

UNIT 2: MIDDLE SCHOOL – WASHINGTON STATE HISTORY

NEW TECHNOLOGIES AND INDUSTRIES: HANFORD NUCLEAR RESERVATION'S EFFECTS ON INDIAN COUNTRY

Level 2

Instructional Support Materials

[Student Project Guide](#)

[Student Project Guide \(Spanish Language Version\)](#)

[PNW Hanford Newsletter](#)

[PNW Hanford Newsletter and Reflection Questions \(Spanish Language Version\)](#)

[Student Task Inquiry](#)

[Student Task Inquiry \(Spanish Language Version\)](#)

[Notetaking Sheet](#)

[Notetaking Sheet \(Spanish Language Version\)](#)

[Evaluation Class Feedback Worksheet \(optional\)](#)

[Evaluation Class Feedback Worksheet \(optional\) \(Spanish Language Version\)](#)

Learning Goals

Students will engage in a role-play to:

- understand how the Hanford Nuclear Reservation has impacted Tribes' land, resources and culture
 - research the continued effects of Hanford on Northwest Tribes from multiple perspectives
 - develop and make a presentation of findings to the class
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Time: 10 class periods

Teacher Preparation

Note: The Pacific Northwest National Laboratory publishes a yearly study of Hanford. The report is part of the student recourse page. This report has a large amount of useful data; however, it is a challenging read for students. It is advised that you read the report prior to your students and help them process information.

In this lesson, students will be part of an influential group speaking to congress about the effects of Hanford Nuclear Reservation on Pacific Northwest Tribes.

Teacher Introduction

- This lesson was created for teachers of Pacific Northwest History. The focus of this project should be on Northwest Tribes, and the legacy of Hanford on Northwest Tribes' land, resources, and culture.
 - Expect to spend approximately two weeks from the time teams are assigned to the time projects are completed, assuming you are teaching Social Studies for approximately 45 minutes a day.
 - You may want consider creating groups of six, assigning a team of two to each role. This may help provide support to students who will struggle with the demands of reading the provided resources.
 - Print a set of lesson materials for each student.
 - Make sure you review all links prior to assigning them to students and make yourself familiar with the materials.
 - Introduce the evaluation criteria at the beginning of the lesson.
 - **Optional:** During the presentation, you may have other class members write notes to provide feedback. See *Class Feedback Worksheet*.
 - At the conclusion of the project, invite each student to self-evaluate.
 - Share your evaluation.
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Learning Activities

The Effects of the Hanford Nuclear Reservation on Pacific Northwest Tribes

In this lesson, students will be part of an influential group speaking to congress about the affects of Hanford Nuclear Reservation on Pacific Northwest Tribes.

Introduction

The Hanford Nuclear Reservation was an important part of the development of nuclear materials in the middle part of the 20th century. Most of the nuclear materials created at Hanford were used in the making of nuclear weapons. The affects of Hanford on the Tribes whose lands are on or near Hanford have been nothing short of devastating. Despite most nuclear reactors being shut down by the

early 1970s, the toxic waste from Hanford continues to affect the physical and spiritual life of Native people.

Task

Hanford Nuclear Reservation is the largest toxic clean up project in the world. In the 20 years following the shutting down of the last nuclear reactor at Hanford clean up has been slow and under-funded.

The Washington State governor, in partnership with the Tribes surrounding Hanford, have sent your team to Washington D.C. to explain the continued affects of Hanford on Northwest Tribes, and plead for action.

Your team consists of the following members:

- **Ecologist:** This team member will be explaining the biological affects of Hanford on the plants and animals surrounding Hanford Nuclear Reservation.
- **Ethnographer/reporter:** This team member is a reporter who will provide information on the affects of Hanford on the communities surrounding Hanford Nuclear Reservation.
- **Tribal representative:** This team member will provide a historical perspective on how the tribes surrounding Hanford Nuclear Reservation have historically interacted with the land, and how Hanford has affected this interaction.

Once your team has collected the required information, you will use your research and Power Point, or other presentation materials, to present your findings to members of the United States Congress and the interested public.

Process

Step One:

You are a group of three. Each person in your group will take on one of the roles outlined in this lesson. Once all members have their assigned role, fill out the inquiry sheet provided here: *Student Task Inquiry*.

The inquiry sheet is a tool for you to explore what questions need to be answered in order to complete your assigned role. For example, the team member filling the role of Ecologist may want to know, "How has Hanford impacted the health of plants and animals in the area?" These questions can be changed or modified as you gather information and solidify your presentation information.

Before you begin your research, please read the overview of Hanford's impact on Northwest Tribes in the *PNW Hanford Newsletter*. Your teacher will review how you will be evaluated for this project (*Evaluation Worksheet*).

Step Two:

You are now ready to do research in your assigned area. Every member of your group should take notes on the *Note Taking Sheet*. This will help you organize your information and determine what information is useful to you and why? All members of your team should read and gather information from the section labeled "Whole Team" below. The rest of the links are divided by Ecologist, Ethnographer, and Tribal Representative for their respective categories. Please use these links as the foundation of your research.

You may also want to use an online bibliography site as you research to keep and format a bibliography. A good one is [Citation Machine - Online Bibliography Creator](#). Ask your teacher for assistance in using this tool.

Whole Team:

- [Hanford Super Fund Site History](http://www.hanford.gov/page.cfm/hanfordhistory)
(<http://www.hanford.gov/page.cfm/hanfordhistory>)
- [Pacific Northwest National Laboratory - Hanford Report - Skim for useful information](https://www.pnnl.gov/about/environmental_reports/2016_SiteAnnualEnvironmentalReport.pdf)
(https://www.pnnl.gov/about/environmental_reports/2016_SiteAnnualEnvironmentalReport.pdf)
(https://www.pnnl.gov/about/environmental_reports/)
- [Department of Energy Website for Hanford](https://www.hanford.gov) (<https://www.hanford.gov>)
- https://en.wikipedia.org/wiki/Hanford_Site

Ecologist:

Guiding Questions:

1. What plants and animals are located on or near the Hanford Nuclear Reservation?
2. How have these plants and animals been affected by exposure to Hanford Nuclear Reservation?
3. What should be done to repair any damage done to plants or animals by Hanford Nuclear Reservation?

- [Nature Conservancy Magazine; Fall/Winter, 2009](https://www.nature.org/media/washington/tnc_fall_winter2009magweb.pdf)
(https://www.nature.org/media/washington/tnc_fall_winter2009magweb.pdf)
- [U.S. Fish and Wildlife – Hanford Reach](https://www.fws.gov/refuge/hanford_reach/)
(https://www.fws.gov/refuge/hanford_reach/)
- [Pacific Northwest National Laboratory - Hanford Report](https://www.pnnl.gov/about/environmental_reports/2016_SiteAnnualEnvironmentalReport.pdf)
(https://www.pnnl.gov/about/environmental_reports/2016_SiteAnnualEnvironmentalReport.pdf)
(https://www.pnnl.gov/about/environmental_reports/)
- [High Country News Article](https://www.hcn.org/issues/238/13514) (<https://www.hcn.org/issues/238/13514>)

Ethnographer:

Guiding Questions:

1. What communities surround Hanford Nuclear Reservation?
2. What have been the negative impacts of the Hanford Nuclear Reservation on surrounding communities?
3. What should be done to repair damage done to communities surrounding Hanford Nuclear Reservation?

- [Centers for Disease Control and Prevention](https://www.cdc.gov/nceh/radiation/hanford/htdsweb/guide/history.htm)
(<https://www.cdc.gov/nceh/radiation/hanford/htdsweb/guide/history.htm>)
- [Washington Department of Health](https://www.doh.wa.gov/CommunityandEnvironment/Radiation/RadiationTopics/HanfordandPublicHealth)
(<https://www.doh.wa.gov/CommunityandEnvironment/Radiation/RadiationTopics/HanfordandPublicHealth>)
- [Hanford Downwinders Information Site – Overview of Hanford and Radiation Health Effects](http://www.geocities.ws/irradiated45rems/2page1.html) (<http://www.geocities.ws/irradiated45rems/2page1.html>)
- [New Scientist – Article](https://www.newscientist.com/article/mg19926642.900-contaminated-us-site-faces-catastrophic-nuclear-leak/?full=true&print=true)
(<https://www.newscientist.com/article/mg19926642.900-contaminated-us-site-faces-catastrophic-nuclear-leak/?full=true&print=true>)
- [Seattle Daily Journal of Commerce – Downwinders](http://www.djc.com/special/enviro98/10043971.htm)
(<http://www.djc.com/special/enviro98/10043971.htm>)
- [New York Times Article on Hanford and Tribes](https://www.nytimes.com/1990/09/03/us/washington-nuclear-plant-poses-risk-for-indians.html)
(<https://www.nytimes.com/1990/09/03/us/washington-nuclear-plant-poses-risk-for-indians.html>)
- [Hanford Challenge Website](http://www.hanfordchallenge.org/) (<http://www.hanfordchallenge.org/>)

Tribal Representative:

Guiding Questions:

1. How have Northwest Indians historically interacted with the land, plants, and animals on and around Hanford Nuclear Reservation?
 2. How have Northwest Indians relationship with the land plants and animals changed since the establishment of the Hanford Nuclear Reservation?
 3. What should be done to repair damage done by Hanford to Northwest Indian communities physical and spiritual lives?
- [Oregon.gov - Nuclear Safety](https://www.oregon.gov/energy/facilities-safety/safety/Pages/About-Hanford.aspx)
(<https://www.oregon.gov/energy/facilities-safety/safety/Pages/About-Hanford.aspx>)
 - [High Country News Article – Fishing](https://www.hcn.org/issues/169/5454?searchterm=Hanford%2C+India)
(<https://www.hcn.org/issues/169/5454?searchterm=Hanford%2C+India>)
 - [Nez Perce - Environmental Restoration and Waste Management Website](http://www.nezperce.org/~erwm/hanford.html)
(<http://www.nezperce.org/~erwm/hanford.html>)
 - [Hanford Tribal Stewardship](http://www2.clarku.edu/mtafund/prodlib/nez_perce/Hanford_Tribal_Stewardship.pdf)
(http://www2.clarku.edu/mtafund/prodlib/nez_perce/Hanford_Tribal_Stewardship.pdf)

- [Yakama Indian Nation - 1855 Treaty Information](http://www.ohwy.com/wa/y/yakamana.htm)
(<http://www.ohwy.com/wa/y/yakamana.htm>)

Step 3:

You have now completed the research portion of your project; however, you are not done. As experts in your field, you will now create a presentation to the United States Congress explaining how the Hanford Nuclear Reservation has affected the environment, Indian, and non-Indian communities in Washington State. Your presentation must include the following:

- Introduction: Your group must introduce who you are and why you are there.
- Background: Your group needs to provide background information including:
 - What life was like for communities near Hanford prior to its construction? and,
 - Where, when, and why was Hanford created?
- Impact of Hanford:
 - What impact has Hanford had on the ecology and people around Hanford, paying particular attention to the impact on Northwest tribes?
 - What research do you have that supports your claim(s)?
- Resolution:
 - What is the government's obligation to combat the continuing effects of Hanford on humans and the environment in the Pacific Northwest? Recommend at least one plausible (realistic) solution.
- Resources:
 - Where did you find your information? How do you know it's believable (bibliography)?

Look to your guiding questions as you assemble your presentation. Make sure you work as a team, sharing notes and discussing how you will approach your presentation. The easiest way to present this information is with a Power Point presentation. If you don't have access to PowerPoint, you may type your presentation and use a poster board to mount your report. Make sure to include helpful maps, graphs, or illustrations that help support your position and make your presentation interesting.

Conclusion

Congratulations! You have now completed this lesson evaluating the impact of the Hanford Nuclear Reservation on Pacific Northwest Tribes. Through this process you have learned about the many ways that the Hanford Nuclear Reservation has impacted the habitat, plants, animals, and communities surrounding it. In addition, you have developed solutions to help our governor and tribal leaders seek solutions to the problems Hanford has left for all Washington citizens.

