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# Facilitating Equitable Distribution of Justice40 Initiative Funding for Lead in Drinking Water

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## ABSTRACT

Disadvantaged communities often find difficulty in meeting the eligibility criteria for federal funding opportunities. The Justice40 Initiative is the Biden administration's commitment to directing 40% of benefits from all Federal investments in clean energy and climate to disadvantaged communities. The U.S. Environmental Protection Agency has designated \$20 million available for the Reducing Lead in Drinking Water Program (RLDWP). Here, our cohort of researchers share a policy brief for the underserved community of Watts in South-Central Los Angeles, which fears exclusion from the RLDWP funding from the Justice40 Initiative due to lack of support in proving eligibility. Our policy brief (1) demonstrates how this community meets the eligibility criteria for inclusion in funding from RLDWP and (2) demonstrates why this community and others like it, which suffer from structural disinvestment and marginalization, should be prioritized in the distribution of funding for this bill, and (3) proposes investment in community education as a policy alternative. Although Watts has access to a group of environmental scientists to support their concerns and collaborate on applying for grant applications, most under-resourced communities do not. We present this brief as an example of a policy intervention that could inform actions by the Justice40 Initiative for other disadvantaged communities to consider.

**Keywords:** health disparities, environmental justice, eligibility criteria, Justice40 Initiative, lead

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## PROBLEM

**H**OUSING AGE AND CONDITION have often been significant predictors of the lead source levels in both pipes and paint.<sup>1,2</sup> California banned the use of lead paint in 1978. California banned lead plumbing and pipes in 1985 and a U.S. Congressional ban went into effect in 1986.

<sup>1</sup>Paul Succop, Robert Bornschien, Katie Brown, and Chi-Yu Tseng. "An empirical comparison of lead exposure pathway models." *Environmental Health Perspectives* 106 (1998): 1577–1583.

<sup>2</sup>Richard Casey Sadler, Jenny Lachance, and Mona Hanna-Attisha. "Social and Built Environmental Correlates of Predicted Blood Lead Levels in the Flint Water Crisis." *American Journal of Public Health* 107 (2017): 763–769.

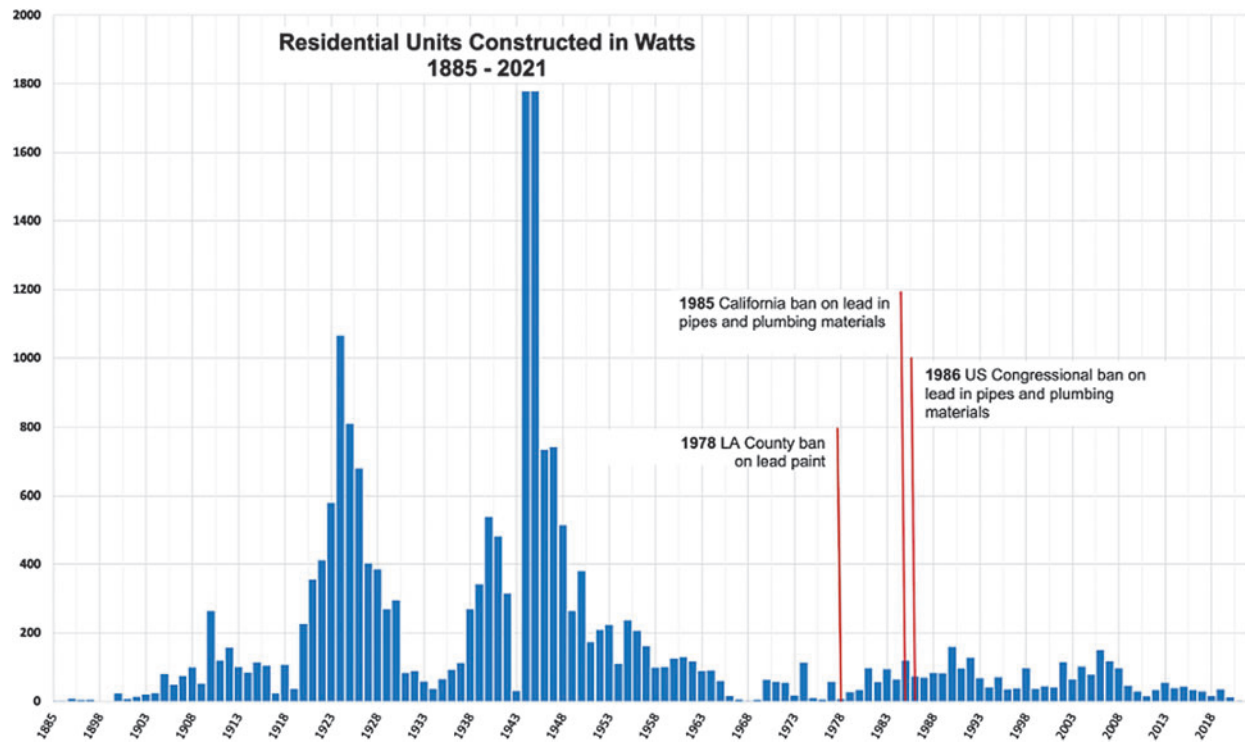


FIG. 1. Year of residential units constructed in Watts.

Using geographic information systems mapping (GIS), we have estimated that of the 21,251 residential units in Watts, 18,712 or 88.1% were built before 1986 and 86.3% were built before 1978 (Fig. 1). The average age of residential construction in Watts is 76.7 years. Thus, it is highly likely that a large percentage of homes built before 1986 in Watts still have lead pipes.

The Reducing Lead in Drinking Water Program (RLDWP) provides an opportunity to rectify health injustices related to lead contamination and long-term health consequences. However, for underserved groups to receive this help, there must be a feasible path for these communities to petition the support of eligible government agencies such as a municipal body to apply on their behalf. Here, we present a proof of concept used by researchers supporting a marginalized community as a template for the Justice40 Initiative to consider as a policy intervention.

Watts, a primarily Black and Latinx neighborhood spanning two square miles in South Los Angeles, has one of the youngest populations in Los Angeles County and the city of Los Angeles with a median age of 21.<sup>3</sup> In fact, 36% of Watts residents are between the ages of 0 and 19, with 8.6% of residents being young children under the age of 5.<sup>4</sup>

<sup>3</sup>Los Angeles Times. "Watts." <<http://maps.latimes.com/neighborhood/neighborhood/watts/?q=Watts%2C+Los+Angeles%2C+CA%2C+USA&lat=33.9386361&lng=-118.2380432&g=Geo codify>>. (Last accessed on March 23, 2022).

<sup>4</sup>United States Census Bureau. American Community Survey 5-Year Estimates Subject Tables 2020. <<https://data.census.gov/cedsci/table?q=90059%2090002>>. (Last accessed on March 23, 2022).

Watts is among the most polluted neighborhoods in California with an overall CalEnviroScreen score in the 100th percentile. The CalEnviroScreen cumulative lead pollution score of 91 comes from plumbing, air pollution, contaminated soil from a retired lead smelting facility, and lead paint in Watts.<sup>5</sup> There is no known safe level of lead in the body, especially for infants and children.<sup>6</sup> Children exposed to environmental lead have long-term adverse health consequences showcased by a reduction of volume in certain areas of brain matter, leading to lowered IQ test scores and deficiencies in academic skills.<sup>7</sup>

Children with higher blood lead levels (BLLs) have an increased risk of developing Attention-Deficit Hyperactivity Disorder.<sup>8</sup> A nationwide analysis of youth

<sup>5</sup>California Office of Environmental Health Hazard Assessment. CalEnviroScreen 4.0 Indicator Maps: California. 2021. <<https://experience.arcgis.com/experience/ed5953d89038431dbf4f22ab9abfe40d/>>. (Last accessed on March 23, 2022).

<sup>6</sup>World Health Organization. "Lead poisoning." <<https://www.who.int/news-room/fact-sheets/detail/lead-poisoning-and-health#:~:text=There%20is%20no%20known%20safe,symptoms%20and%20effects%20also%20increase>>. (Last accessed on March 30, 2022).

<sup>7</sup>Aseel Eid and Nasser Zawia. "Consequences of lead exposure, and it's emerging role as an epigenetic modifier in the aging brain." *NeuroToxicology* 56 (2016): 254–261.

<sup>8</sup>James K. Goodlad, David K. Marcus, and Jessica J. Fulton. "Lead and Attention-Deficit/Hyperactivity Disorder (ADHD) Symptoms: A meta-analysis." *Clinical Psychology Review* 33 (2013): 417–425. <https://doi.org/10.1016/j.cpr.2013.01.009>

blood lead concentration data found that ~3% of children aged 6 and younger in Watts had elevated BLL of >5 µg/dL or higher.<sup>9</sup> Watts is among Los Angeles neighborhoods with higher-than-average BLLs.<sup>10</sup> Further, the dire socioeconomic condition of Watts in conjunction with the historical, political, and social neglect compound with above average BLL measurements indicates the need for Watts to be prioritized in RLDWP funding.

Watts community members know that lead contamination contributes to many preventable health disparities in the community, such as an average life expectancy that is 14 years less than that of its surrounding neighborhoods.<sup>11</sup> Lead service lines in Watts have yet to be replaced because the residents lack resources to replace piping that goes from the municipality's main water lines to their homes. Newer homes in wealthier areas do not have this problem. The California State Water Boards have inventoried Los Angeles' municipal utility lines to ensure that community utility service lines do not contain lead.<sup>12</sup>

However, this inventory does not include the user service lines from the City's mainlines to individual homes built before 1985 that may house lead piping. The Los Angeles Department of Water and Power (LADWP) publishes an annual Drinking Water Quality Report and each year it uses data for lead obtained from the Drinking Water Watch State website to report that all water systems meet appropriate standards.<sup>13,14</sup>

On review of the data used for the reports, the researchers found that little data on water quality at the tap exist. LADWP water quality data are aggregated across all Los Angeles neighborhoods, which can convolute contamination levels for at-risk communities. For the annual water quality report, LADWP divides the City of Los Angeles into five regions, and Watts is placed in a category titled Central Los Angeles Communities along

with wealthier neighborhoods such as Baldwin Hills. In the last report, only 3 of the 108 homes sampled in this region for lead were in Watts.<sup>15,16</sup>

Lead poisoning resulting from persisting lead service lines is not the sole perpetrator responsible for the collective cognitive and behavioral impacts on children in Watts, due to numerous other environmental toxins in direct proximity of residents. However, lead poisoning resulting from persisting lead service lines is not the sole reason for the truncated lifespan.

It is a source that the RLDWP provides a solution toward, by giving assistance to disadvantaged communities based on the affordability criteria established by the applicable State under section 300j-12(d)(3) of the 2021 Infrastructure Bill. Members of the Watts community have called for inclusion in funding to remedy their user water service lines by (1) replacing lead service lines and (2) establishing testing and, planning, or other relevant activities to address and prevent conditions that contribute to increased concentration of lead in water for human consumption.

Despite their calls for inclusion, the community members have concerns that no eligible entity will apply on their behalf. Although government officials responsible for Watts should ideally advocate for their inclusion in such funding, historically this is not the case. Watts as a neighborhood is a victim of political gerrymandering by a technique called "cracking."

"Cracking" splits people with similar voting tendencies into multiple separate districts, diluting their vote and limiting their ability to advocate for needed resources.<sup>17</sup> Watts is a part of Los Angeles council district 15. Despite Watts being a part of this district, they are often excluded from receiving funding that goes to other neighborhoods in the same district located 17.5 miles away, in areas that are socioeconomically and culturally different.

We believe the solution to this specific problem for communities in similar situations is to clearly outline a method that proves eligibility that underrepresented communities can present to their local municipal bodies and political leaders (or eligible agencies/offices) to apply on their behalf. The method we propose is outlined next.

<sup>9</sup>Reuters Investigates. Lead's Hidden Toll. 2017. <<https://www.reuters.com/investigates/special-report/usa-lead-la/>>. (Last accessed on July 10, 2022).

<sup>10</sup>Reuters Investigates. Lead's Hidden Toll. <<https://www.reuters.com/investigates/special-report/usa-lead-la/>>..

<sup>11</sup>Kenneth Olden. "The Inaugural Olden Distinguished Lecture: Economic Inequality and Health Disparities." *Environmental Health Perspectives* 129 (2021): 4.

<sup>12</sup>State Water Resources Control Board. "Lead Service Line Replacement Inventory Status." (2019). <<https://gispublic.waterboards.ca.gov/portal/apps/Cascade/index.html?appid=7adcf6473614ada9c0b9c351362a656>>. (Last accessed on July 10, 2022).

<sup>13</sup>Los Angeles Department of Water and Power. Drinking Water Quality Report. (2021). <[https://ladwp.com/ladwp/faces/ladwp/aboutus/a-water/a-w-w-2021dwqr.jsessionid=PxqKvTQQgGIGL0TGbQYM5bvQL8tvyY96vFQ7ppcPKnvpQrknb8J!-210249385?\\_afLoop=343962298815887&\\_afWindowMode=0&\\_afWindowId=null#%40%3F\\_afWindowId%3Dnull%26\\_afLoop%3D343962298815887%26\\_afWindowMode%3D0%26\\_adf.ctrl-state%3D1drhoxf17u\\_4](https://ladwp.com/ladwp/faces/ladwp/aboutus/a-water/a-w-w-2021dwqr.jsessionid=PxqKvTQQgGIGL0TGbQYM5bvQL8tvyY96vFQ7ppcPKnvpQrknb8J!-210249385?_afLoop=343962298815887&_afWindowMode=0&_afWindowId=null#%40%3F_afWindowId%3Dnull%26_afLoop%3D343962298815887%26_afWindowMode%3D0%26_adf.ctrl-state%3D1drhoxf17u_4)>. (Last accessed on July 10, 2022).

<sup>14</sup>Safe Drinking Water Information System. Drinking Water Watch: California Public Water Supply Systems. <<https://sdwis.waterboards.ca.gov/PDWW/>>. (Last accessed on July 10, 2022).

<sup>15</sup>Los Angeles Department of Water and Power. Drinking Water Quality Report. (2021). <[https://ladwp.com/ladwp/faces/ladwp/aboutus/a-water/a-w-w-2021dwqr.jsessionid=PxqKvTQQgGIGL0TGbQYM5bvQL8tvyY96vFQ7ppcPKnvpQrknb8J!-210249385?\\_afLoop=343962298815887&\\_afWindowMode=0&\\_afWindowId=null#%40%3F\\_afWindowId%3Dnull%26\\_afLoop%3D343962298815887%26\\_afWindowMode%3D0%26\\_adf.ctrl-state%3D1drhoxf17u\\_4](https://ladwp.com/ladwp/faces/ladwp/aboutus/a-water/a-w-w-2021dwqr.jsessionid=PxqKvTQQgGIGL0TGbQYM5bvQL8tvyY96vFQ7ppcPKnvpQrknb8J!-210249385?_afLoop=343962298815887&_afWindowMode=0&_afWindowId=null#%40%3F_afWindowId%3Dnull%26_afLoop%3D343962298815887%26_afWindowMode%3D0%26_adf.ctrl-state%3D1drhoxf17u_4)>..

<sup>16</sup>Safe Drinking Water Information System. Drinking Water Watch: California Public Water Supply Systems. (2022). <<https://sdwis.waterboards.ca.gov/PDWW/>>.

<sup>17</sup>Stacie Schmidt, Rhea E. Powell, Tracey L. Henry, Nancy Connolly, Jennifer B Cowart, and Celeste Newby. "Gerrymandering and the Political Determinants of Health." *Population Health Management* (2022).

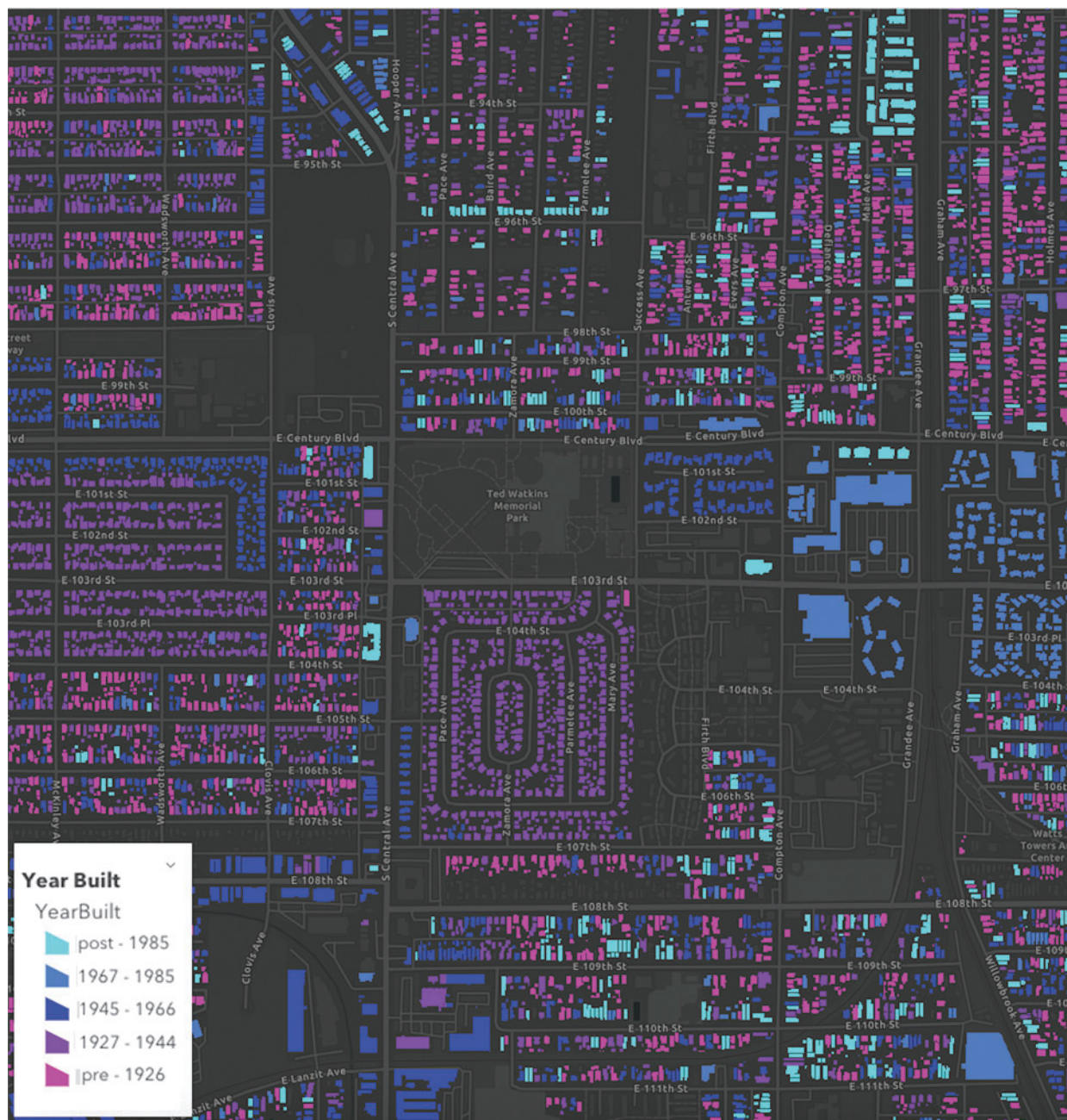


FIG. 2. Map of residential units built by year in Watts.

## FINDINGS

The Justice40 Initiative is the Biden administration's commitment to directing 40% of benefits from all Federal investments in clean energy and climate to disadvantaged communities.<sup>18</sup> The U.S. Environmental Protection Agency has designated \$20 million available for the RLDWP. To receive RLDWP funding, applicants must

prove that over 30% of the water service lines in the community contain lead.<sup>19</sup> Eligible recipients are also required to identify the source of lead pollution in the water supply and how the proposed lead reduction project would meaningfully reduce the concentration of lead in water. In Watts and other under-resourced communities, the exact number of households with lead pipes and fittings is unknown; however, the approximate

<sup>18</sup>U.S. Senate, Committee on Environment and Public Works, 117th Cong., 1st sess., 2021, Environmental Justice For All Act, S.872.

<sup>19</sup>U.S. Senate, Committee on Environment and Public Works, 117th Cong. Drinking Water and Wastewater Infrastructure Act of 2021. S.914.

number of homes with lead services lines can be accurately estimated.

We propose a valid way to do this via GIS mapping of housing age by inventorying the number of homes built before 1985. Our theoretical basis for using this method is that housing age and condition have often been significant predictors of the lead source levels in both pipes and paint.<sup>20,21,22</sup> In addition, because of the lack of data about household lead pipes, using the geostatistics to map the year of construction is one of the closest indicators of lead presence in pipes.<sup>23</sup>

The majority (84.5%) of residential construction in Watts occurred before 1970, and of the 21,251 residential units in Watts, 18,712 or 88.1% were built before 1986 (Fig. 2). The average age of residential construction in Watts is 76.7 years. The results from this GIS analysis indicate that there is an urgent need to remediate water service lines to the older homes in the neighborhood to ensure that the drinking water is safe for human consumption.

### STAKEHOLDERS OF CONCERN

Our primary stakeholders include the community of Watts, LADWP, California State Water Resources Control Board, Los Angeles Regional Water Quality Control Board (LARWQCB), California Environmental Protection Agency (EPA), and elected officials. Elected officials should be accessible to Watts residents when concerns arise pertaining to the environment.

However, since elected officials are inundated with constituent requests, environmental inquiries often go unaddressed. Since Watts is a neighborhood and not a city, Watts specifically does not have a municipal corporation or local government representative that can submit the RLDWP grant application to the EPA. Thus, Watts needs a municipal stakeholder such as LADWP or LARWQCB to submit on their behalf.

LADWP is a municipal water and power utility serving the greater Los Angeles area, including Watts.

LARWQCB, a regional board under the State Water Board, develops and enforces water quality standards and implementation plans for the Los Angeles region. The Watts community is facing prolonged lead exposure among other environmental injustices and is collaborating with this group of scholars to prove eligibility and advocate for funding under the RLDWP.

### POLICY ALTERNATIVES

#### Education

The impacts of pollution on disinvested communities are not common knowledge and for policy of this scale to have generational impact, these neighborhoods must be better prepared. With such a significant amount of young people experiencing harmful environmental exposures, a national educational initiative should be explored that informs the residents of Watts and similar disinvested communities of the property-specific lead risks within their environment and potential solutions that coincide with these injustices.<sup>24</sup>

We envision the development of educational materials from the RLDWP detailing how neighborhoods can access and apply for funding to remediate issues in their drinking water (e.g., LSL replacement). We propose this information be passed along the following dissemination chain: (1) RLDWP will disseminate the educational materials about property-specific lead risks to state health departments, (2) states will then share with county health departments, (3) counties will then share with city health and/or planning departments (and directly to residents of unincorporated areas), (4) and finally city departments will share the materials with community-based organizations and non-profits that work directly with residents in underserved neighborhoods. Once educated and empowered, residents of communities like Watts can advocate for how policies and programs (such as RLDWP LSL replacement funds) are implemented to address their environmental concerns.

#### Policy recommendations

Our goal for this policy brief is to provide a valid method for underserved communities to prove that they meet eligibility requirements for the RLDWP. Specifically for Watts, this policy brief serves to (1) clearly demonstrate that this community meets the eligibility criteria for inclusion in funding from this bill and (2) to demonstrate that this community should be prioritized in the distribution of funding for this bill to those that influence policy in the community.

To address the first goal, we have provided empirical evidence that Watts is, indeed, a heavily impacted low-income community having over 30% of the service lines highly likely to contain lead based on building age and no record of systematic service line replacements. For the

<sup>20</sup>Dignam, Timothy, Rachel B. Kaufmann, Lauren LeS-tourgeon, and Mary Jean Brown. "Control of Lead Sources in the United States, 1970–2017: Public Health Progress and Current Challenges to Eliminating Lead Exposure." *Journal of Public Health Management and Practice* 25, no. Suppl 1 Lead Poisoning Prevention (2019): S13.

<sup>21</sup>US Environmental Protection Agency. "Basic Information about Lead in Drinking Water." <<https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water>>. (Last accessed on July 10, 2022).

<sup>22</sup>Moody, Heather A., and Sue C. Grady. "Lead Emissions and Population Vulnerability in the Detroit Metropolitan Area, 2006–2013: Impact of Pollution, Housing Age and Neighborhood Racial Isolation and Poverty on Blood Lead in Children." *International Journal of Environmental Research and Public Health* 18, no. 5 (2021): 2747.

<sup>23</sup>Goovaerts, Pierre. "How geostatistics can help you find lead and galvanized water service lines: The case of Flint, MI." *Science of the total environment* 599 (2017): 1552–1563.

<sup>24</sup>Los Angeles Times. "Watts." (2021). <<http://maps.latimes.com/neighborhoods/neighborhood/watts/?q=Watts%2C+Los+Angeles%2C+CA%2C+USA&lat=33.9386361&lng=-118.2380432&g=Geocodify>>.

second goal, we have addressed that the cognitive and behavioral impacts of lead on children pose a grave threat to the well-being of residents. Both factors reify the extreme risk for health disparities in vulnerable communities like Watts.

To correct this, we recommend immediate implementation of this bill into Watts (1) replace lead service lines and (2) establish testing, planning, or other relevant activities to address and prevent conditions that contribute to increased concentration of lead in water for human consumption. In a more general sense, we propose our method for proving eligibility for RLDWP be used as a tool to identify lead pipes in other historically underserved communities that fear exclusion from federal funding opportunities.

Watts, as a neighborhood, requires direct funding to empower local community driven movements and organizations. These coalitions of residents understand the immediate needs of the environment and how Watts is vulnerable. Replacing the lead pipes is only one part of the solution. In regard to specifically lead contamination, there are currently community organizations whose focus is on preserving and protecting the environment of Watts.

Funds would be prioritized by the boards of organizations who are an accumulation of residents, technical experts, and stakeholders. A major conjecture is the lack of access and accountable funding strategies for marginalized communities like Watts. This distribution strategy presents an equitable solution where historic community organizations led by residents can steward change in their environment that is sustainable, efficient, and cooperatively driven.

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#### AUTHORS' CONTRIBUTIONS

D.H.: conceptualization, data curation, methodology, writing (original draft), writing (revision), project administration, and supervision; M.J.: conceptualization, methodology, writing (original draft), and writing (revision); R.S.: conceptualization, methodology, writing (original draft), and writing (revision); M.W.: conceptualization, methodology, writing (original draft), and writing (revision); F.J.: conceptualization, methodology, and writing (original draft); E.C.: conceptualization, methodology, writing (original draft), and writing (revision); M.S.: conceptualization, data curation, methodology, visualization, writing (original draft), and formal analysis; T.W.: conceptualization, methodology, writing (original draft), and writing (revision); K.N.: conceptualization, data curation, methodology, writing (original draft), writing (revision), and supervision.

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