DRAFT Environmental Justice Analysis for the Proposed UIC Permitting Actions for the Dewey-Burdock Uranium In-Situ Recovery Project in the Southern Black Hills Region of South Dakota

1.0 Introduction

This document sets forth the EPA Region 8's Draft Environmental Justice analysis for the proposed Underground Injection Control (UIC) permitting actions and associated aquifer exemption for the Dewey-Burdock Uranium In-Situ Recovery (ISR) Project located in the southern Black Hills region of South Dakota. The EPA will continue to assess potential environmental justice (EJ) considerations and is inviting review and comment on this draft EJ analysis.

Executive Order (E.O.) 12898, entitled *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, was issued by President William J. Clinton in 1994. Its purpose is to focus federal attention on the environmental and human health effects of federal actions on minority and low-income populations with the goal of achieving environmental protection for all communities.

The E.O. directs federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations, to the greatest extent practicable and permitted by law. The order also directs each covered agency to develop a strategy for implementing EJ. The order is intended to promote nondiscrimination in federal programs that affect human health and the environment, as well as provide minority and low-income communities access to public information and public participation. The EPA defines "environmental justice" as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." Further information on the EPA's EJ program and activities is available at: https://www.epa.gov/environmentaljustice.

1.1 National EPA EJ Efforts

The EPA's *Plan EJ 2014* sets forth a foundation for integrating EJ in EPA programs, policies and activities consistent with E.O. 12898. One of the nine cross-agency focus areas in *Plan EJ 2014* is *Considering Environmental Justice in Permitting*, which has the goal of enabling overburdened communities to have full and meaningful access to the permitting process and to develop permits that address EJ issues to the greatest extent practicable under existing environmental laws. The strategies identified to achieve this goal include:

1. Developing tools that will enhance the ability of overburdened communities to participate fully and meaningfully in the permitting process.
2. Concurrent with Strategy 1, developing tools to assist permitting authorities to meaningfully address EJ in permitting decisions.
3. Implementing these tools at the EPA and working with others to do the same.

The Environmental Justice 2020 Action Agenda (EJ 2020) is the Agency's environmental justice strategic plan for 2016 to 2020. EJ 2020 will further integrate environmental justice considerations in all of the Agency's programs, strengthen the EPA's collaboration with partners, and demonstrate progress on significant national challenges facing minority and low-income communities. EJ 2020 builds on the foundation established by Plan EJ 2014 as well as decades of significant environmental justice practice by the Agency, communities, and other environmental justice stakeholders.

The EJ 2020 Action Agenda has three overarching goals:

1. Deepen environmental justice practice within EPA programs to improve the health and environment of overburdened communities.
2. Work with partners to expand our positive impact within overburdened communities.
3. Demonstrate progress on critical national environmental justice challenges.

1.2 Regional EPA EJ Efforts

To implement these strategies, the EPA Region 8 Office has developed the *EPA Region 8 Regional Implementation Plan to Promote Meaningful Engagement of Overburdened Communities in Permitting Activities* (Region 8 Regional Implementation Plan). This plan identifies internal recommended procedures for the EPA Region 8 to follow while acting on a permit application. The EPA Region 8's general process for prioritizing permit applications for enhanced public participation is as follows:

1. Conduct a preliminary screen to assess if the area around the facility contains a potentially overburdened community;
2. Determine if the type of permit action has the potential for significant public health or environmental impacts; then
3. Based on the first two steps and any other relevant information available, decide whether enhanced public participation is warranted.

1.3 Summary of Findings

The EPA implemented the strategies discussed above to perform an EJ analysis related to the Region 8 UIC permitting actions and associated aquifer exemption at the Dewey-Burdock uranium ISR Project Area located in the southern Black Hills region of South Dakota as shown in Figure 1. Using criteria described in Section 2.1, the EPA defined a Study Area comprised of a 20-mile buffer zone measured from the approximate Dewey-Burdock Project Area Boundary. The Study Area includes northwestern Fall River County and western Custer County, South Dakota and northeastern Niobrara County and southeastern Weston County, Wyoming, as shown in Figure 2. The EPA conducted a preliminary screening process based upon demographic and environmental indicators as discussed in Section 2.2 of this document. The EPA also conducted a preliminary screening on an area comprised of a 5-mile radius around Edgemont, South Dakota, which lies within the Study Area, as shown in Figure 2. Based on the preliminary screening processes, the City of Edgemont, South Dakota was identified as a community for which the EPA should conduct additional evaluation to determine if the area is a potentially overburdened community as discussed in Section 2.5.

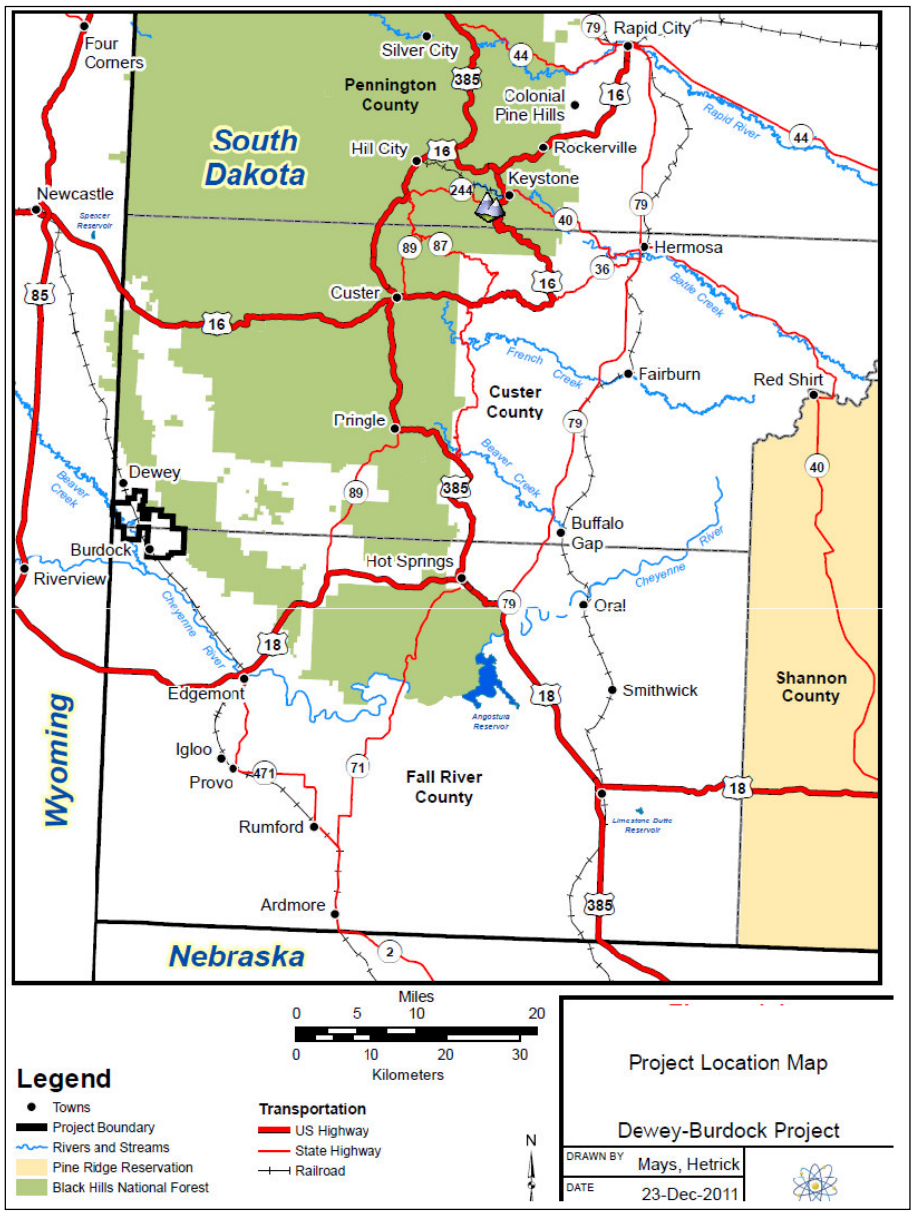


Figure 1. Location of Dewey-Burdock Project Area

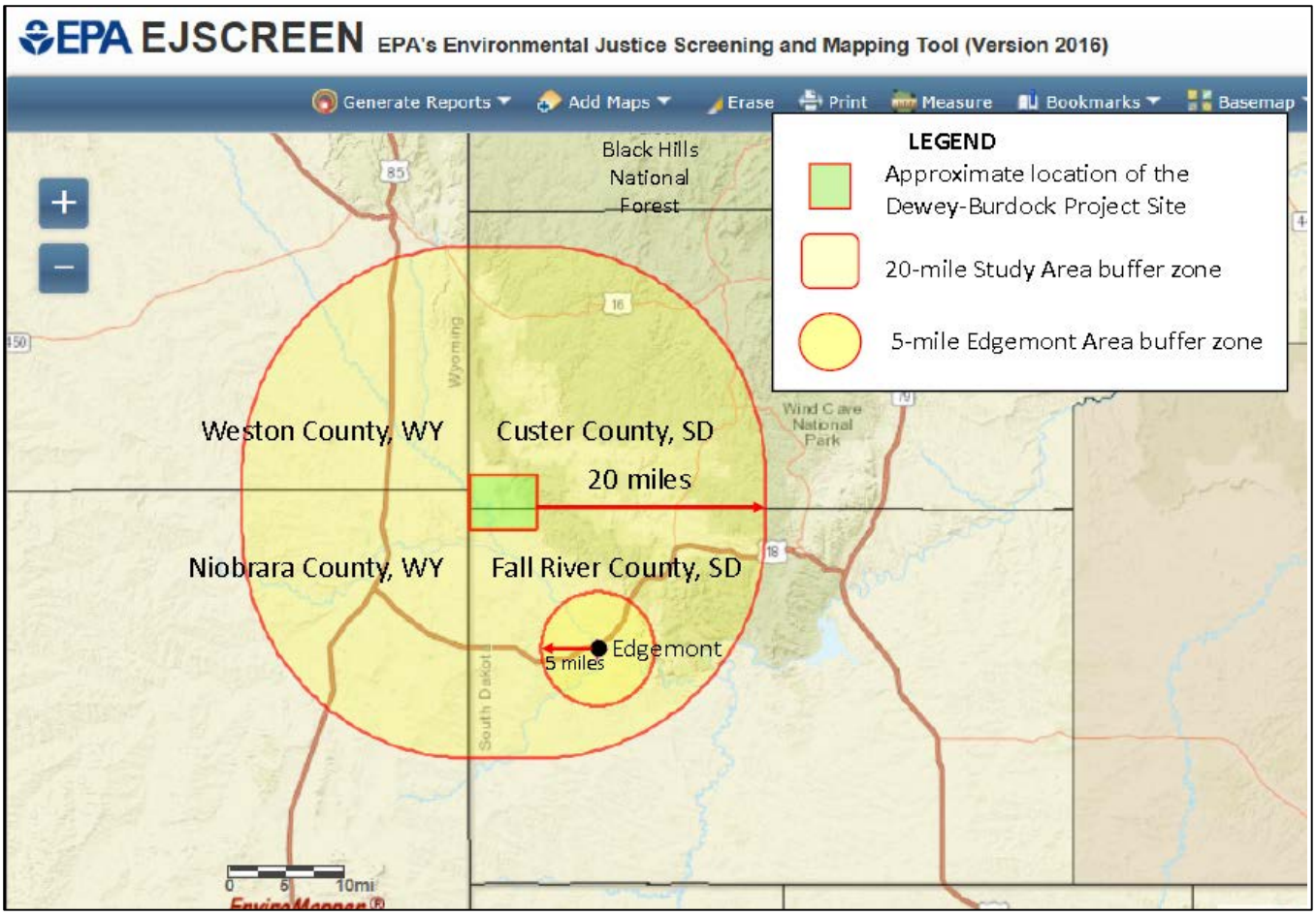


Figure 2. Location of the Study Area, which includes the Dewey-Burdock Project Area and a 20-mile buffer measured from the approximate Project Area Boundary, and the Edgemont Area, which includes a 5-mile buffer around the City of Edgemont.

The screening process used by the EPA identified that the demographic indicator *Low Income Population* ranks above the South Dakota state average. Based on this ranking, the EPA conducted additional evaluation by using readily available data to analyze environmental impacts to the community of Edgemont. The EPA also evaluated present health conditions in Fall River County, South Dakota based on *Community Health Status Indicators*, which compare Fall River County with peer counties[1]. This information is presented in Section 3.4.

The EPA plans to conduct enhanced public outreach activities for the proposed UIC permitting actions in addition to the public review process required under 40 CFR part 124. These enhanced public outreach activities will consist of holding public hearings in Rapid City, Edgemont and Hot Springs, South Dakota. The EPA is also holding a public hearing in Valentine, Nebraska in order to locate a hearing venue closer to Tribal Communities in southern South Dakota and northern Nebraska. The EPA will hold community outreach sessions in each location before each public hearing.

[1] For more information about peer counties, see the U.S. Department of Health and Human Services, Centers for Disease Control website: http://wwwn.cdc.gov/CommunityHealth/info/HowtoUseReport/SD/Fall%20River/#PeerComparison.

The next section describes the screening procedures and the additional information the EPA considered to evaluate potential impacts to Edgemont and other communities from the proposed uranium recovery activities at the Dewey-Burdock Project Area.

2.0 Summary of EJ Preliminary Screening Process

The Dewey-Burdock Project Area is located in southwestern Custer County and northwestern Fall River County in South Dakota on the Wyoming-South Dakota state line. The Dewey-Burdock Project Area is outlined in the heavy black line in Figure 1. The Project Area east-west boundaries extend 6 miles across at the widest point and the north-south boundaries extend 5.5 miles. The EPA used EJSCREEN, an EPA-developed online screening and mapping tool, to conduct a preliminary screening to assess if the area around the Dewey-Burdock Project Site contains a potential environmental justice community. Information about EJSCREEN is included in Appendix A of this document. EJSCREEN allows the user to select a buffer area around the location of interest to include in the screening process.

The EPA used the EJSCREEN mapping and screening tool to screen for communities or areas that may be candidates for additional consideration, analysis or outreach in planning for the public participation process for the UIC draft permits. Note that the EPA *did not* use EJSCREEN for any of the following:

- As a means to identify or label an area as an "EJ community"
- To quantify specific risk values for a selected area
- To measure cumulative impacts of multiple environmental factors
- As a basis for agency decision-making or making a determination regarding the existence or absence of EJ concerns

In addition to EJSCREEN, the EPA used other readily available sources of information, including known community concerns and *Community Health Status Indicators*, to perform initial EJ screening related to the UIC permitting actions, according to recommended procedures in the *Regional Implementation Plan* described above.

2.1 Selection of Areas for Screening

Consistent with UIC regulation 40 CFR § 144.33, the EPA conducted a separate draft cumulative effects analysis to examine impacts resulting from the drilling and operation of the injection wells authorized under the UIC area permits. The cumulative effects analysis includes consideration of potential impacts to groundwater, surface water and air. The protective requirements in the UIC area permits will ensure that there will be no groundwater impacts beyond the aquifer exemption boundary surrounding the uranium ore deposits as discussed in Section 5.0 of this document. Based on the EPA analysis of potential cumulative effects, the potential impacts to surface water and the proposed mitigation measures to prevent or reduce the severity of impacts to surface water, the EPA has concluded there will be no impacts to surface water beyond the Dewey-Burdock Project Area Boundary. The EPA reviewed the results of predictive air modeling conducted at the site by the Inter-Mountain Laboratories, Inc., Air Science division (IML) on behalf of the permit applicant. Information about the air modeling is available

in the document entitled *Ambient Air Quality Final Modeling Protocol and Impact Analysis Dewey-Burdock Project Powertech (USA) Inc., Edgemont, South Dakota*, which was developed by IML[2]. Although in general the modeling results predicted air impacts below National Ambient Air Quality Standards and concentrations below the Prevention of Serious Deterioration Class I and Class II increments, air modeling results predicted detectable impacts above background levels beyond the Dewey-Burdock Project Area Boundary (see Figure 6.5 in the Cumulative Effect Analysis Document as an example). These measureable impacts lie within the 20-mile buffer zone. Based on the air modeling results, the EPA considers a screening area based on a 20-mile buffer measured from the approximate Dewey-Burdock Project Area Boundary to be appropriate for this EJ analysis.

The EPA used EJSCREEN to screen the Dewey-Burdock Project Area and a 20-mile buffer measured from the approximate Project Area Boundary, which will be referred to as the *Study Area* in this document. The Study Area, shown in Figure 2, includes an area of approximately 1,723 square miles and an approximate population of 3,569. The Study Area includes portions of Weston and Niobrara Counties in Wyoming as well as portions of Custer and Fall River Counties in South Dakota.

The City of Edgemont, South Dakota is located approximately 13 miles to the southeast of the Project Area as shown in Figure 2. The EPA also used EJSCREEN to examine a 5-mile buffer around Edgemont, South Dakota, which will be referred to as the *Edgemont Area* in this document. This area includes an area of approximately 78.5 square miles, has an approximate population of 905 and lies within the Study Area boundary as shown in Figure 2. A screening process was done on the smaller Edgemont area because it is the nearest population center to the Dewey-Burdock Project Site. Screening the 5-mile radius around Edgemont separately allowed the EPA to examine the information specific to the City of Edgemont, which was otherwise masked by the screening process for the much larger Study Area encompassing the 20-mile buffer zone measured from the approximate Dewey-Burdock Project Area Boundary.

2.2 EJSCREEN Standard Reports

EJSCREEN produced standard reports showing the results from screening the Study Area and the Edgemont Area. The reports include information for 11 environmental indicators, six (6) demographic indicators and 11 EJ indexes. The Study Area report is included in Appendix B of this document and the Edgemont Area report is included in Appendix C. The reports provide percentile[3] ranks in terms of State percentile, the EPA Region 8 percentile and U.S. percentile for each of these indicators and indexes. Generally, if an EJ Index ranks within the 80th percentile or above, the EPA's practice is to examine the area more closely to determine if the area may be subject to potential disproportionately high and adverse human health or environmental effects. The EPA also examines possible environmental and community impacts related to the proposed permit.

[2] IML (Inter-Mountain Laboratories, Inc). "Ambient Air Quality Final Modeling Protocol and Impact Analysis Dewey-Burdock Project Powertech (USA) Inc., Edgemont, South Dakota." ML13196a061, ML13196a097, ML13196a118. Sheridan, Wyoming: Inter-Mountain Laboratories, Inc., IML Air Science. 2013.

[3] Percentile means the percentage of the population that lives with the indicated level of exposure or less.

2.3 EJ Index Results from the Standard Reports

Table 1a shows the EJ Index results for the Study Area; Table 1b shows the EJ Index results for the Edgemont Area.

Table 1a. The EJ Index Results for the Study Area from the EJSCREEN Standard Report

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	29	24	24
EJ Index for Ozone	19	19	9
EJ Index for NATA* Diesel PM	56	57	52
EJ Index for NATA* Air Toxics Cancer Risk	27	32	31
EJ Index for NATA* Respiratory Hazard Index	24	30	28
EJ Index for Traffic Proximity and Volume	59	65	49
EJ Index for Lead Paint Indicator	31	14	18
EJ Index for Superfund Proximity	28	46	48
EJ Index for RMP Proximity	62	61	48
EJ Index for Hazardous Waste Proximity+	N/A	N/A	N/A
EJ Index for Water Discharger Proximity	52	59	46

Table 1b. The EJ Index Results for the Edgemont Area from the EJSCREEN Standard Report

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	69	63	51
EJ Index for Ozone	64	61	45
EJ Index for NATA* Diesel PM	71	66	55
EJ Index for NATA* Air Toxics Cancer Risk	68	65	53
EJ Index for NATA* Respiratory Hazard Index	63	63	53
EJ Index for Traffic Proximity and Volume	72	70	53
EJ Index for Lead Paint Indicator	44	22	24
EJ Index for Superfund Proximity	97	83	65
EJ Index for RMP Proximity	83	71	58
EJ Index for Hazardous Waste Proximity+	N/A	N/A	N/A
EJ Index for Water Discharger Proximity	67	66	54

An EJ Index combines demographic factors with a single environmental factor. The EJ Index is higher in block groups with large numbers of mainly low-income and/or minority residents with a higher environmental indicator value. For each environmental factor, the EJ Index finds the block groups that contribute the most toward the nationwide disparity in that environmental factor. In this case, "disparity" means the difference between the environmental indicator's average value among these demographic groups and the average in the U.S. population and State and Regional populations as well.[4]

[4] https://www.epa.gov/ejscreen/environmental-justice-indexes-ejscreen#tab-2

Tables 1a and 1b show an N/A instead of a percentile ranking for the Study Area EJ Index for Hazardous Waste Proximity. The hazardous waste environmental indicator (shown in Tables 2a and 2b) and the corresponding EJ index will appear as N/A if there are no hazardous waste facilities within 50 km of a selected location. Table 1b shows that the Edgemont Area EJ Index for Superfund Proximity is in the 97th percentile for the state of South Dakota. Table 1b also shows that the Edgemont Area EJ Index for RMP Proximity is in the 83rd percentile for the state of South Dakota. The RMP Proximity Index includes consideration of how many facilities are located in or near the area that handle a large enough volume of chemicals that the facility is required to have a Risk Management Plan to handle potential chemical spills.

Because EJSCREEN uses percentiles to compare locations, states with no or a very small number of a given type of facility can have extremely high percentiles in certain environmental indicators and their corresponding EJ indexes. This is due to the way EJSCREEN represents ties which is to report to the high end of the range. This happens most commonly in indicators that have a small number of affected areas such as Superfund Proximity and the lead paint indicators. It can also happen with the linguistically isolated demographic indicator. In summary, the high percentile Superfund Proximity and RMP proximity results from EJSCREEN shown in Table 1b do not necessarily indicate that there is a disproportionately high impact within the Study Area or the Edgemont Area from these EJ Index categories. However, the high percentiles prompt the EPA to conduct further investigation of the areas. In the case of the Edgemont Area, the EPA examined the Superfund Proximity and the RMP Proximity more closely.

The EJ Indexes will have different values when compared with the corresponding Environmental Indicator results discussed in the following section because the EJ Indexes combine each environmental indicator with demographic information that is obtained from the U.S. Census Bureau's American Community Survey. For additional explanation about *What the EJ Index Means* and *How the EJ Index Works*, please follow these links to the EPA EJSCREEN website.

2.4 Environmental Indicator Results

Table 2a shows the Environmental Indicator results for the Study Area from the EJSCREEN Standard Report. The Environmental Indicator Results show the actual numbers for the types of measured entities within each of the screening areas.

Table 2a. Environmental Indicator Results for the Study Area from the EJSCREEN Standard Report

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in µg/m³)	6.03	7.89	4	7.17	17	9.32	2
Ozone (ppb)	53.5	50.3	99	54.6	25	47.4	82
NATA* Diesel PM (µg/m³)	0.0725	0.294	12	0.605	<50th	0.937	<50th
NATA* Cancer Risk (lifetime risk per million)	18	22	23	30	<50th	40	<50th
NATA* Respiratory Hazard Index	0.75	0.82	52	1.4	<50th	1.8	<50th
Traffic Proximity and Volume (daily traffic count/distance to road)	2.5	49	16	250	6	590	7
Lead Paint Indicator (% Pre-1960 Housing)	0.25	0.34	47	0.23	67	0.3	56
Superfund Proximity (site count/km distance)	0.0001	0.016	78	0.11	36	0.13	16
RMP Proximity (facility count/km distance)	0.017	0.29	12	0.34	6	0.43	1
Hazardous Waste Proximity+ (facility count/km distance)	N/A	0.12	N/A	0.12	N/A	0.11	N/A
Water Discharger Proximity (facility count/km distance)	0.031	0.2	24	0.27	9	0.31	3

Table 2b. Environmental Indicator Results for the Edgemont Area from the EJSCREEN Standard Report

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in µg/m³)	6.15	7.89	9	7.17	20	9.32	2
Ozone (ppb)	53.5	50.3	99	54.6	25	47.4	82
NATA* Diesel PM (µg/m³)	0.11	0.294	21	0.605	<50th	0.937	<50th
NATA* Cancer Risk (lifetime risk per million)	18	22	30	30	<50th	40	<50th
NATA* Respiratory Hazard Index	0.64	0.82	42	1.4	<50th	1.8	<50th
Traffic Proximity and Volume (daily traffic count/distance to road)	2.6	49	16	250	6	590	7
Lead Paint Indicator (% Pre-1960 Housing)	0.46	0.34	66	0.23	81	0.3	73
Superfund Proximity (site count/km distance)	0	0.016	78	0.11	36	0.13	16
RMP Proximity (facility count/km distance)	1.6E-05	0.29	9	0.34	4	0.43	1
Hazardous Waste Proximity+ (facility count/km distance)	N/A	0.12	N/A	0.12	N/A	0.11	N/A
Water Discharger Proximity (facility count/km distance)	0.033	0.2	25	0.27	9	0.31	4

Table 2b shows the Environmental Indicator results for the Edgemont Area from the EJSCREEN Standard Report. The EPA examined more closely the EJ Indexes with a percentile ranking of 80 or higher as shown in Table 1b: Superfund Proximity and RMP Proximity. Although the EJ Index (Table 1b) for Superfund Proximity for the Edgemont Area is ranked at the 97th percentile for the state, Table 2a shows that the actual number of Superfund sites in the area is zero. Similarly, although the EJ Index for RMP Proximity for the Edgemont Area is ranked in the 83rd percentile for the state, Table 2a shows that the value is a very small number less than one. The state average is also a number less than one. As noted by the units to the right of "RMP Proximity" in the left column of Table 2b, the value for the RMP Proximity is calculated by dividing facility count by distance measured in kilometers, which is why it is possible to have a facility value be a small number less than one.

The EPA notes that the Environmental Indicator results for ozone rank in the 99th percentile for the state in both the Study Area and the Edgemont Area as shown in Table 2a and 2b. Ozone will be discussed later in this document.

2.5 The Demographic Indicator Results

It is EPA Region 8 policy to examine the Demographic Indicators, focusing on the *Minority Population* and *Low Income Population* values. If either of these values is greater than the state average, the EPA conducts additional analysis to evaluate whether the impacts on the community are disproportionate by comparing the impacted community to a reference population or average (neighboring counties, state average or national average). The remaining demographic indicators are considered on a case-by-case basis. For example, if there is prevalence of a "Linguistically Isolated Population," further evaluation may determine that any written material related to the permitting action should be translated into the languages spoken in the area and a translator should be present at the public hearing.

Table 3a lists the results for the six (6) demographic indicators for the Study Area and Table 3b lists the demographic indicator results for the Edgemont Area. The EPA notes that the *Low Income Population* demographic indicator is above the state average in Table 3b. In addition, the *Population with Less than a High School Education* and the *Population over 64 Years of Age* demographic indicators are also higher than the state average in both Tables 3a and Table 3b.

Table 3a. The Demographic Indicator Results for the Study Area from the EJSCREEN Standard Report

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Demographic Indicators							
Demographic Index	16%	25%	34	27%	28	36%	20
Minority Population	6%	16%	34	23%	15	37%	14
Low Income Population	26%	33%	36	31%	44	35%	39
Linguistically Isolated Population	0%	1%	69	2%	55	5%	44
Population With Less Than High School Education	10%	9%	64	9%	67	14%	48
Population Under 5 years of age	4%	7%	22	7%	24	6%	31
Population over 64 years of age	24%	15%	86	12%	91	14%	89

Table 3b. The Demographic Indicator Results for the Edgemont Area from the EJSCREEN Standard Report

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Demographic Indicators							
Demographic Index	25%	25%	65	27%	56	36%	42
Minority Population	5%	16%	31	23%	14	37%	13
Low Income Population	46%	33%	75	31%	77	35%	70
Linguistically Isolated Population	0%	1%	69	2%	55	5%	44
Population With Less Than High School Education	13%	9%	75	9%	75	14%	58
Population Under 5 years of age	2%	7%	8	7%	10	6%	14
Population over 64 years of age	21%	15%	79	12%	86	14%	83

3.0 The EPA Evaluation of Potential Disproportionately High and Adverse Human Health or Environmental Effects

As discussed in Section 2.5, the EPA examined the Demographic Indicators, focusing on the *Minority Population* and *Low Income Population* values. According to EPA Region 8 practice, if either of these values is greater than the state average, the area is a candidate for additional analysis to gauge whether the impacts on the community are disproportionate. Table 3b shows that the Edgemont Area has a *Low Income Population* demographic indicator above the state average.

3.1 Cleanup Operations in the Study Area and the Edgemont Area

Table 4 shows a list of cleanup operations that have occurred in the Study Area and the Edgemont Area. The TVA Silver King Mine uranium mill was located in Edgemont. The Former Black Hills Army Depot was located in Provo, which is less than 8 miles south of Edgemont and outside of the Edgemont Area but inside the Study Area as shown in Figure 3.

Table 4. Site Cleanups within the Study Area and the Edgemont Area, South Dakota

Cleanup Name	City	State	County Name
FORMER BLACK HILLS ARMY DEPOT	PROVO	SD	FALL RIVER
TVA SILVER KING MINERS INC.	EDGEMONT	SD	FALL RIVER

3.1.1 The Edgemont Uranium Mill

The Edgemont uranium mill was constructed in 1956. The production capacity of the mill was 500 tons of ore per day. Most of the ore came from mines in the Black Hills area of southwestern South Dakota, including the Darrow, Freezeout and Triangle open pit uranium mines located within or near the Dewey-Burdock Project Area and from uranium mines in Wyoming. Milling operations ceased in 1972. The Tennessee Valley Authority (TVA) purchased the mill in 1974, along with mineral rights for uranium exploration at properties located near the Edgemont area. When the TVA decided against operating the mill, the NRC required the TVA to decommission it. According to the DOE LM Fact Sheet, decommissioning activities began in 1986 and were completed in 1989. Milling operations had produced radioactive tailings that were left behind at the mill site and some windblown tailing that had been blown

off the mill site. The Edgemont uranium mill clean up did not show up under the Superfund Proximity EJ Index and Environmental Index because it was regulated by the U.S. Nuclear Regulatory Commission (NRC) under the Atomic Energy Act rather than as a Superfund site.

The *Final Environmental Statement* (FES) the Tennessee Valley Authority (TVA) prepared for the decommissioning of the Edgemont uranium mill stated that there was an undetermined amount of land outside the actual mill site that would require the removal of windblown tailings. The TVA identified at least 41 acres of ponderosa pine and surficial soil east of the mill site, referred to as the Pine Area, and an unquantified, but small, area of surficial soil in the Cottonwood community, located east of Edgemont and west of the mill site, that had been contaminated by windblown tailings. Both of these areas were uninhabited.

The Department of Energy, Office of Legacy Management Fact Sheet developed after the cleanup was completed states that cleanup of the site involved excavating approximately 4 million tons of tailings, contaminated soil, building equipment and debris, and materials from 251 vicinity properties and moving them to a newly constructed disposal cell located 2 miles south of the mill site. The mill site, the Cottonwood Community, the Pine Area and the tailings disposal cell all lie within the Edgemont Area.

Amendment No. 29 to Source Material License SUA-816 for the Tennessee Valley Authority's Edgemont Project provides information about the cleanup criteria (action level) in the license: removal of material in the top 15 centimeters that exceed 5 pCi/g above background and in subsequent 15 cm layers that exceed 15 pCi/g above background. The cleanup was successful, however, a small amount of windblown tailings and contaminated soil were left on the steep, tree-covered hillsides of the Pine Area located east of the mill as approved under Amendment 29 to the license. The landowner agreed with this decision because the cleanup of this area would have resulted in loss of the tree cover. The low levels of windblown tailings left behind did not require any institutional controls. The valley area, where most of the windblown tailings were located in the Pine Area, was successfully excavated and remediated to below the action level.

As mentioned earlier, the disposal site of the tailings and contaminated soil is located about 2 miles south of Edgemont. There are institutional controls in place at that site. The institutional controls are described in Section 2.3 of the DOE LM report entitled *2015 Annual Site Inspection and Monitoring Report for Uranium Mill Tailings Radiation Control Act Title II Disposal Sites*. The tailings disposal site is now regulated by the NRC under a long-term custody license as discussed in the *Long-Term Surveillance Plan for the DOE TVA Disposal Site*. Under this license the DOE LM office in Grand Junction, Colorado, conducts annual inspections of the tailings disposal area to ensure there are no impacts from the site outside the area were institutional controls are established.

3.1.2 The Former Black Hills Army Depot

Figure 3 is the map of the Study Area and the Edgemont Area with an overlay of Figure 3.3 from the TVA Final Environmental Statement for the decommissioning of the Edgemont uranium mill, which shows the boundary of the Former Black Hills Army Depot within the Study Area. An April 2014,

Environmental Assessment prepared by the Bureau of Land Management for Oil and Gas leases provides the following information about the Black Hills Army Depot.

In February 1942, the Black Hills Ordnance Depot was officially established in Fall River County. The site consisted of 21,095.85 acres that was utilized for long-term storage of ammunition. In August 1962, the site was renamed the Black Hills Army Depot (BHAD). The facility was used for industrial storage, administrative buildings, housing, and related support facilities and utilities. The Depot was used for the receipt, storage, maintenance, inspection, testing, restoration, issuance and shipping of ammunition, propellants, and chemical toxics, the unpacking and functional packing of small arms ammunition, and the demilitarization of unsafe, obsolete and surplus ammunition, chemical ammunition, ammunition components, chemical toxics and general supplies.

The Department of the Army closed the BHAD in June 1967 and transferred the site to the General Services Administration (GSA). The GSA sold approximately 15,000 acres within the fenced perimeter to the City of Edgemont, South Dakota in 1968 and the remaining 6,000 acres were transferred to the U.S. Forestry Service (USFS). The 1967 Statement of Clearance designated six restricted areas. Table 5lists the restricted areas identified, the land use restrictions and surface ownership of each area as of 2012.

Table 5. Restricted Areas within the Former BHAD, Land Use Limitations and Surface Ownership in 2012.

Restricted Area	Land Use Limitation	Surface Owner
Burning Ground 1	non-use	Privately owned.
Burning Ground 2	non-use	1,510 acres owned by USFS and managed as part of Buffalo Gap National Grassland, with about 945 acres closed to the public. 116 acres privately owned and used for grazing.
Burning Ground 3	surface use only	Privately owned
Tracer Test Range	non-use	Owned by USFS primarily used for grazing
Chemical Plant	non-use	Privately owned, primarily used for grazing
Chemical Burning Pit	non-use	Owned by USFS and managed as part of Buffalo Gap National Grassland.

A number of site investigations and clean-up efforts have been conducted at the site. A list of these efforts is found in Table 1.2 of a Remedial Investigation and Feasibility Study published in 2012 for the U.S. Army Corps of Engineers. At the time this report was published, the remaining sites of concern included Burning Ground 1, Burning Ground 2, the Chemical Plant, the Chemical Burning Pit and two pits within the Chemical Plant area. The EPA will continue efforts to locate and review documentation on environmental concerns at this site.

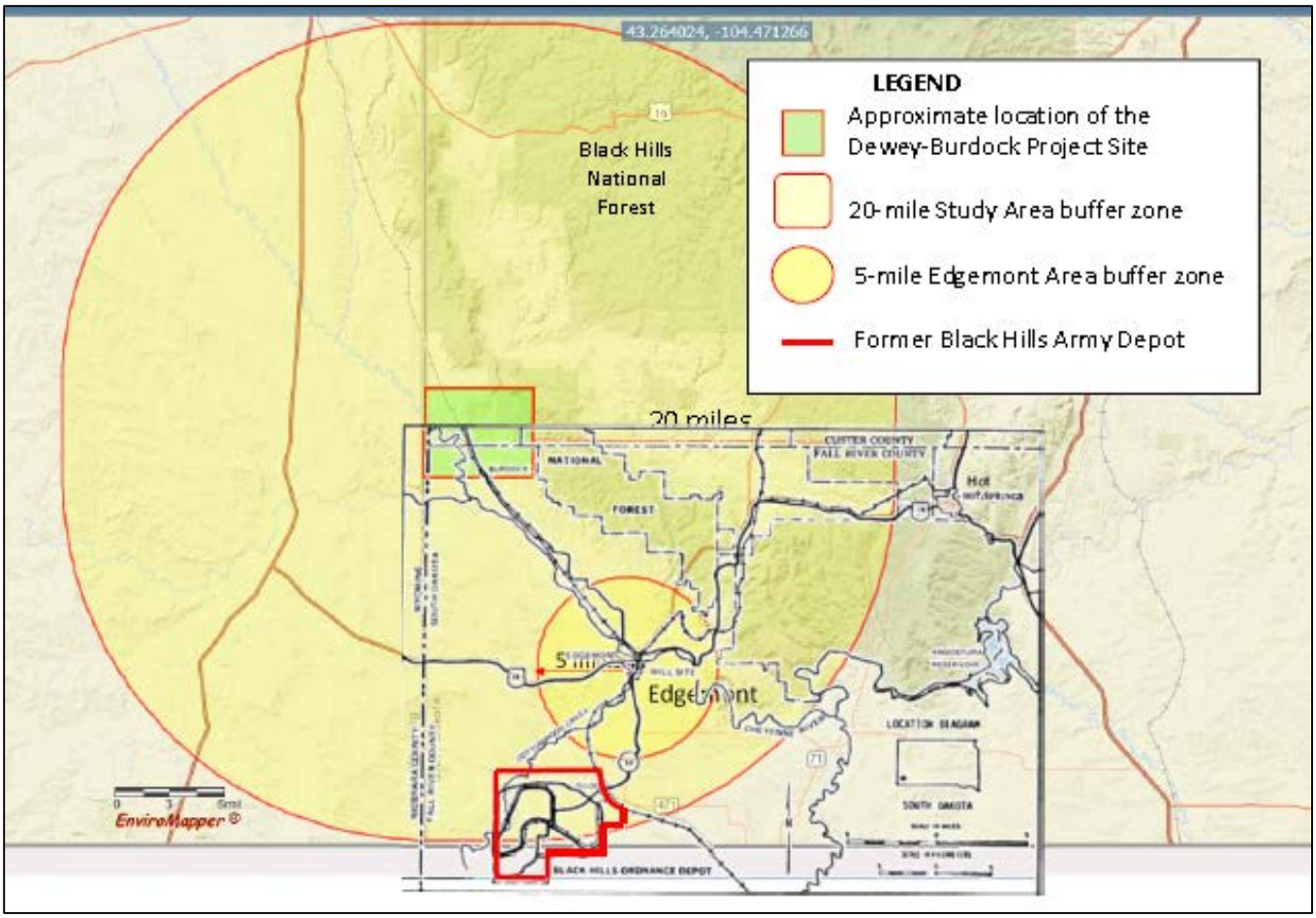


Figure 3. Map showing the locations of the Study Area, the Edgemont Area and the Former Black Hills Army Depot.

3.2 The EPA Review of the Abandoned Uranium Mines located near the Dewey-Burdock Project Area

The Study Area contains abandoned uranium mines that are located within the proposed Dewey-Burdock Project Area. These mines include the Darrow open pit mines and the Triangle open pit. Figure 4 shows the locations of the mines and spoil piles, consisting of crushed overburden and waste rock. There were underground workings associated with the open pits. The two Freezeout underground mines are located to the northeast just outside of the Project Area and are not shown in Figure 4. The public has expressed concerns about the potential impacts from the unreclaimed areas of these abandoned mines. Edgemont is the nearest population center along the Cheyenne River downgradient from the proposed Dewey-Burdock Site and the abandoned uranium mines.

On August 1, 2013, the non-profit Institute of Range and the American Mustang (IRAM), owner of the Black Hills Wild Horse Sanctuary requested an assessment of the abandoned open pit uranium mines in the vicinity of the proposed Dewey-Burdock Uranium ISR Project Area. Included within the scope of this request are seven open pit mines, four shallow underground mines, and two underground adits

(tunnels) leading out of the open pits associated with the Darrow, Freezeout and Triangle (DFT) uranium mine sites.

The written request constituted a citizen's petition under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 105(d). In response to a citizen's petition, the EPA conducts a preliminary assessment (PA) within 12 months or provides a rationale as to why one is not needed. The citizens raised concerns that the DFT mines, as well as the proposed ISR project, would destroy the land and water in the area and jeopardize public health and wildlife. The EPA completed the PA and concluded that further investigation was warranted. These results were communicated to the petitioner and other stakeholders in September 2014.

The EPA conducted a Site Inspection (SI) in September 2015 to evaluate potential impacts to sensitive environments and fisheries. Sampling was limited to surface water and sediments since access was not granted to mine source areas. However, the SI included evaluation of data submitted to the NRC that Powertech collected in the mine source areas. The SI report was completed in March 2016. Analytical results of the surface water samples showed that concentrations of total metal uranium, uranium-238, and radium-226 did not exceed three times background concentrations, which is the threshold the EPA uses for indication of a contaminant release. A release of metals and radionuclides to the surface water pathway could not be documented for the Site. The EPA made a *no further remedial action planned* (NFRAP) decision, since the Site does not qualify for the National Priorities List (NPL) based on existing information as of March 2016. If conditions change or if there is a change in land use in this area, the EPA can reassess the site in the future. Only a few of the site-related contaminants analyzed (aluminum, chromium, iron, and lead) have concentrations above three times background concentrations in the surface water. No health based or ecological standards were exceeded for these constituents. Therefore, further remedial response actions are not warranted at this time. The *Remedial Site Assessment Decision* form is included in Appendix D of this document.

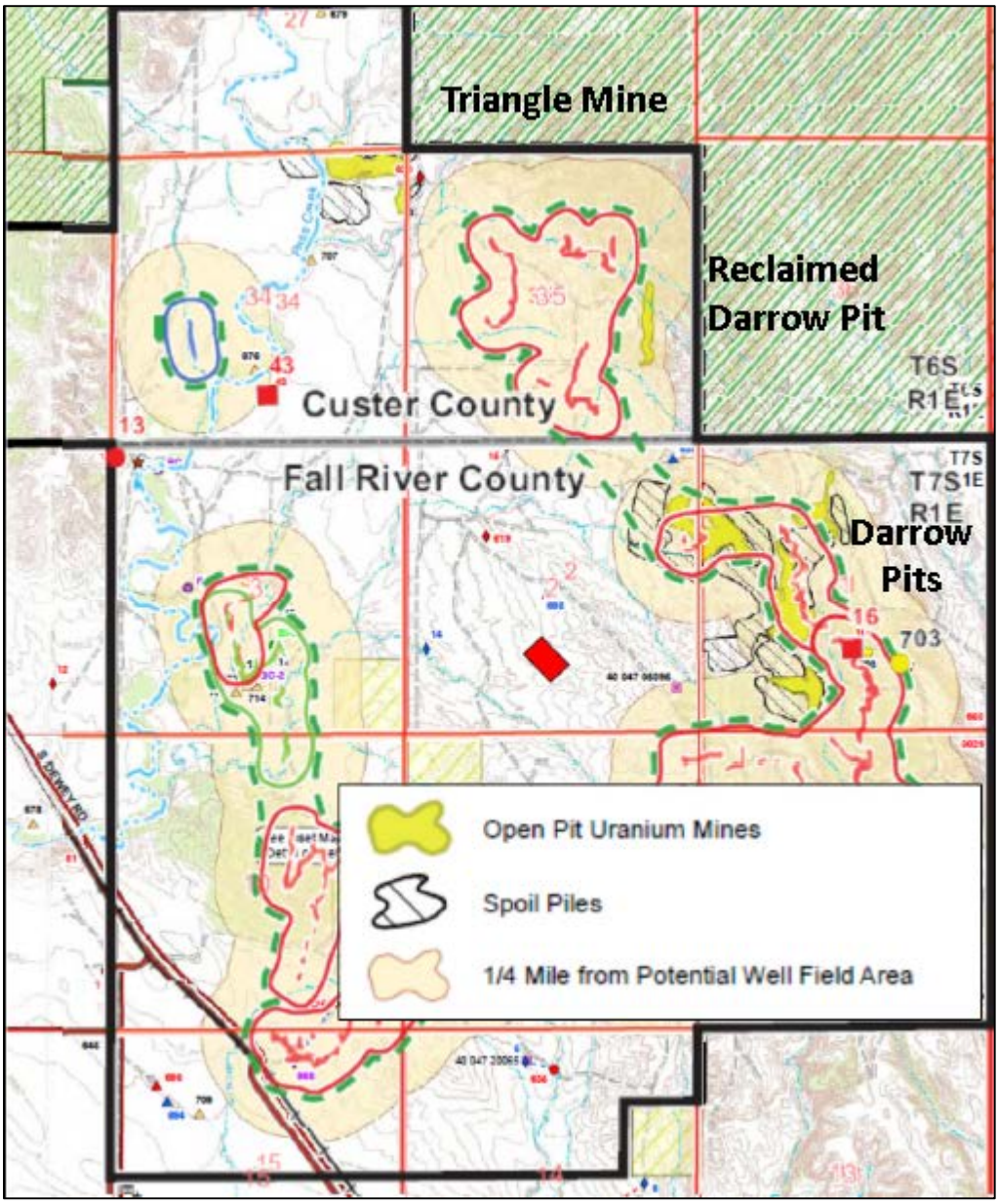


Figure 4. Locations of the Abandoned Uranium Mines at the Dewey-Burdock Project Area

3.4 The Community Health Status Indicators

The EPA examined Community Health Status Indicators (CHSI) for Fall River County for further information about the community within the Study Area. Based on the direction of groundwater flow, surface water flow and prevailing wind direction, Fall River County will receive any down-gradient impacts from the Dewey-Burdock Project Area. The EPA conducted this analysis to provide a baseline or pre-operational assessment of the Fall River portion of the Study Area, which also contains the Edgemont Area, and to identify how Fall River County ranks in comparison to peer communities and the U.S. average for the CHSI.

The CHSI 2015 is an online web application developed by the U.S. Department of Human Health and Services, Centers for Disease Control and Prevention. The CHSI web application produces health status

profiles for each of the 3,143 counties in the United States and the District of Columbia. Each county profile contains indicators of health outcomes (mortality and morbidity); indicators on factors selected based on evidence that they potentially have an important influence on population health status (e.g., health care access and quality, health behaviors, social factors, physical environment); health outcome indicators stratified by subpopulations (e.g., race and ethnicity); important demographic characteristics; and Health People 2020 (HP 2020) targets.

The CHSI application provides a Summary Comparison Report, which provides an "at a glance" summary of how Fall River County compares with peer counties on the full set of Primary Indicators. Peer county values for each indicator were ranked and then divided into quartiles. Information about peer counties can be viewed by copying and pasting this website link into your web browser:
http://wwwn.cdc.gov/CommunityHealth/info/HowtoUseReport/SD/Fall%20River/#PeerComparison
Information about the Primary Indicators can be viewed by copying and pasting this website link into a web browser:
http://wwwn.cdc.gov/CommunityHealth/info/AboutData/SD/Fall%20River/#PrimaryIndicators
The Summary Comparison Report can be viewed at:
http://wwwn.cdc.gov/CommunityHealth/profile/currentprofile/SD/Fall%20River/
The CHSI ranks the percentiles into three groups. The "most favorable" or "better" level is the 25th percentile (or quartile). The second level is the "moderate" or the middle two quartiles and includes the percentiles between the 25th and 75th percentiles. The third level is the "worse" or "least favorable" quartile and is the 75th percentile (or quartile).

3.4.1 Mortality Indicators

Mortality indicators provide measures of how long people live and the number of deaths in a population within a defined time span. To enable comparisons among peer counties, the CHSI 2015 mortality indicators are age-adjusted, meaning that the indicators show what the mortality rate would be if all counties had the same age distribution.

The mortality indicators include stroke deaths, Alzheimer's disease deaths, unintentional injury (including motor vehicle accidents), cancer deaths, chronic lower respiratory disease deaths, coronary heart disease deaths, diabetes deaths, female life expectancy and male life expectancy.

Table 6 shows the distribution of all the Mortality Indicators across the three percentile groups from the Summary Comparison Report for Fall River County.

Table 6. The Distribution of Mortality Indicators across the Three Percentile Groups

	Better (most favorable quartile)	**Moderate** (middle two quartiles)	**Worse** (least favorable quartile)
Mortality	Stroke deaths	Alzheimer's disease deaths Unintentional injury (including motor vehicle)	Cancer deaths Chronic lower respiratory disease (CLRD) deaths Coronary heart disease deaths Diabetes deaths Female life expectancy Male life expectancy

For Fall River County deaths due to stroke ranks within this “most favorable” or “better” quartile. The death rate due to stroke in Fall River County is 32.7 per 100,000 people. The population of Fall River County was 6,957 at the last census. The death rate due to stroke in Fall River per the population of 6,957 people is 2.3. The U.S. mean death rate due to stroke per 100,000 people is 46.0. Table 7 summarizes this information.

Table 7. Number of Deaths in Fall River County from Morbidity Indicator Stroke Deaths

Mortality Indicator	**Number per 100,000**	**Number per 6,957**	**U.S. Median (per 100,000)**
Stroke Deaths	32.7	2.3	46.0

For Fall River County deaths due to Alzheimer's disease and unintentional injury (including motor vehicle accidents) rank within the “moderate” or two middle quartiles. The death rate due to Alzheimer's disease in Fall River County is 22.4 per 100,000 people. The death rate due to Alzheimer's disease in Fall River per the population of 6,957 people is 1.6. The U.S. mean death rate per 100,000 people due to Alzheimer's disease is 27.3. The death rate due to unintentional injury (including motor vehicle) in Fall River County is 74.2 per 100,000 people. The death rate due to unintentional injury in Fall River per the population of 6,957 people is 5.2. The U.S. mean death rate per 100,000 people due to unintentional injury is 27.3. Table 8 summarizes this information.

Table 8. Number of Deaths in Fall River County from Alzheimer's disease and unintentional injury (including motor vehicle accidents)

Mortality Indicator	Number per 100,000	Number per 6,957	U.S. Median
Alzheimer's disease deaths	22.4	1.6	27.3
Unintentional injury (including motor vehicle)	74.2	5.2	50.8

For Fall River County, cancer deaths, chronic lower respiratory disease deaths, coronary heart disease deaths and diabetes deaths fall into the "worse" or "least favorable quartile" quartile. Table 9 shows the number of deaths per 100,000, per 6,957 and the U.S. Mean per 100,000 people for each of the mortality indicators that fall within the “worse” or “least favorable” quartile.

Table 9. Number of Deaths in Fall River County from Each Morbidity Indicator Ranked in the “Least Favorable” or “Worse” Quartile Compared to Peer Counties

Mortality Indicator	Number per 100,000	Number per 6,957	U.S. Median
Cancer deaths	203.6	14.2	185
Chronic lower respiratory disease deaths	67.6	4.7	49.6
Coronary heart disease deaths	177.4	12.3	126.7
Diabetes deaths	38.7	2.7	24.7

Life expectancy in Fall River County also falls within the "worse" or "least favorable quartile" quartile. Table 10 shows the information about life expectancy in Fall River County.

Table 10. Life Expectancy in Fall River Ranked in the “Least Favorable” or “Worse” Quartile Compared to Peer Counties

Life Expectancy	Number of Years	U.S. Median
Female life expectancy	78.4 years	79.8
Male life expectancy	68.8 years	75.0

3.4.2 Morbidity Indicators

Morbidity indicators provide measures of any departure, subjective or objective, from a state of physiological or psychological well-being at a point in time or within a defined time span. Morbidity is usually measured as the percentage of the population with a given condition or the rate of new cases within the population. Table 11 shows the distribution of all the Morbidity Indicators across the three percentile groups from the Summary Comparison Report for Fall River County.

Table 11. The Distribution of Morbidity Indicators across the Three Percentile Groups

	Better (most favorable quartile)	**Moderate** (middle two quartiles)	**Worse** (least favorable quartile)
Morbidity	Gonorrhea Older adult asthma Syphilis	Adult obesity Adult overall health status Alzheimer's diseases/dementia Older adult depression Preterm births	Adult diabetes Cancer

Fall River County ranked in the "worst" or "lease favorable" quartile for adult diabetes and cancer. The percent of adults living with diagnosed diabetes for Fall River County, SD is 8.3 %. The U.S. Median is 8.1 percent. The incidence rate for cancer in Fall River County, SD is 512.5 per 100,000. The incidence rate for cancer based on the Fall River population of 6,957 is 35.7. The U.S. median is 457.6 per 100,000 people.

3.4.3 Physical Environment Indicators

In order to provide another type of indication of general health in Fall River County, the EPA also examined the Physical Environment indicators. Physical Environment includes the natural environment (air, water, and soil) and the built environment (safe and affordable housing, transportation, access to nutritious and affordable food). The physical environment may directly affect health as well as influence choices and health behaviors.

Physical Environment Indicators ranked in the "better" or "most favorable" quartile include:
The annual average concentration of Particulate Matter less than 2.5 micrometers ($PM_{2.5}$) in Fall River County, SD is 6.0 ($\mu g/m^3$)
Housing Stress: The percent of housing defined as stressed in Fall River County is 24.9%. The U.S. Median is 28.1%.

A house is defined as stressed if one or more of the following criteria is met:
1) housing unit lacked complete plumbing;
2) housing unit lacked complete kitchens;
3) household is overcrowded; and
4) household is cost burdened.

Severe overcrowding is defined as more than 1 persons per room. Severe cost burden is defined as monthly housing costs (including utilities) that exceed 30% of monthly income.

Physical Environment Indicators that ranked in the "moderate" or middle two quartiles include:
Limited Access to Healthy Food: The percent of individuals who are low-income and do not live close to a grocery store in Fall River County, SD is 14.6%. The U.S. median is 6.2%

Physical Environment Indicators ranked in the "worse" or "least favorable" quartiles include:
Access to parks: The percent of individuals living within a half mile of a park in Fall River County, SD is 1.0 %. The U.S. median is 14%.
Living near highways: The percent of the population living near a highway in Fall River County, SD is 2.5 %. The U.S, Median is 1.5%.

3.4.5. Summary of Information on Fall River County Health

Based on this review of the CHSI, it appears that Fall River County exhibits a number of mortality rank indicators ranking in the "worse" or "least favorable" quartile when compared to its peer counties. Although the *Low Income Population* demographic indicator is higher than the state average and the environmental indicator for lead paint, which is based on the percentage of houses constructed before 1960, ranks in the 66th percentile for the state (see Table 2b), the CHSI housing stress indicator for Fall River County is 24.9%, which is ranked in the "better" or "more favorable" quartile.

4.0 The Proposed EPA Permitting Activity

The permitting actions are being proposed under the Underground Injection Control (UIC) Program. The UIC Program is authorized under the Safe Drinking Water Act and is intended to protect underground sources of drinking water (USDWs)[5] from contamination related to underground injection activities. The UIC Program is implemented through regulations found at 40 CFR parts 124, 144, 145, 146 and 147. The EPA Region 8 UIC Program has received two permit applications from Powertech (USA) Inc. (Powertech) related to uranium ISR at the Dewey-Burdock Project Site. The proposed Dewey-Burdock uranium ISR site is located in the southern Black Hills region in South Dakota on the South Dakota-Wyoming state line in southwest Custer and northwest Fall River Counties. The site is located approximately 13 miles northwest of Edgemont, South Dakota and 46 miles west of the western border of the Pine Ridge Reservation. The approximate Project Area Boundary is shown as the green square with the red border in Figure 2.

The EPA is proposing to issue two UIC draft permits to Powertech for injection activities related to uranium recovery. One is a UIC Class III Area Permit for injection wells used in the ISR of uranium; the

[5] "Underground Source of Drinking Water" or "USDW" means: an aquifer or its portion
(a)(1) which supplies any public water system; or
(2) which contains a sufficient quantity of ground water to supply a public water system; and
(i) currently supplies drinking water for human consumption; or
(ii) Contains fewer than 10,000 mg/l total dissolved solids; and
(b) is not an exempted aquifer.

second is a UIC Class V Area Permit for deep injection wells that will be used to dispose of ISR process waste fluids into the Minnelusa Formation after treatment to meet radioactive waste and hazardous waste standards.

The Region 8 Regional Implementation Plan identifies certain permits that are considered a priority for enhanced participation due to the potential for significant public health or environmental impacts. Certain types of UIC permits have been identified as priority permits, including permits for Class V deep injection wells and Class III ISR wells.

The EPA is also proposing an aquifer exemption approval in connection with the UIC Class III Area Permit to exempt the uranium-bearing portions of the Inyan Kara Group aquifers from protection as USDWs. Because the Inyan Kara aquifers contain a sufficient quantity of ground water to supply a public water system and contain fewer than 10,000 mg/l total dissolved solids, the aquifers meet the definition of USDW set forth in the UIC regulations. The UIC regulations do not allow Class III injection into a USDW; therefore, in order to inject into the Inyan Kara aquifers for uranium recovery, an aquifer exemption is necessary. The UIC regulations provide for exemption of an aquifer, or a portion of an aquifer, from classification as a USDW if it meets certain criteria. In this case, Powertech provided information to demonstrate that the portions of the Inyan Kara aquifers the EPA is now proposing for exemption are not a current source of drinking water per 40 CFR § 146.4(a) and cannot now and will not in the future be a source of drinking water because they contain minerals in commercially producible quantities per 40 CFR § 146.4(b)(1). Through the current aquifer exemption process, the EPA proposes to approve the aquifer exemption request based on these criteria. The proposed aquifer exemption boundary is the dashed-green line shown in Figure 5 (Note that the NRC license and the South Dakota DENR proposed Large Scale Mine Permit will require these aquifer exemption areas to be cleaned up after uranium recovery has been completed.)

The project will involve the injection of lixiviant, consisting of injection-interval groundwater with added oxygen and carbon dioxide, into the uranium ore deposits targeted by 14 wellfields (shown in Figure 5) containing approximately 4,000 Class III injection wells. Class III injection wells will be used for introducing the lixiviant into the uranium ore zones. The lixiviant will mobilize uranium from the ore deposits and allow production wells to pump the uranium-bearing lixiviant out of the ground to a processing unit where the uranium will be removed from solution using an ion exchange resin. The barren lixiviant will be pumped from the processing unit back to the wellfield locations where oxygen and carbon dioxide will be added before injection back into uranium ore deposits through the wellfield injection wells. (Note that the 14 wellfields will not all be active at one time. It is the EPA’sunderstanding that one wellfield in the Dewey Area and one wellfield in the Burdock Area will be active, while one wellfield in each area may be undergoing groundwater restoration and one wellfield in each area may be undergoing construction).

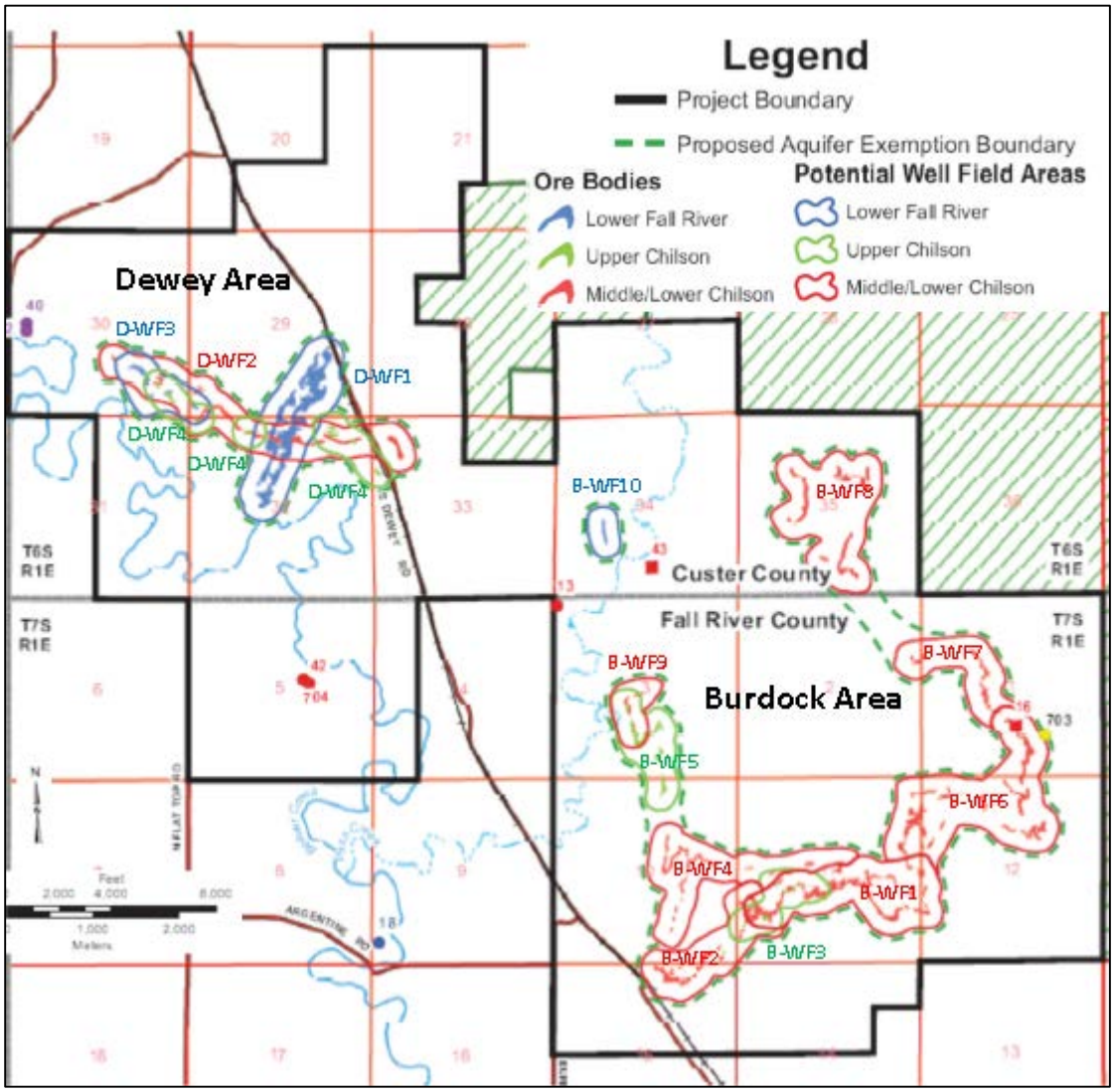


Figure 5. The Dewey-Burdock Project Area map showing the locations of the proposed aquifer exemption boundary (green-dashed line) surrounding the wellfields where the injection wells used for uranium recover will be located.

In addition to the EPA UIC permits and aquifer exemption, Powertech must obtain the additional state and federal permits listed in Table 12 in order to proceed with ISR operations at the Dewey-Burdock Site.

Table 12. Additional State and Federal Permits Powertech is required to obtain.

Issuing Agency	Description	Status
South Dakota Department of Environment and Natural Resources (SDDENR)	Uranium Exploration Permit	Application submitted July 2008; approved by South Dakota Board of Minerals and Environment November 2008
	Scenic and Unique Lands Designation	Submitted August 2008; SDDENR determined lands described by applicant do not constitute special, exceptional, critical, and unique; February 2009.
	Large-Scale Mine Permit	Application submitted September 2012; deemed procedurally complete January 2013; recommended for approval April 2013; hearing held Fall 2013; further hearings and process postponed until the NRC and the EPA have completed their actions.
	Water Appropriation Permits • Madison • Inyan Kara	Applications submitted June 2012; recommended for approval November 2012;
	Air Quality Permit	Application submitted November 2012; SDDENR determined that an operating air permit will not be required, February 2013.
	Groundwater Discharge Plan	Application submitted March 2012; recommended for approval December 2012;
	National Pollutant Discharge Elimination System Water Discharge Permit	Application not yet submitted.
U.S. Nuclear Regulatory Commission	Source Material License (10 CFR Part 40)	Submitted August 10, 2009. Final license issued April 8, 2014
U.S. Bureau of Land Management	Plan of Operations	Application submitted August 2009; revised document submitted January 2011 and under review.
US Army Corps of Engineers	Clean Water Act Section 404 Permit	Application not yet submitted

5.0 Potential Impacts within the Scope of the Permit

The UIC Program is a preventative program to protect USDWs from impacts related to injection activities. UIC regulations set minimum requirements for the construction, operation, and maintenance of injection wells and also give the EPA broad authority to impose additional permit requirements to prevent migration of fluids into USDWs. The EPA included protective monitoring requirements in the Class III Area Permit to detect any contamination of USDWs occurring during ISR operations or during and after groundwater restoration of the ISR wellfields. Standard industry practice includes protective monitoring designed to provide early detection of any loss of control of wellfield fluids so the operator can initiate corrective action before any contaminants leave the wellfield area. The EPA has included additional protective monitoring requirements to ensure that any ISR contaminants migrating out of the ISR wellfield are detected. For a more detailed discussion of wellfield monitoring, see the Class III Area Permit Fact Sheet, Section 12.0. The EPA included stringent characterization requirements in the Class V deep injection well permit to ensure that injection zone fluids remain within the injection zone.

Because of these protective permit requirements, the EPA concludes that there will be no impact to USDWs from the proposed injection activities at the Dewey-Burdock Project Site. The NRC license and the proposed South Dakota DENR Large Scale Mine Permit require restoration of groundwater inside the AE area, where groundwater has been impacted by uranium recovery. The EPA also concludes that there will be no groundwater impacts beyond the aquifer exemption boundary above drinking water standards and above permit limits for constituents without drinking water standards.

6.0 Potential Impacts outside the Scope of the Permit

6.1 Surface Water Impacts

The Dewey-Burdock Project Area is located near the Cheyenne River and tributaries to the Cheyenne River flow through the Project Area. The Cheyenne River has previously been identified as having areas with impaired water quality. The *2008 South Dakota Integrated Report for Surface Water Quality Assessment* states:

> *The Cheyenne River water quality continues to be generally poor due to both natural and agricultural sources. The lower Cheyenne drainage, in general, contains a high percentage of erodible cropland and rangeland in west-central South Dakota. This cropland may contribute additional amounts of eroded sediment during periods of heavy rainfall. Irrigation return flows, cropland, and rangeland also contribute to water quality problems. The latter two sources are particularly prevalent in the lower half of the river course.*

UIC regulations are designed to protect USDWs. The prohibition of contaminants from migrating into USDWs is linked to evaluation of confining zones, or low permeability geologic units overlying and underlying the injection zone that will ensure that injection zone fluids do not migrate out of the injection zone. The UIC Class III Area Permit for uranium recovery injection wells requires thorough characterization of injection zone confining zones before ISR operation can begin. These requirements will also prevent injection zone fluids from flowing upwards to the ground surface through confining zone breached by improperly plugged historic exploration drillholes, which could potentially impact

surface water within the Study Area. Part II of the UIC Class III Area Permit lists the characterization requirements; Sections 4.0 and 5.0 of the Class III Area Permit Fact Sheet discusses these requirements in more detail.

In addition to these EPA UIC permit requirements, the South Dakota DENR proposed the Large Scale Mine Permit requires Powertech to develop a Water Management and Erosion Control Plan, which will include mitigation measures to control drainage, erosion, and sedimentation. This plan must be implemented during and after ISR operations to reduce soil loss within the permit area. The DENR Water Program requires Powertech to obtain construction and industrial stormwater National Pollutant Discharge Elimination System (NPDES) permits. The NPDES permit requirements for discharges to surface water will control the amount of pollutants that can enter surface water bodies, such as streams, wetlands, and lakes or ponds. Powertech has not yet submitted any NPDES permit applications to the DENR, but must do so before any construction work is initiated on the site. Under the NPDES permits, Powertech must develop a Stormwater Management Plan (SWMP) to control erosion, stormwater runoff, and sedimentation from disturbed areas. The SWMP is required as part of the permit in accordance with DENR requirements to detain and treat stormwater runoff to ensure that runoff does not contaminate surface waters and wetlands. The SWMP will be very similar to, and complement, the proposed Large Scale Mine Permit Water Management and Erosion Control Plan.

In addition to the EPA UIC and South Dakota DENR permits, the NRC license requires Powertech to monitor 24 impoundments and 10 stream sampling sites as part of the operational monitoring program during ISR operations, as described in NRC Safety Evaluation Report, Section 5.7.9.4.5.

Because of these protective permit and license requirements, the EPA concludes that there will be no impact to surface water above regulatory/health standards beyond the Dewey-Burdock Project Area Boundary resulting from the proposed injection activities at the Dewey-Burdock Project Site.

6.2 Radiological Impacts

The NRC addressed radiological effects in the Supplemental Environmental Impact Statement (SEIS) developed for the Dewey-Burdock Project stating that radiation doses from ISR facility operations are expected to be well below regulatory limits. The NRC discusses potential radiological impacts in detail under Section 4.13 of the SEIS. Offsite radiological impact could result from the shipment of the uranium yellowcake to a licensed uranium conversion facility for further processing or during the shipment of 11e.(2) byproduct material. The EPA Cumulative Effects Analysis document that is part of the Administrative Record for the UIC permitting actions discusses impacts from spills and leaks in Section 5.0. Impacts from spills and leaks during yellowcake shipments is discussed in Section 5.3.1.

The yellowcake will be packaged in approved 55-gallon steel drums that will be shipped offsite via truck to licensed uranium conversion facilities for further processing. Conversion facilities are currently located in Metropolis, Illinois, and Port Hope, Ontario, Canada. The applicant projects an annual production of 1 million lb/yr of yellowcake, which would result in approximately one truckload transported every two weeks. A specialized, appropriately licensed transportation company will transport

the yellowcake to a conversion facility. The NRC license and the proposed South Dakota DENR Large Scale Mine Permit require Powertech to develop an Emergency Preparedness Program, as part of the Environmental Management Plan, which will be implemented should a transportation accident occur. The primary potential impact associated with an accident involving the spill of yellowcake would be potential impacts to soil in the immediate spill area. The potential impacts will be minimized by implementing the Emergency Preparedness Program and excavating and removing or remediating affected soils.

The Emergency Preparedness Program required under the NRC license and the proposed South Dakota DENR Large Scale Mine Permit will help prevent radiological exposures to the general public. The cleanup requirements under the plan will prevent the occurrence of long term exposures. These requirements will help ensure that these will be no radiological health or environmental impacts above regulatory/health standards resulting from ISR activities at the Dewey-Burdock Project Site or from the transportation of yellowcake from the site.

Byproduct material is defined under Section 11e.(2) of the Atomic Energy Act. NRC regulations include wastes produced by the extraction or concentration of uranium under the definition of 11e.(2) byproduct material. All solid 11e.(2) byproduct material generated in the permit area will be transported to an appropriately licensed disposal facility. Most of the solid 11e.(2) byproduct material shipping will occur during site reclamation and decommissioning. The potential risk of a transportation accident is low, since solid 11e.(2) byproduct material is generally less radioactive than yellowcake and most of the waste will be in a solid form that is easy to contain. All applicable Department of Transportation (DOT) regulations and requirements must be followed during shipment to minimize the potential for a spill resulting from a transportation accident. The primary potential impact associated with an accident involving the spill of solid 11e.(2) byproduct material would be potential impacts to soil in the immediate spill area. The potential impacts will be minimized by excavating and removing or remediating affected soils. The NRC license requires a Powertech to develop a decommissioning plan subject to NRC approval that ensures that the site meets regulatory standards. As discussed in Section 6.0, Impacts to Land Use, in the EPA Cumulative Effects Analysis document, Powertech intends to return the Project Area to its original use, which is rangeland for cattle grazing and agricultural cropland. The NRC-approved decommissioning plan will help ensure that the Dewey-Burdock Project Area will meet the regulatory/health standards required to return the land to its pre-ISR use.

The NRC states in the section of the SEIS containing responses to public comments that Powertech proposes to pursue an agreement with the White Mesa site in San Juan County, Utah, for disposal of solid byproduct material as discussed in SEIS Section 3.13.2. NRC states that San Juan County's population is composed of 49 percent American Indian and Native Alaska persons. The White Mesa site in Blanding, Utah is an existing conventional mill site that has a tailings disposal area licensed by the State of Utah to accept 11e.(2) byproduct wastes. The NRC stated that the amount of solid byproduct material generated by an ISR facility, such as the proposed Dewey-Burdock ISR Project, is only a small fraction of the tailings generated and disposed of at a conventional mill site. In addition, the proposed Dewey-Burdock ISR project would be only one of many ISR projects disposing of solid byproduct

material at the White Mesa site. The NRC concluded that the addition of ISR byproduct material from the proposed Dewey-Burdock ISR Project to the White Mesa disposal site is not considered significant.

6.3 Air Quality Impacts

In Section 3.7.2 of the NRC SEIS, the NRC states that the Dewey-Burdock Project Area is located in the Black Hills-Rapid City Intrastate Air Quality Control Region, which is made up of Butte, Custer, Fall River, Lawrence, Meade, and Pennington Counties, South Dakota. An Air Quality Control Region is a federally designated area for air quality management purposes. The Black Hills-Rapid City Intrastate Air Quality Control Region meets all of the National Ambient Air Quality Standards (NAAQS) regulations and, therefore, is classified as an attainment area for each criteria pollutant.

As discussed earlier, the ozone Environmental Indicator ranked in the 99th percentile for the state for both the Study Area and the Edgemont Area as shown in Tables 3a and 3b. Because high levels of ozone can trigger a variety of health problems, particularly for children, the elderly, and people of all ages who have lung diseases such as asthma, the EPA examined the high rank percentiles for the ozone Environmental Indicator more closely. The ozone Environmental Indicator values are the same for both the Study Area and the Edgemont Area, because the measurements were obtained from the same air monitoring station. The ground-level ozone summer seasonal average of daily maximum 8-hour concentration value for the Study Area is 53.5 parts per billion (ppb). The South Dakota average value is 50.3 ppb, which would be the 50th percentile ranking level for the state. Although a new NAAQS for ozone of 70 ppb was finalized in 2015, the 2008 NAAQS for ozone that is currently being implemented is 75 ppb. The state average ozone concentration is 67% of the standard; the ozone concentration at the Study Area is 71% of the standard. This 4% increase in ozone concentration above the state average resulted in the rank increase from the 50th percentile (representing the state average) to the 99th percentile. The area is an attainment area for all NAAQS and the Study Area and Edgemont Area ozone environmental indicator concentration is 71% of the currently implemented ozone NAAQS. Even though the ozone Environmental Indicator ranked in the 99th percentile for the state, the ozone concentrations in the Study Area and Edgemont Area ozone is below the ozone NAAQS. Therefore, the EPA concludes that ozone does not present a health risk in the areas.

7.0 Impacts to Historic and Cultural Resources

As part of the UIC permit process, the EPA is required to consider whether Section 106 of the National Historic Preservation Act (NHPA) applies to the issuance of a UIC permit. 40 CFR § 144.4. The EPA has determined that the NHPA, which requires federal agencies to take into account the effects of their undertakings on historic properties, applies to its consideration of the UIC permits for the proposed Dewey-Burdock Uranium ISR Project. A detailed summary of the EPA's NHPA section 106 activities appears in *The EPA National Historic Preservation Act Compliance and Review for the Proposed Dewey-Burdock In-Situ Uranium Recovery Project* that is part of the Administrative Record for these UIC permitting actions.

8.0 Tribal Consultation

Because the Black Hills is an area of cultural importance to many Native American tribes, the EPA engaged, and continues to engage, in enhanced tribal consultation efforts under both the National Historic Preservation Act (NHPA) and the EPA *Policy for Consultation and Coordination with Indian Tribes*. The EPA has identified that enhanced communication is warranted for all potentially affected Tribal communities, based on historic interest in the site, and specifically the Oglala Sioux Tribe (OST) and Cheyenne River Sioux Tribe (CRST) because they are located downstream of the Dewey-Burdock Project Area along the Cheyenne River. Both OST and CRST have expressed concerns about the impacts of ISR activities on the water quality of the Cheyenne River specifically and on groundwater quality in general. In addition, because the Dewey-Burdock Site is located in the southern Black Hills region, all Tribes with which the EPA consulted have concerns about identification and protection of historic properties, including properties of traditional religious and cultural importance to the Tribes.

The document entitled *The Environmental Protection Agency National Historic Preservation Act Draft Compliance and Review Document for the Proposed Dewey-Burdock In-Situ Uranium Recovery Project* discussed the EPA Tribal Consultation efforts to day, including the list of Tribes requesting formal consultation with the EPA. During EPA Tribal Consultation meetings, all of the Tribes expressed concerns about surface water and groundwater impacts from the ISR operation, as it pertains to UIC permitting. Tribes with which the EPA consulted also expressed concerns that the proposed injection zone for the Class V deep injection wells lies above the Madison Formation aquifer, which is an important drinking water supply in western South Dakota. The EPA Class V Area Permit has addressed these concerns by requiring characterization of the injection interval confining zones to help ensure that overlying and underlying aquifers, including the Madison Formation aquifer, will not be impacted by injection zone fluids migrating across confining zones into aquifers outside of the intended injection zone. The Class III Area Permit requires characterization of confining zone to help ensure that injection zone fluids do not flow upwards to the surface along breaches in confining zones and to minimize potential impacts to surface water.

The Environmental Protection Agency National Historic Preservation Act Draft Compliance and Review Document for the Proposed Dewey-Burdock In-Situ Uranium Recovery Project includes a more detailed discussion of the EPA's NHPA section 106 Tribal Consultation efforts. The EPA also plans to offer web conferences to Tribal Historic Preservation Officers and Tribal Environmental Directors to discuss the permit requirements. The goal of these web conferences is to encourage tribes to participate in the public review process and provide comments to the EPA on the UIC draft permit requirements and on the overall permitting process, including the NHPA Section 106 process.

9.0 Enhanced Public Participation and Outreach Activities

The EPA is taking measures to conduct enhanced public participation and outreach activities with the aim of encouraging public involvement in the permitting process. First, while not required, the EPA is exercising its discretion to hold a number of public informational meetings and public hearings following issuance of the draft UIC permits. The meetings and public hearings will take place in Edgemont, Rapid City, and Hot Springs, South Dakota and in Valentine, Nebraska. In addition, the EPA plans to conduct

community outreach sessions before the public hearings to provide the local communities opportunity to receive additional information about the proposed Dewey-Burdock Uranium Recovery Project and the proposed UIC permit requirements. EPA representatives will be available to answer questions from the community before each public hearing begins. The EPA is holding a public hearing in Edgemont in consideration of the information developed in the EJSCREEN process. The hearing in Valentine, Nebraska is intended to provide a venue closer to the eastern portion of the Pine Ridge Reservation, the Rosebud Sioux Tribe, the Santee Sioux Tribe and the Ponca Tribe of Nebraska so that Tribal members and others can more readily participate. The hearing in Hot Springs is intended to provide a venue closer to the western portion of the Pine Ridge Reservation so that Oglala Sioux Tribal members and others can more readily participate, The Rapid City, South Dakota location was selected because it is closer to the Cheyenne River Sioux Tribe than the two public hearings in Edgemont and Hot Springs. Second, the EPA is holding a longer public comment period for the UIC draft permits than the 30-day period required under 40 CFR § 124.10.

10.0 EJ Considerations in the Development of Permit Requirements

The UIC Program is a preventative program that protects USDWs from contamination related to injection activities. Because of the potential impacts related to the uranium recovery activities proposed at the Dewey-Burdock site, the EPA finds it necessary to include the permit requirements to ensure protection of USDWs. UIC regulation § 140 CFR 144.52(a)(9) requires the EPA to impose on a case-by-case basis such additional conditions as are necessary to prevent the migration of fluids into underground sources of drinking water. There are private wells completed in the injection zone aquifers downgradient of the ISR wellfields. The proposed injection zone for the deep Class V injection wells lies above the Madison Formation aquifer, which is an important source of drinking water in western South Dakota.

The UIC permit requirements take into account:

1. the downgradient private wells completed in the injection by including monitoring requirements to verify no ISR contaminants cross the aquifer exemption boundary and
2. the deep Class V well injection zone is located just above the Madison Formation by verifying the integrity of the confining zone protecting the Madison aquifer and other USDWs.

These permit requirements include additional hydrogeologic characterization and monitoring that must be met before the EPA will authorize operation of the injection wells, including:

1. Extensive evaluation and characterization of injection zone and confining zone hydrogeologic conditions for both the Class III ISR and Class V deep injection wells;
2. Protective construction and operating requirements for injection wells; and
3. Demonstration that extensive monitoring programs are in place for the Class III wells that are designed to detect any threat to USDWs in a timely manner enabling Powertech to implement mitigation measures before USDWs are actually impacted.

To improve transparency to the public in the event that permit conditions are violated, the EPA is including an additional notification requirement to the public and Tribal governments identified in Table

1 of the EPA NHPA document on violations of permit requirements. The UIC permits require the written reports that are due 5 days after the 24-hour notification of a permit violation per UIC regulation 40 CFR § 144.51(l)(6) be provided to the Director in electronic format, as well as in writing, for release to the public and tribal governments on the EPA Region 8 UIC website. The permit requirement states that the report must contain a description of the noncompliance and its cause, the period of noncompliance including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue and the steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

11.0 Conclusions

The screening process using EJSCREEN identifies the City of Edgemont as a potentially overburdened community. Thus, the EPA has determined that it is appropriate to conduct enhanced public participation and outreach activities with the aim of encouraging public involvement in the permitting process. The EPA is exercising its discretion to hold a number of public informational meetings and public hearings following issuance of the draft UIC permits and to allow for a longer comment period than that required by regulation. The EPA also proposes to implement appropriate permit requirements intended to ensure protection of the underground sources of drinking water and to facilitate public notification and access to information in the event of noncompliance with permit requirements. The EPA will continue to assess potential EJ considerations and is inviting review and comment on this draft EJ analysis.

APPENDIX A

EJSCREEN INFORMATION

(from EPA website: https://www.epa.gov/ejscreen)

EJSCREEN is an environmental justice mapping and screening tool that provides the EPA with a nationally consistent dataset and approach for combining environmental and demographic indicators. EJSCREEN users choose a geographic area; the tool then provides demographic and environmental information for that area. All of the EJSCREEN indicators are publicly-available data. EJSCREEN simply provides a way to display this information and includes a method for combining environmental and demographic indicators into EJ indexes.

EJSCREEN includes:

- 11 environmental indicators
- 6 demographic indicators
- 11 EJ indexes

Each of these items are discussed in more detail below.

Overview of the 11 Environmental Indicators in EJSCREEN

Key Medium	Indicator	Details	Source	Data Year
Air	National-Scale Air Toxics Assessment (NATA) air toxics cancer risk	Lifetime cancer risk from inhalation of air toxics	EPA NATA	2011
Air	NATA respiratory hazard index	Air toxics respiratory hazard index (ratio of exposure concentration to health-based reference concentration)	EPA NATA	2011
Air	NATA diesel PM	Diesel particulate matter level in air, µg/m^3	EPA NATA	2011
Air	Particulate matter	$PM_{2.5}$ levels in air, µg/m^3 annual avg.	EPA, Office of Air and Radiation (OAR) fusion of model and monitor data	2012
Air	Ozone	Ozone summer seasonal avg. of daily maximum 8-hour concentration in air in parts per billion	EPA, OAR fusion of model and monitor data	2012

Key Medium	Indicator	Details	Source	Data Year
Air/other	Traffic proximity and volume	Count of vehicles (AADT, avg. annual daily traffic) at major roads within 500 meters, divided by distance in meters (not km)	Calculated from 2014 U.S. Department of Transportation (DOT) traffic data, retrieved 2016	2014
Dust/ lead paint	Lead paint indicator	Percent of housing units built pre-1960, as indicator of potential lead paint exposure	Calculated based on Census/American Community Survey (ACS) data, retrieved 2015	2010-2014
Waste/ air/ water	Proximity to Risk Management Plan (RMP) sites	Count of RMP (potential chemical accident management plan) facilities within 5 km (or nearest one beyond 5 km), each divided by distance in kilometers	Calculated from EPA's RMP database, retrieved 12/01/2015	2015
Waste/ air/ water	Proximity to Treatment Storage and Disposal Facilities (TSDFs)	Count of TSDFs (hazardous waste management facilities) within 5 km (or nearest beyond 5 km), each divided by distance in kilometers	Calculated from EPA's Resource Conservation and Recovery Act (RCRA) Info database, retrieved 12/08/2015	2015
Waste/ air/ water	Proximity to National Priorities List (NPL) sites	Count of proposed or listed NPL - also known as superfund - sites within 5 km (or nearest one beyond 5 km), each divided by distance in kilometers	Calculated from EPA's Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) database, retrieved 10/30/2015	2015
Water	Proximity to major direct water dischargers	Count of National Pollutant Discharge Elimination System (NPDES) major direct water discharger facilities within 5 km (or nearest one beyond 5 km), each divided by distance in kilometers	Calculated from EPA's Permit Compliance System/ Integrated Compliance Information System (PCS/ICIS) database, retrieved 11/30/2015	2015

Note: EJSCREEN's EJ Indexes also include demographic information that is obtained from the U.S. Census Bureau's American Community Survey (ACS). The 2016 version of EJSCREEN includes 2010-2014 ACS 5-year summary file data, which is based on 2012 Census boundaries.

It is important to understand what each of these is measuring or indicating, in order to use EJSCREEN appropriately. There are important caveats and limitations to these screening-level indicators and anyone using EJSCREEN is encouraged to read these carefully.

Read more information about Environmental Indicators (PDF)(123 pp, 1 MB), including documentation of data sources.

Some of these environmental indicators quantify proximity to and the numbers of certain types of potential sources of exposure to environmental pollutants, such as nearby hazardous waste sites or traffic. The lead paint indicator indicates the presence of older housing, which often, but not always, indicates the presence of lead paint, and therefore the possibility of exposure. In some cases, the term "exposure" is used very broadly here to refer to the potential for exposure. Others indicators in EJSCREEN are estimates of ambient levels of air pollutants, such as $PM_{2.5}$, ozone and diesel particulate matter. Still others are actual estimates of air toxics-related cancer risk or a hazard index, which summarizes the ratios of ambient air toxics levels to health-based reference concentrations. In other words, these environmental indicators vary widely in what they indicate

Overview of ehe 6 Demographic Indicators in EJSCREEN

EJSCREEN uses demographic factors as very general indicators of a community's potential susceptibility to the types of environmental factors included in this screening tool, as explained further in the EJSCREEN Technical Documentation. EJSCREEN has been designed in the context of EPA's EJ policies, including EPA's Final Guidance on Considering Environmental Justice During the Development of an Action (U.S. EPA, 2010) (PDF)(56 pp, 594 K). That guidance document explained EPA's focus on demographics as an indicator of potential susceptibility to environmental pollution.

There are six demographic indicators:

1. **Percent Low-Income**:
    - The percent of a block group's population in households where the household income is less than or equal to twice the federal "poverty level."
2. **Percent Minority**:
    - The percent of individuals in a block group who list their racial status as a race other than white alone and/or list their ethnicity as Hispanic or Latino. That is, all people other than non-Hispanic white-alone individuals. The word "alone" in this case indicates that the person is of a single race, not multiracial.
3. **Less than high school education**:
    - Percent of people age 25 or older in a block group whose education is short of a high school diploma.
4. **Linguistic isolation**:
    - Percent of people in a block group living in linguistically isolated households. A household in which all members age 14 years and over speak a non-English language and also speak English less than "very well" (have difficulty with English) is linguistically isolated.
5. **Individuals under age 5**:
    - Percent of people in a block group under the age of 5.
6. **Individuals over age 64**:
    - Percent of people in a block group over the age of 64.

EJSCREEN provides two indexes that are based on the above demographic indicators:

- **A Demographic Index** is based on the average of two demographic indicators; Percent Low-Income and Percent Minority.
- **A Supplementary Demographic Index** is based on the average of the all six demographic indicators.

Read more detailed information about Demographic Indicators in the EJSCREEN Technical Documentation, including data sources.

The Environmental Justice Indexes in EJSCREEN

The EJ index is a combination of environmental and demographic information. There are twelve EJ Indexes in EJSCREEN reflecting the 11 environmental indicators. The 11 EJ Index names are:

1. National Scale Air Toxics Assessment Air Toxics Cancer Risk
2. National Scale Air Toxics Assessment Respiratory Hazard Index
3. National Scale Air Toxics Assessment Diesel PM (DPM)
4. Particulate Matter (PM2.5)
5. Ozone
6. Lead Paint Indicator
7. Traffic Proximity and Volume
8. Proximity to Risk Management Plan Sites
9. Proximity to Treatment Storage and Disposal Facilities
10. Proximity to National Priorities List Sites
11. Proximity to Major Direct Water Dischargers

Each EJ index combines demographic indicators with a single environmental indicator. This tool uses provides a number of capabilities including:

- Color coded mapping
- The ability to generate a standard report for a selected area
- Comparisons showing how a selected area compares to the state, EPA region or the nation

EJSCREEN replaces EJView, a previous publicly available environmental justice screening tool, and incorporates recommendations from the National Environmental Justice Advisory Council (NEJAC).

Anyone using EJSCREEN should note there is substantial uncertainty in demographic and environmental data, particularly when looking at small geographic areas. EJSCREEN is not intended to provide a risk assessment. Also EJSCREEN does not provide data on every environmental impact and demographic indicator that may be relevant to a particular location, and data may be several years old. Screening results should be supplemented with additional information and local knowledge to get a better understanding of the issues in a selected location. It is important to understand the caveats and limitations when using EJSCREEN.

How the EPA Uses EJSCREEN

EPA uses EJSCREEN as a preliminary step when considering environmental justice in certain situations. The agency uses it to screen for areas that may be candidates for additional consideration, analysis or outreach as EPA develops programs, policies and activities that may affect communities. In the past, the agency employed EJ screening tools in a wide variety of circumstances.

A few examples of what EJSCREEN supports across the agency include:

- Informing outreach and engagement practices
- Implementing aspects of the following programs:
  - permitting
  - enforcement
  - compliance
  - voluntary
- Developing retrospective reports of EPA work
- Enhancing geographically based initiatives

EJSCREEN is not used by EPA staff for any of the following:

- As a means to identify or label an area as an "EJ community"
- To quantify specific risk values for a selected area
- To measure cumulative impacts of multiple environmental factors
- As a basis for agency decision-making or making a determination regarding the existence or absence of EJ concerns

APPENDIX B
EJSCREEN Standard Report for the Study Area
which includes the
Dewey-Burdock Project Area and a 20-Mile Buffer Measured from the Approximate Project Boundary
Consisting of
Portions of Weston and Niobrara Counties in Wyoming
and
Portions of Fall River and Custer Counties in South Dakota

EJSCREEN Report (Version 2016)

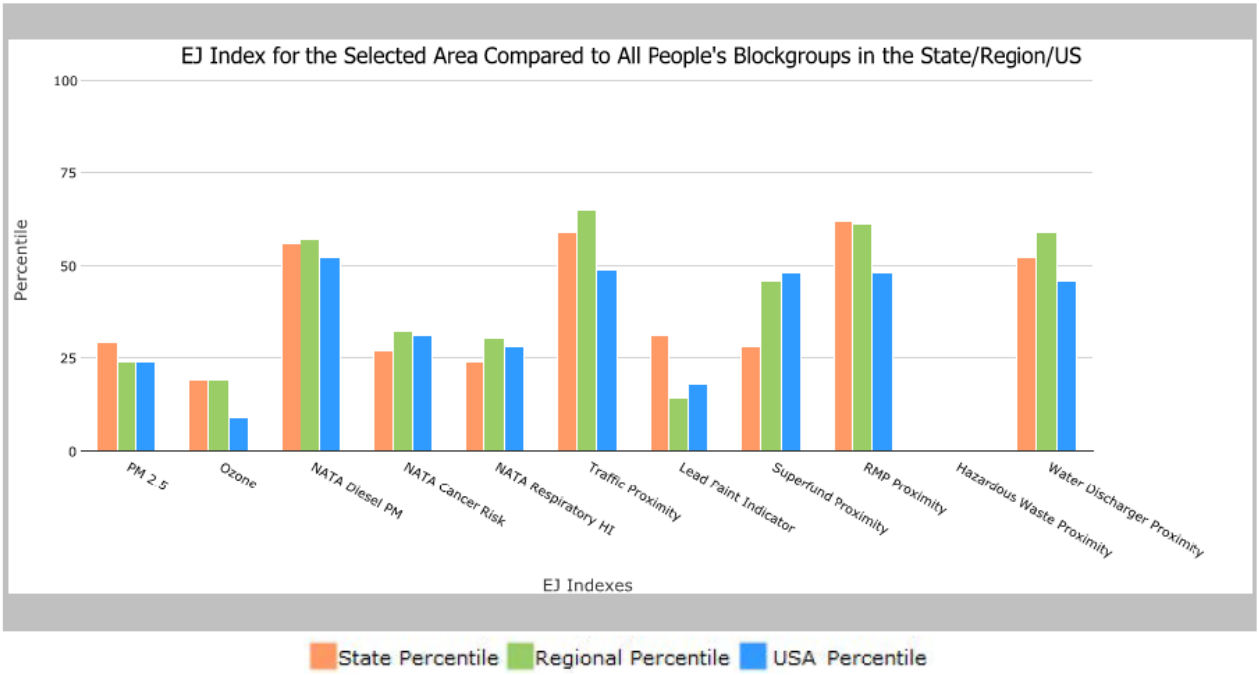
20 mile Ring around the Area, SOUTH DAKOTA, EPA Region 8

Approximate Population: 3,569

Input Area (sq. miles): 1723.03

Dewey-Burdock Study Area

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	29	24	24
EJ Index for Ozone	19	19	9
EJ Index for NATA* Diesel PM	56	57	52
EJ Index for NATA* Air Toxics Cancer Risk	27	32	31
EJ Index for NATA* Respiratory Hazard Index	24	30	28
EJ Index for Traffic Proximity and Volume	59	65	49
EJ Index for Lead Paint Indicator	31	14	18
EJ Index for Superfund Proximity	28	46	48
EJ Index for RMP Proximity	62	61	48
EJ Index for Hazardous Waste Proximity+	N/A	N/A	N/A
EJ Index for Water Discharger Proximity	52	59	46



This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

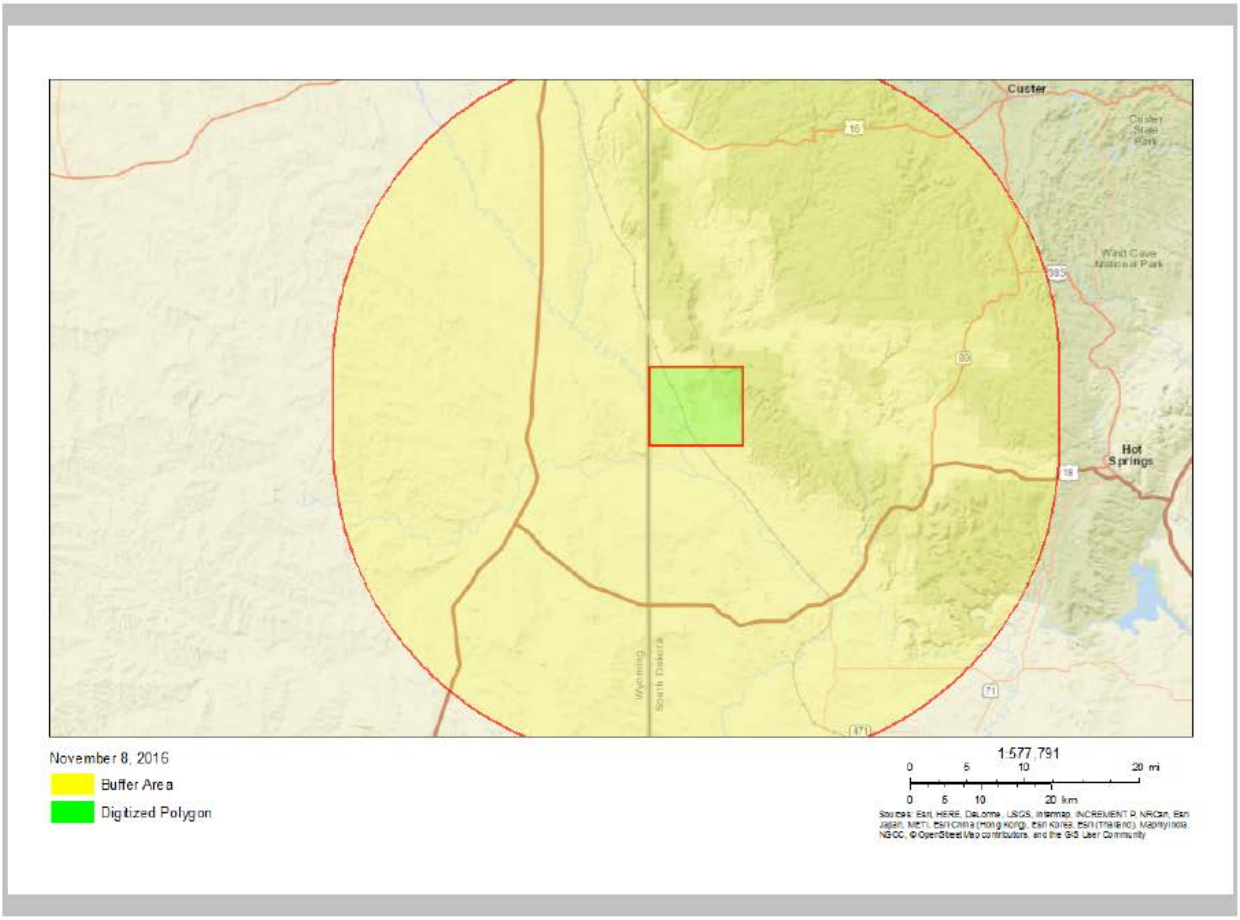
EJSCREEN Report (Version 2016)

20 mile Ring around the Area, SOUTH DAKOTA, EPA Region 8

Approximate Population: 3,569

Input Area (sq. miles): 1723.03

Dewey-Burdock Study Area



Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0
National Pollutant Discharge Elimination System (NPDES)	0

EJSCREEN Report (Version 2016)

20 mile Ring around the Area, SOUTH DAKOTA, EPA Region 8

Approximate Population: 3,569

Input Area (sq. miles): 1723.03

Dewey-Burdock Study Area

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in µg/m^3)	6.03	7.89	4	7.17	17	9.32	2
Ozone (ppb)	53.5	50.3	99	54.6	25	47.4	82
NATA* Diesel PM (µg/m^3)	0.0725	0.294	12	0.605	<50th	0.937	<50th
NATA* Cancer Risk (lifetime risk per million)	18	22	23	30	<50th	40	<50th
NATA* Respiratory Hazard Index	0.75	0.82	52	1.4	<50th	1.8	<50th
Traffic Proximity and Volume (daily traffic count/distance to road)	2.5	49	16	250	6	590	7
Lead Paint Indicator (% Pre-1960 Housing)	0.25	0.34	47	0.23	67	0.3	56
Superfund Proximity (site count/km distance)	0.0001	0.016	78	0.11	36	0.13	16
RMP Proximity (facility count/km distance)	0.017	0.29	12	0.34	6	0.43	1
Hazardous Waste Proximity+ (facility count/km distance)	N/A	0.12	N/A	0.12	N/A	0.11	N/A
Water Discharger Proximity (facility count/km distance)	0.031	0.2	24	0.27	9	0.31	3
Demographic Indicators							
Demographic Index	16%	25%	34	27%	28	36%	20
Minority Population	6%	16%	34	23%	15	37%	14
Low Income Population	26%	33%	36	31%	44	35%	39
Linguistically Isolated Population	0%	1%	69	2%	55	5%	44
Population With Less Than High School Education	10%	9%	64	9%	67	14%	48
Population Under 5 years of age	4%	7%	22	7%	24	6%	31
Population over 64 years of age	24%	15%	86	12%	91	14%	89

* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: https://www.epa.gov/national-air-toxics-assessment.

+ The hazardous waste environmental indicator and the corresponding EJ index will appear as N/A if there are no hazardous waste facilities within 50 km of a selected location.

For additional information, see: www.epa.gov/environmentaljustice

EJSCREEN is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJSCREEN outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.

November 08, 201 3/3

APPENDIX C
EJSCREEN Standard Report for the Edgemont Area
which includes a
5-Mile Buffer from the Center of Edgemont, South Dakota

EJSCREEN Report (Version 2016)

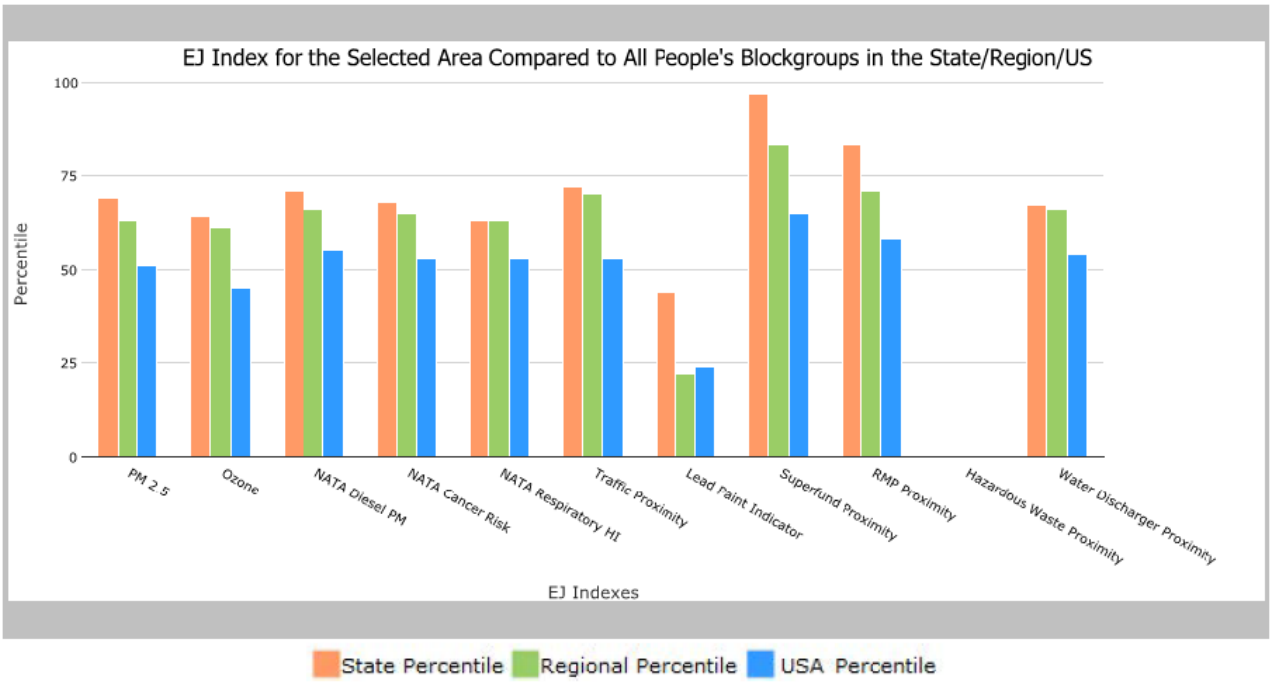
5 mile Ring Centered at 43.300639,-103.831484, SOUTH DAKOTA, EPA Region 8

Approximate Population: 905

Input Area (sq. miles): 78.53

Edgemont Study Area

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	69	63	51
EJ Index for Ozone	64	61	45
EJ Index for NATA* Diesel PM	71	66	55
EJ Index for NATA* Air Toxics Cancer Risk	68	65	53
EJ Index for NATA* Respiratory Hazard Index	63	63	53
EJ Index for Traffic Proximity and Volume	72	70	53
EJ Index for Lead Paint Indicator	44	22	24
EJ Index for Superfund Proximity	97	83	65
EJ Index for RMP Proximity	83	71	58
EJ Index for Hazardous Waste Proximity+	N/A	N/A	N/A
EJ Index for Water Discharger Proximity	67	66	54



This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

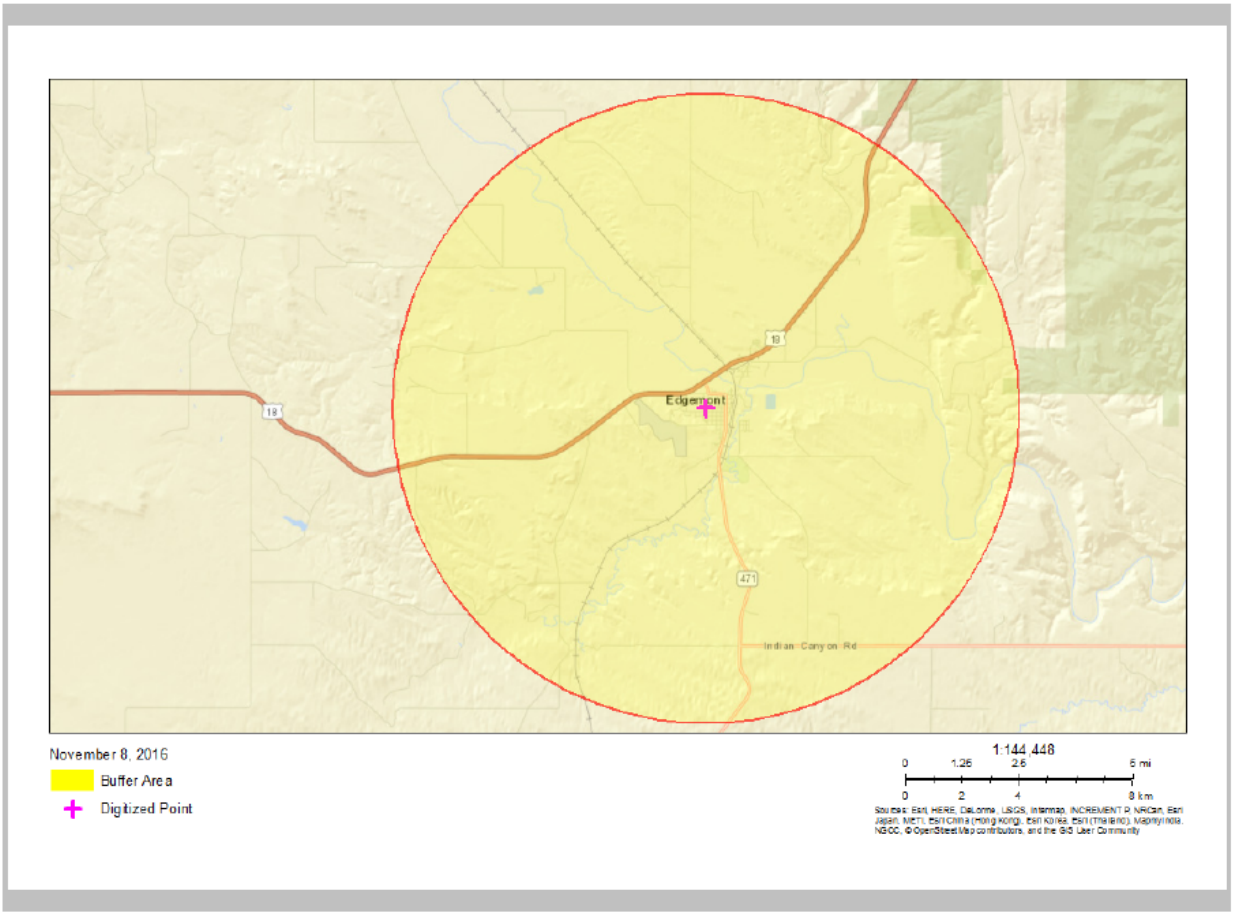
EJSCREEN Report (Version 2016)

5 mile Ring Centered at 43.300639,-103.831484, SOUTH DAKOTA, EPA Region 8

Approximate Population: 905

Input Area (sq. miles): 78.53

Edgemont Study Area



Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0
National Pollutant Discharge Elimination System (NPDES)	0

EJSCREEN Report (Version 2016)

5 mile Ring Centered at 43.300639,-103.831484, SOUTH DAKOTA, EPA Region 8

Approximate Population: 905

Input Area (sq. miles): 78.53

Edgemont Study Area

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in µg/m³)	6.15	7.89	9	7.17	20	9.32	2
Ozone (ppb)	53.5	50.3	99	54.6	25	47.4	82
NATA* Diesel PM (µg/m³)	0.11	0.294	21	0.605	<50th	0.937	<50th
NATA* Cancer Risk (lifetime risk per million)	18	22	30	30	<50th	40	<50th
NATA* Respiratory Hazard Index	0.64	0.82	42	1.4	<50th	1.8	<50th
Traffic Proximity and Volume (daily traffic count/distance to road)	2.6	49	16	250	6	590	7
Lead Paint Indicator (% Pre-1960 Housing)	0.46	0.34	66	0.23	81	0.3	73
Superfund Proximity (site count/km distance)	0	0.016	78	0.11	36	0.13	16
RMP Proximity (facility count/km distance)	1.6E-05	0.29	9	0.34	4	0.43	1
Hazardous Waste Proximity+ (facility count/km distance)	N/A	0.12	N/A	0.12	N/A	0.11	N/A
Water Discharger Proximity (facility count/km distance)	0.033	0.2	25	0.27	9	0.31	4
Demographic Indicators							
Demographic Index	25%	25%	65	27%	56	36%	42
Minority Population	5%	16%	31	23%	14	37%	13
Low Income Population	46%	33%	75	31%	77	35%	70
Linguistically Isolated Population	0%	1%	69	2%	55	5%	44
Population With Less Than High School Education	13%	9%	75	9%	75	14%	58
Population Under 5 years of age	2%	7%	8	7%	10	6%	14
Population over 64 years of age	21%	15%	79	12%	86	14%	83

* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: https://www.epa.gov/national-air-toxics-assessment.

+ The hazardous waste environmental indicator and the corresponding EJ index will appear as N/A if there are no hazardous waste facilities within 50 km of a selected location.

For additional information, see: www.epa.gov/environmentaljustice

EJSCREEN is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJSCREEN outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.

November 08, 201 3/3

APPENDIX D
Remedial Site Assessment Decision Form
for the
Darrow/Freezeout/Triangle Uranium Mines
April 2016

REMEDIAL SITE ASSESSMENT DECISION – EPA Region 08

Site Name: DARROW/FREEZEOUT/TRIANGLE URANIUM MINE
Alias(es): ABANDONED OPEN PIT URANIUM MINE
ABANDONED OPEN PIT URANIUM MINE

City: NEAR EDGEMONT County or Parish: FALL RIVER State: SD

Refer to Report Dated: 03/01/2016 EPA ID: SDN000803095
Report Developed By: Weston Solutions State ID:
Report Type: Site Inspection (001) #001 Decision Date: 03/01/2016

- [x] 1. Further Remedial Site Assessment Under CERCLA (Superfund) is not required because:
  NFRAP-Site does not qualify for the NPL based on existing information
- [ ] 2. Further Assessment Needed Under CERCLA.
- [ ] 3. Remedial study/deanup needed.

Decision/Rationale:

The U.S. Environmental Protection Agency (EPA) has determined that no further remedial action by the Federal Superfund program is warranted at the referenced site, at this time. The basis for the no further remedial action planned (NFRAP) determination is provided in the attached document. A NFRAP designation means that no additional remedial steps under the Federal Superfund program will be taken at the site unless new information warranting further Superfund consideration or conditions not previously known to EPA regarding the site are disclosed. In accordance with EPA's decision regarding the tracking of NFRAP sites, the referenced site may be removed from the CERCLIS database and placed in a separate archival database as a historical record if no further Superfund interest is warranted. Archived sites may be returned to the CERCLIS site inventory if new information necessitating further Superfund consideration is discovered.

Based on a comparison of onsite and offsite data to background concentrations, concentrations of total metal uranium, uranium-238 and radium-226 in surface water were not observed to exceed the three times background concentrations and an Observed Release of metals and radionuclides to the surface water pathway cannot be documented for the Site. Thus, a decision of no further remedial action planned (NFRAP) has been made by the EPA since the Site does not qualify for the NPL based on the existing information as of March 2016. If conditions change or if there is a change in land use in this area, EPA can reassess the site in the future. It should be noted that EPA was not able to obtain current data from the Site source since access had not been granted at the time of the sampling event.

Decision/Rationale (Continued):

Site Decision Made By: Dania Zinner

Signature:_____ Decision Date: 03/01/2016

EPA Form # 9100-3

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