that credit, in this case about \$45,000. A probable partner has been identified and the certification process will be completed in 2005, at which time the money will be available.



Strategy for the Future

In the long run, the Board, management, and staff of Tualatin Valley Water District must commit to embedding sustainability in all District operations and policies. Sustainability should not be a program, but an integral part of how we manage our operations and make our decisions.

The formation of a three-year **Sustainability Steering Committee** (consisting of members from the Management Team and Green Team) would be one way to set goals, prioritize projects and facilitate the transition and successful integration of sustainability into District operations. At the end of that period, we would begin to phase out

sustainability as a separate program. By then, sustainability must be who we are, not what we do.

In the shorter term, however, we can start with smaller steps and build on our strengths, pushing ourselves to take the next step in every area we can. The following list suggests what might constitute a TVWD Sustainability Plan, and a timeline for accomplishing various portions of that plan.

Suggested elements of the Tualatin Valley Water District Sustainability Plan

1. Sustainable projects

Green Team identifies and implements projects that capture the “low-hanging fruit,” i.e. improve in areas that save money or don’t require much investment of money or time to achieve results. Team also identifies a “Big Win” each year – a project that will make a significant positive difference environmentally, socially, or in the way our community or colleagues perceive us.

2. LEED™ process for building expansion

Staff continues to monitor construction progress and work toward accumulating the maximum points possible with this project, with the goal of attaining Silver certification.

3. Purchasing policy revisions

Sustainability Coordinator works with Purchasing and Inventory Management staff to identify attributes to request or require when seeking bids or proposals. Weighted criteria formulas or similar models may be used to include sustainability criteria as part of purchasing decisions.

4. “Backcasting” process

The Sustainability Steering Committee participates in this means of developing a shared vision for our journey to sustainability. Backcasting (as opposed to forecasting) is a process of looking far into the future to see where we want to end up, then working backward to develop the steps to get us there. It involves envisioning a successful future scenario of sustainable District operations, and then asking, “What can we do today to reach that result?”

5. Sustainability Management System

Sustainability Steering Committee works to:

1. Establish sustainability **goals** for the District through Board work session (see Appendix D)
2. Establish **indicators** that will track our progress toward these goals (Appendix E)
3. Obtain **baseline data** for the indicators
4. Establish **targets** for indicators, at least in terms of the desired trend direction
5. Outline **actions** needed to reach each target (Sample of all five steps -- Appendix F)

6. CIP Analysis Integration

The Sustainability Steering Committee ensures that environmental, social and economic criteria are consciously and consistently considered when developing our Capital Improvement Plan.

Elements of Sustainability Plan

1. Sustainable Projects
2. LEED™ Certification
3. Purchasing Revisions
4. Backcasting
5. Sustainability Management System
6. CIP Integration
7. Operations Integration
8. Regional and National Leadership

7. Integration of sustainability into regular business planning process

Steering committee introduces sustainability criteria into annual and biennial planning and budgeting, purchasing decisions, investment strategies, and other District planning processes.

As the chart below illustrates, we don't have to attempt this all at once. We will continue to actively identify and pursue projects that save money, educate our stakeholders and reduce the District's negative impacts on our economic, environmental and social systems. Concurrently, we will begin work on the larger process and policy issues that will lead to the integration of sustainability as an accepted and expected way of operating.

Sustainable Actions Timeline By Fiscal Year

	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009
Sustainable Projects	◆—————◆					
LEED™ Certification	◆—————◆					
Purchasing Policies		◆—————◆				
Backcasting Process	◆—————◆					
Sustainability Management System		◆—————◆				
CIP Analysis Integration		◆—————◆				
Organizational Integration			◆—————◆			

And, as we're ready...

8. Identify and achieve regional and national goals, leadership in industry, influencing of policy

Staff members push for changes in public policy and incentives as appropriate. Share our processes, procedures, forms, policies, successes and lessons learned with larger groups of people – businesses, other government entities, water districts, AWWA and other associations (regionally and nationally) – leading the way to a sustainable future.

In short, Tualatin Valley Water District is at present extremely well positioned to become a water industry leader in the area of sustainability. We have taken many steps already; we have the resources – finances, knowledge, human capital – available to ensure our success; and we now have a road map to guide us. We look forward to the Board's support and assistance to speed our progress toward ushering in a truly sustainable future.

Appendix A

Current Actions and Policies Already in Place

Reducing Our Use of Resources

- Reduce infrastructure demand through water conservation programs including education, water-saving devices, water audits, leak detection, workshops, etc.
- Provide TriMet MAX/bus passes for all employees
- Challenge, encourage & recognize employees who use alternative transportation, especially during building expansion
- Provide alternative sites for bill payment to reduce transportation needed
- Promote online phone book – reduced District need for phone books from about 60 to 10
- Use rubber stamps for incoming payables instead of paper form
- Check request and travel and training requests now online – printed only as needed
- Decrease greenbar computer reports, aiming for total elimination of these
- Route magazines and documents instead of ordering or printing copies for all
- Reduce electricity by turning off lights & computers when not in use
- Variable frequency drives installed at some pump stations for more efficient electricity use
- Motion sensors for lights
- Compact fluorescents and energy efficient ballasts for decreased electricity use
- Reduced garbage dumpster size from 8 yd total to 6 yd total
- Programmable thermostats for more efficient heating and cooling
- Water efficient landscaping, including demonstration garden
- Weather-based irrigation system to reduce water needed
- Rainwater catchment system in new building – for flushing toilets and irrigation
- Minimize vegetation removal required at construction sites
- High velocity zonal flushing utilized to reduce amount of chlorine needed for disinfection
- Laptops, scanners and PDAs utilized to reduce paper copies needed in office and in field
- Tanks drained through distribution system prior to cleaning to reduce water drained to sewer
- Underground storage tanks used when possible to minimize environmental impact and maintain natural look of area

Reusing

- Reuse of usable hydrant & meter parts to repair other hydrants and meters
- Used engine oil burned for shop heat
- Reusable aluminum and wood signs used at construction and maintenance sites
- Reusable plates/glasses/silverware
- Printed-one-side paper
 - Use second side for copies OR
 - Make into scratch pads
- Partner with Tualatin Hills Parks & Recreation to use Grabhorn site to dump landscape waste – grind and mulch for trails, etc.
- Challenge, promote, encourage and recognize employees who use trash to make new items, to suggest waste reduction actions, and to find new uses for printed-one-side paper

Recycling

- Wood
- Metal (copper, aluminum, iron, tin)
- Paper and light cardboard
- Glass
- Plastic bottles
- Styrofoam (block and peanuts)
- Corrugated cardboard
- Alkaline batteries from pagers, locaters, etc.
- Ni-cad batteries to Radio Shack
- Computer hardware and electronics at community drop off sites
- Increasing recycling awareness with education & new signs



Using Recycled Products

- Copy paper
- Computer paper
- Letterhead and other printing paper
- Bathroom paper products
- Recycled rock and ground tailings used in construction projects
- Re-refined motor oil for fleet
- Disposable plates for picnics, etc. from limestone & potato starch or corn starch & recycled fiber
- Sales of Chinook books to employees to encourage individual use of recycled products (coupons for recycled & environmentally sound products and services)

Using Environmentally Friendly Products

- Bark bags for soil retention to decrease erosion and near storm drains to reduce silt
- Install silt fences around debris piles and move spoils to less vulnerable areas
- Diffusers to disperse flushed water to prevent erosion
- Dilute hypochlorine solution used at pump stations instead of gaseous chlorine
- Directional boring used when possible instead of trenching
- Spoils covered with straw, hay or jute matting
- Ascorbic acid used for flushing instead of sodium bisulfate
- Food grade lubricants and cleansers used to prevent water contamination
- Locating paints lead-free and toluene free
- Oil and water separator for run off from wash rack & fueling station
- Rechargeable batteries used in digital cameras and cell phones
- Purchase Energy Star computers and equipment
- Duplexing copiers in most areas

Headquarters Building Expansion

- Achieve LEED™ Silver Certification, including the following elements:
 - Install Rainstore water catchment system
 - Reduce heat islands to minimize impact on human and wildlife habitat
 - Eliminate light escaping from building site to reduce impact on nocturnal environment

- Limit use of potable water for landscape irrigation
- Maximize water efficiency within building
- Achieve increasing levels of energy performance above prerequisite standards
- Include commissioning to ensure building is designed, constructed, and calibrated to operate as intended
- Recycle or reuse over 75% of construction waste
- Use recycled or rapidly renewable products whenever possible
- Use materials manufactured locally whenever possible
- Use low-emitting materials such as carpet, paint, adhesives and composite wood
- Ensure high indoor air quality through construction process and monitoring
- Use the building as an example and teaching tool for others

Social Sustainability Issues (Community Support)

- Participate in Adopt-a-Highway cleanup program
- Allow employees company time to participate in SMART (Start Making a Reader Today) Reading Program
- Emergency Assistance program for customers
- Provide bike racks for customers and employees
- Provide pay stations throughout community to reduce travel needs
- Provide Electronic Funds Transfer (EFT) payment method to reduce travel and paper usage
- Annual employee-supported holiday food baskets for low income households
- Participate in conservation programs and educational fairs
- Many storage tanks located underground and landscaped to preserve aesthetics of area
- Provide training and assistance with individuals' and businesses' conservation efforts
- Take into account Minority/Women owned and Emerging Small Business status in purchasing
- Bidder integrity policy that requires major suppliers to prove they act responsibly in areas of safety and the environment
- Three-year loan of TVWD land to Tualatin Valley Parks & Recreation for use as ball fields

Employee Retention and Benefits

- Provide continuing education reimbursement to employees
- Provide education and training opportunities, on- and off-site
- Offer employee suggestion rewards to foster creativity
- Alternative "9/80" work schedule
- Earlier work hours that keep employees off the road during heaviest commuter times
- Offer myriad of benefits to employees: vacation, sick and comp time, health/dental/vision/life/disability insurance, PERS & 401K
- Offer EAP assistance for employees
- Offer Section 125 benefits and computer loans
- Provide services to employees to reduce need for trips away from work
- Clothes allowance for field staff to allow for personal preferences
- Wellness, Safety, Green Team and Employee committees exist comprised of employees from throughout the organization to participate in decision making processes



Appendix B

Results of Environmental Priorities Analysis

4/15/03										
ENVIRONMENTAL IMPACT	Severity	Likelihood of Change	Frequency/Duration	Controllability by employees	Regulation	Reportability	Stakeholder Concern	Potential Positive Financial Impact	(1 = highest rank)	
Weight of Criteria:	3	3	1	3	3	3	2	3	TOTAL SCORE	PROJECT RANK
Waste Generation	9	12	5	12	9	9	8	6	70	4
Purchasing	9	9	5	12	9	12	8	6	70	4
Energy Use	12	12	5	9	15	15	8	12	88	1
Water Use	6	12	4	12	12	15	8	6	75	3
Vehicle Use & Fuel (Fleet)	15	9	5	9	12	15	8	6	79	2
Other travel (air, commuting)	9	6	3	6	15	6	8	12	65	6
Construction/maintenance operations	6	3	5	9	3	6	10	12	54	7
Incoming mail* (junk, duplicates)	6	6	5	3	15	3	2	3	43	8

*We will include the mail issue with waste generation

Appendix B (cont'd.)

Environmental Priorities Analysis - Definitions

Impacts

Waste Generation	Waste we produce from office, kitchen, shop, construction, maintenance
Purchasing	What we buy for use in office and field, except vehicles
Incoming mail (junk)	Mail received that we don't want -- unsolicited mail, duplicates, etc.
Water Use	Water used at office, for flushing program, in shop (everything except customer use)
Vehicle Use & Fuel (Fleet)	Fuel used and pollution caused by fleet vehicles (vans, pickups, heavy equipment, flatbeds, etc.)
Other travel (air, commuting)	Employee commuting, air travel to conferences, vehicle travel to meetings and conferences
Construction/maintenance operations	Process of maintaining water lines and laying new ones (excavation, run-off, paving, erosion and related issues)
Energy Use	Electricity and natural gas used in office and pump station sites

Criteria

Severity	How negative is our current impact compared to the other items on the list? 5-very negative 0-not at all negative
Likelihood of change	How likely is it that this impact can be bettered? 5-very likely 0-cannot be changed
Frequency/Duration	How often or how long is this impact encountered? 5-continually 0-almost never
Controllability	How much can employees control this impact in the course of doing their jobs? 5-completely 0-not at all
Regulation	How much outside regulation do we face regarding this impact? 5-no regulation 0-very regulated
Reportability	How easy is it to get data and track our progress regarding this impact? 5-very easy 0-very difficult
Stakeholder Concern	How important do we think this impact is to customers, employees, Board members? 5-very important 0-not at all important
Potential Financial Impact	How much money might we save by lessening our negative impact in this area? 5-saves a lot of \$ 3-cost neutral 0-costs a lot of \$

Weight of criterion

- 1: Somewhat important
- 2: Very important
- 3: Most important

Calculation Process

Multiply the score in each cell by the weight we have given that particular criterion, then total and rank the results.

Appendix C

Suggested Guiding Principles

1. The Concept of Sustainability Guides District Policy

Tualatin Valley Water District is committed to meeting its existing needs without compromising the ability of future generations to meet their own needs. The long-term impacts of policy choices will be considered to ensure a sustainable legacy.

2. Protection, Preservation, and Restoration of the Natural Environment is a High Priority of the District

TVWD is committed to protecting, preserving and restoring the natural environment. District decision-making will be guided by a mandate to maximize environmental benefits and reduce or eliminate negative environmental impacts whenever economically and socially feasible. The District will lead by example, taking public stands on sustainability issues when appropriate, and encouraging other community stakeholders, especially our colleagues in the water industry, to make a similar commitment to the environment.

3. Environmental Quality, Economic Health, and Social Equity are Mutually Dependent

Sustainability requires that our collective decisions as a District allow our economy and community members to continue to thrive without destroying the natural environment upon which we all depend. A healthy environment is integral to the District's long-term economic and societal interests. In achieving a healthy environment, we must also ensure that inequitable burdens are not placed on our ratepayers and that the benefits of a sustainable community are accessible to all members of the community.

4. All Decisions Have Implications to the Long-term Sustainability of TVWD

The District will ensure that each of its policy decisions and programs are interconnected through the common bond of sustainability as expressed in these guiding principles. The policy and decision-making processes of the District will reflect our sustainability objectives. The District will lead by example and encourage other community stakeholders, especially our colleagues in the water industry, to use sustainability principles to guide their decisions and actions.

5. TVWD Recognizes its Link with the Regional, National, and Global Community

Local environmental, economic and social issues cannot be separated from their broader context. This relationship between local issues and regional, national and global issues will be recognized and acted upon in the District's programs and policies. The District's programs and policies should therefore be developed as models that can be emulated by other organizations. The District will also act as a strong advocate for the development and implementation of model programs and innovative approaches by associations such as AWWA, and by regional, state and federal government entities that embody the goals of sustainability.

6. Those Sustainability Issues Most Important to the Board and Staff Will be Addressed First, and the Most Cost-effective Projects and Policies Will be Implemented First

The financial and human resources available to the District are limited. The District will formally evaluate activities and policies relating to sustainability on a biennial basis (in “off” budget years) to ensure that the best possible investments in the future are being made. The evaluation of an activity’s cost-effectiveness will be based on a complete analysis of the associated costs and benefits, taking into account environmental, social and economic issues.

7. The District is Committed to Procurement Decisions which Minimize Negative Environmental and Social Impacts

The procurement of products and services by the District results in environmental, social and economic impacts both in this country and in other areas of the world. The District will develop and abide by an environmentally and socially responsible procurement policy that emphasizes long-term values and will become a model for other public as well as private organizations. We recognize that our suppliers also have impacts, and will develop policies that require supply chain responsibility whenever feasible. The District will advocate for and assist other local agencies, businesses and residents in adopting sustainable purchasing practices.

Appendix D

Suggested Sustainability Management System (SMS) Goals

Resource Conservation

1. Significantly decrease overall District consumption, specifically the consumption of non-local, non-renewable and non-recycled materials, water, energy and fuels. Explore innovative strategies to become a zero waste organization.
2. Integrate sustainability criteria into District purchasing decisions. The District will take a leadership role in encouraging sustainable procurement, extended producer responsibility.
3. Encourage our customers and other water providers, regionally and nationally, to use local, non-polluting, renewable and recycled resources.

Transportation

4. Create a multi-modal fleet that minimizes pollution and reduces motor vehicle congestion without compromising our ability to accomplish District productivity goals and ensure safety.
5. Where traditional vehicles are required for District activities, maximize use of lower-emitting fuels and alternative sources of power for these vehicles.

Environmental and Community Health

6. Protect and enhance environmental and community health by minimizing, and where possible eliminating, the District's use of hazardous or toxic materials, in particular POPs (persistent organic pollutants) and PBTs (persistent bioaccumulative and toxic chemicals).
7. Recognizing the direct effect of climate change on our industry, and that the increase of Greenhouse gases (GHGs) is a major cause of climate change, the District will ensure that decisions are made that minimize the GHGs created in all of its operations and travel.

Community Conservation, Education, and Civic Participation

8. Provide incentives for customers to conserve water, e.g. rebates, new customer kits, surveys, and the BIG (Business, Industry, Government) program.
9. Investigate use of technology to encourage wise water use, such as ET (envirotranspiration) controllers, Weather Reach pilot program, and weather stations.
10. Create educational opportunities for students, customers, and staff through newsletters, school presentations, speakers' bureau, trade shows and other opportunities.

Appendix E

Possible Sustainability Management System Indicators

Resource Conservation Indicators

- District Energy Use
- District Water Use
- District Waste Reduction
- District Renewable Energy Use
- District Sustainable Purchasing
- District Use of Regionally Appropriate Vegetation
- Customer Water Use

Transportation Indicators

- Fuel Use – Fleet Vehicles
- Alternatively Fueled Fleet Vehicles
- Transportation Alternatives for Staff and Customers
- Non-fleet District Travel

Environmental and Community Health Indicators

- Water Quality
- District Greenhouse Gas Emissions
- Fleet Vehicle Emissions
- Air Quality
- District Purchase of Toxic Materials
- District Toxic Air Contaminant releases
- Urban Runoff Reduction

Appendix E

Possible Sustainability Management System Indicators

(Continued)

Community Conservation Education and Civic Participation Indicators

- Presence at community events
- Participation in media spots and articles
- Employee volunteer hours

Appendix F

From Goal to Detailed Steps

(An example of the whole SMS process for one indicator)

GOAL: Environmental and Community Health

- 1. Protect and enhance environmental and community health by minimizing, and where possible eliminating, the District's use of hazardous or toxic materials, in particular POPs (persistent organic pollutants) and PBTs (persistent bioaccumulative and toxic chemicals).*
- 2. Recognizing the direct effect of climate change on our industry, and that the increase of Greenhouse gases (GHGs) is a major cause of climate change, the District will ensure that decisions are made that minimize the Greenhouse gases created in all of its operations.**

Detailed description of problem: According to the U.S. Environmental Protection Agency (EPA), driving a car is the single most polluting thing that most of us do. Motor vehicles emit millions of tons of pollutants into the air each year. In many urban areas, motor vehicles are the single largest contributor to ground-level ozone, a major component of smog. Cars also emit several pollutants classified as toxics, which cause as many as 1,500 cases of cancer in the country each year. Auto emissions also contribute to the environmental problems of acid rain and global warming.

Pollution control measures have drastically reduced emissions per vehicle in the past 20 years. However, during that time the total miles traveled has doubled, resulting in higher levels of air pollutants in many parts of the country.

Sample Indicator:

- Fleet Vehicle Emissions

Baseline Data to include:

- Current miles traveled per type of vehicle
- Fuel mileage per vehicle
- Type of fuel per vehicle

Targets: (used here for illustrative purposes only – more research is needed for actual targets)

- Reduce emissions of GHGs from 06/03 level by 10% by June 2005
- Reduce emissions of GHGs from 06/03 level by 25% by June 2007

Steps:

- Obtain baseline data from TVWD fleet maintenance records on each vehicle in fleet – miles traveled, type of fuel, and gas mileage
- Obtain information on emissions per gallon of gasoline, diesel, propane, etc.
- Produce report detailing baseline GHGs emitted and specific levels the District needs to reach to meet targets.
- Continue to track vehicle data
- Produce progress report each September based on fiscal year data

Appendix G -- Glossary

(not all of the following words or phrases are included in this document, but the following definitions involve important sustainability-related concepts)

Alternative fuel vehicles: vehicles that operate on fuels other than gasoline or diesel. Alternative fuels include compressed natural gas (CNG), liquid natural gas (LNG), propane, electricity, hybrid of gasoline and electricity, hydrogen, and solar.

Clean distributed generation: distributed generation refers to generation of electricity at or near the location where that electricity will be used. This differs from traditional electricity generation, which occurs at centralized power plants and is distributed over hundreds of miles to millions of customers through the electricity “grid”. For the purpose of this document, clean distributed generation (in order of preferred technology type) refers to 1) renewable distributed generation, including electricity generated by solar photovoltaic systems, fuel cells (powered by hydrogen generated from solar, wind, or other non-fossil-fuel, renewable energy technologies), and small wind generators; 2) electricity generated by high efficiency (i.e. meeting or exceeding efficiency of large natural gas power plants) natural gas generators and fuel cells using hydrogen generated through a natural gas catalyst; and 3) medium scale, high-efficiency co-generation systems (powered by natural gas) serving many properties located within close proximity of each other. Clean distributed generation does not include electricity generated by gasoline or diesel powered generators.

Diversification: in reference to solid waste, diversion refers to all waste that is kept out of a landfill through recycling, beneficial reuse, composting, or other means.

Environmentally preferable: a product service, activity or process that has a lesser or reduced effect on human health and the environment when compared to other products, services, activities or processes that serve the same purpose.

Extended producer responsibility: responsibility of producers or manufacturers across the entire life cycle of their products, particularly to the post-consumer stage (after products are discarded and become waste). Typically once a product is sold to a consumer the responsibility of disposing of that product becomes the responsibility of the consumer. Extended producer responsibility requires that the producer of the product maintain responsibility for recycling or proper disposal of the product once it has surpassed its useful life.

Fossil fuel: non-renewable sources of energy like coal, oil and gas. Fossil fuels were formed about 300 million years ago. They were made from the buried remains of animals and plants. Plants living at that time trapped energy from the sun, and it is this energy that is released when a fossil fuel like coal is burned.

Global warming: the systematic increasing of the Earth’s temperature. According to the National Academy of Sciences, the Earth’s surface temperature has risen by about 1 degree Fahrenheit in the past century, with accelerated warming during the past two decades. There is new and stronger evidence that most of the warming over the last 50 years is attributable to human activities. Our actions have altered the chemical composition of the atmosphere through the buildup of greenhouse gases (see below).

Greenhouse gas (GHG): natural and human made gases in the earth's atmosphere that allow incoming solar radiation to pass through the atmosphere and warm the earth, but trap radiant heat given off by the earth. The radiant heat absorbed by these gases heats the atmosphere. This is a natural process known as the "greenhouse effect" that keeps the earth habitable. Since the onset of the industrial period, however, human activities have led to sharp increases in the levels of GHGs in the atmosphere, enhancing the greenhouse effect and contributing to rising global temperatures. The four primary greenhouse gases listed below.

- Carbon dioxide (CO₂): In order to provide energy to heat buildings, power automobiles, and fuel electricity-producing power plants, humans burn objects that contain carbon, such as the fossil fuels oil, coal, and natural gas; wood or wood products; and some solid wastes. When these products are burned, they release carbon dioxide into the air. In addition, humans cut down huge tracts of trees for lumber or to clear land for farming or building. This process, known as deforestation, can both release the carbon stored in trees and significantly reduce the number of trees available to absorb carbon dioxide. The transportation sector contributes about one-third of total carbon dioxide emissions in the United States
- Methane (CH₄): The main sources of CH₄ are thought to be anaerobic bacteria in rice fields, the digestive tracts of cattle, sewage treatment plants, landfills and fossil fuels. Methane is also emitted during coal mining and the production and transport of other fossil fuels.
- Nitrous oxide (N₂O): The main sources of nitrous oxide are the burning of fossil fuels and nitrogen fertilizers. Since 1750 nitrous oxide has risen by 17 percent in the atmosphere. Although this increase is smaller than for the other greenhouse gases, nitrous oxide traps heat about 300 times more effectively than carbon dioxide and can stay in the atmosphere for a century.
- Chlorofluorocarbons (CFCs): CFCs, HCFCs (hydrochlorofluorocarbons), and HFCs (hydrofluorocarbons) are manufactured for use in air conditioners and refrigerators, as a propellant in spray cans and in plastic foam products. One molecule of CFCs is several thousand times more effective in trapping heat than a single molecule of carbon dioxide.

Hazardous material: a material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment.

Hazardous waste: a waste or combination of wastes which, because of its quantity, concentration, or physical, chemical or infectious characteristics, may (1) cause or significantly contribute to an increase in serious, irreversible, or incapacitating reversible illness or (2) pose a substantial present or potential hazard to human health, safety, welfare of to the environment when improperly treated, stored, transported, used or disposed of, or otherwise managed.

LEED™ certification (Leadership in Energy and Environmental Design): a rating system developed by the United States Green Building Council (USGBC) that sets definitive standards for what constitutes a green or environmentally preferable building. The certification is designed for rating new and existing commercial, institutional, and high-rise residential buildings. It evaluates environmental performance of the entire building over the building's life cycle. LEED™ certifications are awarded at various levels (certified, silver, gold, and platinum) according to a point-based system. TVWD's building expansion is targeted to meet the criteria for a Silver rating.

Local: where local refers to resources, it refers to resources obtained or impacted within a 500-mile radius of the Beaverton area.

Multi-modal transportation: a transportation system that includes alternative modes of transportation such as public transit, bicycles, pedestrians and alternative fueled vehicles, in addition to standard vehicular transportation.

Native species: plant or animal species native to the Pacific Northwest.

Non-renewable resources: natural resources that have a finite availability worldwide, including coal, oil and other petroleum products.

PBTs (persistent bioaccumulative toxics): chemicals that are toxic, persist in the environment and bioaccumulate in food chains, and thus pose risks to human health and the environment. PBT is used primarily by the US Environmental Protection Agency (EPA) as part of its preparation of a list of such chemicals that will receive special regulatory emphasis in the United States.

POPs (persistent organic pollutants): organic chemical substances that persist in the environment and bioaccumulate in food chains and pose a risk of causing adverse effects to human health and the environment. POP is commonly used in the context of the United Nations Environment Program (UNEP) and refers to substances that are subject to international negotiations aiming toward their global elimination. The primary difference between PBT and POP is that the list of PBTs includes non-organic toxins that are not included on the list of POPs.

Potable: suitable for drinking

Regionally appropriate vegetation: plant and tree species that are environmentally appropriate for our region and that do not negatively impact native plants or animals.

Renewable limits: harvesting resources within renewable limits refers to harvesting a renewable resource at a rate that is lower than the rate the resource can replace itself (e.g. catching fish at a rate that will allow the fish population to be maintained over time. If too many fish are caught, exceeding renewable limits, the fish population will decline). The terms renewable limits and sustainable limits are synonymous.

Renewable resources: natural resources that have an unlimited supply (such as solar radiation) or that can be renewed indefinitely if ecosystem health is maintained (e.g. fisheries or forests).

Significant emissions source: sources of toxic air contaminants and other air emissions that pose a threat to human health and the environment.

Sustainable (in reference to resource use): a method of harvesting or using a resource so that the resource is not depleted or permanently damaged.

Sustainable business: a business that provides goods and services, and/or has incorporated into its daily operations practices that result in cleaner air and water, less waste and pollution, conservation of energy and natural resources, less traffic, improved quality of life for residents and workers, and contribute to a strong and viable local economy.

Sustainable community: a community that improves and enhances its natural social and economic resources in ways that allow current and future members of the community to lead healthy, productive and satisfying lives.

Sustainable procurement: procurement of environmentally preferable goods and services in a way that also takes into consideration social responsibility and sustainable economic development issues in the manufacture, transportation, sale and use of those goods and services.

System Conditions (as outlined in The Natural Step):

In a sustainable society, Nature must not be subject to...

- 1. increasing concentrations of substances extracted from the earth's crust,*
- 2. increasing concentrations of substances produced by society,*
- 3. increasing degradation by physical means,*

and in that society,

- 4. human needs must be met worldwide.*

That means, for TVWD to be a sustainable organization, we must systematically DECREASE our economic dependence on...

- fossil fuels and mining, especially of scarce substances,*
- compounds produced by society that are non-biodegradable or toxic,*
- activities that encroach on natural areas or that take resources faster than nature can regenerate,*
- using a large amount of resources in relation to the basic human needs that are satisfied.*

Toxic material: a substance that causes illness, injury or death by chemical means. A poison.

Toxic air contaminants (TACs): air pollutants which may cause or contribute to an increase in mortality or serious illness, or which may pose a present or potential hazard to human health.

Tradable water pollution credits: an approach that allows one source to meet its regulatory obligations by using pollutant reductions created by another source that has lower pollution output. Trading credits offers greater efficiency in achieving water quality goals on a watershed basis. It capitalizes on economies of scale and the control cost differentials among and between sources.

Water rights: the authorization to use a particular flow or body of water. The prior-appropriation doctrine is the basis of water law for Oregon and most of the states west of the Mississippi River. East of the Mississippi, the riparian doctrine usually applies. Under the riparian doctrine, only landowners with water flowing through their property have claims to the water. Under Oregon law, all water is publicly owned. With some exceptions, all users must obtain a permit or water right from the Water Resources Department to use water from any source. Landowners with water flowing past, through, or under their property do not automatically have the right to use that water without a permit from the Department.

Even though a water right is attached to the land on which it was established, water cannot be used in any manner in which the right holder desires. The water can only be used beneficially and without waste up to the amount specified in the right. Water rights may be transferred temporarily or permanently with Water Resources Department approval.

Zero emissions vehicle (ZEV): motor vehicle that produces neither tailpipe nor evaporative pollutant emissions.

Zero waste: recycling or reuse of all natural and human made materials back into nature or the marketplace rather than sending those materials to landfills or similar disposal options.