

Montalban Oil & Gas Operations, Inc, Jody Field Wells Aquifer Exemption Expansion Pondera County, Montana Draft Climate and Environmental Justice Analysis

1.0 Introduction

This document sets forth the U.S. Environmental Protection Agency (EPA) Region 8's Climate and Environmental Justice analysis for the Safe Drinking Water Act (SDWA) Underground Injection Control (UIC) aquifer exemption (AE) expansion for the Montalban Oil & Gas Operations, Inc (MOGO) Jody Field 34-1 and Jody Field 34-2 injection wells injecting into the Madison Formation in the Jody Field located in Pondera County, Montana.

This analysis is informed by a number of Executive Orders across administrations that establish federal executive policies on environmental justice, equity, climate change, and tribal consultation.

[Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations](#), lays the foundation of the federal environmental justice and equity policies, directing each federal agency, to the greatest extent practicable and permitted by law, to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."¹ As underscored in the Presidential memorandum accompanying EO 12898,² existing environmental and civil rights³ statutes provide many opportunities to ensure that all communities and persons live in a safe and healthful environment.⁴

[Executive Order 14096, Revitalizing Our Nation's Commitment to Environmental Justice for All](#), supplements EO 12898 and reinforces the federal government's commitment to advancing environmental justice, equity, and civil rights, establishing a policy that "every person must have clean air to breathe; clean water to drink; safe and healthy foods to eat; and an environment that is healthy, sustainable, climate-resilient, and free from harmful pollution and chemical exposure."⁵ The Order defines the term "environmental justice"⁶ and sets forth a government-wide approach to environmental justice that includes directives that each agency, as appropriate

¹ Exec. Order No. 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, 59 Fed. Reg. 7629 (Feb. 11, 1994) (hereinafter EO 12898).

² See <https://www.govinfo.gov/content/pkg/WCPD-1994-02-14/pdf/WCPD-1994-02-14-Pg279.pdf>

³ EPA enforces several federal civil rights laws that, together, prohibit discrimination on the bases of race, color, national origin (including limited-English proficiency), disability, sex, age, and retaliation/intimidation in programs or activities that receive federal financial assistance from EPA. See 40 C.F.R Part 7; Title VI of the Civil Rights Act of 1964 (42 United States Code §§ 2000d to 2000d-7); Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. § 794); Title IX of the Education Amendments of 1972 (20 U.S.C. §§ 1681 et seq.); Section 13 of the Federal Water Pollution Control Act Amendments of 1972 Pub. L. 92-500 § 13, 86 Stat. 903 (codified as amended at 33 U.S.C. § 1251); Age Discrimination Act of 1975 (42 U.S.C. § 6101 et seq.); 40 C.F.R. parts 5 and 7.

⁴ Civil rights laws also create independent obligations for recipients of federal financial assistance to provide meaningful access to their programs and activities, including access for those with limited English proficiency, as well as to ensure their programs and activities do not result in discriminatory effects. See Chapter 7 "Civil Rights in Federal Assistance Programs," *infra*. States may also have independent obligations to consider environmental justice, either procedurally or substantively, based on state environmental justice or civil rights laws.

⁵ Exec. Order No. 14096, *Revitalizing Our Nation's Commitment to Environmental Justice for All*, 88 Fed. Reg. 25251 (Apr. 21, 2023) (hereinafter EO 14096).

⁶ "Environmental justice" means the just treatment and meaningful involvement of all people, regardless of income, race, color, national origin, Tribal affiliation, or disability, in agency decision-making and other Federal activities that affect human health and the environment so that people: (i) are fully protected from disproportionate and adverse human health and environmental effects (including risks) and hazards, including those related to climate change, the cumulative impacts of environmental and other burdens, and the legacy of racism or other structural or systemic barriers; and (ii) have equitable access to a healthy, sustainable, and resilient environment in which to live, play, work, learn, grow, worship, and engage in cultural and subsistence practices." EO 14096, 88 Fed. Reg. at 15253.

and consistent with applicable law: identify, analyze, and address disproportionate and adverse human health and environmental effects (including risks) and hazards of Federal activities, including those related to climate change and cumulative impacts of environmental and other burdens on communities with environmental justice concerns; evaluate relevant legal authorities and, as available and appropriate, take steps to address such effects; identify, analyze, and address historical inequities, systemic barriers, or actions related to any Federal regulation, policy, or practice that impair the ability of communities with environmental justice concerns to achieve or maintain a healthy and sustainable environment; identify, analyze, and address barriers related to Federal activities that impair the ability of communities with environmental justice concerns to receive equitable access to human health or environmental benefits, including benefits related to natural disaster recovery and climate mitigation, adaptation, and resilience; where available and appropriate, consider adopting or requiring measures to avoid, minimize, or mitigate disproportionate and adverse human health and environmental effects (including risks) and hazards of Federal activities on communities with environmental justice concerns, to the maximum extent practicable; and provide opportunities for the meaningful engagement of persons and communities with environmental justice concerns who are potentially affected by Federal activities.⁷

[Executive Order 14008, Tackling the Climate Crisis at Home and Abroad](#) establishes an executive policy to “move quickly to build resilience, both at home and abroad, against the impacts of climate change that are already manifest and will continue to intensify according to current trajectories” directing federal agencies to address “climate-related and other cumulative impacts on disadvantaged communities, as well as the accompanying economic challenges of such impacts.”⁸ EO 14008 further declares a policy to “combat the climate crisis to implement a Government wide approach that reduces climate pollution in every sector of the economy; increases resilience to the impacts of climate change; protects public health; conserves our lands, waters, and biodiversity; delivers environmental justice; and spurs well-paying union jobs and economic growth, especially through innovation, commercialization, and deployment of clean energy technologies and infrastructure.”⁹

[Executive Order 13990, Protecting Public Health and the Environment and Restoring Science To Tackle the Climate Crisis](#), establishes a policy that the Federal Government must be guided by the best science and be protected by processes that ensure the integrity of Federal decision-making by directing federal agencies “to listen to the science; to improve public health and protect our environment; to ensure access to clean air and water; to limit exposure to dangerous chemicals and pesticides; to hold polluters accountable, including those who disproportionately harm communities of color and low-income communities; to reduce greenhouse gas emissions; to bolster resilience to the impacts of climate change; to restore and expand our national treasures and monuments; and to prioritize both environmental justice and the creation of the well-paying union jobs necessary to deliver on these goals.”¹⁰

[Executive Order 14091, Further Advancing Racial Equity and Support for Underserved Communities Through the Federal Government](#), reinforces the policy directive to advance an ambitious, whole-of-government approach to racial equity and support for underserved¹¹ communities and to continuously embed equity¹² into all aspects of

⁷ Id. at 15253-54.

⁸ Exec. Order No. 14008, *Tackling the Climate Crisis at Home and Abroad*, 86 Fed. Reg. 7619 (Jan. 27, 2021) (hereinafter EO 14008).

⁹ Id. at 7622.

¹⁰ Exec. Order No. 13990, *Protecting Public Health and the Environment and Restoring Science To Tackle the Climate Crisis*, 86 Fed. Reg. 7037 (Jan. 25, 2021) (hereinafter EO 13990).

¹¹ As defined by the Executive Order, the term “underserved communities” refers to “those populations as well as geographic communities that have been systematically denied the opportunity to participate fully in aspects of economic, social, and civic life, as defined in Executive Orders 13985 and 14020.” Exec. Order No. 14091, *Further Advancing Racial Equity and Support for Underserved Communities Through the Federal Government*, 88 Fed. Reg. 10825, 10832 (Feb. 16, 2023) (hereinafter EO 14091).

¹² As defined by the Executive Order, the term “equity” means “the consistent and systematic treatment of all individuals in a fair, just, and impartial manner, including individuals who belong to communities that often have been denied such

Federal decision-making. The Order directs the federal government to, among other things, invest in communities where Federal policies have historically impeded equal opportunity — both rural and urban — in ways that mitigate economic displacement and to advance equity in health, including mental and behavioral health and well-being.¹³

[Executive Order 13985, Executive Order On Advancing Racial Equity and Support for Underserved Communities Through the Federal Government](#) establishes a whole-of-government equity agenda to address inequities in the implementation of laws, policies and programs and in the protection afforded by those laws and policies and to promote equal opportunity for underserved communities that have been denied fair, just, and impartial treatment, including Indigenous and Native American persons and persons who live in rural areas.¹⁴

[Executive Order 13175, Consultation and Coordination with Indian Tribal Governments](#) directs federal agencies to establish regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications, to strengthen the United States government-to-government relationships with Indian tribes, and to reduce the imposition of unfunded mandates upon Indian tribes.¹⁵ EO 13175 recognizes the right of Indian tribes to self-government and supports tribal sovereignty and self-determination, and reaffirms the trust relationship between the federal government and federally-recognized Indian tribes as set forth in the Constitution of the United States, treaties, statutes, Executive Orders, and court decisions.¹⁶

1.1 Safe Drinking Water Act (SDWA)

Section 1421 of the SDWA requires EPA to develop UIC program requirements that protect underground sources of drinking water (USDWs) from endangerment. A USDW is defined under 40 CFR § 144.3 as an aquifer that supplies a public water system or contains a sufficient quantity of groundwater to supply a public water system; and currently supplies drinking water for human consumption; or contains fewer than 10,000 mg/l total dissolved solids (TDS). The UIC Program is authorized under the SDWA to protect USDWs through the regulation of underground injection. States can be authorized to administer the UIC program through the approval of primacy programs as described under 40 CFR part 145. In Montana, the Montana Board of Oil and Gas Conservation (MBOGC) has been authorized to regulate Class II wells, which are those wells that inject fluids associated with oil and natural gas production. EPA retains primacy for the regulation of UIC well classes I, III, IV, V and VI.

The SDWA statute does not include an aquifer exemption provision. However, when promulgating the UIC regulations, EPA recognized that not all aquifers meeting the definition of a USDW would have potential to serve as a source of drinking water. See 49 Fed. Reg. 30137, 30141 (May 11, 1984). Therefore, the EPA developed the aquifer exemption (AE) process, which provides EPA discretion to exempt aquifers or portions of aquifers that do not currently serve as a source of drinking water and will not serve as a source of drinking water in the future, based on certain criteria. Aquifer exemptions can allow aquifers that fall under the definition of a USDW but have no potential as a source of drinking water, to be used by energy and mining companies for oil or mineral extraction or disposal purposes in compliance with EPA's UIC requirements under SDWA. However, even when these criteria are met the Director has discretion to deny an aquifer exemption application.

treatment, such as Black, Latino, Indigenous and Native American, Asian American, Native Hawaiian, and Pacific Islander persons and other persons of color; members of religious minorities; women and girls; LGBTQI+ persons; persons with disabilities; persons who live in rural areas; persons who live in United States Territories; persons otherwise adversely affected by persistent poverty or inequality; and individuals who belong to multiple such communities." EO 14091, 88 Fed. Reg. at 10831-32.

¹³ Id. at 10825.

¹⁴ Exec. Order No. 13985, *Executive Order on Advancing Racial Equity and Support for Underserved Communities Through the Federal Government*, 86 Fed. Reg. 7009 (Jan. 25, 2021) (hereinafter EO 13985).

¹⁵ Exec. Order No. 13175, *Consultation and Coordination with Indian Tribal Governments*, 65 Fed. Reg. 67249 (Nov. 9, 2000) (hereinafter EO 13175).

¹⁶ Id.

1.2 Applicable SDWA Aquifer Exemption Criteria

The UIC regulations include the following provisions:

§ 146.4 Criteria for exempted aquifers.

An aquifer or a portion thereof which meets the criteria for an “underground source of drinking water” in § 146.3 may be determined under § 144.7 of this chapter to be an “exempted aquifer” for Class I-V wells if it meets the criteria in paragraphs (a) through (c) of this section. Class VI wells must meet the criteria under paragraph (d) of this section:

- (a) It does not currently serve as a source of drinking water; *and*
- (b) It cannot now and will not in the future serve as a source of drinking water because:
 - (1) It is mineral, hydrocarbon or geothermal energy producing, or can be demonstrated by a permit applicant as part of a permit application for a Class II or III operation to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible.
 - (2) It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical.
 - (3) It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption; or
 - (4) It is located over a Class III well mining area subject to subsidence or catastrophic collapse; or
- (c) The total dissolved solids content of the ground water is more than 3,000 and less than 10,000 mg/l and it is not reasonably expected to supply a public water system.
- (d) The areal extent of an aquifer exemption for a Class II enhanced oil recovery or enhanced gas recovery well may be expanded for the exclusive purpose of Class VI injection for geologic sequestration under § 144.7(d) of this chapter if it meets the following criteria:
 - (1) It does not currently serve as a source of drinking water; and
 - (2) The total dissolved solids content of the ground water is more than 3,000 mg/l and less than 10,000 mg/l; and
- (3) It is not reasonably expected to supply a public water system.

40 CFR § 144.7

The following regulations under § 144.7 are applicable to AEs for Class II injection wells:

- (a) The Director may identify (by narrative description, illustrations, maps, or other means) and shall protect as underground sources of drinking water, all aquifers and parts of aquifers which meet the definition of “underground source of drinking water” in § 144.3, except to the extent there is an applicable aquifer exemption under paragraph (b) of this section or an expansion to the areal extent of an existing Class II enhanced oil recovery or enhanced gas recovery aquifer exemption for the exclusive purpose of Class VI injection for geologic sequestration under paragraph (d) of this section. Other than EPA approved aquifer exemption expansions that meet the criteria set forth in § 146.4(d) of this chapter, new aquifer exemptions shall not be issued for Class VI injection wells. Even if an aquifer has not been specifically identified by the Director, it is an underground source of drinking water if it meets the definition in § 144.3.
- (b)(1) The Director may identify (by narrative description, illustrations, maps, or other means) and describe in geographic and/or geometric terms (such as vertical and lateral limits and gradient) which are clear and definite, all aquifers or parts thereof which the Director proposes to designate as exempted aquifers using the criteria in § 146.4 of this chapter.

(2) No designation of an exempted aquifer submitted as part of a UIC program shall be final until approved by the Administrator as part of a UIC program. No designation of an expansion to the areal extent of a Class II enhanced oil recovery or enhanced gas recovery aquifer exemption for the exclusive purpose of Class VI injection for geologic sequestration shall be final until approved by the Administrator as a revision to the applicable Federal UIC program under part 147 or as a substantial revision of an approved State UIC program in accordance with § 145.32 of this chapter.

(3) Subsequent to program approval or promulgation, the Director may, after notice and opportunity for a public hearing, identify additional exempted aquifers. For approved State programs exemption of aquifers identified

- (i) under § 146.04(b) shall be treated as a program revision under § 145.32;
- (ii) under § 146.04(c) shall become final if the State Director submits the exemption in writing to the Administrator and the Administrator has not disapproved the designation within 45 days. Any disapproval by the Administrator shall state the reasons and shall constitute final Agency action for purposes of judicial review.

(c)(2) For Class II wells, a demonstration of commercial producibility shall be made as follows:

- (ii) For Class II wells not located in a field or project containing aquifers from which hydrocarbons were previously produced, information such as logs, core data, formation description, formation depth, formation thickness and formation parameters such as permeability and porosity shall be considered by the Director, to the extent such information is available.

2.0 Current Climate Conditions and Climate Change

[Executive Order 14008, entitled *Tackling the Climate Crisis at Home and Abroad*](#) affirms the importance of environmental justice and makes explicit that agencies should address “climate-related and other cumulative impacts on disadvantaged communities, as well as the accompanying economic challenges of such impacts.”¹⁷ EO 14008 further declares a policy to “combat the climate crisis to implement a Government wide approach that reduces climate pollution in every sector of the economy; increases resilience to the impacts of climate change; protects public health; conserves our lands, waters, and biodiversity; delivers environmental justice; and spurs well-paying union jobs and economic growth, especially through innovation, commercialization, and deployment of clean energy technologies and infrastructure.”¹⁸

2.1 Current Climate Conditions in the Assessment Area Climate Divisions

The EPA conducted a preliminary screening of the AE site using EJSscreen version 2.2¹⁹ to assess the area within a 20.9-mile radius²⁰ from a central point between the two wells as shown in Figure 1. The population in this area is 5,375. The assessment area includes portions of Ponderosa, Teton, Glacier and Toole Counties in Montana. The northwestern portion of the assessment area also includes a portion of the Blackfeet Indian Reservation.²¹

¹⁷ Exec. Order No. 14008, *Tackling the Climate Crisis at Home and Abroad*, 86 Fed. Reg. 7619 (Jan. 27, 2021) (hereinafter EO 14008).

¹⁸ EO 14008, 86 Fed. Reg. at 7622.

¹⁹ <https://ejscreen.epa.gov/mapper/>

²⁰ EPA used a 20.9-mile radius for the assessment area because that includes the largest area EJSscreen allows.

²¹ The Blackfeet Nation of the Blackfeet Indian Reservation did not provide any comments to EPA on this AE or express any concerns to EPA about approval, so EPA did not conduct a separate analysis for the Blackfeet Indian Reservation.

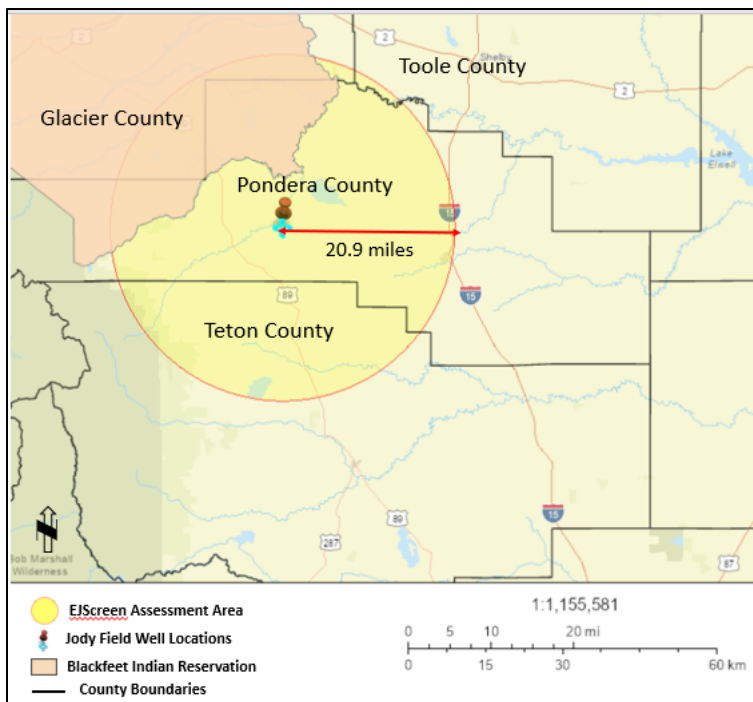


Figure 1. EJScreen Assessment Area: 20.9-mile radius from the Lucky Ditch #D-6 SWD well.

The Jody Field injection wells are located in the western portion of the North Central Climate Division which lies in northern Montana shown in Figure 2. EPA conducted an initial screening of aridity and the Standardized Precipitation Evapotranspiration Index (SPEI) in the North Central Climate Division, and the four counties included within the assessment area shown in Figures 2 and 3. The aridity index discussed below provides a snapshot of climate conditions in the five counties through 2000. The SPEI value provides further updated aridity information through 2020 by showing whether there is a trend toward increasing drought conditions that would potentially affect water resources in the vicinity surrounding the AE request for the Jody Field injection wells.

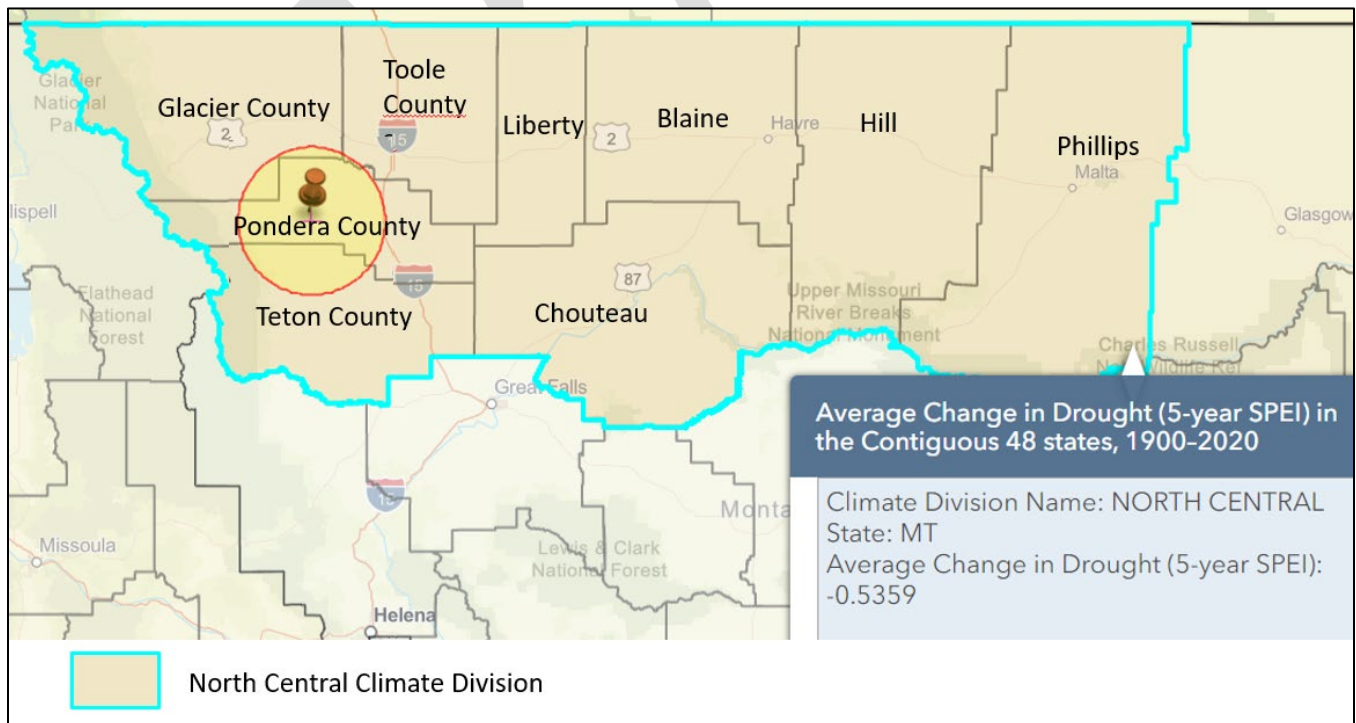


Figure 2. The North Central Climate Division in Northern Montana (from EJScreen v 2.11).

2.1.1 Current Climate Conditions: Aridity Screening Process

One approach for evaluating aridity is to estimate actual evapotranspiration (ET) indirectly by using a water-balance approach and computing an aridity index (AI) as a ratio of evapotranspiration to precipitation, ET/P. Sanford and Selnick, 2012²² used this approach to estimate ET and compute the ratio ET/P at the county level for the conterminous United States. With this method, precipitation and stream discharge are measured, and ET is computed as the difference between the two. This method is advantageous when the goal is to obtain long-term average ET because when the period of record examined is long enough, temporal changes in storage for the water balance can be neglected.

Figure 3 is an excerpt showing the assessment area counties from the map in Figure 13 from Sanford and Selnick (2012). In Glacier County, the ratio of evapotranspiration to precipitation is in the range of 0.5 to 0.59, which means 50 to 59% of precipitation received in the area is lost to evapotranspiration. In Ponderosa and Teton Counties, the ratio of evapotranspiration to precipitation is in the range of 0.6 to 0.69, which means 60 to 69% of precipitation received in the area is lost to evapotranspiration. A very small section of the assessment area lies in Toole County with a ratio of evapotranspiration to precipitation in the range of 0.7 to 0.79, which means 70 to 79% of precipitation received in the area is lost to evapotranspiration.

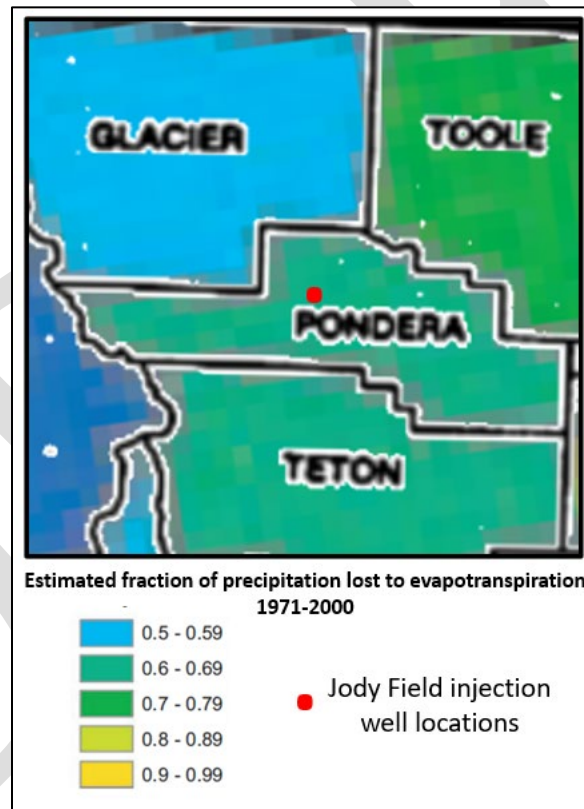


Figure 3. Indication of Aridity by County from Figure 13, Sanford and Selnick, 2012

2.1.2 Current Climate Conditions: Screening Process for Precipitation and Evapotranspiration

EPA used *Average Change in Drought (Five-Year SPEI) in the Contiguous 48 States, 1900–2020*, (figure 3 on the EPA Climate Change Indicators webpage for Drought²³) to examine the SPEI in the North Central Climate Division of Montana, where the Jody Field injection wells are located. The SPEI measures the combination of water supply (precipitation) and atmospheric water demand (evapotranspiration, which is based on temperature) to

²² Sanford, W.E., and Selnick, D., 2012, Estimation of Evapotranspiration Across the Conterminous United States Using a Regression with Climate and Land-Cover Data: *Journal of the American Water Resources Association (JAWRA)* 49(1), pp. 217-230, <https://doi.org/10.1111/jawr.12010>.

²³ <https://www.epa.gov/climate-indicators/climate-change-indicators-drought>

determine whether a certain area is experiencing extreme drought, extreme moisture, or conditions in between. The SPEI uses the monthly (or weekly) difference between precipitation and potential evapotranspiration (PET), and a probability-distribution function is applied to calculate SPEI at different time scales (Vicente-Serrano and others, 2010²⁴).

Computation of PET for input to the SPEI can be performed using different methods, but the simple climatic water-balance method of Thornthwaite (1948)²⁵ commonly is used because it has the advantage of requiring only monthly mean temperature data, which are readily available. The resulting SPEI is a standardized variable, where a value of zero (0) represents average (50 percent probability) conditions, and the standard deviation is one (1). Drought conditions can be classified according to SPEI values as follows (Wang and others, 2014²⁶):

<u>Drought class</u>	<u>SPEI value</u>
Non-drought	SPEI \geq -0.5
Mild	-1 < SPEI < -0.5
Moderate	-1.5 < SPEI \leq -1
Severe	-2 < SPEI \leq -1.5
Extreme	SPEI \leq -2

The *Average Change in Drought (Five-Year SPEI) in the Contiguous 48 States, 1900–2020* map²⁷ shows how drought conditions have changed across the State of Montana from 1900 to 2020. The map presents the average change in drought based on a 5-year SPEI. Using the 5-year moving averages smooth out the effects of short-term precipitation fluctuations. The data are shown for regions called climate divisions as defined by the National Oceanic and Atmospheric Administration. Under this index, non-drought conditions are indicated by an index value at or above negative 0.5. Mild drought conditions start at an index value below -0.5. As shown in Figure 2, the SPEI value for the North Central Climate Division is -0.5359, indicating a slight trend toward mild drought.

Figure 4 shows the difference between annual average precipitation measured from 2002 through 2021 compared to the average for the first half of the previous century measured from 1901 through 1960. Within the Northern Central Climate Division precipitation has decreased in the western portion as indicated by the brown shades and increased in areas where the green shades are located. Darker shades of brown and green indicate a larger percent of increase or decrease. The overall change in annual precipitation within the climate division has contributed to the SPEI value indicating a slight trend toward mild drought conditions. Within the assessment area, the annual average precipitation has decreased 10 to 15% in the western portion and 5 to 10% at the location of the Jody Field wells but has increased up to 5% in the eastern portion of the assessment area.

²⁴ Vicente-Serrano, S. M., Beguería, S., López-Moreno, J.I., (2010), A Multiscalar Drought Index Sensitive to Global Warming: The Standardized Precipitation Evapotranspiration Index, April 2010, Journal of Climate 23(7): 1696-1718, DOI: 10.1175/2009JCLI2909.1.

https://www.researchgate.net/publication/262012840_A_Multiscalar_Drought_Index_Sensitive_to_Global_Warming_The_Standardized_Precipitation_Evapotranspiration_Index

²⁵[https://www.brr.cr.usgs.gov/projects/SW_MoWS/Thornthwaite.html#:~:text=The%20Thornthwaite%20water%20balance%20\(Thornthwaite,are%20monthly%20temperature%20and%20precipitation.](https://www.brr.cr.usgs.gov/projects/SW_MoWS/Thornthwaite.html#:~:text=The%20Thornthwaite%20water%20balance%20(Thornthwaite,are%20monthly%20temperature%20and%20precipitation.)

²⁶ Wang, L., Good, S. P., and Caylor, K. K. (2014), Global synthesis of vegetation control on evapotranspiration partitioning, Geophys. Res. Lett., 41, 6753–6757, doi:10.1002/2014GL061439.

<https://agupubs.onlinelibrary.wiley.com/doi/10.1002/2014GL061439>

²⁷ <https://www.epa.gov/climate-indicators/climate-change-indicators-drought>

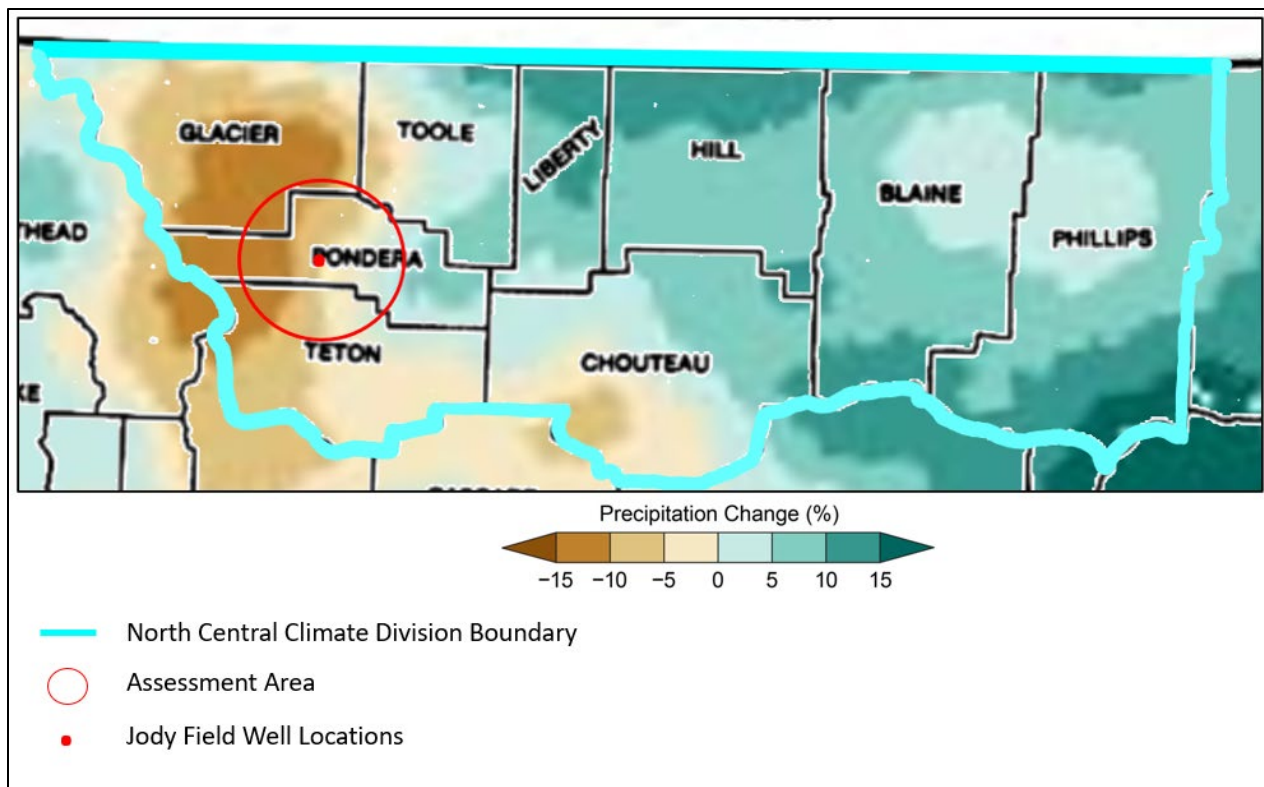


Figure 4. The difference between annual average precipitation measured from 2002 through 2021 compared to the average for the first half of the previous century measured from 1901 through 1960. (From Figure 2.4 in Chapter 2 of the Fifth National Climate Assessment²⁸).

2.2 Vulnerability within the Assessment Area Climate Divisions to Projections for Precipitation

To obtain an understanding of projections for future precipitation trends in the North Central Climate Basin, EPA reviewed information in the Fifth National Climate Assessment (NCA5).²⁹ Climate modeling experts develop global climate projections for a range of future scenarios. These projections capture variables such as the relationship between human behavior, greenhouse gas (GHG) emissions, the Earth system processes and responses to changes in concentration of GHGs in our atmosphere and oceans, and resulting impacts, including temperature change and sea level rise. Because there are uncertainties inherent in these factors, the resulting range of projections are not predictions but instead reflect multiple potential pathways of climate change impacts. The scenarios do not have relative likelihoods assigned and are all plausible futures. Figure 5 shows Table 3 from the NCA5 *Report-in-Brief*³⁰ which presents Descriptive Terms for Common Climate Scenarios Used in NCA5 and summarizes the terms used to describe scenarios from Phases 5 and 6 of the Coupled Model Intercomparison Project (CMIP5³¹ and CMIP6³²).

²⁸ Marvel, K., W. Su, R. Delgado, S. Aarons, A. Chatterjee, M.E. Garcia, Z. Hausfather, K. Hayhoe, D.A. Hence, E.B. Jewett, A. Robel, D. Singh, A. Tripathi, and R.S. Vose, 2023: Ch. 2. Climate trends. In: *Fifth National Climate Assessment*. Crimmins, A.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, B.C. Stewart, and T.K. Maycock, Eds. U.S. Global Change Research Program, Washington, DC, USA. <https://nca2023.globalchange.gov/chapter/2/>

²⁹ <https://nca2023.globalchange.gov/>

³⁰ USGCRP, 2023: Fifth National Climate Assessment: Report-in-Brief. Crimmins, A.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, B.C. Stewart, and T.K. Maycock, Eds. U.S. Global Change Research Program, Washington, DC, USA.

<https://doi.org/10.7930/NCA5.2023.RiB>

³¹ <https://pcmdi.llnl.gov/mips/cmip5/>

³² <https://pcmdi.llnl.gov/CMIP6/>

NCA5 Chapter 4 presents projected impacts of climate on water. Chapter 4, Figure 4.3 shows projected changes in annual precipitation by the middle of the 21st Century (2036 through 2065) relative to 1991 through 2020 conditions. Excerpts from this figure for Montana are shown in Figure 6. Figure 6a shows the average of all the projections listed in Figure 5. Figure 6b shows the average of the wettest 20% of the scenarios; Figure 6c shows the average of the driest 20% of projections. The average of all available climate model projections indicates there will be an increase of up to 1 inch in annual precipitation within the assessment area.

Table 3. Descriptive Terms for Common Climate Scenarios Used in NCA5			
Climate Scenario Descriptor	CMIP5	CMIP6	Summary
Very High Scenario	RCP8.5	SSP5-8.5	Among the scenarios described here, these reflect the highest range of carbon dioxide (CO ₂) emissions and no mitigation. Total annual global CO ₂ emissions in 2100 are quadruple emissions in 2000 (RCP8.5 and SSP5-8.5). Population growth in 2100 doubles from 2000 in RCP8.5, but the SSP5-8.5 population remains relatively stable, with approximately 13% growth in 2100 from 2005. Both scenarios include fossil fuel development, but SSP5-8.5 has higher economic growth than RCP8.5.
High Scenario	RCP6.0	SSP3-7.0	These scenarios reflect high CO ₂ emissions with limited (RCP6.0) or no (SSP3-7.0) mitigation. Total annual CO ₂ emissions in 2100 are more than 75% higher than in 2000 in RCP6.0, and triple that of 2000 emissions in SSP3-7.0. Compared to 2000, both scenarios include expanded fossil fuel development and population growth but slow economic growth.
Intermediate Scenario	RCP4.5	SSP2-4.5	These scenarios reflect reductions in CO ₂ emissions from current levels. Total annual CO ₂ emissions in 2100 are 46% (RCP4.5) and 67% (SSP2-4.5) less than the year 2000. Mitigation efforts include low-carbon technology (SSP2-4.5) and expanded renewable energy compared to 2000 (RCP 4.5).
Low Scenario	RCP2.6	SSP1-2.6	These scenarios reflect rapidly declining and net-negative CO ₂ emissions (with CO ₂ removal from the atmosphere exceeding human-caused emissions) by 2100. Mitigation efforts include increased renewable energy. Adaptive capacity reflects effective governance institutions, reduced inequality, and international cooperation (SSP1-2.6).
Very Low Scenario	n/a	SSP1-1.9	Among the scenarios described here, SSP1-1.9 reflects the greatest reduction in global greenhouse gas emissions and substantial CO ₂ removal from the atmosphere. Total annual CO ₂ emissions have a steeper decline than SSP1-2.6, dropping by more than 145% by 2100 compared to 2000. Mitigation efforts include a shift to nuclear and renewable energy and sustainable land use. Adaptive capacity benefits from international cooperation and sharing of technology.

Figure 5. Table 3 from the NCA5 “Report in Brief.”

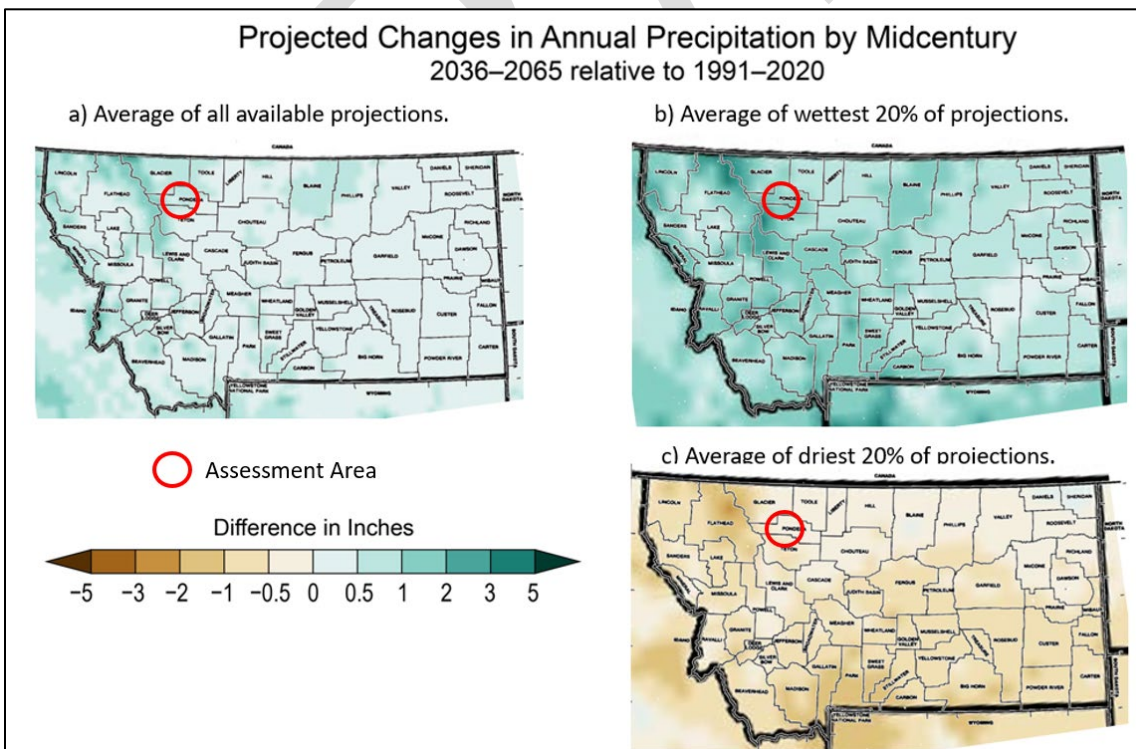


Figure 6. Projected Changes in Annual Precipitation in Montana by the Middle of the 21st Century. Excerpted from Figure 4.3 of NCA5 Chapter 5.

2.3 Climate Change Analysis Conclusions

EPA reviewed the percentages of precipitation lost to evaporation identified during the aridity screening process in the counties within the assessment area and the SPEI value within the Northern Central Climate Division, which indicated a trend toward slight drought conditions from 1900 to 2020. This trend is also reflected by the decrease in precipitation from the first half of the previous century to the first two decades of the 21st century in the western portion of the Northern Central Climate Division. Although offset by increases in precipitation in the central and eastern portions of the climate division, the balance resulted an overall slight trend toward mild drought. Considering this information and the fact that the average of all available climate model projections of precipitation change indicates a slight increase in precipitation within the assessment area, EPA determined additional evaluation of current climate conditions was not necessary to inform the potential for future use of the additional vertical extent of the exempted portion of the Madison aquifer. However, a more in-depth analysis may be required in other situations where current climate conditions, climate change projections or other factors indicate that further information might inform EPA's decision.

3.0 Environmental Justice

The EPA conducted an Environmental Justice preliminary screening of the AE site using EJScreen version 2.2 to assess the area within a 20.9-mile radius from a point equidistant from the Jody 34-1 and Jody 34-2 injection wells as shown in Figure 1 above. The population in this area is 5,375. The EJScreen Community Report for the assessment area is included in Appendix A. The EJScreen Community Report indicates that the Supplemental Index for Lead Paint ranks at the 82nd percentile. The lead paint indicator signals the presence of older housing, which often, but not always, indicates the presence of lead paint, and therefore the possibility of exposure. The term "exposure" is used very broadly to refer to the potential for exposure.³³ More information about the lead paint indicator is found in the EJScreen Technical Documentation, pages 19-20. The socioeconomic indicator for low-income populations is at 39%, which is above the Montana state average value of 32%. Usually, EPA will conduct additional analysis when either the EJ Index or Supplemental Index is at or above the 80th percentile or the People of Color or Low Income Socioeconomic Indicators are above the state average. A more in-depth analysis of Environmental Justice considerations may be warranted in cases where other factors indicate that further information might inform EPA's decision or public comments were received that raised environmental justice or community health concerns. EPA did determine that there is potentially a candidate population within the assessment area that might benefit from enhanced public engagement. Therefore, EPA is conducting enhanced public engagement during the public participation process for the draft Class V permits and AE approval process.

4.0 Conclusions

Initial screening of current and projected climate change impacts in the assessment area did not indicate additional climate change analysis was required to further inform the potential for future use of the vertical extension of the exempted portion of the Madison aquifer. The initial EJ screening did not indicate the need to conduct additional evaluation of the assessment area at this time. A more in-depth analysis may be warranted in other cases where climate conditions, environmental justice considerations, public comments or other factors indicate that further information might inform EPA's decision. However, EPA determined that there is potentially a candidate population within the assessment area that might benefit from enhanced public engagement. EPA is therefore conducting enhanced public engagement during the public participation process for the draft Class V permits and AE approval: EPA is issuing this draft Climate Change/Environmental Justice analysis document for public review along with the draft Class V permits for the Jody Field 34-1 and 34-2 Class V injection wells permits.

³³ EJScreen Technical Documentation, 2022, p. 13. https://www.epa.gov/sites/default/files/2021-04/documents/ejscreen_technical_document.pdf



EJScreen Community Report

This report provides environmental and socioeconomic information for user-defined areas, and combines that data into environmental justice and supplemental indexes.

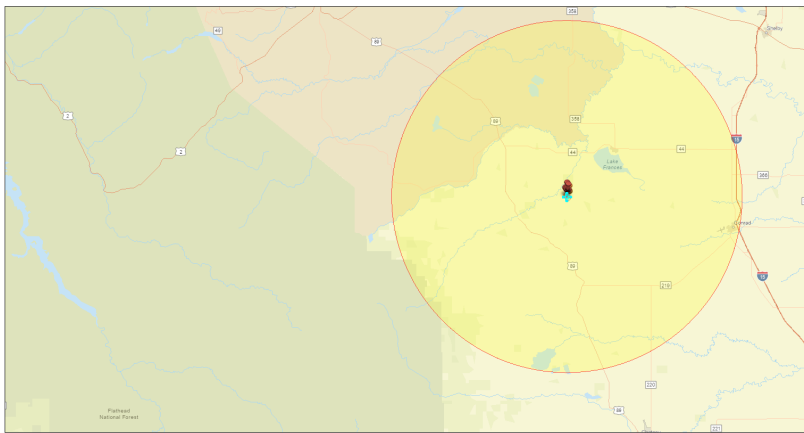
Pondera County, MT

20.9 miles Ring Centered at 48.225473,-112.373915

Population: 5,375

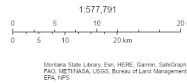
Area in square miles: 1372.01

A3 Landscape

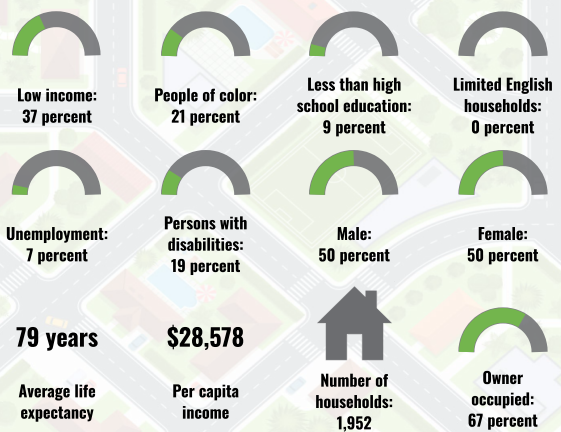


November 20, 2023

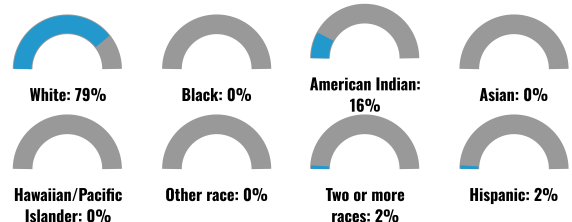
- Project 3
- ◆ Search Result (point)
- Project 2
- Project 1



COMMUNITY INFORMATION



BREAKDOWN BY RACE



BREAKDOWN BY AGE



LANGUAGES SPOKEN AT HOME

LANGUAGE	PERCENT
English	92%
Spanish	1%
German or other West Germanic	5%
Other and Unspecified	1%
Total Non-English	8%

LIMITED ENGLISH SPEAKING BREAKDOWN



Notes: Numbers may not sum to totals due to rounding. Hispanic population can be of any race. Source: U.S. Census Bureau, American Community Survey (ACS) 2017-2021. Life expectancy data comes from the Centers for Disease Control.

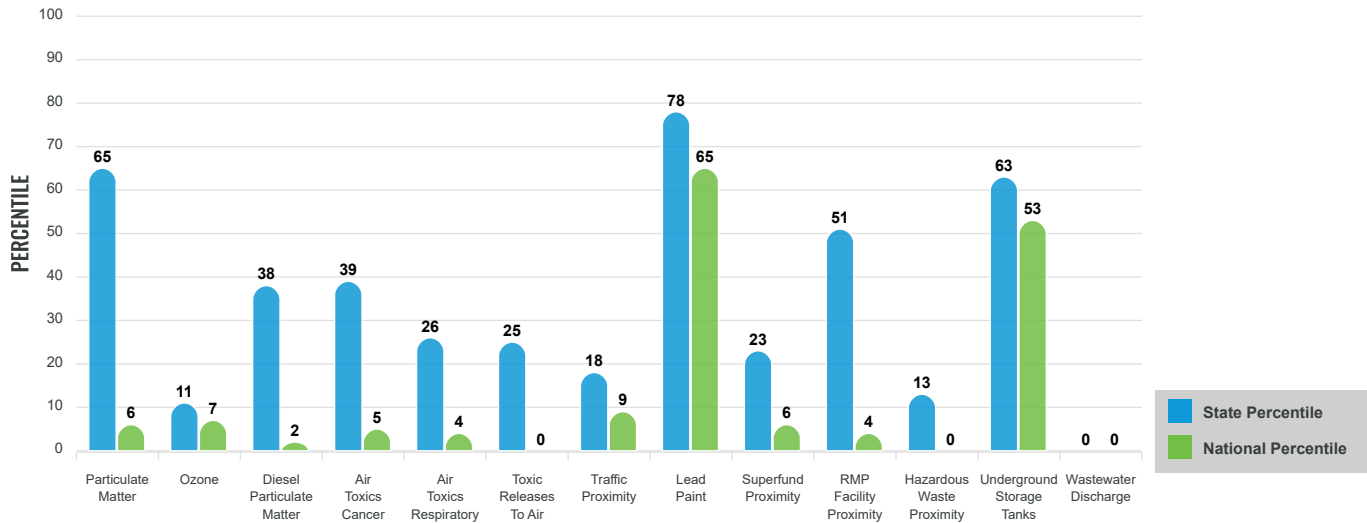
Environmental Justice & Supplemental Indexes

The environmental justice and supplemental indexes are a combination of environmental and socioeconomic information. There are thirteen EJ indexes and supplemental indexes in EJScreen reflecting the 13 environmental indicators. The indexes for a selected area are compared to those for all other locations in the state or nation. For more information and calculation details on the EJ and supplemental indexes, please visit the [EJScreen website](#).

EJ INDEXES

The EJ indexes help users screen for potential EJ concerns. To do this, the EJ index combines data on low income and people of color populations with a single environmental indicator.

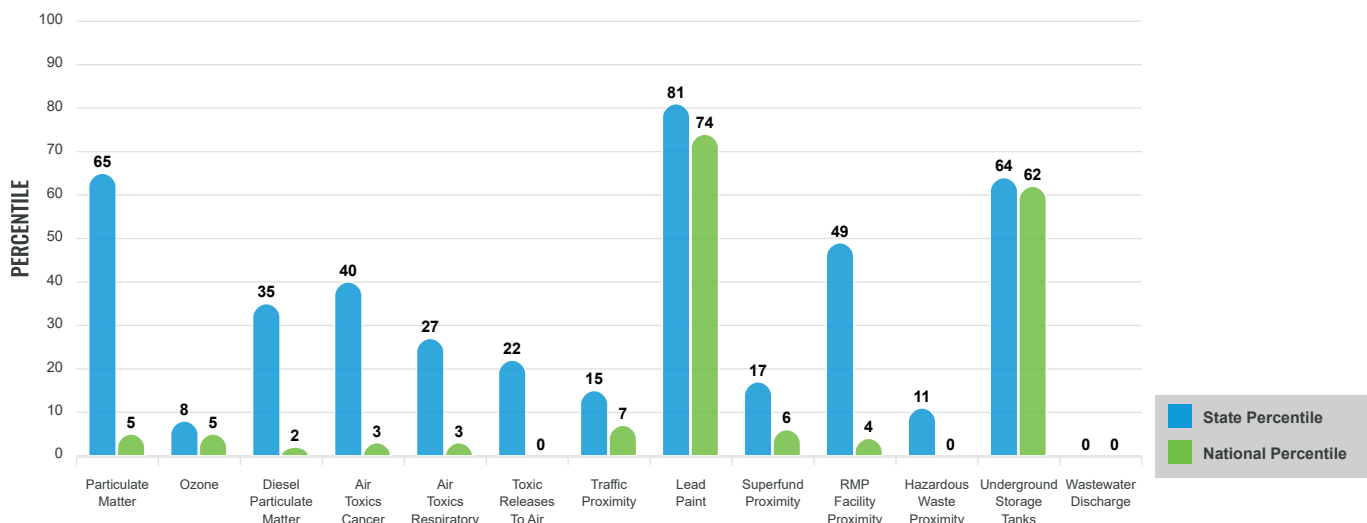
EJ INDEXES FOR THE SELECTED LOCATION



SUPPLEMENTAL INDEXES

The supplemental indexes offer a different perspective on community-level vulnerability. They combine data on percent low-income, percent linguistically isolated, percent less than high school education, percent unemployed, and low life expectancy with a single environmental indicator.

SUPPLEMENTAL INDEXES FOR THE SELECTED LOCATION



These percentiles provide perspective on how the selected block group or buffer area compares to the entire state or nation.
Report for 20.9 miles Ring Centered at 48.225473,-112.373915

EJScreen Environmental and Socioeconomic Indicators Data

SELECTED VARIABLES	VALUE	STATE AVERAGE	PERCENTILE IN STATE	USA AVERAGE	PERCENTILE IN USA
POLLUTION AND SOURCES					
Particulate Matter (µg/m ³)	4.87	5.24	50	8.08	2
Ozone (ppb)	52.3	54.5	1	61.6	4
Diesel Particulate Matter (µg/m ³)	0.0279	0.086	29	0.261	1
Air Toxics Cancer Risk* (lifetime risk per million)	10	15	1	25	1
Air Toxics Respiratory HI*	0.1	0.18	2	0.31	1
Toxic Releases to Air	0	590	17	4,600	0
Traffic Proximity (daily traffic count/distance to road)	1.9	67	14	210	6
Lead Paint (% Pre-1960 Housing)	0.51	0.3	79	0.3	74
Superfund Proximity (site count/km distance)	0.011	0.15	15	0.13	4
RMP Facility Proximity (facility count/km distance)	0.026	0.22	35	0.43	3
Hazardous Waste Proximity (facility count/km distance)	0.011	0.65	9	1.9	0
Underground Storage Tanks (count/km ²)	5.5	5.1	75	3.9	79
Wastewater Discharge (toxicity-weighted concentration/m distance)	2.1E-13	1.7	0	22	0
SOCIOECONOMIC INDICATORS					
Demographic Index	26%	23%	70	35%	44
Supplemental Demographic Index	14%	12%	71	14%	58
People of Color	13%	15%	64	39%	28
Low Income	39%	32%	69	31%	68
Unemployment Rate	6%	4%	75	6%	63
Limited English Speaking Households	0%	0%	0	5%	0
Less Than High School Education	9%	6%	75	12%	52
Under Age 5	7%	5%	73	6%	70
Over Age 64	22%	20%	61	17%	73
Low Life Expectancy	18%	19%	34	20%	36

*Diesel particulate matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: <https://www.epa.gov/haps/air-toxics-data-update>.

Sites reporting to EPA within defined area:

Superfund	0
Hazardous Waste, Treatment, Storage, and Disposal Facilities	0
Water Dischargers	87
Air Pollution	1
Brownfields	2
Toxic Release Inventory	0

Other community features within defined area:

Schools	14
Hospitals	6
Places of Worship	26

Other environmental data:

Air Non-attainment	No
Impaired Waters	Yes

Selected location contains American Indian Reservation Lands*	Yes
Selected location contains a "Justice40 (CEJST)" disadvantaged community	Yes
Selected location contains an EPA IRA disadvantaged community	Yes

Report for 20.9 miles Ring Centered at 48.225473,-112.373915

EJScreen Environmental and Socioeconomic Indicators Data

HEALTH INDICATORS					
INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Low Life Expectancy	18%	19%	34	20%	36
Heart Disease	8	6.5	79	6.1	83
Asthma	10.5	10.4	57	10	66
Cancer	8	6.9	72	6.1	87
Persons with Disabilities	17.2%	14.4%	70	13.4%	76

CLIMATE INDICATORS					
INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Flood Risk	6%	15%	32	12%	49
Wildfire Risk	8%	44%	39	14%	81

CRITICAL SERVICE GAPS					
INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Broadband Internet	17%	16%	58	14%	66
Lack of Health Insurance	9%	9%	62	9%	62
Housing Burden	No	N/A	N/A	N/A	N/A
Transportation Access	Yes	N/A	N/A	N/A	N/A
Food Desert	Yes	N/A	N/A	N/A	N/A

Footnotes

Report for 20.9 miles Ring Centered at 48.225473,-112.373915