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Sustainable Energy and Economic Development (SEED) Coalition
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May Ma, Office of Administration,
Mail Stop: TWFN-7-A60M
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Via email to WCS_CISF_EIS@nrc.gov.

RE: Docket # NRC-2016-0231 Waste Control Specialists LLC's Consolidated Interim Spent Fuel Storage Facility Project

November 19, 2018

Dear May Ma and NRC Application Review Staff:

Public Citizen, Inc. and the Sustainable Energy and Economic Development (SEED) Coalition respectfully submit the following scoping comments regarding the license application of ISP's WCS' Consolidated Interim Storage Facility (CISF). Please consider the following issues for inclusion in the environmental impact study for the above-referenced spent nuclear fuel storage facility.

We are submitting these comments on behalf of 5,500 Public Citizen members in Texas as well as 2,000 members of SEED Coalition, many of whom would be particularly affected by this proposed project, either as neighbors near the site or because they live near the rail lines that would carry this risky radioactive cargo through their communities.

Public Citizen advocates for a healthier and more equitable world by making government work for the people and by defending democracy from corporate greed. In addition to the comments included here, more than 17,697 of our members across the United States also submitted comments in 2017 and many will be submitting additional comments about Waste Control Specialists proposed high-level interim radioactive waste storage facility in Andrews County, Texas.

The Sustainable Energy and Economic Development (SEED) Coalition is a grassroots organization with over 2000 members, most of whom live in Texas. SEED Coalition advocates for clean air and clean energy, and has promoted solar and wind development in Texas, while opposing coal plants and urging their retirement. SEED Coalition participated in licensing proceedings in opposition to Comanche Peak 3 & 4 and South Texas Project 3 & 4. The organization has also raised concerns about Waste Control Specialists' low-level radioactive waste facility, including the proximity of groundwater to the pits in which radioactive waste is being disposed.

A State of Nevada Report regarding the proposed Yucca Mountain high-level radioactive waste repository project led off by stating that it "has the potential to wreak economic, social, and environmental devastation on at least 44 states, including Nevada, hundreds of major cities and thousands of communities across the country through which spent nuclear fuel (SNF) and high-level radioactive waste (HLW) must travel."[1] The report noted that tens of thousands of shipments of highly radioactive waste would be an "inseparable and dominant component of the federal government's repository program " and lamented the fact that the Secretary of Energy recommended that "Yucca Mountain be developed as a repository without full disclosure of these transportation impacts and without having assessed the implications of the program for the nation as a whole…"[2]

> What began in 1983 as a noble experiment that promised to place science ahead of politics, and fairness, equity, and openness above parochialism has degenerated into a technical and ethical quagmire, where facts are routinely twisted to serve predetermined ends and where "might makes right" has replaced "consultation, concurrence, and cooperation" as the guiding principle for the program. The shoddy and politically driven science, the heavy-handed federal approach, the constant changing of the rules to negate disqualifying conditions and "inconvenient" findings, and the deliberate avoidance of responsibility for considering socioeconomic impacts have created an atmosphere of severe distrust, where the already significant impacts associated with the nuclear nature of the program are further exacerbated and amplified. The result is a massive suite of negative impacts, national in scope, inextricably linked to the Yucca Mountain program, and unprecedented in the history of federal government domestic projects.[3]

Unfortunately, the same politically driven science and heavy-handed federal approach are still in use today as evidenced by the ill-conceived, ill-advised proposals to store spent nuclear fuel in Texas and New Mexico. As with Yucca Mountain, the nation would be put at unprecedented risk by the thousands of shipments of high-level radioactive waste across the country. At least the goal with the failed Yucca Mountain site was a permanent repository. Consolidated interim storage, by contrast, does not move our nation toward permanent disposal. This approach could delay a viable repository, while unnecessarily risking health and safety and creating financial liability. This proposal also creates the very real risk that a permanent repository will become a de facto permanent storage site—a use for which it was never intended and would be wholly unsuited.

Public hearing opportunities have been woefully inadequate for the Waste Control Specialists (WCS) proposal. WCS and their partner, Orano, have formed a joint venture, Interim Storage Partners. Together they seek to import 40,000 tons of spent fuel from nuclear reactors around the country and store it on WCS' existing low-level radioactive waste site in Andrews County for 40 years (possibly 60–100) or "until a permanent repository is available." This could mean forever.

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[1] http://www.state.nv.us/nucwaste/yucca/impactreport.pdf.
[2] Ibid.
[3] Ibid.

Importing high-level radioactive waste would threaten public health, safety and financial well being. Exposure to radiation can lead to various cancers, genetic damage and birth defects. Human exposure to unshielded high-level radioactive waste is lethal. Homeowners' insurance doesn't cover radioactive contamination, so there are risks to property value as well. The WCS proposal and Holtec's proposed project for nearby New Mexico should be halted immediately. Waste would travel through major cities in Texas and throughout the country in order to reach either or both sites.

Under the Nuclear Waste Policy Amendments Act of 1987, the WCS consolidated interim storage facility cannot legally operate, so the NRC should not even be considering the license application. Yet the applicant is now pushing forward with their proposal, under new corporate ownership of WCS and with a revised application.

We Don't Want Radioactive Waste. We Do Want Public Meetings.

Texans don't want dangerous high-level radioactive waste but the NRC has failed to listen to the voices of many concerned Texans. There has not been a single public meeting on the revised application, submitted by new WCS ownership. The WCS proposal would result in massive transport of radioactive waste across the country, but the public is being given very little opportunity to speak out.

For the original version of the application, NRC held only one Texas meeting, in Andrews, hundreds of miles away from major cities that would be impacted by rail transport of radioactive waste. One meeting was held across the border in Hobbs, New Mexico, and two were accessible by phone and webinar. By contrast, five in-person NRC meetings were held in New Mexico regarding Holtec's proposal. Twenty-four meetings were held for Yucca Mountain at locations across the country.

There is strong opposition to this proposal in Texas. Resolutions opposing the radioactive waste plans and transport were passed by Dallas, Bexar, Nueces, El Paso and Midland counties and the cities of San Antonio, Midland and Denton. The NRC has failed to host a single meeting in any of these locations despite requests to do so. Nor has it extended deadlines for 180 days as requested to allow for full public awareness and participation.

Inadequate Environmental Review and Emergency Plan

The inadequate WCS Environmental Report should clearly identify transportation routes that would be used across the country and thoroughly examine:

- Risks to groundwater and the nearby Ogallala Aquifer, which lies beneath eight states, providing drinking water, and water for agriculture, ranching and wildlife.
- The impacts of temperature extremes, wildfires, flooding, earthquakes, tornadoes, lightning, and shifting ground (as reported in recent Southern Methodist University studies) on radioactive waste casks and canisters.

- The environmental injustice of dumping high-level radioactive waste from around the country on the largely Hispanic Texas / New Mexico region, where many people have limited ability to read or speak English.
- The inadequacy of financial assurances; the stability of new WCS owner J.F. Lehman, an equity firm that buys and sells companies; and the ties of partner Orano (with a 51% share of the project) to the French government and other entities.
- Improved monitoring, security and worker protections are needed and should be addressed more thoroughly in the Environmental Report. Cumulative impacts of multiple nuclear facilities in the region need to be more fully examined.
- The emergency plan should include actions to be taken in response to an emergency, not just a notification structure. It appears there may not be any viable plans for action should an emergency arise.

Protect Public Health, Safety and Financial Well-Being by Denying the License

Sending nuclear reactor waste to Texas to be stored here for decades would accomplish nothing but storing the waste in an alternate location, while risking the health and security of 218 million people within 50 miles either side of potential rail routes.[4] It would risk financial disaster, damage to existing businesses, and contamination of land, air and waterways at the WCS site and along transport routes.

An inadequate permanent disposal site could result since the waste would likely never get moved from consolidated interim storage to a permanent repository. This is dangerous waste that must remain isolated for a million years. Storing it for decades above ground in extreme climate conditions would not lead the nation toward the long-term isolation goal, and in fact, could impede progress.

In the interest of our public health and safety, the NRC should halt review and deny the WCS license application for Consolidated Interim Storage in Texas, as well that of the Holtec project proposed for nearby New Mexico.

Consolidated Interim Storage of High-Level Radioactive Waste Risks Creating a De Facto Permanent Site

If high-level radioactive waste comes to Texas, it's unlikely that it would ever leave. This license application should consider the possibility of an inadequate potential permanent site being created.

If high-level radioactive waste gets stored in Texas and/or New Mexico and utilities no longer have local nuclear waste liabilities, no one would lobby Congress for a permanent repository. Political pressure would evaporate. The waste would be "out of sight, out of

[4] Sabotage Consequences, Resnikoff and Travers, RMMA – page 4
http://www.state.nv.us/nucwaste/news2008/pdf/rwma0810sabotage.pdf

mind" for most utilities and political leaders in other states. It would thus be unlikely that Congress would ever fund a permanent repository, a facility designed appropriately for long-term storage.

The Federal Government has attempted to find a safe site for a high-level waste repository since 1983, but has failed to do so.

Yucca Mountain was selected for permanent disposal but development has been halted because of inadequacy of the site to isolate waste and societal and political opposition. Yucca Mountain seeps so badly that plans for the site had to include installation expensive titanium drip shields over the waste. It is questionable whether Congress will ever fund a viable nuclear waste repository, which could cost $100 billion or more to build. With no alternative repository being planned and Yucca Mountain halted, the NRC should evaluate the wisdom of allowing high-level radioactive waste to be transported to a consolidated interim storage site, where it could remain for decades, or "until a permanent repository is available." This could essentially mean forever.

The casks and canisters that would be used are not designed for permanent disposal. The casks, with waste canisters inside them, would be stored outside, above-ground in extreme temperatures, exposed to earthquakes, rain and wildfires, which are becoming increasingly more frequent and intense in the Permian Basin. The high temperature experienced at the site, 113° F, exceeds the design value (101°) of some of the canisters that could be stored there. With above ground storage and exposure to the elements, the risks of degradation of the casks and canisters and water contamination are likely to increase as storage time lengthens. No funding is being set aside for repackaging of the waste.

Canisters may crack and release radiation over time. The Environmental Report should clarify how long casks and canisters are expected to last before there are cracks, metal fatigue, through wall cracks or other defects, including those that may result from accidents, drops, shaking the canisters in transport or shaking due to seismicity. As the cladding around the fuel rods ages, it could become thin and embrittled, making it more dangerous to store and decreasing the likelihood that it will be moved again.

The NRC has said that once there is a crack in a canister it can grow through the canister wall in about 16 years.[5] Dr. Kris Singh, President and CEO of Holtec, a company competing for high-level radioactive waste business, has said that even a microscopic through-wall crack will release millions of curies of radionuclides into the environment and that it's not feasible to repair the cracks even if you could find them.[6]

Detailed information regarding this crucial issue is provided in a September 24, 2018 letter from Donna Gilmore of San Onofre Safety to Michael Layton, Director of the NRC Spent Fuel Division. Gilmore raises serious safety concerns, stating:

[5] https://www.nrc.gov/docs/ML1425/ML14258A081.pdf Page 4
[6] https://sanonofresafety.files.wordpress.com/2015/09/attachment-14-declaration-of-donna-gilmore.pdf

> We're running out of time before these canisters have major leaks, explosions or criticalities. The NRC and nuclear industry have kicked these cans down the road for over 20 years, but we're getting to the end of that road. Since aging canisters have not and cannot be inspected for cracks or depth of cracks, let alone repaired, the fuse may be lit on many of these aging canisters, but we cannot see them.[7]

The NRC should carefully consider the important safety issues raised in this letter, which we incorporate here by reference. Key data and concepts should be included in the Environmental Report and other portions of the WCS license application.

A permanent repository must be designed to isolate nuclear waste for a million years, but the WCS interim storage facility is not designed for long-term disposal. It would be woefully inadequate for permanent storage of radioactive waste that remains dangerous so far into the future. The licensing process for interim storage only accounts for the consequences of storage for a few decades, or possibly up to 100 years.

Thus the Environmental Report parameters are inadequate for a site that could become the de facto permanent site for deadly radioactive waste, and further analysis is essential. Canisters and casks are not designed to last anywhere close to a million years. There are no provisions in the application for a transfer facility at the site in which damaged or leaking canisters could be repackaged. The Environmental Report should thoroughly examine the effects of long-term storage and explicitly analyze the potential problems that could result involving zirconium or other kinds of cladding, and the potential impacts, including criticality.

Since there is no permanent repository being planned, this application should analyze the possibility that there will never be a final repository, and carefully consider all enhanced standards and guidelines that should be required due to the risk of creating a de facto permanent site.

Liability Risks and Inadequate Financial Assurance

The State of Texas could get stuck with billions of dollars of cleanup costs from a transportation accident, a contaminated waste facility, or having to remediate an abandoned high-level radioactive waste site.

Lack of viable financial assurance that would protect Texas.
WCS proposes to use one of two methods to fund decommissioning. The Environmental Report lacks sufficiently detailed information about either of these possibilities.

1. **DOE contract**. The license application says: Pursuant to a contract with DOE, DOE shall take legal title of the SNF prior to receipt and shall also be responsible for all costs associated with the decommissioning of the WCS CISF pursuant to 10 CFR Part

[7] https://sanonofresafety.files.wordpress.com/2018/09/nureg-2224donnagilmorecomments2018-09-24.pdf

20 Subpart E at the time of license termination (SAR 13.6.2 Cost of Decommissioning)

The application should discuss the goals and minimal terms that would be involved in such a contract, in order for the public to assess whether financial assurance would be anywhere close to adequate.

2. **External sinking fund**. If such a fund were to be used, would there be a requirement to use cash as financial assurance? Would bonds be considered? A combination of the two? Sister company stock? WCS was previously allowed to use sister company stock as financial assurance for their low-level radioactive waste facility. This inadequate option should not be permitted, since stock values can plummet. In order to prevent liability problems, the licensee should be required to provide full financial assurance up front, not incrementally over time. An accident with a radiation release could occur sooner than expected and someone would have to pay for remediation. It should not be US taxpayers.

   - WCS' and Orano have formed Interim Storage Partners (ISP). Orano, previously known as Areva, is largely owned by the French government, and it has a 51% ownership of ISP. The Environmental Report should include justification for why this could possibly be appropriate or why the NRC should even considered this proposed arrangement in light of Foreign Ownership and Control regulations**.**

     The national security implications of a high-level radioactive waste facility having a foreign-owned company with a controlling interest should be thoroughly examined. U.S. relations with France could become increasingly strained under the current Administration. The NRC should not allow any foreign company to have a controlling interest in any project on U.S. soil involving high-level radioactive waste.

   - The business model has changed. Additional financial scrutiny is needed since there have been economic shortcomings for WCS and Areva in the past. J.F. Lehman & Company now owns both Waste Control Specialists and NorthStar Group Holdings, Inc., a company that plans to decommission nuclear reactors.

   - NorthStar Group, in which WCS is a partner, is attempting to purchase Vermont Yankee nuclear reactor. NRC officials have approved the transfer of title, which is yet to be considered by the Vermont Public Utility Commission. There were significant questions as to whether NorthStar's financial plans were "adequate to provide reasonable assurance that sufficient funds would be available for decommissioning" and how long-term storage of spent nuclear fuel stored at Vermont Yankee would be funded. "That's no small expense: NorthStar estimates fuel costs at $287.8 million through 2052." [8]

[8] https://vtdigger.org/2018/05/24/northstar-makes-new-promises-in-vermont-yankee-sales-deal/

- WCS has made no commitment to set aside any given amount of financial assurance/decommissioning funds. It should be required to do so and explain how that would be accomplished under permissible terms. Otherwise, there is no guarantee of adequate funds for decommissioning. The company plans to negotiate a contract with DOE, leaving it to the federal government to clean up. No minimal terms for this contract are provided in the NRC license application. If no deal is struck, if funds turned out to be insufficient or if the federal government failed to pay, Texas and other states with transport routes could get burdened with a disastrous mess and shouldering potentially exorbitant cleanup costs.

- Before any licensing decision is made, a more comprehensive and credible financial assurance and decommissioning plan should be developed based on risks due to contamination, aging, weathering and abandonment. It should also address the new business model, which may not be backed by federal guarantees. There should be analysis of both WCS and Orano's assets and access to capital and a full examination of decommissioning revenues, and the extent to which these revenues could be used for financial assurance and decommissioning.

- The Environmental Report should acknowledge and discuss the fact that the Price-Anderson Act does not cover storage activity at a private sector Consolidated Interim Storage Facility. It could potentially cover some, but not all, transportation scenarios. The Price-Anderson funds that would available would not be nearly enough to cover a significant radiation release, which should also be discussed in depth.

- WCS' license application cites EPRI decommissioning estimates for a high-level radioactive waste site, of $12.65 million for 5,0000 tons, without commenting further as to whether they believe these estimates to be credible. If proportionate, costs would be $101 million for 40,000 tons. The Environmental Report should clarify as to whether WCS agrees with these unrealistically low numbers and if so, why.

- By contrast, a financial assurance package in excess of $250 million was secured for decommissioning the Vermont Yankee plant, a single nuclear reactor. The state of Vermont sought protections against "project risks and cost overruns" and to "ensure the complete cleanup and restoration of the reactor site." [9]

- The decommissioning cost estimates suggested in the license application pale in comparison to actual multi-billion dollar cleanup costs of existing radioactive

[9] https://publicservice.vermont.gov/announcements/department-files-mou-entergynorthstar-case

waste sites. Congress seldom adequately or timely funds remediation for such sites. The companies that would profit from radioactive waste storage may be long gone when it comes time for cleanup.

- **The Hanford Nuclear Reservation** in Washington State is considered America's most contaminated nuclear site.[10] In 2016, the price tag for the remaining environmental cleanup of the Hanford nuclear reservation is estimated at $107.7 billion. The estimate released by the Department of Energy, EPA and the state of Washington included cleanup work planned for completion by 2060, plus some post-cleanup oversight.[11]

- **The Waste Isolation Pilot Plant** (WIPP) After less than 15 years of operation the site had a fire and soon afterwards an explosion. The site was closed for 3 years and remediation costs were estimated to reach $2 billion.[12]

- **The Pantex Plant** is the primary United States nuclear weapons assembly and disassembly facility. Since 2000, $171 million in compensation and medical bills has been disbursed to more than 1,300 workers and families since the energy employees' compensation program began.[13] In 2009, soil and groundwater contamination cleanup was projected to cost over $120 million. [14]

- **Fernald uranium production facility** is the site of one of the largest environmental cleanup operations undertaken in U.S. history. It was added to the U.S. EPA's National Priorities List of Superfund Sites most in need of cleanup in 1989. The cleanup was completed after 28 years, at a cost of $4.4 billion.[15]

- **Savannah River** Site (SRS) produced tritium, plutonium and other special nuclear materials for national defense and the space program. Past disposal practices caused site contamination. Cleanup efforts have been underway since the 1980s. Site cleanup completion is currently scheduled for 2065.[16] The cleanup cost estimate has increased to $17 billion. [17]

- **Beatty, Nevada,** has the nation's first federally licensed low-level radioactive waste dump, which opened in 1962 and closed in 1992. The State of Nevada had to take over ownership and oversight of this site. In 2015, an underground fire led to violent eruptions that spewed hazardous debris 60 feet into the air. The cost to ensure that there is no repeat of the accident is expected to exceed the $9 million that Nevada accepted when it inherited the

[10] https://www.bbc.com/news/magazine-26658719
[11] https://www.tri-cityherald.com/news/local/hanford/article61912837.html
[12] http://www.latimes.com/nation/la-na-new-mexico-nuclear-dump-20160819-snap-story.html
[13] http://www.star-telegram.com/news/state/texas/article49500030.html
[14] https://www.mysanantonio.com/news/environment/article/Amarillo-weapons-plant-to-clean-up-soil-844339.php
[15] http://www.fluor.com/projects/fernald-environmental-remediation
[16] https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0403485
[17] https://www.postandcourier.com/the-remaining-mission-of-the-savannah-river-site-clean-up/article_186a2452-3039-11e7-83da-47bb41f904b2.html

site.[18] The radioactive waste dump was troubled over the years by leaky shipments and oversight so lax that employees took contaminated tools and building materials home, according to state and federal records.[19]

- **West Valley Demonstration Project** is a nuclear waste remediation project focusing on the cleanup and containment of radioactive waste left behind after the abandonment of a commercial nuclear fuel reprocessing plant in 1980. Despite over 30 years of cleanup efforts and billions of dollars having been spent at the site, the property has been described as New York's most toxic location in 2013.[20]

- The decommissioning plans suggested in the WCS license application are also unrealistic because they consider cleanup of a site with wastes that have recently been removed from a reactor, not for wastes stored in canisters or casks that have been degraded by transportation, accidents, weather or aging. Realistic analysis that covers various potential scenarios is needed to ensure accurate decommissioning costs.

- The license application assumes that 20% of the site could become contaminated and requiring remediation. What does this mean? Clarification of this vague statement and further analysis should be provided. Does this mean contamination of 20% of the canisters or casks? Or 20% of the site itself? Does this include the low-level radioactive waste area? The pad on which high-level radioactive waste would be stored?

  Is there really such thing as a 20% contaminated site? If a site is no longer safe for workers, isn't it effectively 100% contaminated? If workers were unable to access all or portions of the site, remediation could become difficult or even impossible. Are there robotics available that could be used to remediate a contaminated consolidated interim storage facility? Where and how would such decontamination take place, and at what expense?

The Presence of Water and Risks to Aquifers Must Be Analyzed

TCEQ's professional staff in the Radioactive Materials Division reviewed the original low-level radioactive waste application and unanimously urged the Commission to deny the license because of water incursion risks. An Interoffice Memorandum on August 14, 2007, relayed their conclusions to TCEQ Commissioners:

- Groundwater is likely to intrude into the proposed disposal units and contact the waste from either or both of two water tables near the proposed facility. The

[18] https://www.reviewjournal.com/local/local-nevada/a-year-after-fiery-accident-at-radioactive-waste-dump-in-nevada-the-meter-is-running-on-a-fix/
[19] https://www.theguardian.com/us-news/2015/oct/25/radioactive-waste-dump-fire-reveals-nevada-troubled-past
[20] https://en.wikipedia.org/wiki/West_Valley_Demonstration_Project

Applicant has failed to demonstrate compliance with 30 TAC §336.728(f), which states, "The disposal site shall provide sufficient depth to the water table so that groundwater, perennial or otherwise, shall not intrude into the waste."

- The Applicant has failed to successfully use numerical modeling to predict the future location of one water table that is expected to intrude into radioactive waste. This constitutes a failure to characterize the proposed site as required by 30 TAC §336.728(a) which states the proposed disposal site "...be capable of being characterized, modeled, analyzed, and monitored." Moreover, the Applicant's failure to model the future location of the water table violates 30 TAC §336.709(1), which requires analysis of future site conditions.

Monitoring well data in one quarterly report submitted in 2012 by WCS to TCEQ showed the presence of water in 40% of monitoring wells. Pumping removes water at the Compact and Federal facilities of the WCS site.

The Ogallala Aquifer, which provides water for eight states, is very near the WCS site. Risks of water contamination and the extent to which it could spread over time should be considered in the Environmental Report. Texas Water Development Board maps previously showed water underneath the WCS site location and previous studies of the site, once known as the Flying W Ranch, should be analyzed and the data incorporated into the Environmental Report. This includes a report formerly prepared for the Andrews Industrial Foundation.

Texas Does Not Consent to High-Level Radioactive Waste Storage

The WCS license application should acknowledge the significant opposition to the proposal for high-level radioactive waste storage in Texas or New Mexico.

Opposition to the WCS project far exceeds support, and NRC should hear these voices.

- Dallas, Bexar, Midland, El Paso and Nueces counties and the cities of San Antonio, Denton and Midland have passed resolutions expressing opposition.
- More than 23,000 people have now submitted comments opposing the WCS license.
- At least 500 of those comments came from people who live in the Andrews area
- Collectively, these resolutions represent 5,474,037 people based on 2017-2018 population data from SuburbanStats.org.[21]

[21] https://suburbanstats.org/population/how-many-people-live-in-texas (The population of the cities of San Antonio and Midland are assumed to be included in the county population)

Dallas County	2,368,139
Midland County	136,872
Nueces County	340,223
Bexar County	1,714,773
El Paso County	800,647

- While radioactive waste opposition is clearly not a partisan issue, it is also of note that the Texas Democratic Party Platform, 2018 – 2020 includes opposition to consolidated interim storage and transport of high-level radioactive waste.[22] In the 2016 election, Democrats cast 43.2% of the votes (3,877,868).

None of the criteria used by WCS to proclaim support for their project meet any reasonable definition of consent. They include:

- A March 2014 study by TCEQ, which was far from a glowing endorsement of the plan, pointing out sabotage risks and the possibility of creating a de facto permanent site. This report was presumed to back up former Governor Rick Perry's support for the WCS project. Governor Greg Abbott has not voiced support for WCS' proposal.
- A resolution passed by Andrews County in January 2015, without any public comment, at a hearing attended only by WCS.
- A 2014 resolution by the Texas Radiation Advisory Board, which only has an advisory role in state government.

Department of Energy officials have portrayed the resolution by Andrews County as evidence that Texas was giving consent to high-level radioactive waste storage site, which is false. Andrews County lacks any legal authority to consent to the WCS proposal on behalf of the state. The reality is that there was no citizen input into the decision by five people and the county was looking at potential financial gain as opposed to health and safety concerns of the community. The desire that many community members hold of a safe future for their families and for local businesses was disregarded, although many spoke to NRC about their concerns.

On January 20, 2015, Andrews County Commissioners passed a resolution supporting Waste Control Specialists' application for a consolidated interim high-level waste storage site. There had some coverage in the local newspaper of WCS' proposal, but there appears to have been little, if any, effort to reach out to citizens about the opportunity to weigh in about high-level radioactive waste storage plans at the Commissioners Court. Not a single member of the public was present at the only Commissioners Court public hearing. Only WCS was present. The resolution was approved with no community debate.

The Environmental Report should note this lack of public input. The process failed to constitute informed local consent, a serious failure considering the magnitude of the decision and the impacts it could have for Andrews County, the State of Texas and the nation as a whole. Many Andrews residents didn't know what was proposed until after the County resolution was passed. Some say that a vote should have been

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City of Denton	113,383
	5,474,037

[22] https://www.txdemocrats.org/our-party/texas-democratic-party-platform - in the Environmental Protection, Regulation and Enforcement section

held and that they would have voted against the project. Testimony at 2017 NRC meetings in Andrews, Texas and Hobbs, New Mexico was dominated by deeply concerned community members who said that they don't want radioactive waste nearby.

The volume of low-level waste arriving at WCS recently has been less than originally projected. As a result, revenues have been down, including the 5% that goes to Andrews County. County dependence on revenue generated at the site may have unduly influenced decisions made regarding storage of high-level radioactive waste.

The Andrews County's resolution favoring storage of high-level radioactive waste has no legal or regulatory basis. The Blue Ribbon Commission on America's Nuclear Future report in 2012 recommended a consent-based process, but since the recommendation was never codified or adopted by regulation the definition of consent was never finalized. The Environmental Report should acknowledge that there is no legal basis for the claim that Andrews County's resolution constitutes consent.

In fact, a fair definition of consent would give weight to the nearest and most affected community. In this case that would be Eunice, New Mexico, located about 4 miles west of the WCS site, and not Andrews, Texas. Eunice is the nearest governmental body, and the Mayor has publicly expressed opposition to the site and raised concerns about transportation. The WCS license application indicates that all rail transport to WCS would come through Eunice. True consent would include a vote for communities at risk because they are close to the proposed consolidated interim storage project or along transport routes.

Eunice, New Mexico, Mayor Johnnie "Matt" White wrote to Public Citizen member Michael Trost, saying:

> We have opposed the nuclear waste dump as it is so close to the city. It is only 4 miles and we are uncomfortable with the location. Also the waste material will be transported though the city and my council is very concerned. We have attended the meeting (in Hobbs) and expressed our concerns.

Transportation Risks Higher than NRC Acknowledges

Review of the WCS and Holtec license applications should be halted. No licenses should be issued until completion of the transportation route study that the U.S. Department of Transportation plans to release in 2022 and until the public has had adequate response time. Once route information is determined, the NRC should make the information available and host public meetings in cities likely to be on transport routes.

The Environmental Report fails to provide adequate route information. It should be revised to do so. There is no way the public can fully assess the environmental, health,

safety and environmental justice impacts of transportation without full information regarding how the waste would get to West Texas. People are left to make educated guesses by examining major rail lines and routes that would have been used to transport spent nuclear fuel to Yucca Mountain.

- An estimated 4,000 rail cars would move across the nation to Texas to the WCS site, in a process lasting over 20 years, threatening the health of communities and the environment.

- A 2002 study by Radioactive Waste Management Associates for the State of Nevada used RADTRAN and RISKIND computer models to reexamine the truck and rail accident estimates for Yucca Mountain. They found that sabotage impacts would be at least ten times greater than DOE Estimates. They found that remediation of a rail accident involving a radiation release could cost $189 to $270 billion, data that should be included in the Environmental Report.

> For the most economically severe rail accident in an urban area under weighted average meteorological conditions, our RADTRAN 5 analysis has estimated the associated costs to be on the order of $270 billion for 10-year-cooled fuel and $145 billion for 25.9-year-cooled fuel, present-day value. For the most economically severe truck accident, our RADTRAN 5 analysis has estimated the associated costs to be on the order of $36.6 billion for 10-year-cooled fuel and $20.1 billion for 25.9-year-cooled fuel. We need to underline the fact that the economic costs could be 3 to 4 times greater if one assumed a realistic urban population density.[23]

- RWMA examined accident health consequences analyses with RISKIND and concluded that the number of expected latent cancer fatalities could be up to 40 times higher than DOE estimates. They found that if radioactive waste was involved in a transportation accident similar to the Baltimore rail tunnel fire that there could be 1,580 latest cancer fatalities over one year, and 31,800 latent cancer fatalities over 50 years. The DOE had estimated only 31 latent cancer fatalities for a severe rail accident, and that the waste would have already cooled 26 years.

> RWMA concluded that the Baltimore accident conditions were severe enough to have caused the largest release considered in the DEIS for the Yucca Mountain facility. The contamination resulting from the release would cause a policy-maker's nightmare. On the one hand, the cost of cleanup could be $13.7 Billion. On the other hand, failure to clean up could result in up to 1,580 latent cancer fatalities over one year, and up to 31,800 latent cancer fatalities over 50 years. The potential health and economic consequences presented give some indication of the tradeoff likely to take place between preventing future health effects and expending a large amount of money to properly remediate an area.[24]

- Each rail car would carry as much plutonium as was in the atomic bomb dropped over Nagasaki. The Environmental Report should include information as to the content of spent nuclear fuel canisters, including the percentage of various radionuclides including,

[23] http://www.state.nv.us/nucwaste/yucca/impactreport.pdf Page 43 and 36
[24] Ibid. Page 42 and 36.

but not limited to plutonium, uranium, cesium, and americium and their half-lives. Data for high-burnup fuel should be included.

- The Environmental Reports fail to explain how very heavy loads trainloads would be handled, since loaded rail cars generally weigh close to 213 tons, significantly exceeding the 143 tons/car the rails are designed to handle. The term "shipment" should be defined. Information is needed regarding number of rail cars that would carry spent nuclear fuel in a given train, whether dedicated trains would be used and what requirements would ensure this, what buffer cars and security would be used and what regulations would apply, and the speed of such trains would travel in order to reduce transport risks, as well as how such speed limits, if they exist, would be enforced.

- Transportation routes have not been designated. However, DOT rules and guidance would require Class One lines for rail transport of spent nuclear fuel. The Environmental Report should clarify anticipated rail routes, as well as the extent to which barges and trucks would also be used and in what locations. WCS states a preference in the license application for using Union Pacific rail lines, but they have in no way limited the routes they might use. It appears that:
    - 90% of the waste would come from reactors east of the Mississippi River.
    - It appears that high-level radioactive waste would likely be shipped to WCS on UP lines running along 1-10, 1-20, I -30, and then westward through Dallas/Ft. Worth and heading north from Monahans to the WCS site.

This map from WCS' application appears to indicate that radioactive waste could be transported on numerous rail lines throughout the entire United States, but further discussion of the map and its significance should be included so that the public can know if this is true. A map should be included that overlays locations of reactors and decommissioned sites from which waste might originate and the rail lines. Maps should be provided that indicate routes for waste originating from all specific sites from which WCS could potentially receive spent nuclear fuel.

Title:	Figure:	Date:
RAIL LINES MAP	2.2-4	11/16/2015
		Scale: NONE

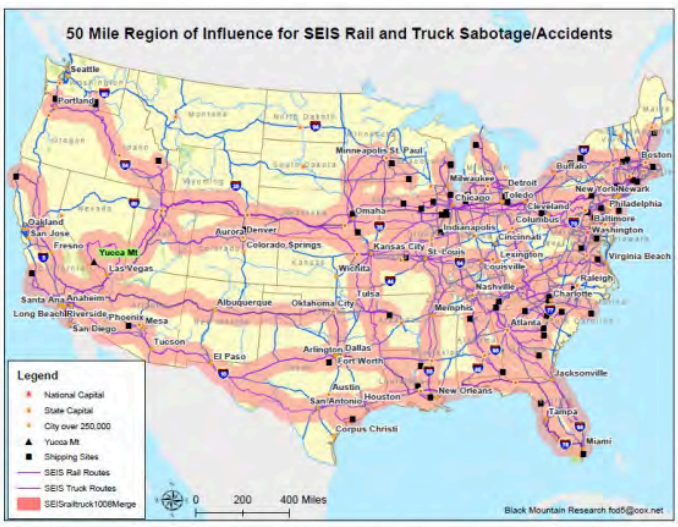

Figure 2. Potential National Rail and Highway Routes and 50-Mile Radiological Region of Influence (ROI) for Sabotage and Accidents

The Class One rail lines that could potentially haul this extremely heavy cargo run through the center of many of our largest cities. An analysis of spent nuclear fuel that would have gone to Yucca Mountain found that 218 million people live within the region of

influence, 50 miles on either side of rail lines that would have been used to transport this dangerous waste.[25]

The WCS plan would also endanger millions of people across the country. In Texas likely routes would go through major cities including Dallas/ Ft. Worth, Houston, San Antonio, Midland and El Paso. People along within a 50-mile region of influence along these rail lines should be considered affected parties since they are at risk for accidents and sabotage.

The concerns of people that live along likely transport routes must be heard in public meetings and the consent of governing bodies along transport routes must be obtained.

The NRC estimated that 10,000 rail shipments would be needed to ship waste to Yucca Mountain if transport was mainly by rail, and based on projected rate, at least one accident was anticipated.[26] The accident rates could be similar, or potentially higher for the WCS consolidated interim storage proposal.

There have been numerous train accidents and derailments in West Texas and New Mexico, and the following data should be considered and included in the Environmental Report. A Ten Year Accident/ Incident Overview for Texas Railroads, using data from the Federal Railroad Administration, Office of Safety Analysis shows that from FY2009 to FY2018, there were 8034 rail accidents/ incidents, with a total of 570 fatalities. Human factors caused 784 train accidents that were not at grade crossings, while 752 were track caused; 168 were collisions and 1550 were derailments. There were 10,225 cars that carried hazardous materials; with 1,24 hazmat cars damaged or derailed and 16 hazmat releases. There were 445 accidents with reportable damage over $100,000, 133 in which damage was over $500,000, and 58 with damage over $1 million. Incidents at public crossings totaled 1854 and highway – rail accidents claimed 206 lives.

Photos Courtesy of the Ward County Daily

A train vs. train collision at the rail road crossing of Eva and Sealy Avenue Wednesday in Monahans. Further details on the accident are pending following an investigation.

Union Pacific Railroad had 5062 accidents in Texas in this timeframe. The Texas and New Mexico Railroad (TNMR), which would be used for transport between Monahans, Texas and Eunice, NM, had 10 accidents. [27]

On April 18, 2018 the Ward County Daily reported on a train versus train collision that happened in Monahans, Texas, in a crash that took out more than a dozen cars (photo at

/pdf/rwma0810sabotage.pdf

[26] TCEQ Assessment of Texas' High Level Radioactive Waste Storage Options, https://www.documentcloud.org/documents/1100389-tceq-assessment-of-texas-high-level-radioactive.html
Originally based on DOE's FEIS for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada, Feb. 2002

[27] https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/TenYearAccidentIncidentOverview.aspx

left).[28] One of the trains was traveling at 70 mph at the time of the accident.

In June 2016, in Panhandle, Texas, a train going 65 mph failed to stop at a signal, and collided head on with another freight train (photo at left). Three people died. One train had 56 loaded cars and the other had 54 cars. A huge fireball was triggered, cars derailed and debris scattered 400 yards from the site. BNSF estimated damaged at $16 million. The fire burned for twelve hours.[29]

Risk of Terrorist Attacks on Radioactive Waste Transported through Texas' Major Cities

Shipping high-level radioactive waste through population centers would create attractive targets for terrorists. If terrorists were to attack, they'd be most likely to do so in a highly populated city like San Antonio, which has numerous military bases, or Houston, which is home to the nation's largest petrochemical complex and second largest port, or Dallas/Ft. Worth, which have the some of the nation's most congested rail hubs.[30]

A Texas Commission on Environmental Quality study discussed the risk of a terrorist attack on radioactive waste during transport or at the site as a significant threat.[31] The report cited a study entitled "Centralized Interim Storage of Nuclear Waste and a National Interim Storage Strategy," which included this reference:

> With the presence of any potentially dangerous material, it is important to anticipate the possibility of malicious attack or theft. Due to the deliberate nature of such security threats, one cannot reasonably assign them a probability and calculate an expected cost. Because these attacks often target human lives and aim to create terror, it is important to actively safeguard against the negative consequences of such an attack. Therefore, for interim spent fuel storage, spent

[28] https://www.oaoa.com/news/traffic_transportation/vehicle_accidents/article_f7e3395e-435a-11e8-bbe5-5b37334a3c03.html.
[29] https://www.nbcdfw.com/news/local/Report-Train-Didnt-Heed-Stop-Signal-in-Deadly-Texas-Crash-386849071.html.
[30] http://gov.texas.gov/files/ecodev/Logistics_Report.pdf
[31] TCEQ 'Assessment of Texas' High Level Radioactive Waste Storage Options' - https://www.documentcloud.org/documents/1100389-tceq-assessment-of-texas-high-level-radioactive.html

> fuel must be secured against malicious attack and its consequences at all times. For radioactive materials such as spent fuel, security threats fall into two general categories: sabotage and theft. In the former, the intent is to damage shielding and potentially disperse radioactive material, therefore exposing the environment and population to radiation. The latter involves stealing the material for future use in a radiological dispersal device or "dirty bomb," or a potential nuclear device. In addition, each of these types of events may occur during storage, transportation, or fuel transfer. [32]
>
> The transportation of spent fuel presents unique security vulnerabilities and challenges. Differences in risk between storage and transportation are due to a reduced number of security personnel guarding transport, fewer engineered barriers during transport, and potential proximity of transportation routes to population centers. Each of these factors make spent fuel in transit a more appealing and accessible target to attackers, thus increasing risk.[33]

In 2007 the National Academies (NAS) Committee on Transportation of Radioactive Waste reported that "Malevolent acts against spent fuel and high-level waste shipments are a major technical and societal concern."34 They urged an independent examination of security before spent nuclear fuel shipment to a repository.

Sabotage events similar to those evaluated by DOE for Yucca Mountain, in which the casks are penetrated but not perforated, could range from *$3.5 billion to $45.8 billion* (in 2008 dollars) according to Radioactive Waste Management Associates. Transportation sabotage events in which the casks are fully perforated could result in cleanup costs of *$463 billion to $648 billion*.

A terrorist strike on a shipment of radioactive waste could create an immediate health and safety hazard to the surrounding population and resulting radioactive contamination caused could render large areas of land uninhabitable for generations. This significant risk to human health and safety that must be accounted for and fully addressed in the Environmental Report.

Drones and Armor-Piercing Weaponry

[32] Petroski, Robert, "Centralized Interim Storage of Nuclear Waste and a National Interim Storage Strategy," Journal of Engineering and Public Policy, vol. 9, (2005) - http://www.wise-intern.org/journal/2005/petroski.pdf Page 24.
[33] http://www.wise-intern.org/journal/2005/petroski.pdf, page 26
[34] http://www.state.nv.us/nucwaste/news2007/pdf/wm07ymtrans.pdf Page 2

The Environmental Report should include updated analysis of transportation risks, including the potential impacts of drones being used by terrorists in attacks on radioactive waste shipments. Drones are a dangerous new threat to our troops abroad, as was recently seen in battles with terrorists in Mosul, Iraq.[35] A recent report detailed the growing use of drones as terrorist tools.[36]

A new generation of armor-piercing weaponry has been developed since then and an estimated 48% of all weapons used in Iraq and Afghanistan have disappeared. Due to extensive arms trafficking, no one can say where all these military weapons are today. Drones now carry warheads. No NRC analysis has been done of the impacts that could occur. Experts say that the thin canisters can be pierced.

Cask safety tests are outdated and inadequate

The NRC website says that spent fuel transport packages must met certain conditions:

> To show that it can withstand accident conditions, a package must pass impact, puncture, fire and water immersion tests. Transportation packages must survive these tests in sequence, including a 30-foot drop onto a rigid surface followed by a fully-engulfing fire of 1475 degrees Fahrenheit for 30 minutes. These very severe tests equate to the package hitting a concrete highway overpass at high speed, and being involved in a severe and long-lasting fire. The test sequence encompasses more than 99 percent of vehicle accidents. [37]

However, real world accidents have exceeded scenarios studied by the NRC. Most of the canister safety analysis was done prior to 9/11. Many of the tests were simulations, not full-scale model testing. Artificial limits were set which have already been exceeded in the real world. One test assumed that the radioactive waste transport package on a train hitting an immovable object at 60 mph would be unharmed, but in 2016 there was a 65 mph head-on train collision in Panhandle, Texas. The force of the oncoming train magnified the impact and the impact was greater than the test scenario, where a train collides at 60 mph into an immovable barrier.[38] In the Monahans collision one train was traveling at 70 mph.

The Baltimore rail tunnel fire also significantly exceeded test conditions. "RWMA concluded that the Baltimore rail tunnel fire burned for three days with temperatures as high as 1500 degrees Fahrenheit, creating a Category 6 accident fire environment

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[35] https://www.washingtonpost.com/world/national-security/use-of-weaponized-drones-by-isis-spurs-terrorism-fears/2017/02/21/9d83d51e-f382-11e6-8d72-263470bf0401_story.html?utm_term=.290f6b7d82e4

[36] www.memri.org/reports/decade-jihadi-organizations-use-drones-–-early-experiments-hizbullah-hamas-and-al-qaeda

[37] https://www.nrc.gov/reading-rm/doc-collections/fact-sheets/transport-spenfuel-radiomats-bg.html#safety

[38] NTSB Collision of BNSF Eastbound Train S-LACLPC1- 26K and BNSF Westbound Train Q-CHISBD6-27L, Panhandle, Texas - https://www.ntsb.gov/investigations/AccidentReports/Reports/DCA16FR008-PreliminaryReport.pdf

sufficient to cause a breach of the cask and a significant release of radiocesium and other radionuclides." [39]

In the real world, firefighting equipment and personnel may not always be close at hand when and where they're needed. Scott Palmer, chairman of the Oregon State Legislative Board of the Brotherhood of Locomotive Engineers and Trainmen, testified on July 19, 2018 at a New Mexico Radioactive and Hazardous Waste Committee hearing. He said that although fire suppression equipment is available, rail accidents often occur at locations hours away from that equipment.[40]

Environmental Justice Concerns

Executive Order 12898, the Environmental Justice Executive Order, tasks all federal agencies with, "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[.]"[41] Federal agencies are further tasked with conducting their programs in a manner that does not exclude participation by certain populations. Specifically:

> Sec. 2–2. Federal Agency Responsibilities for Federal Programs. Each Federal agency shall conduct its programs, policies, and activities that substantially affect human health or the environment, in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under, such programs, policies, and activities, because of their race, color, or national origin.[42]

The Environmental Justice Executive Order also tasks federal agencies with collecting and analyzing data comparing health risks borne by different populations, determining whether low-income communities of color are disproportionately impacted. Specifically:

> 3–302. Human Health and Environmental Data Collection and Analysis.
> To the extent permitted by existing law, including the Privacy Act, as amended (5 U.S.C. section 552a): (a) each Federal agency, whenever practicable and appropriate, shall collect, maintain, and analyze information assessing and comparing environmental and human health risks borne by populations identified by race, national origin, or income. To the extent practical and appropriate, Federal agencies shall use this information to determine whether their programs,

[39] http://www.state.nv.us/nucwaste/yucca/impactreport.pdf Page 38.
[40] Presentation provided to committee at July 19, 2018 hearing - https://www.nmlegis.gov/handouts/RHMC%20071918%20Item%202%20SNF%20Transportation%20Safety%20and%20Security%20Concerns.pdf
[41] Executive Order 12898, 59 Fed. Reg. 7629 (1994).
[42] Executive Order 12898, 59 Fed. Reg. 7629 at §2-2 (1994).

> policies, and activities have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations; [43]

In order to promote public participation and access to information, the EJ Executive Order states that "Each Federal agency may, whenever practicable and appropriate, translate crucial public documents, notices, and hearings relating to human health or the environment for limited English speaking populations."[44]

The proposed site in Andrews County and the transport routes through Texas are located in predominantly low-income communities of color—environmental justice communities. The Nuclear Regulatory Commission has not ensured that the disproportionate health impacts to environmental justice communities are documented.

Many of the rail transport routes in Texas are through communities with a large percentage of non-English speaking residents. The NRC has not made information available in Spanish, including WCS's application and supporting documents, or provided an opportunity for public participation by Spanish-speaking communities. Various federal laws and executive orders require the NRC to document the potential effects of this project on environmental justice communities and seek to limit the impact of a proposed site on these communities.

The U.S. Environmental Protection Agency developed the Environmental Justice Screening Tool (EJ SCREEN) for use when documenting impacts to EJ communities. Public Citizen used EJSCREEN to analyze populations near the rail transport routes in Texas. (See attachments.)

Information about specific rail transport routes is not included in WCS's application. Public Citizen and SEED Coalition used available public information, including TxDOT rail maps, to determine the most likely rail transport routes in Texas. We used EJ SCREEN to map these routes along various urban and rural corridors across Texas. We counted the population within 0.5 miles of the rail line because that is the population that will be most impacted by waste transport. We looked at demographic data from the 2012-2016 American Community Survey.

Our analysis shows that transportation of spent nuclear fuel is a major environmental justice issue, since it would likely come by rail through many EJ communities. WCS's application is deficient because:

- There is no analysis of the demographics of populations impacted by the proposal or identification of which are environmental justice communities.
- There is no analysis of whether environmental justice communities will be disparately impacted. (They will.)
- There is no documentation of the impacts to EJ communities.
- There is no discussion of attempts to limit impacts to EJ communities.

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[43] Executive Order 12898, 59 Fed. Reg. 7629 at §3-302 (1994).
[44] Executive Order 12898, 59 Fed. Reg. 7629 at §5-5(b) (1994).

- There has been no attempt to provide information, including application materials, to communities with high percentages of non-English speakers.
- There has been no attempt to conduct public outreach to non-English speaking communities.
- There has been no attempt to give non-English speaking communities an opportunity to comment on the application or otherwise participate in the process.

We used EJ SCREEN and the American Community Survey to analyze the following rail routes (see attached):

				% who speak Spanish at home	
Rail segment	population	% minority	% Hispanic	Speak English Well	Do not Speak English Well
El Paso to Monahans	100,985	94%	92%	51%	49%
Bexar county	86,262	88%	72%	59%	41%
Bexar County (route 2)	90,644	78%	71%	58%	42%
Houston to San Antonio	114,433	67%	67%	79%	21%
Midland to Eunice	37,415	70%	63%	62%	38%
Harris county	103,509	67%	45%	70%	30%
Beaumont to Houston (southern route)	49,295	72%	42%	89%	11%
Texarkansas to Dallas	92,054	63%	33%	71%	29%
Ft. Worth to Midland	84,583	37%	28%	87%	13%
Tarrant county	74,450	49%	26%	78%	22%
Shreveport to Dallas	97,323	61%	26%	73%	27%
Total Population	**930,953**				

All but one of the routes we analyzed were majority minority. Within these communities, the largest single demographic is the Hispanic population. Many communities have large percentages of people—above 40% in many cases—who do not Speak English well. These populations should have been provided information in Spanish and given an opportunity to comment or otherwise participate in the public process despite their lack of facility with English.

Attorney Terry Lodge submitted additional comments to which Public Citizen and SEED Coalition are signatories. Please consider the summary of contentions, the full contentions filed on November 13, 2018, and the comments submitted by Mr. Lodge incorporated into these scoping comments. Also attached are maps and demographic data developed using the EPA's EJSCREEN tool.[45]

[45] https://www.epa.gov/ejscreen.

This application should be dismissed for all the many reasons discussed. Processing an interim waste storage application is illegal until such time as a final repository has been approved or changes are made in federal law. The plan to ship high-level radioactive waste to Texas and store it for decades imperils the health and safety of the people of Texas, creates financial risks and fails to move the nation toward the goal of a permanent repository. Review of the applications for the WCS project in Texas and the Holtec project in nearby New Mexico should be halted and the licenses denied.

Respectfully Submitted,

Adrian Shelley, Director of Public Citizen's Texas Office
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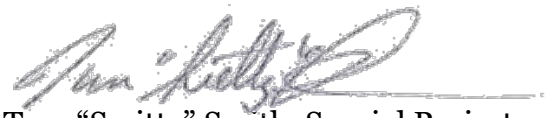
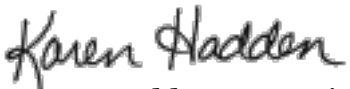


Tom "Smitty" Smith, Special Projects Director for Public Citizen's Texas Office



Karen Hadden, Executive Director
Sustainable Energy and Economic Development (SEED) Coalition
605 Carismatic Lane
Austin, Texas 78748

Appendix: Environmental Justice Screens along projected rail lines through Texas likely to transport High-level radioactive waste to the proposed ISP/WCS site.

The environmental justice screens were done using EPA's **EJSCREEN: Environmental Justice Screening and Mapping Tool** (https://www.epa.gov/ejscreen)

				% who speak Spanish at home	
Rail segment	population	% minority	% hispanic	Speak English Well	Do not Speak English Well
El Paso to Monihans	100,985	94%	92%	51%	49%
Bexar County	86,262	88%	72%	59%	41%
Bexar County (route 2)	90,644	78%	71%	58%	42%
Houston to San Antonio	114,433	67%	67%	79%	21%
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Texarkansas to Dallas	92,054	63%	33%	71%	29%
Ft. Worth to Midland	84,583	37%	28%	87%	13%
Tarrant county	74,450	49%	26%	78%	22%
Shreveport to Dallas	97,323	61%	26%	73%	27%
Total Population	**930,953**				

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: El Paso to Monahans

Summary of ACS Estimates	2012 - 2016
Population	100,985
Population Density (per sq. mile)	641
Minority Population	94,588
% Minority	94%
Households	31,744
Housing Units	35,698
Housing Units Built Before 1950	7,868
Per Capita Income	14,821
Land Area (sq. miles) (Source: SF1)	157.65
% Land Area	100%
Water Area (sq. miles) (Source: SF1)	0.28
% Water Area	0%

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population by Race			
Total	100,985	100%	848
Population Reporting One Race	99,485	99%	2,317
White	85,181	84%	878
Black	1,837	2%	361
American Indian	870	1%	172
Asian	207	0%	162
Pacific Islander	54	0%	70
Some Other Race	11,336	11%	674
Population Reporting Two or More Races	1,500	1%	145
Total Hispanic Population	92,414	92%	796
Total Non-Hispanic Population	8,571		
White Alone	6,397	6%	273
Black Alone	1,546	2%	361
American Indian Alone	179	0%	109
Non-Hispanic Asian Alone	150	0%	156
Pacific Islander Alone	37	0%	70
Other Race Alone	71	0%	53
Two or More Races Alone	191	0%	108
Population by Sex			
Male	50,431	50%	580
Female	50,554	50%	616
Population by Age			
Age 0-4	6,696	7%	338
Age 0-17	25,282	25%	411
Age 18+	75,703	75%	577
Age 65+	15,884	16%	262

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS) 2012 - 2016 .

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: El Paso to Monahans

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population 25+ by Educational Attainment			
Total	63,906	100%	526
Less than 9th Grade	17,747	28%	270
9th - 12th Grade, No Diploma	8,913	14%	230
High School Graduate	16,825	26%	374
Some College, No Degree	15,070	24%	263
Associate Degree	3,359	5%	164
Bachelor's Degree or more	5,351	8%	149
Population Age 5+ Years by Ability to Speak English			
Total	94,289	100%	753
Speak only English	15,280	16%	326
Non-English at Home[1+2+3+4]	79,009	84%	618
[1]Speak English "very well"	39,150	42%	459
[2]Speak English "well"	15,806	17%	271
[3]Speak English "not well"	11,365	12%	382
[4]Speak English "not at all"	12,687	13%	340
[3+4]Speak English "less than well"	24,052	26%	511
[2+3+4]Speak English "less than very well"	39,859	42%	578
Linguistically Isolated Households*			
Total	10,767	100%	145
Speak Spanish	10,727	100%	144
Speak Other Indo-European Languages	33	0%	54
Speak Asian-Pacific Island Languages	5	0%	27
Speak Other Languages	2	0%	13
Households by Household Income			
Household Income Base	31,744	100%	207
< $15,000	9,033	28%	162
$15,000 - $25,000	5,304	17%	141
$25,000 - $50,000	9,823	31%	199
$50,000 - $75,000	3,664	12%	127
$75,000 +	3,920	12%	133
Occupied Housing Units by Tenure			
Total	31,744	100%	207
Owner Occupied	17,646	56%	163
Renter Occupied	14,098	44%	188
Employed Population Age 16+ Years			
Total	79,139	100%	594
In Labor Force	41,884	53%	501
Civilian Unemployed in Labor Force	4,215	5%	198
Not In Labor Force	37,255	47%	446

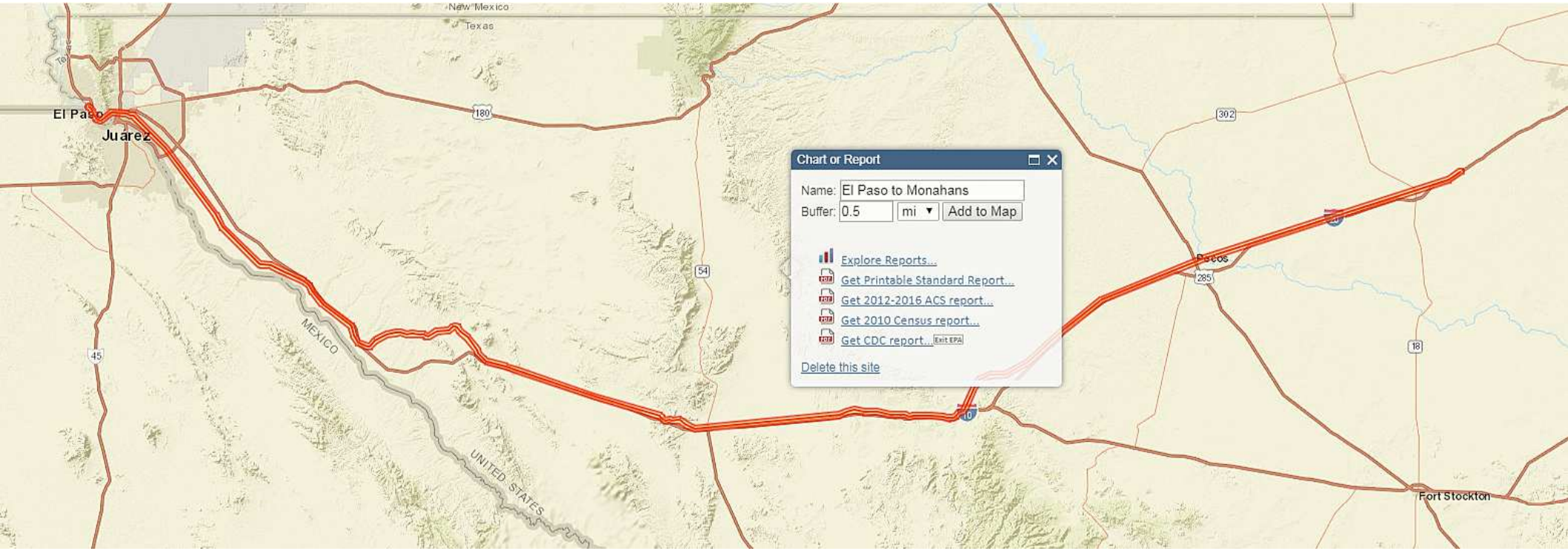
Data Note: Datail may not sum to totals due to rounding. Hispanic population can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS)
*Households in which no one 14 and over speaks English "very well" or speaks English only.

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: El Paso to Monahans

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population by Language Spoken at Home*			
Total (persons age 5 and above)	78,655	100%	597
English	12,707	16%	349
Spanish	65,534	83%	546
French	85	0%	156
French Creole	N/A	N/A	N/A
Italian	N/A	N/A	N/A
Portuguese	N/A	N/A	N/A
German	7	0%	18
Yiddish	N/A	N/A	N/A
Other West Germanic	N/A	N/A	N/A
Scandinavian	N/A	N/A	N/A
Greek	N/A	N/A	N/A
Russian	N/A	N/A	N/A
Polish	N/A	N/A	N/A
Serbo-Croatian	N/A	N/A	N/A
Other Slavic	N/A	N/A	N/A
Armenian	N/A	N/A	N/A
Persian	N/A	N/A	N/A
Gujarathi	N/A	N/A	N/A
Hindi	N/A	N/A	N/A
Urdu	N/A	N/A	N/A
Other Indic	N/A	N/A	N/A
Other Indo-European	162	0%	156
Chinese	25	0%	48
Japanese	N/A	N/A	N/A
Korean	19	0%	18
Mon-Khmer, Cambodian	N/A	N/A	N/A
Hmong	N/A	N/A	N/A
Thai	N/A	N/A	N/A
Laotian	N/A	N/A	N/A
Vietnamese	5	0%	18
Other Asian	26	0%	27
Tagalog	0	0%	18
Other Pacific Island	N/A	N/A	N/A
Navajo	N/A	N/A	N/A
Other Native American	N/A	N/A	N/A
Hungarian	N/A	N/A	N/A
Arabic	32	0%	166
Hebrew	N/A	N/A	N/A
African	N/A	N/A	N/A
Other and non-specified	53	0%	33
Total Non-English	65,948	84%	653

Data Note: Detail may not sum to totals due to rounding. Hispanic popultion can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS) 2012 - 2016.
*Population by Language Spoken at Home is available at the census tract summary level and up.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EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: UP Bexar County

Summary of ACS Estimates	2012 - 2016
Population	86,262
Population Density (per sq. mile)	2,303
Minority Population	74,057
% Minority	86%
Households	28,146
Housing Units	31,334
Housing Units Built Before 1950	9,040
Per Capita Income	18,974
Land Area (sq. miles) (Source: SF1)	37.46
% Land Area	99%
Water Area (sq. miles) (Source: SF1)	0.33
% Water Area	1%

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population by Race			
Total	86,262	100%	1,024
Population Reporting One Race	84,081	97%	2,696
White	61,542	71%	1,009
Black	9,864	11%	546
American Indian	815	1%	270
Asian	905	1%	192
Pacific Islander	39	0%	67
Some Other Race	10,916	13%	612
Population Reporting Two or More Races	2,181	3%	369
Total Hispanic Population	62,138	72%	918
Total Non-Hispanic Population	24,125		
White Alone	12,206	14%	585
Black Alone	9,551	11%	546
American Indian Alone	198	0%	205
Non-Hispanic Asian Alone	800	1%	192
Pacific Islander Alone	18	0%	67
Other Race Alone	118	0%	170
Two or More Races Alone	1,235	1%	363
Population by Sex			
Male	41,799	48%	552
Female	44,463	52%	664
Population by Age			
Age 0-4	6,347	7%	297
Age 0-17	24,169	28%	382
Age 18+	62,093	72%	613
Age 65+	9,125	11%	229

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS) 2012 - 2016 .

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: UP Bexar County

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population 25+ by Educational Attainment			
Total	53,664	100%	661
Less than 9th Grade	7,443	14%	279
9th - 12th Grade, No Diploma	7,499	14%	197
High School Graduate	16,226	30%	393
Some College, No Degree	14,889	28%	323
Associate Degree	3,188	6%	169
Bachelor's Degree or more	7,607	14%	278
Population Age 5+ Years by Ability to Speak English			
Total	79,916	100%	899
Speak only English	39,796	50%	640
Non-English at Home[1+2+3+4]	40,120	50%	517
[1]Speak English "very well"	27,147	34%	437
[2]Speak English "well"	5,680	7%	236
[3]Speak English "not well"	4,627	6%	357
[4]Speak English "not at all"	2,667	3%	172
[3+4]Speak English "less than well"	7,293	9%	362
[2+3+4]Speak English "less than very well"	12,973	16%	413
Linguistically Isolated Households*			
Total	2,669	100%	146
Speak Spanish	2,603	98%	145
Speak Other Indo-European Languages	9	0%	18
Speak Asian-Pacific Island Languages	50	2%	52
Speak Other Languages	7	0%	18
Households by Household Income			
Household Income Base	28,146	100%	219
< $15,000	4,978	18%	123
$15,000 - $25,000	4,444	16%	176
$25,000 - $50,000	8,571	30%	204
$50,000 - $75,000	4,901	17%	137
$75,000 +	5,252	19%	186
Occupied Housing Units by Tenure			
Total	28,146	100%	219
Owner Occupied	14,646	52%	220
Renter Occupied	13,500	48%	204
Employed Population Age 16+ Years			
Total	64,472	100%	785
In Labor Force	39,841	62%	485
Civilian Unemployed in Labor Force	3,456	5%	175
Not In Labor Force	24,631	38%	405

Data Note: Datail may not sum to totals due to rounding. Hispanic population can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS)
*Households in which no one 14 and over speaks English "very well" or speaks English only.

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: UP Bexar County

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population by Language Spoken at Home*			
Total (persons age 5 and above)	79,591	100%	865
English	40,276	51%	732
Spanish	38,108	48%	552
French	95	0%	62
French Creole	N/A	N/A	N/A
Italian	N/A	N/A	N/A
Portuguese	N/A	N/A	N/A
German	177	0%	86
Yiddish	N/A	N/A	N/A
Other West Germanic	N/A	N/A	N/A
Scandinavian	N/A	N/A	N/A
Greek	N/A	N/A	N/A
Russian	N/A	N/A	N/A
Polish	N/A	N/A	N/A
Serbo-Croatian	N/A	N/A	N/A
Other Slavic	N/A	N/A	N/A
Armenian	N/A	N/A	N/A
Persian	N/A	N/A	N/A
Gujarathi	N/A	N/A	N/A
Hindi	N/A	N/A	N/A
Urdu	N/A	N/A	N/A
Other Indic	N/A	N/A	N/A
Other Indo-European	126	0%	84
Chinese	43	0%	62
Japanese	N/A	N/A	N/A
Korean	97	0%	372
Mon-Khmer, Cambodian	N/A	N/A	N/A
Hmong	N/A	N/A	N/A
Thai	N/A	N/A	N/A
Laotian	N/A	N/A	N/A
Vietnamese	140	0%	115
Other Asian	240	0%	190
Tagalog	176	0%	148
Other Pacific Island	N/A	N/A	N/A
Navajo	N/A	N/A	N/A
Other Native American	N/A	N/A	N/A
Hungarian	N/A	N/A	N/A
Arabic	10	0%	27
Hebrew	N/A	N/A	N/A
African	N/A	N/A	N/A
Other and non-specified	86	0%	106
Total Non-English	39,315	49%	1,133

Data Note: Detail may not sum to totals due to rounding. Hispanic popultion can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS) 2012 - 2016.
*Population by Language Spoken at Home is available at the census tract summary level and up.

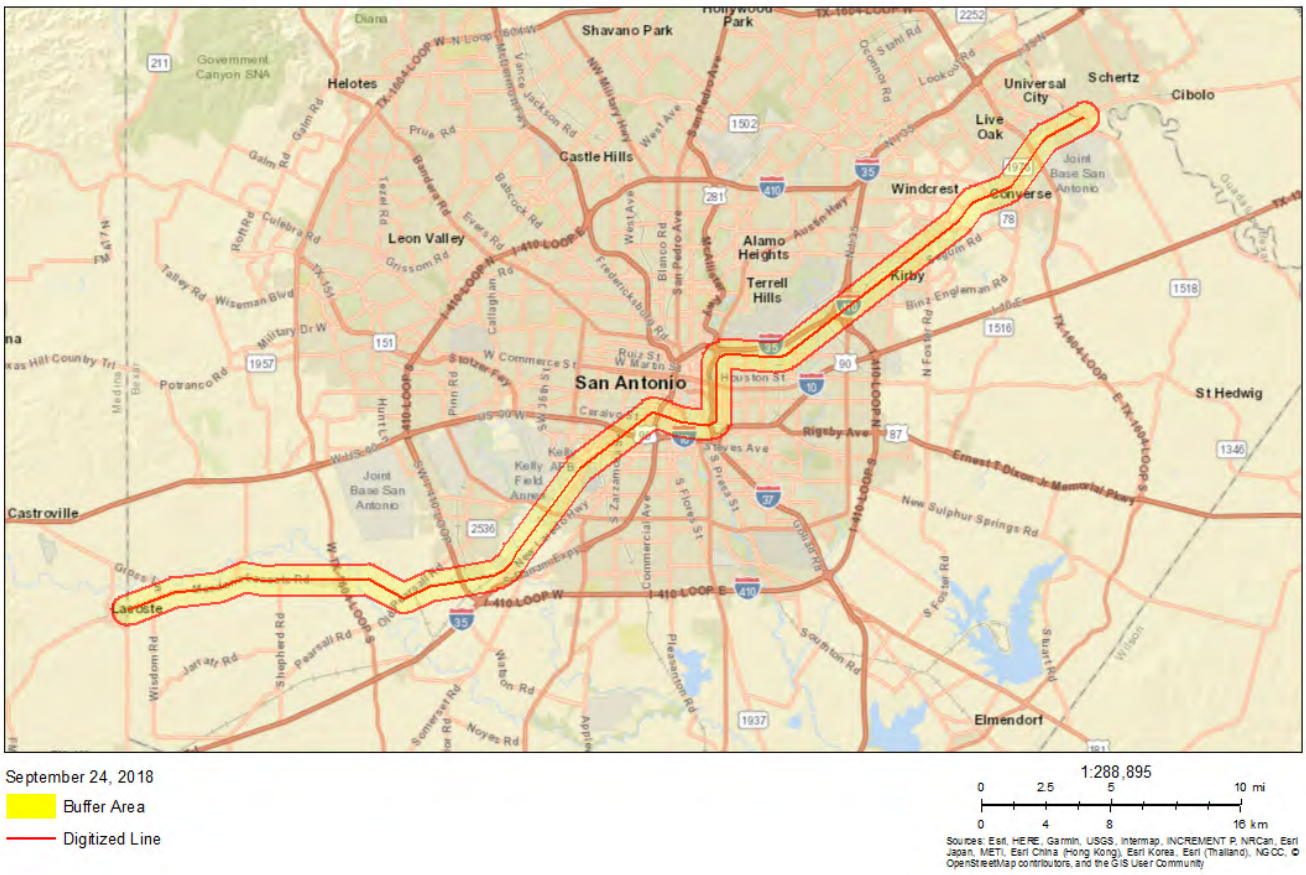
EJSCREEN Report (Version 2018)

0.5 mile Ring around the Corridor, TEXAS, EPA Region 6

Approximate Population: 86,262

Input Area (sq. miles): 40.72

UP Bexar County



Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	11

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: UP Bexar County, Route 2

Summary of ACS Estimates	2012 - 2016
Population	90,644
Population Density (per sq. mile)	2,494
Minority Population	68,865
% Minority	76%
Households	30,354
Housing Units	33,776
Housing Units Built Before 1950	9,468
Per Capita Income	22,549
Land Area (sq. miles) (Source: SF1)	36.35
% Land Area	99%
Water Area (sq. miles) (Source: SF1)	0.36
% Water Area	1%

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population by Race			
Total	90,644	100%	1,013
Population Reporting One Race	88,655	98%	2,493
White	76,374	84%	1,009
Black	2,718	3%	379
American Indian	945	1%	262
Asian	964	1%	187
Pacific Islander	27	0%	44
Some Other Race	7,627	8%	612
Population Reporting Two or More Races	1,989	2%	351
Total Hispanic Population	64,366	71%	918
Total Non-Hispanic Population	26,278		
White Alone	21,779	24%	690
Black Alone	2,518	3%	378
American Indian Alone	123	0%	83
Non-Hispanic Asian Alone	917	1%	187
Pacific Islander Alone	13	0%	44
Other Race Alone	53	0%	95
Two or More Races Alone	875	1%	349
Population by Sex			
Male	45,058	50%	552
Female	45,586	50%	728
Population by Age			
Age 0-4	5,588	6%	304
Age 0-17	21,844	24%	405
Age 18+	68,800	76%	626
Age 65+	11,929	13%	229

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS) 2012 - 2016 .

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: UP Bexar County, Route 2

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population 25+ by Educational Attainment			
Total	59,790	100%	661
Less than 9th Grade	7,913	13%	279
9th - 12th Grade, No Diploma	7,127	12%	174
High School Graduate	16,088	27%	393
Some College, No Degree	17,028	28%	497
Associate Degree	3,668	6%	174
Bachelor's Degree or more	11,634	19%	254
Population Age 5+ Years by Ability to Speak English			
Total	85,056	100%	899
Speak only English	42,632	50%	640
Non-English at Home[1+2+3+4]	42,424	50%	517
[1]Speak English "very well"	29,359	35%	455
[2]Speak English "well"	5,585	7%	201
[3]Speak English "not well"	4,589	5%	357
[4]Speak English "not at all"	2,890	3%	172
[3+4]Speak English "less than well"	7,479	9%	362
[2+3+4]Speak English "less than very well"	13,064	15%	413
Linguistically Isolated Households*			
Total	3,074	100%	146
Speak Spanish	2,992	97%	145
Speak Other Indo-European Languages	35	1%	21
Speak Asian-Pacific Island Languages	47	2%	22
Speak Other Languages	0	0%	13
Households by Household Income			
Household Income Base	30,354	100%	219
< $15,000	5,376	18%	149
$15,000 - $25,000	4,313	14%	176
$25,000 - $50,000	7,410	24%	189
$50,000 - $75,000	5,439	18%	183
$75,000 +	7,816	26%	207
Occupied Housing Units by Tenure			
Total	30,354	100%	219
Owner Occupied	16,887	56%	212
Renter Occupied	13,467	44%	190
Employed Population Age 16+ Years			
Total	71,218	100%	774
In Labor Force	43,366	61%	603
Civilian Unemployed in Labor Force	3,208	5%	294
Not In Labor Force	27,852	39%	401

Data Note: Datail may not sum to totals due to rounding. Hispanic population can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS)
*Households in which no one 14 and over speaks English "very well" or speaks English only.

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: UP Bexar County, Route 2

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population by Language Spoken at Home*			
Total (persons age 5 and above)	86,950	100%	861
English	43,961	51%	736
Spanish	41,396	48%	584
French	84	0%	130
French Creole	N/A	N/A	N/A
Italian	N/A	N/A	N/A
Portuguese	N/A	N/A	N/A
German	328	0%	133
Yiddish	N/A	N/A	N/A
Other West Germanic	N/A	N/A	N/A
Scandinavian	N/A	N/A	N/A
Greek	N/A	N/A	N/A
Russian	N/A	N/A	N/A
Polish	N/A	N/A	N/A
Serbo-Croatian	N/A	N/A	N/A
Other Slavic	N/A	N/A	N/A
Armenian	N/A	N/A	N/A
Persian	N/A	N/A	N/A
Gujarathi	N/A	N/A	N/A
Hindi	N/A	N/A	N/A
Urdu	N/A	N/A	N/A
Other Indic	N/A	N/A	N/A
Other Indo-European	225	0%	130
Chinese	76	0%	103
Japanese	N/A	N/A	N/A
Korean	165	0%	171
Mon-Khmer, Cambodian	N/A	N/A	N/A
Hmong	N/A	N/A	N/A
Thai	N/A	N/A	N/A
Laotian	N/A	N/A	N/A
Vietnamese	153	0%	115
Other Asian	203	0%	113
Tagalog	116	0%	80
Other Pacific Island	N/A	N/A	N/A
Navajo	N/A	N/A	N/A
Other Native American	N/A	N/A	N/A
Hungarian	N/A	N/A	N/A
Arabic	57	0%	58
Hebrew	N/A	N/A	N/A
African	N/A	N/A	N/A
Other and non-specified	52	0%	83
Total Non-English	42,989	49%	1,133

Data Note: Detail may not sum to totals due to rounding. Hispanic popultion can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS) 2012 - 2016.
*Population by Language Spoken at Home is available at the census tract summary level and up.

EJSCREEN Report (Version 2018)

0.5 mile Ring around the Corridor, TEXAS, EPA Region 6

Approximate Population: 90,644

Input Area (sq. miles): 40.25

UP Bexar County, Route 2 (The study area contains 1 blockgroup(s) with zero population.)

Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	9

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: UP Houston to San Antonio

Summary of ACS Estimates	2012 - 2016
Population	114,433
Population Density (per sq. mile)	757
Minority Population	76,359
% Minority	67%
Households	37,834
Housing Units	41,861
Housing Units Built Before 1950	4,640
Per Capita Income	24,901
Land Area (sq. miles) (Source: SF1)	151.10
% Land Area	99%
Water Area (sq. miles) (Source: SF1)	1.63
% Water Area	1%

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population by Race			
Total	114,433	100%	2,782
Population Reporting One Race	111,083	97%	7,516
White	70,127	61%	2,476
Black	20,475	18%	1,906
American Indian	499	0%	612
Asian	9,040	8%	1,477
Pacific Islander	114	0%	149
Some Other Race	10,828	9%	896
Population Reporting Two or More Races	3,350	3%	687
Total Hispanic Population	44,877	39%	1,989
Total Non-Hispanic Population	69,556		
White Alone	38,074	33%	2,152
Black Alone	19,936	17%	1,799
American Indian Alone	303	0%	612
Non-Hispanic Asian Alone	8,971	8%	1,477
Pacific Islander Alone	25	0%	67
Other Race Alone	143	0%	170
Two or More Races Alone	2,105	2%	383
Population by Sex			
Male	54,981	48%	1,773
Female	59,452	52%	1,694
Population by Age			
Age 0-4	9,519	8%	979
Age 0-17	32,742	29%	1,543
Age 18+	81,691	71%	2,092
Age 65+	12,537	11%	620

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS) 2012 - 2016 .

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: UP Houston to San Antonio

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population 25+ by Educational Attainment			
Total	71,603	100%	1,602
Less than 9th Grade	5,335	7%	359
9th - 12th Grade, No Diploma	6,359	9%	376
High School Graduate	18,687	26%	872
Some College, No Degree	21,042	29%	1,348
Associate Degree	5,539	8%	747
Bachelor's Degree or more	20,181	28%	1,448
Population Age 5+ Years by Ability to Speak English			
Total	104,914	100%	2,537
Speak only English	67,602	64%	2,183
Non-English at Home[1+2+3+4]	37,313	36%	1,960
[1]Speak English "very well"	25,417	24%	1,634
[2]Speak English "well"	6,499	6%	843
[3]Speak English "not well"	4,119	4%	489
[4]Speak English "not at all"	1,278	1%	253
[3+4]Speak English "less than well"	5,397	5%	534
[2+3+4]Speak English "less than very well"	11,896	11%	997
Linguistically Isolated Households*			
Total	2,194	100%	334
Speak Spanish	1,699	77%	156
Speak Other Indo-European Languages	175	8%	220
Speak Asian-Pacific Island Languages	308	14%	195
Speak Other Languages	11	1%	27
Households by Household Income			
Household Income Base	37,834	100%	702
< $15,000	4,307	11%	395
$15,000 - $25,000	3,831	10%	223
$25,000 - $50,000	8,851	23%	511
$50,000 - $75,000	6,532	17%	660
$75,000 +	14,313	38%	1,221
Occupied Housing Units by Tenure			
Total	37,834	100%	702
Owner Occupied	25,526	67%	720
Renter Occupied	12,308	33%	631
Employed Population Age 16+ Years			
Total	85,493	100%	2,026
In Labor Force	54,560	64%	1,650
Civilian Unemployed in Labor Force	3,098	4%	493
Not In Labor Force	30,934	36%	1,437

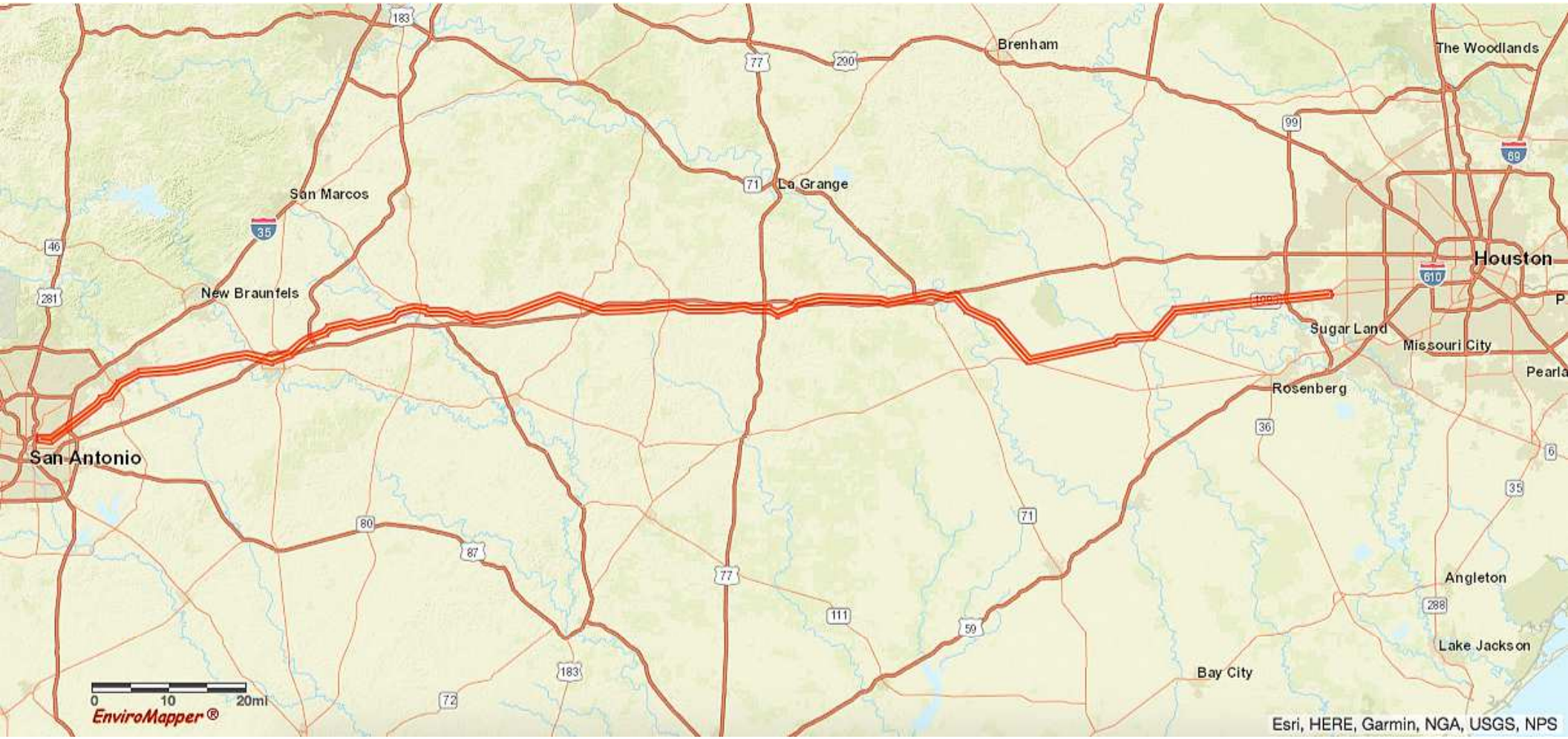
Data Note: Datail may not sum to totals due to rounding. Hispanic population can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS)
*Households in which no one 14 and over speaks English "very well" or speaks English only.

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: UP Houston to San Antonio

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population by Language Spoken at Home*			
Total (persons age 5 and above)	52,292	100%	865
English	34,793	67%	732
Spanish	16,405	31%	552
French	52	0%	62
French Creole	N/A	N/A	N/A
Italian	N/A	N/A	N/A
Portuguese	N/A	N/A	N/A
German	186	0%	86
Yiddish	N/A	N/A	N/A
Other West Germanic	N/A	N/A	N/A
Scandinavian	N/A	N/A	N/A
Greek	N/A	N/A	N/A
Russian	N/A	N/A	N/A
Polish	N/A	N/A	N/A
Serbo-Croatian	N/A	N/A	N/A
Other Slavic	N/A	N/A	N/A
Armenian	N/A	N/A	N/A
Persian	N/A	N/A	N/A
Gujarathi	N/A	N/A	N/A
Hindi	N/A	N/A	N/A
Urdu	N/A	N/A	N/A
Other Indic	N/A	N/A	N/A
Other Indo-European	79	0%	84
Chinese	30	0%	62
Japanese	N/A	N/A	N/A
Korean	135	0%	372
Mon-Khmer, Cambodian	N/A	N/A	N/A
Hmong	N/A	N/A	N/A
Thai	N/A	N/A	N/A
Laotian	N/A	N/A	N/A
Vietnamese	59	0%	71
Other Asian	213	0%	190
Tagalog	220	0%	148
Other Pacific Island	N/A	N/A	N/A
Navajo	N/A	N/A	N/A
Other Native American	N/A	N/A	N/A
Hungarian	N/A	N/A	N/A
Arabic	9	0%	27
Hebrew	N/A	N/A	N/A
African	N/A	N/A	N/A
Other and non-specified	57	0%	106
Total Non-English	17,498	33%	1,133

Data Note: Detail may not sum to totals due to rounding. Hispanic popultion can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS) 2012 - 2016.
*Population by Language Spoken at Home is available at the census tract summary level and up.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Esri, HERE, Garmin, NGA, USGS, NPS

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: Midland to Eunice Rail Line

Summary of ACS Estimates	2012 - 2016
Population	37,415
Population Density (per sq. mile)	356
Minority Population	26,051
% Minority	70%
Households	12,615
Housing Units	14,092
Housing Units Built Before 1950	1,673
Per Capita Income	25,622
Land Area (sq. miles) (Source: SF1)	105.10
% Land Area	100%
Water Area (sq. miles) (Source: SF1)	0.15
% Water Area	0%

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population by Race			
Total	37,415	100%	872
Population Reporting One Race	36,532	98%	2,249
White	30,373	81%	873
Black	2,269	6%	545
American Indian	240	1%	172
Asian	173	0%	231
Pacific Islander	0	0%	13
Some Other Race	3,477	9%	415
Population Reporting Two or More Races	882	2%	222
Total Hispanic Population	23,423	63%	756
Total Non-Hispanic Population	13,991		
White Alone	11,364	30%	639
Black Alone	2,033	5%	545
American Indian Alone	38	0%	156
Non-Hispanic Asian Alone	135	0%	231
Pacific Islander Alone	0	0%	13
Other Race Alone	0	0%	13
Two or More Races Alone	422	1%	176
Population by Sex			
Male	19,141	51%	585
Female	18,273	49%	520
Population by Age			
Age 0-4	3,422	9%	326
Age 0-17	10,944	29%	429
Age 18+	26,471	71%	473
Age 65+	3,901	10%	205

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS) 2012 - 2016 .

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: Midland to Eunice Rail Line

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population 25+ by Educational Attainment			
Total	22,681	100%	482
Less than 9th Grade	2,990	13%	144
9th - 12th Grade, No Diploma	3,404	15%	242
High School Graduate	6,339	28%	258
Some College, No Degree	6,861	30%	308
Associate Degree	1,334	6%	194
Bachelor's Degree or more	3,087	14%	313
Population Age 5+ Years by Ability to Speak English			
Total	33,992	100%	757
Speak only English	17,639	52%	530
Non-English at Home[1+2+3+4]	16,353	48%	552
[1]Speak English "very well"	10,705	31%	421
[2]Speak English "well"	2,301	7%	201
[3]Speak English "not well"	2,014	6%	280
[4]Speak English "not at all"	1,332	4%	171
[3+4]Speak English "less than well"	3,347	10%	283
[2+3+4]Speak English "less than very well"	5,648	17%	292
Linguistically Isolated Households*			
Total	1,374	100%	126
Speak Spanish	1,354	99%	125
Speak Other Indo-European Languages	0	0%	13
Speak Asian-Pacific Island Languages	10	1%	27
Speak Other Languages	9	1%	16
Households by Household Income			
Household Income Base	12,615	100%	291
< $15,000	1,592	13%	118
$15,000 - $25,000	1,475	12%	112
$25,000 - $50,000	3,015	24%	239
$50,000 - $75,000	1,977	16%	174
$75,000 +	4,556	36%	276
Occupied Housing Units by Tenure			
Total	12,615	100%	291
Owner Occupied	8,338	66%	256
Renter Occupied	4,277	34%	236
Employed Population Age 16+ Years			
Total	27,363	100%	583
In Labor Force	17,780	65%	465
Civilian Unemployed in Labor Force	1,025	4%	159
Not In Labor Force	9,583	35%	307

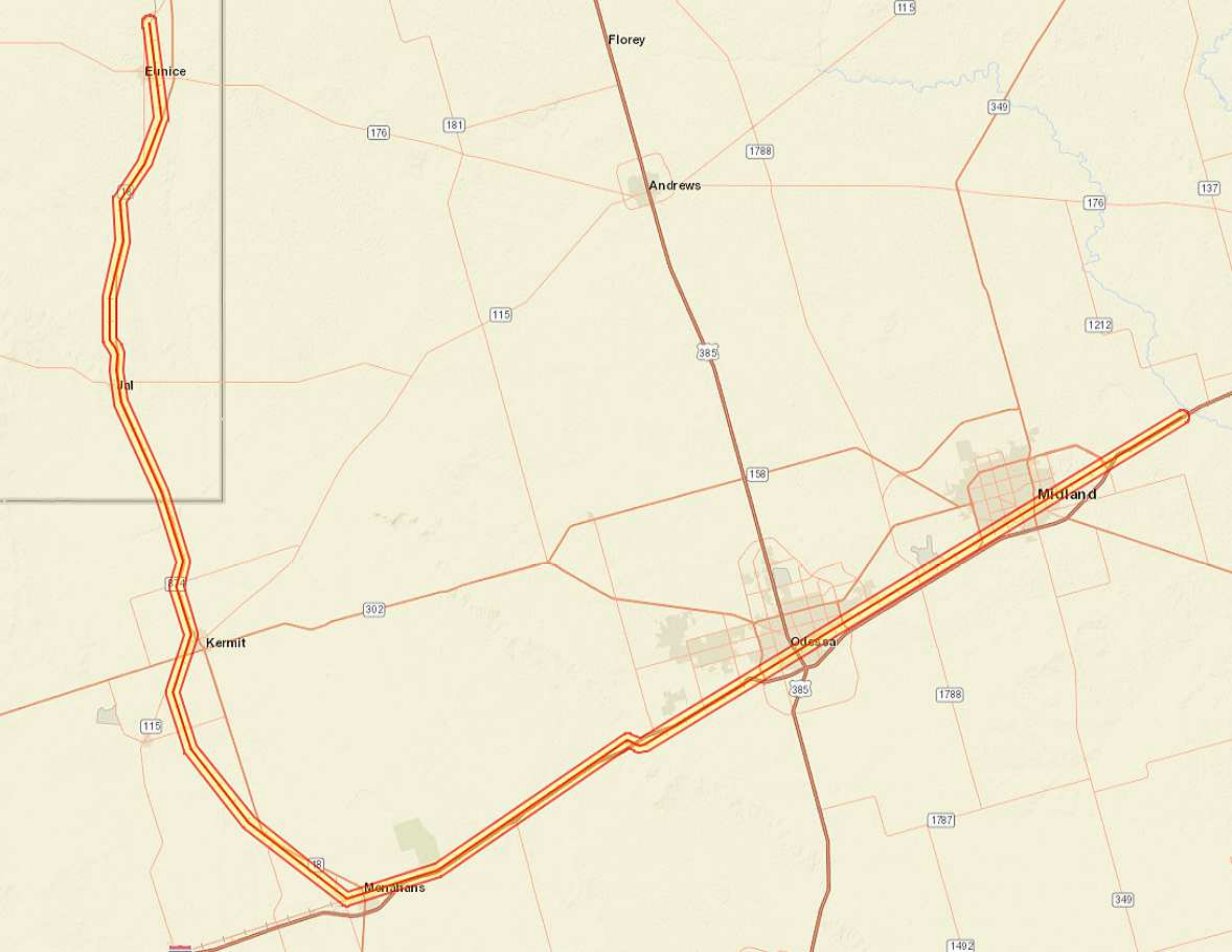
Data Note: Datail may not sum to totals due to rounding. Hispanic population can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS)
*Households in which no one 14 and over speaks English "very well" or speaks English only.

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: Midland to Eunice Rail Line

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population by Language Spoken at Home*			
Total (persons age 5 and above)	36,463	100%	638
English	19,001	52%	483
Spanish	17,178	47%	592
French	6	0%	19
French Creole	N/A	N/A	N/A
Italian	N/A	N/A	N/A
Portuguese	N/A	N/A	N/A
German	12	0%	21
Yiddish	N/A	N/A	N/A
Other West Germanic	N/A	N/A	N/A
Scandinavian	N/A	N/A	N/A
Greek	N/A	N/A	N/A
Russian	N/A	N/A	N/A
Polish	N/A	N/A	N/A
Serbo-Croatian	N/A	N/A	N/A
Other Slavic	N/A	N/A	N/A
Armenian	N/A	N/A	N/A
Persian	N/A	N/A	N/A
Gujarathi	N/A	N/A	N/A
Hindi	N/A	N/A	N/A
Urdu	N/A	N/A	N/A
Other Indic	N/A	N/A	N/A
Other Indo-European	44	0%	88
Chinese	23	0%	87
Japanese	N/A	N/A	N/A
Korean	6	0%	34
Mon-Khmer, Cambodian	N/A	N/A	N/A
Hmong	N/A	N/A	N/A
Thai	N/A	N/A	N/A
Laotian	N/A	N/A	N/A
Vietnamese	2	0%	18
Other Asian	55	0%	121
Tagalog	7	0%	32
Other Pacific Island	N/A	N/A	N/A
Navajo	N/A	N/A	N/A
Other Native American	N/A	N/A	N/A
Hungarian	N/A	N/A	N/A
Arabic	29	0%	93
Hebrew	N/A	N/A	N/A
African	N/A	N/A	N/A
Other and non-specified	72	0%	105
Total Non-English	17,461	48%	797

Data Note: Detail may not sum to totals due to rounding. Hispanic popultion can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS) 2012 - 2016.
*Population by Language Spoken at Home is available at the census tract summary level and up.


Florey
Andrews
Eunice
Jal
Kermit
Monahans
Odessa
Midland
115
349
137
176
181
1788
1212
385
158
302
874
1787
1492

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: BNSF Harris County

Summary of ACS Estimates	2012 - 2016
Population	153,581
Population Density (per sq. mile)	3,490
Minority Population	113,641
% Minority	74%
Households	53,446
Housing Units	60,162
Housing Units Built Before 1950	9,257
Per Capita Income	25,436
Land Area (sq. miles) (Source: SF1)	44.00
% Land Area	99%
Water Area (sq. miles) (Source: SF1)	0.33
% Water Area	1%

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population by Race			
Total	153,581	100%	1,543
Population Reporting One Race	150,431	98%	4,500
White	96,569	63%	1,455
Black	30,466	20%	681
American Indian	768	1%	572
Asian	6,856	4%	499
Pacific Islander	63	0%	83
Some Other Race	15,708	10%	1,210
Population Reporting Two or More Races	3,150	2%	320
Total Hispanic Population	74,896	49%	1,424
Total Non-Hispanic Population	78,686		
White Alone	39,941	26%	918
Black Alone	29,751	19%	681
American Indian Alone	324	0%	570
Non-Hispanic Asian Alone	6,812	4%	499
Pacific Islander Alone	63	0%	83
Other Race Alone	266	0%	375
Two or More Races Alone	1,528	1%	269
Population by Sex			
Male	77,125	50%	987
Female	76,457	50%	953
Population by Age			
Age 0-4	12,334	8%	513
Age 0-17	39,405	26%	885
Age 18+	114,176	74%	1,257
Age 65+	14,743	10%	357

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS) 2012 - 2016 .

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: BNSF Harris County

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population 25+ by Educational Attainment			
Total	98,158	100%	917
Less than 9th Grade	13,262	14%	296
9th - 12th Grade, No Diploma	10,461	11%	305
High School Graduate	25,715	26%	885
Some College, No Degree	25,503	26%	624
Associate Degree	5,916	6%	350
Bachelor's Degree or more	23,217	24%	600
Population Age 5+ Years by Ability to Speak English			
Total	141,247	100%	1,464
Speak only English	76,321	54%	1,111
Non-English at Home[1+2+3+4]	64,926	46%	1,195
[1]Speak English "very well"	32,371	23%	982
[2]Speak English "well"	13,101	9%	571
[3]Speak English "not well"	11,626	8%	494
[4]Speak English "not at all"	7,828	6%	405
[3+4]Speak English "less than well"	19,454	14%	510
[2+3+4]Speak English "less than very well"	32,555	23%	675
Linguistically Isolated Households*			
Total	7,267	100%	217
Speak Spanish	6,624	91%	216
Speak Other Indo-European Languages	116	2%	76
Speak Asian-Pacific Island Languages	422	6%	178
Speak Other Languages	104	1%	70
Households by Household Income			
Household Income Base	53,446	100%	271
< $15,000	7,520	14%	179
$15,000 - $25,000	6,681	13%	182
$25,000 - $50,000	14,119	26%	297
$50,000 - $75,000	8,779	16%	325
$75,000 +	16,348	31%	537
Occupied Housing Units by Tenure			
Total	53,446	100%	271
Owner Occupied	26,891	50%	333
Renter Occupied	26,556	50%	311
Employed Population Age 16+ Years			
Total	118,061	100%	1,003
In Labor Force	78,112	66%	825
Civilian Unemployed in Labor Force	5,899	5%	371
Not In Labor Force	39,949	34%	634

Data Note: Datail may not sum to totals due to rounding. Hispanic population can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS)
*Households in which no one 14 and over speaks English "very well" or speaks English only.

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: BNSF Harris County

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population by Language Spoken at Home*			
Total (persons age 5 and above)	144,389	100%	996
English	79,945	55%	914
Spanish	56,718	39%	846
French	513	0%	262
French Creole	N/A	N/A	N/A
Italian	N/A	N/A	N/A
Portuguese	N/A	N/A	N/A
German	393	0%	262
Yiddish	N/A	N/A	N/A
Other West Germanic	N/A	N/A	N/A
Scandinavian	N/A	N/A	N/A
Greek	N/A	N/A	N/A
Russian	N/A	N/A	N/A
Polish	N/A	N/A	N/A
Serbo-Croatian	N/A	N/A	N/A
Other Slavic	N/A	N/A	N/A
Armenian	N/A	N/A	N/A
Persian	N/A	N/A	N/A
Gujarathi	N/A	N/A	N/A
Hindi	N/A	N/A	N/A
Urdu	N/A	N/A	N/A
Other Indic	N/A	N/A	N/A
Other Indo-European	1,873	1%	318
Chinese	866	1%	216
Japanese	N/A	N/A	N/A
Korean	110	0%	66
Mon-Khmer, Cambodian	N/A	N/A	N/A
Hmong	N/A	N/A	N/A
Thai	N/A	N/A	N/A
Laotian	N/A	N/A	N/A
Vietnamese	1,651	1%	351
Other Asian	767	1%	214
Tagalog	272	0%	293
Other Pacific Island	N/A	N/A	N/A
Navajo	N/A	N/A	N/A
Other Native American	N/A	N/A	N/A
Hungarian	N/A	N/A	N/A
Arabic	547	0%	479
Hebrew	N/A	N/A	N/A
African	N/A	N/A	N/A
Other and non-specified	511	0%	147
Total Non-English	64,444	45%	1,252

Data Note: Detail may not sum to totals due to rounding. Hispanic popultion can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS) 2012 - 2016.
*Population by Language Spoken at Home is available at the census tract summary level and up.

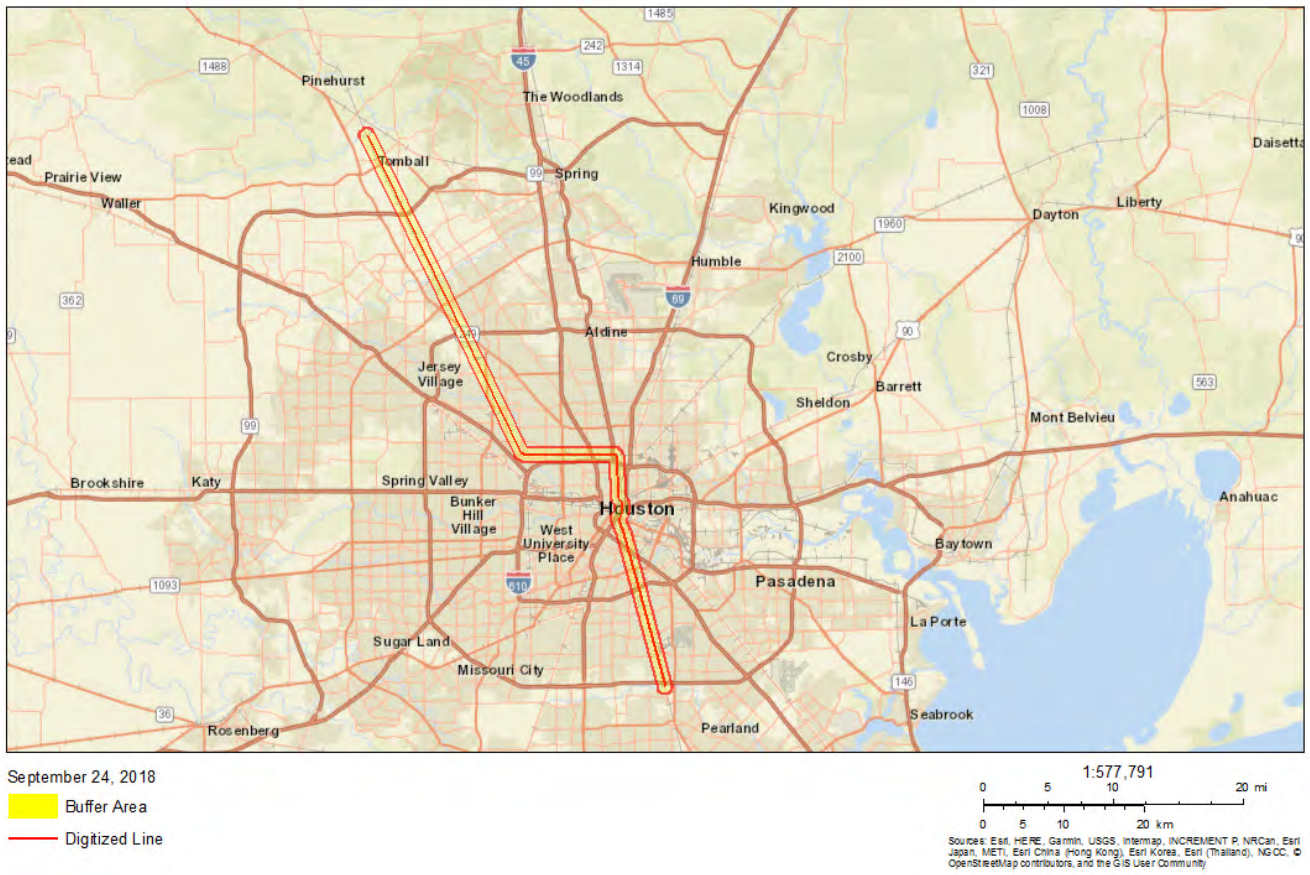
EJSCREEN Report (Version 2018)

0.5 mile Ring around the Corridor, TEXAS, EPA Region 6

Approximate Population: 153,581

Input Area (sq. miles): 46.38

BNSF Harris County



Sites reporting to EPA	
Superfund NPL	2
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	13

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: UP Beaumont to Houston (South)

Summary of ACS Estimates	2012 - 2016
Population	49,295
Population Density (per sq. mile)	820
Minority Population	35,413
% Minority	72%
Households	17,085
Housing Units	19,213
Housing Units Built Before 1950	3,611
Per Capita Income	22,644
Land Area (sq. miles) (Source: SF1)	60.15
% Land Area	99%
Water Area (sq. miles) (Source: SF1)	0.76
% Water Area	1%

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population by Race			
Total	49,295	100%	1,198
Population Reporting One Race	48,129	98%	3,356
White	30,832	63%	1,239
Black	14,149	29%	771
American Indian	125	0%	254
Asian	456	1%	405
Pacific Islander	5	0%	124
Some Other Race	2,561	5%	563
Population Reporting Two or More Races	1,167	2%	615
Total Hispanic Population	20,465	42%	1,165
Total Non-Hispanic Population	28,830		
White Alone	13,882	28%	746
Black Alone	13,903	28%	771
American Indian Alone	105	0%	83
Non-Hispanic Asian Alone	456	1%	405
Pacific Islander Alone	5	0%	124
Other Race Alone	16	0%	65
Two or More Races Alone	462	1%	582
Population by Sex			
Male	24,540	50%	705
Female	24,755	50%	861
Population by Age			
Age 0-4	4,274	9%	392
Age 0-17	13,677	28%	789
Age 18+	35,618	72%	1,056
Age 65+	5,603	11%	205

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS) 2012 - 2016 .

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: UP Beaumont to Houston (South)

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population 25+ by Educational Attainment			
Total	30,440	100%	530
Less than 9th Grade	4,650	15%	223
9th - 12th Grade, No Diploma	3,998	13%	209
High School Graduate	9,800	32%	424
Some College, No Degree	8,197	27%	621
Associate Degree	1,564	5%	400
Bachelor's Degree or more	3,795	12%	603
Population Age 5+ Years by Ability to Speak English			
Total	45,021	100%	1,180
Speak only English	27,567	61%	824
Non-English at Home[1+2+3+4]	17,454	39%	1,064
[1]Speak English "very well"	9,030	20%	692
[2]Speak English "well"	3,145	7%	721
[3]Speak English "not well"	2,850	6%	231
[4]Speak English "not at all"	2,430	5%	338
[3+4]Speak English "less than well"	5,280	12%	345
[2+3+4]Speak English "less than very well"	8,425	19%	768
Linguistically Isolated Households*			
Total	1,790	100%	153
Speak Spanish	1,694	95%	152
Speak Other Indo-European Languages	26	1%	28
Speak Asian-Pacific Island Languages	48	3%	58
Speak Other Languages	22	1%	59
Households by Household Income			
Household Income Base	17,085	100%	212
< $15,000	3,285	19%	163
$15,000 - $25,000	2,520	15%	170
$25,000 - $50,000	4,737	28%	314
$50,000 - $75,000	3,044	18%	234
$75,000 +	3,499	20%	585
Occupied Housing Units by Tenure			
Total	17,085	100%	212
Owner Occupied	9,525	56%	286
Renter Occupied	7,560	44%	253
Employed Population Age 16+ Years			
Total	37,020	100%	701
In Labor Force	22,295	60%	600
Civilian Unemployed in Labor Force	1,711	5%	219
Not In Labor Force	14,725	40%	477

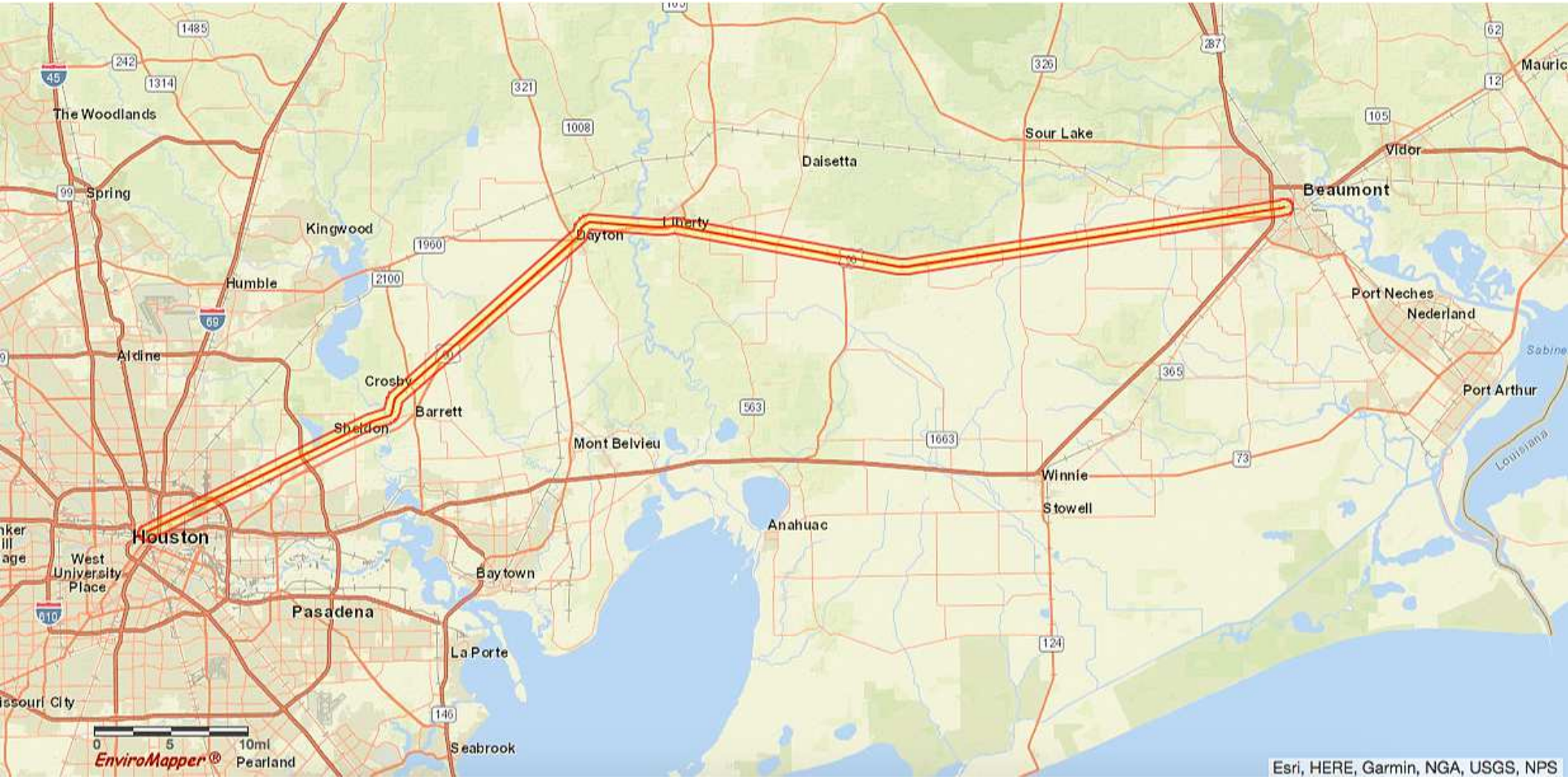
Data Note: Datail may not sum to totals due to rounding. Hispanic population can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS)
*Households in which no one 14 and over speaks English "very well" or speaks English only.

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: UP Beaumont to Houston (South)

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population by Language Spoken at Home*			
Total (persons age 5 and above)	48,635	100%	960
English	29,314	60%	746
Spanish	18,387	38%	941
French	189	0%	106
French Creole	N/A	N/A	N/A
Italian	N/A	N/A	N/A
Portuguese	N/A	N/A	N/A
German	57	0%	59
Yiddish	N/A	N/A	N/A
Other West Germanic	N/A	N/A	N/A
Scandinavian	N/A	N/A	N/A
Greek	N/A	N/A	N/A
Russian	N/A	N/A	N/A
Polish	N/A	N/A	N/A
Serbo-Croatian	N/A	N/A	N/A
Other Slavic	N/A	N/A	N/A
Armenian	N/A	N/A	N/A
Persian	N/A	N/A	N/A
Gujarathi	N/A	N/A	N/A
Hindi	N/A	N/A	N/A
Urdu	N/A	N/A	N/A
Other Indic	N/A	N/A	N/A
Other Indo-European	272	1%	229
Chinese	14	0%	20
Japanese	N/A	N/A	N/A
Korean	0	0%	20
Mon-Khmer, Cambodian	N/A	N/A	N/A
Hmong	N/A	N/A	N/A
Thai	N/A	N/A	N/A
Laotian	N/A	N/A	N/A
Vietnamese	112	0%	211
Other Asian	104	0%	176
Tagalog	53	0%	84
Other Pacific Island	N/A	N/A	N/A
Navajo	N/A	N/A	N/A
Other Native American	N/A	N/A	N/A
Hungarian	N/A	N/A	N/A
Arabic	2	0%	20
Hebrew	N/A	N/A	N/A
African	N/A	N/A	N/A
Other and non-specified	123	0%	68
Total Non-English	19,321	40%	1,212

Data Note: Detail may not sum to totals due to rounding. Hispanic popultion can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS) 2012 - 2016.
*Population by Language Spoken at Home is available at the census tract summary level and up.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Pearland
Missouri City
Dayton
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Esri, HERE, Garmin, NGA, USGS, NPS

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: UP Texarkana to Dallas

Summary of ACS Estimates	2012 - 2016
Population	92,054
Population Density (per sq. mile)	584
Minority Population	57,693
% Minority	63%
Households	29,955
Housing Units	34,514
Housing Units Built Before 1950	5,647
Per Capita Income	20,261
Land Area (sq. miles) (Source: SF1)	157.75
% Land Area	98%
Water Area (sq. miles) (Source: SF1)	3.19
% Water Area	2%

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population by Race			
Total	92,054	100%	865
Population Reporting One Race	89,982	98%	2,365
White	59,160	64%	726
Black	25,172	27%	721
American Indian	498	1%	200
Asian	912	1%	235
Pacific Islander	40	0%	44
Some Other Race	4,200	5%	439
Population Reporting Two or More Races	2,072	2%	265
Total Hispanic Population	30,006	33%	730
Total Non-Hispanic Population	62,048		
White Alone	34,361	37%	661
Black Alone	24,953	27%	717
American Indian Alone	333	0%	200
Non-Hispanic Asian Alone	883	1%	235
Pacific Islander Alone	9	0%	23
Other Race Alone	85	0%	101
Two or More Races Alone	1,424	2%	239
Population by Sex			
Male	44,983	49%	606
Female	47,071	51%	503
Population by Age			
Age 0-4	6,929	8%	302
Age 0-17	25,685	28%	413
Age 18+	66,369	72%	577
Age 65+	10,443	11%	204

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS) 2012 - 2016 .

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: UP Texarkana to Dallas

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population 25+ by Educational Attainment			
Total	57,305	100%	535
Less than 9th Grade	6,750	12%	221
9th - 12th Grade, No Diploma	7,911	14%	227
High School Graduate	18,306	32%	392
Some College, No Degree	16,335	29%	292
Associate Degree	3,296	6%	182
Bachelor's Degree or more	8,004	14%	383
Population Age 5+ Years by Ability to Speak English			
Total	85,125	100%	754
Speak only English	59,266	70%	617
Non-English at Home[1+2+3+4]	25,859	30%	517
[1]Speak English "very well"	14,700	17%	396
[2]Speak English "well"	4,041	5%	225
[3]Speak English "not well"	4,277	5%	367
[4]Speak English "not at all"	2,841	3%	235
[3+4]Speak English "less than well"	7,118	8%	367
[2+3+4]Speak English "less than very well"	11,159	13%	367
Linguistically Isolated Households*			
Total	1,991	100%	114
Speak Spanish	1,952	98%	103
Speak Other Indo-European Languages	12	1%	23
Speak Asian-Pacific Island Languages	26	1%	59
Speak Other Languages	0	0%	113
Households by Household Income			
Household Income Base	29,955	100%	245
< $15,000	5,293	18%	150
$15,000 - $25,000	4,530	15%	145
$25,000 - $50,000	8,165	27%	165
$50,000 - $75,000	5,064	17%	216
$75,000 +	6,903	23%	246
Occupied Housing Units by Tenure			
Total	29,955	100%	245
Owner Occupied	16,856	56%	200
Renter Occupied	13,099	44%	239
Employed Population Age 16+ Years			
Total	68,944	100%	617
In Labor Force	40,774	59%	572
Civilian Unemployed in Labor Force	3,327	5%	239
Not In Labor Force	28,170	41%	577

Data Note: Datail may not sum to totals due to rounding. Hispanic population can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS)
*Households in which no one 14 and over speaks English "very well" or speaks English only.

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: UP Texarkana to Dallas

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population by Language Spoken at Home*			
Total (persons age 5 and above)	79,734	100%	961
English	55,134	69%	938
Spanish	22,869	29%	1,030
French	182	0%	78
French Creole	N/A	N/A	N/A
Italian	N/A	N/A	N/A
Portuguese	N/A	N/A	N/A
German	110	0%	145
Yiddish	N/A	N/A	N/A
Other West Germanic	N/A	N/A	N/A
Scandinavian	N/A	N/A	N/A
Greek	N/A	N/A	N/A
Russian	N/A	N/A	N/A
Polish	N/A	N/A	N/A
Serbo-Croatian	N/A	N/A	N/A
Other Slavic	N/A	N/A	N/A
Armenian	N/A	N/A	N/A
Persian	N/A	N/A	N/A
Gujarathi	N/A	N/A	N/A
Hindi	N/A	N/A	N/A
Urdu	N/A	N/A	N/A
Other Indic	N/A	N/A	N/A
Other Indo-European	212	0%	123
Chinese	112	0%	108
Japanese	N/A	N/A	N/A
Korean	90	0%	79
Mon-Khmer, Cambodian	N/A	N/A	N/A
Hmong	N/A	N/A	N/A
Thai	N/A	N/A	N/A
Laotian	N/A	N/A	N/A
Vietnamese	167	0%	108
Other Asian	305	0%	196
Tagalog	98	0%	106
Other Pacific Island	N/A	N/A	N/A
Navajo	N/A	N/A	N/A
Other Native American	N/A	N/A	N/A
Hungarian	N/A	N/A	N/A
Arabic	25	0%	37
Hebrew	N/A	N/A	N/A
African	N/A	N/A	N/A
Other and non-specified	355	0%	183
Total Non-English	24,600	31%	1,191

Data Note: Detail may not sum to totals due to rounding. Hispanic popultion can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS) 2012 - 2016.
*Population by Language Spoken at Home is available at the census tract summary level and up.


Texarkana
Texarkana
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Lewisville
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Dallas
Mesquite
Terrell
Longview
Cedar Hill
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EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: UP Forth Worth to Midland

Summary of ACS Estimates	2012 - 2016
Population	84,563
Population Density (per sq. mile)	363
Minority Population	31,173
% Minority	37%
Households	32,085
Housing Units	37,951
Housing Units Built Before 1950	6,599
Per Capita Income	28,291
Land Area (sq. miles) (Source: SF1)	232.80
% Land Area	99%
Water Area (sq. miles) (Source: SF1)	1.56
% Water Area	1%

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population by Race			
Total	84,563	100%	736
Population Reporting One Race	82,830	98%	1,788
White	70,245	83%	669
Black	5,478	6%	362
American Indian	464	1%	161
Asian	949	1%	163
Pacific Islander	65	0%	38
Some Other Race	5,629	7%	395
Population Reporting Two or More Races	1,733	2%	160
Total Hispanic Population	23,387	28%	632
Total Non-Hispanic Population	61,176		
White Alone	53,390	63%	639
Black Alone	5,191	6%	343
American Indian Alone	360	0%	156
Non-Hispanic Asian Alone	930	1%	163
Pacific Islander Alone	59	0%	38
Other Race Alone	109	0%	82
Two or More Races Alone	1,136	1%	157
Population by Sex			
Male	40,769	48%	398
Female	43,794	52%	476
Population by Age			
Age 0-4	6,154	7%	326
Age 0-17	21,239	25%	375
Age 18+	63,324	75%	540
Age 65+	12,171	14%	227

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS) 2012 - 2016 .

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: UP Forth Worth to Midland

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population 25+ by Educational Attainment			
Total	54,499	100%	470
Less than 9th Grade	3,875	7%	145
9th - 12th Grade, No Diploma	4,835	9%	242
High School Graduate	15,879	29%	295
Some College, No Degree	16,973	31%	227
Associate Degree	3,834	7%	135
Bachelor's Degree or more	12,937	24%	219
Population Age 5+ Years by Ability to Speak English			
Total	78,409	100%	672
Speak only English	62,988	80%	548
Non-English at Home[1+2+3+4]	15,421	20%	493
[1]Speak English "very well"	10,498	13%	329
[2]Speak English "well"	2,244	3%	289
[3]Speak English "not well"	1,990	3%	287
[4]Speak English "not at all"	690	1%	138
[3+4]Speak English "less than well"	2,680	3%	306
[2+3+4]Speak English "less than very well"	4,923	6%	328
Linguistically Isolated Households*			
Total	1,210	100%	91
Speak Spanish	1,006	83%	90
Speak Other Indo-European Languages	34	3%	41
Speak Asian-Pacific Island Languages	45	4%	33
Speak Other Languages	124	10%	79
Households by Household Income			
Household Income Base	32,085	100%	219
< $15,000	4,715	15%	135
$15,000 - $25,000	3,758	12%	135
$25,000 - $50,000	8,122	25%	239
$50,000 - $75,000	6,386	20%	174
$75,000 +	9,105	28%	239
Occupied Housing Units by Tenure			
Total	32,085	100%	219
Owner Occupied	18,745	58%	216
Renter Occupied	13,340	42%	184
Employed Population Age 16+ Years			
Total	65,582	100%	542
In Labor Force	40,440	62%	412
Civilian Unemployed in Labor Force	2,250	3%	187
Not In Labor Force	25,142	38%	481

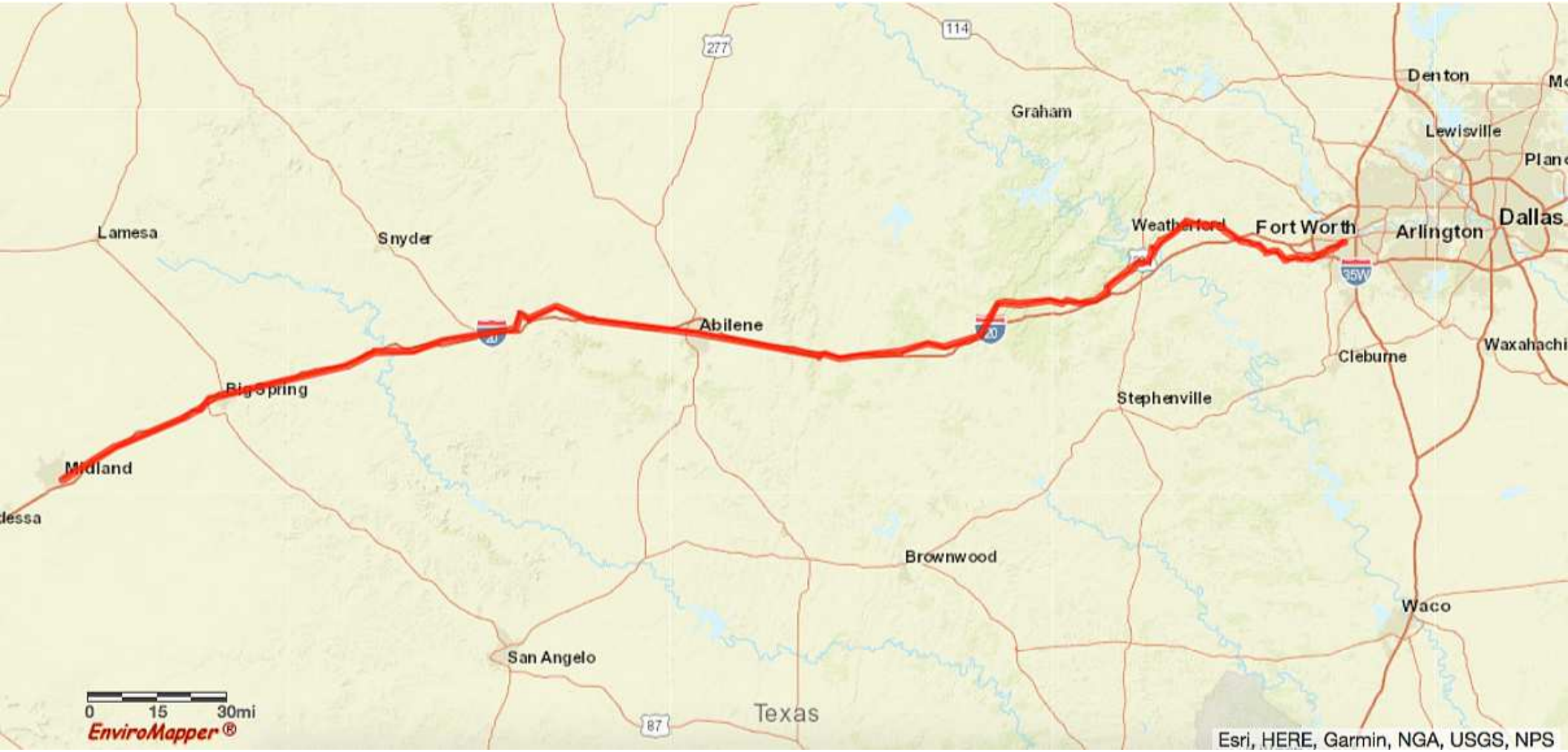
Data Note: Datail may not sum to totals due to rounding. Hispanic population can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS)
*Households in which no one 14 and over speaks English "very well" or speaks English only.

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: UP Forth Worth to Midland

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population by Language Spoken at Home*			
Total (persons age 5 and above)	71,456	100%	875
English	56,616	79%	890
Spanish	13,208	18%	579
French	160	0%	164
French Creole	N/A	N/A	N/A
Italian	N/A	N/A	N/A
Portuguese	N/A	N/A	N/A
German	191	0%	117
Yiddish	N/A	N/A	N/A
Other West Germanic	N/A	N/A	N/A
Scandinavian	N/A	N/A	N/A
Greek	N/A	N/A	N/A
Russian	N/A	N/A	N/A
Polish	N/A	N/A	N/A
Serbo-Croatian	N/A	N/A	N/A
Other Slavic	N/A	N/A	N/A
Armenian	N/A	N/A	N/A
Persian	N/A	N/A	N/A
Gujarathi	N/A	N/A	N/A
Hindi	N/A	N/A	N/A
Urdu	N/A	N/A	N/A
Other Indic	N/A	N/A	N/A
Other Indo-European	310	0%	164
Chinese	62	0%	91
Japanese	N/A	N/A	N/A
Korean	108	0%	163
Mon-Khmer, Cambodian	N/A	N/A	N/A
Hmong	N/A	N/A	N/A
Thai	N/A	N/A	N/A
Laotian	N/A	N/A	N/A
Vietnamese	46	0%	56
Other Asian	198	0%	113
Tagalog	74	0%	40
Other Pacific Island	N/A	N/A	N/A
Navajo	N/A	N/A	N/A
Other Native American	N/A	N/A	N/A
Hungarian	N/A	N/A	N/A
Arabic	27	0%	48
Hebrew	N/A	N/A	N/A
African	N/A	N/A	N/A
Other and non-specified	322	0%	241
Total Non-English	14,840	21%	1,248

Data Note: Detail may not sum to totals due to rounding. Hispanic popultion can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS) 2012 - 2016.
*Population by Language Spoken at Home is available at the census tract summary level and up.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EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: UP Tarrant County

Summary of ACS Estimates	2012 - 2016
Population	74,450
Population Density (per sq. mile)	2,244
Minority Population	32,558
% Minority	44%
Households	27,417
Housing Units	29,763
Housing Units Built Before 1950	2,999
Per Capita Income	33,226
Land Area (sq. miles) (Source: SF1)	33.18
% Land Area	99%
Water Area (sq. miles) (Source: SF1)	0.29
% Water Area	1%

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population by Race			
Total	74,450	100%	1,613
Population Reporting One Race	71,837	96%	3,480
White	54,791	74%	1,335
Black	6,814	9%	1,062
American Indian	313	0%	175
Asian	4,536	6%	476
Pacific Islander	59	0%	37
Some Other Race	5,324	7%	395
Population Reporting Two or More Races	2,613	4%	674
Total Hispanic Population	19,294	26%	803
Total Non-Hispanic Population	55,156		
White Alone	41,891	56%	1,126
Black Alone	6,455	9%	1,062
American Indian Alone	210	0%	134
Non-Hispanic Asian Alone	4,524	6%	476
Pacific Islander Alone	30	0%	22
Other Race Alone	106	0%	73
Two or More Races Alone	1,940	3%	674
Population by Sex			
Male	36,984	50%	890
Female	37,466	50%	965
Population by Age			
Age 0-4	5,448	7%	332
Age 0-17	19,780	27%	722
Age 18+	54,669	73%	678
Age 65+	7,277	10%	281

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS) 2012 - 2016 .

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: UP Tarrant County

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population 25+ by Educational Attainment			
Total	47,834	100%	749
Less than 9th Grade	2,835	6%	151
9th - 12th Grade, No Diploma	3,633	8%	151
High School Graduate	11,402	24%	348
Some College, No Degree	14,136	30%	412
Associate Degree	3,104	6%	192
Bachelor's Degree or more	15,828	33%	443
Population Age 5+ Years by Ability to Speak English			
Total	69,002	100%	1,470
Speak only English	50,342	73%	944
Non-English at Home[1+2+3+4]	18,660	27%	825
[1]Speak English "very well"	10,530	15%	464
[2]Speak English "well"	4,446	6%	434
[3]Speak English "not well"	2,795	4%	632
[4]Speak English "not at all"	889	1%	141
[3+4]Speak English "less than well"	3,684	5%	632
[2+3+4]Speak English "less than very well"	8,130	12%	767
Linguistically Isolated Households*			
Total	1,593	100%	215
Speak Spanish	989	62%	114
Speak Other Indo-European Languages	140	9%	75
Speak Asian-Pacific Island Languages	330	21%	98
Speak Other Languages	134	8%	215
Households by Household Income			
Household Income Base	27,417	100%	360
< $15,000	2,721	10%	172
$15,000 - $25,000	2,259	8%	161
$25,000 - $50,000	6,143	22%	268
$50,000 - $75,000	5,564	20%	219
$75,000 +	10,731	39%	353
Occupied Housing Units by Tenure			
Total	27,417	100%	360
Owner Occupied	15,609	57%	354
Renter Occupied	11,809	43%	305
Employed Population Age 16+ Years			
Total	56,704	100%	822
In Labor Force	38,440	68%	612
Civilian Unemployed in Labor Force	2,378	4%	175
Not In Labor Force	18,264	32%	462

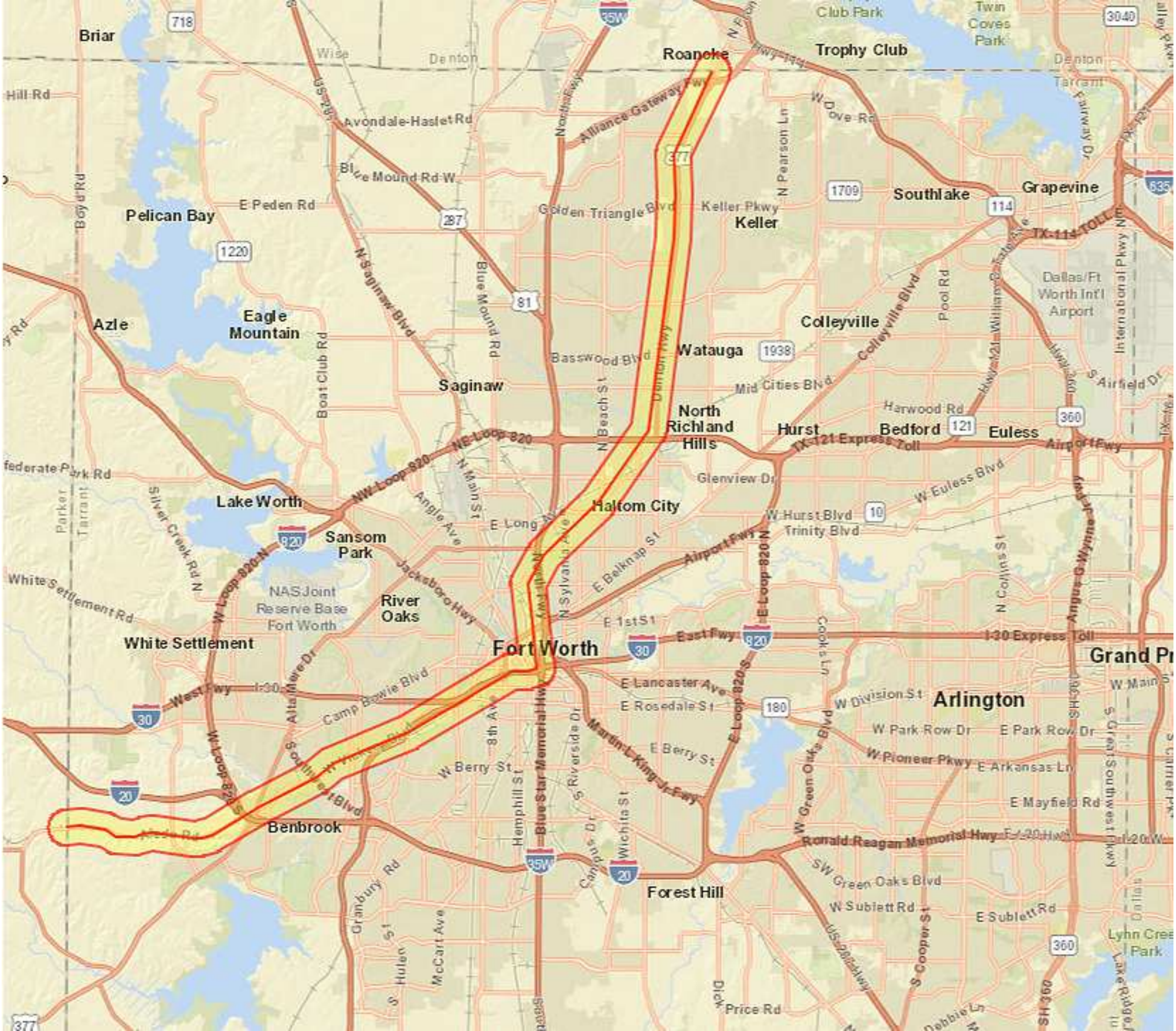
Data Note: Datail may not sum to totals due to rounding. Hispanic population can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS)
*Households in which no one 14 and over speaks English "very well" or speaks English only.

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: UP Tarrant County

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population by Language Spoken at Home*			
Total (persons age 5 and above)	76,917	100%	1,527
English	57,716	75%	1,736
Spanish	13,812	18%	820
French	289	0%	326
French Creole	N/A	N/A	N/A
Italian	N/A	N/A	N/A
Portuguese	N/A	N/A	N/A
German	142	0%	77
Yiddish	N/A	N/A	N/A
Other West Germanic	N/A	N/A	N/A
Scandinavian	N/A	N/A	N/A
Greek	N/A	N/A	N/A
Russian	N/A	N/A	N/A
Polish	N/A	N/A	N/A
Serbo-Croatian	N/A	N/A	N/A
Other Slavic	N/A	N/A	N/A
Armenian	N/A	N/A	N/A
Persian	N/A	N/A	N/A
Gujarathi	N/A	N/A	N/A
Hindi	N/A	N/A	N/A
Urdu	N/A	N/A	N/A
Other Indic	N/A	N/A	N/A
Other Indo-European	1,343	2%	425
Chinese	113	0%	86
Japanese	N/A	N/A	N/A
Korean	190	0%	225
Mon-Khmer, Cambodian	N/A	N/A	N/A
Hmong	N/A	N/A	N/A
Thai	N/A	N/A	N/A
Laotian	N/A	N/A	N/A
Vietnamese	1,015	1%	489
Other Asian	1,162	2%	342
Tagalog	259	0%	442
Other Pacific Island	N/A	N/A	N/A
Navajo	N/A	N/A	N/A
Other Native American	N/A	N/A	N/A
Hungarian	N/A	N/A	N/A
Arabic	149	0%	100
Hebrew	N/A	N/A	N/A
African	N/A	N/A	N/A
Other and non-specified	544	1%	1,091
Total Non-English	19,201	25%	2,312

Data Note: Detail may not sum to totals due to rounding. Hispanic popultion can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS) 2012 - 2016.
*Population by Language Spoken at Home is available at the census tract summary level and up.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Bedford
Euless
Dallas/Ft Worth Int'l Airport
Lake Worth
Sansom Park
Haltom City
River Oaks
NAS Joint Reserve Base Fort Worth
White Settlement
Fort Worth
Arlington
Grand Pr
Benbrook
Forest Hill
Alliance Gateway Fwy
Golden Triangle Blvd
Keller Pkwy
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Blue Mound Rd W
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N Saginaw Blvd
Boat Club Rd
Basswood Blvd
Mid Cities Blvd
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East Fwy
West Fwy
Camp Bowie Blvd
Southwest Blvd
E Lancaster Ave
E Rosedale St
Martin L King Jr Fwy
Ronald Reagan Memorial Hwy
W Pioneer Pkwy
SW Green Oaks Blvd
White Settlement Rd
Silver Creek Rd N
Jacksboro Hwy
E Belknap St
N Sylvania Ave
Blue Star Memorial Hwy

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: UP Shreveport to Dallas

Summary of ACS Estimates	2012 - 2016
Population	97,323
Population Density (per sq. mile)	667
Minority Population	59,106
% Minority	61%
Households	31,931
Housing Units	36,933
Housing Units Built Before 1950	5,244
Per Capita Income	20,272
Land Area (sq. miles) (Source: SF1)	145.85
% Land Area	98%
Water Area (sq. miles) (Source: SF1)	2.37
% Water Area	2%

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population by Race			
Total	97,323	100%	865
Population Reporting One Race	95,616	98%	2,599
White	59,933	62%	726
Black	31,635	33%	774
American Indian	492	1%	200
Asian	925	1%	235
Pacific Islander	41	0%	335
Some Other Race	2,591	3%	329
Population Reporting Two or More Races	1,706	2%	265
Total Hispanic Population	25,222	26%	730
Total Non-Hispanic Population	72,101		
White Alone	38,217	39%	661
Black Alone	31,358	32%	774
American Indian Alone	347	0%	200
Non-Hispanic Asian Alone	916	1%	235
Pacific Islander Alone	37	0%	335
Other Race Alone	62	0%	170
Two or More Races Alone	1,164	1%	239
Population by Sex			
Male	46,956	48%	493
Female	50,367	52%	571
Population by Age			
Age 0-4	7,793	8%	302
Age 0-17	27,394	28%	413
Age 18+	69,929	72%	513
Age 65+	11,419	12%	204

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS) 2012 - 2016 .

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: UP Shreveport to Dallas

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population 25+ by Educational Attainment			
Total	60,056	100%	482
Less than 9th Grade	5,952	10%	221
9th - 12th Grade, No Diploma	8,268	14%	190
High School Graduate	20,469	34%	392
Some College, No Degree	17,203	29%	292
Associate Degree	3,628	6%	182
Bachelor's Degree or more	8,164	14%	360
Population Age 5+ Years by Ability to Speak English			
Total	89,530	100%	754
Speak only English	68,561	77%	617
Non-English at Home[1+2+3+4]	20,969	23%	517
[1]Speak English "very well"	12,073	13%	396
[2]Speak English "well"	3,196	4%	225
[3]Speak English "not well"	3,526	4%	367
[4]Speak English "not at all"	2,174	2%	235
[3+4]Speak English "less than well"	5,700	6%	367
[2+3+4]Speak English "less than very well"	8,896	10%	367
Linguistically Isolated Households*			
Total	1,673	100%	114
Speak Spanish	1,619	97%	103
Speak Other Indo-European Languages	21	1%	24
Speak Asian-Pacific Island Languages	33	2%	59
Speak Other Languages	0	0%	113
Households by Household Income			
Household Income Base	31,931	100%	205
< $15,000	5,897	18%	150
$15,000 - $25,000	4,824	15%	150
$25,000 - $50,000	8,695	27%	166
$50,000 - $75,000	5,272	17%	216
$75,000 +	7,242	23%	246
Occupied Housing Units by Tenure			
Total	31,931	100%	205
Owner Occupied	18,808	59%	200
Renter Occupied	13,123	41%	203
Employed Population Age 16+ Years			
Total	72,754	100%	589
In Labor Force	42,802	59%	572
Civilian Unemployed in Labor Force	3,531	5%	239
Not In Labor Force	29,952	41%	446

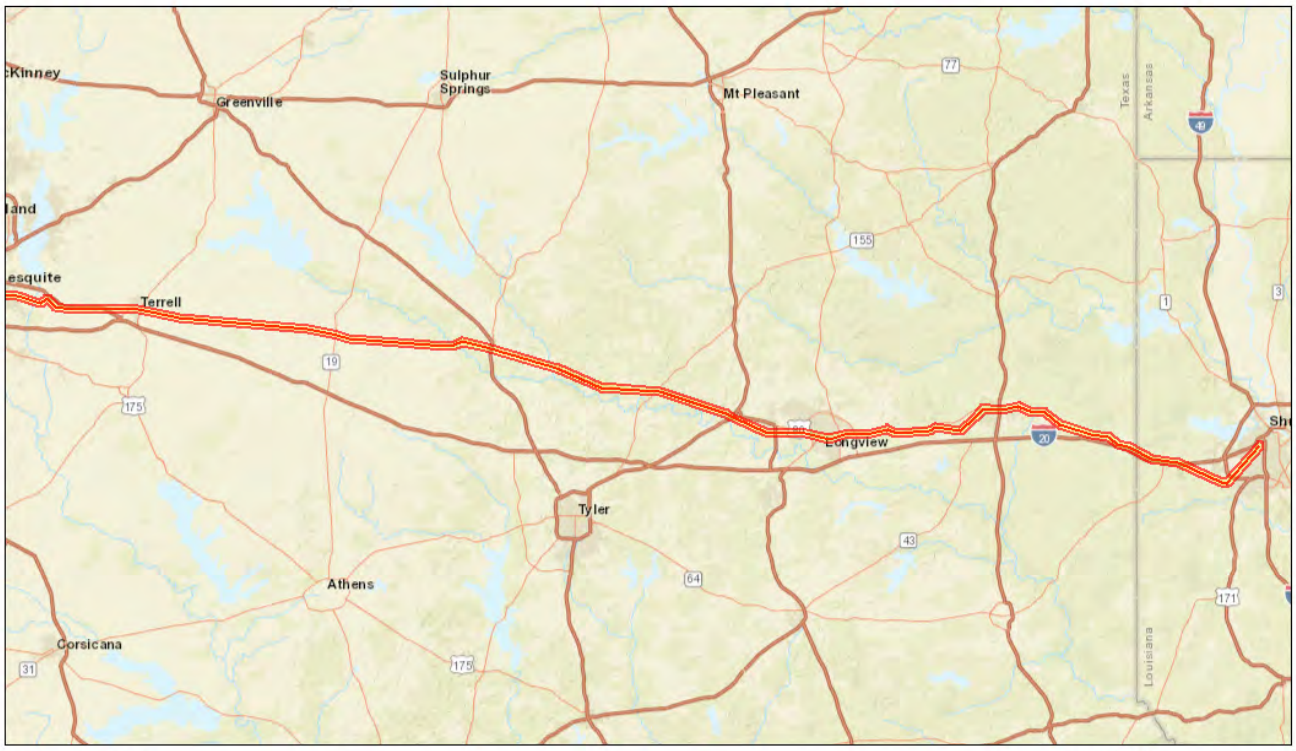
Data Note: Datail may not sum to totals due to rounding. Hispanic population can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS)
*Households in which no one 14 and over speaks English "very well" or speaks English only.

EJSCREEN ACS Summary Report

Location: User-specified linear location
Ring (buffer): 0.5-mile radius
Description: UP Shreveport to Dallas

	2012 - 2016 ACS Estimates	Percent	MOE (±)
Population by Language Spoken at Home*			
Total (persons age 5 and above)	80,152	100%	961
English	58,853	73%	938
Spanish	19,831	25%	1,030
French	83	0%	78
French Creole	N/A	N/A	N/A
Italian	N/A	N/A	N/A
Portuguese	N/A	N/A	N/A
German	84	0%	145
Yiddish	N/A	N/A	N/A
Other West Germanic	N/A	N/A	N/A
Scandinavian	N/A	N/A	N/A
Greek	N/A	N/A	N/A
Russian	N/A	N/A	N/A
Polish	N/A	N/A	N/A
Serbo-Croatian	N/A	N/A	N/A
Other Slavic	N/A	N/A	N/A
Armenian	N/A	N/A	N/A
Persian	N/A	N/A	N/A
Gujarathi	N/A	N/A	N/A
Hindi	N/A	N/A	N/A
Urdu	N/A	N/A	N/A
Other Indic	N/A	N/A	N/A
Other Indo-European	204	0%	123
Chinese	88	0%	108
Japanese	N/A	N/A	N/A
Korean	51	0%	85
Mon-Khmer, Cambodian	N/A	N/A	N/A
Hmong	N/A	N/A	N/A
Thai	N/A	N/A	N/A
Laotian	N/A	N/A	N/A
Vietnamese	146	0%	108
Other Asian	325	0%	196
Tagalog	131	0%	106
Other Pacific Island	N/A	N/A	N/A
Navajo	N/A	N/A	N/A
Other Native American	N/A	N/A	N/A
Hungarian	N/A	N/A	N/A
Arabic	17	0%	37
Hebrew	N/A	N/A	N/A
African	N/A	N/A	N/A
Other and non-specified	296	0%	183
Total Non-English	21,299	27%	1,191

Data Note: Detail may not sum to totals due to rounding. Hispanic popultion can be of any race.
N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS) 2012 - 2016.
*Population by Language Spoken at Home is available at the census tract summary level and up.



November 19, 2018

Buffer Area

Digitized Line

1:1,155,581

0 10 20 40 mi

0 15 30 60 km

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community