



PART 1: Research Student Directions:

Your assignment:

Congratulations! You are studying the amazing salmon! As part of this study, you have been asked to explain what water flow is and why it's important to the life cycle of salmon. You will read one article and watch a video to gather information, taking notes on both sources. Then you will answer three questions before writing your essay.

Steps you will be following:

To plan and compose your speech, you will do all the following:

- 1. Watch one video.
- 2. Read an article.
- 3. Answer three questions about the sources.
- 4. Write your essay.

Directions for beginning:

You will now watch video and then read an article about water flow taking notes with the templates provided. You will want to refer to your notes when writing your essay. You may refer to any of the sources as often as you like.

Teacher Note: Prior to showing the video, pre-teach the terms "Waxing" and "Waning." These terms are used in the video to explain water flow. Stop the video when you hear these terms and explain their meaning. You may also want to pre-teach "drought," "fish ladder," "debris" and "culvert" prior to having the students read the article.

Source Information:

Source #1:	Healthy Salmon Go with the Flow (2:00)
Video	https://youtu.be/PQ2_EhS4udQ

Source #2:Water Flow and SalmonArticleN. Skerritt, 2015







NOTE TAKING TEMPLATE

	Go with the Flow Video	Water Flow and Salmon Article
What water flow is		
Why water flow is important to salmon		
How different	Farmers:	Farmers:
people affect water flow	Dam Engineers:	Dam Engineers:
	Road Construction Engineers:	Road Construction Engineers:



Water Flow and Salmon



Do you know what water flow is? Water flow is the amount of water that is in our rivers and streams. Water flow can be high when it continually rains and even cause flooding. Water flow can be low in a drought and create problems for salmon who need enough water to swim upstream to spawn and then lay their eggs. We may not be able to change the weather, but people can help with water flow in a number of ways. These people include farmers, engineers who build dams and engineers who build roads. Here's how they help!

How do farmers help?

Farmers help by not removing too much water from rivers and streams when they get water for their farms. Farmers need water too to grow their crops. They pump water from rivers and streams to their farmlands. If farmers remove too much water, then the streams won't be deep enough for salmon to return to their birthplaces upstream to spawn, lay their eggs and create a new generation of fish. So, by using water wisely, farmers help water flow for salmon.

How do engineers who build dams help?

Pumping water from a river for crops



Another way that people can help is by building fish ladders next to dams when possible and useful. Dams stop the water from moving down the river, holding the water in a lake above. Water is released to create electricity or held back to control flooding. Salmon need constantly flowing water to get up stream. When dams are built, salmon need help from humans to get through the dam and continue their journey upstream. Engineers design and build **fish ladders** at the site of a dam. Fish ladders allow the salmon to climb up steps to get around the dam, enter the lake, and reach the rivers and streams for spawning.





Bonneville Dam Washington State



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Water Flow and Salmon



How do engineers who build roads help?

A third way to help with water flow is to make sure that road construction is safe for salmon. New roads built across rivers and streams can affect water flow. Road construction involves placing **culverts** or large tubes under the new road. The stream water goes under the road and not over. Salmon can have difficulty swimming in the shallow water of a culvert to reach its destination up stream. Sometimes, culverts become blocked by tree branches and other debris, creating a barrier for the fish. When fish can't get up stream, they die without spawning and laying their eggs. Fish biologists and engineers work together to plan projects that replace the old culverts and barriers. In the last fifteen years, over 5000 culverts have been replaced on forestlands in Washington to allow salmon tomove upstream.

Old Style Culvert



How do other people help?

People can help by supporting laws that control the amount of water in our streams. These laws can tell farmers how much water they can safely take from the streams. The laws can also provide research and funding to build fish ladders by dams when possible. Finally, laws can direct construction companies to use more fish friendly ways to build the roads. These laws can also require that old construction be replaced with new construction. New



construction, including culverts, can be designed to protect the streams salmon use to make their incredible journey.

Spawning Salmon

Check the laws in your area. What are you discovering? Talk to your parents. They can help to support laws that protect salmon habitat. Water flow can't be too high or too low for salmon. To protect our salmon, it has to be just right! And now you know!

Laws in Action!

The Forest and Fish Law (June 1999) protects 60,000 miles of streams across 9.3 acres of forests in Washington State. One part of the law provided for changes to be made to improve forest roads and culverts.







Research Questions

1. Explain why water flow is important to salmon. Use one detail from the video and one detail from the article. (*Claim 4, Target 2*)







 What are two things you learn from the video that are not mentioned in the article? (Claim 4, Target 3)







3. Explain one way that laws can make a difference for the health of salmon. Use information from the article in your response. *(Claim 4, Target 2)*







Part 2: Field Investigation

Teachers are encouraged to arrange a visit to a local fish hatchery, fish ladder or aquarium where engineered features can be observed that help our salmon to transition from one level of a river to another. Dams create challenges for salmon as they work their way up stream. Culverts in road design are also important in protecting water flow. Try to find manmade features near you to observe firsthand that maintain water flow. Consider inviting a civil engineer to visit your class to talk about their jobs and how they do design work to manage water flow.

Discussion questions might include the following:

- What is water flow and why is it important?
- How does water flow affect our farmers and what can they do to provide enough water for the salmon?
- What are construction engineers doing to protect water flow in our local streams?
- How is the climate affecting water flow?

Other ideas for field investigations:







PART 3: Essay Student Directions:

You will now review your notes and sources, plan, draft, and revise your essay.

While you may use your notes and refer to the sources, you must work on your own. Now read your assignment and the information about how your essay will be scored, and then begin your work.

Your Assignment:

Write an essay where you explain to your reader what water flow is, why it is important to the life cycle of salmon and what people can do to make a difference. Use information from the video and the article to write your essay. Outline your ideas on the template provided.

How your essay will be scored:

The people scoring your essay will be assigning scores for

- 1. *Statement of Purpose/Focus* how well you clearly state and maintain your controlling idea or main idea
- 2. **Organization** how well the ideas progress from the introduction to the conclusion using effective transitions and how well you stay on topic throughout the essay.
- **3.** *Elaboration of Evidence* how well you provide evidence from sources about your topic and elaborate with specific information.
- 4. Language and Vocabulary how well you effectively express ideas using precise language that is appropriate for your audience and purpose
- 5. *Conventions* how well you follow the rules of usage, punctuation, capitalization, and spelling

Now begin work on your essay.

Manage your time carefully so that you can:

- Plan your essay
- Write your
- Revise and edit for a final draft





Outlining My Essay:

Introduction
What water flow is:
Why water flow is important to the life cycle of a salmon:
What people can do to make a difference:
Closing:



Informative / Explanatory Performance Task Writing Rubric (Grades 3-5)



Score	4	3	2	1
Statement of Purpose/Focus	The response is fully sustained and consistently and purposefully focused: • controlling or main idea of a topic clearly communicated, and the focus is strongly maintained for the purpose, audience, and task	The response is adequately sustained and generally focused: • controlling or main idea of a topic is clear, and the focus is mostly maintained for the purpose, audience, and task	The response is somewhat sustained and have a minor drift in focus: • controlling or main idea may be somewhat unclear, or the focus may be insufficiently sustained for the purpose, audience, and task	The response has little or no discernable organizational structure: • controlling or main idea may be confusing or ambiguous; response may be too brief or the focus may drift from the purpose, audience, and task
Organization	 The response has a clear and effective organizational structure creating unity and completeness: consistent use of a variety of transitional strategies to clarify the relationship between and among ideas effective introduction and conclusion logical progression of ideas from beginning to end; strong connections among ideas with some syntactic variety 	The response has an evident organizational structure and a sense of completeness, though there may be minor flaws and some ideas may be loosely connected: • adequate use of transitional strategies with some variety to clarify the relationship between and among ideas • adequate introduction and conclusion • progression of ideas from beginning to end; strong connections among ideas	The response has an inconsistent organizational structure, and flaws are evident: • inconsistent use of transitional strategies and/or little variety • introduction and conclusion, if present, may be weak • uneven progression of ideas from beginning to end; and/or formulaic; inconsistent or unclear connections between and among ideas	The response may be related to the topic but may provide little or no focus: • few or no transitional strategies are evident • introduction and/or conclusion may be missing • frequent extraneous ideas may be evident; ideas may be randomly ordered or have an unclear progression
Elaboration of Evidence	The response provides thorough and convincing support/evidence for the controlling idea and supporting idea(s) that includes the effective use of sources, facts, and details: • comprehensive evidence from sources is integrated; references are relevant and specific • effective use of a variety of elaborative techniques*	The response provides adequate support/evidence for the controlling idea and supporting idea(s) that includes the use of sources, facts, and details: • adequate evidence from sources is integrated, some references may be general • adequate use of some elaborative techniques*	The response provides uneven, cursory support/evidence for the controlling idea and supporting idea(s) that includes partial or uneven use of sources, facts, and details: • some evidence from sources may be weakly integrated, imprecise, or repetitive; references may be vague • weak or uneven use of elaborative techniques*; development may consist primarily of source summary	The response provides minimal support/evidence for the controlling idea and supporting idea(s) that includes little or no use of sources, facts, and details: • evidence from the source material is minimal or irrelevant; references may be absent or incorrectly used • minimal, if any, use of elaborative techniques*
Language	The response clearly and effectively expresses ideas, using precise language: • vocabulary is clearly appropriate for the audience and purpose • effective, appropriate style enhances content	The response adequately elaborates ideas, employing a mix of precise and more general language: • vocabulary is generally appropriate for the audience and purpose • generally appropriate style is evident	The response expresses ideas unevenly, using simplistic language: • vocabulary use is uneven or somewhat ineffective for the audience and purpose • inconsistent or weak attempt to create appropriate style	 The response is vague, lacks clarity, or is confusing: vocabulary is limited or ineffective for the audience and purpose little or no evidence of appropriate style

The response demonstrates an adequate command of conventions: The response demonstrates a partial command of conventions: The response demonstrates little or no of conventions: • adequate use of correct sentence formation, punctuation, capitalization, grammar usage, and spelling • limited use of correct sentence formation, punctuation, capitalization, grammar usage, and spelling • infrequent use of correct sentence formation, punctuation, capitalization, grammar usage, and spelling	Score	2	1	0
	Conventions	 The response demonstrates an adequate command of conventions: adequate use of correct sentence formation, punctuation, capitalization, grammar usage, and spelling 	 The response demonstrates a partial command of conventions: limited use of correct sentence formation, punctuation, capitalization, grammar usage, and spelling 	 The response demonstrates little or no command of conventions: infrequent use of correct sentence formation, punctuation, capitalization, grammar usage, and spelling

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Unintelligible, in a language other than English, off-topic, copied text. (Off-purpose writing will still receive a score in Conventions.)

*Elaborative techniques may include the use of personal experiences that support the controlling idea.