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Policy Paper

Depolarizing Uranium Mining near the Grand Canyon

1. Identify audience (purpose of the paper)

The purpose of this paper is to contextualize the issues presented by the domestic shift of the uranium market, specifically how reopening uranium mines in the Arizona Northwest would impact the Grand Canyon region. Uranium mining in the Grand Canyon draws up many points of contention as many different interests and priorities are involved, including the energy/mining economy, public health, the environment, national security, politics, the international uranium market, tourism, national park associations, and indigenous populations (Green 2020; Krol 2020; Reimondo 2020). Though the locational scale of the mine extends just miles around the Grand Canyon, the scope of the issue extends throughout the region, the state, the country, and the players in the international mining market. Thus, this paper is intended to inform all stakeholders of uranium mining in the Grand Canyon of these conflicting interests, as well as offer solutions.

First and foremost, this paper addresses those on both sides of this polarized issue. To the mining industry and political constituents, this paper will discuss the potentially damaging effects on the public health of surrounding populations, the surrounding environment and wildlife, and the Grand Canyon tourism industry. To those that oppose further mining in the Grand Canyon, this paper will address why domestic uranium mining is favorable for the economy, national security, and energy utility. This paper will adopt multiple frameworks, from an economic perspective, political perspective, humanitarian perspective, and environmental perspective. We'd like to address legislatures and policymakers, the mining industry and organizations, local tribes and populations, the federal and local government, Grand Canyon

organizations and tourism companies, environmentalists, public health researchers, and economists. Specifically, we call to attention the presidential administration to consider our research and solutions. We understand that it is the direction of the presidential administration that directs the domestic shift of the mining industry, as one of uranium's uses is nuclear energy, which bolsters national security (Green 2020).

With this paper, we hope to open up a dialogue between these stakeholders and present them with solutions that can help reach a middle ground between the conflicting interests. We encourage all stakeholders to fully understand what is at stake - public health, environment, economy, national security - and to understand all conflicting interests of uranium mining near the Grand Canyon in hopes of settling on a depolarized solution.

2. Introduction to the issue - What's at stake (problem)?

Uranium is a helpful material that can help people all over the nation. Uranium can be utilized in a few ways, with one of the main uses being for military use (bombs), but it is mostly used for the production of electricity. Uranium is effective as a producer of electricity since it is many times more powerful than oil, coal, or natural gas. A 1-centimeter pellet of uranium can produce as much energy as 149 gallons of oil, 1 ton of coal, or 17,000 cubic feet of natural gas (NEI, 2020). Unfortunately, not everything about uranium can be good.

First of all, uranium is a radioactive material. Touching it won't do anything but ingesting or inhaling the uranium can cause lung or kidney cancers. This is a huge problem when it comes to mining for uranium in or near the Grand Canyon since there is a nearby body of water named Havasu Creek that functions as the only water supply for around 650 residents of the Havasupai reservation (Watahomigie-Corliss, 2020). Uranium, being like dirt, is quite soluble when in water, so sometimes mining for uranium can cause some of the material to seep into water supplies and contaminate it. The water will then be quite harmful for both people and any other creatures that drink from it.

Along with damage to life, uranium mining causes damages to the areas being mined. The Grand Canyon is one of the 7 natural wonders of the world. It is not something man made that can be easily put back together if an area is needed to be torn down for mining purposes. Not only that, but mining can sometimes leave behind radioactive wastes that may or may not be cleaned up properly by the companies in charge of the job (EPA, 2020). This can be dangerous for people living near mines after they're abandoned and might not have been cleaned properly. Curious children or even tourists might stumble upon these areas eventually.

These problems might cause other problems among people who are separated on the issue. The Canyon Mine can employ up to 60 people and would have enough to mine for about 10 years. Knowing this, there might be people who side on the part of wanting more jobs and taking advantage of technology to produce greater amounts of electricity through less pollution as is the problem with coal and oil. Then there are people who side with wanting to protect nature and the people living near those areas that are being mined. Uranium can indeed be incredibly useful, but sometimes only at the expense of nature, wildlife, and people's homes.

3. Who are the stakeholders (describe their agenda - what is their stake?)

Stakeholders are parties that have an interest in a company or on issue, and can either effect or be affected by what's at stake. One of the stakeholders in the issue presented is the Grand Canyon, as the tourism industry, economy, and safety guidelines will be impacted if uranium mining is further developed near the Grand Canyon.

Being steep sided and covered by Colorado river, the Grand Canyon approximately 6.3 million visitors a year. In 2018, the National Park service data showed that the total profit was approximately \$40.1 billion which benefits the economy a lot in addition creating 329,000 jobs (Fister, 2019). Uranium mining can be a negative influence to the tourism industry. Because the uranium mining and the radioactivity has been contaminating the groundwater continuously and

tourists have been threatened by this. It will be a huge loss for the tourism industry, if the tourists' health is threatened.

In the Grand Canyon's surrounding area, six tribes reside: the Hualapai, Havasupai, Navajo, Hopi, Paiute and Zuni. However, continuous mining will impact more risk to humans and the biological organisms living in these water bodies (rivers), so the Colorado river needs to be protected by waste from the mining site of uranium. If not, the consequences will be similar to drought, where the water will be unusable because of the toxicity to the indigenous population in the entire region. The uranium contaminated water could, over time, potentially lead to fatal health effects like cancer.

Even though uranium mining in the Grand Canyon will likely have potentially negative impacts on many stakeholders, others stand to benefit if the mining is initiated. The mining industry is a stakeholder who will benefit from uranium mining at Grand Canyon. For the mining industry, domestic mining of uranium would improve the availability of the mineral in the industry. Many players in the mining industry would benefit from reduced prices and increased availability of uranium within the country. Currently, the US imports a large amount of uranium it uses mainly because it is cheaper to buy from other countries such as Canada and Australia. According to the U.S. Energy Information Administration, during 2017, owners and operators of U.S. nuclear power plants purchased 40 million pounds of uranium from foreign suppliers. Canada, Australia, Russia, Kazakhstan, and Uzbekistan represented the top five countries of origin and together accounted for 84% of total U.S. uranium purchases in 2017 (Johnson and Shear, 2018). A little more than half of these purchases originated from Canada and Australia, which provided 14 million pounds and 8 million pounds of uranium, respectively. The United States supplied 3 million pounds, or 7% of total uranium purchased by U.S. power plants.

The other stakeholders who would be adversely affected by domestic mining of uranium in the country are the suppliers such as Canada and Australia. Currently, the US imports most of its uranium from Canada and Australia especially because it tends to be cheaper. However, if

the country can mine its own uranium, there would be no need to import large amounts of uranium from these two countries. This translated to a reduction in revenues for Canada and Australia that is directly collected from uranium exports. Depending on the amount of uranium that can be mined from The Grand Canyon, the US may also be an exporter. If the amount of available uranium is large, the US can compete with major exporters such as Canada and Australia.

4. Propose solution(s) (your policy position)

One of the biggest problems with Uranium mines is not the amount of active mines, but the mines that were abandoned. From 1944 to 1986, there were nearly 30 million tons of Uranium ore extracted. However, the mines in which they were extracted from, were abandoned. Today, the mines are closed with a total of around 500 mines being left alone. The best thing that we can do to make things safer is to clean up these mines. In October of 2007, the U.S. House Committee on Oversight and Government Reform, EPA, Bureau of Indian Affairs, The Nuclear Regulatory Commission, the Department of Energy, and the Indian Health Service developed a Five-Year plan to address the contamination. However, nothing is being done towards this plan and it needs to be taken as a priority. If we were to fully commit to doing research on Uranium, getting exact information on the area's range of infection, and funding new ways to keep people safe while within range, this 5-year plan could work in cleaning these old mines. Eventually, we can slowly eliminate these gamma rich mines from affecting those within the area. This is only scratching the surface on possible solutions in fixing Uranium mines.

Another solution to making Uranium mines safer is by updating and fixing the safety guidelines. There's nothing wrong with the contents within the current safety guidelines, but the problem is that the guidelines are a little outdated. These guidelines haven't been updated in almost four years and they need to be updated. The safety of the workers should be taken as a

top priority. By pushing to innovate the guidelines we can make sure everyone understands how to properly mine for Uranium within the mines and keep these workers protected as they're working with high levels of radiation.

In order to improve safety guidelines, it is imperative that studies are done to know exactly what and who is at risk if uranium mining continues in the Grand Canyon area. We would need to obtain concrete evidence by studying the range that the uranium was affecting both the surrounding area and people. Getting in contact with Epidemiologists would boost our information on the possibility of diseases coming from within the area of the uranium mines and how to treat those who have been affected by the uranium in the area.

Without a doubt, Uranium mines have plenty of advantages and have helped greatly to get the world to where it is currently. However, if they are not kept under surveillance and thoroughly researched on, the environment and people within range of them will be greatly affected. By executing the 5-year plan, updating the safety guidelines, and committing to revamp the studies on the mines and Uranium, we could extract more Uranium while keeping the people and environment in the area safe from diseases.

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