Theme: Water Scarcity/Conservation Grade Level: 5 Unit #: 2

Essential Question: How can we protect, conserve, and maintain our Earth's water supply?

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
BIG IDEA	Water Scarcity/Water Cycle	Research and Background Knowledge of Water Scarcity	Water Filtration	Water filtration/PSA	Global water Crisis	Bringing it all together: Celebration of Learning
Science	**5.PS.3** Determine if matter has been added or lost by comparing mass when melting, freezing, or dissolving a sample of a substance. Changing States **Water Cycle** **Ice Cream** - page 96 - *Smithsonian Maker Lab Outdoors* **Materials** • 2 dish towels • vanilla extract • sugar • heavy cream • milk • rock salt • ice • bowl • 2 sizes of ziploc bags • plastic bag Explore water topic-Start (and finish?) Earth's Water Slides Presentation -Collect notes from students for the 1st set of slides presented (guided notes) Earth's water Slide Show	5.ESS2.1 Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth **Solar Water Distiller** - page 73 - *Awesome Engineering Activities for Kids* **Materials** • water • shallow bucket • tablespoon • salt • glass jar • plastic wrap • rubber band • rock Finish Water Slide Show which ends talking about water filtering, water scarcity, pollution, etc. Continue Inquiry based "Wonder Wednesday". Have students begin to narrow down a more specific question for inquiry-the only stipulation is that it has to do with water. This will be something that has some sort of *solution* needed.	**3-5.E.1** Identify a simple problem with the design of an object that reflects a need or a want. Include criteria for success and constraint on materials, time, or cost. **3-5.E.2** Construct and compare multiple plausible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. Water Filter building begins **Fabulous Filter** page 108 - *Smithsonian Maker Lab 28 Super Cool Projects* **Materials** • charcoal • sand • small gravel • medium sized gravel • spoon • scissors • cotton balls • small pebbles • soil • pitcher • leaves • grass • plastic bottle Pose the problem scenario that they are going to solve. Problem Scenario: Many children in countries around the world die every day due to	**3-5.E.1** Identify a simple problem with the design of an object that reflects a need or a want. Include criteria for success and constraint on materials, time, or cost. **3-5.E.2** Construct and compare multiple plausible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. Continue with building and testing our water filters. Filters should be built by now, and then students will be testing them with "dirty water" to see how well they filter water. Use the engineering and design process to test and rebuild filters to be able to retest by the end of the week. Use this link to help students see the Engineering and Design process with a student who talks about what she did to solve a problem: Engineering a Water Solution Water Conservation Resources on Discovery Education • Water as a Resource • Water Everywhere	**5.PS.4** Describe the difference between weight being dependent on gravity and mass comprised of the amount of matter in a given substance or material. Gravity **3-5.E.1** Identify a simple problem with the design of an object that reflects a need or a want. Include criteria for success and constraint on materials, time, or cost. **3-5.E.2** Construct and compare multiple plausible solutions to a problem based on how well each is likely to meet the criteria and constrainthttps://app.discoveryeducation.com/suite/my-content/user?folder_guid=580f6134-2ea7-426d-a678-76fd4dd0986a&types of the problem.	5.ESS2.1 Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth **Saltwater Jars** - page 90 - *Smithsonian Maker Lab Outdoors* **Materials** • cups of water • red food coloring • blue food coloring • salt • spoon • 2 glass jars

	Start Wonder Wednesdays about water. Have students start to think about anything that they want to look further into when it comes to water. Students write down an inquiry question and then they use the time to research their inquiry. Compile questions (and answers) on a "Wonder Wednesday" bulletin board.		drinking contaminated water. Did you know that only 2.5% of the Earth's water is freshwater and 99.7% of the Earth's water is not available to use? This leaves only 1 % of the water usable for all humankind around the world. One out of every six people on Earth lack access to freshwater. Environmental, chemical, and civil engineers are working together to improve and design filtration systems to ensure that we have clean water now, and in the future. This is where you come in! You and your team are going to create a prototype of a water filtration system using certain materials that are easy to get and inexpensive. This design should be able to be used by individual households to remove water impurities. You will also create a logo/slogan that goes with your product. You will test your system using dirty water that is provided to you. You will also be measuring how much clean water you can produce with your system, and you will also be looking at the water quality. We will also share our logos, designs, and results at the end of the challenge. Good Luck!	• MLB Sustainability Challenge #6: Mets • Water at Yosemite National Park • The Women in Nepal • Conservation • Out of Water: Crisis and Hard Solutions • Great Lakes Now: Waters Infected • Summary: Water as a Natural Resource • Discovery Science Alliance: Conserving Water • Great Lakes Now: Waters Restored • Water Smart: Water as a Natural Resource • Home Planet: Clean Water for All • Conservation and Science Activities		

			Then leave them with this inquiry question: ***How can dirty water be filtered?*** Have students start filling out the same chart as is above focusing on this question (do more together) and have them start some research using water.org to start filling it out. This inquiry question will be more guided, but it will help them when they have to do more of their self-directed inquiry for Wonder Wednesdays. Use the following videos to help convey the need for clean water: need for Clean water Walking for Clean Water			
Social Studies		**Standard 3:** Students describe the influence of the Earth/sun relationship on climate and use global grid systems; identify regions; describe physical and cultural characteristics; and locate states, capitals and major physical features of the United States. They also explain the changing interaction of people with their environment in regions of the United States and show how the United States is related geographically to the rest of the world.	**5.3.5.** Locate the continental divide and the major drainage basins/watersheds in the United States noting the watersheds that Indiana lies within. **5.3.7** Identify major sources of accessible fresh water and describe the impact of access on the local and regional communities. Color a world map that shows the different water sources on Earth: land, fresh water, salt water, ice caps. (collect for a grade and save for boards for Celebration of Learning.)		Discuss the Global water Crisis and where the areas that are hardest hit are occurring in the world. Use the following videos to show students more about the problem. Water Scarcity Video	

ELA	**5.RN.4.1** Explain how an author uses reasons and evidence to support claims in a text, identifying which reasons and evidence support which claims. **5.RN.2.1** Quote accurately from a text when explaining what a text says explicitly and when drawing inferences from the text. **5.RN.3.1** Apply knowledge of text features in multiple print and digital sources to locate information, gain meaning from a text, or solve a problem. **5.RL.4.1** Analyze how visual and multimedia presentations and representations can enhance the meaning of a text. Explore water topic-Start (and finish?) Earth's Water Slides Presentation -Collect notes from students for the 1st set of slides presented (guided notes) Earth's water Slide Show • water Slides Should be done going through the slideshow by the end of the week. Discussing water phases, water cycle. (Collect guided notes)	**5.RN.3.2 (Q2)** Compare and contrast the organizational structure of events, ideas, concepts, or information in two or more texts. **5.RN.4.1** Explain how an author uses reasons and evidence to support claims in a text, identifying which reasons and evidence support which claims. **5.RN.2.1** Quote accurately from a text when explaining what a text says explicitly and when drawing inferences from the text. **5.RN.3.1** Apply knowledge of text features in multiple print and digital sources to locate information, gain meaning from a text, or solve a problem. Read the Wangari story in Wonders (Unit 4, Starts on lesson 13). Give background on Kenya, and talk about the problem of water in the story and what ONE solution was. -Complete storyboards with this text. This storyboard will be practice for another storyboard later on. Possibly get to reading the Water Princess and water video later in the week too (depending on how far we get with storyboards.) Story board Pear Deck -Read Water Princess with students and talk about the differences and similarities	**5.RL.2.2*** Determine a theme of a story, play, or poem from details in the text, including how characters respond to challenges or how the speaker in a poem reflects upon a topic, summarize the text. **5.RN.2.1 (Q2)** Quote accurately from a text when explaining what a text says explicitly and when drawing inferences from the text. **5.RN.2.3 (Q2)** Explain the relationships or interaction between two or more individuals, events, ideas, or technical text based on specific information in the text. **5.RN.3.1 (Q2)** Apply knowledge of text features in multiple print and digital sources to locate information, gain meaning from a text, or solve a problem. Start A Long Walk to Water. Read chapters 1-6. Do mainly whole group reading so you can have discussions about the story, connecting to other stories we've read, and to do comprehension activities. Use ReadWorks, Newsela, and Epic to discuss text features and then to explain the relationships between events or ideas...(Standard 2.3).	**5.RL.2.2*** Determine a theme of a story, play, or poem from details in the text, including how characters respond to challenges or how the speaker in a poem reflects upon a topic, summarize the text. **5.RL.3.1*** Explain how a series of chapters, scenes, or stanzas fits together to provide the overall structure of a particular story, play, or poem. **5.RN.2.1** Quote accurately from a text when explaining what a text says explicitly and when drawing inferences from the text. **5.RN.4.1 (Q2)** Explain how an author uses reasons and evidence to support claims in a text, identifying which reasons and evidence support which claims. Continue reading A Long Walk to Water (Chapters 7-12) Continue doing work with comprehension strategies such as VIP information, character analysis, Annotating during each chapter, and chapter questions/discussions as we read. Use annotations at the end of the week. Read a Read Works article Create a PSA (use district lessons) to make a PSA based on water scarcity/water conservation. PSA Example: PSA example on Water Scarcity	**5.RL.2.2*** Determine a theme of a story, play, or poem from details in the text, including how characters respond to challenges or how the speaker in a poem reflects upon a topic, summarize the text. **5.RL.3.1*** Explain how a series of chapters, scenes, or stanzas fits together to provide the overall structure of a particular story, play, or poem. **5.RN.2.1** Quote accurately from a text when explaining what a text says explicitly and when drawing inferences from the text. Continue and Finish reading A Long Walk to Water (chapters 13-18). Continue doing work with comprehension strategies such as VIP information, character analysis, Summarizing each chapter, and chapter questions/discussions as we read. Discuss the end of the book, have them write a book review, and finish their redesign of the book cover if necessary.	**5.RL.2.2*** Determine a theme of a story, play, or poem from details in the text, including how characters respond to challenges or how the speaker in a poem reflects upon a topic, summarize the text. **5.RL.3.1*** Explain how a series of chapters, scenes, or stanzas fits together to provide the overall structure of a particular story, play, or poem. **5.RN.2.1** Quote accurately from a text when explaining what a text says explicitly and when drawing inferences from the text. **5.RN.4.2*** Combine information from several texts or digital sources on the same topic in order to demonstrate knowledge about the subject. **5.RL.4.1** Analyze how visual and multimedia presentations and representations can enhance the meaning of a text. Review tested Q2 standards and take Unit 3 test RN.3.2 RN.2.1 RN2.3 RN3.1 RN.4.1 Practice Presentations

		between this story and Wangari. Complete an advertisement (one page, paper ad) that addresses a water problem and persuades people to change the problem. (Unit 4 District ELA plans on lesson 8). Use this or come up with our own? This worked well last year-can consolidate lessons so we can get it done in a week. Collect for a grade and save for boards.		Tips for Making a PSA Storyboarding for a PSA		
Math	**5. NS.4** Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote power of 10. **5.C.8** Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	**5.C.2** Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models **5.C.8** Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning Multiplying used.	**5.C.4** Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.) **5.AT.2** Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2.	**5.C.4** Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.) **5.AT.2** Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2.	**5.C.4** Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.) **5.AT.2** Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example, recognize an incorrect result 2/5 + 1/2 =	**5.C.4** Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.) **5.AT.2** Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2.

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Technology	**Water Cycle with Ozobots** - students will work with a partner to create a water cycle poster on charter paper • planning sheet **Add and Subtract Decimals with Ozobot** - Students will work with a partner and add speed and spin codes, as well as solid colors to create a number randomizer. They will use the number randomizer to create decimal numbers to practice adding and subtracting decimals. • Add Subtract Decimals • Number Randomizer • Video Instructions	**Multiplying Decimals to the hundreths with Ozobot** • Multiply Decimals Maze • Instructional Video **Dividing decimals with Sphero** - Students will use Sphero to practice dividing decimals. The students will work in small groups. They will take turns driving the Sphero to the dart board and work together to solve the quotient. The teacher will call out a number and the driver in each group will drive to their dart mat. They will add a decimal in front of the number for which their Spehro lands and divide the number called by the teacher by the number for which they landed. Each group will share out their division fact, process, and quotient then continue with a new driver until as students have had the opportunity to drive. • dart board Make a pie chart with students guided in Google sheets or Excel Students will choose to create one of two options for graphs using either Sheets or Excel Here's a good tutorial How to make a pie chart in Google Sheets in case you don't know how. This takes you through step by step! Otherwise we could all Zoom on one Zoom (mine) and then I can walk everyone through the process so they can make their own!	**Adding Fractions with Ozobot** - The students will use the random number generator to determine which fractions will be added. • Adding Fractions Capture Sheet • Random Number Generator • Instructional Video **Watch Code Pairs to help with working together** **A Long Walk to Water with Bitsbox** - Students will practice javascript coding skills as practice for their Celebration of Learning game to accompany their display. Become familiar with Set 1 Mini Apps card (#4497 - Fire Monster, 1145 - Snacks Please!, and 3429 - Hot Stuff) as well as Early Bird gets the Worm and the Set 3 Tips and Tricks card (6057 Headache Machine and 8246 Night of the Rubber Chicken). JavaScript commands include • (' ') • stamp • .tap • Sound • Song • Fill • Text • Variables • Speed • Function • Loop • Rotate • Move • drag Students should also become familiar with the library and how to share Early Bird gets the Worm	**Celebration of Learning Game** Students will continue to use Bitsbox to create their game for the celebration of learning. Cards listed below will help to build the skills needed to complete their call to action game. • Fill, stamp, sound, text, song - Set 1 - "Mini Apps to Get You Started" card - apps 4497, 1145, and 3429 • Coordinates - Set 1 - "Tips & Tricks" card - app 7695 • Tap, random, rotate, move, pop - Set 2 "Bedbug Bedlam" card - app 4414 • Moving stamps - Set 2 - "Tips & Tricks" card - app 2085 • Tapping to change direction and leaving a trail - Set 3 - "Flight of the Dragon" card - app 2713 • Tapping to change from one stamp to another - set 3 - "Frog Prince Donkey" card - app 8242 • Changing a stamp, based on coordinates - Set 3 - "Tips and Tricks" card - app 6477 - Bob the Magic Squirrel • Random fill changing - Set 3 - "Tips & Tricks" card - app 6057 • Target app for modification when building the same - Set 3 "Cookie Snitch" card - app 4742	**Sphero PSA** - Students will create a PSA with 3- 5 Elements. They will visually represent the elements on chart paper and code the Sphero to travel in a loop to each element. Ateach element, the Sphero should play a sound, speak the topic of the element, display corresponding scrolling text or an animation, and delay. Students will need to use the roll, stop, animation, scrolling text, speak, and play sound blocks.	**Thinglink Presentations -** students will create Thinglink presentations to demonstrate the deep understanding of content for the Celebration of Learning

		Website where I got the information from (and where student can get their information from: [Fresh water percentages Site] Choice 1: Choice 2: 97.5% Salt water 30.1 % groundwater 2.5% Fresh water 68.7 % Glaciers and Ice Caps 1.2 % Surface/other freshwater If anyone gets done with their graph early, give them an option to create a graph to show what percentages of freshwater are in rivers, swamps, lakes, etc.				
Music	Guitar Intro - Playing position, string names, strumming, Em & G chords. guitar picks made from recycled materials	Songs about water	Celebration of Learning Song - Under the Sea Chorus focus	Under the Sea Verse focus	Under the Sea Bridge Focus & Put it all together	Under the Sea Review and Rehearse
Art	Artist of the Unit: Leonardo Da Vinci **Codex Leicester** While Leonardo da Vinci is primarily known as a painter, his famous scientific journal links art and science. In it, he explores the flow of water, https://theconversation.com/how-leonardo-da-vinci-master-of-water-explored-the-power-and-beauty-of-its-flow-112401	logo design https://youtu.be/u76UYT9s8PI	marbling paper https://youtu.be/XwA5rpCKFgY	Watercolor techniques	Art show theme: Water Conservation Artist Statements and mounting	

PE	For a warmup game play sharks and minnows. Sharks are trying to get the minnows in the ocean.	Play water olympics with the buckets filled with bean bags to emulate the water. Run across the gym with two buckets filled with water.	Glacier climb to start the class.	Water sponge relay to start class. Just like field day. Teamwork is stressed.	Water challenge for the next two weeks. Track the number of ounces of water you drink daily. Try and get 64 ounces of water daily.	Go over the results of the water challenge. Why is it important to get enough water?