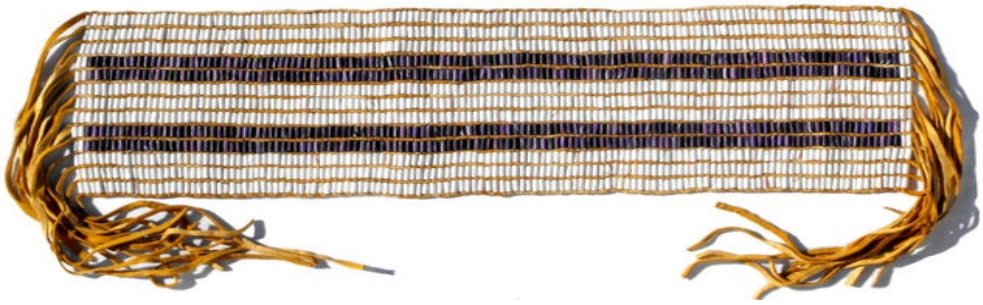
NUCLEAR REACTORS ARE NOT "GREEN"



RED PAPER BY ONONDAGA NATION,
HAUDENOSAUNEE ENVIRONMENTAL TASK FORCE, and
AMERICAN INDIAN LAW ALLIANCE

NUCLEAR REACTORS ARE NOT "GREEN"

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As we work together to attempt to save the Mother Earth from climate chaos, it is important not to be misled by false claims. We were told that fracked gas [methane] was a "bridge fuel", as we transition to renewable energy generations. We learned that fracking was a bridge to nowhere and that fracked gas is actually worse than burning coal, due to the extreme impacts of methane on climate change.

Today, New York State and Bill Gates have taken the position that nuclear reactor generated electricity is "green"; but we know this is false, short sighted and once again, fails to account for the entire life cycle of the uranium/nuclear reactor industry.

One of the voices that has here-to-fore been excluded from this discussion is that of Indigenous peoples. On December 15, 2018, the Onondaga Nation, joined by the Haudenosaunee Environmental Task Force and the American Indian Law Alliance, filed a motion to join, as *Amici Curiae*, [1] the state court challenge to Governor Cuomo's 2015 "Clean Energy Standard", which used the false claim of "clean" nuclear energy to meet his goal of 50 % clean power production for the state by 2030. [2]

This red paper is largely taken from the text of the Nation's General Counsel's Affirmation in support of that *Amici* motion, but the legal text that was necessary to meet the standards for such motion has been removed to make it more readable and hopefully,

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[1] *Amicus curiae* means "friend of the court" and it is a limited appearance in law suits–not joining as a full party, but raising facts and arguments about issues which other parties have failed to bring to the court.

[2] Unfortunately, this state court challenge has been dismissed.

more useable. [3]

The Nation, H.E.T.F. and A.I.L.A. moved to join the state court suit as *Amici*, to bring the following issues to the Court's attention;

a. The negative impact of the nuclear power industry on Indigenous nations and peoples, both historically and currently. This includes mining, milling, transportation and storage;

b. The dangers of the three aging nuclear power reactors in Scriba, New York and the direct harm that would result to the Onondaga people, and Nation lands and waters from the continued operations of these aging nuclear reactors and from any accidental release of radiation, or worse,;

c. How these three aging nuclear reactors in Scriba are interfering with the stewardship responsibilities of the Nation leaders to protect the natural world for future generations; and

d. The dangers to the Onondaga Nation, its waters and its people from the current transport of nuclear wastes down Interstate Route 81, directly through the Nation's currently recognized territory.

I. HISTORY AND BACKGROUND OF THE ONONDAGA NATION AND ITS INTERESTS IN THE NUCLEAR INDUSTRY:

The Onondaga Nation is a traditional Haudenosaunee Nation and one of the Six Nations of the Haudenosaunee [Iroquois] Confederacy. The Nation is the Central Fire or Capital of the Six Nations and its currently recognized territory is just south of the City of Syracuse. The Nation and its environmental workers are active members of H.E.T.F

Today, the Nation's recognized territory, or reservation, is only about 7,500 acres

[3] This Red Paper and the *Amici* pleading were written by Joseph J. Heath, Esq., Onondaga Nation General Counsel. However, neither document could have been possible without the extensive research performed by Richelle Brown, a paralegal and community organizer in the General Counsel's office.

which is merely a tiny fraction of the Nation original territory of approximately 2 ½ million acres, which was the homeland of the Nation and its people for centuries before the European colonization. A map which shows the general boundaries of the Nation's original territory is attached below as "Figure 1".

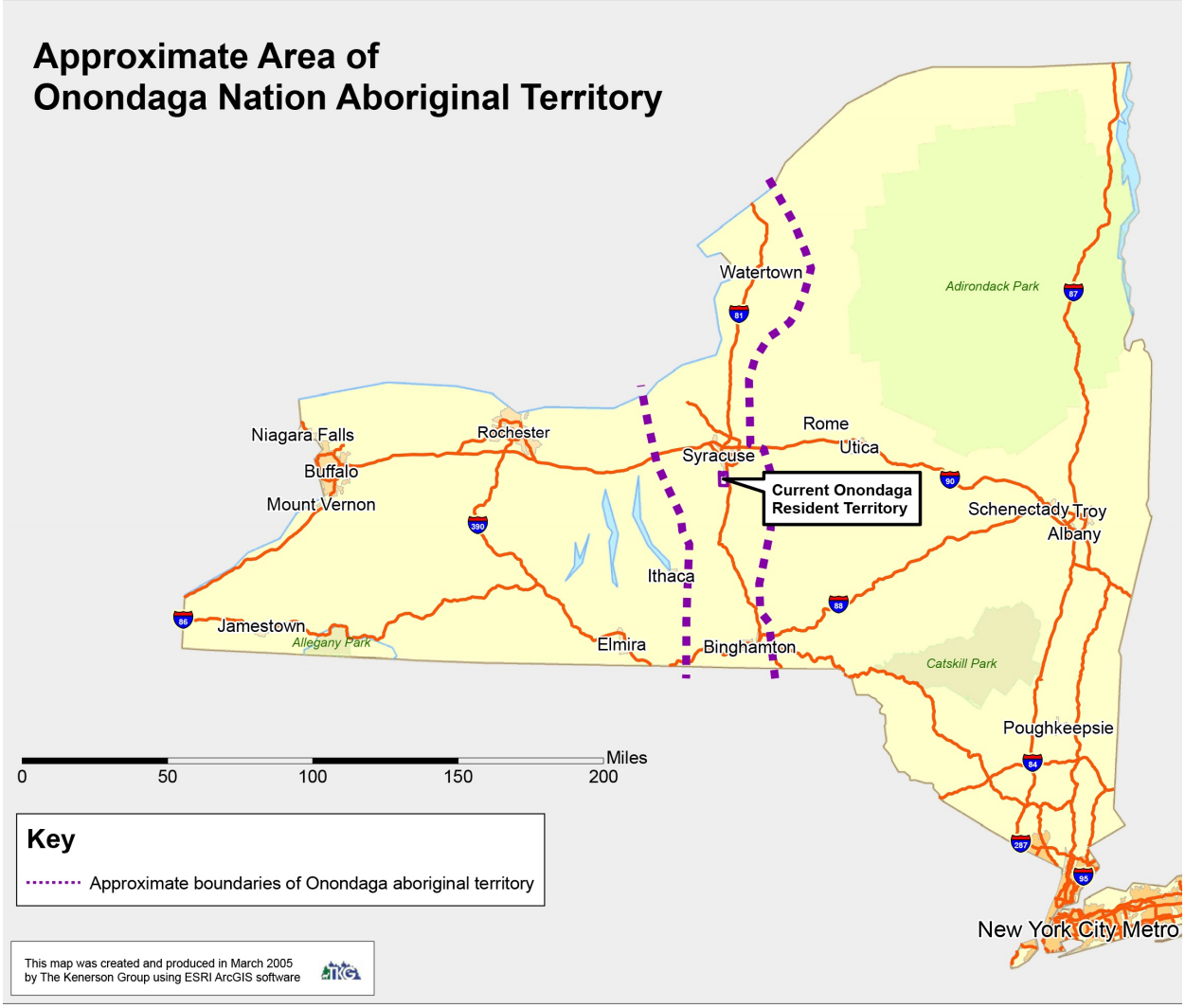


Figure 1

The Nation still governs itself under the traditional system of government that was given to them by the Peacemaker over 1000 years ago in the Gayanashagowa, the Great Law of Peace. The Nation is still governed by its Council of Chiefs, who are selected and nominated to these leadership positions by their respective Clan Mothers, who also hold the authority to remove a Chief from power, under certain specified protocol.

The Nation, its leaders and its people have a unique spiritual, cultural and historic relationship with the land. This relationship goes far beyond federal and state legal concepts of ownership, possession or legal rights. The people are one with the land, and consider themselves stewards of it. It is the duty of the Nation's leaders to work for a healing of their land and waters, to protect them, and to pass them on to future generations.

The Nation and the other Six Nations of the Haudenosaunee hold three treaties with the United States government: the 1784 Treaty of Fort Stanwix, the 1789 Treaty of Fort Harmor and the 1794 Treaty of Canandaigua. In Article II of the Canandaigua Treaty, the United States government guaranteed the Nation the "free use and enjoyment" of their protected territory.

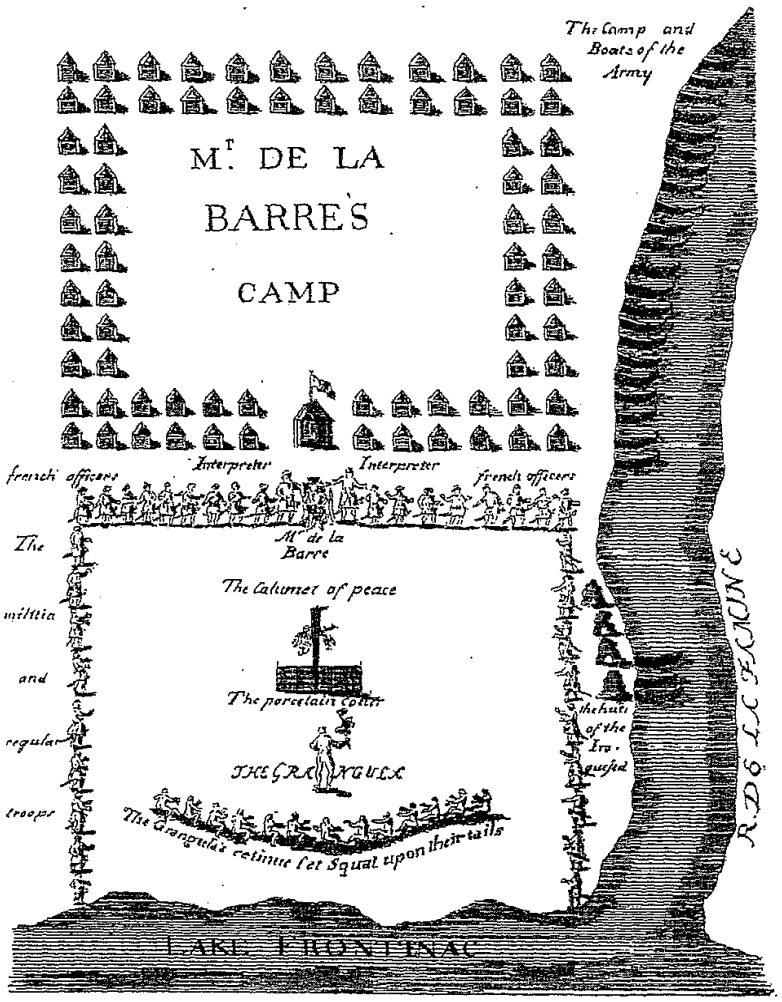
The Nation moved to join the state court law suit, as *amicus*, on behalf of its people in the hope that it may hasten the process of healing historic harms and environmental dangers; and to bring lasting justice, peace and respect among all who inhabit the area. Further, their cultural and spiritual obligation to be stewards of the original lands and waters has been, and continues to be, negatively impacted by the continued operation of the three nuclear power reactors in Scriba, near Oswego, New York.

Lake Ontario and the Oswego River system are of great historical, cultural and spiritual importance to the Nation and the other Haudenosaunee nations, as they were used extensively by the Onondaga people before the arrival of Europeans, for fishing and transportation.

The Haudenosaunee Confederacy is governed by a Grand Council of Chiefs from all of the Nations and this Grand Council still meets at Onondaga. The Haudenosaunee Environmental Task Force was created by the Grand Council, so that all Six Nations could work together with one voice on environmental issues and challenges.

Before the arrival of the Europeans, the Grand Council often met at Three Rivers, because the various Nations: Mohawk, Oneida, Cayuga and Seneca could travel there by canoe on the Oneida and Seneca River systems which meet at Three Rivers, to form the Oswego River, which connects with Lake Ontario, in Oswego.

The historical importance and use of Lake Ontario by the Onondagas is documented in the 1684 French drawing that depicts a meeting of French explorers and Onondaga Chiefs on the eastern shore of Lake Ontario, at what is now called Port Ontario, where the Salmon River enters the Lake. This 1684 drawing, below is taken from page 282 of the New York State Museum's published book: *Wampum and Shell Articles Used by the New York Indians,* which was originally published in 1901 and reprinted by AMS Press in 1978.



Lahontan's view of De la Barre's council at La Famine September, 1684

PLATE 13

Lahontan's view of De la Barre's council at La Famine (Salmon River N. Y.) September 1684. An Onondaga chief is speaking, who is the famous orator usually called Garangula. The spot is at the mouth of Salmon river in Oswego county, on the north side, and represents fairly well the conditions of the picture. The place received its name in 1656 from the famished condition of the French colonists when they reached it. It had been intended for their habitation but the plan was changed. As a landing place on Lake Ontario it had long been a notable place of resort, and was the terminus of the beaver land trust deed. A fine picture of this council adorns the Flower Memorial Library building in Watertown, in which Lahontan's plan is followed in a general way. This was the Great La Famine river. A smaller stream farther west had the prefix of little.

Figure 2

Further evidence of the historic and cultural history of Oswego and Lake Ontario can be found in: *Aboriginal Place Names of New York, (1907),* which was originally published by the New York State Museum [4] in 1907 and reprinted by Kessinger Publishing:

a. Under the heading: "OSWEGO COUNTY": *"Most of this country was in the territory of the Onondagas, but after the colonial period, the Oneidas increased their claims. The eastern part originally belonged to them but not the Ontario lake shore, the Onondagas having a village at the mouth of the Salmon River in 1654. Nearly all the names are thus Iroquois."* (Page 168.)

b. The word "Oswego" is derived from the Onondaga and Haudenosaunee: "*O-swe'-go, Osh-wa-kee and Swa-geh are forms of the well known name, meaning* flowing out, *or more exactly* small water flowing into that which is large." (Page 171.)

c. "*Ga-so-te'-na, high grass is Scriba Creek*." (Page 170.)

The Nation, its leaders and its people take their obligations to be stewards of their original lands and waters very seriously and within the past fifteen years have joined with citizens along the shores of Lake Ontario in two, separate environmental actions: one prevented the construction of an illegal golf course in Port Ontario which was planned to illegally drain into a wetland and which would have jeopardized an endangered species of turtles, and the other prevented the proposed construction of a "clean coal" plant in Scriba, New York.

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[4] Historically, the New York State Museum has been one of the principle arms of the state government that, for over 230 years, has actively worked to destroy the culture of the Onondaga and the Haudenosaunee–by stealing their wampum belts and other items of cultural patrimony, by illegally and immorally keeping 100s of set of ancestors' human remains, and more recently, by acting in defiance of NAGPRA. So, these admissions by the museum, in its publication, are incontrovertible proof of the extent of the original territory of the Onondagas.

The Nation's currently recognized territory is located in the peak injury zone, approximately forty (40) miles from the three nuclear reactors in Scriba.

II. THE HAUDENOSAUNEE ENVIRONMENTAL TASK FORCE AND ITS INTEREST IN THE IMPACTS OF THE NUCLEAR INDUSTRY:

The Haudenosaunee Environmental Task Force (H.E.T.F.) is composed of delegates selected by each of the Six Haudenosaunee Nations–the Mohawk, Oneida, Onondaga, Cayuga, Seneca and Tuscarora–who are committed to identifying the environmental problems in their communities and the impacts of climate chaos, and to working together to find solutions to these problems. The mission of the H.E.T.F. is:

a. To assist the Haudenosaunee Nations in their efforts to conserve, preserve, protect and restore their environmental, natural and cultural resources;
b. To promote the health and survival of the sacred web of life for future generations;
c. To support other Indigenous nations working on environmental issues; and
d. To fulfill their responsibilities to the natural world as instructed by the Creator without jeopardizing peace, sovereignty or treaty obligations.

As Indigenous Nations, H.E.T.F. understands that all things are interconnected and that all peoples and nations need to work together to protect the natural world for the future generations.

Whenever one Haudenosaunee Nation is confronted with an environmental threat, such as the nuclear power plants on Lake Ontario, H.E.T.F. works to provide the collective support from all Six Nations. [5]

[5] See: www.hetf.org.

III. THE AMERICAN INDIAN LAW ALLIANCE AND ITS INTEREST IN THE IMPACTS OF THE NUCLEAR INDUSTRY:

The American Indian Law Alliance (A.I.L.A.) is an Indigenous non-governmental organization in consultative status with the United Nations Economic and Social Council (ECO SOC). A.I.L.A. is committed to working with and on behalf of Indigenous Nations on a wide range of issues. One of the primary areas of the work of A.I.L.A. is environmental protection and the defense of Mother Earth, with an emphasis on leaving behind a healthy world for the next seven generations.

A.I.L.A. was founded by a now deceased citizen of the Onondaga Nation: Tonya Gonella Frishner; and the current president of A.I.L.A. is also an Onondaga Nation citizen: Betty Lyons. Other leaders and citizens of the Onondaga Nation are active in the work of A.I.L.A., particularly the work in the United Nations Permanent Forum on Indigenous Issues. A.I.L.A. and the Onondaga Nation work closely together to mutually support each other and their work.

The vision of A.I.L.A. is to empower Indigenous Nations and communities by being the catalyst for the advancement of self-determination, in order to promote social, economic and cultural development. This is done through education capacity building and legal advocacy.

The ultimate goal of A.I.L.A. is protection of the natural world for the seven generations yet to come. By working with Indigenous Nations and communities globally, A.I.L.A. seeks to further the defense of Mother Earth, by protecting it for the next seven generations.

The missions of the A.I.L.A. include:

a. To assist Indigenous Nations in their efforts to conserve, preserve, protect and restore their environmental, natural and cultural resources;

b. To promote the health and survival of the sacred web of life for future

generations;

c. To support other Indigenous Nations working on environmental issues; and

d. To fulfill their responsibilities to the natural world as instructed by the Creator without jeopardizing peace, sovereignty or treaty obligations.

A.I.L.A. vigorously opposes the continued use of nuclear reactors and the proliferation of the nuclear industry; and this opposition is culturally, environmentally and spiritually based.

As an Indigenous organization A.I.L.A. understands that all things are interconnected and that all peoples and Nations need to work together to protect the natural world for the future generations.

Whenever one Indigenous Nation is confronted with an environmental threat, such as the nuclear power plants on Lake Ontario, A.I.L.A. works to provide the collective support from many Indigenous Nations. [6]

IV. THE NEGATIVE IMPACT OF THE NUCLEAR POWER INDUSTRY ON INDIGENOUS NATIONS AND PEOPLES, BOTH HISTORICALLY AND CURRENTLY:

A. OVERALL NEGATIVE IMPACTS OF URANIUM MINING ON INDIGENOUS NATIONS AND PEOPLES:

The Nation, H.E.T.F. and A.I.L.A. urged all parties to consider the entire life-cycle of the nuclear power industry and not just the isolated, final step of generating power. This entire life cycle has historically had hugely negative impacts on Indigenous nations and peoples: from the mining of uranium in Indian country and the vast amounts of nuclear wastes associated with the mining and milling of uranium; the transportation of uranium; and the proposed, long term storage of high-level nuclear wastes on Indian county. These negative impacts continue to this day.

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[6] See: https://aila.ngo.

There are three stages of conventional uranium mining: first, the ore containing uranium is extracted from the ground. Next, a mill grinds the ore into sand, which is run through a solution to separate the uranium from the waste rock, commonly known as "tailings." The uranium is then concentrated and dried into "yellowcake" for commercial sale. Finally, the tailings, which are radioactive, must be secured and stored.

To the Nation's, H.E.T.F.'s and A.I.L.A.'s knowledge, these broader, life-cycle negative impacts on Indigenous peoples were not considered by the state Public Service Commission in their decision to keep these aging reactors operating for at least ten more years, despite their profound environmental justice impacts.

Uranium mining, milling and related industries have resulted in the destruction of sacred sites, petroglyphs and ancestors' unmarked burial sites, [7] and the contamination of housing and drinking water supplies. [8]

Traditional lifeways have been made difficult or impossible to continue due to contamination of water and land; [9] sacred sites have been made inaccessible and physically dangerous; and Indigenous peoples have had to move away from areas of their

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[7] Jarding, Lilias J. *Uranium Activities' Impacts on Lakota Territory*. 2010, p. 8 Available at http://www.cleanupthemines.org/wp-content/uploads/2013/11/URANIUM-IMPACTS-IN-LAKOTA-TERRITORY.pdf

[8] Green, April. "Sacred N.M. Mountain Remains at Center of Uranium Fight." *New York Times*, 18 August 2011. Available at https://archive.nytimes.com/www.nytimes.com/gwire/2011/08/18/18greenwire-sacred-nm-mountain-remains-at-center-of-uraniu-22823.html (past mining on sacred Mount Taylor)

Winters, Rosemary. "Uranium Mill or Dump?" *High Country News*, 2 February 2004. Available at https://www.hcn.org/issues/267/14525 (White Mesa mill built on more than 200 Ute, Navajo, and Ancestral Pueblo ceremonial and burial sites)

[9] Tsosie, Rebecca. "Indigenous Peoples and the Ethics of Remediation: Redressing the Legacy of Radioactive Contamination for Native Peoples and Native Lands." *Santa Clara Journal of International Law*, vol. 13, no. 1, 2015, p. 208. Available at https://digitalcommons.law.scu.edu/cgi/viewcontent.cgi?article=1185&context=scujil

homelands upon which they have lived for centuries. [10]

Water contamination from uranium mining and the resultant tailings has been widespread and especially damaging in the southwestern states where water is so scarce. Surface waters and aquifers have been polluted by all phases of uranium mining and production. The contamination of the waters has included various combinations of uranium, arsenic, copper, lead, molybdenum, selenium, sulfate, thorium, vanadium and radium. [11]

Prior to any actual mining of uranium, extensive explorations have been conducted on Indian country and this exploration has included drilling thousands of holes and drill cores and the construction of extensive roads and truck pads on previously undisturbed and pristine lands. Most of these exploratory holes have not been sealed or capped and have therefore created pathways between groundwater aquifers, which has resulted in the migration of contaminated water that has polluted clean drinking water supplies. [12]

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[10] Bleir, Garet. "Desecrating Medicine, Contaminating Water, Defiling Sacred Land." *Intercontinental Cry*, 20 October 2017, https://intercontinentalcry.org/desecrating-medicine-contaminating-water-defiling-sacred-land/

[11] Gallaher, Bruce M. and Steven J. Cary. *Impacts of Uranium Mining on Surface and Shallow Groundwaters, Grants Mineral Belt, New Mexico*. New Mexico Environmental Improvement Division Report EID/GWH-86/2, 1986.

Loomis, Brandon. "With Uranium Poisoning Wells, Navajos Must Drive Miles to Get Drinking Water." *Arizona Republic*, 11 August 2014. Available at https://www.azcentral.com/story/news/arizona/investigations/2014/08/05/uranium-mining-poison-wells-safe-drinking-water/13635345/

Stone, James, Larry Stetler, and Albrecht Schwalm. *Final Report: North Cave Hills Abandoned Uranium Mines Impact Investigation*. 18 April 2007, pp. 111-139. Available at https://www.fs.usda.gov/detail/custergallatin/landmanagement/resourcemanagement/?cid=stelprd3833603.

[12] Jarding, Lilias J., 2010, pp. 10-11.

B. URANIUM MINERS WERE NOT PROTECTED:

Historically, when uranium mining began in earnest, in the late 1940s, virtually no safety measures were implemented for miners' safety, despite the known risks from exposure to uranium and its dust. Proper monitoring and ventilation were not employed. Consequently, miners were exposed to unnecessary inhalation of various radon isotopes and to direct, whole-body exposure to air-borne radiation from the mine face. [13]

In addition to the dangers to which miners themselves were unnecessarily exposed, their families and homes were also contaminated and exposed. This was due to the complete lack of proper decontamination practices, so that miners and their work clothing brought home radioactive materials and particles.

All of these dangers and their inherent health risks were exacerbated due to the virtually complete lack of any information being shared with the miners, their families or their communities.

C. THE RADIOACTIVE LEGACY OF THESE OLD, ABANDONED URANIUM MINES:

In addition to the dangers inherent in the mining operations themselves, Indigenous nations, such as the Navajo and Lakota, have suffered extensive harms from the legacies of these hundreds of now abandoned uranium mines. These harms and long term health risks have been caused by the tailings or wastes simply piled up during the mining operations. [14]

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[13] Brugge, Doug, Timothy Benally, Phil Harrison, and Chenoa B. Stilwell. *Memories Come to Us in the Rain and the Wind: Oral Histories and Photographs of Navajo Uranium Miners & Their Families*. Boston, MA: Navajo Uranium Miner Oral History and Photography Project, 2000. Available at https://swuraniumimpacts.org/wp-content/uploads/2016/06/Memories-Come-To-Us.pdf

[14] Moore-Nall, Anita. The Legacy of Uranium Development on or Near Indian Reservations and Health Implications Rekindling Public Awareness." *Geosciences*, vol. 5, pp. 15-29. Available at https://www.mdpi.com/2076-3263/5/1/15.

About 98 % of all the material extracted from the uranium mines has been left in place as tailings; and these remaining wastes are about 80 to 85 % as radioactive as those materials that were removed from the mining sites for further processing. [15] The radioactive contamination from these tailings has been documented to have moved easily through air and water. [16]

Additionally, a significant portion of the tailings from some sites on Indian country has been "re-purposed" and used in housing construction, roads and driveways; and yet, the people and the Indigenous governments were not informed of the dangers inherent in the radioactive wastes. [17]

Another source of danger to Indigenous nations and peoples has been created by the abandonment of numerous open pit uranium mines, as the plant litter and sediments at old open pit mines have been found to contain very high levels of radium-226, which is 2.7 million times more radioactive than the same amount of naturally occurring uranium. [18]

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[15] Waggitt, Peter. *A Review of Worldwide Practices for Disposal of Uranium Mill Tailings.* Australian Government Publishing Service, 1994. Available at http://www.environment.gov.au/system/files/resources/7baf0bdd-a928-4d58-a0a7-1e7e5647ca3c/files/tm48.pdf

[16] Mathes, David E. "Lessons Learned from the 20-Year Uranium Mill Tailings Remedial Action Surface Project." *WM'99 Proceedings, February 28-March 4, 1999, Tucscon, Arizona*. WM Symposia, 1999. Available at https://pdfs.semanticscholar.org/2877/a20036dc5b34e8bbd2dac01685bbfaee8ab7.pdf

[17] Cornwall, Warren. "Radioactive Remains: The Forgotten Story of the Northwest's Only Uranium Mines." *The Seattle Times*, 24 February 2008, https://www.seattletimes.com/pacific-nw-magazine/radioactive-remains-the-forgotten-story-of-the-northwests-only-uranium-mines/

Frosch, Dan. "Uranium Contamination Haunts Navajo Country." *The New York Times*, 26 July 2009. Available at https://www.nytimes.com/2009/07/27/us/27navajo.html?_r=0

[18] Dienemann, Holder, Claudia Dienemann, and E. Gert Dudel. "Distribution of Ra-226 Downstream a Uranium Mining Site." *Uranium, Mining and Hydrogeology*, edited by Broder J. Merkel and Andrea Hasche-Berger, Springer, 2008, pp. 865-872.

Studies in heavily mined areas have repeatedly found high levels of radiation, cave-ins, collapsed sides of open pits, erosion of spoils, lack of vegetation re-growth, open ventilation shafts, unmarked open pits and extensive disturbance of surface lands. [19]

The practice of *in-situ* extraction was also used extensively on Indian country, which involved the pumping of chemical solutions into ore to dissolve the uranium and other metals. [20] The chemicals and extracted metals were then pumped out for further processing. [21]

One of the problematic consequences of this practice of *in-situ* extraction has been documented spills and leaks. Underground leaks can be either vertical or horizontal and have been labeled "excursions" when they have migrated from the immediate mining areas, thereby extending the areas of contamination and pollution. [22]

Additionally, it has been documented that complete clean-up of in-situ site has been impossible, and reclamation attempts have never returned the water to its original,

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[19] Jarding, 2010, p. 23.

[20] "In Situ Leach Mining of Uranium." *World Nuclear Association*, October 2017. http://www.world-nuclear.org/information-library/nuclear-fuel-cycle/mining-of-uranium/in-situ-leach-mining-of-uranium.aspx

[21] Hilleary, Cecily. "Native Americans Ask: What About Our Water Supply?" *Voice of America*, 13 February 2016, https://www.voanews.com/a/native-americans-ask-what-about-our-water-supply/3188737.html

Leddy, Liane C. *Cold War Colonialism: The Serpent River First Nation and Uranium Mining, 1953-1988*. Dissertation, Wilfred Laurier University, 2011. Available at https://central.bac-lac.gc.ca/.item?id=NR81496&op=pdf&app=Library

[22] Staub, William P, Elwood N. Hinkle, Roy E. Williams, Frank Anastasi, James Osiensky, and Douglas Rogness. *An Analysis of Excursions at Selected in Situ Uranium Mines in Wyoming and Texas*. Washington, D.C: Division of Waste Management, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, 1986. Available at https://www.nrc.gov/docs/ML1423/ML14237A635.pdf

unpolluted condition. [23]

The health impacts from historic uranium mining on Indian country have been profoundly destructive and negative; they include various cancers, especially lung cancer [24] and fibrosis among the miners. [25] Additionally, bone cancer and impaired kidney functions have been documented in the neighboring Indigenous populations from drinking water that has been contaminated with radio nuclides. Drinking water with radionuclides is a known risk factor for bone cancer, as noted by the EPA. [26] Longer term, extremely negative health impacts, such as gene mutations and chromosome changes, have been documented in Indigenous communities where uranium has been mined. [27]

V. SPECIFIC INDIGENOUS NATIONS THAT HAVE BEEN NEGATIVELY IMPACTED BY URANIUM MINING, MILLING AND RELATED INDUSTRIES:

A. *NAVAJO NATION:*

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[23] Kelley, Dan. "As Uranium Mines Closed, State Altered Cleanup Goals." *Corpus Christi Caller-Times*, 5 November 2006.

[24] Brugge, Doug and Rob Coble. "The History of Uranium Mining and the Navajo People." *American Journal of Public Health*, vol. 92, no.2, 2002, pp. 1410–1419. Available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3222290/

[25] Dawson, Susan E. "Navajo Uranium Workers and the Effects of Occupational Illnesses: A Case Study." *Human Organization,* Vol. 51, No. 4, 1992, pp. 289-397.

[26] United States Environmental Protection Agency. "Cleaning Up Abandoned Uranium Mines." 3 May 2018, https://www.epa.gov/navajo-nation-uranium-cleanup/cleaning-abandoned-uranium-mines

[27] Morales, Laurel. "For The Navajo Nation, Uranium Mining's Deadly Legacy Lingers." *NPR,* 10 April 2016. Available at https://www.npr.org/sections/health-shots/2016/04/10/473547227/for-the-navajo-nation-uranium-minings-deadly-legacy-lingers (kidney disease)

Shields, Lora M., William H. Wiese, Betty J. Skipper, Bernard Charley, and L. Benally. "Navajo Birth Outcomes in the Shiprock Uranium Mining Area." *Health Physics*, vol. 63, no. 5, 1992, pp. 542-551. (gene changes and chromosomal abnormalities)

The Navajo Nation has experienced the longest and most intense uranium mining, due to its location on the Colorado Plateau, which contains the richest and highest percentage of deposits of uranium in the country. Uranium mining occurred on the Navajo Nation from 1944 to 1986, with 30 million tons of uranium extracted; and there are over 500 abandoned uranium mines on the Navajo territory. [28]

On July 16, 1979, the mill tailings pond at Church Rock, New Mexico breached due to a failure in the earthen containment dam at United Nuclear Corporation's uranium processing mill; over 1,000 tons of solid radioactive waste and 93 million gallons of acidic, radioactive tailings were released and flowed into the Puerco River. These released radioactive wastes traveled 80 miles downstream onto the recognized territory of the Navajo Nation. Many Navajo citizens rely on the Puerco River for irrigation and livestock. [29]

According to the Nuclear Regulatory Commission, the contaminated river measured 6,000 times the allowable standard for radioactivity below the broken dam, after the breach was repaired. [30] This was the largest release of radiation in United States history; and second only to Chernobyl in world history. [31]

The damage to the lands and waters and the devastating health impacts on the

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[28] United States Environmental Protection Agency. "Cleaning Up Abandoned Uranium Mines." 3 May 2018, https://www.epa.gov/navajo-nation-uranium-cleanup/cleaning-abandoned-uranium-mines

[29] Jennings, Trip. "Remembering the Largest Radioactive Spill in U.S. History." *New Mexico in Depth*, 7 July 2014, http://nmindepth.com/2014/07/07/remembering-the-largest-radioactive-spill-in-u-s-history/

[30] Grinde, Donald A., and Bruce Johansen, *Ecocide of Native America: Environmental Destruction of Indian Lands and People*, Sante Fe, New Mexico: Clear Light Publishers, 1995, p. 211.

[31] Navajo Nation. *President Ben Shelly Declares 'Uranium Legacy Remembrance and Action Day'*. 15 Jul 2011, http://www.navajo-nsn.gov/News%20Releases/OPVP/Jul11/71511_PresidentBenShellyDelares%20%E2%80%98UraniumLegacyRemembrance%20andActionDay%E2%80%99.pdf

Navajo people continues to the present. On January 18, 2020, the Washington Post ran a long article on the current impacts of this legacy mining and the 1979 Church Rock Spill. [32] The article documents that essentially all of the radioactive tailings remain, continuing to endanger the Navajo who live in the village of Red Water Pond Road. Adding insult to injury:

> The Environmental Protection Agency aims to haul away thousands of truckloads of the radioactive waste over the next seven years. . . . . The federal government wants to move the [families] out. . . . Residents do not want to stay during that work, but many fear losing their way of life if they are uprooted and unmoored from rural roots and traditions. . . .
>
> Red Water Pond Road has seen little reason for hope for a long time. Starting in the mid-1950s, mining companies extracted about 30 million tons of uranium from Navajo lands. It was just down the road on a July morning in 1979 that an embankment broke on a uranium tailings pond, releasing 1,000 tons of waste that traveled more than 80 miles downstream through arroyos, creeks and rivers. The Church Rock Spill remains the largest nuclear waste spill in US history.
>
> Even four decades later, only scattershot mitigation has occurred. Residents, activists and some nonprofit groups have cited **a variety of health concerns, including cancer and risks to pregnancy and newborns, relating to uranium extraction here. No comprehensive study on the health effects from uranium**

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[32] See: "*A radioactive legacy haunts this Navajo village, which fears a fractured future*,": https://washingtonpost.com/national/a-radioactive-legacy-haunts-this-navajo-village-which-fears-a-fractured-future/2020/01/184c6066e0-11ea-9541-9107303481a4.story.html.

contamination on Navajo lands has been done. (Emphasis added.)

The EPA is planning to move these Navajo families into the city of Gallup, about half-hour away.

> [However,] many describe the process as a painful dissolution of their village–like a real estate developer clearing out a neighborhood by picking off families one by one.
>
> "Government is supposed to have cultural sensitivity training" one woman sais a community meeting in September. "Where is that?"

The community, working with the University of New Mexico's architecture school and its Indigenous Design and Planning Institute, have proposed an alternative–building a new community, nearby on a mesa, which would be solar powered and off the grid, with the houses made of recycled material, and which

> incorporates Navajo Hogan structures in a nod to the tribe's traditional dwellings and ceremonial homes. Doorways are positioned to face the rising sun.
>
> The design, supporters say, is both practical and symbolic. The community will not have to leave its ancestral lands, and clean energy will power a village environmental degraded by the mining industry.

The resistance of the community to the EPA's removal plan is gaining outside support:

> The community "is owned a culturally appropriate relocation plan that reflects the historical and familial connections to its ancestral homeland," Sen. Tom Udall (D.N.M.), who chairs the Senate Indian Affairs Committee, said in a statement this month. . . .
>
> The New Mexico Environmental Law Center appealed on the

> Red Water Pond Road's behalf to the United Nations High Commissioner for Human Rights, contending that EPA actions are par of a pattern of disparate treatment of indigenous communities. The kind of relocation pushed in this case, it wrote, is an untenable choice [that] often results in traditional family units and relationships being fractured."

In 2005, the Navajo Nation enacted a moratorium for uranium mining on currently recognized Nation lands. [33] However, development of uranium mining on immediately adjacent lands is constantly being promoted. Westwater Resources has been attempting to start uranium mining operations on federal lands near Church Rock, on the checkerboard, to the east of the Nation's territory. [34]

B. *SENECA NATION:*

The health of the Seneca Nation citizens living on the Cattaraugus Reservation is severely jeopardized by the radioactive wastes traveling down Cattaraugus Creek from the former West Valley nuclear waste site, which was the first and, to date, only commercial reprocessing plant for intensely radioactive, irradiated "spent" fuel rods in the United States. The plant operated only from 1966 to 1972, and then, at only 18 % of its

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[33] Navajo Nation. *Navajo Nation President Joe Shirley, Jr. Signs Diné Natural Resources Protection Act of 2005.* 30 April 2005, https://www.nrc.gov/docs/ML0721/ML072150169.pdf

[34] Bourne, Chloe. "Environmental Jurisdiction in Indian Country: Why the EPA Should Change its Definition of Indian Agency Jurisdiction under the Safe Drinking Water Act." *Colorado Natural Resources, Energy & Environmental Law Review*, vol. 27, no. 2, 2016, pp. 294-314. Available at https://www.colorado.edu/law/sites/default/files/CNREELR-V27-I2-Bourne.pdf

claimed capacity. [35] The location of West Valley, which sits upstream of the Cattaraugus Reservation is shown in Figure 3, below.

In 1966, the Atomic Energy Commission reported that 5 million gallons of liquid radioactive wastes were discharged into on-site streams which flow into Cattaraugus Creek, into which the on-site streams flow. [36]

Although the highest level waste was "stabilized" in 2002, via a process called "vitrification" that solidified the most dangerous waste into glass and enclosed it in stainless steel containers. The waste still remains at the West Valley site in metal containers on a pad outside on land that is prone to erosion. Significant problems of long-lasting, low-level radioactive waste–transuranic (plutonium type) waste, as well as radioactive soil, buildings, massive underground piping systems and groundwater contamination remain. [37]

Among the hazardous conditions that remain at West Valley are:

1. 275 canisters containing 10 million curies of vitrified, high-level radioactive waste in borosilicate glass from reprocessing of fuel rods are stored in "dry casks"–5 to a cask–on a concrete pad, 200 feet from Rock Springs Road;
2. Two massive underground tanks with high-level radioactive sludge, on complex internal lattice structures making it perilously difficult to remove;
3 . Cesium Prong: Cesium 137 remains detectable, on and offsite, at 10 to 20 per cent above background levels on over 100 acres, due to a 1968 accident that blew a ventilation filter into the atmosphere, depositing pieces on the

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[35] *A Brief History of Reprocessing and Cleanup in West Valley, NY,'* the Union of Concerned Scientists, https://www.ucsusa.org/nuclear_power/making-nuclear-power-safer/handing-nuclear-waste/a-brief-history-of.html.

[36] *"West Valley"*–http://concernedcitizens.homestead.com/maplink_westvalley.html.

[37] *Id.*

ground, some several miles from the site;

4. Strontium Prong: Strontium 90 and other radionuclides are moving 40 to 60 feet per year through the groundwater at levels up to 346,000 times background levels, and in 1994, emerged at the surface at a rate of 30 gallons per minute. The permeable treatment wall that was built to remove some of the strontium before it drains into the streams, lakes and drinking water does not remove all the radioactivity and is a temporary fix which will not last as long as the radioactivity; and it must be exhumed itself and treated as waste and replaced;
5. Numerous monitoring wells measure both radioactive (including Tritium and radioactive hydrogen, which makes radioactive water) and hazardous chemical contamination, with over 100 such wells on site;
6. Both on-site and off-site streams and Cattaraugus Creek contain sediments contaminated with Cesium 137 and Strontium 90;
7. 42 intensively radioactive irradiated "spent" fuel rods, which are technically high-level radioactive waste, in ruptured concrete casings remain buried in one of the burial grounds, against federal regulations. There is a danger of that waste being redefined as not high-level so that it can be abandoned in the ground, rather than excavated for a permanent repository;
8. Although trenches containing buried nuclear waste are now capped with asphalt, methane gas [38] carrying radioactive Tritium continues to be released through the caps;
9. Sediments behind Cattaraugus Creek's Springville Dam downstream, which are removed during regular dam maintenance, contain radioactive materials;
10. A half-dozen "lagoons" used for settling contaminated effluent from the old

[38] Methane is also an extremely potent green house gas, as it is approximate 100 times worse for climate change, over the next 20 years, than CO 2.

nuclear processing plant contaminate groundwater at the site; and wildlife and nearby domestic animals drink at these lagoons;

11. A Plutonium-kerosene mixture contaminates soil on the site. When it was detected, in 1983, efforts to dig it up found empty barrels indicating that the 3600 gallons of plutonium waste had leaked into the soil and could not be accounted for;
12. 19,900, 72 gallon drums, with a total of 4,000 Curies, of supernatant from the vitirification process, have been shipped to Nevada. These are estimated to be "hot"/or highly radioactive for more than 12,000 years;
13. Airborne radioactive elements have been released in substantial amounts over the past four decades–some due to accidents, and some due to "natural" decomposition of nuclear wastes mixed with other wastes; and
14. Stabilizing and dismantling buildings used in the nuclear processing plant is underway and there is a danger that the massive highly contaminated Main Plant Process Building, which was used to reprocess and solidify some of the hottest radioactive waste in the power and weapons fuel chain, could be demolished without a containment over it and without meaningful real time publicly accessible air monitoring before, during or after this domolition.

During reprocessing operations, Cattaraugus Creek was the most radioactive water in the United States. All of this radioactive waste and sediment flow down Cattaraugus Creek, which flows directly through the Cattaraugus Seneca Reservation and into Lake Erie. Lake Erie flows into Lake Ontario, which in turn flows into the St. Lawrence River. Releases of radioactive and toxic substances into the groundwater, air and on-site streams (which flow into Cattaraugus Creek) continue today, despite massive cleanup efforts. *See*: Figure 3, below.

The negative health impacts to the thousands of Seneca citizens living on the Cattaraugus Reservation from the radiation carried by Cattaraugus Creek are not well

studied, and the available medical treatment is greatly inadequate. [39] "A recent aerial study of 'hot spots' on the reservation revealed specific irradiated areas of Cattaraugus with no plans or funds to remediate the contamination."

The drinking water supply on Cattaraugus is not safe to drink because it comes from a municipal water system which draws from Lake Erie near to the outflow of Cattaraugus Creek. Bottled water is only available to Seneca citizens at Cattaraugus if they have access to an automobile.

[39] These details come from direct communications with Seneca women, living at Cattaraugus, based upon their decades of efforts to demand a "Full Clean Up of Nuclear Waste at West Valley, NY."


Western New York Nuclear Service Center
AERIAL RADIOLOGICAL SURVEY
Helicopter Bell 412, RSI 12 - 2" x 4" x 16" NaI Detectors
West Valley, NY
Sep-Oct 2014
Cattaraugus Reservation
WVDP
WNYNSC Boundary
Cattaraugus Creek
Buttermilk Creek
Zoar Valley
Sources: Esri, DeLorme, NAVTEQ, USGS, NRCAN, METI, iPC, TomTom
Map created on 10/16/2015 4:12:21 PM (PDT)
Anthropogenic Extraction in cps
< 1,000
1,000 - 2,000
2,000 - 4,000
> 4,000
The data shown have been processed in a manner that suppresses the natural background. The results are displayed as relative levels of anthropogenic radionuclide activity.
Flight Parameters:
150 ft AGL; 70 knots; 300 ft line spacing
This map was produced by the Aerial Measuring System section of NNSA's Remote Sensing Laboratories (RSL) at Andrews AFB, MD and Nellis AFB, NV.
Map Scale: 1:250,000
Kilometers
Miles

Figure 3

The following quotation is from a recent email received from a Seneca woman who lives on Cattaraugus:

> We have lost many to rare autoimmune diseases, cancers, etc. Some live with the impacts now. This is my strong belief. Especially people from Bucktown have expressed that cancer is in almost every home for 3 to 4 miles. Either someone is sick from cancers etc or someone recently passed.
>
> [Dangers which we face include]: gastrointestinal diseases from eating fish, deer, etc.; use of contaminated plants; lung diseases; high rates of childhood asthma; many hysterectomies and reproductive issues; and children have developmental issues.
>
> We, our parents, grandparents, and even my great grandmother had direct contact. My great grandmother died of colon cancer in 1980. The list of my family members who are deceased goes on and on, probably from direct and compounded impacts of West Valley site.
>
> We hunt, fish, and farm with creek waters and soils and we have consumed probably contaminated foods. We play in that creek even if we don't eat foods. For example, I garden and used fish for fertilizer, and transplanted wild herbs from creek to my garden. I gave crops to my family; and now my nieces and grandchildren are in same situation.
>
> The creek bed has not tested ever as far as I know. Animals, fish, tubers and soil have levels that concern me. In our culture, to not use the gift of water plants, etc. is not possible in my opinion. It is difficult to be us and protect ourselves and families.

C. TUSCARORA NATION:

The Tuscarora Nation's territory, near Niagara Falls, is threatened by multiple toxic waste sites, including the Niagara Falls Storage Site, which was formerly known as the Lake Ontario Ordnance Works. The 191 acre Niagara Falls Storage Site was used to store materials used to create nuclear weapons in the 1940s and 1950s. The site was also used to process uranium ore The radioactive materials left behind include K-65 residues and radium-226, which release harmful gas and radiation as it decays. [40] The site also contains uranium, radium and thorium. [41]

Interim remedial actions, taken in the 1980s were implemented to address radioactive residues stored at various locations on the site and widespread contaminated soil on the site. Additionally, these actions "addressed on-site and off-site drainage areas that had been contaminated from the migration of radioactive materials" into the groundwater. [42]

The Niagara Falls Storage Site is about 1 ½ mile north of the Tuscarora Nation territory; and another nuclear waste site–Porter field–is located on the nothern border of the Storage Site. In the 1950s, the federal governments ordered the burning of nuclear waste in the open air on a field in Porter. In July of 2018, the Army Corps of Engineers began a $600,000.00 project to investigate this small field for radioactivity.

The Corps cited a 1982 U.S. Department of Energy report that said that the Atomic Energy Commission ordered Hooker Electrochemical Company of Niagara Falls to burn low-level radioactive waste on a concrete pad in the field; and the Corps has

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[40] See: https://www.lockportjournal.com/local_news/army-corps-to-clean-up-area-near-niagara-falls-storage/article_ae61682-27e2-572f-a626-5f543f3e...

[41] See: http://www.lm.doe.gov/Considered_Sites/Niagara_Falla_Storage_Site_NY_-_NY_17/.

[42] U.S. Army Corps of Engineers, Buffalo District, October 2013 fact sheet on the Niagara Falls Storage Site.

given the field the name: "Niagara Falls Storage Site Vicinity Property H Prime." Their investigation will include a radioactive scan to look for uranium, thorium and radium, by conducting soil borings and taking groundwater samples. [43]

D. *LAKOTA NATION:*

Despite the fact that the Black Hills in South Dakota are sacred to the Lakota Nation, extensive uranium mining has taken place there. This mining was widespread, despite the fact that the lands are protected by the 1868 Fort Laramie Treaty as Lakota lands. [44]

Studies have shown widespread radioactive contamination of the Grand River and the Moreau River watersheds, which flow east through the Standing Rock and Cheyenne River Reservations. [45]

Additionally, uranium-removal facilities in Belfield and Bowman, North Dakota, where uranium-bearing lignite was burned to concentrate the uranium, have left behind dangerous radioactive wastes in massive volumes.

In 1995, the state of North Dakota requested that the Department of Energy revoke the designation of the sites as processing sites under the Uranium Mill Tailings Radiation Control Act because the state did not believe the low health risks the sites posed warranted the $4.4 million the state would have to pay for their cleanup. Thus, no

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[43] See: https://buffalonews.com/2018/07/16/army-corps-to-test-where-nuclear-waste-was-burned-in-tht-open-air/.

[44] Jarding, 2010, p. 50.

Grinde, Donald A., and Bruce Johansen, *Ecocide of Native America: Environmental Destruction of Indian Lands and People*. Sante Fe, New Mexico: Clear Light Publishers, 1995, p. 204.

[45] White Face, Charmaine. *Report on Water Tests for Radioactive Contamination*. Defenders of the Black Hills, March 2011. Available at http://www.defendblackhills.org/document/waterreport32011.pdf

remedial action was taken. As the Environmental Assessment of the no action alternative states, taking no action means the general population continues to be exposed to radon decay products and airborne radioactive particles from the ash-contaminated soils. [46]

Uranium mining in the sacred Black Hills is not just an historic, legacy problem; currently, intense efforts are underway to open a new uranium mine in the Black Hills. On December 13, 2019, the Rapid City Journal reported that a three judge panel of the US Atomic Safety and Licensing Board ruled that a plan for a proposed uranium mine could proceed, despite the lack of mandated consultation with the Oglala Sioux Tribe. This proposed mine, referred to as the Dewey Burdock Project, is being pushed by Powertech, a subsidiary of Azarga Uranium, a Canadian corporation; their plan is for an in situ mining. They propose to drill wells across a 17 square mile area to inject a water-based solution underground to dissolve the uranium and then draw the solution and the uranium up to the surface for processing. The water would come from local aquifers and would be injected back underground after mining. This process raises intense local fears that it will pollute the aquifer and underground water sources.

E. *PUEBLO NATION:*

The Laguna Pueblo Village of Paguate was the site of the Atlantic Richfield–Anaconda Minerals Company's Jackpile–Paguate Uranium mine, which was once the world's largest open-pit uranium extraction site. [47]

The Acoma Pueble–Mt. Taylor area is of special cultural significance, in that it is

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[46] United States Department of Energy. *Environmental Assessment of No Remedial Action at the Inactive Uraniferous Lignite Ashing Sites at Belfield and Bowman, North Dakota*. 1997. Available at https://www.energy.gov/sites/prod/files/EA-1206-FEA-1997_1.pdf.

[47] United States Environmental Protection Agency. *The Legacy of Abandoned Uranium Mines in the Grants Mineral Belt, New Mexico.* November 2011. Available at https://www.epa.gov/sites/production/files/2015-08/documents/uranium-mine-brochure.pdf

one of the four sacred mountains of the Navajo, and it is also sacred to the Laguna, Zuni and Hopi Nations. Despite this irreplaceable cultural importance, this area was subject to extensive uranium mining from the 1950s to the 1970s; and current proposals call for the uranium mining to start again there. [48]

F. *WESTERN SHOSHONE NATION AND YUCCA MOUNTAIN:*

The Yucca Mountain Nuclear Waste Repository was designated by the Nuclear Waste Policy Act [49] amendments of 1987 [50] to be a deep geological repository facility for spent nuclear fuel rods from all reactors in the United States and for other, high-level nuclear wastes.

Yucca Mountain remains under active consideration by the Trump administration and $120 million in funding for the Yucca project is contained in a recent spending plan that was submitted to Congress, with the support of Energy Secretary Rick Perry.

The Western Shoshone Nation considers the Great Basin area, which includes Yucca Mountain, as sacred:

> To the Western Shoshone people Yucca Mountain is part of a seamless sacred landscape known in the Shoshone language as *Newe Sogobia*. *Newe* is what the Western Shoshone call themselves meaning, the people. *Sogibia* is the name of Mother Earth. Used together, *Newe Sogobia* is the political, social, cultural and spiritual

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[48] Indigenous World Association and Laguna-Acoma Coalition for a Safe Environment. *Joint Alternative Report of Indigenous World Association and Laguna-Acoma Coalition for a Safe Environment: The Case of Mt. Taylor, A Sacred Cultural Landscape*. Submitted to the United Nations Committee on the Elimination of Racial Discrimination, 21 July 2014. Available at https://tbinternet.ohchr.org/Treaties/CERD/Shared%20Documents/USA/INT_CERD_NGO_USA_17696_E.pdf

[49] 42 U.S.C. § 10101 *et seq*..

[50] 42. U.S.C. § 10172.

embodiment of Western Shoshone people and land as a nation. [51]

The Western Shoshone Nation also maintains that Yucca Mountain is within their treaty recognized territory, pursuant to the 1863 Treaty of Ruby Valley; and the Nation is adamantly opposed to the creation of a nuclear dump on their sacred and treaty protected territory, because it violates the historical, cultural and spiritual connection with the lands and the area.

In 1994, the Western Shoshone National Council joined with their Southern Paiute neighbors to form the Nuclear Risk Management for Native Communities Project to study the reasons for the incidence of cancer and other health consequences from the fallout from nuclear weapons testing in the 1950s at the Nevada Test Site, which is also located on Western Shoshone lands. This Project found that Western Shoshone and Southern Paiute people were being exposed to radiation through unique pathways that included diet, shelter and mobility. Radiation exposure for adults is as much as 15 times greater than non-Native American communities downwind, as much as 39 times greater for children and as much as 60 times greater for in utero exposure. [52]

G. *HUALAPAI AND HAVASUPAI NATIONS:*

The Hualapai and Havasupai Nations' Reservation is in northwestern Arizona and these nations currently ban uranium mining on their recognized territory. However, their lands, waters and cultural connections to their original lands are threatened by uranium mines on the north and south of the Grand Canyon, on public lands. [53]

In 2012, the Secretary of Interior enacted a 20-year moratorium on such uranium

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[51] *A Western Shoshone Perspective on Yucca Mountain,* http://nativeamericannetroots.net/diary/779 , p. 4.

[52] *Id.*, p. 3.

[53] Sislin, Caitlin. "Toxic Legacy for Tribes." *High Country News*, 26 March 2010, https://www.hcn.org/greenjustice/blog/toxic-legacy-for-tribes.

mining so close to the Grand Canyon, to allow time for proper study of the risks and impacts. However, the current administration has planned to overturn this moratorium, in the near future. [54]

H. *WHITE MESA BAND OF THE UTE MOUNTAIN UTE NATION:*

The White Mesa Uranium Mill is located about three miles from the center of the White Mesa Ute community; and the wind often blows from the mill over the community and the groundwater flows from the mine to the community. [55]

Additionally, this mill is where uranium from the Daneros Mine, located on Bears Ears, which are the ancestral lands of the Hopi, Ute Mountain Ute and the Navajo Nations, would be transported for processing, under current plans. [56]

I. *SPOKANE NATION:*

Uranium mining was conducted on Spokane territory from 1955 to 1981, at the Midnight Mine, which was an open-pit mine located about eight miles from nation headquarters at Wellpinit, Washington. [57]

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[54] Walters, Joanna. "In the Grand Canyon, Uranium Mining Threatens a Tribe's Survival." *The Guardian*, 17 July 2017, https://www.theguardian.com/environment/2017/jul/17/grand-canyon-uranium-mining-havasupai-tribe-water-source.

[55] Penrod, Emma. "The Water Around a Utah Uranium Mill is Growing More Polluted. What Does It Mean for the Nearby Town?" *The Salt Lake Tribune*, 21 October 2018, https://www.sltrib.com/news/environment/2018/10/21/ute-tribal-members-living/

[56] Maffly, Brian. "Feds Approve Uranium Mine Expansions in Utah's San Juan County, One of Them Near Bears Ears." *The Salt Lake Tribune*, 28 February 2018, https://www.sltrib.com/news/environment/2018/02/28/feds-approve-uranium-mine-expansions-in-san-juan-county/

[57] United States Environmental Protection Agency. "Case Summary: Cleanup Agreement Reached at Former Uranium Mine on Spokane Indian Reservation." 13 April 2017, https://www.epa.gov/enforcement/case-summary-cleanup-agreement-reached-former-uranium-mine-spokane-indian-reservation

J. *DENE AND CANOE LAKE CREE FIRST NATIONS:*

The Dene reserve lands in the Athabasca Basin in northern Saskatchewan [58] are currently the world's leading source of high-grade uranium, and currently the main source of the uranium being used in the United States. [59]

VI. HOW THE THREE AGING NUCLEAR REACTORS IN SCRIBA, NEW YORK ARE INTERFERING WITH THE STEWARDSHIP RESPONSIBILITIES OF THE ONONDAGA NATION LEADERS AND H.E.T.F. TO PROTECT THE NATURAL WORLD FOR FUTURE GENERATIONS:

HARMS CAUSED BY NORMAL, INCIDENT-FREE OPERATION OF THE THREE OSWEGO REACTORS:

A. *WATER WITHDRAWALS, RELEASES AND CONSUMPTION:*

Each of the three reactors at Sriba, near Oswego--Nine Mile Point 1 and 2 and Fitzpatrick--depends on withdrawal massive volumes of water from Lake Ontario for cooling purposes; a large portion of this lake water is not returned to the lake, but is "consumed" by evaporation. This consumption has at least two negative impacts on the Lake Ontario and the downwind Tug Hill ecosystems: (a) the volume of water in the Lake is reduced, and (b) tritiated moisture is added to the atmosphere to be carried by the prevailing winds to the east, adding to the already record breaking snowfalls and rains in the Tug Hill Plateau.

The volumes of water consumed by each of the reactors has been calculated by

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[58] Cuffe, Sandra. "Uranium's Chilling Effects." *The Media Co-Op*, 21 November 2013, http://www.mediacoop.ca/story/uraniums-chilling-effects/19083

[59] "About Uranium." *Natural Resources Canada*, 6 October 2014, https://www.nrcan.gc.ca/energy/uranium-nuclear/7695 (Canada as leading source of uranium for U.S.) "Nuclear Explained: Where Our Uranium Comes From." *United States Energy Information Administration*, 26 September 2018. https://www.eia.gov/energyexplained/index.php?page=nuclear_where

the Union of Concerned Scientists, in the following amounts:

a. Nine Mile Point 1: intake from Lake Ontario: 5,348,000 gallons per year; consumption: 3,264,000 year;

b. Nine Mile Point 2: intake from Lake Ontario: 10,493,000 gallons per year; consumption: 5,537 000 year; and

c. Fitzpatrick: intake from Lake Ontario: 7,367,000 gallons per year; consumption: 4,496,000 year; [60]

Therefore the total, annual volume of water consumed by these three reactors, and not returned to Lake Ontario, is 13,297,000 gallons.

B. *HARM TO LAKE ONTARIO FISH POPULATIONS: FISH ENTRAINMENT AND IMPINGEMENT:*

The massive volumes of water taken from Lake Ontario also have negative impacts on the fish populations in the Lake, which include "entrainment"–fish small enough are pulled through the screens in the intake systems and sucked into the internal cooling pipes and systems, and "impingement"– larger fish which are unable to pass through the screens are trapped in the intakes. NYS DEC denied water use permits to Indian Point for these very same issues.

For Nine Mile Point 1 and 2, a 1976 study revealed that the maximum weekly entrainment for alewife was estimated at 350 million eggs and 4.9 million larvae; and that the maximum weekly entrainment for rainbow smelt was estimated at 1.5 million eggs and 205,000 larvae. [61]

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[60] Union of Concerned Scientists. *UCS EW3 Energy-Water Database V.1.3*. 2012. www.ucsusa.org/ew3database.

[61] United States Nuclear Regulatory Commission. *Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 24, Regarding Nine Mile Point Nuclear Station Units 1 and 2.* 2006, pp. 4-13 to 4-17. Available at https://www.nrc.gov/docs/ML0612/ML061290310.pdf.

A study from April to August of 1997 estimated that the entrainment of alewife, tessellated darter, and threespine stickleback during study period were 78.7 million, 3.6 million, and 2.4 million, respectively. [62]

The estimated total number of alewife, which were the most common species found during study period, impinged from 1973 to 1997 was 13,894,754; for an annual average of 578,823. The highest impingement rates were usually observed during spring when alewife and rainbow smelt move inshore to spawn. [63]

For Fitzpatrick, the estimated total number of alewife impinged 1976-1997 was 7,546,639. [64]

The Nuclear Regulatory Commission used the above cited data from the Nine Mile Point studies on entrainment in the Supplemental Environmental Impact Study (SEIS) for the most recent license renewal, which was published in 2008. In its comments on the SEIS, the United State Fish and Wildlife Service stated: "*The Service considers the entrainment of fish to be one of the most significant adverse environmental effects of this facility*." [65]

C. *THERMAL POLLUTION:*

Another adverse environmental impact from the use of massive volumes of water for cooling purposes is the thermal pollution that the system discharges cause in Lake Ontario, because the discharges add heat to the Lake and therefore, have a negative impact on the native, cold-water fish population. Also, the added heat, when combined

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[62] *Id.*

[63] *Id.*

[64] United States Nuclear Regulatory Commission. *Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 231, Regarding James A. Fitzpatrick Nuclear Power Plant.* 2008, p. 4-17.

[65] *Id*, p. A-19.

with water temperature increase from climate chaos, is a contributing factor to the increase of harmful algae blooms.

The thermal pollution from these reactors is governed under the State Pollutant Discharge Elimination System (SPDES). For Nine Mile Point 1, the 2014 SPDES permit renewal sets the maximum temperature for the discharge at 115 degrees F, and the maximum increase in temperature between the intake and discharge at 35 degrees F. Further, the permitted daily maximum net rate addition of heat to the Lake was limited to 4,405 million British thermal units (MBTUs) per hour. [66]

For Nine Mile Point 2, the 2014 SPDES permit renewal sets the maximum temperature for the discharge at 110 degrees F, and the maximum increase in temperature between the intake and discharge at 30 degrees F. Further, the permitted daily maximum net rate addition of heat to the Lake was limited to 407 million British thermal units (MBTUs) per hour. [67]

For Fitzpatrick, the 2008 SPDES permit renewal sets the maximum temperature for the discharge at 112 degrees F, and the maximum increase in temperature between the intake and discharge at 32.4 degrees F. Further, the permitted daily maximum net rate addition of heat to the Lake was limited to 6,000 MBTUs per hour. [68]

Thermal pollution and increases in lake water temperatures have negative impacts on aquatic life and ecosystems, which include negative effects on individual fish, including changes in metabolic rate, appetite and digestion, swimming rate, growth rate, susceptibility to disease and parasites. Thermal pollution also caused changes in

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[66] United States Environmental Protection Agency. "Effluent-Charts, Nine Mile Point Nuclear LLC." *Enforcement and Compliance History Online*. echo.epa.gov/effluent-charts#NY0001015. Accessed 22 October 2018.

[67] *Id.*

[68] United States Environmental Protection Agency. "Effluent Charts, James A. Fitzpatrick Nuclear Power Plant." *Enforcement and Compliance History Online*. echo.epa.gov/effluent-charts#NY0020109. Accessed 22 October 2018.

patterns of spawning and reproduction. [69]

Thermal pollution also causes alteration in the food chain due to the different abilities of some species to adapt; and increased heat causes the multiplication of bacteria, which can result in water bird mortality. [70]

As noted above, an increase in water temperature creates favorable conditions for the multiplication and increases of cyanobacteria (known popularly as blue-green algae, or harmful algae blooms). [71]

VII. THE DANGERS OF THE THREE AGING NUCLEAR POWER REACTORS IN SCRIBA, NEW YORK AND THE DIRECT HARM THAT WOULD RESULT TO THE ONONDAGA AND HAUDENOSAUNEE PEOPLE, ONONDAGA NATION LANDS AND WATERS FROM ROUTINE AND ANY ACCIDENTAL RELEASE OF RADIATION FROM THESE REACTORS:

A. DESIGN FLAWS IN ALL THREE REACTORS WHICH CAUSE INCREASED DANGERS:

All three Scriba reactors, Fitzpatrick and Nine Mile Point 1 and 2, are General Electric Boiling Water Reactors (GE BWR). This is the same design as the reactors at Fukushima Daiichi in Japan.

GE BWR reactors have two fundamental design flaws which increase the risks and dangers to the surrounding human populations and to the nearby air, water and land.

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[69] Shiomoto, Gail T., and Betty H. Olson. "Thermal Pollution Impact Upon Aquatic Life." *Journal of Environmental Health*, vol. 41, no. 3, 1978, pp. 132–139.

[70] John, James E. "Thermal Pollution: A Potential Threat to Our Aquatic Environment." *Boston College Environmental Affairs Law Review*, vol. 1, no. 2, 1971. Available at https://lawdigitalcommons.bc.edu/cgi/viewcontent.cgi?article=2037&context=ealr.

[71] Clarke, H. A. "Effects of Thermal Discharges from the Nuclear Power Industry." In *Canadian Nuclear Association, Thirteenth Annual International Conference, Toronto, Canada. Volume 2: Interface between the Environment and the Nuclear Industry*. 1973, p. 15. Available at https://inis.iaea.org/collection/NCLCollectionStore/_Public/05/141/5141541.pdf.

These flaws are that (a) the containment vessel is not as physically robust as competing designs; and (b) the spent fuel rods are stored on upper floors and not in cooling pools at ground level.

Shortly after the Fukushima Daiichii disaster began, the New York Times ran an article entitled: "*Experts Had Long Criticized Potential Weakness in Design of Stricken Reactor"* [72] which primarily discussed the weakness in the containment vessel and pressure relief system.

The article first described that problem:

> When the ability to cool a reactor is compromised, the containment vessel is the last line of defense. Typically made of steel and concrete, it is designed to prevent–for a time–melting fuel rods from spewing radiation into the environment if cooling efforts completely fail.
>
> In some reactors, known as pressurized water reactors, the system is sealed inside thick steel-and-cement tomb. Most nuclear reactors around the world are of this type.
>
> But the type of containment vessel and pressure suppression system used in the failing reactors at Japan's Fukushima Daiichi plant is **physically less robust** and it has been thought to be more susceptible to failure in an emergency than competing designs. [73] (Emphasis added.)

The article also explained that concerns about and criticisms of this weaker containment vessel design are long standing:

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[72] NY Times, March 16, 2011, p. A14, http://nytimes.cpm/2011/03/16/world/asis/16contain.html.

[73] *Id*.

> In 1972, Stephen H. Hanauer, then a safety official with the Atomic Energy Commission, recommended that the Mark 1 (the early model number of GE BWRs) system be discontinued **because it presented unacceptable safety risks**. Among the concerns cited was the smaller containment design, which was more susceptible to explosion and rupture from a buildup in hydrogen–a situation that may have unfolded at the Fukushima Daiichi reactor. Later that same year, Joseph Hendrie, who would become chairman of the Nuclear Regulatory Commission, . . . said the idea of a ban on such systems was attractive. [74] (Emphasis added.)

These were not the only warnings of this design by experts, in this New York Times article:

> Questions about the design escalated in the mid-1980s, when Harold Denton, an official with the Nuclear Regulatory Commission, asserted that Mark 1 reactors **had a 90 percent probability of bursting should fuel rods overheat and melt in an accident**. . .
>
> Several utilities and plant operators also threatened to sue G.E. in the late 1980s after the disclosure of internal company documents dating back to 1975 that suggested that the containment vessel designs were either insufficiently tested or had flaws that could compromise safety. [75] (Emphasis added.)

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[74] *Id.*

[75] *Id.*

RISKS AND CONCERNS SPECIFIC TO THE THREE AGING NUCLEAR REACTORS AT OSWEGO FROM THE ACCUMULATION AND STORAGE OF SPENT FUEL RODS:

B. ROUTINE DISCHARGES OF RADIOACTIVE WATER AND AIR:

The Nuclear Regulatory Commission relies on self-reporting and computer modeling from reactor operators to track radioactive releases and projected dispersion of radioactivity. This results in the fact that a significant portion of the environmental monitoring data is extrapolated and virtual, but not real. [76]

Low-level radiation damages tissues, cells, DNA and other vital molecules in humans and all life forms; there is no safe dose. [77]

One of the main isotopes of concern for both water and air releases from nuclear reactors is tritium, a radioactive isotope of hydrogen, which combines with oxygen to produce tritiated water, and which is readily absorbed through skin, lungs, and GI tract. [78]

Tritium is impossible to remove from air or water by filters. [79]

Tritium is absorbed by trees and plants, including food crops; and when it is consumed, it can become incorporated into tissue cells, where it is extremely dangerous

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[76] Nuclear Information and Resource Services. *Routine Radioactive Releases from Nuclear Reactors*. N.d. Available at https://www.nirs.org/wp-content/uploads/factsheets/routineradioactivereleases.pdf.

[77] University of South Carolina. "Even Low-level Radioactivity is Damaging, Scientists Conclude." *ScienceDaily*, 13 November 2012, www.sciencedaily.com/releases/2012/11/121113134224.htm.

[78] United States Department of Energy. *Primer on Tritium Safe Handling Practices*. 1994, p. 18. Available at https://www.osti.gov/servlets/purl/10196000.

[79] Wald, Matthew L. “Has Trust Leaked Away with Tritium?” *The New York Times*, 20 April 2016. Available at https://green.blogs.nytimes.com//2010/04/20/has-trust-leaked-away-with-the-tritium/.

to human health. [80]

A nuclear reactor's fuel rods, pipes, tanks and valves can all leak; and as a nuclear reactor ages, so does its equipment, and leaks generally increase. The three Oswego/Scriba reactors are all old and are already operating beyond their projected life spans. Therefore, the risks of leaks is greater from these aging reactors. [81]

Additionally, some contaminated water is intentionally removed from the reactor vessel to reduce the amount of the radioactive and corrosive chemicals; the water is filtered and then either recycled back into the cooling system or released into the environment. [82]

Some radioactive fission gases from the reactor cooling water are contained in decay tanks for days before being released into the atmosphere through filtered rooftop vents; and some gases leak into the reactor buildings' interiors and are released during periodic purges. [83]

The gases released, in addition to tritium, include noble gases such as xenon-135 and krypton-85, which rapidly decay to dangerous daughter isotopes such as cesium-135 and strontium-90. [84]

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[80] Calmon, Philippe and Jacqueline Garnier-Laplace. *Tritium and the Environment*. ISRN, 2010. Available at https://www.irsn.fr/EN/Research/publications-documentation/radionuclides-sheets/environment/Documents/Tritium_UK.pdf.

[81] Makhijani, Annie and Arjun Makhijani. "Radioactive Rivers and Rain: Routine Releases of Tritiated Water From Nuclear Power Plants." *Science for Democratic Action*, vol. 16, no. 1, 2009. Available at https://ieer.org/wp/wp-content/uploads/2012/01/SDA-16-1.pdf.

[82] *Id.*

[83] Lochbaum, *David. Routine Releases of Routine Releases of Radioactive Materials from U.S. Nuclear Plants*. Union of Concerned Scientists, 2014. Available at https://cdn.allthingsnuclear.org/wp-content/uploads/2014/10/20140818-Routine-Releases-Rev-1.pdf.

[84] Radioactive Effluent Release Reports for all three reactors are available at https://www.nrc.gov/reactors/operating/ops-experience/tritium/plant-specific-reports/nmp1-2.html.

C. THE DANGERS PRESENTED BY THE LARGE AND EVER INCREASING VOLUMES OF SPENT FUEL RODS and THEIR RADIOACTIVE ISOTOPES*:*

A nuclear reactor produces hundreds of radioisotopes, or radioactive substances, such as krypton-85, cesium–137, and strontium–90. Neutron bombardment of uranium can also create heavier radioisotopes, such as plutonium-239. [85]

Plutonium-239, which is one of the components of spent fuel, decays into various radioactive substances, such as thorium and radium. [86]

Radioisotopes produced in a reactor can remain extremely hazardous from a few days to many hundreds of thousands of years; these radioisotopes remain in the fuel assemblies and as components of the resulting spent fuel. [87]

The plutonium-239 in spent fuel has a half-life of 24,200 years and must be isolated from the environment for at least 100,000 years for it to decay to a safe level. [88]

D. STORAGE TECHNOLOGIES FOR SPENT FUEL RODS and THE DANGERS CREATED BY THEIR ACCUMULATION AT REACTORS*:*

When spent fuel rods are removed from a reactor, they are thermally hot and intensely radioactive; they must be immersed in deep pools of water, which cools the spent fuel and shields the environment from the isotopes in the fuel. This means that cooling water must be continuously circulated in the pools, which requires an

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[85] United States Government Accountability Office. *Spent Nuclear Fuel: Accumulating Quantities at Commercial Reactors Present Storage and Other Challenges.* GAO-12-797. Washington, DC, 2012, p. 7. http://purl.fdlp.gov/GPO/gpo33055.

[86] *Id.*, p. 12.

[87] *Id.*, p. 7.

[88] Martin, Alex. "In Search of a Nuclear Disposal Site." *The Japan Times*, 7 May 2011. Available at https://www.japantimes.co.jp/news/2011/05/07/national/in-search-of-a-nuclear-disposal-site/.

uninterrupted source of power. [89]

Once placed in a holding pool, spent fuel rods continue to decay and they continue to generate enormous amounts of heat. Therefore, the water must be continually circulated and cooled. [90]

Spent fuel rods can be put into dry cask storage once they have aged long enough to be cooled by passive air ventilation—generally after about 5-7 years. This dry cask storage typically consists of a stainless steel canister placed inside a larger stainless steel or concrete cask. [91]

Because refueling requires downtime, reactor operating cycles have been lengthened to generate more electricity and reduce costs. [92]

Another method of cost savings has been the use of fuel with higher levels of uranium, which can burn longer and thereby increase the periods between shutdowns for refueling. This fuel is referred to as high-burn-up fuel, and it is hotter and more radioactive when removed from a reactor core. Therefore, the length of time that it must remain in a pool is extended. [93]

The higher levels of uranium in the fuel rods can cause the cladding [94] around a spent fuel rod to become brittle; it also leads to higher pressure from hydrogen and other radioactive gases inside the cladding; all this increases risk that the cladding will fail,

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[89] *Id*., p. 3.

[90] *Id*., p. 12.

[91] *Id*., p. 3.

[92] Alvarez, Robert. *Spent Nuclear Fuel Pools in the U.S: Reducing the Deadly Risks of Storage*. Washington, D.C: Institute for Policy Studies, 2011, p. 16. Available at https://ips-dc.org/wp-content/uploads/2011/05/spent_nuclear_fuel_pools_in_the_US-final.pdf.

[93] Government Accountability Office, *Id*., p. 13.

[94] "Cladding" is the outer layer of the fuel rods, situated between the coolant and the nuclear fuel.

allowing the escape of radioactive materials. [95]

In March 2010, Gregory Jaczko, who was then the Nuclear Regulatory Commission Chairman, told industry officials at a conference that spent fuel should be stored primarily in dry casks that meet safety and security standards for several centuries.

However, due to cost, operators keep rods in pools until the pools are at full capacity, meaning that only about 25% of domestic spent fuel is stored in dry casks. Keeping the rods in the cooling pools is less expensive that moving them into dry cask storage. [96]

In the original designs for spent fuel storage pools, the spent rods were packed at relatively low densities, which allowed for better cooling water circulation and more effective cooling. However, operators have replaced these low-density racks with higher-density racks to delay transfer to dry casks for as long as possible. [97]

As a result of this "re-packing" or increased density of storage, spent fuel rods are being stored at an average density of four times higher than originally intended; this increased density creates increased safety risks, given the need to constantly cool the spent fuel rods. [98]

The higher density of storage of spent fuel rods causes degradation in the neutron-absorbing materials that are required to prevent a self-sustaining chain reaction from starting; and it creates an added stress on the cooling systems. [99]

The higher storage density also strains storage pool cooling and cleaning

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[95] Institute for Policy Studies, *Id.*, p. 2.

[96] *Id.*

[97] Government Accountability Office, *Id.*,p. 13.

[98] Alvarez, *Id.*, p. 6.

[99] *Id.*, p. 16.

systems, with spare pumps and heat exchangers operating for periods far longer than originally intended. [100]

Spent fuel rod storage pools have at least two potential hazards. If a leak develops it could drain enough water to expose the fuel, or the water circulation system used for cooling could fail, which would cause the hot fuel rods to boil off the water in which they are stored. If the fuel rods were exposed to air and steam, the zirconium cladding would catch fire, at about 800 degrees Celsius. [101]

According to the Government Accountability Office, the worst-case scenario for spent fuel at reactor sites is the possibility of a self-sustaining fire in a spent fuel pool, which could spread to all assemblies in the pool and could release massive amounts of radioactivity. [102]

According to a 1997 report for the Nuclear Regulatory Commission done by the Brookhaven National Laboratory, a severe pool fire could render about 188 square miles around the nuclear reactor uninhabitable, cause as many as 28,000 cancer fatalities and result in $59 billion in damages. [103]

Further, spent fuel pools are not under the same type of containment that the reactor vessels are. This less safe containment makes a release of radioactive material into the atmosphere much more likely in the case of an accident or fire. [104]

In addition to the risks created by the over-packing of too many spent fuel rods in the aging cooling pools, much concern has been expressed about the risks of terrorism, which are increased by the scattered and often remote reactor locations:

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[100] *Id*.

[101] Alvarez, *Id*., p. 18.

[102] Government Accountability Office, *Id*., p. 28.

[103] Alvarez, *Id*., p. 18.

[104] Alvarez, *Id*., p. 16.

> The probability of terrorist attacks on spent fuel storage cannot be assessed quantitatively or comparatively. Spent fuel storage facilities cannot be dismissed as targets for such attacks because it is not possible to predict the behavior and motivations of terrorists, and because of the attractiveness of spent fuel as a terrorist target given the well known public dread of radiation. [105]

In addition to potential terrorist acts, there are several events could cause a loss of pool water, including leakage, evaporation, siphoning, pumping, aircraft impact, earthquake, the accidental or deliberate drop of a fuel transport cask, reactor failure, or an explosion inside or outside the pool building. [106]

Recently, a new danger has been added to this list–the ever increasing risk of flooding, due to climate chaos. Every reactor in the US is located on the shores of a water body, because the water is essential for cooling. The risks of flooding are ever increasing, due to intense and more frequent rain events. Lake Ontario has reached record high levels in 2 of the past 3 years, causing massive shoreline flooding and damage and coming within one foot of overflowing and flooding the Scriba reactors. Such flooding could well begin the series of catastrophic events seem at Fukushima.

Since 1981, there have been at least 66 incidents at United States nuclear reactors in which there was a significant loss of spent fuel cooling water. One of the major threats from the Fukushima reactor disaster was the loss of cooling water surrounding the spent fuel rods, which were stored in cooling pools on upper floors. [107]

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[105] National Research Council. *Safety and Security of Commercial Spent Nuclear Fuel Storage: Public Report*. Washington, DC: The National Academies Press, 2006, p. 6. https://doi.org/10.17226/11263.

[106] Alvarez, *Id*., pp. 18-19.

[107] *Id*., p. 2.

VIII. THE DANGERS TO THE ONONDAGA NATION, ITS WATERS AND ITS PEOPLE FROM THE CURRENT TRANSPORT OF NUCLEAR WASTES DOWN INTERSTATE ROUTE 81, DIRECTLY THROUGH THE NATION'S CURRENTLY RECOGNIZED TERRITORY:

The Onondaga Nation's currently recognized territory [a/k/a: "reservation"] contains about 7,500 acres and is located just to the south of the City of Syracuse. Interstate Route 81 cuts directly through this territory for approximately four (4) miles.

About two years ago, the United States Department of Energy quietly started allowing shipments of highly radioactive nuclear waste to travel from Ontario, Canada, across the Thousand Islands Bridge, down Route 81, through Onondaga Nation territory, and eventually to a processing plant in South Carolina.

These shipments illustrate a forgotten problem that has been created and continues to be created by the nuclear industry: the dangers inherent in nuclear wastes and how to store, transport and process them.

These shipments were confirmed in a May 19, 2017 article in the *Syracuse Post Standard*, entitled: "Did feds begin secret shipments of nuclear waste on I-81 in Upstate NY?" [108]

This article goes on to state that up to 150 shipments have been approved by the Department of Energy; and that they will either be sent down Route 81, or on an alternative route, from the Chalk River Laboratories in Ontario, across the Peace Bridge, through Buffalo, and then through Seneca Nation territory. Further the article continues:

> No federal agency announced the start of the shipments last month. The only confirmation came from an inspection report posted last week to the website of the Defense Nuclear Facilities Safety Board.

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[108] Https://www.syracuse.com/politics/index.ssf/2017/05/did_feds_begin_secret_shipments_of_nuclear_waste_on_I-81_in_upstate_ny.html.

> The board is an independent federal organization that advises the president about public health and safety issues at Department of Energy defense nuclear facilities.
>
> An April 21[, 2017] inspector report posted to the board's website on May 12 from the Savannah River Site noted that "personnel started processing the first shipment of liquid Highly Enriched Uranium (HEU) this week."
>
> During the process, the inspector wrote, workers found an "unexpected hotspot" on the side of the lead-lined container or "pig" holding the nuclear material. [109]

In 2012 and 2014, leaders of the Onondaga Nation met with Department of Energy officials at the Nation Longhouse, when the Nation was informed of the plans for such shipments of highly radioactive liquid wastes down Route 81. At these meetings, the Nation leaders were firm and clear that they opposed any such shipments through their sovereign territory. The Nation considers this transport, through their recognized territory in defiance of their authority and will, as a treaty violation, in violation of the 1794 Treaty of Canandaigua. Federal officials ignored the Nation's position. [110]

The substance that is being transported is uranyl nitrate, rather than the more common, solid uranium compounds. Uranyl nitrate is produced by dissolving yellow-cake or spent fuel rods in nitric acid; and it is an interim compound in nuclear reprocessing. Uranyl nitrate presents a "severe fire and explosion risk when heated or subjected to shock in conjunction with oxidizable substances." It is not flammable itself

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[109] *Id*.

[110] This information is from my personal knowledge, learned during my participation in these meetings.

but creates "toxic oxides of nitrogen in fires and intensifies the fires." [111]

Uranyl nitrate is considered fatal if swallowed or inhaled, toxic through contact, and toxic to aquatic life due to solubility. According to the Center for Disease Control, "the toxicity of soluble uranium compounds are at least of an order of magnitude higher than for insoluble uranium compounds." [112]

The driving conditions on Route 81 can be particularly hazardous in the winter months, due to massive amounts of snow, ice, freezing rains and sleet, and winds. The Nation's territory receives a significant amount of snow from the Lake Ontario lake effect and the average annual snow fall is about 130 inches. [113]

Transportation of high-level nuclear material by truck in icy and winter conditions is reckless and dangerous. A January 2016 accident in Saskatchewan, under similarly snowy, icy, windy conditions to Syracuse and Onondaga territory, spilled uranium concentrate across the snow. [114]

The Onondaga Nation, over the past decade, has re-established and enhanced its volunteer fire and rescue department, with millions of dollars of solely Nation funds. The Nation fire department is a member of the mutual assistance agreement with the other volunteer departments in Onondaga County; and as a result of the commitments in this agreement, at least 60 % of the calls that are responded to by the Nation fire department are outside the Nation's currently recognized territory, and a large number

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[111] Https://science.ernegy.gov/~/media/nbl/pdf/price-lists/SDS/SDS-Uranyl_Nitrate_Solution.pdf.

[112] Https://www.atsdr.cdc,gov/ToxProfiles/tp150-c2.pdf.

[113] I live about 15 miles south of Syracuse, in Tully, New York; and I drive to and from my office in Syracuse, along Route 81, through the Nation territory, at least once a day. There are days when weather conditions along Route 81 are too severe for this commute; and accidents along 81 are an almost daily occurrence in the winter months.

[114] Https://www.cbc.ca/news/canada/saskatchwan/uranium-spill-cleaned-up-highway-4-1-3401625.

are in response to accidents along Route 81, on or near the Nation territory.

Consequently, if one of these trucks carrying high-level nuclear wastes has an accident on Route 81 on or near the Nation's territory, the Nation fire department personnel will be the first responders to arrive at the scene; and they will be exposed to the radiation dangers from such an accident.

Additionally, at least two feeder creeks and streams flow in a westerly direction, under Route 81, until they merge with Onondaga Creek on the Nation's territory. One of these creeks. Hemlock Creek, is used by the Nation's children for swimming and by Nation citizens for fishing and gathering of medicinal plants.

A review of the history of nuclear waste transportation in the United States reveals that there have been 72 documented accidents in the period up to 2002. Four of these accidents included "radioactive material contamination beyond the transportation vehicle." [115]

There is currently no approved repository for nuclear wastes; and even if there were, transporting nuclear wastes dramatically increases a host of risks to the Haudenosaunee nations. Therefore, nuclear waste that continues to be created in New York state will remain in the state for the foreseeable future, thereby increasing environmental and economic costs.

IX. THE CURRENT STATE PLAN TO SUBSIDIZE THE LAKE ONTARIO REACTORS IS MORE EXPENSIVE AND RELEASES MORE CO 2 THAN SHUTTING THEM DOWN AND REPLACING WITH RENEWABLES:

Recent studies have shown that keeping reactors operating with subsidy is the more expensive option and will actually result in increased CO 2 emissions:

> In sum, in all cases examined, subsidizing the three upstate nuclear reactors to stay open increases both C0 2 emission and costs

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[115] Https://www.nuclearactive.org/graphix/transport_accidents.pdf.

relative to the renewable scenarios. . . .

> In conclusion, our findings are in line with other research, . . . [which] agree that nuclear power is often uneconomical without subsidies. Moreover, both authors conclude that, like with our calculations, nuclear typically save less CO 2 emissions that shutting these plants down and reinvesting the funds in renewables. **In other words, electricity from renewables reduces carbon emissions much faster and more efficient[ly] than nuclear power does.** [116] (Emphasis added and citations omitted.)

Additionally, as stated above, recent scholarly writing has verified that nuclear reactors do not have zero carbon emissions, when the entire life-cycle of the uranium process is properly factored in.

> There is not such thing as a zero- or close-to-zero emission nuclear power plant. Even existing plants emit due to the continuous mining and refining of uranium for the plant. However, all plants emit [CO 2] from the water vapor and heat they release. This contrasts with solar panels and wind turbines, which reduce heat or water vapor fluxes to the air . . . for a net [reduction]. . . . [117]

Additionally, time is running out for us to take every step we can to reduce climate collapse, as we were just reminded in the fall of 2018 that we have only ten (10) years to act, if we are to have a chance to save Mother Earth. Consequently, the industry push to

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[116] "*Carbon emissions and costs associated with subsidizing New York nuclear instead of replacing it with renewables*." by Felix Cebulla and Mark Z. Jacobson, Journal of Cleaner Production 205 (2018) 884–894;

[117] " *Evaluation of Nuclear Power as a Proposed Solution to Global Warming, Air Pollution, and Energy Security,"* by Mark Z. Jacobson, a chapter in the Textbook in Preparation: *100% Clean, Renewable Energy and Storage for Everyone*, https://web.stanford.edu/group/efmh/jacobson/WWSBook/WWSBook.html

construct new nuclear reactors has become illogical and absurd:

> New nuclear plants cost 2.3 to 7.4 times those of onshore wind or utility solar PV per kWh, take 5 to 17 years longer bwtween planning and operation, and produce 9 to 37 times the emissions per kWh as wind. [118]

The findings in these studies received an overwhelmingly clear validation on May 16, 2019, when an Op Ed article appeared in the *Washington Post,* [119] by Gregory Jaczko, who served on the Nuclear Regulatory Commission from 2005 to 2009, and as its chair from 2009 to 2012, and who teaches at both Georgetown University and Princeton University. Prof. Jaczko relates his personal awakening from being pro-nuclear, partially due to concerns about climate change and the carbon emissions of fossil fuel electricity production; to unsuccessfully working to attempt to ensure reactors in the United States were "safe enough" after the Fukushima Daiichi disaster; to his current understanding that nuclear reactors are not safe, are too expensive to operate and should all be phased out of operation:

> **I now believe that nuclear power's benefits are no longer enough to risk the welfare of the people living near these plants. . . . This tech is no longer a viable strategy for dealing with climate change, nor is it a competitive source of power. It is hazardous, expensive and unreliable, and abandoning it wouldn't bring on climate doom**.
>
> The real choice now is between saving the planet or saving the dying nuclear industry. I vote for the planet. (Emphasis added.)

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[118] *Id.*

[119] https://www.washingtonpost.com/outlook/i-oversaw-the-us-nuclear-industry-now-i-think-it-should-be-banned/2019/o5/16/a3b8be52-71db-11e9-9...;

CONCLUSION:

The Onondaga Nation, the Haudenosaunee Environmental Task Force and the American Indian Law Alliance have issued this Red Paper so that the voice of Indigenous peoples can be heard to document the vast harms from the nuclear power industry; and so that the process of healing from these harms can begin.

The nuclear industry, both historically and currently, presents another example of capitalism placing profits before all else. The list of past and on-going treaty violations is long and troublesome; and the deaths of, and devastating human health damage to, Indigenous peoples are merely collateral damage to these corporations and the US government.

We must all work together to protect Mother Earth for the future generations by reducing greenhouse gas emissions and other measures. However, prolonging the use of aging nuclear reactors, without a viable plan for the handling of spent fuel rods, at the expense of electric rate payers is not an acceptable "solution". The billions of dollars that have been designated for this nuclear bail-out would be much better spend on promoting truly green alternative energy generation, electric car promotion and infrastructure and high-speed rail projects.

Dated: January 30, 2020
Onondaga Nation Territory