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| <p style="text-align: center;">LESSON 2 Being Proactive</p> | <p style="text-align: center;">Teacher's Guide</p> |
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PROBLEM

How might a community be proactive to flooding in their neighborhood?

Think back to the question How might floods impact specific neighborhoods differently? in Lesson 1 and how you were looking out for built and natural infrastructure that might make a neighborhood either more or less prone to flooding.

The key concepts you should encourage students to think about are community design and land use (hinted at in lesson 1); and emergency preparedness (being introduced in this lesson)

These definitions of community design are from the following source:

<https://cutt.ly/yoCw5P>

Community design has been defined, in the broadest sense, as a movement for discovering how to make it possible for people to be involved in shaping and managing their environment.

Community design stands for an alternative style of practice, based on the idea that professional technical knowledge is often inadequate in the resolution of social problems. It is an umbrella term covering community planning, community architecture, social architecture, community development and community participation, all of which emphasize the involvement of local people in the social and physical development of the environment in which they live.

The definition of land use is from the following source:

<https://cutt.ly/5oCyF4>

Land use means the purpose to which the land cover is committed. Some land uses, such as agriculture, have a characteristic land cover pattern. These usually appear in land cover classifications. Other land uses, such as nature conservation, are not readily discriminated by a characteristic land cover pattern. For example, where the land cover is woodland, the land use may be timber production, grazing or nature conservation.

FACTS & QUESTIONS (Synthesize content; generate ideas and explanations)

What opportunities exist for communities to be proactive?

Think back on answers to the problem question in this lesson as well as to lesson 1 and the introductory video to help you answer the above question

Some community design and land use strategies you can help students to identify include: planting sea grass or creating any other wave-breaking barriers such as oyster reefs; storm water drains; the creation of more green spaces etc. [Point out to students that these are all strategies that citizens/residents can influence by being involved in their city or county's urban planning process].

Also consider answering the following questions:

What should you do before a flood?

Refer to the following source to help you answer

<https://www.weather.gov/safety/flood-before>

Point out to students how answers to these questions all have to do with emergency preparedness strategies that a person can have control/responsibility over.

How might aspects of someone's identity (such as their income level, age, physical and mental ability, educational level, etc.) affect their ability to undertake any of the aforementioned proactive strategies?

Refer to the following source to help you answer

<http://artsandsciences.sc.edu/geog/hvri/faq>

Help students to realize that not everyone may have the ability to undertake any of these strategies to the same degree. You may have students think about the median income levels in the two neighborhoods from lesson 1 (refer back to the map if necessary <http://arcg.is/1uaGvy>) if they are having trouble understanding the provided link and how income might affect the ability to proactively respond to a flood. For e.g. people without a car may not be able to evacuate upon a flood warning. Older people and children may also have a harder time evacuating than others. People with lower

education levels may feel intimidated at the thought of participating in a local flood planning process etc.

LEARNING ISSUES (listing information needed to solve the problem)

Flood preparedness strategies can be divided into short-term (emergency/disaster preparedness) strategies and long-term planning and implementation strategies.

How would you explain emergency/disaster preparedness?

Refer to the following links for help answering this question <https://cutt.ly/xoBW8d> and/or <https://cutt.ly/1oBYWn>

The New York Department of Health states that “emergency preparedness refers to the steps you take to make sure you are safe before, during and after an emergency” (Source: <https://cutt.ly/xoBW8d>). The International Federation of Red Cross and Red Crescent Societies states that “disaster preparedness refers to measures taken to prepare for and reduce the effects of disasters” (Source: <https://cutt.ly/1oBYWn>)

If students seem to be having trouble explaining/understanding the term, you may first ask them to explain what they think an emergency or disaster is. Then, follow-up with what they think they can do to be prepared for an emergency/disaster.

Also convey to students that emergency/disaster preparedness strategies involve both shorter-term strategies and longer-term strategies. Also not that some of the preparedness strategies might be carried out at either an individual or community level (or both).

What does it mean to be vulnerable to flooding?

Refer to the following sites for help answering the question:

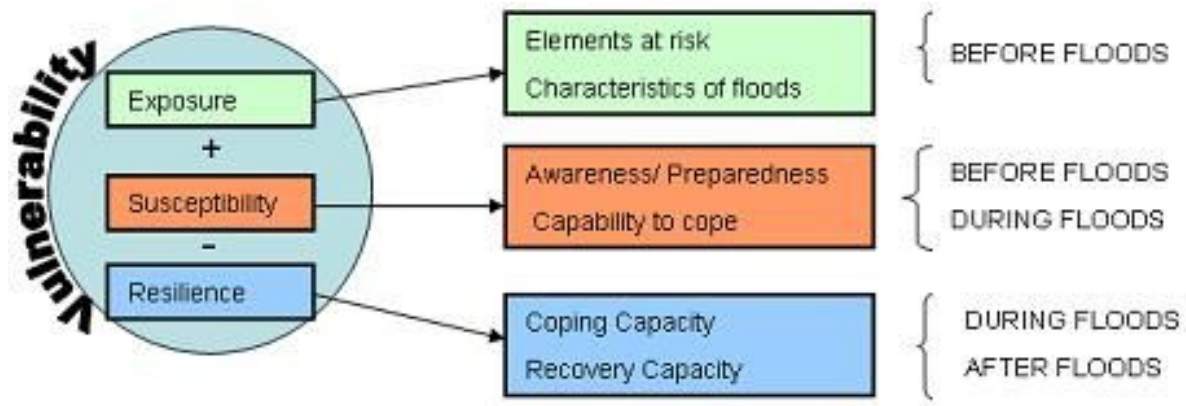
<http://unihefvi.free.fr/vulnerability.php>

http://unihefvi.free.fr/flood_vulnerability_factors.php

If students are struggling with answering the question, have them first think about what they think it means to be vulnerable. Then follow up their explanation of vulnerability to their understanding of what floods are and how floods form.

Help students realize that vulnerability to flooding can be understood as a function of exposure, susceptibility, and resilience; summarized in the following equation:

$$\text{Vulnerability} = \text{Exposure} + \text{Susceptibility} - \text{Resilience}$$



Source: http://unihefvi.free.fr/flood_vulnerability_factors.php

You may refer to the following link for an overview of the two links they students are asked to explore: <https://cutt.ly/7oNQ0q>

PURSUIT (Researching to acquire new information about the problem)

What are some longer-term strategies you can take to be prepared for a flood event?

Refer to the following site for help to answer the question: <https://cutt.ly/poNR1T>

- Get flood insurance
- Do not dump or throw anything into the ditches, streams, creeks, or rivers. Even grass clippings and branches can accumulate, plug channels, creeks and streams. A blocked channel cannot carry rain or flood water.
- If your property is next to a ditch or stream, please do your part and keep the banks clear of brush and debris. Contact your local government for assistance to remove major blockages such as fallen trees.
- If you see dumping or debris in the ditches, please report to the appropriate authorities

- Always check with your locality's building inspections division before you build, alter, re-grade or fill on your property. A permit may be needed to ensure projects do not cause problems on other properties.
- If you see building or construction without a permit sign posted, contact your local building inspections division (Modified from: <https://cutt.ly/poNR1T>)

Point out to students that these strategies are steps that individuals can take well in advance of a flood event (i.e. longer-term individual strategies).

What are some shorter-term strategies you can take to be prepared for a flood event (disaster in general)?

Refer to the following sites for help answering the question:

<https://cutt.ly/HoNIII>

<https://cutt.ly/ToNUfd>

<https://cutt.ly/WoNOKN>



Source: <https://cutt.ly/HoNIII>



This is your main disaster supplies kit and should contain essential food, water, and supplies for at least three days. Keep this kit in a designated place and have it ready in case you have to leave your home quickly. Make sure all family members know where the kit is kept. Additionally, you may want to consider having supplies for sheltering for up to two weeks.



This kit should be in one container, and ready to “grab and go” in case you are evacuated from your workplace. Make sure you have food and water in the kit. Also, be sure to have comfortable walking shoes at your workplace in case an evacuation requires walking long distances.












In case you are stranded, keep a kit of emergency supplies in your car. This kit should contain food, water, first aid supplies, flares, jumper cables, and seasonal supplies.

KEEP IN WATERPROOF CONTAINER

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| <input type="checkbox"/> Wills, deeds and titles | <input type="checkbox"/> Bank account numbers |
| <input type="checkbox"/> Insurance policies for home, health, life and automobiles | <input type="checkbox"/> Mortgage information |
| <input type="checkbox"/> Stocks, bonds and investments | <input type="checkbox"/> Important telephone numbers |
| <input type="checkbox"/> Passports, social security cards, immunization records | <input type="checkbox"/> Family records (birth, marriage, death, divorce and adoption paperwork) |
| <input type="checkbox"/> Utility bills (for proof of residency and to turn off utilities that bill regardless of service) | <input type="checkbox"/> Receipts for anything you purchase prior to and following a storm, including generators, chain saws and repairs. |
| <input type="checkbox"/> Credit card account numbers | |
| <input type="checkbox"/> Inventory of household goods | |

Is Your Disaster Kit Stocked?

Food in your fridge stays good for approximately four hours without power. Hurricane Sandy knocked out power to 8.5 million customers for seven days. What is your disaster preparedness plan?

| Be Prepared | When the Power Goes Out | When the Power Returns |
|---|---|--|
|  Make sure you have an appliance thermometer. |  If the freezer isn't full, group together to form an "igloo." |  Check temperature inside fridge and freezer. |
|  Have a few days of ready-to-eat food. |  If you anticipate a power outage, put water in the fridge ahead of time, it'll help keep everything cool. |  Discard perishables, meats, poultry, seafood, eggs, leftovers. When in doubt, throw it out! |
|  Know where to get dry ice or block ice. |  Keep the fridge and freezer door closed. |  Unusual odor, color, or texture? Throw it out! |

Prepare your Disaster Kit:

What items should you have on-hand for a power outage:

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|  Store at least a three-day supply of non-perishables. |  Choose foods your family will eat. |  Avoid foods that will make you thirsty. |  Remember any special dietary needs. |  Choose salt-free crackers, and whole grain cereals. |
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Following a disaster, there may be power outages that could last for several days. Stock canned foods, dry mixes and other staples that do not require refrigeration, cooking, water or special preparation. Be sure to include a manual can opener and eating utensils.

1 Ready-to-eat canned meats, fruits, vegetables and a can opener 2 Protein or fruit bars 3 Dry cereal or granola 4 Peanut butter 5 Dried fruit 6 Nuts 7 Crackers 8 Canned juices 9 Non-perishable pasteurized milk 10 High energy foods 11 Vitamins



This information is only a portion of what you need to be prepared; for more information and resources, visit Ready.gov and FEMA.gov.

Source: <https://cutt.ly/ToNUfd>

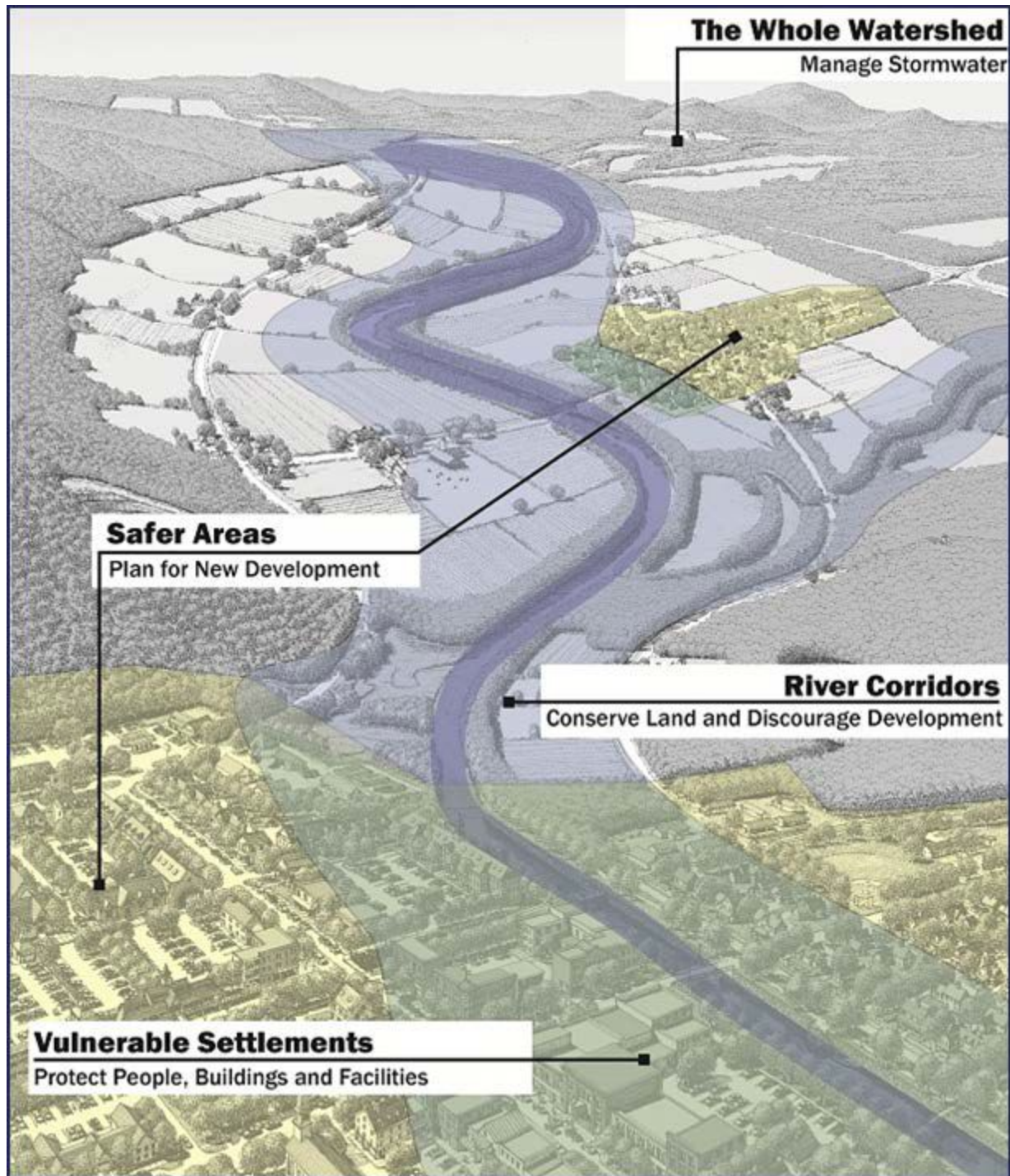
Other strategies:

- *Prevent flood damage*
- *Prepare for power outages*
- *Turn off utilities*
- *Secure your property that can float away (Source: <https://cutt.ly/WoNOKN>)*

Point out to students that these strategies are steps that individuals can take shortly in advance of a flood event (i.e. shorter-term individual strategies).

What do you think are some longer-term strategies communities as a whole can take to prepare for floods?

Refer to the following link to help you answer the question: <https://cutt.ly/IoNArk>



This graphic illustrates the four categories of approaches to enhance resilience to future floods. Credit: Vermont Agency of Commerce and Community Development. Source: <https://cutt.ly/loNArk>

Point out to students that the strategies in the document (checklist) are steps that can take well in advance of a flood event (i.e. longer-term comunal strategies).

Do you think that the different ways in which communities or people might be vulnerable to flooding are considered in any of the aforementioned flood preparedness strategies?

Have students reflect on the information they have engaged with up to this point. Ask the students to consider whether the short-term and long-term strategies - both individual and communal - consider issues such as income, ethnicity, educational levels and how those factors might different people's (or communities') ability to prepare for a flood event. Ask the students to reflect on how things might be done differently to make flood preparedness more accessible and equitable to all. To contextualize this thinking, have students reflect on the income levels of the neighborhoods in which the two schools are located and how different people (e.g. children, older adults, racial and ethnic minorities, women etc.) might prepare differently for flooding in each of these neighborhoods.

INTEGRATION & SHARING (Applying and sharing learned information with classmates)

Share with your classmates what you have learned about flood preparedness and how the vulnerability of different people to flooding can influence their ability to be prepared for a flood event

(if you divided students into teams, have the teams report back their findings to the entire class for comparison).

OPTIONAL ACTIVITIES (supplemental activity to further elaborate on content)

1) Weather-Ready Nation simulator (Modified from Groundwork Hudson Valley 2018. Distance Learning Module for “Global, Local, Coastal: Preparing the Next Generation for a Changing Climate” pp 88)

Weather-Ready Nation simulator:

<https://www.meted.ucar.edu/emgmt/wxreadynation/launch.htm> (One has to sign in or create an account)

This interactive teaching module was developed by Raytheon in partnership with NOAA’s Weather Ready Nation program.

Getting into the interactive module will require:

- Setting up an account and logging in.
- Then, you can select a grade-level and state to get the “required” and “elective” lessons. Each lesson takes about 8-10 minutes to play through.

Alternatively, the videos in the lessons can be downloaded and saved to play in the future without a login required.

Each scenario will explain what to do BEFORE, DURING, and AFTER the severe weather event (in this case the severe weather event students will select will be flooding), and then test the student’s retention of the information. This interactive module is an engaging way to communicate life-saving information.

2) Have the students watch and reflect on (either individually or via class discussion) a FEMA video on preparing a family communications plan and emergency kit

<https://cutt.ly/SoNKHq>