CENTER FOR
ReSource Conservation

September 30, 2015

Kevin Reidy and Ben Wade
Office of Water Conservation and Drought Planning Section
Colorado Water Conservation Board
1313 Sherman St., Room 721
Denver, CO 80203

Dear Mr. Reidy and Mr. Wade,

Status report for Center for ReSource Conservation grant: School District Water Efficiency Project PO# PDAA 20150000000000000231

As of September, 2015, the CRC's School District Water Efficiency Project has reached the 50% benchmark of completion. Below is a summary of the successes and challenges encountered on the project to date.

We are pleased to report that the project is going very well and that we have successfully completed Tasks 1 and 2 at this time. The main work of Tasks 1 and 2 were to perform indoor and outdoor water assessments at a group of schools within the St. Vrain Valley School District (SVVSD). All 20 indoor assessments and all 10 outdoor assessments were successfully completed and the bulk of the analysis of the data has been performed. Reports on the initial findings from these analyses were sent to SVVSD staff. We also began work on Tasks 3 and 4 which contain components of student involvement and education as well as reporting results of the assessments to the district. The main educational components that have been accomplished are the creation of a water-based curriculum database for K-12 and involvement of a group of students at one of the elementary schools in the indoor assessment of their school. We look forward to incorporating and growing student involvement and education in the next phases of the grant.

Overall there have been no major challenges with implementation of the project. The timeline was adjusted due to external circumstances that slowed the timing of the outdoor assessments, however no further delay in the grant is expected at this time. Minor challenges that have arisen include difficulty with identifying an aspect of the implementation that students will be able to participate in, as well as with identifying processes, not just fixtures and appliances, that could help the districts improve efficiency. Two other minor challenges were due to technology glitches with the outdoor assessment application and with CRC's lack of direct access to the teacher population. All of these challenges are being addressed and will hopefully be resolved by the end of the project timeline.

Included with this cover letter are the Grant Timeline and Progress table as well as the full report. The report outlines success of meeting previously identified goals and objectives, obstacles encountered, preliminary findings or accomplishments, and potential need for revisions to the scope of work and timelines. At this time there are no anticipated revisions to the scope or work or timelines.

If the CWCB has any questions for CRC about the progress on this project so far, do not hesitate to contact Dan Stellar or myself.

Respectfully Submitted,

Morgan Shimabuku
Senior Manager of Sustainability Programs
Center for ReSource Conservation

&

Dan Stellar
Senior Director of Sustainability Programs
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CRC Water Efficiency Grant Timeline and Progress

Task	Deliverables	Deadline	Billable Amt.	Completion Date
Task 1: Indoor Water Assessments	20 indoor water assessments completed Preliminary analysis of water conservation recommendations delivered to district staff	No change	$10,712	4/15/15
Task 2: Outdoor Water Assessments	10 irrigation assessments completed 50% Progress Report	9/30/2015	$15,712	9/30/15
Task 3: Water Conservation Education	Comprehensive, well organized database of water-related lesson plans for K-12 students Submissions from educators on lesson plans used Results from student-led water assessments and aerator replacements 75% Progress Report	1/21/2016 (database will be complete by 8/15/2015)	$6,274	In Progress
Task 4: Implementation	Report compiling findings of indoor and outdoor assessments with recommendations from CRC Report from School District detailing plan for implementation including details of purchases with grant funds and matching funds and process changes Any water fixture purchases will be complete and delivered to all schools receiving the upgrades Water upgrades and/or process changes implemented and installed	2/26/2016 (Report from CRC and District will be completed by 10/30/2015)	$13,984	In Progress
Task 5: Data Analysis and Reporting	Analysis of water savings and project accomplishments for school district Final Report to CWCB	4/1/2016	$2,200	

Water Efficiency Grant Program 50% Progress Report

Project Name: School District Water Efficiency Project

PO #: PO PDAA 20150000000000000231

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Success of meeting previously identified goals and objectives

Task 1: Perform Indoor Water Assessments – *Completed on time by April 15, 2015*

Beginning in February of 2015 the Center for ReSource Conservation (CRC) began performing indoor water assessments at 20 pre-selected schools within the St. Vrain Valley School District (SVVSD). These assessments were used to evaluate and identify water conservation opportunities within restrooms, kitchens and classrooms in the district. At each school the main objective was to test all water-using fixtures and record specifications of the water-using appliances found throughout the school. Data collected during each assessment was entered into an Excel-based commercial auditing tool (created by the Brendle Group) along with utility rate information. The output from the tool for each school is included in **Attachment 1**. The aggregation of the indoor assessment data is included in **Attachment 2**. This table provides information at both the individual school-level, as well as the aggregated-level at the bottom of the spreadsheet (rows 24-28). These two attachments were the two pieces of information provided to the district by April 2015.

While the primary goal of the indoor assessments was to gather data for the analysis of potential and recommended water savings, a secondary goal was to identify processes within each school that could be changed to use less water. This goal proved to be more difficult to achieve and is discussed further below in the "Obstacles Encountered" section of this report.

Another part of the indoor assessments was involving the students so as to pass on information about the theories and methods of water conservation. Longmont Estates Elementary School encouraged an after-school group of students to participate in the water assessment (see photos included in section below).

Task 2: Perform Outdoor Water Assessments – *Completed on time by September 30, 2015*

The SVVSD staff identified the top 10 highest water using schools for the outdoor irrigation assessments. They decided to limit the focus to schools that receive water from a municipality, rather than from an irrigation ditch, in order to ensure that the any savings gained would directly reduce their water bills. The 10 schools chosen were also a subset of the schools the received an indoor assessment.

Complete irrigation system evaluations were performed at all 10 schools during the summer of 2015. Two CRC technicians were assigned to the project and performed all of the assessments so as to maintain continuity throughout the project with the assessments. The

summary of the data that they collected can be found in **Attachment 3**. Where cells are blank the category was either not applicable or the technicians had technical issues with the auditing application. This challenge is further discussed in the "Obstacles Encountered" section below.

In addition to the 10 irrigation assessments SVVSD staff requested help assessing the viability and utility of a weather-based irrigation control system. The district was already considering purchasing and installing one of these systems, however they wanted more information on what kind of potential savings one of these systems could offer them. CRC was able to provide an analysis of historical water usage along with the historical ET demand, allowing the district to have some information on how well their previous watering had matched the ET demand. Findings from this assessment were presented to the district in a short report, found in **Attachment 4**.

Task 3: Provide educational lessons and opportunities for students and staff – *In Progress, due 1/21/16*

There are three subtasks associated with this task. The first was to develop a database of lesson plans for educators around water conservation. This task has been completed. After compiling the list of resources and lessons for educators in a spreadsheet, we met with SVVSD educator leads to discuss the format that they would like to have the database presented as. They said that the best way would be through the school district's blog, which can be found at https://blogs.svvsd.org/science/. The water curriculum has not yet been posted yet, however **Attachment 5** shows the general layout of what the post will look like and how the curriculum was organized.

The next subtask was to coordinate a student-led assessment of the schools water use, before and after implementation of the upgrades. This sub-task has been partially completed. On March 19, 2015, the CRC technician met with a teacher and a group of 10-12 students from Longmont Estates Elementary and as a group, the water conservation assessment was performed. It was a great, hands-on experience for the students who were able to see the difference in flow rates at faucets all over their school, among other observations. The pictures below are from the student-led assessment.



The third subtask is to deliver lessons to students through classroom and/or environmental clubs. This subtask will be performed by the teachers in the schools that use the curriculum database after it has been posted on the SVVSD Blog site. The post date for the blog is planned to be early October. After this time the lead educator who is in charge of this

website will promote the lessons to the teachers in the district and connect with those who use it in their classrooms. CRC will then be connected with these teachers to assess the success and challenges of the lessons and to receive feedback on the curriculum and what it needs to do to better serve the needs of the teachers and district.

Task 4: Implementation for Water Savings – *In Progress, due 2/26/16*

This task is composed of the analysis of the indoor and outdoor assessment, the recommendation process to SVVSD staff, the decision-making process with CRC and SVVSD staff as to what action will be taken and then the implementation of those actions. As explained and presented above, the analysis of the indoor and outdoor assessments has already begun and is well underway. A preliminary report will be sent to district staff within the next two weeks and a meeting will be set up to plan for the implementation phase. A final report will be sent to district staff by 10/30/2015 with the description of the final steps that are going to be taken

Task 5: Data Analysis and Reporting – *Due 4/1/2016*

This task is included to provide for an opportunity to measure any changes in water use from the implementation of the upgrades. It also provides an opportunity for CRC to report to the school the final outcome of the project. It will only provide preliminary analysis of any savings as the time frame between the implementation and the analysis will be less than 2 months. This two month period will also not coincide with the outdoor watering season and therefore will not provide direct information on any water savings gained from upgrades to the irrigation system.

Obstacles Encountered

Overall the project has gone smoothly and despite a shift in the timeframe, it continues to meet the stated goals and tasks. However, as with every new project, there have been unforeseen challenges. One of the first challenges that CRC has encountered is identifying an upgrade that students are able perform themselves in order to be involved with the process of water conservation. Due to time constraints on students (i.e. classes, testing and extra-curricular activities) there are few students available to do an upgrade. Furthermore, some of the district staff are hesitant to involve students in the type of work necessary to do things such as replace faucet aerators. CRC is continuing to work with the district to identify at least one school and one group of students who can help with some aspect of the implementation, however students may not end up being involved to the level that we had originally planned.

Another challenge has been identifying processes around water that the school could make meaningful changes to that would reduce water waste. During the assessments, although water waste was identified, it was most commonly due to inefficient fixtures rather than habits. Furthermore, habits were hard to identify in such a short time period (1-2 hours per school). It may take more discussion with a variety of school staff to better understand water use habits within the schools and if there is an opportunity for improvement.

As mentioned above another challenge was the technological glitches in the irrigation auditing application. The application is fairly comprehensive and robust when used in a residential setting, however we have discovered that it will need additional work before it is

adequate for use in a large-property setting such as at a school. While some data was lost, the major findings of the irrigation assessments were not compromised.

A final challenge that CRC has encountered is lack of direct access to the teachers within the district. While the blog will allow for CRC to disseminate the curriculum database that we have complied, CRC will have to work through a single lead educator to connect with potential teachers who have tried the curriculum. In this case CRC will not be able to directly receive feedback or at least not in a very efficient manner, making it more difficult for CRC to make changes to the curriculum database and/or discuss the effectiveness and impact of the lessons with the staff that used them.

Preliminary Findings or Accomplishments

In general, the indoor assessments revealed that there are significant opportunities for water savings at nearly every school visited. The table below shows both the total (sum) as well as the mean (average) for the categories of water, electricity, and natural gas savings per unit, and cost savings. These are only the savings potentially available through indoor upgrades to fixtures and appliances within the 20 schools included in the assessments.

	Water Savings (kgal)	Electricity Savings (kWh)	Natural Gas Savings (therm)	Water Cost Savings	Electric Cost Savings	Natural Gas Cost Savings	Total Cost Savings
Total	9,050	109,432	11,194	$62,223	$9,738	$885	$72,307
Mean	453	5,472	560	$3,111	$487	$44	$3,615

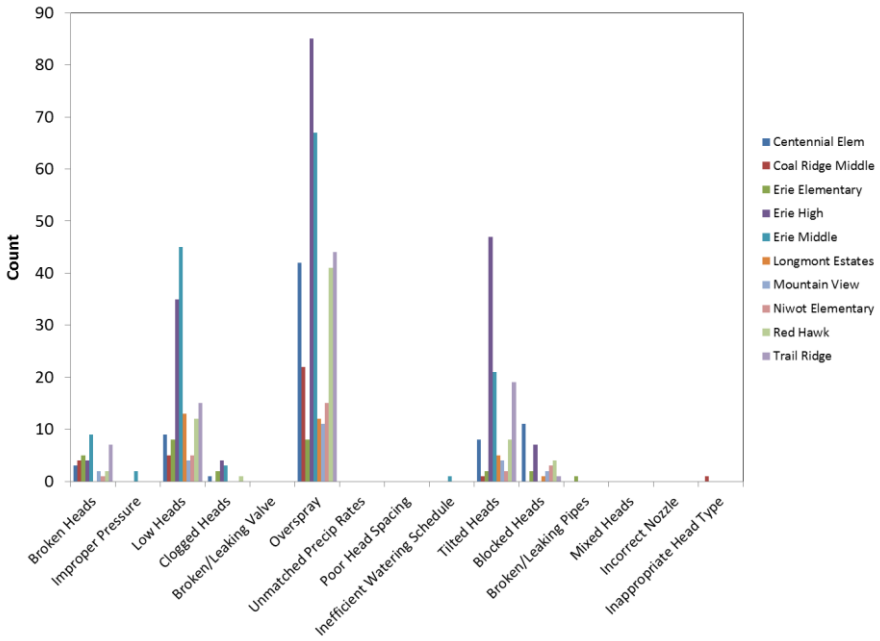
The top recommendations for fixture and appliance upgrades for the district are:

- Flushometer toilets (only 5% met WaterSense)
- Clothes washers (only 11% met Energy STAR)
- Steam Cookers (only 15% met Energy STAR)
- Dishwasher (only 17% met Energy STAR)

Attachment 1 and Attachment 2 contain more data from the indoor assessments.

The main finding from both the irrigation assessments as well as from the analysis of historical water use is that, in general, SVVSD has been watering their landscapes in a fairly efficient and appropriate manner. This was a surprise to CRC because other large properties that CRC has assessed are commonly overwatering. Overall, the management of the irrigation systems at the 10 schools surveyed is effective and conservation-minded. The systems themselves have opportunities for improvement, as displayed by the graph below that shows the count of sprinkler system issues identified at each school. Overspray, low heads, and tilted

heads were the top three most common problems amongst all irrigation systems that were surveyed. Other tests performed onsite found room for improvement on common efficiency parameters such as distribution uniformity (DU), which was measured at an average of 53% (standard irrigation DU is recommended to be at 70% or higher) across all sites.



The main results from the irrigation analysis are presented in the table below. Take note that after this table was produced it was brought to CRC's attention that Erie High School and Erie Middle School have larger irrigated areas than originally reported and therefore their extremely low application ratios[1] are inaccurate. While the majority of schools were watering at or below the calculated water need of their landscapes, Mountain View Elementary and Trail Ridge Middle School both showed room for improvement in watering application adequacy.

School	Actual Water Usage 2012	Needed Water Usage 2012	Application Ratio	Actual Water Usage 2013	Needed Water Usage 2013	Application Ratio
Centennial ES	4,532	4,392	103%	2,829	3,310	85%
Erie ES	5,991	5,965	100%	4,317	4,170	104%
Niwot ES	3,043	3,167	96%	2,552	2,387	107%
Longmont Estates ES	5,082	4,759	107%	3,247	5,641	58%
MountainView ES	3,671	2,566	143%	2,387	1,934	123%
Coal Ridge MS	9,305	13,639	68%	7,323	10,703	68%
Erie MS	2,908	4,821	60%	3,094	3,370	92%
Trail Ridge MS	7,499	5,425	138%	7,162	4,089	175%
Erie HS	15,887	32,327	49%	10,059	22,598	45%
Average	6,227	8,562	96%	6,227	6,467	95%
Sum	62,269	77,062		62,269	58,201	

*All water volumes in thousands of gallons (kgal)

[1] Application ratio is the ratio between the amount of water applied to a landscape relative to the amount of water needed by the landscape.

Potential Need for Revisions to the Scope of Work and Timelines

At this time CRC does not anticipate the need to change the scope of work or timeline. The changes made to the timeline earlier in the year should be adequate for ongoing success of the project.

Water Assessment Tool Output for 20 SVVSD Schools

Notes:

- Only fixtures with water use above the efficiency standards set in this tool are shown. For example, if a handwash sink was measured to use 0.5 gallons per minute, then it has met the efficiency standard and was not included in tool's calculations for water savings, etc.
- Utility and cost savings are based on typical utility rates and equipment use practices. Actual savings may vary.
- Installed costs are based on typical equipment cost and may vary. Installed costs include the full cost of end-use fixtures and the additional cost of water-saving appliances over conventional alternatives.
- Rebates were not added in to the analysis at this time, but will vary by utility.

CII Water Assessment Tool - Results **Black Rock Elem** **v 1.3**

Measure	Quantity	Water Savings (kgal)	Electricity Savings (kWh)	Natural Gas Savings (therm)	Water Cost Savings* ($)	Electric Cost Savings* ($)	Natural Gas Cost Savings* ($)	Total Cost Savings* ($)	Estimated Rebate*** ($)	Installed Cost** ($)	Simple Payback (years)	Include Measure in Report?	Estimated Water Consumption (kgal)
Faucet	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Aerator	21	322	0	670	$4,483	$0	$54	$4,536	$0	$105	0.0	yes	429
Pre-rinse spray valve	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Toilet	26	114	-	-	$1,594	-	-	$1,594	$0	$13,650	8.6	yes	572
Urinal	6	101	-	-	$1,401	-	-	$1,401	$0	$2,400	1.7	yes	201
Showerhead	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Clothes washer	1	6	236	9	$87	$24	$1	$112	$0	$150	1.3	yes	11
Dishwasher (residential)	0		0	0	-	$0	$0	$0	$0	$0		yes	0
Dishwasher (commercial)	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	47
Ice machine	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Steam cooker	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	7
Food disposal	0	0	-	-	$0	-	-	$0	$0	$0		yes	0
Cooling tower	0	0	-	-	$0	-	-	$0	$0	$0		yes	
Custom Project	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	
Total of All Measures		**543**	**236**	**679**	**$7,564**	**$24**	**$54**	**$7,643**	**$0**	**$16,305**	**2.1**		

CII Water Assessment Tool - Results — Centennial Elem — v 1.3

Measure	Quantity	Water Savings (kgal)	Electricity Savings (kWh)	Natural Gas Savings (therm)	Water Cost Savings* ($)	Electric Cost Savings* ($)	Natural Gas Cost Savings* ($)	Total Cost Savings* ($)	Estimated Rebate*** ($)	Installed Cost** ($)	Simple Payback (years)	Include Measure in Report?	Estimated Water Consumption (kgal)
Faucet	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Aerator	15	194	0	404	$577	$0	$32	$609	$0	$75	0.1	yes	290
Pre-rinse spray valve	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Toilet	21	90	-	-	$268	-	-	$268	$0	$11,025	41.1	yes	452
Urinal	6	79	-	-	$236	-	-	$236	$0	$2,400	10.2	yes	159
Showerhead	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Clothes washer	1	6	236	9	$18	$21	$1	$40	$0	$150	3.7	yes	11
Dishwasher (residential)	0		0	0	-	$0	$0	$0	$0	$0		yes	0
Dishwasher (commercial)	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	44
Ice machine	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Steam cooker	1	79	4,740	0	$233	$427	$0	$660	$0	$630	1.0	yes	79
Food disposal	0	0	-	-	$0	-	-	$0	$0	$0		yes	0
Cooling tower	0	0	-	-	$0	-	-	$0	$0	$0		yes	
Custom Project	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	
Total of All Measures		**449**	**4,976**	**413**	**$1,333**	**$448**	**$33**	**$1,814**	**$0**	**$14,280**	**7.9**		

CII Water Assessment Tool - Results — Central Elementary — v 1.3

Measure	Quantity	Water Savings (kgal)	Electricity Savings (kWh)	Natural Gas Savings (therm)	Water Cost Savings* ($)	Electric Cost Savings* ($)	Natural Gas Cost Savings* ($)	Total Cost Savings* ($)	Estimated Rebate*** ($)	Installed Cost** ($)	Simple Payback (years)	Include Measure in Report?	Estimated Water Consumption (kgal)
Faucet	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Aerator	30	86	0	179	$641	$0	$14	$655	$0	$150	0.2	yes	140
Pre-rinse spray valve	1	2	0	4	$13	$0	$0	$13	$0	$80	6.2	yes	4
Toilet	40	57	-	-	$427	-	-	$427	$0	$21,000	49.1	yes	286
Urinal	0	0	-	-	$0	-	-	$0	$0	$0		yes	0
Showerhead	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Clothes washer	1	6	236	9	$46	$19	$1	$66	$0	$150	2.3	yes	11
Dishwasher (residential)	0		0	0	-	$0	$0	$0	$0	$0		yes	0
Dishwasher (commercial)	1	21	424	236	$156	$33	$18	$208	$0	$770	3.7	yes	21
Ice machine	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Steam cooker	1	83	5,007	0	$619	$396	$0	$1,015	$0	$630	0.6	yes	83
Food disposal	0	0	-	-	$0	-	-	$0	$0	$0		yes	0
Cooling tower	0	0	-	-	$0	-	-	$0	$0	$0		yes	
Custom Project	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	
Total of All Measures		**255**	**5,667**	**428**	**$1,903**	**$448**	**$33**	**$2,384**	**$0**	**$22,780**	**9.6**		

CII Water Assessment Tool - Results — Coal Ridge MS — v 1.3

Measure	Quantity	Water Savings (kgal)	Electricity Savings (kWh)	Natural Gas Savings (therm)	Water Cost Savings* ($)	Electric Cost Savings* ($)	Natural Gas Cost Savings* ($)	Total Cost Savings* ($)	Estimated Rebate*** ($)	Installed Cost** ($)	Simple Payback (years)	Include Measure in Report?	Estimated Water Consumption (kgal)
Faucet	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Aerator	52	176	0	366	$523	$0	$29	$552	$0	$260	0.5	yes	343
Pre-rinse spray valve	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Toilet	34	125	-	-	$373	-	-	$373	$0	$17,850	47.9	yes	627
Urinal	15	110	-	-	$327	-	-	$327	$0	$6,000	18.3	yes	220
Showerhead	1	0	0	0	$0	$0	$0	$0	$0	$30		yes	0
Clothes washer	1	6	50	15	$18	$4	$1	$24	$0	$150	6.2	yes	11
Dishwasher (residential)	0		0	0	-	$0	$0	$0	$0	$0		yes	0
Dishwasher (commercial)	1	23	465	259	$68	$42	$21	$131	$0	$770	5.9	yes	23
Ice machine	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Steam cooker	1	91	5,489	0	$270	$494	$0	$764	$0	$630	0.8	yes	91
Food disposal	0	0	-	-	$0	-	-	$0	$0	$0		yes	0
Cooling tower	0	0	-	-	$0	-	-	$0	$0	$0		yes	
Custom Project	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	
Total of All Measures		**532**	**6,003**	**641**	**$1,579**	**$540**	**$51**	**$2,171**	**$0**	**$25,690**	**11.8**		

CII Water Assessment Tool - Results — Columbine Elem — v 1.3

Measure	Quantity	Water Savings (kgal)	Electricity Savings (kWh)	Natural Gas Savings (therm)	Water Cost Savings* ($)	Electric Cost Savings* ($)	Natural Gas Cost Savings* ($)	Total Cost Savings* ($)	Estimated Rebate*** ($)	Installed Cost** ($)	Simple Payback (years)	Include Measure in Report?	Estimated Water Consumption (kgal)
Faucet	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Aerator	10	67	0	140	$500	$0	$11	$511	$0	$50	0.1	yes	115
Pre-rinse spray valve	1	2	0	3	$12	$0	$0	$12	$0	$80	6.6	yes	4
Toilet	29	62	-	-	$459	-	-	$459	$0	$15,225	33.2	yes	266
Urinal	7	45	-	-	$335	-	-	$335	$0	$2,800	8.4	yes	90
Showerhead	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Clothes washer	1	6	236	9	$46	$19	$1	$66	$0	$150	2.3	yes	11
Dishwasher (residential)	1	0	9	1	$1	$1	$0	$2	$0	$10	5.6	yes	0
Dishwasher (commercial)	1	20	401	224	$148	$32	$17	$197	$0	$770	3.9	yes	20
Ice machine	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Steam cooker	1	79	4,740	0	$586	$374	$0	$961	$0	$630	0.7	yes	79
Food disposal	0	0	-	-	$0	-	-	$0	$0	$0		yes	0
Cooling tower	0	0	-	-	$0	-	-	$0	$0	$0		yes	
Custom Project	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	
Total of All Measures		**280**	**5,385**	**376**	**$2,087**	**$425**	**$29**	**$2,542**	**$0**	**$19,715**	**7.8**		

CII Water Assessment Tool - Results — Erie Elementary — v 1.3

Measure	Quantity	Water Savings (kgal)	Electricity Savings (kWh)	Natural Gas Savings (therm)	Water Cost Savings* ($)	Electric Cost Savings* ($)	Natural Gas Cost Savings* ($)	Total Cost Savings* ($)	Estimated Rebate*** ($)	Installed Cost** ($)	Simple Payback (years)	Include Measure in Report?	Estimated Water Consumption (kgal)
Faucet	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Aerator	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Pre-rinse spray valve	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Toilet	23	61	-	-	$852	-	-	$852	$0	$12,075	14.2	yes	306
Urinal	13	54	-	-	$749	-	-	$749	$0	$5,200	6.9	yes	108
Showerhead	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Clothes washer	1	6	50	15	$87	$5	$1	$93	$0	$150	1.6	yes	11
Dishwasher (residential)	0		0	0	-	$0	$0	$0	$0	$0		yes	0
Dishwasher (commercial)	1	20	401	224	$276	$42	$18	$336	$0	$770	2.3	yes	20
Ice machine	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Steam cooker	1	79	4,740	0	$1,095	$491	$0	$1,585	$0	$630	0.4	yes	79
Food disposal	0	0	-	-	$0	-	-	$0	$0	$0		yes	0
Cooling tower	0	0	-	-	$0	-	-	$0	$0	$0		yes	
Custom Project	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	
Total of All Measures		**220**	**5,190**	**239**	**$3,059**	**$537**	**$19**	**$3,615**	**$0**	**$18,825**	**5.2**		

CII Water Assessment Tool - Results — Erie High School — v 1.3

Measure	Quantity	Water Savings (kgal)	Electricity Savings (kWh)	Natural Gas Savings (therm)	Water Cost Savings* ($)	Electric Cost Savings* ($)	Natural Gas Cost Savings* ($)	Total Cost Savings* ($)	Estimated Rebate*** ($)	Installed Cost** ($)	Simple Payback (years)	Include Measure in Report?	Estimated Water Consumption (kgal)
Faucet	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Aerator	10	426	0	887	$5,932	$0	$71	$6,003	$0	$50	0.0	yes	544
Pre-rinse spray valve	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Toilet	42	126	-	-	$1,758	-	-	$1,758	$0	$22,050	12.5	yes	631
Urinal	11	111	-	-	$1,545	-	-	$1,545	$0	$4,400	2.8	yes	222
Showerhead	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Clothes washer	1	6	50	15	$87	$5	$1	$93	$0	$150	1.6	yes	11
Dishwasher (residential)	0		0	0	-	$0	$0	$0	$0	$0		yes	0
Dishwasher (commercial)	1	20	2,374	144	$279	$246	$12	$536	$0	$770	1.4	yes	20
Ice machine	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Steam cooker	1	79	0	523	$1,107	$0	$42	$1,149	$0	$870	0.8	yes	79
Food disposal	0	0	-	-	$0	-	-	$0	$0	$0		yes	0
Cooling tower	0	0	-	-	$0	-	-	$0	$0	$0		yes	
Custom Project	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	
Total of All Measures		**769**	**2,423**	**1,569**	**$10,707**	**$251**	**$126**	**$11,083**	**$0**	**$28,290**	**2.6**		

CII Water Assessment Tool - Results — Erie Middle School — v 1.3

Measure	Quantity	Water Savings (kgal)	Electricity Savings (kWh)	Natural Gas Savings (therm)	Water Cost Savings* ($)	Electric Cost Savings* ($)	Natural Gas Cost Savings* ($)	Total Cost Savings* ($)	Estimated Rebate*** ($)	Installed Cost** ($)	Simple Payback (years)	Include Measure in Report?	Estimated Water Consumption (kgal)
Faucet	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Aerator	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Pre-rinse spray valve	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Toilet	23	130	-	-	$1,812	-	-	$1,812	$0	$12,075	6.7	yes	650
Urinal	0	0	-	-	$0	-	-	$0	$0	$0		yes	0
Showerhead	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Clothes washer	1	6	50	15	$87	$5	$1	$93	$0	$150	1.6	yes	11
Dishwasher (residential)	0		0	0	-	$0	$0	$0	$0	$0		yes	0
Dishwasher (commercial)	1	20	401	224	$276	$42	$18	$336	$0	$770	2.3	yes	20
Ice machine	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Steam cooker	1	79	4,740	0	$1,095	$491	$0	$1,585	$0	$630	0.4	yes	79
Food disposal	0	0	-	-	$0	-	-	$0	$0	$0		yes	0
Cooling tower	0	0	-	-	$0	-	-	$0	$0	$0		yes	
Custom Project	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	
Total of All Measures		**235**	**5,190**	**239**	**$3,269**	**$537**	**$19**	**$3,825**	**$0**	**$13,625**	**3.6**		

CII Water Assessment Tool - Results — Fall River Elem — v 1.3

Measure	Quantity	Water Savings (kgal)	Electricity Savings (kWh)	Natural Gas Savings (therm)	Water Cost Savings* ($)	Electric Cost Savings* ($)	Natural Gas Cost Savings* ($)	Total Cost Savings* ($)	Estimated Rebate*** ($)	Installed Cost** ($)	Simple Payback (years)	Include Measure in Report?	Estimated Water Consumption (kgal)
Faucet	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Aerator	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Pre-rinse spray valve	2	3	0	5	$19	$0	$0	$20	$0	$160	8.2	yes	9
Toilet	18	98	-	-	$732	-	-	$732	$0	$9,450	12.9	yes	491
Urinal	8	86	-	-	$644	-	-	$644	$0	$3,200	5.0	yes	173
Showerhead	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Clothes washer	1	6	50	15	$46	$4	$1	$52	$0	$150	2.9	yes	11
Dishwasher (residential)	0		0	0	-	$0	$0	$0	$0	$0		yes	0
Dishwasher (commercial)	1	23	462	258	$170	$37	$20	$227	$0	$770	3.4	yes	23
Ice machine	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Steam cooker	2	181	10,925	0	$1,351	$863	$0	$2,214	$0	$1,260	0.6	yes	181
Food disposal	0	0	-	-	$0	-	-	$0	$0	$0		yes	0
Cooling tower	0	0	-	-	$0	-	-	$0	$0	$0		yes	
Custom Project	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	
Total of All Measures		**397**	**11,437**	**279**	**$2,964**	**$904**	**$22**	**$3,889**	**$0**	**$14,990**	**3.9**		

CII Water Assessment Tool - Results — Legacy Elem — v 1.3

Measure	Quantity	Water Savings (kgal)	Electricity Savings (kWh)	Natural Gas Savings (therm)	Water Cost Savings* ($)	Electric Cost Savings* ($)	Natural Gas Cost Savings* ($)	Total Cost Savings* ($)	Estimated Rebate*** ($)	Installed Cost** ($)	Simple Payback (years)	Include Measure in Report?	Estimated Water Consumption (kgal)
Faucet	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Aerator	6	420	0	874	$566	$0	$70	$636	$0	$30	0.0	yes	555
Pre-rinse spray valve	2	3	0	6	$4	$0	$1	$5	$0	$160	34.5	yes	9
Toilet	26	108	-	-	$146	-	-	$146	$0	$13,650	93.4	yes	541
Urinal	7	95	-	-	$128	-	-	$128	$0	$2,800	21.8	yes	190
Showerhead	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Clothes washer	1	6	236	9	$8	$27	$1	$36	$0	$150	4.2	yes	11
Dishwasher (residential)	0		0	0	-	$0	$0	$0	$0	$0		yes	0
Dishwasher (commercial)	1	23	462	258	$31	$53	$21	$104	$0	$770	7.4	yes	23
Ice machine	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Steam cooker	1	91	5,463	0	$122	$622	$0	$744	$0	$630	0.8	yes	91
Food disposal	0	0	-	-	$0	-	-	$0	$0	$0		yes	0
Cooling tower	0	0	-	-	$0	-	-	$0	$0	$0		yes	
Custom Project	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	
Total of All Measures		**746**	**6,161**	**1,147**	**$1,007**	**$701**	**$92**	**$1,800**	**$0**	**$18,190**	**10.1**		

CII Water Assessment Tool - Results — Longmont Estates Elem — v 1.3

Measure	Quantity	Water Savings (kgal)	Electricity Savings (kWh)	Natural Gas Savings (therm)	Water Cost Savings* ($)	Electric Cost Savings* ($)	Natural Gas Cost Savings* ($)	Total Cost Savings* ($)	Estimated Rebate*** ($)	Installed Cost** ($)	Simple Payback (years)	Include Measure in Report?	Estimated Water Consumption (kgal)
Faucet	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Aerator	31	102	0	212	$760	$0	$17	$776	$0	$155	0.2	yes	256
Pre-rinse spray valve	1	2	0	3	$12	$0	$0	$13	$0	$80	6.3	yes	4
Toilet	18	63	-	-	$469	-	-	$469	$0	$9,450	20.2	yes	314
Urinal	8	55	-	-	$412	-	-	$412	$0	$3,200	7.8	yes	110
Showerhead	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Clothes washer	1	6	236	9	$46	$19	$1	$66	$0	$150	2.3	yes	11
Dishwasher (residential)	1	0	9	1	$1	$1	$0	$2	$0	$10	5.6	yes	0
Dishwasher (commercial)	1	21	419	234	$155	$33	$18	$206	$0	$770	3.7	yes	21
Ice machine	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Steam cooker	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	7
Food disposal	0	0	-	-	$0	-	-	$0	$0	$0		yes	0
Cooling tower	0	0	-	-	$0	-	-	$0	$0	$0		yes	
Custom Project	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	
Total of All Measures		**249**	**664**	**459**	**$1,855**	**$52**	**$36**	**$1,943**	**$0**	**$13,815**	**7.1**		

CII Water Assessment Tool - Results — Lyons Jr Sr High School — v 1.3

Measure	Quantity	Water Savings (kgal)	Electricity Savings (kWh)	Natural Gas Savings (therm)	Water Cost Savings* ($)	Electric Cost Savings* ($)	Natural Gas Cost Savings* ($)	Total Cost Savings* ($)	Estimated Rebate*** ($)	Installed Cost** ($)	Simple Payback (years)	Include Measure in Report?	Estimated Water Consumption (kgal)
Faucet	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Aerator	44	86	0	180	$553	$0	$14	$568	$0	$220	0.4	yes	179
Pre-rinse spray valve	1	2	0	3	$10	$0	$0	$10	$0	$80	7.6	yes	4
Toilet	17	62	-	-	$398	-	-	$398	$0	$8,925	22.4	yes	311
Urinal	11	75	-	-	$477	-	-	$477	$0	$4,400	9.2	yes	129
Showerhead	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Clothes washer	1	6	236	9	$40	$21	$1	$62	$0	$150	2.4	yes	11
Dishwasher (residential)	1	0	9	1	$1	$1	$0	$2	$0	$10	5.7	yes	0
Dishwasher (commercial)	1	20	401	224	$127	$36	$18	$181	$0	$770	4.3	yes	20
Ice machine	2	10	688	0	$63	$62	$0	$125	$0	$0	0.0	yes	10
Steam cooker	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	6
Food disposal	0	0	-	-	$0	-	-	$0	$0	$0		yes	0
Cooling tower	0	0	-	-	$0	-	-	$0	$0	$0		yes	
Custom Project	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	
Total of All Measures		**261**	**1,334**	**417**	**$1,670**	**$120**	**$33**	**$1,824**	**$0**	**$14,555**	**8.0**		

CII Water Assessment Tool - Results — Niwot Elementary — v 1.3

Measure	Quantity	Water Savings (kgal)	Electricity Savings (kWh)	Natural Gas Savings (therm)	Water Cost Savings* ($)	Electric Cost Savings* ($)	Natural Gas Cost Savings* ($)	Total Cost Savings* ($)	Estimated Rebate*** ($)	Installed Cost** ($)	Simple Payback (years)	Include Measure in Report?	Estimated Water Consumption (kgal)
Faucet	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Aerator	46	130	0	271	$971	$0	$21	$992	$0	$230	0.2	yes	219
Pre-rinse spray valve	1	2	0	4	$13	$0	$0	$13	$0	$80	6.2	yes	4
Toilet	48	57	-	-	$427	-	-	$427	$0	$25,200	59.0	yes	286
Urinal	9	73	-	-	$543	-	-	$543	$0	$3,600	6.6	yes	123
Showerhead	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Clothes washer	1	6	236	9	$46	$19	$1	$66	$0	$150	2.3	yes	11
Dishwasher (residential)	0		0	0	-	$0	$0	$0	$0	$0		yes	0
Dishwasher (commercial)	1	13	1,287	144	$95	$102	$11	$208	$0	$2,050	9.9	yes	13
Ice machine	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Steam cooker	1	83	5,007	0	$619	$396	$0	$1,015	$0	$630	0.6	yes	83
Food disposal	0	0	-	-	$0	-	-	$0	$0	$0		yes	0
Cooling tower	0	0	-	-	$0	-	-	$0	$0	$0		yes	
Custom Project	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	
Total of All Measures		**364**	**6,530**	**427**	**$2,714**	**$516**	**$33**	**$3,263**	**$0**	**$31,940**	**9.8**		

CII Water Assessment Tool - Results — Prairie Ridge — v 1.3

Measure	Quantity	Water Savings (kgal)	Electricity Savings (kWh)	Natural Gas Savings (therm)	Water Cost Savings* ($)	Electric Cost Savings* ($)	Natural Gas Cost Savings* ($)	Total Cost Savings* ($)	Estimated Rebate*** ($)	Installed Cost** ($)	Simple Payback (years)	Include Measure in Report?	Estimated Water Consumption (kgal)
Faucet	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Aerator	26	188	11,449	0	$557	$1,030	$0	$1,587	$0	$130	0.1	yes	286
Pre-rinse spray valve	2	1	91	0	$4	$8	$0	$13	$0	$160	12.7	yes	7
Toilet	19	68	-	-	$203	-	-	$203	$0	$9,975	49.2	yes	341
Urinal	8	60	-	-	$178	-	-	$178	$0	$3,200	18.0	yes	120
Showerhead	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Clothes washer	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	5
Dishwasher (residential)	0		0	0	-	$0	$0	$0	$0	$0		yes	0
Dishwasher (commercial)	1	20	3,807	81	$59	$343	$7	$408	$0	$770	1.9	yes	20
Ice machine	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Steam cooker	1	79	4,740	0	$233	$427	$0	$660	$0	$630	1.0	yes	79
Food disposal	0	0	-	-	$0	-	-	$0	$0	$0		yes	0
Cooling tower	0	0	-	-	$0	-	-	$0	$0	$0		yes	
Custom Project	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	
Total of All Measures		**416**	**20,086**	**81**	**$1,235**	**$1,808**	**$7**	**$3,049**	**$0**	**$14,865**	**4.9**		

CII Water Assessment Tool - Results — Red Hawk Elem — v 1.3

Measure	Quantity	Water Savings (kgal)	Electricity Savings (kWh)	Natural Gas Savings (therm)	Water Cost Savings* ($)	Electric Cost Savings* ($)	Natural Gas Cost Savings* ($)	Total Cost Savings* ($)	Estimated Rebate*** ($)	Installed Cost** ($)	Simple Payback (years)	Include Measure in Report?	Estimated Water Consumption (kgal)
Faucet	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Aerator	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Pre-rinse spray valve	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Toilet	13	79	-	-	$1,095	-	-	$1,095	$0	$5,200	4.7	yes	633
Urinal	0	0	-	-	$0	-	-	$0	$0	$0		yes	0
Showerhead	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Clothes washer	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	5
Dishwasher (residential)	0		0	0	-	$0	$0	$0	$0	$0		yes	0
Dishwasher (commercial)	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	57
Ice machine	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Steam cooker	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	8
Food disposal	0	0	-	-	$0	-	-	$0	$0	$0		yes	0
Cooling tower	0	0	-	-	$0	-	-	$0	$0	$0		yes	
Custom Project	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	
Total of All Measures		**79**	**0**	**0**	**$1,095**	**$0**	**$0**	**$1,095**	**$0**	**$5,200**	**4.7**		

CII Water Assessment Tool - Results — Spark PreSchool — v 1.3

Measure	Quantity	Water Savings (kgal)	Electricity Savings (kWh)	Natural Gas Savings (therm)	Water Cost Savings* ($)	Electric Cost Savings* ($)	Natural Gas Cost Savings* ($)	Total Cost Savings* ($)	Estimated Rebate*** ($)	Installed Cost** ($)	Simple Payback (years)	Include Measure in Report?	Estimated Water Consumption (kgal)
Faucet	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Aerator	17	209	0	436	$283	$0	$35	$317	$0	$85	0.3	yes	310
Pre-rinse spray valve	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Toilet	24	216	-	-	$292	-	-	$292	$0	$12,600	43.2	yes	564
Urinal	11	77	-	-	$103	-	-	$103	$0	$4,400	42.6	yes	153
Showerhead	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Clothes washer	0		0	0	-	$0	$0	$0	$0	$0		yes	0
Dishwasher (residential)	0		0	0	-	$0	$0	$0	$0	$0		yes	0
Dishwasher (commercial)	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Ice machine	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Steam cooker	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Food disposal	0	0	-	-	$0	-	-	$0	$0	$0		yes	0
Cooling tower	0	0	-	-	$0	-	-	$0	$0	$0		yes	
Custom Project	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	
Total of All Measures		**502**	**0**	**436**	**$678**	**$0**	**$35**	**$713**	**$0**	**$17,085**	**24.0**		

CII Water Assessment Tool - Results — Thunder Valley K-8 — v 1.3

Measure	Quantity	Water Savings (kgal)	Electricity Savings (kWh)	Natural Gas Savings (therm)	Water Cost Savings* ($)	Electric Cost Savings* ($)	Natural Gas Cost Savings* ($)	Total Cost Savings* ($)	Estimated Rebate*** ($)	Installed Cost** ($)	Simple Payback (years)	Include Measure in Report?	Estimated Water Consumption (kgal)
Faucet	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Aerator	2	154	0	322	$208	$0	$26	$234	$0	$10	0.0	yes	232
Pre-rinse spray valve	1	1	0	3	$2	$0	$0	$2	$0	$80	36.4	yes	4
Toilet	47	218	-	-	$294	-	-	$294	$0	$24,675	84.0	yes	547
Urinal	9	9	-	-	$12	-	-	$12	$0	$3,600	294.8	yes	81
Showerhead	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Clothes washer	1	6	236	9	$8	$27	$1	$36	$0	$150	4.2	yes	11
Dishwasher (residential)	0		0	0	-	$0	$0	$0	$0	$0		yes	0
Dishwasher (commercial)	1	22	437	244	$29	$50	$20	$98	$0	$770	7.8	yes	22
Ice machine	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Steam cooker	1	86	5,168	0	$116	$588	$0	$704	$0	$630	0.9	yes	86
Food disposal	0	0	-	-	$0	-	-	$0	$0	$0		yes	0
Cooling tower	0	0	-	-	$0	-	-	$0	$0	$0		yes	
Custom Project	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	
Total of All Measures		**496**	**5,841**	**578**	**$670**	**$665**	**$46**	**$1,381**	**$0**	**$29,915**	**21.7**		
Total of Included Measures		**496**	**5,841**	**578**	**$670**	**$665**	**$46**	**$1,381**	**$0**	**$29,915**	**21.7**		

CII Water Assessment Tool - Results — Timberline K-8 — v 1.3

Measure	Quantity	Water Savings (kgal)	Electricity Savings (kWh)	Natural Gas Savings (therm)	Water Cost Savings* ($)	Electric Cost Savings* ($)	Natural Gas Cost Savings* ($)	Total Cost Savings* ($)	Estimated Rebate*** ($)	Installed Cost** ($)	Simple Payback (years)	Include Measure in Report?	Estimated Water Consumption (kgal)
Faucet	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Aerator	28	303	0	631	$2,262	$0	$49	$2,311	$0	$140	0.1	yes	502
Pre-rinse spray valve	2	2	0	5	$18	$0	$0	$18	$0	$160	8.8	yes	8
Toilet	29	316	-	-	$2,357	-	-	$2,357	$0	$15,225	6.5	yes	940
Urinal	9	137	-	-	$1,024	-	-	$1,024	$0	$3,600	3.5	yes	274
Showerhead	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Clothes washer	1	6	50	15	$46	$4	$1	$52	$0	$150	2.9	yes	11
Dishwasher (residential)	0		0	0	-	$0	$0	$0	$0	$0		yes	0
Dishwasher (commercial)	2	42	857	478	$316	$68	$37	$421	$0	$1,540	3.7	yes	42
Ice machine	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Steam cooker	2	168	10,122	0	$1,252	$800	$0	$2,052	$0	$1,260	0.6	yes	168
Food disposal	0	0	-	-	$0	-	-	$0	$0	$0		yes	0
Cooling tower	0	0	-	-	$0	-	-	$0	$0	$0		yes	
Custom Project	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	
Total of All Measures		**975**	**11,028**	**1,130**	**$7,274**	**$871**	**$88**	**$8,234**	**$0**	**$22,075**	**2.7**		

CII Water Assessment Tool - Results — Trail Ridge MS — v 1.3

Measure	Quantity	Water Savings (kgal)	Electricity Savings (kWh)	Natural Gas Savings (therm)	Water Cost Savings* ($)	Electric Cost Savings* ($)	Natural Gas Cost Savings* ($)	Total Cost Savings* ($)	Estimated Rebate*** ($)	Installed Cost** ($)	Simple Payback (years)	Include Measure in Report?	Estimated Water Consumption (kgal)
Faucet	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Aerator	72	259	0	540	$1,935	$0	$42	$1,978	$0	$360	0.2	yes	493
Pre-rinse spray valve	1	1	0	3	$9	$0	$0	$10	$0	$80	8.2	yes	4
Toilet	41	119	-	-	$891	-	-	$891	$0	$21,525	24.2	yes	597
Urinal	18	105	-	-	$783	-	-	$783	$0	$7,200	9.2	yes	210
Showerhead	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Clothes washer	1	6	50	15	$46	$4	$1	$52	$0	$150	2.9	yes	11
Dishwasher (residential)	0		0	0	-	$0	$0	$0	$0	$0		yes	0
Dishwasher (commercial)	1	23	458	255	$169	$36	$20	$225	$0	$770	3.4	yes	23
Ice machine	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Steam cooker	1	90	5,409	0	$669	$427	$0	$1,096	$0	$630	0.6	yes	90
Food disposal	0	0	-	-	$0	-	-	$0	$0	$0		yes	0
Cooling tower	0	0	-	-	$0	-	-	$0	$0	$0		yes	
Custom Project	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	
Total of All Measures		**604**	**5,916**	**814**	**$4,504**	**$467**	**$63**	**$5,034**	**$0**	**$30,715**	**6.1**		

CII Water Assessment Tool - Results — Westview MS — v 1.3

Measure	Quantity	Water Savings (kgal)	Electricity Savings (kWh)	Natural Gas Savings (therm)	Water Cost Savings* ($)	Electric Cost Savings* ($)	Natural Gas Cost Savings* ($)	Total Cost Savings* ($)	Estimated Rebate*** ($)	Installed Cost** ($)	Simple Payback (years)	Include Measure in Report?	Estimated Water Consumption (kgal)
Faucet	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Aerator	46	284	0	592	$2,120	$0	$46	$2,167	$0	$230	0.1	yes	478
Pre-rinse spray valve	1	2	0	3	$12	$0	$0	$13	$0	$80	6.4	yes	4
Toilet	48	125	-	-	$933	-	-	$933	$0	$25,200	27.0	yes	625
Urinal	9	159	-	-	$1,185	-	-	$1,185	$0	$3,600	3.0	yes	269
Showerhead	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Clothes washer	1	6	50	15	$46	$4	$1	$52	$0	$150	2.9	yes	11
Dishwasher (residential)	0		0	0	-	$0	$0	$0	$0	$0		yes	0
Dishwasher (commercial)	1	12	1,259	140	$93	$99	$11	$203	$0	$2,050	10.1	yes	12
Ice machine	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	0
Steam cooker	1	81	4,900	0	$606	$387	$0	$993	$0	$630	0.6	yes	81
Food disposal	0	0	-	-	$0	-	-	$0	$0	$0		yes	0
Cooling tower	0	0	-	-	$0	-	-	$0	$0	$0		yes	
Custom Project	0	0	0	0	$0	$0	$0	$0	$0	$0		yes	
Total of All Measures		**670**	**6,209**	**751**	**$4,996**	**$490**	**$59**	**$5,545**	**$0**	**$31,940**	**5.8**		

				Approximate Number of Fixture, by type, that do not meet water efficiency standards					Number of Appliances, by type, that do not meet water efficiency standards						
School	**City**	**Assessment Date**	**Assessment Contact**	**Handwash Sink Faucet Aerators**	**Kitchen-type Faucet Aerators**	**Toilets**	**Urinals**	**PRSVs**	**Clothes Washer**	**Residential Dishwasher**	**Commercial Dishwasher**	**Steam Cooker**	**Ice Machine**	**Water Savings (kgal)**	**Electricity Savings (kWh)**
Centennial Elementary	Firestone	4/1/2015	Patrick?	14	1	21	6		1			1		449	4976
Central Elementary	Longmont	3/19/2015	Tim	30		40		1	1		1	1		255	5667
Coal Ridge MS	Firestone	4/1/2015	David	41	11	34	15		1		1	1	1	532	6003
Columbine Elementary	Longmont	3/19/2015	Rosa	10		29	7	1	1	1	1	1		280	5385
Fall River Elementary	Longmont	3/18/2015	Kerri Tanner			18	8	2	1		1	2		397	11437
Legacy Elementary	Fredrick	4/2/2015	Larissa	5	1	26	7	2	1		1	1		746	6161
Longmont Estates Elementary	Longmont	3/19/2015	Kyle Houghton (teacher)	6	25	18	8	1	1	1	1			249	664
Lyons MS/HS	Lyons	3/25/2015	Bobby	31	13	17	11	1	1	1	1		2	261	1334
Prairie Ridge	Firestone	4/1/2015	Patrick?	19	5	19	8	2			1	1		416	20086
Spark Elementary	Fredrick	4/2/2015	James	15	2	24	11							502	0
Thunder Valley K-8	Fredrick	4/2/2015	Alan	2		47	9	1	1		1	1		496	5841

Timberline K-8	Longmont	3/18/2015	Sean	23	5	29	9	2	1		2	2		975	11028
Westview MS	Longmont	3/25/2015	Mike	31	15	48	9	1	1		1	1		678	5365
Black Rock Elementary	Erie	3/4/2015	Ophelia	21		26	6		1					543	236
Trail Ridge MS	Longmont	3/18/2015	Bill	33	39	41	18	1	1		1	1	1	604	5916
Erie Elementary	Erie	3/4/2015	Buddy			23	13		1		1	1		220	5190
Erie High School	Erie	3/4/2015	Pete	10		42	11		1		1	1		769	2423
Erie Middle School	Erie	3/4/2015	Callow			23			1		1	1		235	5190
Niwot Elementary	Longmont	3/25/2015	Tim	31	15	48	9	1	1		1	1		364	6530
Red Hawk Elementary	Erie	3/4/2015	VP			13								79	0

Totals	322	132	586	165	16	17	3	17	17	4	9,050	109,432
Mean	20	12	29	10	1	1	1	1	1	1	453	5,472
Median	20	11	26	9	1	1	1	1	1	1	433	5,375
Min	2	1	13	6	1	1	1	1	1	1	79	0
Max	41	39	48	18	2	1	1	2	2	2	975	20,086

Natural Gas Savings (therm)	Water Cost Savings	Electirc Cost Savings	Natural Gas Cost Savings	Total Cost Savings	Water Fuel Type Note	PRSV Note	Other Reported Issues by Staff/Students	Annual Days of Operation	Facuet notes	Toilet notes	Urinal Notes
413	$1,333	$448	$33	$1,814	Same as Prairie Ridge	T&S Brass, Blue cover			some metered, some sinks missing aerators		
428	$1,903	$448	$33	$2,384		brush attachement, T&S brand	healthroom sink does not get hot water at all.	Did not have summer school in previous years, but summer 15 they will			
641	$1,579	$540	$51	$2,171			Leak in Art Room sink, leak in science room		timers on many, 3-10+ sec	Crane toilets	
376	$2,087	$425	$29	$2,542	unkown	Fisher brand, don't use both			some leaks noted, many are metered	could be using more water, a lot were unspecified GPF	
279	$2,964	$904	$22	$3,889		no brush			some metered sinks		
1147	$1,007	$701	$92	$1,800		Fisher			mostly metered, some did not turn off at all on their own, or went on for a very long time.		
459	$1,855	$52	$36	$1,943	unkown		sinks in classroom use 5+ gpm				
417	$1,670	$120	$33	$1,824	gas	brush			Science room barb fittings leak a lot; some are metered	Kholer, auto flush in some places, some 1.28 toilets	
81	$1,235	$1,808	$7	$3,049	Each classroom has own under-counter heater. Each pod has electirc hot water heater. Kitchen has gas hot water heater	brush attachement			some metered, some not, many sinks missing aerators		
436	$678	$0	$35	$173	gas		Kitchen not used at all		some sinks are metered, some without aerators	many very old toilets,	
578	$670	$665	$46	$1,381					no aerators on some faucets; meterd faucets on handwash sinks	AmericanStandard, Kholer brand	Zurin brand

1130	$7,274	$871	$88	$8,234	gas				many handwash sinks are metered	American Standard	Urinals had the range: 0.125-1.0
842	$5,056	$424	$66	$5,545	electric and gas	brush	"no one drinks the water here", "water is brown and smells funny"		some aerators missing	Toilets clog because kids put things in them	
679	$7,564	$24	$54	$7,643							
814	$4,504	$467	$63	$5,034	gas	Scotsman	Have cooling towers				
239	$3,059	$537	$19	$3,615	gas						
1569	$10,707	$251	$126	$11,083							
239	$3,269	$537	$19	$3,825	gas						
427	$2,714	$516	$33	$3,263	gas						
0	$1,095	$0	$0	$1,095	gas						

11,194	$62,223	$9,738	$885	$72,307
560	$3,111	$487	$44	$3,615
432	$1,995	$458	$34	$2,796
0	$670	$0	$0	$173
1,569	$10,707	$1,808	$126	$11,083

School Name	Drip System	Xeriscape	MP Rotators	Check Valves	ET/Soil Moisture Sensor	Watering Days /Week	Cycles	Average Rotor Minutes /Day	Recommended Rotor Min /Week	Average Spray Min/Day	Recommended Spray Min/Week	Avg Rotor Mins/Week	Avg Spray Mins/Week	FIXED A Zone Number
Centenial Elementary														1 3
Coal Ridge Middle														28
Erie Elementary	Yes	Some	None	Some	No	4	1	29				116		25
	Yes	Some	None	Some	No	3	1	34		30		102	90	
Erie High School						7	1							1c
Erie Middle School														9 43
Longmonst Estates Elementary	Yes	Some	None	Some	No	4	1	29				116		
Mountain View Elementary	Yes	Some	None	Some	No	3	1	34		30		102	90	
Niwot Elementary	Yes	Some	None	Some		4	1	30				120		
Red Hawk Elementary						7	1							3 52

Trail Ridge Elementary							
Sum							
Average	5	1	31	30	111	90	21
Min	3	1	29	30	102	90	1
Max	7	1	34	30	120	90	52

A Root Depth FIXED	FIXED A Soil Type	FIXED A psi	FIXED A Precip Rate	FIXED A Dist Uniformity	Fixed A Current Min/Week	Fixed A Rec Min/Week	FIXED B Zone Number	FIXED B Root Depth	FIXED B Soil Type	FIXED B psi	FIXED B Precip Rate	FIXED B Dist Uniformity	FIXED B Current min/week	Fixed B Rec Min/Week	ROTOR A Zone Number
3	Clay	25	1.9	57			29	3	Clay	30	2.19	52			28
3	Clay	25	3.62	49			11	2	Clay	25	1.67	65			
															42-10
															60-29
3	Sand	40	1.19	34											36,37
															2
															3
3	Loam		1.45	46											19
															15
															12
															23a
															2a
2	Clay	25	1.03	31											19a
															27c
															40 B
															20D
															4D
															23E
4	Sand		0.37	65			1	4	Sand		1	64			
															21
															32
6	Loam	75	1.55	67			27	5	Loam	66	1.76	61			
															29
															15
															12
											8				
															6
															15
2	Clay	40	2.32	69			9	2	Clay	41	1.46	53			8
															42
2	Clay	40	1.47	57											45

3	**39**	**2**	**53**		**15**	**3**	**41**	**3**	**59**	**18**
2	**25**	**0.37**	**31**		**1**	**2**	**25**	**1**	**52**	**2**
6	**75**	**2.32**	**69**		**27**	**5**	**66**	**8**	**64**	**45**

ROTOR A Root Depth	ROTOR A Soil Type	ROTOR A psi	ROTOR A Precip Rate	ROTOR A Dist Uniformity	ROTOR A Current Min/Week	ROTOR A Rec Min/Week	ROTOR B Zone Number	ROTOR B Root Depth	ROTOR B Soil Type	ROTOR B psi	ROTOR B Precip Rate	ROTOR B Dist Uniformity	ROTOR B Current mins/week	ROTOR B Rec Min/Week	Broken Heads
3	Clay	30	1.4	63											3
															0
3	Clay	25	0.34	76			43-11	3	Clay	30	0.35	68			0
3	Clay	30	0.38	60			57-26	3	Clay	30	0.96	65			0
3	Sand	40	0.45	78			39	3	Sand	40	1.26	34			4
3	Sand	40	0.85	66			3	3	Sand	40	1.05	79			0
3	Loam		0.45	60			26	3	Loam	40	0.4	43			5
3	Loam	40	1.05	77			14				1.06	55			0
															0
4	Clay	60	0.54	76	116		22	4	Clay	60	0.68	52	116		0
4	Clay	60	0.26	58	116										0
															2
			0.27	67			22a				0.52	66			4
3			0.54	0			5a	2		55	1.39	33			0
3	Clay	54	0.64	75			18c				0.39	64			0
			0.41	27			29c				0.46	48			0
3	Clay	45	0.58	45			22D	3	Clay	60	0.29	31			0
3	Clay	62	1	42			6D	3	Clay	45	0.53	76			0
3	Clay	60	0.31	55			27E	3	Clay	58	0.53	57			0
3	Clay	60	0.2	60			3E	3		55	0.44	43			0
															0
															9
4	Sand		0.55	31			2	5	Loam		0.47	54			0
6	Loam	56	0.99	44			34	6	Loam	62	0.85	34			0
															0
6	Loam	66	0.91	58											0
4	Clay	60	0.54	76	116		22	4	Clay	60	0.68	52	116		0
4	Clay	60	0.26	58	116										0
															2
3	Clay	40	0.26	72	120		12	3	Clay	40	0.86	74	120		1
3	Clay	35	0.34	64	120										0
2	Clay	40	0.59	46											2
2	Clay	40	0.7	70			43	2	Clay	42	0.83	62			0
2	Clay	45	0.68	64											0

3	Clay	42	0.33	70		3,4,5	3	Clay	40	0.35	65		7
3	Clay	40	1.11	80		6b	3	Clay	45	0.82	69		0
													39
3		**47**	**1**	**59**	**117**	**22**	**3**		**47**	**1**	**56**	**117**	**1**
2		**25**	**0.2**	**0**	**116**	**2**	**2**		**30**	**0.29**	**31**	**116**	**0**
6		**66**	**1.11**	**80**	**120**	**43**	**6**		**62**	**0.86**	**74**	**120**	**9**

Improper Pressure	Low Heads	Clogged Heads	Broken/Leaking Valve	Overspray	Unmatched Precip Rates	Poor Head Spacing	Inefficient Watering Schedule	Tilted Heads	Blocked Heads	Broken/Leaking Pipes	Mixed Heads	Incorrect Nozzle	Inappropriate Head Type
0	9	1	0	42	0	0	0	8	11	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	5	0	0	22	0	0	0	1	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	8	2	0	8	0	0	0	2	2	1	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	13	0	0	12	0	0	0	5	1	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	4	0	0	11	0	0	0	4	2	0	0	0	0
0	35	4	0	85	0	0	0	47	7	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	45	3	0	67	0	0	1	21	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	13	0	0	12	0	0	0	5	1	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	4	0	0	11	0	0	0	4	2	0	0	0	0
0	5	0	0	15	0	0	0	2	3	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	12	1	0	41	0	0	0	8	4	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0

0	15	0	0	44	0	0	0	19	1	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	**168**	**11**	**0**	**370**	**0**	**0**	**1**	**126**	**34**	**1**	**0**	**0**	**1**
0	**5**	**0**	**0**	**10**	**0**	**0**	**0**	**4**	**1**	**0**	**0**	**0**	**0**
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2	**45**	**3**	**0**	**67**	**0**	**0**	**1**	**21**	**4**	**0**	**0**	**0**	**0**

Outdoor Water Use Analysis for SVVSD by Center for ReSource Conservation

The Center for ReSource Conservation conducted outdoor irrigation audits at 10 schools in the Saint Vrain Valley School District. To augment the outdoor irrigation audits an analysis was performed of historical water use at these same schools to compare outdoor water use to the water demand of those landscapes based on weather data. This analysis can provide the district with insight as to how much water is used to irrigate compared to how much is needed.

By using landscape area, provided to CRC by the district, weather data from Northern Colorado Water Conservation District's weather station network (northernwater.org), and the data collected in the field, we were able to calculate how much irrigation water was needed for each school, for the 2012 and 2013 growing season (March-Nov). We compared this number to the total irrigation water used during these same years (calculated following the minimum month method). Finally, the application ratio, a value that represents the efficiency of water use, or the ratio of what was used compared to what was needed on the landscape. If the exact amount of water needed is applied, then the application ratio is 100%. If more water is applied than is needed then the application ratio is greater than 100% and if less water is applied than is needed, then the application is less than 100%.

All of the schools with the exception of Mountain View Elementary and Trail Ridge Middle School were watering efficiently, and in some cases were actually watering less than the estimated amount that was needed. Mountain View Elementary had an application ratio of 143% in 2012 and 123% in 2013. Trail Ridge Middle School overwatered in 2012 by approximately 38% and in 2013 75%. Erie High School was the school with the lowest application ratio of the schools audited with an AR of 49% in 2012 and 45% in 2013. On average, the schools audited had an application ratio of 96% of the water needed in 2012 and 95% in 2013.

School	Actual Water Usage 2012	Needed Water Usage 2012	Application Ratio	Actual Water Usage 2013	Needed Water Usage 2013	Application Ratio
Centennial ES	4,532	4,392	103%	2,829	3,310	85%
Erie ES	5,991	5,965	100%	4,317	4,170	104%
Niwot ES	3,043	3,167	96%	2,552	2,387	107%
Longmont Estates ES	5,082	4,759	107%	3,247	5,641	58%
MountainView ES	3,671	2,566	143%	2,387	1,934	123%
Coal Ridge MS	9,305	13,639	68%	7,323	10,703	68%
Erie MS	2,908	4,821	60%	3,094	3,370	92%
Trail Ridge MS	7,499	5,425	138%	7,162	4,089	175%
Erie HS	15,887	32,327	49%	10,059	22,598	45%
Average	6,227	8,562	96%	6,227	6,467	95%
Sum	62,269	77,062		62,269	58,201	

*All water volumes in thousands of gallons (kgal)

Red Hawk ES data not included due to missing data issues.

All About That H2O

The St. Vrain Valley School District is partnering with the Center for ReSource Conservation (CRC) to provide H2O-focused curriculum for SVVSD teachers and students. CRC is a non-profit organization located in Boulder, Colorado working to put *conservation into action* by providing accessible and affordable conservation solutions to our community!

For more information on CRC please visit their website: conservationcenter.org. To give feedback on this curriculum blog-post, please contact Morgan Shimabuku at mshimabuku@conservationcenter.org.

Video: TED-Ed: Where we get our fresh water

K 1 2 3 4 5 6 7 8 9 10 11 12

K: Kindergarten Lesson Plans

Water Cycle: The Earth's Gift
This units covers topics like, defining the states of matter, demonstrating the contents of water, exploring how clouds are formed, and comparing different types of weather.
SVVSD Unit Plan: K - Writing and Science
Click Here for Lesson Plan! Water Cycle: The Earth's Gift

What is Water?
This unit introduces kindergartners to the basic concepts of water, where it comes from and why it is important in our lives.
SVVSD Unit Plan: K - Writing
Click Here for Lesson Plan! What is Water?

1: First Grade Lesson Plans

Backyard Water Discovery
This unit is designed for students to discover aquatic environments and the living and nonliving things that are found in them, through active observation outdoors and in classroom. They will practice skills of recording, comparing, questioning, and communicating. Science notebooks are used through the unit to help students understand and organize information.
SVVSD Unit Plan: 1 - Science
Click Here for Lesson Plan! Backyard Water Discovery

2: Second Grade Lesson Plans

Where Does Water Come From: The Water Cycle
Learners will develop an understanding of the water cycle. They will then use this knowledge to create a tactile model of the water cycle and then relate these ideas to the importance of water conservation.
SVVSD Unit Plan: 2 - Writing and Science
Click Here for Lesson Plan! Where Does Water Come From: The Water Cycle

3: Third Grade Lesson Plans

Where Does Water Come From: The Water Cycle
Learners will develop an understanding of the water cycle. They will then use this knowledge to create a tactile model of the water cycle and then relate these ideas to the importance of water conservation.
SVVSD Unit Plan: 3 - Writing and Science
Click Here for Lesson Plan! Where Does Water Come From: The Water Cycle

Abasi's Story
Abasi is a fictitious young boy in a West African Village. His before and after stories show students how clean water affects Abasi's whole family and village by improving health, increasing wealth, encouraging education and decreasing hunger.
SVVSD Unit Plan: 3 - Writing and Art
Click Here for Lesson Plan! Abasi's Story p.6

4: Fourth Grade Lesson Plans

The Water Cycle
The Water Cycle lesson helps students understand where water comes from, it's pathways through the environment, and how it comes into our homes. Students use the scientific method to conduct an experiment that will help them discover and understand the water cycle on a small scale.
SVVSD Unit Plan: 4 - Science
Click Here for Lesson Plan! The Water Cycle

What Is A Watershed?
The purpose of this lesson is to help learners understand the importance of watersheds and ways in which water pollution occurs. After understanding the importance of the watersheds, they will recognize that wise usage of their local watershed is an example of stewardship.
SVVSD Unit Plan: 4 - Writing and Science
Click Here for Lesson Plan! What Is A Watershed?

Scarcity Scramble
This activity teaches students about different types of water scarcity using a "resource" (ie. candy or stickers) that students know.
SVVSD Unit Plan: 4 - Writing
Click Here for Lesson Plan! Scarcity Scramble p. 12

5: Fifth Grade Lesson Plans

Scarcity Scramble
This activity teaches students about different types of water scarcity using a "resource" (ie. candy or stickers) that students know.
SVVSD Unit Plan: 5 - Writing
Click Here for Lesson Plan! Scarcity Scramble p. 12

6: Sixth Grade Lesson Plans

The Watershed Quest

The Watershed Quest Unit is an integrated-curriculum unit that culminates with the creation of a watershed quest, a treasure hunt centered on a watershed in your community. The quest involves sharing and learning information about watershed in general and about the watershed in the region where the students live.

SVVSD Unit Plan: 6 - Writing and Science

Click Here for Lesson Plan! The Watershed Quest

7: Seventh Grade Lesson Plans

The Water Cycle

By taking notes on a guide sheet and in their notebooks and by performing experiments and analyzing their results, students will explore the different components of the water cycle. Students will develop a better understanding of the need to conserve this valuable renewable resource.

SVVSD Unit Plan: 7 - Science

Click Here for Lesson Plan! The Water Cycle

Water Water Anywhere

By transforming the classroom into three "country-stations" to show students the difference between water abundance, economic scarcity, and physical scarcity. Groups must fill a water bottle with the resources that are set-aside for their particular group using specific instructions. They are encouraged to evaluate their decisions and make honest reflections about how water is accessed around the world, and how properties impact the use of water.

SVVSD Unit Plan: 7 - Writing

Click Here for Lesson Plan! Water Water Anywhere

8: Eighth Grade Lesson Plans

The Water Cycle

By taking notes on a guide sheet and in their notebooks and by performing experiments and analyzing their results, students will explore the different components of the water cycle. Students will develop a better understanding of the need to conserve this valuable renewable resource.

SVVSD Unit Plan: 8 - Science

Click Here for Lesson Plan! The Water Cycle

The Importance of Wetlands

Students will understand the value of wetlands and the importance of protecting existing wetlands.

SVVSD Unit Plan: 8 - Science

Click Here for Lesson Plan! The Importance of Wetlands

9: Ninth Grade Lesson Plans

The Seven Major Properties of Water

The goal of this lesson will be to conduct mini-experiments that demonstrate how water behaves. Students will perform the experiment, collect the data, diagram results, and generate a definition of the seven properties of water.
SVVSD Unit Plan: 9 - Science
Click Here for Lesson Plan! The Seven Major Properties of Water

Groundwater as Part of the Water Cycle
Students will be able to understand the effects of soils and rocks on filtering groundwater. Students will also be able to expand their concept concerning the water cycle to include groundwater, transpiration, aquifers, and the water table. Additionally, students will consider sources of contamination in the water cycle.
SVVSD Unit Plan: 9 - Science
Click Here for Lesson Plan! Groundwater as Part of the Water Cycle

Identifying Wetlands
Students will be able to list and describe the three major categories of indicators used to delineate wetlands (hydrology, vegetation, soils). Students will also be able to identify hydrologic features that can be used to identify wetlands during a field inspection. Students will be able to list and identify several plants associated with wetlands, and they will be able to describe and identify a wetland soil.
SVVSD Unit Plan: 9 - Science
Click Here for Lesson Plan! Identifying Wetlands

10: Tenth Grade Lesson Plans

The Seven Major Properties of Water
The goal of this lesson will be to conduct mini-experiments that demonstrate how water behaves. Students will perform the experiment, collect the data, diagram results, and generate a definition of the seven properties of water.
SVVSD Unit Plan: 10 - Science
Click Here for Lesson Plan! The Seven Major Properties of Water

Identifying Wetlands
Students will be able to list and describe the three major categories of indicators used to delineate wetlands (hydrology, vegetation, soils). Students will also be able to identify hydrologic features that can be used to identify wetlands during a field inspection. Students will be able to list and identify several plants associated with wetlands, and they will be able to describe and identify a wetland soil.
SVVSD Unit Plan: 10 - Science
Click Here for Lesson Plan! Identifying Wetlands

11: Eleventh Grade Lesson Plans

The Seven Major Properties of Water
The goal of this lesson will be to conduct mini-experiments that demonstrate how water behaves. Students will perform the experiment, collect the data, diagram results, and generate a definition of the seven properties of water.

SVVSD Unit Plan: 11 - Science
Click Here for Lesson Plan! The Seven Major Properties of Water

Identifying Wetlands
Students will be able to list and describe the three major categories of indicators used to delineate wetlands (hydrology, vegetation, soils). Students will also be able to identify hydrologic features that can be used to identify wetlands during a field inspection. Students will be able to list and identify several plants associated with wetlands, and they will be able to describe and identify a wetland soil.
SVVSD Unit Plan: 11 - Science
Click Here for Lesson Plan! Identifying Wetlands

Water in the Arts
Using a combination of literature, music and online resources, this 3-to-5 day language arts lesson highlights issues of water justice facing the world.
SVVSD Unit Plan: 11 - Reading and Writing
Click Here for Lesson Plan! Water in the Arts

12: Twelfth Grade Lesson Plans

The Seven Major Properties of Water
The goal of this lesson will be to conduct mini-experiments that demonstrate how water behaves. Students will perform the experiment, collect the data, diagram results, and generate a definition of the seven properties of water.
SVVSD Unit Plan: 12 - Science
Click Here for Lesson Plan! The Seven Major Properties of Water

Identifying Wetlands
Students will be able to list and describe the three major categories of indicators used to delineate wetlands (hydrology, vegetation, soils). Students will also be able to identify hydrologic features that can be used to identify wetlands during a field inspection. Students will be able to list and identify several plants associated with wetlands, and they will be able to describe and identify a wetland soil.
SVVSD Unit Plan: 12 - Science
Click Here for Lesson Plan! Identifying Wetlands