

Holtec-CISFEISCEm Resource

From: Kevin Kamps <kevin@beyondnuclear.org>
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To: Holtec-CISFEIS Resource
Subject: [External_Sender] Enclosure #12, attached, re: Docket ID NRC-2018-0052:
Holtec/ELEA's proposed CISF is a violation of environmental justice – that is, it is
environmental racism, radioactive racism (submitted by Kevin Kamps, Beyond Nuclear)
Attachments: native_american.pdf

Per my preceding email.

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Beyond Nuclear aims to educate and activate the public about the connections between nuclear power and nuclear weapons and the need to abolish both to safeguard our future. Beyond Nuclear advocates for an energy future that is sustainable, benign and democratic.

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**MEASURES OF COMMUNITY IMPACT
FOR THE TRANSPORTATION OF HAZARDOUS MATERIALS:
THE CASE OF INDIAN TRIBES AND HIGH-LEVEL NUCLEAR WASTE**

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ABSTRACT

The shipment of high-level nuclear waste to the proposed Yucca Mountain repository would have varying effects on Indian Tribes across the nation. Indian Tribes would likely play a significant role in the shipment of nuclear material because of their unique legal standing. This paper develops basic measures of potential impacts of Yucca Mountain shipments on each identified tribe.

INTRODUCTION

Indian Tribes would likely occupy a special position in the consideration of route selection for spent nuclear fuel (SNF) and high-level radioactive waste (HLW) shipments to the proposed Yucca Mountain repository. Tribes may have substantial power to regulate shipments en route to Yucca Mountain. Although other legal mechanisms have been explored, such as State efforts to regulate shipments under air pollution laws, tribal authority remains untested in court, and potentially represents a thorny issue for these waste shipments.(1)

The National Congress of American Indians (NCAI) has been an active participant in national nuclear waste policy discussions since 1983. "As a national organization representing many tribes on potential transportation routes, NCAI has a sustained interest in the safe transportation of spent nuclear fuel." (2) A number of individual Indian Tribes have also been involved in transportation planning for the U.S. Department of Energy (DOE) Yucca Mountain repository project, and in transportation of transuranic wastes to the DOE Waste Isolation Pilot Plant (WIPP) in New Mexico.

DOE official policy adopted in 2000 states: "Indian nations are sovereign with unique political and legal standing derived from a longstanding relationship.... The Indian nations retain an inherent right to self-governmental authority, and therefore, Federal activities affecting self-governance rights and impacting upon trust resources, require policy implementation in a knowledgeable and sensitive manner protective of tribal sovereignty and trust resources. ... The Department recognizes and commits to a government to government relationship and will institute appropriate protocols and procedures for program and policy implementation." (3)

Tribal authority has also had an effect on interactions with the Nuclear Regulatory Commission (NRC). The NRC has amended its regulations to provide federally recognized tribes with the option to participate in NRC adjudicatory proceedings as an "interested governmental participant," rather than requiring them to intervene as a formal "party" in any proceeding in which they wish to participate. The NCAI has interpreted this action as recognition of tribal sovereignty: "This amendment to the NRC's Rules of Practice recognizes that tribes exercise inherent sovereign powers over their members and territories, similar to the powers exercised by state and local governments. Accordingly, the amendment ensures that tribes have the same options now available to state governments, and their official subdivisions, any of which can take part in NRC proceedings as an "interested government participant." (2)

Shipments of high-level nuclear waste to Yucca Mountain would have different effects on different tribes. This study uses a Geographic Information System (GIS) based analysis to determine which tribes would be most affected by truck shipments to Yucca Mountain. A similar analysis is planned for rail shipments. The current work identifies the scope and location of potential highway shipment impacts on federally-recognized tribes. The results can be used to identify where the most severe effects would occur so that mitigation and emergency response funding may be distributed. Tribes are entitled to such funding under section 180c of the Nuclear Waste Policy Act.

BACKGROUND

The problem posed in this paper is in two parts. First, it is a solution of the transportation problem first posed by Hitchcock in 1941 which requires the identification of the optimal route on a network (4). For this study, Oak Ridge National Laboratory's Webtrags software package was used to determine the shortest routes. (5) The solution to the algorithm used in Webtrags and most routing software is to calculate a route by minimizing the total impedance between the origin and destination. The routes define impedance as a function of distance and driving time for each segment along a route that minimizes these factors as shown below:

$$\left(\sum_{i=1}^n T_i D_i \right) \text{ Min } L \beta \alpha \quad (1)$$

where

L = total impedance of a route;

α = distance bias;

D_i = distance of segment i, miles;

β = time bias;

T_i = time required to travel along segment i, minutes.

The ESRI ARCGIS software package was used to display all the routes simultaneously and then to merge the individual routes. The necessary inputs are the network, the sources and destinations for the shipments. The origin-destination pairs and site-specific shipment numbers were obtained from the DOE Final Environmental Impact Statement (FEIS) for Yucca Mountain. (6) The merged truck routes are shown below in Figure 1. (Note that the origin-destination routes derived from the Webtrags outputs are generally the same as those in the FEIS, except for shipping sites in the southeastern States. The Webtrags routes used in this paper utilize Interstate 40 from Nashville to Barstow, for shipments from the southeastern States. In the FEIS, shipments from the southeastern States were routed north and west, and utilized Interstate 80 from Omaha to Salt Lake City.)



Fig. 1. Shipping sites and truck routes to Yucca Mountain.

The second part of the problem was to create a buffer of varying widths around the route and overlay the buffer onto data that displayed tribal information. The result would provide the ability to determine how tribes were affected differently and how severely the tribes may be affected by the truck shipments to Yucca Mountain. The tribal data was obtained from the Bureau of Indian Affairs (BIA) which publishes annual data that is included in the Bureau of Transportation Statistics annual transportation atlas. (7) This data includes all types of federally recognized tribal jurisdictions. It does not include tribal commercial enterprises that are not on tribal lands.

OVERLAYING THE DATA

The tribal areas affected by potential shipments were examined at ½ mile, 1, 5, and 10 mile distances from either side of the street centerline. An important shortcoming of this analysis is that data about tribal commercial enterprises (casinos, resorts, hotels, smoke shops, etc.) are not included in the BIA data. This is of particular concern because these facilities are most likely to be located near shipping routes. Once the buffers around the routes are calculated, they are then overlaid onto the layer containing the tribal data, as shown in Figure 2. The tribal data contains the traditional census data as well and so it is possible to determine population impacts for each of the various buffer widths.

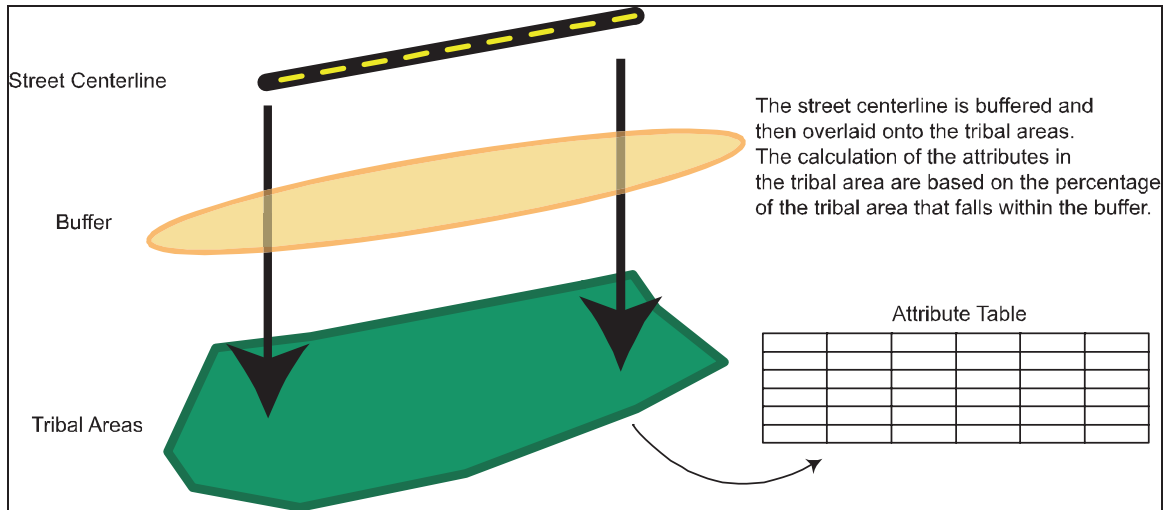


Fig. 2. How the data overlay works.

An example of a detailed view of the bands is shown in Figure 3.

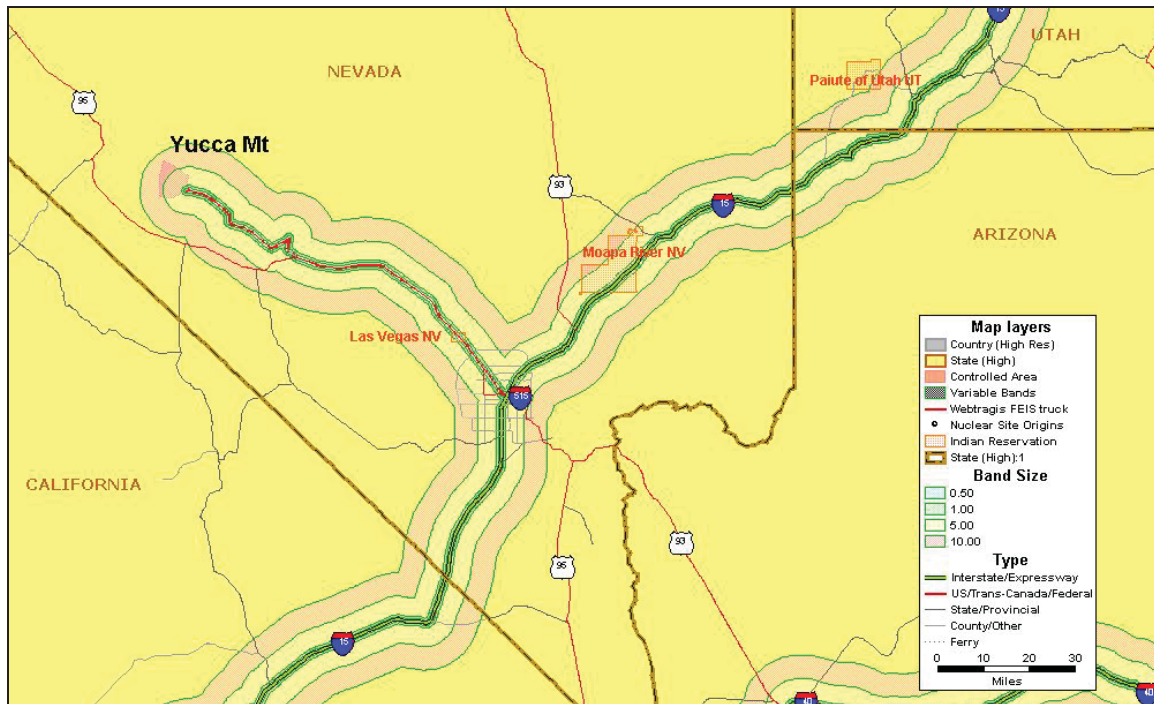


Fig. 3. Bands around truck routes to Yucca Mountain, overlaid on Indian Tribes in Nevada and Utah.

From this GIS analysis, it is possible to develop measures of impact and to determine which tribes may be most affected by shipments to Yucca Mt and the severity of these effects.

ANALYSIS

The results of the data operation yield a number of significant findings about the potential impacts of Yucca Mountain shipments on Indian Tribes. First, tribes affected by truck shipments to Yucca Mountain can be viewed graphically, as shown in Figure 4.



Fig. 4. Indian Tribes affected by truck shipments to Yucca Mountain.

Second, the affected tribes can be listed (or ranked) in order, according to specific measures of impact. One of the cumulative impact measures most frequently used by transportation planners is shipment-miles. Table I shows the twelve Indian Tribes that would be most affected, in terms of shipment-miles, over the proposed 24 years of truck shipments to Yucca Mountain.

Table I. Indian Tribes Most Impacted by Truck Shipment-Miles to Yucca Mountain

| Rank | Name | Shipment Miles |
|------|--------------------------------|----------------|
| 1 | Cheyenne-Arapaho TJSA | 2,363,680 |
| 2 | Cherokee TJSA | 969,513 |
| 3 | Creek TJSA | 899,003 |
| 4 | Navajo Reservation | 798,073 |
| 5 | Laguna Pueblo | 722,745 |
| 6 | Chickasaw TJSA | 468,939 |
| 7 | Absentee Shawnee-Citizens Band | 373,383 |
| 8 | Caddo-Wichita-Delaware TJSA | 313,529 |
| 9 | Moapa River Reservation | 261,685 |
| 10 | Seminole TJSA | 258,003 |
| 11 | Acoma Pueblo | 144,549 |
| 12 | Las Vegas Colony | 98,731 |

Shipment-miles are derived by multiplying the number of shipments traveling across a jurisdiction, by the number of route miles traveled in that jurisdiction, over a certain period of time, or over the life of a project.

There are numerous other ways to define “most affected.” For example, Table II shows the twelve Indian Tribes, with the greatest Native American population, located within ½ mile (in both directions from the centerline) of the potential truck routes to Yucca Mountain.

Table II. Indian Tribes Located within ½ Mile of Potential Truck Routes to Yucca Mountain, Ranked by their Native American Population

| Rank | Name | Type |
|------|---|-------------|
| 1 | Navajo Nation AZ | Reservation |
| 2 | Cherokee OK | OTSA |
| 3 | Navajo Nation NM | Reservation |
| 4 | Creek OK | OTSA |
| 5 | Chickasaw OK | OTSA |
| 6 | United Houma Nation LA | TDSA |
| 7 | Gila River AZ | Reservation |
| 8 | Yakama WA | Reservation |
| 9 | Cheyenne-Arapaho OK | OTSA |
| 10 | Citizen Potawatomi Nation-Absentee Shawnee OK | OTSA |
| 11 | Hopi AZ | Reservation |
| 12 | Sac and Fox OK | OTSA |

In another example, Table III shows the 15 Indian Tribes, with the greatest Native American populations, located within 10 miles (in both directions from the centerline) of the potential truck routes to Yucca Mountain.

Table III. Indian Tribes Located within 10 Miles of Potential Truck Routes to Yucca Mountain, Ranked by their Native American Population

| Rank | Name | Type |
|------|---------------------------|------------------|
| 1 | Maricopa (Ak-Chin) AZ | Reservation |
| 2 | Gila River AZ | Reservation |
| 3 | Celilo OR | Village |
| 4 | Umatilla OR | Reservation |
| 5 | Morongo CA | Reservation |
| 6 | Agua Caliente CA | Reservation |
| 7 | Cabazon CA | Reservation |
| 8 | Las Vegas NV | Colony |
| 9 | Moapa River NV | Reservation |
| 10 | Prairie Island MN | Indian Community |
| 11 | Cattaraugus NY | Reservation |
| 12 | Nanticoke Lenni Lenape NJ | SDAISA |
| 13 | MaChis Lower Creek AL | SDAISA |
| 14 | Yakama WA | Reservation |
| 15 | Tohono O'odham AZ | Reservation |

These tables show that varying the distance from a potential truck route has a substantial effect on which tribes would be affected, and the degree to which they would be affected, by truck shipments to Yucca Mountain.

An additional consideration is the size of the tribal land area affected by the shipments. This is largely determined by the length of the route through the tribal jurisdiction. Table IV shows the 12 Indian Tribes which have the longest routes through their jurisdictions.

Table IV. Indian Tribes with Longest Truck Routes
to Yucca Mountain through their Jurisdictions

| Rank | Name | Miles |
|------|-------------------------------------|-------|
| 1 | Cheyenne-Arapaho TJSA | 116.1 |
| 2 | Chickasaw TJSA | 108.2 |
| 3 | Cherokee TJSA | 60.5 |
| 4 | Creek TJSA | 56.1 |
| 5 | Navajo Reservation | 39.2 |
| 6 | Laguna Pueblo | 35.5 |
| 7 | Umatilla Reservation | 26.9 |
| 8 | Gila River Reservation | 24.2 |
| 9 | United Houma Nation TDSA | 24.2 |
| 10 | Absentee Shawnee-Citizens Band of P | 23.3 |
| 11 | Seminole TJSA | 16.1 |
| 12 | Caddo-Wichita-Delaware TJSA | 15.4 |

There are clearly a number of different ways to identify affected tribal populations. From these few examples, it is immediately clear that the tools exist to do so.

CONCLUSION

DOE has been studying the transportation of high-level nuclear waste to Yucca Mountain for almost two decades. A great deal of discussion has taken place between DOE and potentially affected Indian Tribes, without empirically determining just who may be affected by Yucca Mountain shipments, and to what degree they might be affected. Tribal legal sovereignty, combined with ongoing Native American concerns about the program, suggest that tribal interactions will be a critical to a successful DOE shipping program. This paper shows that with only simple tools and readily acquired data, it is possible to identify the most affected tribes and to locate where the impacts would occur. Understanding where these impacts would occur enables planners to allocate emergency management funds, embark on mutual aid agreements, and develop effective public outreach measures. Most importantly, identifying the potentially affected tribal jurisdictions early in the transportation planning process is essential, if DOE is truly committed to a government-to-government relationship with the affected Indian Tribes.

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