APPENDIX A

Campus Groundwater Conservation Planning (CGCP)

Meeting #1
Wednesday, June 1st, 2016
10:00 a.m. – 12:30 p.m.

CLEAN WATER LAND & LEGACY AMENDMENT

Agenda

- Review project goals and objectives
- Review work plan, tasks, timeline, and budget
- Develop taskforce
- Discuss member roles – workload distribution
- Assignments and next meeting

Overall Resource Objectives

- Implementing BMPs to conserve groundwater (reduce and/or supplement use) and encourage infiltration where it is appropriate
- Position SWCDs state-wide to do this in a cost-effective manner

Project Goals

- Provide groundwater planning protocols to member districts for large-acreage, public campuses
  - Focus on public schools, hospitals, and government facilities
  - Rank BMPs based on cost-effectiveness (e.g. cost per acre-foot reduced)
- Train Metro SWCD staff on protocol
- Complete up to 11 CGCPs
- Develop training module
- Train facility managers
- Make protocol available to SWCDs state-wide

- May 2016 – Establish taskforce
- June-October 2016 – Refine protocol
- November 2016 – Report describing protocol
- December 2016 – Staff training on protocol
- **January-February 2017 - Campus identification and recruitment**
- January-February 2017 – Develop training module
- **March-September 2017 – Complete up to 11 CGCPs**
- **October 2017 – Training for facility managers**
- October 2017 - Refine protocol based on planning experience
- **November-December 2017 – Compile findings into comprehensive report**

Work Plan –

Program Development

Planning and Design

Member Structure

- Fiscal agent – Scott Soil and Water Conservation District
- Host – Anoka Conservation District
- Participant –
  - Level 1 - TBD
  - Level 2 – 10 Metro SWCDs and Hennepin County Environmental Services
- Partner - TBD

Participant Levels

- Level 1 – CGCP Protocol Development
  - Actively participate in taskforce
  - Develop CGCP protocols
  - Literature review of BMPs
  - Develop training modules for SWCD staff and facility managers
  - Training of Level 2 participants and campus facility managers
- Level 2 – CGCP Implementation
  - Identify and recruit campus participation
  - Complete at least one CGCP including final report
  - Reporting documentation provided to Host
- Taskforce only
  - Active participation in taskforce but does not assist with CGCP protocol work product development
    - MCD member
    - Non-MCD member

Budget

- FY 2016 CWF AIG – 3-year grant concludes 12/31/18
- $250,000 project
  - $200,000 CWF AIG
  - $50,000 SWCD match
- Review budget spreadsheet
  - Match requirements
    - Grant can cover 80%
  - Compensation to Level 1 and Level 2 participants
  - Compensation to Taskforce Only level?

Metro Campus Groundwater Conservation Planning Budget

	Description	Admin	Mgr	Spec	Tech	Seasonal	Staff Total Hours	Staff Total Cost	Mileage, supplies, facilities, printing, etc	Category Hours	Category Cost	Timing
	Hrly rate -->	**$55**	**$75**	**$65**	**$50**	**$30**						
Admin	eLink Reporting, bookkeeping, and related	75	70	0	0	0	145	**$9,375**		**145**	**$9,375**	2016, 2017, 2018
Coordination	Refining project elements	0	20	50	30	0	100	**$6,250**		**300**	**$18,750**	2016
	Engaging taskforce, stakeholders, and partners - organizing meeting	0	20	50	30	0	100	**$6,250**				2016, 2017
	Progress reports and communications	0	20	50	30	0	100	**$6,250**				2016, 2017, 2018
Development	Establish task force	0	10	20	0	0	30	**$2,050**		**1645**	**$104,275**	2016
	Develop protocol	0	105	630	190	0	925	**$58,325**				2016
	Report protocol	0	10	175	50	0	235	**$14,625**				2016
	Train MCD staff	0	10	55	10	0	75	**$4,825**	**$200**			2016
	Facilities manager training module development	0	45	210	70	0	325	**$20,525**	**$250**			2017
	Refine protocol based on design experience	0	5	40	10	0	55	**$3,475**				2017
Design	Identify and recruit campus participation	0	55	110	110	0	275	**$16,775**		**1760**	**$110,200**	2017
	Complete campus groundwater conservatoin plans	0	55	880	220	0	1155	**$72,325**				2017, 2018
	Train facilitites managers	0	110	110	110	0	330	**$20,900**	**$200**			2017, 2018
Report Compilation	Compile final report	0	20	60	40	0	120	**$7,400**		**120**	**$7,400**	2018
	TOTAL	**75**	**555**	**2,440**	**900**	**-**	**3,970**	**$249,350**	**$650**	**3,970**	**$250,000**	

Taskforce Development

- Steps to develop taskforce
  - Visioning – work product
  - Size and composition
  - Sectors
  - Candidates from sectors
  - SWCD candidates
  - SWCD levels of involvement

Taskforce Development

- Visioning – Work product composition
  - Pair and share
    - What work product does the taskforce provide to Level 2 members?
    - What form does the work product take (e.g. paper, digital, web-based)?
    - What is within budget?
    - What challenges do we need to overcome in order to develop a protocol (e.g. BMP options, cost estimation, benefit modeling)?

Taskforce Development

- Taskforce size and composition?
  - Pair and share
    - What's a good size?
    - How many sectors represented?
    - Percent SWCD vs. non-SWCD?
    - How many SWCDs involved in Level 1 work product development?
  - Tally results to define consensus

Taskforce Development

- What sectors should be represented on the optimal taskforce?
  - Brainstorming
  - Multi-voting

- Who are good candidates from the selected sectors?

Taskforce Development

- Which SWCDs are on the taskforce?

Taskforce Development

- Which SWCDs will actively develop work products and specifically what tasks in the work plan are you well suited to assist with?

Taskforce Development

Moving Forward

- Recruit multi-disciplinary stakeholder taskforce (i.e. who makes the calls)
- Point person for each district involved
- Next meeting

Campus Groundwater Conservation Planning (CGCP)

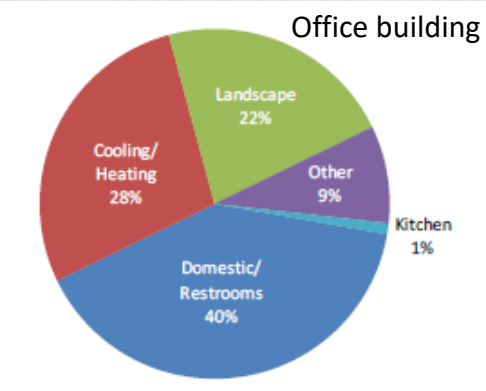
Level 1 SWCD Member Meeting #2
Thursday, September 28th, 2017
2:00 PM – 4:00 PM

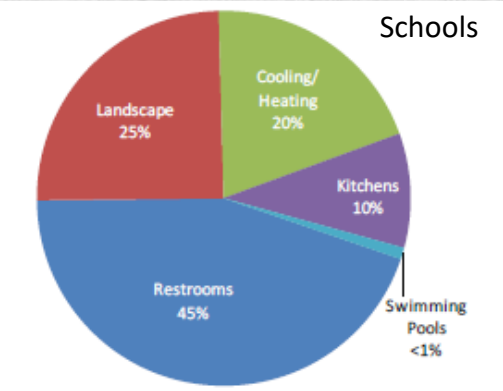
CLEAN WATER LAND & LEGACY AMENDMENT

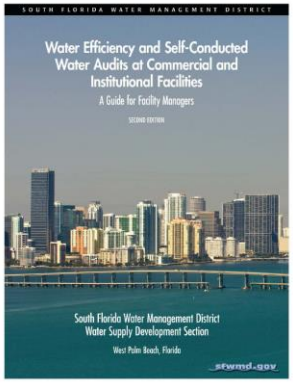
Agenda

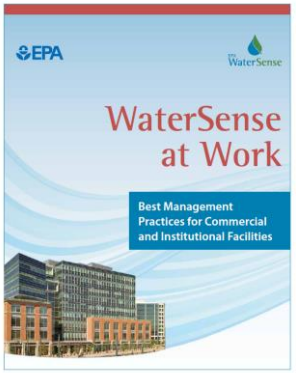
- Update (10 minutes)
- Review draft worksheets (40 minutes)
- Review calculators (30 minutes)
- Finalize process (25 minutes)
- Next steps (15 minutes)

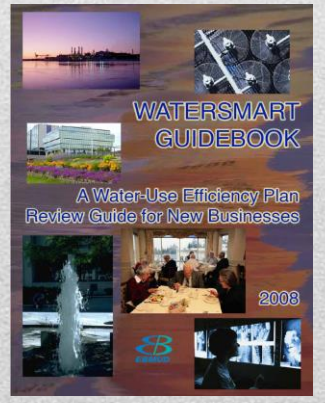
- Reviewed existing protocols
  - SFWMD
  - EPA's WaterSense at Work
  - East Bay Municipal Utility District
- Emphasize need for thorough water audit to develop holistic understanding of facility water use







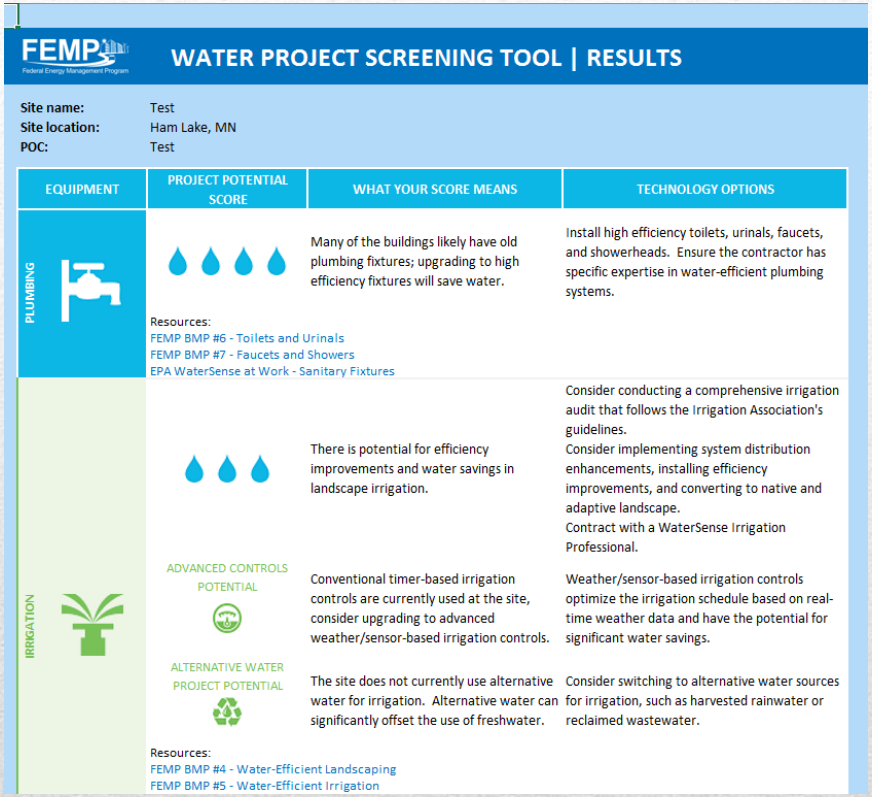




CGCP Update

CGCP Update

- Reviewed existing calculators
- 9 Calculators
  - 6 from SFWMD
  - 2 from Energy Star
  - 1 from DOE FEMP
- Detailed guidance in manuals



FEMP Federal Energy Management Program

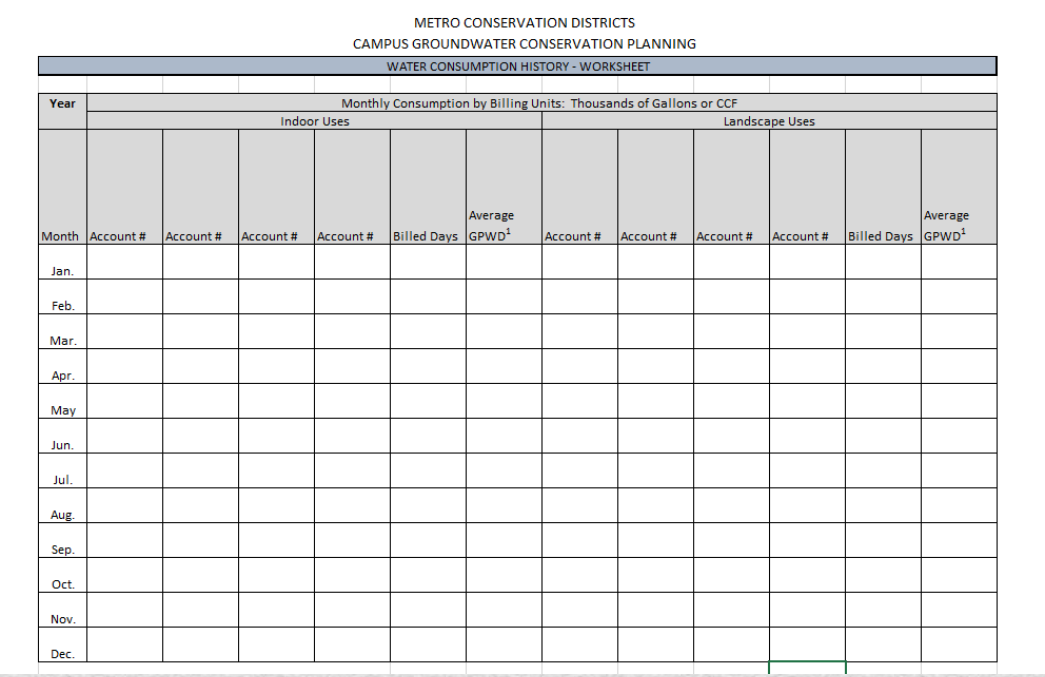
WATER PROJECT SCREENING TOOL | RESULTS

Site name: Test
Site location: Ham Lake, MN
POC: Test

EQUIPMENT	PROJECT POTENTIAL SCORE	WHAT YOUR SCORE MEANS	TECHNOLOGY OPTIONS
PLUMBING	4 water drops	Many of the buildings likely have old plumbing fixtures; upgrading to high efficiency fixtures will save water.	Install high efficiency toilets, urinals, faucets, and showerheads. Ensure the contractor has specific expertise in water-efficient plumbing systems.
	Resources: FEMP BMP #6 - Toilets and Urinals; FEMP BMP #7 - Faucets and Showers; EPA WaterSense at Work - Sanitary Fixtures		
IRRIGATION	3 water drops	There is potential for efficiency improvements and water savings in landscape irrigation.	Consider conducting a comprehensive irrigation audit that follows the Irrigation Association's guidelines. Consider implementing system distribution enhancements, installing efficiency improvements, and converting to native and adaptive landscape. Contract with a WaterSense Irrigation Professional.
	ADVANCED CONTROLS POTENTIAL	Conventional timer-based irrigation controls are currently used at the site, consider upgrading to advanced weather/sensor-based irrigation controls.	Weather/sensor-based irrigation controls optimize the irrigation schedule based on real-time weather data and have the potential for significant water savings.
	ALTERNATIVE WATER PROJECT POTENTIAL	The site does not currently use alternative water for irrigation. Alternative water can significantly offset the use of freshwater.	Consider switching to alternative water sources for irrigation, such as harvested rainwater or reclaimed wastewater.
	Resources: FEMP BMP #4 - Water-Efficient Landscaping; FEMP BMP #5 - Water-Efficient Irrigation		

CGCP Update

- Developed worksheets for onsite data collection
- Detailed guidance in manuals



METRO CONSERVATION DISTRICTS
CAMPUS GROUNDWATER CONSERVATION PLANNING
WATER CONSUMPTION HISTORY - WORKSHEET

Year	Monthly Consumption by Billing Units: Thousands of Gallons or CCF											
	Indoor Uses						Landscape Uses					
Month	Account #	Account #	Account #	Account #	Billed Days	Average GPWD[1]	Account #	Account #	Account #	Account #	Billed Days	Average GPWD[1]
Jan.												
Feb.												
Mar.												
Apr.												
May												
Jun.												
Jul.												
Aug.												
Sep.												
Oct.												
Nov.												
Dec.												

CGCP Update

- Meeting with Scott County facilities manager
  - Reviewed simplified protocol steps and draft worksheets (both data collection and BMPs)
  - Tour of facility

- Simplified protocol outline
  - Desktop review of campus (5 hours)
  - Kick-off meeting (5 hours)
  - Initial data request (5 hours)
  - Review and process data provided (5 hours)
  - Site visit (20 hours)
  - Develop list of possible projects and cost estimates (30 hours)
  - Analyze all recommendations for cost-effectiveness (30 hours)
  - Generate final report (60 hours)
  - On-going support
    - Campus follow-up (5 hours)
    - Campus outreach (5 hours)
  - Total: 170 hours

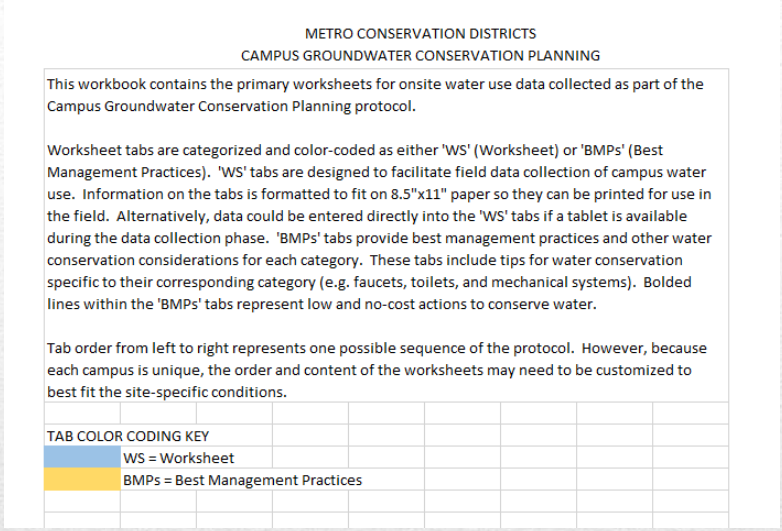
CGCP Update

Current Vision

- Water use reduction goals
  - Reduce losses (leaks)
  - Increase efficiency
  - Educate employees and occupants – behavior modification
  - Reuse onsite alternative water
- Analysis can be conducted in a reasonable timeframe (e.g. 150-200 hours) and still produce meaningful results
- Adaptation of existing protocols
  - Hours saved in development can be transferred to implementation of protocol
- Develop templates for reporting

Review Draft Worksheets

- MS Excel file
- Commercial and institutional water use divided into four general categories
  - Meters and leak detection
  - Domestic indoor
  - Non-domestic indoor (air cooling)
  - Outdoor
- Detailed guidance in manuals



METRO CONSERVATION DISTRICTS
CAMPUS GROUNDWATER CONSERVATION PLANNING

This workbook contains the primary worksheets for onsite water use data collected as part of the Campus Groundwater Conservation Planning protocol.

Worksheet tabs are categorized and color-coded as either 'WS' (Worksheet) or 'BMPs' (Best Management Practices). 'WS' tabs are designed to facilitate field data collection of campus water use. Information on the tabs is formatted to fit on 8.5"x11" paper so they can be printed for use in the field. Alternatively, data could be entered directly into the 'WS' tabs if a tablet is available during the data collection phase. 'BMPs' tabs provide best management practices and other water conservation considerations for each category. These tabs include tips for water conservation specific to their corresponding category (e.g. faucets, toilets, and mechanical systems). Bolded lines within the 'BMPs' tabs represent low and no-cost actions to conserve water.

Tab order from left to right represents one possible sequence of the protocol. However, because each campus is unique, the order and content of the worksheets may need to be customized to best fit the site-specific conditions.

TAB COLOR CODING KEY

	WS = Worksheet
	BMPs = Best Management Practices

Review Existing Calculators

- DOE FEMP Screening Tool
- Calculators that pair with data collection worksheets
- Detailed guidance in manuals

Project Ranking and Implementation

- Project ranking ideas
  - Facility goals
  - Urgency
  - Cost-effectiveness - shortest to longest simple payback period (return on investment)
    - Typically, 4 years or less considered favorable
  - Highest to lowest potential of water savings
  - Most visibility to least visibility
  - Greatest to least environmental impact
- Implementation ideas
  - Fix malfunctioning or leaking equipment
  - Start with simple projects to create initial positive results
  - Modify O&M protocols that can be little or no cost

Finalize CGCP Process

- Simplified protocol outline
- Removed campus identification, promotion, and final selection steps – could be included for when program is well-established
- Project ranking
- Thoughts/questions
- Discussion about proposed modifications

Next Steps

- Structure of formal protocol report
  - What's most useful?
- SWCD staff training
  - What format is most useful?
- Next task force meeting structure and goals
  - How do we most effectively use the task force?