

THE UNIVERSITY OF HULL

**Evaluating Environmental Justice: Expanding
Conventional Understandings through the Case of
Unsafe Water.**

being a Thesis submitted for the Degree of Master of Research in History
in the University of Hull

by

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September 2019

Word count: 30,209

Acknowledgements

I would like to thank the staff that were instrumental in the creation of this work; Professor Joy Porter, whose expert advice guided me through the trials and tribulations of the year and ensured that I kept the end goal in sight; Professor Iain Brennan, who helpfully supervised from Criminology even though the area was new to him; and Dr. Susannah Hopson for the constant offers of support throughout. A huge thank you to Dr. Thomas Biskup for his unending support during the second half of the year, we are sorry MRes complained so much!

This study would never have been possible without my fabulous friends, Charlotte Pettitt, Tom Johnston, and Toby Harrison, who have been a brilliant support base for the past four years. Thank you for proof-reading every piece of work. With special thanks to my fellow MRes students who have made the year significantly easier to get through; Matt and Becca.

A final thanks to my family, many of whom questioned whether I'd ever make it through this study; I did it!

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List of Abbreviations

ABC	ABC One Hour Cleaners
CCC	Civilian Conservative Corps
CVWD	Coachella Valley Water District
CWA	Clean Water Act
DDD	Dichlorodiphenyldichloroethane
DDT	Dichlorodiphenyltrichloroethane
DWSD	Detroit Water and Sewerage Department
EPA	United States Environmental Protection Agency
FDR	Franklin D. Roosevelt
GAO	General Accounting Office
LANTDIV	Naval Facilities Engineering Command, Atlanta Division
MDEQ	Michigan Department of Environmental Quality
mgd	Millions of gallons per day
MIT	Massachusetts Institute of Technology
MRS	Monitored Retrievable Storage
PCB	Polychlorinated biphenyl
PCE	Tetrachloroethylene
SDWA	Safe Drinking Water Act
TCE	Trichloroethylene
TTHMs	Total trihalomethanes
U.S.	United States
µg/L	Micrograms per litre

INTRODUCTION

Environmental justice is fast becoming an increasingly prevalent topic in a society whose social awareness of environmental problems has been aided and increased by interaction with digital and social media. The likelihood of such awareness continuing to grow is high alongside the increasing concerns surrounding global warming and climate change. While the concept of environmental justice is aimed at creating 'fairness' for all people in relation to environmental harms, decisions and policy, both the concept itself and the resulting research and literature are limited by their adherence to the earliest definitions and examples environmental justice. The definition that the United States Environmental Protection Agency (hereafter EPA) provides of environmental justice is 'the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies'.¹ The EPA further states that environmental justice will only be achieved when the 'same degree of protection from environmental and health hazards' and 'equal access to the decision-making process to have a healthy environment in which to live, learn, and work' is available to all.² Whilst this should have encouraged the exploration of environmental justice among all people, many of the first and most prominent authors of the field have focussed almost solely on issues of disproportionate environmental harms on African Americans, and often looked to hazardous waste siting and distribution as said harm.³

With the turn of the twenty-first-century, other minority groups are increasingly being put at the centre of environmental justice studies; it is being recognised that all minorities are notoriously disadvantaged by environmental injustices, not just African Americans. Lack of understanding as a result of language barriers and poor access to education are cited as two ways in which these minorities are affected by environmental injustices, hindering their involvement in environmental decision-making. For some minority communities, such as those in Tulare County,

¹ United States Environmental Protection Agency (EPA), *Environmental Justice*. (2019). Available online: <https://www.epa.gov/environmentaljustice> [Accessed 24/07/2019].

² EPA, *Environmental justice*.

³ S. Benzhaf, L. Ma, & C. Timmins, 'Environmental justice: the economics of race, place, and pollution', *Journal of Economic Perspectives*, 33, 1 (2019). 185-208: 189.

California, officials went so far as refusing to provide translation to remove the language barriers that hindered the cooperation between the community and the officials dealing with a water injustice problem.⁴ Laurel Firestone noted that the attorney representing the water district (perpetrator) in this instance claimed that they didn't care what a community member had to say.⁵ This is one of many instances whereby environmental justice has not been achieved due to lack of inclusion of the affected communities. Frequently, this is done to push through environmental policy or changes that are solely beneficial to a corporate or governmental body, as opposed to benefitting the community that will bear the burden of the consequences. A plethora of environmental injustices occur through unsafe water; this thesis will question whether or not justice is ever achieved by evaluating the most impactful factors.

Terminology

Before progressing with the study, there are a number of terms that must be defined for clarity. The first key environmental justice protest that was led by African Americans occurred in response to a toxic waste site in Warren County, North Carolina in the early 1980s. Following these protests, the term *environmental racism* was adopted into the environmental and civil rights movements. Benjamin Chavis coined the term,⁶ with Robert Bullard describing it as 'racial discrimination in environmental policymaking', including involvement in decision-making, enforcement of environmental policy, and 'deliberate targeting of communities of color' (although Bullard could be criticised himself for not extending his description to all minority communities and focussing on African Americans for the majority of his work).⁷ This would later evolve into *environmental justice* in order to encapsulate a wider range of minority groups, categorised by race, income, and class. Environmental justice was

⁴ L. Firestone, A Kaswan, & S. Meraz, 'Environmental justice: access to clean drinking water', *Hastings Law Journal*, 57, 6, (2005). 1367-1386: 1378.

⁵ *ibid*

⁶ Chavis was the executive director of the Commission for Racial Justice of the United Church of Christ; a key group in both the civil rights movement and the early environmental justice movement that focussed on the Warren County protests in the late 1970s.; E. Blum, 'Environmental justice', in M. Melosi, *The new encyclopedia of southern culture: volume 8: environment*. (North Carolina: University of North Carolina Press, 2007). 58-62: 61.

⁷ R. Bullard (ed.), *Confronting environmental racism: voices from the grassroots*. (Massachusetts: South End Press, 1993). 4.

officially outlined by President Clinton's 1994 Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*,⁸ from which the EPA have created their definition. The Executive Order stated that all federal agencies 'shall make achieving environmental justice part of [their] mission[s]';⁹ this would be done by adhering to the EPA definition that was outlined in the above section. While this is the definition most academics, authors, and activists use for researching and/or advocating for environmental justice, they often focus solely on one aspect of it. The influence of race as the sole cause of environmental injustice appears to have captured the attention of most conventional authors in the field. The current discourse would therefore benefit from an exploration of all the factors mentioned in the definition (income, ethnicity, national origin), with the hopes of creating a more in-depth, nuanced understanding of the causes of injustice.

A final term that must be clarified is the terminology used in relation to the Indigenous communities that lived in America prior to the migration of Europeans. It must be noted that these communities are not one and the same, and therefore there is always some issue with giving a blanket term to such peoples. For ease of this study, as with most others that explore these communities, it is important to consider the term most appropriate to utilise when referring to these people as a community. Unfortunately, there is no single term that these communities collectively prefer to be called; some are happy with 'Native American', while others prefer 'Indigenous Peoples' or 'American Indian'.

An exploration of the historiography discussing this terminology has demonstrated that there are legitimate reasons that indigenous peoples dislike each term. 'American Indian' has been related to its connotations of 'a person of lower social class who is from a "backwards, inferior culture"',¹⁰ while 'Native American' does not always distinguish between the descendants of the first American inhabitants, and those who are just 'native-born' in modern America.¹¹ Problems with terminology for these communities in America are further complicated by the fact that they do 'not

⁸ Executive Order No. 12898 (1994), 'Federal actions to address environmental justice in minority populations and low-income populations', *Federal Register*, 59, 32, (16 February 1994).

⁹ Executive Order No. 12898. Section 1-101.

¹⁰ M. Yellow Bird, 'What we want to be called: Indigenous peoples' perspectives on racial and ethnic identity labels', *American Indian Quarterly*, 23, 2 (1999). 1-21: 5.

¹¹ *ibid*, 16.

regarded themselves as one monolithic racial society',¹² each with their own identity, cultures, laws, and governments, meaning that 'no clear consensus exists on which label is most preferable'.¹³ Robert Berkhofer explores the idea that native peoples have never considered themselves 'as a collectivity',¹⁴ suggesting that the term 'Indian' is a 'White conception' encouraging a number of generalising stereotypes.¹⁵ As a result, Michael Yellow Bird notes that 'Native American' appears to be the term that is preferred, due to the fact 'it avoids the stereotypes that are often associated with phrases such as "wild Indians" or "cowboys and Indians"'.¹⁶ Regardless, 'American Indian' was adopted by The Bureau of Indian Affairs in the 1960s,¹⁷ and is the 'legal definition used by the federal government to fulfil trust responsibility'. This term ignores the huge number of differences between different native communities. Berkhofer claims that the original inhabitants of the Americas were 'divided into at least two thousand cultures', with innumerable beliefs and values, lifestyles and languages,¹⁸ while Yellow Bird asserts that a study conducted on preferential naming has demonstrated that 'American Indian' was the 'racial label most often preferred by Indigenous Peoples'.¹⁹ This study, however, will employ the term 'Native American', and in doing so, will strive to avoid the usual stereotyping that correlates with 'American Indian', whilst reiterating the fact that these peoples were the original inhabitants of America. Only under the circumstances of a direct quotation will any alternative term be used to describe these communities. Furthermore, due to the inappropriate nature of blanket terms, specific tribal names will be utilised wherever possible.

Aims

This thesis will use a number of case studies, synthesising data from multiple fields, working hand-in-hand with a number of primary sources to support the debate on the necessity to broaden the environmental justice paradigm. It will demonstrate

¹² *ibid*, 2.

¹³ *ibid*, 1.

¹⁴ R. F. Berkhofer Jr., *The white man's Indian: images of the American Indian from Columbus to the present*. (New York: Random House Inc., 1978). 3.

¹⁵ *ibid*, 3, 25-26.

¹⁶ Yellow Bird, 'What we want to be called'. 4.

¹⁷ *ibid*

¹⁸ Berkhofer Jr., *The white man's Indian*. 3.

¹⁹ Yellow Bird, 'What we want to be called'. 2-4.

the need to redefine environmental justice and re-evaluate the field of study by broadening modern understandings to include the historical context (precursors) and the factors (mechanisms) that influence the injustices. It will also explore the need to increase the scope of the environmental justice to include more than just one group of peoples; in doing so, the study will explore factors that may be considered unique to certain communities, such as claims of sovereignty among tribal entities.

Throughout this research it will be made apparent that insufficient attention has been paid to the issue of access to clean water throughout the United States. The default argument of race being the only precursor to environmental justices is not only flawed, but also potentially dangerous. The use of the Flint water crisis and a number of Native American struggles, including that of the Agua Caliente Band of Cahuilla Indians, will demonstrate how race is rarely the only factor involved in these injustices. While evidently true that minorities fare worse in environmental decision-making and harms, the argument that other factors are important in disproportionate impact of environmental injustices is slowly beginning to pick up pace within the field. This has led to the increased inclusion of other disciplines within environmental justice studies, such as history, geography, (green) criminology, and theology. This interdisciplinary study will therefore create a multifaceted exploration of environmental justice.²⁰

Until very recently, the field relied on the initial, older texts as its most prominent and well-respected information, with most being published in the late 1980s and 1990s,²¹ when environmental awareness was influencing public policy. This study will bring understandings of environmental justice up-to-date by modernising its terms and applying it to an ever-growing area of concern. New primary sources, such as Supreme Court Cases, allow the study of environmental justice to change quickly over the course of just a couple of months, with new details to enhance and evolve the concept. It is absolutely necessary to modernise the somewhat stagnant definition and

²⁰ M. J. Lynch, P. B. Stretesky, & M. A. Long, 'Green criminology and native peoples: the treadmill of production and the indigenous environmental activists', *Theoretical Criminology*, 22, 3, (2018). 318-341.; L. Pulido, 'Rethinking environmental racism: white privilege and urban development in Southern California', *Annals of the Association of American Geographers*, 90, 1, (2000). 12-40.; L. White, Jr., 'The historical roots of our ecological crisis', *Science*, 155, 3767 (1967). 1203-1207.

²¹ R. Bullard (ed.), *Confronting environmental racism.*; R. Bullard, *Dumping in Dixie: race, class and environmental quality.* (Boulder: Westview Press, Inc., 1994); F. J. Turner, 'The significance of the frontier in American History, 1893', *American Historical Association* 1893. Available online: <http://nationalhumanitiescenter.org/pds/gilded/empire/text1/turner.pdf> [Accessed on: 26/10/2018]. 1-9.

understanding of environmental justice as a concept, in the hope that it could further influence public policy at this most crucial time.

This thesis will focus specifically on water injustices, due to the increasing prevalence of water problems across the globe. Whilst access to clean water is typically deemed to be a prominent issue in developing countries,²² it is becoming more obvious that it is a problem within rich, first world countries too. Academics, journalists and activists who explore environmental injustices in developing countries often emphasise the fact that first world countries are major polluters and contributors to environmental injustices in these underrepresented and disadvantaged communities. For example, emphasis is placed upon the transfer of toxic wastes or the impact of large, western corporations on access to water. The issue of e-waste (electronic waste) and nuclear waste dumping in the Global South by the United States has become known as the global waste trade,²³ while corporations such as Nestlé often come under fire for commoditising groundwater in developing countries who already have little access to their own water.²⁴ In contrast, this study will draw upon evidence of environmental injustices in water management within the United States, demonstrating that first world countries are increasingly experiencing similar issues and that innocent citizens often end up bearing the burdens of environmentally harmful governmental or corporate decisions. By bringing water to the forefront of the environmental justice, this study will demonstrate how important it is to consider the broadening of the field to encapsulate unsafe water. As a relatively new concern, water is becoming the latest resource to be commoditised by both governmental bodies and corporations, with it being treated in terms of cost and benefit, as opposed to a human right that should be equally accessible to all people. With water scarcity and climate change inciting further fear into the public mind, water management has been brought to the forefront of environmental social awareness, and literature is

²² W. Wehrmeyer & Y. Mulugetta, *Growing pains: environmental management in developing countries*. (Sheffield: Greenleaf Publications, 1999). & R. T. Ako, *Environmental justice in developing countries: perspectives from Africa and Asia-Pacific*. (Abingdon: Routledge, 2013).

²³R. Bullard & G. S. Johnson, 'Environmental justice: grassroots activism and its impact on public policy decision making', *Journal of Social Issues*, 56, 3 (2000). 555-578: 572.; N. Ferronato & V. Torretta, 'Waste management in developing countries: a review of global issues', *International Journal of Environmental Research in Public Health*, 16, 6, (2019). Available online: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6466021/> [Accessed: 24/06/2019].

²⁴ SumOfUs, *Nestlé: water is always a public right*. (2019). Available online: <https://actions.sumofus.org/a/nestle-water-pakistan> [Accessed 24/06/2019].

beginning to reflect this movement.²⁵ The study will alter the current wide-spread belief that water is not an issue within first world countries, demonstrating the need to focus not just on water itself, but to also consider the impact that first world governance has on the management of this resource.

Literature

The study will employ secondary literature to explore interdisciplinary arguments, supporting the debates throughout this thesis and enabling the identification of gaps within the historiography where further study could be completed. While some literature used throughout this study will be well-known to scholars of environmental justice, others will demonstrate the wider contexts that can be applied to the environmental justice paradigm that help to examine the causes of injustice alongside its potential solutions. Among the more prominent authors used will be Frederick Jackson Turner, a frontier historian, but also a key person in wilderness thought within the environmental history discipline,²⁶ and Robert Bullard,²⁷ who has been credited as a significant author in the environmental justice field, whose *Dumping in Dixie* being described as 'one of the seminal works in the environmental justice movement'.²⁸ Rachel Carson will also be referred to as she demonstrated the change in the early environmental movement, encouraging ground-breaking environmental policy changes following the publishing of her 1962 text *Silent Spring*.²⁹

Moving forth to consider the precursors and mechanisms involved in environmental injustices, the study will draw on the works of public policy professor Christopher Foreman,³⁰ geographer Laura Pulido,³¹ and transport engineer expert Lori Kennedy.³² These works combine to demonstrate that race is not the only factor that impacts the environmental injustices faced by minority communities. Instead, whilst

²⁵ For further discussion on water scarcity and climate change see M. Das, 'Water scarcity and gender dynamics in a slum in Delhi', *Indian Anthropologist*, 14,2, (2011). 91-98.

²⁶ Turner, 'The significance of the frontier'.; F. J. Turner, *The Frontier in American History*. (New York: Holt, 1920).

²⁷ Bullard, *Dumping in Dixie*.

²⁸ D. E. Newton, *Environmental justice: second edition*. (California: ABC-CLIO, 2009). 248.

²⁹ R. Carson, *Silent Spring*. (London: Penguin Group, 2000).

³⁰ C. Foreman, *The promise and peril of environmental justice*. (Washington D.C.: The Brookings Institution, 1998).

³¹ L. Pulido, 'A critical review of the methodology of environmental racism research', *Antipode*, 28, 2, (1996). 142-159. & Pulido, 'Rethinking environmental racism'.

³² L. G. Kennedy, 'Transportation and environmental justice', in K. Lucas, *Running on empty: transport, social exclusion and environmental justice*. (Bristol: Bristol University Press, 2004). 155-180.

still arguing that minorities are indeed disproportionately burdened by injustices, they focus heavily on the role of housing markets, migration patterns, the history of the surrounding environment, and access to transport in the occurrence of environmental issues. Literature within Chapter Two will focus predominantly on the Flint water crisis, using it to demonstrate the need to expand environmental justice studies to consider prior mechanisms and causes of injustice. Paediatrician and Flint civilian Mona Hanna-Attisha,³³ Detroit journalist Anna Clark,³⁴ and even Michigan's very own Bridge Magazine,³⁵ have produced pioneering works that focus specifically on the crisis. These texts link the crisis to the history of the city and other external toxic stressors, such as poverty, transportation, and lead exposure. These factors draw in the argument of risk assessment, which is used by the EPA to 'characterize the nature and magnitude of health risks to humans...and ecological receptors... from chemical contaminants and other stressors, that may be present in the environment'.³⁶ The methodology of risk assessment is heavily debated by Love Canal activist Lois Gibbs,³⁷ and Jason Corburn of the Department of Urban Studies and Planning at Massachusetts Institute of Technology (hereafter MIT).³⁸ The pair recognised that the current risk assessment procedures used by governmental agencies are limited by their lack of understanding and consideration of community experience. Taking these broader issues into account will encourage a nuanced understanding of water injustices and will enable policy changes to reflect on the prevention of these issues before they occur, acting pro-actively, rather than reactively.

While arguing for an expansion of the scope of the environmental justice field in Chapter Three, the study will employ literature that is focussed particularly on the inclusion of Native Americans in environmentally charged studies. The chapter will demonstrate that environmental injustices have occurred as early as the eighteenth-century in the form of land and water removal; in this sense, acts of colonisation have

³³ M. Hanna-Attisha, *What the eyes don't see: a story of crisis, resistance, and hope in an American city*. (New York: Random House Large Print, 2018).

³⁴ A. Clark, *The poisoned city: Flint's water and the American urban tragedy*. (New York: Metropolitan books, 2018).

³⁵ Bridge Magazine, *Poison on tap: a Bridge Magazine analysis*. (Michigan: Mission Point Press, 2016).

³⁶ United States Environmental Protection Agency, *About Risk Assessment*. (2019). Available online: <https://www.epa.gov/risk/about-risk-assessment#whatrisk> [Accessed 31/08/2019].

³⁷ L. Gibbs, 'Risk assessments from a community perspective', *Environmental Impact Assessment Review*, 14, (1994). 327-335: 331-332.

³⁸ J. Corburn, 'Environmental justice, local knowledge, and risk: the discourse of a community-based cumulative exposure assessment', *Environmental Management*, 29, 4, (2002). 451-466.

become environmental injustices in some instances.³⁹ This is a topic that appears to have had limited attention within the environmental justice field, but can be seen in historian Lynn White, Jr.'s 'Historical roots of our Ecological Crisis',⁴⁰ Dorothy Jones' *License for Empire*,⁴¹ and Stacy Alaimo's *Bodily Natures*.⁴² These texts emphasise the acts of domination committed across America in the centuries following the European migration to the U.S., supporting the argument that acts of environmental injustice existed in the form of removing access to water, well before the term was even coined. This chapter further considers the differences between Western regard for the environment by comparing Christian theology with Native American understandings of space and place,⁴³ and will explore this spiritual understanding of nature whilst also debating the legal and physical environmental injustices faced by past and present Native Americans in both the past and present.⁴⁴

Chapter One will delve further into the historiography of the field, demonstrating how environmental justice has evolved over time. Here, the literature will be critically examined in more depth, considering its development from the study of environmental history and civil rights to its own movement and paradigm.

Methodology

This dissertation will approach the field of environmental justice with a focus on water. In doing so, the study calls for a methodological, multidisciplinary approach to the problems preventing the achievement of environmental justice. Water injustices have been a significant problem for centuries, but without significant attention paid to them until the last decade, they have often been considered on a case-by-case basis,

³⁹ I. Rodriguez & M. L. Inturias, 'Conflict transformation in indigenous peoples' territories: doing environmental justice with a 'decolonial turn', *Development Studies Research*, 5, 1, (2018). 90-105.

⁴⁰ White, Jr., 'The historical roots of our ecological crisis'.

⁴¹ D. V. Jones, *License for empire: colonialism by treaty in early America*. (Chicago: University of Chicago Press, 1982).

⁴² S. Alaimo, *Bodily natures: science, environment and the material self*. (Indiana: Indiana University Press, 2010).

⁴³ B. Waters, 'Christian theological resources for environmental ethics', *Biodiversity and Conservation*, 4, (1995). 849-856.; J. Porter, *Native American environmentalism: land, spirit, and the idea of wilderness*. (Lincoln: University of Nebraska Press, 2014).; C. Vecsey, 'American Indian environmental religions', in C. Vecsey & R. W. Venables, *American Indian environments: ecological issues in Native American history*. (New York: Syracuse University Press, 1980). 1-37.

⁴⁴ L. Burton, 'The American Indian water rights dilemma: historical perspective and dispute-settling policy recommendations', *UCLA Journal of Environmental Law and Policy*, 7, 1, (1987). 1-66.; J. Shurts, *Indian reserved water rights: the Winters' Doctrine in its social and legal context, 1880s-1930*, (Oklahoma: University of Oklahoma Press: Norman, 2000). D. McCool, 'Precedent for the Winters Doctrine: seven legal principles', *Journal of the Southwest*, 29, 2, (1987). 164-178.

rather than exploring the activities that led to the injustices occurring. The use of primary sources will enable further modernisation of the study, allowing for older documents, such as treaties, to be applied to present and future injustices.

This thesis considers a number of case studies to demonstrate how certain precursors and mechanisms are likely to occur in multiple cases of unsafe water. In Chapter Two, the main focus is placed on the Flint water crisis, wherein the City of Flint, Michigan, changed its water supply in 2014, from Lake Huron to the Flint River. The City plunged into a state of emergency in 2016, due to high levels of lead contamination as a consequence of insufficient water treatment.⁴⁵ The case study will demonstrate the importance of race in environmental injustices, before considering the precursors (housing migration, infrastructure investment) that predate the crisis, and the mechanisms (denial of scientific study, state and federal governance) that enabled the crisis to continue for a number of years. This chapter will also explore the case of water contamination at Camp Lejeune Military Base, North Carolina, in order to demonstrate that race is not always an influencing factor in water injustices. Here, harmful chemicals contaminated the water from 1953 to 1987, including industrial solvents and toxic chemicals which allegedly caused various illnesses in those contaminated.⁴⁶ The study investigates the issues of water mismanagement, alongside corrupt leadership; both were also key mechanisms in the Flint water crisis. The third chapter focusses on case studies in various Native American communities, such as the water rights of the Gros Ventre and Assiniboine of Belknap Reserve, Montana, the spiritual connections to water of the Montana Blackfoot tribe, and the on-going water rights dispute of the Agua Caliente Band of Cahuilla Indians in California. These will not only add to the discussion of precursors and mechanisms in environmental injustices but will also be key in demonstrating the need for a wider scope within the field of study.

By taking recent amendments and lawsuits into account, alongside older legislature, acts and treaties, this project is also significant in bringing a more modern

⁴⁵ A. Beckrich, 'The green room: when lead flows from the tap' *The Science Teacher*, 83, 4. (2016).

Available online:

<https://www.jstor.org/stable/pdf/44159471.pdf?refreqid=excelsior%3Af2fd75c3793c62146fd564f5d73bca4f> [Accessed on 02/07/2018].

⁴⁶ United States Department of Veterans Affairs, *Public health. Camp Lejeune: Past Water Contamination*. 2018. Available online: <https://www.publichealth.va.gov/exposures/camp-lejeune/> [Accessed on 07/07/2019].

perspective to environmental justice studies. Executive Orders, new policies, and governmental agency studies have been employed to demonstrate the official stance on certain environmental justice concepts, policies, and studies. There are limitations to using this kind of source; it is often politically charged, and therefore not entirely unbiased towards certain ideals. The EPA's Web Archive has been vital in aiding the search for governmental acts and reports on safe drinking water, however, there are issues with access restriction. Recent years have seen the removal of certain information on the EPA's main site, which "reflect[ed] the agency's new direction under President Donald Trump and Administrator Scott Pruitt", according to an Agency statement.⁴⁷ Furthermore, it has been noted that 'content in EPA's Web Archive is no longer being updated and links may not function'.⁴⁸ Regardless of such limitations, the Archive has been employed as much as possible through the use of keyword sampling, alongside the online documents of the Congressional Record Archive.⁴⁹

The study further modernises the concept of environmental justice by employing recent news articles, often produced by journalists in close contact with grassroots organisations, or the individuals being affected by the specific water issue at hand. Due to the increasing social awareness surrounding environmental justice, there are many news stories (which are also more accessible due to internet access) that have not been used in the most prominent of environmental justice literature, that have been considered here. Modern news accounts add a new perspective, often non-academic and more easily understood for a wider audience, enabling further growth of interest in the field. The use of newspaper accounts has limitations, however, meaning that they must be monitored due to their ability to exaggerate or fit information into a political bias that could misconstrue events. These are issues have been constantly considered throughout this research.

As a result of the constant progression and advancement in health and sciences, the study will utilise the most recently available and relevant studies to support the thesis. Mona Hanna-Attisha, for example, produced a study outlining the

⁴⁷ Astrid Caldas, 'Trump EPA web page removal doesn't change climate change reality', Union of Concerned Scientists, 28 April 2017. Available online: <https://www.ucsusa.org/press/2017/trump-epa-web-page-removal-doesnt-change-climate-reality#.XA6sYHr7TOQ> [Accessed on 08/07/2019].

⁴⁸ United States Environmental Protection Agency, *EPA Web Archive*. 2016. Available online: <https://archive.epa.gov/> [Accessed on 08/07/2019].

⁴⁹ Congress.gov, *Congressional Records*. (2019). Available online: <https://www.congress.gov/congressional-record/archive> [Accessed 21/07/2019].

levels of lead poisoning on children in Flint both before and after the Flint River switch, and further explained the effects of such poisoning.⁵⁰ Marc Edwards, a prolific civil engineering professor at Virginia Tech with experience of water crises as a result of the Washington water crisis in 2001, supported Hanna-Attisha's work. These studies further support the need to explore external mechanisms by pointing to other influences in water crises, such as poverty's influence on lead toxicity.

Parameters

The study considers environmental injustices in water from as early as the eighteenth-century, considering conflicts between Native Americans and European settlers, through to the present day. It begins by exploring the origins of the field of environmental justice in Chapter One, demonstrating its roots in the field of environmental history and the civil rights movements of the 1950s and 1960s. The chapter considers the arguments of conventional environmental justice literature, before demonstrating key developments in the historiography from the early 2000s onwards. It goes on to detail the benefits of expanding and redefining the environmental justice paradigm, whilst also explaining the benefits of considering water injustices specifically.

Chapter Two considers the precursors and mechanisms that impact environmental injustices. It explores the conventional argument that race is a key influence in these injustices, whilst also considering the history of surrounding environments, looking to their social and economic histories. It explores housing markets, patterns of migration, urbanisation and suburbanisation, poverty, health and science, and toxicology and risk assessments. The chapter will utilise the Flint water crisis and the Camp Lejeune military base water contamination to demonstrate how these factors come to be and how they impact each other. Through this method, the chapter demonstrates that environmental injustices are caused by a culmination of several historical factors, combined with present concerns that enable environmental issues to prevail.

⁵⁰ M. Hanna-Attisha, et al, 'Elevated blood lead-level in children associated with the Flint drinking water crisis; a spatial analysis of risk and public health response', *AJPH Research*, 106, 2 (2016). Available online: <https://www.ncbi.nlm.nih.gov/pubmed/26691115> [Accessed: 29/07/2019].

The final chapter will demonstrate that insufficient attention has been paid to Native American communities in environmental justice literature and will help to rectify this. Investigation into their historical difficulties with Euro-Americans will show that, when environmental justice considers a different section of society, new precursors to injustice can be recognised. Micro-historic case studies will be employed here to consider the issues of water rights, physical contamination, and the spirituality of water in Native American tribes. The study will further explore the removal of access to water as an act of colonisation by Euro-Americans, and the desire of Native Americans to enforce their treaty rights to gain access to said water as acts of decolonisation.

The dissertation will conclude by reiterating the importance of exploring water issues in environmental justice studies, before outlining avenues for future research and the potential impact these studies could have in activism, academia, and domestic policy.

CHAPTER ONE

Evaluating the Environmental Justice Paradigm

The concept of environmental justice was not necessarily a unique phenomenon. It was instead borne out of two key movements in the United States. The first was the environmental history movement; the literature and policy that followed the field's expansion laid the groundwork for environmental justice to grow from. The second influence was the civil rights movement of the 1950s and 1960s, which was applied to further demonstrate how minorities were disproportionately harmed by environmental decision-making.

Environmental History

Wilderness thinking: the nineteenth-century

The history of the environment has seen much development over the last century, with initial authors often noting large changes in nature, but then attributing this to 'the promotion of individualism and democracy', rather than human effect on biological changes to nature.⁵¹ Frederick Jackson Turner has been credited as one of the first authors of environmental history; his work not only demonstrated the understandings of early nineteenth-century environmental thought, but also spurred future environmental interest in wilderness thinking, conservation and preservation. Upon delivering his paper, 'The Significance of the Frontier in American History', to the American Historical Society in 1893,⁵² Turner suggested that 'the wilderness' was an area in which the natural environment was no-man's land. Wilderness thought of the 1800s often made heavy use of biblical interpretations, which claimed that these were areas of desolation, where Satan ruled and temptation would be overwhelming.⁵³ Simultaneously, it was also believed that the wilderness was a place where one could fully withdraw from the human world and be tested in the face of God.⁵⁴ This

⁵¹ A. W. Crosby, 'The past and present of environmental history', *The American Historical Review*, 100, 4 (1995). 1177-1189: 1179.

⁵² Turner, 'The significance of the frontier'.

⁵³ A. M. Sinnott, 'Third Sunday in Creation: Wilderness Sunday' in N.C. Habel, D. Rhoads, & H. P. Santmire (eds.), *The season of creation: a preaching commentary*. (Minneapolis: Fortress Press, 2011). 100-111: 100.

⁵⁴ Sinnott, 'Third Sunday in Creation: Wilderness Sunday'. 100.

wilderness mentality in early environmental history has played a key role in the early understandings of dominating the environment for personal gain, a concept that has long caused the environmental issues that are faced in the modern day.

Furthermore, Turner stated that in focussing on the domination of the Atlantic Coast, Americans *allowed* the western area to remain primitive. He suggested that this area held 'new opportunities.. furnish[ing] the forces dominating American character',⁵⁵ emphasising the idea of controlling untouched, truly natural areas. In Turner's eyes, 'winning a wilderness' was not what some would consider it today.⁵⁶ In more modern understandings of the environment, winning a wilderness often means leaving it to run its natural course, with no interaction or interruption from humans; truly achieving the natural. Instead, in 1893, Turner claimed it to be the taking of unsettled land (in this instance, the land beyond the 'frontier belt'),⁵⁷ unchanged by human needs or desires, and developing it into an area that purely benefits humans, by way of 'Americanization'.⁵⁸ Although he refers to the wilderness as a 'fertile field for investigation', Turner claims that wilderness first 'masters the colonist' by changing their Euro-American habits. Following this, a coloniser then 'transforms the wilderness' as a result of their "expansive power" to "gain space for [their] development".⁵⁹ This notion of domination is not confined to early Euro-American perceptions of the environment, but is also relevant to the spaces and places of Native American importance, both in the past and present, a concept that will be explored in Chapter Three. As these forms of environmental colonisation progressed, spurred on by wilderness thinking, America saw the evolution of historical environmental thought into preservation.

Preservation: early 1900s

Environmental preservation often was, and for modern preservationists still is, concerned with the protection of landscapes. It is often focussed on the aesthetic of an area, aiming to allow the 'natural growth' of landscapes that humans do not interfere

⁵⁵ Turner, 'The significance of the frontier'. 2.

⁵⁶ *ibid*, 1.

⁵⁷ *ibid*, 2.

⁵⁸ *ibid*

⁵⁹ *ibid*, 2-3.

with.⁶⁰ New thinking on preservation in the early 1900s was combined with the favourable aspects of wilderness thinking. This created the concept of the 'wilderness preservationist',⁶¹ which encouraged the constant manipulation of the environment and its natural species allowing for a more acceptable version of wilderness. The aim was to create 'national parks for recreational use, primarily by short-term visitors'.⁶² From this desire grew the National Parks Service in 1916, which had the following aim:

...to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.⁶³

The continuous maintenance of national parks created the notion of "'sublime" landscapes: mountains, waterfalls, and other landforms of exquisite and deep aesthetic appeal to transient visitors', rather than allowing nature to play its natural role in creating true wilderness.⁶⁴ This ended up encouraging green tourism, wherein we could apply Gregory Ashworth's ideas of 'the aesthetic concept of nature to which many non-utility attributes were ascribed'.⁶⁵ Preservation and the resulting creation of national parks was fundamentally yet another way to turn over a profit from the environment. As a result, the original ideas of wilderness that were expressed by Turner, of savagery and desolation of the uninhabited environment, no longer existed under the preservationist view of environment. Instead, as Linda Vance rightly states, wilderness thinking, and the subsequent desire to create areas that were considered touched by gods and aesthetically pleasing, was merely another instance in which

⁶⁰ S. Sarkar, 'Wilderness preservation and biodiversity conservation-keeping divergent goals distinct', *Bioscience*, 49, 5, (1999). 405-412: 406.

⁶¹ *ibid*

⁶² *ibid*

⁶³ National Park Service, *Organic Act of 1916*. (2017). Available online: <https://www.nps.gov/grba/learn/management/organic-act-of-1916.htm> [Accessed 12/07/2019].

⁶⁴ Sarkar, 'Wilderness preservation and biodiversity conservation'. 406.

⁶⁵ G. Ashworth, 'Preservation, conservation and heritage: approaches to the past in the present through the built environment', *Asian Anthropology*, 10, 1 (2011). 1-18: 3.

humans were 'controlling nature' for their own benefit.⁶⁶ As domination over nature and its resources became cause for concern, the field of environmental history began to move towards conservation; although this only truly concerned the human benefit and economics.

Conservation: 1930 to 1950

The conservation movement that followed ideas of preservation moved the study of environmental history from the sublime 'natural' environment to the need to protect the environment for physical and practical human benefit, as promoted by Franklin D. Roosevelt (hereafter FDR) from the mid-1930s.⁶⁷ Environmental conservation can be understood as a more profit-led relationship to the environment; it encouraged the protection of 'vital resources',⁶⁸ directly linked to 'present and future utility',⁶⁹ and was often driven by fear of future resource scarcity. While Ashworth applied the term 'conservation' to his understanding of the built environment rather than the natural one, his conclusion that 'the term...was best defined as "preserving purposefully"' is an accurate way to describe the protection of resources for future human benefit.⁷⁰ The conservation effort was facilitated largely throughout the 1930s and 1940s by FDR, who emphasised the importance of restoration and conservation of the natural environment. FDR saw that the environment could 'be developed and managed in an integrated fashion for human benefit',⁷¹ driving the argument that the environment was there for human taking; the conservation movement was the method that would allow this to continue for as long as possible. Alongside the encouragement of national park creation, environmentally beneficial restoration policies such as the *Under the Soil Conservation and Domestic Allotment Act* of 1936, the employment of the 1911 *Weeks Act* and the use of the Civilian Conservation Corps (hereafter CCC) all promoted environmental growth and

⁶⁶ L. Vance, 'Ecofeminism and wilderness' *NWSA Journal*, 9, 3 (1997). 60-76: 61.

⁶⁷ R. N. L. Andrews, 'Recovering FDR's environmental legacy', in H.L. Henderson & D. Woolner (eds.), *FDR and the environment*. (New York: Palgrave Macmillan, 2005). 221-245.

⁶⁸ Conserve Energy Future, *Environmental conservation*. (2019). Available online: <https://www.conserve-energy-future.com/methods-and-importance-of-environmental-conservation.php> [Accessed 12/07/2019].

⁶⁹ Sarkar, 'Wilderness preservation and biodiversity conservation'. 406.

⁷⁰ Ashworth, 'Preservation, conservation and heritage'. 10.

⁷¹ Andrews, 'Recovering FDR's environmental legacy'. 221.

sustainable use of limited resources.⁷² Some policies implemented under Roosevelt enabled detrimental long-term resource use. Richard Andrews notes that 'overproduction and intensified use of mechanization and chemicals on acreage that remained in production' became an issue in years to come.⁷³ As a result, whilst conservation was deemed beneficial for restoration and sustainability of the environment, it only prolonged the same issues that had been occurring before its emergence- the overuse of natural resources. It is possible to argue that conservation thinking in relation to the environment is still dominant, as demonstrated by discussions related to stricter resources management across the globe and, more relevant to this study, water scarcity fears.⁷⁴

Modern Environmental Policy

Whilst FDR has been hailed as the key president to influence and enact ground-breaking environmental policy, Richard Nixon arguably also played a crucial role in such policy.⁷⁵ The main concern of the conservation movement was the use of natural resources; further anxiety surrounded the pollution of these resources, particularly in relation to human consumption. Nixon's election came soon after the publication of what could be deemed the first, although inadvertent, environmental justice text. Rachel Carson's 1963 *Silent Spring* made a dramatic impact on the awareness of environmental issues in the United States,⁷⁶ and can be credited with spurring on the environmental justice movement recognisable today. Carson's text was deemed 'the most revolutionary book since *Uncle Tom's Cabin*' by U.S. Supreme Court Justice William O. Douglas.⁷⁷ It would pave the way for mass change in both the study of environmental history and ecology, whilst initiating the environmental movements of

⁷² Andrews, 'Recovering FDR's environmental legacy'. 222-223.

⁷³ *ibid*, 227.

⁷⁴ T. C. Brown *et al*, 'Adaption to Future Water Shortages in the United States caused by population growth and climate change', *Earth's Future*, 7 (2019). 219-134. This study demonstrated that there 'are likely to be serious challenges in some regions of the U.S.' in terms of water shortages.

⁷⁵ R. E. Train, 'The environmental record of the Nixon administration', *Presidential Studies Quarterly*, 26,1, (1996). 185-196.; J. B. Flippen, *Nixon and the environment*. (Albuquerque: University of New Mexico Press, 2000). M. Rinde, 'Richard Nixon and the rise of American environmentalism', *Science History Institute*, Internet edition. 2 June 2017. Available online: <https://www.sciencehistory.org/distillations/richard-nixon-and-the-rise-of-american-environmentalism> [Accessed 15/08/2019].

⁷⁶ R. Carson, *Silent Spring*. (London: Penguin Group, 2000).

⁷⁷ Carson, *Silent Spring*. 258.

the late 60s and early 70s, thereby influencing U.S. legislation. Carson tells the story of the destruction caused by pesticides, fungicides and herbicides in America, both upon the natural environment and on humans.⁷⁸ The text became hugely significant in the public view of environmentalism and ecology, and even influenced domestic policy, leading to the ban on dichlorodiphenyltrichloroethane (hereafter DDT) in agriculture uses.⁷⁹ While some critics have argued that Carson lost her balanced approach and often overstated her case in some places by making 'free use of speculation', it would be unfair to dismiss this ground-breaking text.⁸⁰ *Silent Spring* acts as the perfect backdrop to this study, being one of the first publications that seriously considered harmful environmental practices that impacted both environment and human welfare, often for the benefit and profit of a growing industry. The early 1970s saw significant progress in environmental policy that would change the way the United States engaged with their natural surroundings. This was likely influenced more by the public's concern over human and environmental well-being, encouraged by texts such as Carson's, rather than Nixon's genuine concern with the environment.

Nevertheless, after taking office in 1969, Nixon enacted a plethora of environmental policies throughout the early 1970s, paving the way for greater control of environmentally harmful practices perpetrated by individuals, industries and states. Many of the initiatives that Nixon implemented still exist in current environmental policy and 'form the foundation for the country's ongoing environmental programs'.⁸¹ In July 1970, Nixon established the EPA, with the aim of giving full responsibility of interconnected environmental issues to one federal agency. On 9 July, Nixon delivered the *Reorganization Plan No.3 of 1970*, outlining that the new agency would draw together 'a variety of research, monitoring, standard-setting and enforcement activities' which, at the time of the message, required 'the coordinated efforts of a variety of separate agencies and departments'.⁸² Alongside this much-needed creation of a single federal agency that assumed responsibility for the environmental concerns

⁷⁸ Carson, *Silent Spring*. 11.

⁷⁹ United States Environmental Protection Agency, 'DDT ban takes effect', *EPA Press Release*, 31 December 1972. Available online: <https://archive.epa.gov/epa/aboutepa/ddt-ban-takes-effect.html> [Accessed 08/07/2019].

⁸⁰ D. E. Ferguson, 'Review of *Silent Spring* by Rachel Carson', *Copeia*, 1963, 1 (1963). 207-208: 208.

⁸¹ Train, 'The environmental record of the Nixon administration'. 185.

⁸² President Richard Nixon, 'Reorganization plan no.3 of 1970', *United States Environmental Protection Agency Web Archive*. Available online: <https://archive.epa.gov/epa/aboutepa/reorganization-plan-no-3-1970.html> [Accessed 12/07/2019].

of the nation, Nixon pushed for further implementation of policy that would protect land, air and water. Although some level of protection was already afforded to air and water since the mid 1900s, Nixon's policies cemented the need to adhere to stricter regulations. One example was Nixon's 1972 *Clean Water Act* (hereafter CWA), which, according to the EPA, established a 'basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters'.⁸³ The *Safe Drinking Water Act* (hereafter SDWA) followed in 1974, signed into law by President Gerald Ford in December. This Act established regulations on drinking water quality to protect public drinking water supplies throughout the nation.⁸⁴ Both Acts set new standards for the country to adhere to in relation to water, whilst the creation of the EPA allowed for a regulatory body to be responsible for the enforcement of these acts. Future legislation on water would often present itself in the form of amendments to these laws, demonstrating the importance of these reforms.

Civil Rights

A model movement

While the environmental justice movement and relating literature draws key principles from the study of environmental history, legislature and activism, it also 'find[s] much of its structural roots and moral inspiration' in the civil rights movement of the 1950s and 1960s.⁸⁵ There were clear links between what the civil rights movement was based upon and what emerging concerns in environmental justice were looking towards. Aldon Morris claims that the civil rights movement 'served as a model that has been utilized by other movements both domestically and internationally';⁸⁶ the environmental justice movement is just one of these. Much like environmental justice, the civil rights movement also had precursors leading to its development, including increased social mobility, political awareness and modern communication technology.

⁸³ United States Environmental Protection Agency, *Summary of the Clean Water Act*. (2019). Available online: <https://www.epa.gov/laws-regulations/summary-clean-water-act> [Accessed 12/07/2019].

⁸⁴ United States Environmental Protection Agency, *Safe Drinking Water Act (SDWA)*. (2019). Available online: <https://www.epa.gov/sdwa> [Accessed 1/07/2019].

⁸⁵ R. J. Lazarus, 'Pursuing "environmental justice": the distributional effects of environmental protection', *Northwestern University Law Review*, 87, 3, (1993). 787-857: 789.

⁸⁶ A. D. Morris, 'A retrospective on the civil rights movement: political and intellectual landmarks', *Annual Review of Sociology*, 25 (1999). 517-539: 517.

Furthermore, Morris noted the importance of black migration and urbanisation on creating 'dense social networks...through which the [civil rights] movement was mobilized and sustained'.⁸⁷ It is viable to apply this theory to the emergence of the environmental justice movement. It saw the coming together of people in Warren County, North Carolina, as the first major environmental justice protest led by African Americans in the U.S. and similar migration patterns can still be seen today, particularly in the Flint water crisis. The protests mounted here against the drinking water contamination was made infinitely more powerful by the social network of like-minded people created by a history of migration, urbanisation, and suburbanisation, which shall be further explored in Chapter Two. Morris notes that the civil rights movement demonstrated that 'an oppressed, relatively powerless group, can generate social change through the widespread use of social protest',⁸⁸ perhaps encouraging the first environmental justice protests. He goes on to state that 'a mass-based grass roots social movement that is sufficiently organized, sustained, and disruptive is capable of generating fundamental social change',⁸⁹ it is hoped that future environmental policy will further reflect the desires of the environmental justice movement.

Civil rights and the environment

Environmental justice really became its own field of study following the first major African American protest against a waste facility siting for polychlorinated biphenyl (hereafter PCB) in Warren County, North Carolina. The protests that began in 1978 demonstrated the influence that the civil rights movement had on environmental justice concerns, however, despite the huge peaceful protest from local African Americans, the PCB waste facility was created in 1982.⁹⁰ The link between civil rights and environmental justice became increasingly clear when grassroot environmental organisations were joined by civil rights activists, including those of the United Church of Christ, who had played a key role in the civil rights movement.⁹¹ In Bullard's words, 'although the demonstrations in North Carolina were not successful in halting the

⁸⁷ *ibid*, 522-523, 532.

⁸⁸ *ibid*, 524.

⁸⁹ *ibid*, 527.

⁹⁰ M. Reimann, 'The EPA chose this county for a toxic dump because its residents were 'few, black, and poor', *Timeline*, Internet edition. 3 April 2017. Available online: <https://timeline.com/warren-county-dumping-race-4d8fe8de06cb> [Accessed 09/07/2019].

⁹¹ J. H. Colopy, 'The road less traveled: pursuing environmental justice through Title VI of the Civil Rights Act of 1964', *Stanford Environmental Law Journal*, 13, 125, (1994). 125-189: 140-141.

landfill construction, the protests brought a sharper focus to the convergence of civil rights and environmental rights, mobilising a nationally broad-based group to protest these inequities'.⁹² This injustice encouraged the production of several studies that examined the role of race in environmentally harmful practices. The influence of the civil rights movement demonstrated the ability to draw social cohesion among a network of underrepresented, underappreciated people, enabling the creation of the environmental justice movement that has been prevalent ever since.

Title VI of the Civil Rights Act of 1964 was a close predecessor to the EPA definition of environmental justice. The Title states that 'no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance'.⁹³ While it is claimed that federal agencies have been looking at how this Title can be utilised for environmental justice purposes,⁹⁴ Richard Lazarus notes that the EPA had 'not exploited its Title VI responsibilities as it could to redress distributional inequities',⁹⁵ further demonstrating areas for future development in environmental justice. It is clear that the environmental justice movement and its subsequent field and literature therefore owes its beginnings, in part, to the civil rights movement, and would benefit from even further implementation of civil rights into environmental decision-making.

The Development of Environmental Justice Literature

Conventional understandings of environment justice

Considering the close links between environmental justice and civil rights, it is little wonder that much of the conventional and most prominent literature has focussed heavily on inequalities in environmental decision-making as a result of racial discrimination. The current discourse would therefore benefit from venturing further into the precursors and mechanisms of injustices inflicted. Furthermore, much like the civil rights movement itself, early environmental justice activism and literature

⁹² Bullard, *Dumping in Dixie*. 32.

⁹³ Federally Assisted Programs, 42 U.S. Code, Ch. 21, §2000d. (2010). Available online: <https://www.govinfo.gov/content/pkg/USCODE-2010-title42/pdf/USCODE-2010-title42-chap21-subchapV.pdf> [Accessed: 09/07/2019].

⁹⁴ Foreman, *The promise and peril of environmental justice*. 56.

⁹⁵ Lazarus, 'Pursuing "environmental justice"'. 836.

focussed heavily on the discrimination faced by African Americans in the country, with the inclusion of other disadvantaged minorities, such as Native Americans and Latinos, only becoming a topic of key interest in more recent years.

The environmental justice movement has been imperative in demonstrating the disproportionate discrimination that minority communities have faced. Bullard, noted as the 'premier scholar of the environmental justice movement',⁹⁶ has been an essential activist in environmental justice. His monograph *Dumping in Dixie* built upon the studies into toxic waste siting that were conducted after the Warren County protests; the two key studies were carried out by the General Accounting Office (hereafter GAO) and the United Church of Christ's Commission for Racial Justice.⁹⁷ These studies encouraged an increase in social awareness of environmental injustices beyond the scope of the Warren County protests. *Dumping in Dixie* further reinforced the links between the civil rights and environmental justice movement and this has been cited as a key reason that Bullard based the text in the Southern states of the U.S.; it is where the civil rights movement was born.⁹⁸ Bullard theorised that as a result of socio-economic vulnerabilities, black communities are often targeted for the siting of toxic waste facilities, which he demonstrates through a systematic study of the locations of noxious facilities across Texas, Louisiana, West Virginia, and Alabama, focusing on five neighbourhoods that contain a predominantly black population.⁹⁹ The text employs the key aspects of environmental justice to explore the extent to which black communities are disadvantaged, as Bullard not only considers the specific siting issues of toxic facilities, but also looks to the black community's involvement in activism and decision-making. He demonstrates that those in suffering communities did not often perceive the injustices as environmental problems. Instead, 'opinion leaders were more likely to define the community threat in terms of a public health

⁹⁶ G. Markowitz, 'Book review: Robert D. Bullard (ed.): The quest for environmental justice: human rights and the politics of pollution' *Human Ecology*, 35, 3. (2007). 257-258: 257.

⁹⁷ See United States General Accounting Office, *Siting of hazardous waste landfills and their correlation with racial and economic status of surrounding communities*, (GAO/RCED-83-168) 1 June 1983. Available online: <https://www.gao.gov/assets/150/140159.pdf> [Accessed 13/07/2019]. & United Church of Christ, Commission for Racial Justice, *Toxic wastes and race in the United States: a national report on the racial and socio-economic characteristics of communities with hazardous waste sites*, 1987. Available online: <https://www.nrc.gov/docs/ML1310/ML13109A339.pdf> [Accessed 13/07/2019].

⁹⁸ J. B. Stewart, 'Book reviews: dumping in Dixie: race, class and environmental quality by Robert Bullard', *The Review of Black Political Economy*, (1991). 105-107: 106.

⁹⁹ Bullard, *Dumping in Dixie*. xv.

problem and an equity issue'.¹⁰⁰ Bullard could have further expanded this by considering the role that increased access to education could have played in the understanding of environmental problems; a potential precursor issue to the lack of involvement of black communities in environmental justice movements.

Furthermore, Bullard and Johnson briefly note in their article, 'Environmental Justice: Grassroots Activism and its Impact on Public Policy Decision Making', that 'environmental racism is as real as the racism found in housing, employment, education, and voting'.¹⁰¹ They argue that this form of environmental injustice 'is reinforced by government, legal, economic, political, and military institutions',¹⁰² however, they could have expanded further on this point as this is the only insight they gave on the matter. *Dumping in Dixie* certainly would have benefited from a more in-depth exploration of these areas, investigating social, economic and political history in the five communities, since these were often contributory to the environmental hazards and issues faced at later dates. The use of the Flint water crisis and certain water issues faced by Native Americans in this thesis will demonstrate the benefits of exploring factors that often underpin the existence of an environmental injustice.

Following on from Bullard's use of environmental racism in *Dumping in Dixie*, geographer Laura Pulido published 'A Critical Review of the Methodology of Environmental Racism Research' in 1996,¹⁰³ which appears to be somewhat ahead of her time. The text addressed the issue of defining environmental racism as one single concept, as opposed to several different types of racism that can either act alone, or work in conjunction with one another to create certain environmental racisms. Many definitions of environmental racism claim that 'racism and its effects can be isolated' and emphasise the ideas 'that there exists a single form of racism responsible for environmental discrimination'; this is something that Pulido takes issue with throughout the article.¹⁰⁴ She notes how Bullard and other environmental justice authors often consider 'racism as a specific, conscious act of discrimination',¹⁰⁵ as opposed to looking at a broader picture. This thesis encourages the consideration of environmental justice from a more historical point of view, directly building upon

¹⁰⁰ *ibid*, 65.

¹⁰¹ Bullard & Johnson, 'Environmental justice'. 559.

¹⁰² *ibid*, 559.

¹⁰³ Pulido, 'A critical review'. 142-159.

¹⁰⁴ *ibid*, 143.

¹⁰⁵ *ibid*, 148.

Pulido's opinion that future studies should understand the 'various economic forces, including, relations of production and regimes of accumulation, to create highly oppressive circumstances' and how racism interacts with these wider issues.¹⁰⁶ This study recommends the expansion of the environmental justice paradigm to include these factors in order to draw a more informed view of how and why certain injustices have and do occur, whilst also aiming to influence future public policy. Environmental justice policy would benefit from the inclusion of other areas of domestic policy to work hand in hand to address underlying causes. Drawing on Pulido's work, this study claims that the wider exploration of environmental justice can demonstrate how the paradigm is limited by narrow definitions and conventional understandings; it would benefit significantly from a broadening of the field.

The study of disproportionate harm to minority communities in the 1990s did not often consider the socio-political climates of the time, however, David Camacho's 1998 text, *Environmental Injustices, Political Struggles: Race, Class, and the Environment*, was created as a 'response to the lack of attention given to the political and social aspects of environmental problems'.¹⁰⁷ Camacho states that the text avoids scientific discussions, looking to the 'importance of context' and ethical matters.¹⁰⁸ Whilst he notes that the text considers 'political, economic, social, and cultural factors' and their role in causing environmental problems,¹⁰⁹ it seems that discussions involving these factors are often limited to their impact at the time of the specific injustice being investigated, as opposed to the history of them. Camacho's text is set apart from other early environmental justice literature by the inclusion of Kate Berry's article on Native Americans, a rarely explored minority group in the environmental justice literature before 2000,¹¹⁰ and whilst Bath, Tanski and Villarreal specifically focus on the history of external factors on environmental problems. This article investigates immigration patterns and their influence in creating the *Colonias* of El Paso, Texas,¹¹¹

¹⁰⁶ *ibid*, 148.

¹⁰⁷ D. E. Camacho (ed.), *Environmental Injustices, Political Struggles: Race, Class, and the Environment*. (Durham: Duke University Press, 1998). 2.

¹⁰⁸ *ibid*, 2, 3.

¹⁰⁹ *ibid*, 3.

¹¹⁰ K. A. Berry, 'Race for water?: Native Americans, Eurocentrism, and western water policy', in D. E. Camacho (ed.), *Environmental Injustices, Political Struggles: Race, Class, and the Environment*. (Durham: Duke University Press, 1998). 101-124.

¹¹¹ C. R. Bath, J. M. Tanski, R. E. Villarreal, 'The failure to provide basic services to the *Colonias* of El Paso County: a case of environmental racism?', in D. E. Camacho (ed.), *Environmental Injustices, Political Struggles: Race, Class, and the Environment*. (Durham: Duke University Press, 1998). 125-138.

demonstrating an early expance into the importance of research into surrounding historical impacts on environmental injustices.

Texts following the Warren County incident in early 1980 often focussed on the racial consequences of hazardous waste issues, frequently limiting their scope to one minority group (African Americans), and did not consider how other factors, such as immigration patterns, housing markets, and the history of environments had influenced the environmental injustice being studied. The next section of this chapter will demonstrate the increasing consensus within environmental justice literature that these, and other factors, must be considered in order to fully understand the injustices facing American citizens.

Evolved understandings of environmental justice

The turn of the twenty-first-century saw a number of texts begin to consider the wider issues in relation to environmental injustices. While the focus is still on disproportionate racial disparities, these are often considered in terms of both the historical factors that precede the injustice, alongside those that exist at the time of the problem. Furthermore, a wider range of texts within the field have begun to consider disproportionate environmental injustices against Native American and Latin American communities, as opposed to only focussing on African Americans. The increased attention is imperative in hopes to aid policy decisions that could benefit these already extremely disadvantaged communities. These expansions in the environmental justice field demonstrate that activists and academics are acknowledging the need to evolve the movement to encapsulate a larger scope of communities, further exploring the precursors and mechanisms that impact environmental injustices.

Pulido's article, published in 2000 for the *Annals of the Association of American Geographers*, draws from her 1996 text on environmental racism.¹¹² Pulido impressively demonstrates the need to discuss environmental racism on a broader scale, delving into how the history of racial understandings can influence environmental problems in the present. This concept is then taken further in 'Rethinking Environmental Racism' by expanding her exploration of environmental

¹¹² Pulido, 'Rethinking environmental racism'.

racism into a discussion about how white privilege and urban development can cause environmental injustices. Here the geographer notes that 'the historical processes of suburbanization and decentralization are instances of white privilege and have contributed to contemporary patterns of environmental racism'.¹¹³ She uses the migration of people in Southern California between 1848 and the late 1900s to demonstrate how past migration worked alongside 'social and economic shifts' to create a 'highly segregated' area,¹¹⁴ which would then experience environmental injustices that were perceived as racially motivated. By taking into account the precursors to specific environmental injustices, Pulido allows for a more nuanced discussion of the mechanisms involved in environmental problems faced in the present day, a method that will prove beneficial to many future environmental justice studies.

Jason Corburn's work 'Environmental Justice, Local Knowledge, and Risk' draws in a much-needed discussion into the efficacy of conventional risk assessment in environmental justice studies.¹¹⁵ Risk assessment is key in the official decision-making processes of Federal environmental bodies but is often criticised for being too objective. It analyses on 'individual contaminants from one source' in order to determine how much can be placed within a human body before it causes a significant problem; Corburn suggests that exposure assessment would be more effective. Exposure assessment would allow for the consideration of 'cumulative hazards and local knowledge' within environmental management decision-making.¹¹⁶ The article acknowledges the danger of conventional risk assessment to 'minimize health hazards facing [minority and low-income] populations and ignore the unique background risks they already face', by not considering 'poverty, lack of adequate health care, and other socioeconomic factors'.¹¹⁷ These issues need to be considered in environmental justice studies to understand the cause and consequence of injustices. Corburn's suggested cumulative exposure assessment in risk analysis could combine with environmental justice studies to consider a plethora of issues that combine to create one large injustice. The long-term goal of these considerations would be to influence environmental policy. Changes could be made in both scientific risk assessment and

¹¹³ *ibid*, 12.

¹¹⁴ *ibid*, 31.

¹¹⁵ Corburn, 'Environmental justice, local knowledge, and risk'.

¹¹⁶ Corburn, 'Environmental justice, local knowledge, and risk'. 451.

¹¹⁷ *ibid*, 456.

the environmental justice sector of the EPA to encourage the exploration of social and economic life and how this impacts already existing hazards. Similar to early studies of environmental justice, risk assessment prevents the expansion of the field due to its desire to stick to conventional understandings. The inclusion of wider socio-economic factors in both risk (or exposure) assessment and environmental justice studies would allow for greater understandings of the risks that minority communities already face.

Such external factors have been explored across several more recent works within the field. Lori Kennedy investigated the relationship between transportation and environmental justice, placing key emphasis on access to public transport and how this affects minority community's access to amenities such as grocery stores or healthcare.¹¹⁸ This issue directly correlates with problems concerning lead toxicity in the Flint water crisis. Chapter Two of this study demonstrates how the lack of public transport and access to amenities cause further issues in childhood exposure to lead and how this has affected black families below the poverty line in Flint. The chapter suggests that if public transport lines were improved, lead exposure and blood lead levels would decrease; this demonstrates how access to public transport can be considered an environmental justice problem, as Kennedy claims.

In contrast to his 1994 *Dumping in Dixie*, Bullard's 2005 text, *The Quest for Environmental Justice: Human Rights and The Politics of Pollution*,¹¹⁹ moves to expand the scope of his previous work. The text includes a historical overview and critique of environmental justice, before examining struggles and triumphs in the environmental justice movement, among others. By comparing Bullard's 1996 *Dumping in Dixie* with his 2005 *Quest for Environmental Justice*, the movement from conventional understandings of environmental justice to more modern ones is clearly depicted. The latter text displays the development of the early 2000s to include some diversity in environmental justice studies; it explores the plight of both women and Native Americans, alongside that of African Americans. Six years later, Stacy Alaimo made the case for a more scientific branch of environmental justice to be created in the hopes that invisible harms, both physical and spiritual, caused by environmental justice might

¹¹⁸ Kennedy, 'Transportation and environmental justice'.

¹¹⁹ R. Bullard (ed.), *The quest for environmental justice: human rights and the politics of pollution*. (California: Sierra Club Books, 2005).

be explored in more depth.¹²⁰ By combining Alaimo's arguments with the diversity demonstrated in Bullard's *Quest for Environmental Justice*, this study will explore the injustices that have impacted African Americans and Native Americans, drawing upon issues that are not immediately evident. For example, Chapters Two and Three explore invisible issues such as lead toxicity and spiritual connections to space, place and nature.

Finally, Chakraborty, Collins, and Grineski published a text that demonstrated the key issues that are beginning to emerge in the environmental justice field.¹²¹ 'Environmental Justice Research: Contemporary Issues and Emerging Topics' aims to 'document and redress the disproportionate environmental burdens and benefits associated with social inequalities... by considering emerging topics' in order to broaden environmental justice research.¹²² The authors specifically include two articles focussed on drinking water as one of these 'emerging topics'; the first of which looks to the First Nations communities in Canada,¹²³ and the second considers the Flint water crisis.¹²⁴ Chakraborty *et al*'s claim that these are two key areas in environmental justice perfectly supports this thesis, which explores unsafe water practices, including that of the Flint water crisis and also Native American water access. Where 'Environmental Justice Research' seeks to demonstrate new topics that need further attention, this study will go some way to filling some of the gaps Chakraborty has recognised, extending these to include water injustices that are not limited to drinking water.

¹²⁰ S. Alaimo, *Bodily natures: science, environment and the material self*. (Indiana: Indiana University Press, 2010).

¹²¹ J. Chakraborty, T. W. Collins, S. E. Grineski, 'Environmental justice research: contemporary issues and emerging topics', *International Journal of Environmental Research and Public Health*, 13, 11, (2016). Available online: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5129282/> [Accessed 13/07/2019].

¹²² *ibid*

¹²³ L. Galway, 'Boiling over: a descriptive analysis of drinking water advisories in First Nations communities in Ontario, Canada', *International Journal of Environmental Research and Public Health*, 13, 5, (2016), Available online: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4881130/> [Accessed 13/07/2019].

¹²⁴ C. Campbell et al, 'A case study of environmental injustice: the failure of Flint', *International Journal of Environmental Research and Public Health*, 13, 10 (2016). Available online: <https://www.mdpi.com/1660-4601/13/10/951> [Accessed on: 15/07/2019].

Water in Environmental Justice

It is possible that environmental justice does not sufficiently explore drinking water crises because they have previously been deemed to fit into other debates more effectively. Drinking water crises are often created as a result of several issues, some of which are typically not considered under the environmental justice paradigm; it is neither broad, nor unified enough to encapsulate them under one umbrella definition.

Water necessitates the broadening of the paradigm to encompass disciplines that are beyond the usual remit of environmental justice and historical studies. The water issues of both Flint and the different Native American communities explored in this study are excellent case studies by which to engage regional and local models into the broad scholarship. A need to understand the history of the surrounding environment, racism, and poverty is imperative. Furthermore, particularly in relation to Flint, exploring the study of lead toxicity is important to understand both the bodily and social effects of lead poisoning, directly incorporating Alaimo's 'invisible harms' thesis. Even relationships between city, state, and federal entities are important in determining issues to do with accountability of environmental injustices. Consequently, this study draws upon numerous debates across a plethora of disciplines to understand how water impacts each, before combining these into a multi-disciplinary study.

Furthermore, this study demonstrates the usefulness of considering external factors within case studies so that they might be applied elsewhere, for example, in solutions to environmental injustices as a whole. While Christopher Foreman argues that environmental justice studies focus too much on localised issues, claiming that this approach is limiting,¹²⁵ there is the potential for local issues to be applied in wider debates. By employing the Flint water crisis and a number of water injustices that have occurred in Native American communities, this study has drawn out the precursors and mechanisms to these environmental problems. They have demonstrated how seemingly localised issues, such as economic change, political climates, and housing access in specific communities can be applied to a wider understanding of why and how environmental injustices both came and will come to be. While it is not possible to focus on all impacts that cause an environmental injustice within this study, it is

¹²⁵ Foreman, *The promise and peril of environmental justice*. 122.

important to draw out a number that enable us to demonstrate the implications of these injustices. It is imperative, however, that studies continue to explore little investigated precursors and mechanisms, whilst seeking to combine them with already existing studies to create more holistic understandings of environmental injustices. Applying individual case studies to a broader understanding of environmental justice will not only enable a wider base of research in the field but will also demonstrate to policy-makers that these issues are not isolated; they are widespread. This exploration of water injustices will hopefully encourage a broader discussion among officials, leading to the understanding that environmental policy should be influenced by more than one environmental justice body. Instead, the achievement of environmental justice may be more viable should other departments be involved in decision-making processes. For example, the inclusion of the Civil Rights Division of the Department of Justice could enable further discussion of the implementation of Title VI of the Civil Rights Act 1964 within environmental justice policy. A future interdepartmental approach may benefit the concept of environmental justice in ways we are yet to understand.

CHAPTER TWO

Precursors and Mechanisms in Drinking Water

Drinking Water in Environmental Justice

As this study has demonstrated, the conventional understanding and role of environmental justice is to prevent unequal impacts of environmental decision-making within the United States.¹²⁶ Literature focusses heavily on the role of racial discrimination at the time of the injustice, however this approach often fails to give enough attention to other influences on environmental issues. This chapter demonstrates that while minority communities are disproportionately impacted by environmental injustices, these issues often come about as a result of specific precursors and mechanisms at play. The historical and modern impact of these injustices are often also motivated or influenced by racial prejudices and the environmental injustice is very rarely linked to deliberate racism alone at the point of injustice.

The conventional understandings of environmental justice have already proven to be a useful analytical tool and movement, particularly to grassroots organisations. It must be noted, however, that environmental justice does not encompass the history of unsafe water in the United States, due to the fact that water injustices are often burdened by a number of historical and present-day factors. Laura Pulido criticised the literature of the 1970-90s, noting that 'by continuously emphasizing siting decisions, and treating racial and income groups as two separate entities (without considering their complex interactions), we pave the way for policy measures of limited efficacy'.¹²⁷ While Pulido's article is specifically geared towards issues linked to the term 'environmental racism', this argument can also be applied to the exploration of what causes environmental injustices, as the two terms are closely linked. This study encourages future research to continue exploring the impacts that transportation,¹²⁸ the natural environment,¹²⁹ and housing patterns have had on environmental

¹²⁶ Bullard, *Dumping in Dixie*.; Bullard, *Confronting environmental racism*.; United Church of Christ, Commission for Racial Justice, *Toxic wastes and race in the United States*.

¹²⁷ Pulido, 'A critical review'. 142-159.

¹²⁸ Kennedy, 'Transportation and environmental justice'.

¹²⁹ See J. Lovell, 'Q&A: what really happened to the water in Flint, Michigan?', *Scientific American*, Internet edition, 2 March 2016. Available online: <https://www.scientificamerican.com/article/q-a-what-really-happened-to-the-water-in-flint-michigan/> [Accessed 20/07/2019]; J. Shen, 'Rising scholar: Flint

injustices.¹³⁰ By analysing case studies of unsafe water in the United States, the environmental justice paradigm can be widened to enable further understandings into how the past experiences of single communities can influence the injustices they face today. This developed approach to injustices will lead to new understandings of the environmental justice framework as a whole, well beyond its conventional constructs. Recently, environmental justice literature has placed greater importance on understanding the precursors of unsafe water in the United States, which could be a result of increasing concern surrounding climate change and resource (specifically water) scarcity. With increased media involvement in such areas, the interest of the general public in water concerns has increased significantly. While communities protest against the environmental injustices they are personally facing, social media communities are rallying behind them to provide further support and backing of their cause. The expansion of environmental justice studies to include the investigation of precursors and mechanisms enables the field to draw in activists from a number of social justice movements, further solidifying the environmental justice support by broadening its scope.

As Chapter One noted, older publications, such as that of Bullard, often focussed on toxic wastes that caused pollution in air and land, as these were the more prevalent issues of the 1970s-90s. Bullard's 1990 *Dumping in Dixie* applied the paradigm of environmental justice,¹³¹ as the equal treatment, protection, and involvement of all people in terms of environmental harm and regulation, to his case studies on toxic waste facility siting. Bullard argues that both race and income are key factors in the siting, although the former plays a larger role, demonstrating that non-whites are often disproportionately affected by environmental injustices. This study will build upon the work of Bullard, modernising his arguments by focussing on the more prevalent issue of unsafe water, and drawing upon more factors than just race and income at the point of injustice. Due to the aforementioned concerns surrounding unsafe water across the globe, research in this area has grown rapidly within the past decade. New work has recently been produced focussing specifically on the Flint water

water crisis: impacts of human-environmental interactions and reflections for future solutions', *International Social Science Review*, 93, 2 (2017). 1-14.; Clark, *The poisoned city*.

¹³⁰ Pulido, 'Rethinking environmental racism'.

¹³¹ R. Bullard, *Dumping in Dixie*.

crisis, such as Sarah Hughey's thesis comparing the Love Canal tragedy to Flint,¹³² Anna Clark's *The Poisoned City*,¹³³ and Mona Hanna-Attisha's *What the Eyes Don't See*.¹³⁴ These studies consider the historical context to this water crisis, bridging the gap between the conventional understanding of environmental justice and the necessity to apply it to the history of a specific case study. Hughey calls for historians to consider the scientific and medical community debates during their studies into cases of environmental injustices,¹³⁵ while Hanna-Attisha employs her expertise as a paediatrician to the effects of lead toxicity on children in Flint, in both her published text and also scientific studies.¹³⁶ Finally, Clark argues that while race is certainly a key factor in the Flint water crisis, she also believes that 'a cover-up by the city, state and federal governments' is a cause for concern, encouraging investigation into state and federal relationships.¹³⁷ All three authors note important interactions between the history of the surrounding environment, including the physical, economic, social and political histories, and the present day Flint water crisis.

The Flint water crisis case study will be used to prove that instances of unsafe water go beyond the conventional debates of race and income, demonstrating several other issues which should be considered within the environmental justice paradigm. Alongside new literature developing this theory, the University of Michigan ran *The Flint Water Crisis Course*, which can be found easily accessible on the University's public YouTube.¹³⁸ The course, which ran throughout 2016, focussed on a new issue each week, such as environmental justice, infrastructure, and lead toxicity. Each week also had a board of specialists on the panel in order to give reliable, trustworthy, and evidenced information. The course is crucial in demonstrating the issues that influenced the events of the Flint water crisis, giving important information to both residents and those interested in the crisis. Speakers frequently highlight the fact that

¹³² S. Hughey, *From Love Canal to the Flint water crisis: government, public opinion and environmental crisis*. Senior Thesis (Western Michigan University. December 2016). Available online: https://scholarworks.wmich.edu/honors_theses/2871/ [Accessed 15/07/2019].

¹³³ Clark, *The poisoned city*.

¹³⁴ Hanna-Attisha, *What the eyes don't see*.

¹³⁵ Hughey, *From Love Canal to the Flint water crisis*. 82.

¹³⁶ Hanna-Attisha, et al, 'Elevated blood lead-level'.

¹³⁷ Clark, *The poisoned city*. 6.

¹³⁸ University of Michigan-Flint, Public Health and Health Sciences Department, *Flint water course*, January 2016-December 2016, [Video]. Available online: <https://www.youtube.com/playlist?list=PLXTcWgqRYbI15MwCzeQhFK1ASsxoI416u> [Accessed 20/07/2019].

these injustices are not only faced by the residents of Flint, but that unsafe water is both a national and international problem.

Another university platform is used by Harvard University, where an instructor's note linked to teaching on the Flint water crisis made the case for 'collaborators across diverse sections of society as well as governments', to find solutions to drinking water crises.¹³⁹ It reports that there is more than just one factor in unsafe drinking water instances, particularly in the Flint water crisis. The author further argues that 'culture, ethics...environment, politics.... economic justice and governance' all played key roles in the Flint water crisis, demonstrating the limitations of adhering to the conventional understandings of environmental justice that do not consider these broad-ranging impacts.¹⁴⁰

It is of paramount importance that future literature, activists and policy-makers continue to apply new methodological approaches to environmental injustices, to include the precursors and mechanisms that influence them. The new approach would benefit understandings of specific localised injustices, whilst also being applicable to other cases across the nation and the wider issue of environmental injustice in the U.S. This study will utilise unsafe drinking water injustices, although the new approach can and should be applied to any and all environmental injustices in the future. In turn, ideally the city, state, and federal environmental management and policy will begin to reflect this change in approach to environmental injustices.

The Flint Water Crisis

The Flint water crisis is just one of many similar issues across the globe; it is not limited to the United States.¹⁴¹ However, the study will use Flint as a recent example of

¹³⁹ Harvard University, Flint, Michigan: lethal water- instructors note, *Global Health Education and Learning Incubator at Harvard University*, 2017. Available online: <https://repository.gheli.harvard.edu/repository/collection/teaching-pack-flint-michigan-and-lethal-water/resource/11516> [Accessed 24/07/2019].

¹⁴⁰ *ibid*

¹⁴¹ Dr. Mona Hanna-Attisha was told of a case in Washington, D.C. in 2001 wherein lead levels in drinking water exceeded the EPA's 'action level' of 15µg/L. Notably, the city was 69.2 per cent non-white at the time of the crisis. See Hanna-Attisha, *What the eyes don't see*. 80.; Non-profit organisation The Water Project noted that water scarcity is becoming an issue in the United States, citing the drying up of the Colorado River as one example. See S. Snyder, *Water scarcity- the U.S. connection*. (2019). Available online: <https://thewaterproject.org/water-scarcity/water-scarcity-in-us> [Accessed 07/07/2019].; In 2001 there was a similar water crisis in Washington, D.C., wherein lead levels in peoples' homes showed that the chemical exceeded the national standard of 15 parts per billion. Marc

unsafe drinking water to demonstrate how precursor factors can significantly influence the dynamics of future, seemingly innocent, actions. Following a contextual introduction to the Flint water crisis, the role of precursor factors will be explored, including economic and social influences. This chapter will also consider the mechanisms that impacted the crisis as it occurred, investigating the role of race, class, access to amenities, and toxicology assessment. In recognising these factors, the benefits of broadening the environmental justice paradigm from its conventional understandings will be demonstrated.

The Flint water crisis began on 25 April 2014, with the switch of water supply from Lake Huron, owned by Detroit Water and Sewerage Department (hereafter DWSD), to the Flint River, which was owned by the city themselves.¹⁴² The change came as a cost-cutting and profit-making activity in the long-term, mandated by a series of Emergency Managers, who claimed the change in water supply would save the city approximately \$200 million per year once completed.¹⁴³ However, a number of issues followed the water supply switch. Levels for total trihalomethanes (hereafter TTHMs) in water exceeded the federal limit as a result of 'elevated chlorine levels'.¹⁴⁴ Moreover, a number of studies have noted that there were elevated lead levels in drinking water following the switch to the Flint River. These levels exceeded the EPA action limit of 15 micrograms per litre (hereafter µg/L),¹⁴⁵ although according to the World Health Organization there is 'no known level of lead exposure that is considered safe'.¹⁴⁶ The elevated lead levels have been attributed to lead leaching from

Edwards, a key 'hero' in the Flint water crisis was originally known from the D.C. water crisis. See J. Foti, 'Lead in our water- a Washington, DC Mystery', *World Resources Institute*, (2008). Available online: <https://www.wri.org/blog/2008/03/lead-our-water-washington-dc-mystery> [Accessed 07/07/2019].; Allaire, Wu and Lall found that almost 21 million people were relying on community water systems that violated health-based quality standards. See M. Allaire, H. Wu, & U. Lall, 'National trends in drinking water quality violations', *Proceedings of the National Academy of Sciences of the United States of America*, 115, 9, (2018). 2078-2083; Newark, New Jersey, has been experiencing issues with lead in water since 2010. August 2019 tests show that lead levels in drinking water are still above the federal safe limit. See S. Scutti, 'How the Newark water crisis unfolded', *Cable News Network*. Internet edition. 15 August 2019. Available online: <https://edition.cnn.com/2019/08/13/health/newark-water-crisis-what-we-know/index.html> [Accessed: 25/08/2019].

¹⁴² CNN Library, 'Flint water crisis fast facts', *Cable News Network*. Internet edition. 6 December 2018. Available online: <https://edition.cnn.com/2016/03/04/us/flint-water-crisis-fast-facts/index.html> [Accessed: 16/07/2019].

¹⁴³ Clark, *The poisoned city*. 16.

¹⁴⁴ Clark, *The poisoned city*. 64-65.

¹⁴⁵ Agency for Toxic Substances and Disease Registry, *Lead toxicity*. (2019). Available online: <https://www.atsdr.cdc.gov/csem/csem.asp?csem=34&po=8> [Accessed: 06/07/2019].

¹⁴⁶ World Health Organization, *Lead poisoning and health*. (2019). Available online: <https://www.who.int/news-room/fact-sheets/detail/lead-poisoning-and-health> [Accessed: 16/07/2019].

infrastructure due to lack of corrosion control.¹⁴⁷ This in turn has allegedly caused lead exposure and lead poisoning, which is particularly worrying for the 9,000 children under five years old who were exposed to this water, as their bodies absorb more toxins than adults do.¹⁴⁸ The issue of lead toxicity will be considered later in this chapter as one of a plethora of mechanisms explored. The study will further consider race, corrupt practice and management, state and federal governance, and poverty as a number of other influences on the Flint water crisis.

The History of Flint

The history of Flint's economy, housing patterns and migration, and the surrounding environments must be considered to understand the plight of its residents today in the water crisis. These factors are linked heavily to historical racial prejudices, which can still be seen in today's water crisis. They will allow for a greater understanding into how external factors can influence present-day environmental injustices in a manner that could not have been predicted.

Economic history

The economic history of Flint significantly influences the experiences of today's residents. Much of the city's economy relied on the success of the automobile industry throughout the twentieth-century, after General Motors founded a plant in the city in 1908.¹⁴⁹ Flint was once a bustling town of opportunity, where many people migrated in an attempt to achieve the American Dream,¹⁵⁰ as it promised 'the highest standard of living in the United States'.¹⁵¹ Morgan Robinson attributes Flint's sudden population growth to General Motors' plants, as the population increased from 12,103 people in 1900 to 38,550 in 1910; by the 1970s, the company 'employed 80,000 people in Flint

¹⁴⁷ S. Roy, 'Flint River water is very corrosive to lead, and causing lead contamination in homes, Flint Water Study. 2 September 2015. Available online: <http://flintwaterstudy.org/2015/09/flint-rivers-water-is-very-corrosive-to-lead-and-causing-lead-contamination-in-homes/> [Accessed on: 21/07/2019].

¹⁴⁸ J. Lurie, 'Meet the mom who helped expose Flint's toxic water nightmare', *Mother Jones*, 21 January 2016. Available online: <https://www.motherjones.com/politics/2016/01/mother-exposed-flint-lead-contamination-water-crisis/> [Accessed 24/07/2019].

¹⁴⁹ M. A. Robinson, 'Thirst for the American dream: the lost city of Flint', *Michigan Sociological Review*, 32 (2018). 170-186:173.

¹⁵⁰ *ibid.* 170-186.

¹⁵¹ B. J. Pauli, *Flint fights back: environmental justice and democracy in the Flint water crisis.* (Massachusetts, Massachusetts Institute of Technology, 2019). ix.

alone', over half of the city's 1970 population.¹⁵² General Motors enjoyed approximately 70 years of success in Flint, maintaining the pretence that they were benefitting the entire city, stabilising the economy, and allowing for the American Dream to be achieved.

In reality, the dream perpetrated did not manifest as General Motors' existence contributed heavily to what would become a failed economy in Flint. Robinson argues that the company 'chose which workers were deserving of which jobs, as well as the quality of life that came with those jobs'. This encouraged the education of skilled white workers whilst simultaneously allowing blacks to take up lower paid unskilled labour, creating clear disparity in income levels based upon racial difference.¹⁵³ Following General Motors' investment into Mexican cities to capitalise on the ability to pay lower wages to workers,¹⁵⁴ significant job losses hit Flint. Employment cuts of about 72,000 people began in the late 1980s,¹⁵⁵ and by 2015, just 26 per cent of the 1996 level of all manufacturing jobs still existed in Flint.¹⁵⁶ Since the city's economy had largely been built upon the success of General Motors, its departure from Flint meant that much of the perceived economic success was also removed. Robinson points out that 'General Motors was the catalyst through which Flint as we know it was created', supporting the idea that the company's initial success bolstered the city's economy, but its downturn was influential in the creation of the low-income and poverty-stricken areas that we see in Flint today. Other factors also contributed to the present-day situation, as proved by the following analysis of housing patterns and segregation as a result of institutionalised racism.

Housing patterns

Not only did a declining economy mean there was less money available to invest in infrastructure repair, but the approval of the *Fair Housing Ordinance* in 1968 led to the departure of thousands of white people from the previously economically stable areas in Flint. Although the city of Flint appeared to be rich, Robinson notes that only a small percentage of the population actually held any wealth, and that this was

¹⁵² Robinson, 'Thirst for the American dream'. 171,173.

¹⁵³ *ibid*, 176-171.

¹⁵⁴ *ibid*, 176-177.

¹⁵⁵ Bridge Magazine, *Poison on tap*.

¹⁵⁶ *ibid*

evidenced in Flint's infrastructure, both past and present.¹⁵⁷ He goes on to state that a tour of the city would have shown the disparity in certain sections, from bustling recreational areas that had clearly been invested in, to poorer areas with run-down, spoiled housing that was barely fit to live in.¹⁵⁸ With Flint being the 'third most segregated nation' in the late 1930s,¹⁵⁹ it is not surprising that the most dilapidated areas were predominantly occupied by African American communities. Black people were often confined to economically poor sections of the city by way of redlining and 'racial containment', which referred to the 'complete segregation of race, class and opportunity'.¹⁶⁰ Redlining was a practice utilised by Real Estate professionals that would prevent loans from being granted in 'portions of the city classified as physically or economically deteriorated or in neighbourhoods inhabited by Afro-Americans or ethnics'.¹⁶¹ This meant that there was often more investment into 'low-risk' areas and peoples, including new suburbs on the outskirts of central cities, and more emphasis on granting loans to whites over blacks. As a result of this practice, two sections of Flint were occupied by the majority of the city's black population: Floral Park and St John Street.¹⁶² Significantly, redlining, enforced by Real Estate professionals, was one of the acts halted by the civil rights movement in the 1960s. Despite this, the damage had already been done, as less development occurred in the centre of cities, leaving physically and economically destitute areas, preventing them from improving, and restricting them to a future of further misery.

This was then exacerbated by the *Fair Housing Ordinance* of 20 February 1968, which sought to remove discrimination in housing. In theory, this should have allowed for the integration of white and black populations in Flint neighbourhoods, ideally clearing the way for investment into the infrastructure of economically deprived areas. Instead, almost the opposite occurred; following the passing of the *Ordinance*, a mass exodus of white people occurred as they left the city unhappy with the desegregation of housing.¹⁶³ Consequently, the population has been sat at 100,000 people for the

¹⁵⁷ Robinson, 'Thirst for the American dream'. 174.

¹⁵⁸ Robinson, 'Thirst for the American dream'. 174.

¹⁵⁹ Clark, *The poisoned city*. 47.

¹⁶⁰ Robinson, 'Thirst for the American dream'. 176.

¹⁶¹ M. H. Ebner, 'Re-reading suburban America: urban population deconcentration, 1810-1980', *American Quarterly*, 37, 3, (1985). 368-381: 379.

¹⁶² A. Clark, *The poisoned city*. 48.

¹⁶³ J. Lawlor, 'Flint made civil rights history 40 years ago', *MLive*. Internet edition. 10 February 2008. Available online:

past decade, half of what it was in its General Motor induced glory days. Most of those living in Flint since then were, and still are, the poor, black citizens left behind to bear the brunt of a failed economy and continuing racial segregation. The decentralisation of cities often ended up being caused by an influx of white people into suburbs, who were escaping these areas in search of a better life, both in terms of prosperity and quality. What followed, was the continuous economic and physical decline of the city of Flint, which aided the environmental injustice that would plague the city fifty years later.

Flint River pollution

General Motors also played a large role in causing problems in the physical environment, of which the Flint River was a particular target. Approximately half a century before the water crisis, the River had been the original water supplier to Flint and surrounding communities in Genesee County. Flint itself accounted for approximately 36 millions of gallons per day (hereafter mgd) of the 45 mdg used annually, with 60 per cent of this going towards Flint's impressive industry.¹⁶⁴ A 1964 report on 'Water resources of the Flint Area, Michigan' noted that the demand of water exceeded the amount that the River could supply,¹⁶⁵ and stated that Lake Huron was 'a source of practically unlimited supply of water of good quality' for the city.¹⁶⁶ As a result, water supply was transferred from the Flint River to Lake Huron in 1967, under Detroit Water and Sewerage Department,¹⁶⁷ where it continued to supply Flint until April 2014. As well as struggling to meet demands, the Flint River was also the victim of significant amounts of pollution throughout the late 1900s, which is frequently attributed to Flint's past as a heavily industrialised area, whereby the automotive industry was a key contributor.¹⁶⁸ At its prime, Flint had 'more than a hundred different manufacturing establishments in town'.¹⁶⁹ These companies

http://blog.mlive.com/flintjournal/newsnow/2008/02/flint_made_civil_rights_histor.html [Accessed on: 21/07/2019].

¹⁶⁴ S. W. Wiitala, K. E. Vanlier & R. A. Krieger, 'Water resources of the Flint area, Michigan: geological survey water-supply paper 1499-E', *U.S. Department of the Interior*, (1964). 13. Available online: <https://pubs.usgs.gov/wsp/1499e/report.pdf> [Accessed on: 20/07/2019]. 1.

¹⁶⁵ *ibid*, 79-80.

¹⁶⁶ *ibid*. 7.

¹⁶⁷ M. Thick, *The great water: a documentary history of Michigan*. (Michigan: Michigan State University Press, 2018). 255.

¹⁶⁸ Shen, 'Rising scholar: Flint water crisis'. 4.

¹⁶⁹ Clark, *The poisoned city*. 3.

deposited huge amounts of waste into the Flint River,¹⁷⁰ as proven by the 1964 water commission survey, which demonstrated that ‘the Flint River receive[d] most of its pollution from two key sources, industrial plants and the sewage-treatment plant’.¹⁷¹ In her 2017 article, Julia Shen claimed ‘more than 22 million gallons of human, industrial and commercial waste was poured into the Flint River’ as a result of a damaged Flint Wastewater Treatment Plant pipe in 1999.¹⁷² Ultimately, Flint became regarded as an undesirable ‘Lost [and forgotten] City’, due to the lack of federal and state attention it received as these issues largely went unnoticed by those who could work to prevent further environmental pollution.¹⁷³ These polluting acts continued to the point of the water crisis and played a key role in the issue of unsafe water, particularly when the lack of water treatment that the supply received is regarded.

Precursor Influence on the Flint Water Crisis

Undeniably, Flint has been a hugely disadvantaged community for decades, and with each problem, the likelihood of an environmental injustice as large as the Flint water crisis increased. By recognising how environmental injustices severely affected the poorest minority communities, that were already disadvantaged, it can be acknowledged that there was no chance of the people of Flint avoiding an environmental crisis that carried severe social consequences. The economic decline faced from the late 1980s still existed in 2014 when the water crisis began. Not only is the physical deterioration of infrastructure a clear sign of this depravation, but crime, education, and poverty levels all demonstrate that Flint is still living with the effects of economic downturn today.¹⁷⁴ It is possible to argue that the downward economic spiral directly influenced the inevitability of the Flint water crisis. As a result of the dire financial situation the city was in, Flint was under the management of a number of financial Emergency Managers who chose to make the switch to Flint River water from Lake Huron in the first place, despite the outcries from both civilians and the city

¹⁷⁰ Shen, ‘Rising scholar: Flint water crisis’. 4. & B. Venkataraman, ‘The paradox of water and the Flint crisis’, *Environment: Science and Policy for Sustainable Development* 60, 1 (2018). 4-17: 7.

¹⁷¹ Wiitala, Vanlier & R. Krieger, ‘Water resources of the Flint area’.

¹⁷² Shen, ‘Rising scholar’. 4.

¹⁷³ Robinson, ‘Thirst for the American dream’. 170-186.

¹⁷⁴ United States Census Bureau, *QuickFacts: Flint city, Michigan*. (2019). Available online: <https://www.census.gov/quickfacts/fact/table/flintcitymichigan/PST045217> [Accessed on 24/07/2019].

council. As the Emergency Managers further chose to stick with Flint River regardless of its danger, the question must be asked: 'Would the Flint water crisis have occurred if the economic situation had not been so dire?' The decisions made to save money in the present day to draw Flint out of economic turmoil owe their roots to the economic downfall of Flint in the late 1900s.

The economics of Flint also affected the deteriorating infrastructure and fluctuating housing patterns, resulting in deep-rooted racial segregation. The mass migration of white people to the surrounding suburbs and the increasing population of black communities in the city of Flint meant it became more vulnerable to a number of threats, including environmental injustice. Furthermore, this exodus of almost half of the population of Flint caused significant issues linked to economy and infrastructure as the movement of people did not mean that infrastructure within the city ceased to exist. Instead, there is now double the amount of infrastructure in the city than is actually needed. Not only does this mean that certain areas are likely not to be maintained, further enabling deteriorating conditions of the city, but it also resulted in DWSD raising the price of water supply.¹⁷⁵ This was because the water still ran to every house in the city, regardless of whether it was occupied or not. Those left in Flint following the waves of migration were paying both their own overpriced bills as well as those of the people who moved away, just to keep the water running. As an already majority low-income area with over forty per cent of the population in poverty, many people were unable to pay their bills.¹⁷⁶ As a result, the notion to move to a cheaper water supplier came forth. From this, the Flint water crisis was born.

Finally, the pollution incurred over the years by several sources, including industrial and social factors, meant that Flint was already experiencing some forms of environmental injustice before the water crisis; the impact of the pollution was just not visible yet. Such pollution meant that the water from the Flint River would require extra treatment before being distributed to residents for drinking, bathing, and cooking. While the pollution of the River alone cannot be blamed for the danger in drinking water during the Flint water crisis, it certainly played a significant role. Marc Edwards of Virginia Tech, a key figure in the discovery of lead in both Washington D.C. and Flint's water, established that regardless of this pollution, however, the Flint River

¹⁷⁵ Clark, *The poisoned city*. 15.

¹⁷⁶ *ibid*

would have been safe with the correct treatment.¹⁷⁷ Unfortunately, this did not happen. Instead, after the water had begun to be distributed, E-coli bacteria was discovered in the water, and as a result, high levels of chlorine were added in an attempt to remove it. This, however, created more issues as the by-products of chlorination, known as TTHMs, are considered to be a potential long-term carcinogenic, and Hanna-Attisha observed that they can be attributed to maternal-foetal complications.¹⁷⁸ Furthermore, small changes in the chemistry of water can 'greatly disrupt and impact lead and iron scale'.¹⁷⁹ The excessive amount of chlorine added in attempts to treat the Flint River water made it substantially more corrosive than it already was, further enabling lead levels in water to increase as water pipes corroded.¹⁸⁰ Consequently, the decades of pollution prior to the Flint water crisis wreaked havoc on the health of Flint residents in the form of lead leaching into water and complications from excessive TTHMs. This clearly shows that the historical environmental context cannot be removed from the present-day environmental issues. Undeniably, this precursor could have posed less of a problem with adequate management of the Flint River prior to the water source switch, and thus, official decision-making and management roles must be explored as a mechanism to enabling the Flint water crisis.

Mechanisms in the Flint Water Crisis

This study has demonstrated that historical context (precursors) play a key role in the environmental injustices faced in the United States today. The thesis will demonstrate that present-day factors (mechanisms) also impact the likelihood of an environmental crisis occurring and how they influence the severity of the event.

Race

Since race is the key factor within the conventional understandings in environmental justice, it is important that this study explores racial discrimination as a

¹⁷⁷ Lovell, 'Q&A'.

¹⁷⁸ B. M. Kuehn, 'Pediatrician sees long road ahead for Flint after lead poisoning crisis', *JAMA*, 315, 10. (2016). 967-969: 969.

¹⁷⁹ K. J. Piper, M. Tang & M. A. Edwards, 'Flint water crisis caused by interrupted corrosion control: investigating "ground zero home"', *Environmental science and technology*, 51, (2017). 2007-2014: 2008.

¹⁸⁰ J Lovell, 'Q&A'.

mechanism in environmental injustices. Particularly because two of the three precursors discussed above relate to racial disparity, demonstrating the significance of race in the Flint water crisis. The racial attitudes that led to the mass exodus of white people from Flint in the late 1960s are still visible today. With the city having retained its high black population ever since, it would be wrong to ignore the argument that race plays a key role in environmental injustices. The U.S. Census Bureau demonstrates that Flint's non-white population stands at 60.1 per cent, with 41.2 per cent of the population living in poverty.¹⁸¹ As many authors of interdisciplinary environmental justice studies have demonstrated,¹⁸² minority or low-income communities are often disproportionately affected by environmental injustices. This includes within the decision-making processes, environmental harm, and the responses to the harm. If a resident is both poor and belongs to a minority race, the chances of facing environmental injustice is further increased. With the history of segregation and economic deterioration that Flint has faced over the previous half-century, it is not surprising that the city is now tackling a water crisis of this magnitude. Furthermore, it has been noted that the most densely populated black neighbourhoods have been the ones that fared the worst in terms of high lead levels. Hanna-Attisha's elevated blood lead-level study demonstrated that Wards (sections of the city) 5, 6 and 7 had the highest blood lead-levels in children under five.¹⁸³ It is particularly significant that Vox News claimed that the population in these areas was at least 60 per cent black.¹⁸⁴ Not only was Flint itself a majority non-white population that was being unfairly treated, but it appears as though the predominantly black sections of society were enduring the worst of the pollution. This further supports the existence of racial disparity as a mechanism within environmental injustices.

Environmental injustice in the Flint water crisis has not only been felt in the form of physical illness, however. The definition of environmental justice claims that the involvement in environmental matters is of paramount concern; it is an injustice

¹⁸¹ United States Census Bureau, *QuickFacts: Flint city, Michigan*.

¹⁸² M. Melosi, 'Environmental justice, ecoracism and environmental history', in D. D. Glave M. Stoll, *To love the wind and the rain: African Americans and environmental history*. (Pittsburgh: University of Pittsburgh Press, 2006). 120-132.; K. Bell, *Achieving environmental justice*. (Bristol: Bristol University Press, 2014).; Campbell et al, 'A case study of environmental injustice'.; Venkataraman, 'The paradox of water'.; Bullard, *Dumping in Dixie*.

¹⁸³ Hanna-Attisha, et al, 'Elevated blood lead-level'.

¹⁸⁴ L. Nelson, 'The Flint water crisis, explained', *Vox*, Internet edition, 15 February 2016. Available online: <https://www.vox.com/2016/2/15/10991626/flint-water-crisis> [Accessed: 17/07/2019].

that the residents of Flint have been ignored. Flint residents were not involved in the early decision-making of switching their water supply to the Flint River, and were also ignored when voicing early concerns about the state of the new water. It seems that black residents in particular were stripped of their agency in this way. While minority groups rose up, demanding answers and aid from officials, it took the efforts of white residents to cause any changes to manifest. A Flint teacher and resident, Gregory Shafer, and his Flint students explored this theory in detail. They demonstrated that even as non-white people in the city complained that something was wrong with the drinking water, if 'some white [person] can say that the problem isn't that bad', even as people are being endangered,¹⁸⁵ it is often believed as fact. This also appeared to apply to complaints about the quality of Flint water. In what seems to be a demonstration of preferential treatment of whites in environmental injustices, the attention given to the Flint water crisis only materialised when a white person came forward with the problem. LeeAnne Walters is the white mother who has been credited with pushing officials towards investigation of Flint's contaminated water, due to her complaint to the EPA District 5 office in Chicago in mid-2015. As a result of this action, there was a spike in media coverage of the Flint water crisis (although initially only local media),¹⁸⁶ and an increase in the attention that officials paid to the people of Flint. This strongly suggests that one white person appears to have more impact than a community of black people, regardless of their efforts to be heard. This argument is further proven through the use of the financial Emergency Management in Flint, which will be explored in more depth further in this chapter.

While the EPA definition of environmental justice would suggest that its aim is for everyone to have equal opportunities for involvement in environmental decision-making, this failed in Flint, partly due to the existence of the Emergency Manager. Under Public Act 436, Governor Snyder placed a series of unelected Emergency Managers in charge of Flint, who held the 'power of both the mayor's office and the City Council to do what needed to be done to stabilize the community'.¹⁸⁷ This meant

¹⁸⁵ G. Shafer, 'Confronting whiteness and the Flint water crisis', *Humanist*. March/April 2016. Available online: <https://thehumanist.com/magazine/march-april-2016/features/confronting-whiteness-flint-water-crisis> [Accessed on 18/07/2019].

¹⁸⁶ D. Robbins, 'Analysis: how Michigan and national reporters covered the Flint water crisis', *Media Matters For America*, Internet edition, 2 February 2016. Available online: <https://www.mediamatters.org/research/2016/02/02/analysis-how-michigan-and-national-reporters-co/208290> [Accessed 19/07/2019].

¹⁸⁷ Clark, *The poisoned city*. 14.

that 'the city was in the hands of an unelected EM who was accountable to the governor, not to the people of the city'.¹⁸⁸ Flint was not the only city in the state to be under a Financial Emergency Manager, and although their appointment did not impact African Americans alone, they were more likely to be under the control of an unelected official. Approximately 50 per cent of African-Americans in Michigan were under the control of Governor Snyder and his Emergency Managers in 2013, according to Rachel Maddow of television news show MSNBC,¹⁸⁹ who would later give the most extensive coverage of the Flint water crisis across all of the national news outlets.¹⁹⁰ The lack of involvement and right to democracy for half of Michigan's black civilians removed the right to a voice on environmental issues, including that of switching water supply in Flint, which is something the EPA claims to fight for in its environmental justice definition.¹⁹¹ The distinct lack of concern for minority rights demonstrates severe environmental justice issues. As a city whose population majority is black, lack of involvement in the Flint water switch decision-making is arguably an environmental injustice, which links back to the civil rights issues discussed in Chapter One. Had the citizens, and even the City Council, been able to have a voice, the switch to Flint River water may never have been made, and the entire water crisis may have been averted. At the very least, in the event of the switch occurring, as per the City Council's vote to move back to Detroit water on 23 March 2015,¹⁹² the crisis could have been halted. Environmental injustice means that 'it takes longer for the response...in communities of colour and low-income',¹⁹³ and this has certainly been portrayed throughout the Flint water crisis, by the apparent need for white intervention to initiate a national response to the crisis.

Alternative mechanism to race

Evidence suggests that whilst environmental justice and environmental racism debates can be applied to some case studies, including the Flint water crisis, the

¹⁸⁸ Hanna-Attisha, *What the eyes don't see*. 87.

¹⁸⁹ G. Burns, 'Half of Michigan's blacks under direct control of Rick Snyder, says Rachel Maddow', *MLive*, Internet edition, 18 March 2013. Available online: https://www.mlive.com/news/detroit/2013/03/half_of_michigans_blacks_under.html [Accessed 19/07/2019].

¹⁹⁰ Robbins, 'Analysis: how Michigan and national reporters covered the Flint water crisis'.

¹⁹¹ United States Environmental Protection Agency, *Environmental justice*.

¹⁹² CNN Library, 'Flint water crisis fast facts'.

¹⁹³ Campbell et al, 'A case study of environmental injustice'. 4.

debate does not fit all instances of unsafe water. Foreman states, 'a world in which no person or community faces potential exposure to any environmental toxin is an impossible dream'.¹⁹⁴ This study builds upon this concept to demonstrate that some drinking water crises do affect white populations, proving that race is not the only mechanism involved in drinking water.

The examination of water contamination at Camp Lejeune Military Base demonstrated that whites suffer from both environmental harm and the struggle to gain recognition for such harms. Marines and their families found themselves drinking chemically-contaminated, unsafe water between 1953 and 1987, with 'an off-base dry cleaner... and environmental disposal practices of the U.S. Marine Corps' being blamed for the water contamination at a number of water treatment plants at the Base.¹⁹⁵ It has been reported that this contamination had long-term effects on victims' health.¹⁹⁶ Furthermore, the victims have still not received due recognition for their plight, and any admittance of wrongdoing by the Marine Corps does not seem likely. Officials continue to deny any issues with their water supply during the time of crisis regardless of the countless studies produced, supported by governmental admittance, that prove contamination.¹⁹⁷ As a result, many victims are still suffering; they are being denied compensation for related health issues by Veterans Affairs, even when they meet the necessary requirements.¹⁹⁸

¹⁹⁴ Foreman, *The promise and peril of environmental justice*. 13.

¹⁹⁵ J. T. Haney, Jr., 'Historical drinking water contamination at Camp Lejeune: regulatory risk assessor and personal perspectives', *Human and Ecological risk Assessment: An International Journal*, 22, 4, (2016). 1029-1035: 1029.

¹⁹⁶ United States Department of Veterans Affairs, *Public health*.; See also: Agency for Toxic Substances and Disease Registry, *ATSDR assessment of the evidence for the drinking water contaminants at Camp Lejeune and specific cancers and other diseases*. 13 January 2017. Available online: https://www.atsdr.cdc.gov/sites/lejeune/docs/atsdr_summary_of_the_evidence_for_causality_tce_pce_508.pdf [Accessed on 24/08/2019].

¹⁹⁷ Agency for Toxic Substances and Disease Registry, *Volatile organic compounds in drinking water and adverse pregnancy outcomes: United States Marine Corps Base, Camp Lejeune, North Carolina*. (Aug 1998). Available online: <https://www.atsdr.cdc.gov/HS/lejeune/> [Accessed on 20/08/2019].; See also: Agency for Toxic Substances and Disease Registry, *ATSDR assessment of the evidence*.; The site was named a Superfund site in 1993 due to excessive chemical pollution: United States Environmental Protection Agency, *EPA Superfund. Record of decision: ABC One Hour Cleaners, NC*. (Jan 1993). Available online: <https://nepis.epa.gov/Exe/ZyPDF.cgi/91002DQG.PDF?Dockkey=91002DQG.PDF> [Accessed 14/08/2019].

¹⁹⁸ S. Davis, 'A whistleblower: veterans poisoned at Camp Lejeune need Trump's help getting care', *Washington Examiner*, Internet edition. 27 February 2018. Available online: <https://www.washingtonexaminer.com/va-whistleblower-veterans-poisoned-at-camp-lejeune-need-trumps-help-getting-care> [Accessed 24/08/2019].; C. Kube, 'Navy to deny all civil claims related to Camp Lejeune water contamination', *NBC News*. Internet edition. 24 January 2019. Available online: <https://www.nbcnews.com/news/military/navy-deny-all-civil-claims-related-camp-lejeune-water-contamination-n962206> [Accessed 24/08/2019].

Between the years of water contamination, the population of non-whites in Onslow County, wherein the Camp is situated, was never higher than 24 per cent; Camp Lejeune was a majority white area.¹⁹⁹ It was therefore likely that Camp Lejeune Military Base was also a primarily white area. Further, while Camp Lejeune was the site of the first training base for black Marines- Camp Johnson- in 1942,²⁰⁰ it must be noted that the inclusion of non-whites in the Marine Corps was limited throughout the years of the Camp Lejeune water contamination. Herbert Northrup *et al* argue that even by the end of the Korean war in 1953, just eight per cent of total enlistments in the Marine Corps were black.²⁰¹ Executive Order 11246, which established non-discriminatory practices in government employment, was only extended to the Marine Corps in 1970 and while they were 'striving to attain overall proportionate minority representation',²⁰² there were still racial tensions throughout the military sector in 1979.²⁰³ The low percentage of non-whites in the area enables Camp Lejeune Military Base's water contamination to demonstrate that race is not the only factor that influences the existence of environmental injustices in the United States.

Instead, the water crisis faced at Camp Lejeune was related more to mismanagement of harmful chemicals and the inappropriate responses of Marine Base officials, suggesting that official mismanagement is a significant mechanism that impacts the occurrence and responses to environmental injustices. The inappropriate management of toxic chemicals, both by an on-site dry cleaners, ABC One Hour Cleaners (hereafter ABC), and the Marine Corps officials have been cited to be at fault for the contamination at Camp Lejeune.²⁰⁴ The Marine Corps were key polluters of the military base, causing chemicals to consistently leak into groundwater, including benzene, which came from fuel leaks of about 20,000-30,000 gallons,²⁰⁵ trichloroethylene (hereafter TCE),²⁰⁶ dichlorodiphenyldichloroethane (hereafter

¹⁹⁹ United States Census Bureau, *Census of population and housing* (2018). Available online: <https://www.census.gov/prod/www/decennial.html> [Accessed on 24/07/2019].

²⁰⁰ M. Magner, *A trust betrayed: the untold stories of Camp Lejeune and the poisoning of generations of Marines and their families*. (Boston: Da Capo Press, 2014). 21.

²⁰¹ H. R. Northrup et al, *Black and other minority participation in the all-volunteer Navy and Marine Corps*. (Pennsylvania: University of Pennsylvania Press, 1979). 13.

²⁰² *ibid*, 14.

²⁰³ *ibid*, 34.

²⁰⁴ United States Environmental Protection Agency, *EPA Superfund. Record of decision: ABC One Hour Cleaners*.

²⁰⁵ Northrup et al, *Black and other minority participation*. 34.

²⁰⁶ J. Ensminger & M. Partain, *The few, the proud, the forgotten: MCB Camp Lejeune timeline of events*. (N.D.) Available online: <http://www.tftptf.com/5873.html> [Accessed on 14/07/2019].

DDD),²⁰⁷ and DDT. The on-site dry cleaners further contaminated groundwater with residues of tetrachloroethylene (hereafter PCE).²⁰⁸

Following the discovery of these contaminations, the Marine Corps leaders continuously denied that their water was polluted at all, regardless of both EPA and Naval Facilities Engineering Command, Atlanta Division's (hereafter LANTDIV) involvement in studies which proved contamination.²⁰⁹ The responses of Marine Corps officials could be described as corrupt, denying contamination and acting with dishonesty and negligence. They continued to allow Marine Corps members and their families to drink the contaminated water, even after they were made aware of the toxicity issues. For example, the results of an October 1980 study into the two largest water treatment plants at the Base (Hadnot Point and New River) showed 'strong interference' of chemicals in the water. This, alongside several other warnings, were ignored by Marine Corps leaders.²¹⁰ Moreover, although an on-base laboratory was established in 1979, it lacked the equipment and manpower to sufficiently investigate the water contamination, suggesting that leaders were not hugely concerned with the health of the Corps and their families.²¹¹ Although the initial pollution of Camp Lejeune water was not deliberate, this environmental injustice was further exacerbated by the reluctance of Marine leaders to accept and fix the issue. This instance of unsafe water portrayed the sheer disregard for citizen health in the response to contamination. The Marine Corps then deliberately continued to expose residents to harmful chemicals, regardless of the warnings, and further hindered efforts to create complete and concise studies that would demonstrate the links between the contamination and health issues faced by victims of Camp Lejeune drinking water. Camp Lejeune demonstrates, therefore, that aftermath reaction was deliberately played out in a way that enabled harm to continue through complacency; Flint faced the same denial 40 years later. This illustrates the impact of official mismanagement in environmental issues, which encouraged this study's investigation into other mechanisms that continue to influence environmental injustices.

²⁰⁷ Magner, *A trust betrayed*. 57.

²⁰⁸ United States Environmental Protection Agency, *EPA Superfund. Record of decision: ABC One Hour Cleaners*. 14.

²⁰⁹ Magner, *A trust betrayed*. 47. & Agency for Toxic Substances and Disease Registry, *ATSDR assessment of the evidence*.

²¹⁰ Magner, *A trust betrayed*. 46

²¹¹ Magner, *A trust betrayed*. 47.

Acts of corruption

As Camp Lejeune Military Base demonstrates, the corruption among officials that were deemed to be in positions of responsibility is a key factor that can exacerbate environmental injustices; this concept will be further explored in relation to the Flint water crisis. As a result of a 'profit over health' mentality on the parts of the elite, numerous decisions were made with negligence and dishonesty by federal and state agencies and employees, turning the crisis into an issue of governmental greed. The Flint Water Advisory Task Force set up in 2016 by Governor Snyder to explore the Flint water crisis claimed that environmental injustice 'is not about malevolent intent'.²¹² However, the acts of corruption demonstrated throughout the Flint water crisis by officials in positions of responsibility would suggest otherwise. This study broadens the original understanding of environmental justice to demonstrate how corruption among trusted officials allowed the Flint water crisis to occur and continue to manifest, even after the nature of the problems was brought to light.

In 2014, Steven Busch, a Michigan Department of Environmental Quality (hereafter MDEQ) supervisor from the drinking water office, expressed his concern about 'bacterial problems, exposure to chemicals, [and] additional regulatory requirements' of the new water supply;²¹³ this demonstrates that there were early concerns about the Flint River water. Regardless, the water switch was made because of its promise to cut costs for the city and bring the city some control over its water supply; Emergency Manager Ed Kurtz claimed that the switch to Flint River water would gain the region about '\$200 million a year over twenty-five years'.²¹⁴ A number of similar thoughtless, off-hand, and neglectful decisions were made by officials over the course of 2014 to 2016. These include the switch from Lake Huron to Flint River being made even when Michael Glasgow, Flint's utilities administrator, made it known that neither the treatment plant nor his staff were ready for the change a month beforehand.²¹⁵ Glasgow made it clear that there was a lack of corrosion control in the

²¹² Flint Water Advisory Task Force, *Final Report*, March 2016. Available online: https://www.michigan.gov/documents/snyder/FWATF_FINAL_REPORT_21March2016_517805_7.pdf [Accessed 21/07/2019]. 53.

²¹³ Clark, *The poisoned city*. 18.

²¹⁴ Clark, *The poisoned city*. 16.

²¹⁵ *ibid*, 17.

water (even though large systems were required to add it by law),²¹⁶ whilst the MDEQ were lying to residents, claiming they had added corrosion control when they had not done so.²¹⁷

Each of the above issues are examples of governmental officials and agencies placing desire to save money before the health of the people. Implementing corrosion control in the first place would have cost a mere \$100 a day for just three months, but instead of adding phosphates, MDEQ decided that corrosion control, and in turn citizen health, was not worth the cost.²¹⁸ This initial cost could have prevented the Flint water crisis, and the ensuing financial cost it then caused the city. If anything, officials exacerbated the city's financial situation in order to make small, short-term savings. Since lead poisoning often leads to increased levels of crime and incarceration, and special needs education being required, the switch to Flint River water has created more areas that money must be invested into. Libby Nelson of Vox News reports that every dollar that could have been spent on reducing the children's exposure to lead, could have brought a 'return of \$17 to \$221' later in life, by avoiding the costly negative social impacts that lead poisoning has been linked to; the city could have received more income 'due to higher earnings and therefore more tax revenue'.²¹⁹ The mentality of officials, however, to place short-term profit and quick cost-saving initiatives above the health of civilians, actually prevented the state from gaining more profit from the water switch. This study highlights the cost-cutting, morally neglectful actions that were key in the Flint water crisis, demonstrating that drinking water can be utilised as a commodity and is prioritised over human health creating an environmental injustice.

State governor responsibility: the role of Snyder

In a similar fashion, the decisions and dishonesty portrayed by officials would suggest that personal gain and reputation was also placed above civilian health on numerous occasions; particularly in the case of Michigan governor, Rick Snyder. In October 2014, General Motors made Snyder aware of the corrosivity of the Flint River

²¹⁶ M. A. Del Toral, 'Memorandum', *United States Environmental Protection Agency*, 24 June 2015. Available online: <http://flintwaterstudy.org/wp-content/uploads/2015/11/Miguels-Memo.pdf> [Accessed 21/07/2019]. 2.

²¹⁷ Clark, *The poisoned city*. 94.

²¹⁸ Lovell, 'Q&A'.

²¹⁹ Nelson, 'The Flint water crisis, explained'.

water when they requested to move back to Lake Huron.²²⁰ The company claimed that the water was corroding their engine parts. While Snyder's response to this should have entailed acting quickly to change the water of all people living in Flint in order to ensure safety to residents, he instead went about paying \$400,000 to allow General Motors to have access to clean water from DWSD (Lake Huron).²²¹ Snyder's priority here was arguably his own reputation. It is claimed that General Motors was a significant donor to the Republican Governors Association, which helped to elect candidates such as Snyder.²²² Snyder's desire to keep a relationship with General Motors in order to increase the likelihood of future campaign donations trumped his need to protect the residents of Flint. This was not the first time the Governor put corporate interest above the health of the people.

Governor Snyder also came under fire for dealings with Swiss transnational corporation Nestlé and their contract to use Lake Huron water. The corporation pays a fee of just \$200 per year, to take approximately 200 gallons of water from Lake Huron per minute.²²³ Hanna-Attisha notes that 'the average annual Flint residential water bill in 2015 was \$864 – about \$300 more than any other city in Michigan. In fact, it was the highest in the nation'.²²⁴ Every month, Flint residents paid half of what Nestlé did in a year for dirty and unsafe water. Bethany Hazard, a resident of Flint, claimed that her water was 'murky and foamy', and yet she 'paid about \$90 a month for her water and sewer bill'.²²⁵ Ironically, Nestlé's bottled water was then sold on to Flint residents who are substituting it for their tap water; Nestlé not only has access to

²²⁰ S. J. Masten, S. H. Davies & S. P. McElmurry, 'Flint water crisis: what happened and why?', *American Water Works Association*, 108, 12, (2016). Available online: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5353852/#> [Accessed 24/08/2019].

²²¹ R. Gordon and S. R. Holman, 'Flint, Michigan: lethal water', *Global Health Education and Learning Incubator at Harvard University*, 2017. Available online: https://s3.amazonaws.com/production.media.gheli.bbox.ly/filer_public/94/af/94af20d6-89c7-4eca-b9d2-b70eab5669a2/2017_gheli_flintlethalwater_cs.pdf?AWSAccessKeyId=AKIAJ5V4SYAYTFZ2CNGQ&Expires=1553725117&Signature=9HlcBuNUUyb53QU%2FfY36tEzDZhM%3D [Accessed 21/07/2019]. 2.

²²² *Fahrenheit 11/9*, Directed by Michael Moore [Film]. (United States: Briarcliff Entertainment, 2018).

²²³ J. Glenza, 'Nestlé pays \$200 a year to bottle water near Flint- where water is undrinkable', *The Guardian*, Internet edition. 29 September 2017. Available online: <https://www.theguardian.com/us-news/2017/sep/29/nestle-pays-200-a-year-to-bottle-water-near-flint-where-water-is-undrinkable> [Accessed 26/08/2019].

See also: R. Edward, 'Michigan residents take aim at Gov. Snyder's close ties to Nestlé', *Michigan Chronicle*, Internet edition. 10 February 2016. Available online: <https://michiganchronicle.com/2016/02/10/michigan-residents-take-aim-at-gov-snyders-close-ties-to-nestle/> [Accessed 27/07/2019].

²²⁴ Hanna-Attisha, *What the eyes don't see*. 118.

²²⁵ Clark, *The poisoned city*. 32.

cleaner water than the citizens paying more, but also gained a substantial profit from the crisis.

Snyder's desire to retain his old reputation as a businessman, in line with his promise to voters of running 'the state like a business', was clearly upheld throughout the crisis.²²⁶ However, treating Michigan and Flint like a business clearly allowed for the continuation of unsafe water to be distributed to residents. The significance of mismanagement and immoral decision-making in an attempt to save reputation is a key problem in both the Flint water crisis and in many other instances of unsafe drinking water; it is imperative that this is therefore considered on a broader scale in future studies. This section has also demonstrated that environmental injustices can occur when water is treated as a commodity; corrupt practice and management, alongside a lack of citizen involvement in decision making, are significant environmental injustices faced when resources begin to be commoditised. Environmental justice studies would benefit from further exploration of these issues as they inevitably become increasingly prevalent in the future.

Discrediting science through corrupt practices

It would be wrong to place all blame on Snyder, however, when it comes to the argument of corruption. Other state officials can be seen to care more for the reputation of their agencies; again, in the same way the Marine Corps officials did at Camp Lejeune. The MDEQ constantly reassured the citizens of the safety of the water supply, even during the boil advisories of summer 2014, which should have sparked early concern among officials that the water was unsafe. Furthermore, they consistently tried to discredit the reports of other experts, including that of Miguel Del Toral. As an employee at the EPA District 5 office in Chicago, he produced a memorandum following phone calls and testing he carried out on LeeAnne Walter's water in 2015.²²⁷ The memo clearly highlighted the issues of high lead levels in water, however, Toral was dismissed as a 'rogue employee' and the results were ignored.²²⁸ Similarly, the MDEQ fought to discredit the studies of Dr. Mona Hanna-Attisha and

²²⁶ *Fahrenheit 11/9*.

²²⁷ Del Toral, 'Memorandum'.

²²⁸ L. Smith, 'The mom and the EPA 'rogue employee' who exposed Flint's water crisis', *PRI*, 23 January 2016. Available online: <https://www.pri.org/stories/2016-01-23/after-blowing-whistle-flints-water-epa-rogue-employee-has-been-silent-until-now> [Accessed 24/07/2019].

Marc Edwards, both of which also demonstrated high lead levels in Flint water; Hanna-Attisha also studied the blood lead levels of children under five, who were deemed most at risk of lead poisoning.²²⁹ Although these studies did pave the way for a return to Detroit water, in the days following their publication, officials continued to deny any problems and claimed that the water was still safe to drink, despite the scientific results demonstrating otherwise. By vehemently denying scientific studies and discrediting experts, the MDEQ demonstrated high levels of neglect for the safety of citizens. This, along with tactics of denial and dishonesty enabled the Flint water crisis to carry on for longer than necessary. These acts did not only focus on one racial group, they were injustices that affected all civilians, regardless of race, income, or class; ironically, it seems equality in *injustice* can be achieved. The corruption seen in both the Flint water crisis and the Camp Lejeune water contamination demonstrate that the event of an environmental injustice is not the sole problem; the subsequent handling of the issue can also translate into environmental injustices.

State and federal governance issues

Environmental justice studies would benefit hugely from an investigation into city, state, and federal oversight in water injustices. Confusion in jurisdiction and the reluctance (or inability) of federal and state agencies to take responsibility further enabled the Flint water crisis to come about and allowed the crisis to continue over several years. Following the introduction of Emergency Managers by Governor Snyder's Public Act 436, Flint officials were relieved of their control over the city; instead, the state now claimed total responsibility.²³⁰ The Emergency Managers were implemented to take over the financial situation in Flint and held 'the full power of both the mayor's office and the City Council to do what needed to be done to stabilize the economy'.²³¹ What followed were a series of decisions made by a state employed financial manager, who bore only the economics of the situation in mind, despite the potential cost to life. In response to Stephen Busch's concerns of the long-term risk of the water, MDEQ Deputy Director Jim Sygo stated in an email that "it's entirely

²²⁹ Lurie, 'Meet the mom who helped expose Flint's toxic water nightmare'.

²³⁰ Clark, *The poisoned city*. 14.

²³¹ *ibid*

possible that [Emergency Managers] will be making decisions relative to cost”,²³² further supporting the earlier suggestion that profit came before health. While there were a number of votes taken at city level, including one that explored a move back to DWSD water on 23 March 2015,²³³ these were ultimately pointless since the Emergency Manager had the final say; this final say was often a ‘no’.²³⁴ This enforcement of a state appointed lead, who took control of all decisions involving Flint, removed the residents’ right to democracy, as Flint was no longer represented by their elected officials. While the removal of representation of Flint is a significant issue, it did allow for culpability of the Flint water crisis to be placed quite quickly. The Flint Water Advisory Task Force, set up by Governor Snyder in the aftermath of his announcement of a state of emergency in 2016, reported that the ‘causes of the crisis lie primarily at the feet of the state by virtue of its agencies’ failures and its appointed Emergency Managers’ misjudgements’.²³⁵ This demonstrates that the state held the ultimate responsibility for the Flint water crisis.

Moreover, state agencies were not following the federal regulations that should guarantee the safety of civilians. While the EPA, does create regulations to be followed,²³⁶ it is down to state agencies, such as MDEQ, to implement and enforce the regulations. This creates two problems on the basis of state and federal jurisdiction. The first is that state agencies often fail to follow federal regulations efficiently; they instead look for loopholes which later allow them to avoid the consequences of not meeting guidelines. Journalist Barry-Jester found, for example, that the MDEQ not only took water samples from the wrong houses, but also removed two of the samples from the final report in order to lower the average lead level beneath the mandatory action level.²³⁷ The EPA’s Lead and Copper Rule states that samples must be taken from the most at-risk homes, with the intent of the rule being to ‘collect compliance samples under ‘worst-case’ conditions’.²³⁸ This was not carried out, possibly

²³² Bridge Magazine, *A truth squad companion: years of missed warnings before Flint River switch*. (2019). Available online: <https://www.bridgemi.com/truth-squad-companion/years-missed-warnings-flint-river-switch> [Accessed on: 26/02/2019].

²³³ CNN Library, ‘Flint water crisis fast facts’.

²³⁴ CNN Library, ‘Flint water crisis fast facts’.

²³⁵ Flint Water Advisory Task Force, *Final Report*.

²³⁶ Lovell, ‘Q&A’.

²³⁷ A. M. Barry-Jester, ‘What went wrong in Flint’, *abcNews*, Internet edition, 26 January 2016. Available online: <https://fivethirtyeight.com/features/what-went-wrong-in-flint-water-crisis-michigan/> [Accessed 23/07/2019].

²³⁸ Del Toral, ‘Memorandum’.

unintentionally as the city and state had no records for where the lead pipes in the city existed.²³⁹ This demonstrates that state agencies are given too much independence when it comes to environmental regulation and implementation.

Had the EPA's regulations been carried out, it is arguable that the issues leading to the Flint water crisis, such as lack of corrosion control, could have been avoided. Secondly, while the state agencies should be following federal rules, federal agencies must also take some responsibility in following-up with states to ensure regulations are being enforced properly. The EPA claims to have protocols in place for safe drinking water but then allows a state to implement these themselves, giving them the responsibility to report back to the EPA themselves; this enables biased results, as was the case with the Flint water crisis. The EPA should display agency in the future, and follow up on state implementation, as Del Toral argued when listing future actions for EPA follow-up.²⁴⁰ An exploration of state and federal jurisdiction in environmental issues demonstrates that environmental injustices occur as a result of a lack of communication, as well as failure to implement nation-wide regulation. This demonstrates a mechanism within the Flint water crisis that could certainly exist in other instances of unsafe drinking water in the United States. Further research into drinking water crises should highlight whether this is a wide-spread issue; if so, seeking a change in jurisdiction over environmental problems and ensuring that regulation is adhered to should be of paramount importance to environmental justice activists, academics and policy-makers.

Science and health: risk and toxicology

Drawing on Hughey's call for historians and environmental justice studies to include medical and scientific debates,²⁴¹ the final mechanism to be considered is that of lead toxicity and its impact on the residents of Flint, particularly those in low-income areas. The studies into lead consistently report that those who are low-income or of a minority race are disproportionately affected by higher lead levels within Flint; if a person comes under both criteria, the chances of lead exposure, and the resulting poisoning, are significantly higher. This is particularly socially significant as lead

²³⁹ *ibid*

²⁴⁰ *ibid*

²⁴¹ For other lead water crises see Scutti, 'How the Newark water crisis unfolded'. & Hanna-Attisha, *What the eyes don't see*. 80.; Hughey, *From Love Canal to the Flint water crisis*. 82.

poisoning is deemed to be the 'common among poor American children'.²⁴² Lead is most potent for children under the age of five and studies have demonstrated that those in poverty are the most at risk of elevated blood lead levels due to their inability to afford preventatives. For example, low-income families do not have the same access to bottled water as middle-class families, as they cannot afford this added expense on top of food, healthcare and other living costs. Hanna-Attisha notes that Grace, a mother of one of her patients, claimed that the affordability of bottled water and transport limitations proved a hindrance to avoiding the poisoned tap water. Grace did not have a car to drive out of the city to bathe her children,²⁴³ nor could she afford to buy bottled water;²⁴⁴ she was already working extra hours to afford what little they had. Fortunately for Grace, her aunt bought bottled water for her, and following the roll out of free bottled water from the state, Grace was local enough to a church and a National Guard drop off to receive these vital provisions.²⁴⁵ Some people, however, would not have been as fortunate and may not have had family that could help, nor access to local amenities to collect bottled water. Furthermore, Hanna-Attisha claims that the city's own transportation system was a significant problem that could affect access to bottled water and healthcare appointments. 'Many kids had trouble getting to their regular paediatrician due to an array of poverty-induced obstacles, from inadequate transportation to complicated child-care arrangements'.²⁴⁶ As a result, Hanna-Attisha and her team attempted to provide 'transportation assistance' to help patients get to their appointments.²⁴⁷ It is likely that these families who lacked access to adequate transportation or funds to acquire healthcare and bottled water were dependent on the Flint River system tap water, despite the pollution and the side-effects it caused.

Furthermore, experts such as Hanna-Attisha claim that good nutrition is beneficial in preventing blood lead poisoning; being well sustained can prevent a child's body from absorbing as much lead into the bloodstream than if they were malnourished.²⁴⁸ Unfortunately for many poverty-stricken families, food scarcity is a

²⁴² Nelson, 'The Flint water crisis, explained'.

²⁴³ Hanna-Attisha, *What the eyes don't see*. 141.

²⁴⁴ *ibid*, 482.

²⁴⁵ *ibid*

²⁴⁶ *ibid*, 155.

²⁴⁷ *ibid*, 88.

²⁴⁸ *ibid*, 238.

common problem and this lack nutrition means that low-income families are affected by lead poisoning to a greater extent than their middle-class counterparts.²⁴⁹ Hanna-Attisha goes on to suggest that ‘if children who have an empty stomach or are deficient in certain nutrients are exposed to lead, their bodies will absorb more of it’ into the bloodstream.²⁵⁰ Limited access to transport can also influence the nutritional health of children from low income families as without a cheap and convenient mode of transport, trips to the grocery stores would be limited, further reducing the possibilities of low-income children receiving the nutrition they required.

The Flint water crisis has demonstrated that external toxic stressors, such as poverty and racism often make the problem of lead toxicity worse. Taking into consideration that it is often non-white populations that live below the poverty line, it is clear that a person’s socio-economic situation is key factor in determining the level of lead poisoning they may experience. While lead toxicity as a singular factor is imperative in unsafe drinking water, it is an ongoing area of research. With regulations already placed on paint and gasoline that prohibit the use of lead,²⁵¹ the Flint water crisis further proves the need to expand research on lead in water; doing so would hopefully encourage more secure drinking water regulation, and in turn, achieve environmental justice in this area. Furthermore, this analysis into drinking water has demonstrated that environmental justice literature can benefit from the application of lead toxicology studies and geographical analysis, to consider the ways in which amenity access can further exacerbate environmental injustices. The field may also benefit from the application of Corburn’s aforementioned cumulative exposure assessment when considering lead in drinking water, as opposed to the typical risk assessment.²⁵² As Hanna-Attisha has clearly demonstrated, social stressors such as poverty, amenity access and race, can increase a person’s vulnerability to certain chemicals. By combining lead toxicology and environmental justice studies with Corburn’s exposure assessment, officials could ensure that those in low-income

²⁴⁹ Hanna-Attisha, et al, ‘Elevated blood lead-level’.

²⁵⁰ Hanna-Attisha, *What the eyes don’t see*. 238.

²⁵¹ Lead-Based Paint Poisoning Prevention Act 1971, 42 U.S. Code, Ch. 63. (1971). Available online: <https://uscode.house.gov/view.xhtml?path=/prelim@title42/chapter63&edition=prelim> [Accessed: 22/08/2019].; United States Energy Information Administration, *Gasoline explained* (2018). Available online: <https://www.eia.gov/energyexplained/gasoline/gasoline-and-the-environment.php> [Accessed: 14/08/2019].

²⁵² Corburn, ‘Environmental justice, local knowledge, and risk’.

minority communities are not disproportionately affected by environmental chemical harms.

This chapter has demonstrated the importance of exploring precursor factors and influencing mechanisms to understand how environmental injustices come about and are impacted throughout their existence. The use of water crises validates the need to adopt a broader understanding of environmental justice than is conventional. Traditional understandings of environmental justice have been imperative in aiding minority groups in organising sections of society, to highlight the mistreatment of their living and working conditions. It must be noted in future studies, however, that race often works alongside the other factors explored in this study to exacerbate environmental injustices. Instead, a greater focus on the history that surrounds the injustice must be promoted, as well as extra attention on the mechanisms that worsen them. In order to make environmental justice a more useful analytical tool, the field must be widened to include these. If water injustices are to be considered effectively within the environmental justice paradigm would be appropriate, the framework needs to be reconsidered and broadened to include crises' precursors and mechanisms.

CHAPTER THREE

Expanding the Scope of Environmental Justice

Not only is it important for the environmental justice paradigm to consider the precursors and mechanisms that impact injustices, but it is also imperative to widen the scope of the study to include minorities that are typically underrepresented in the literature. Doing so draws in a number of other precursors and mechanisms that have not previously been addressed within this study, as they are unique to the plight of Native Americans. This group is typically African Americans, as the largest minority group in the United States, with minimum attention being paid to the affect that environmental injustices have on other minority groups. This study demonstrates the need to eliminate this approach and apply environmental justice to more than one minority. This is particularly necessary when exploring the spiritual connections that some hold towards bodies of water; these are issues that are usually unique to Native Americans. This chapter will look to widen the scope of environmental justice studies, demonstrating some areas where the paradigm could, and certainly should, be expanded. This expansion includes the consideration of historical experiences of Native Americans and their experiences of environmental injustices before the term was even coined. It will further allow for the inclusion of more water related environmental injustices that apply specifically to certain tribal communities.

Native Americans in Environmental Justice

The plight of Native Americans in environmental injustices is not currently encapsulated in the conventional environmental justice paradigm. While the current definition of environmental justice under the EPA claims that it is the equal treatment of all people in environmental protection and decision-making,²⁵³ earlier chapters of this study have noted that this hasn't been achieved; Native Americans are no exception to this. In 1994, an Executive Order regarding environmental justice was signed by President Clinton. Executive Order 12898 determines that environmental justice is now a part of every federal agency's responsibility. The Order encouraged

²⁵³ United States Environmental Protection Agency, *Environmental justice*.

increased attention to ‘disproportionately high and adverse human health or environmental effects of [federal] programs, policies, and activities on minority populations and low-income populations’.²⁵⁴ It goes on to state that it will ‘apply equally to Native American programs’, citing the coordination and consultation with tribal leaders.²⁵⁵ The intention of this Executive Order was to advocate non-discrimination in environmentally related agencies and programs, and aimed to ‘provide low-income, minority, and indigenous communities access to public information and participation’.²⁵⁶ As will be demonstrated throughout this chapter, the Executive Order did not count as legislation that enforced regulation, it merely stated how things *should* be. As a result, environmental injustices are often still faced by Native Americans in disproportionate amounts, regardless of the Executive Order’s language.

This chapter will consider the unique relationship that a number of Native American tribes have with their surrounding environment, including a discussion of the achievement and/or failure of environmental justice within these spaces. It must be noted, however, that no single view of environment can apply to all Native American communities, due to differences in culture, beliefs, and historical experiences; this will be demonstrated below. As a result of this diversity, the chapter will consider individual instances of water injustices where possible and tie them with that specific community’s relation to the environment. It will begin with an overview of the history of the sovereign status of Native Americans, before considering how this sovereignty has affected their historical relationships with water. The chapter will go on to explore how western ideas of environment are not the same as tribal understandings, enabling an exploration of the water concerns that many Native Americans have faced since the point of European migration. It will explore the legality of Native American rights to water, including arguments that have been waged over sovereignty,²⁵⁷ and the different ways that water has either been allotted or taken away. Here Supreme Court

²⁵⁴ Executive Order No. 12898. Section 1-101.

²⁵⁵ *ibid.* Section 6-606.

²⁵⁶ United States Environmental Protection Agency, *Laws and regulations: summary of Executive Order 12898- Federal actions to address environmental justice in minority populations and low-income populations*. (2018). Available online: <https://www.epa.gov/laws-regulations/summary-executive-order-12898-federal-actions-address-environmental-justice> [Accessed 21/07/2019].

²⁵⁷ Burton, ‘The American Indian water rights dilemma’.

cases, such as *United States v. Winters*,²⁵⁸ will be heavily employed as key evidence of the legal arguments that have occurred. In arguing that the physical problem of water builds most of the cases studied in environmental justice, be it pollution of rights of access, the study will demonstrate that the field needs to expand in order to take into account arguments brought forth by Native Americans on cultural and spiritual grounds. This leads to a discussion of the spiritual connections to water that many tribes have carried in their culture for centuries. The chapter will finally consider the argument that some tribal entities are not as environmentally friendly as the usual narrative would have many people believe.²⁵⁹ Some tribes have been seen as collaborators with perpetrators of environmentally unhealthy decisions, oftentimes in relation to voluntary toxic waste siting.²⁶⁰ It will explore the reasons that tribes might choose to take on such environmentally harmful chemicals, investigating the role that socio-economic factors have on these communities, and how this may affect such decision-making.

History of Sovereignty

When the European settlers moved across the Atlantic to the Americas, Native American identity was defined under one blanket term- 'the *Indian*'- and failed to acknowledge that the Native Americans have individual communities and identities.²⁶¹ In doing so, settlers also ignored the unique connection between each tribe of Native Americans and the concepts of 'nature' and the 'environment'. This lack of understanding arguably encouraged a fear of the unknown among settlers in relation to Native American culture, and because they did not adhere to European views of 'civilisation', the settlers wrote them off as 'Savages'.²⁶² During the period of European

²⁵⁸ *Winters v. United States*, 207 U.S. 564 (1908). (Available online: <https://supreme.justia.com/cases/federal/us/207/564/> [Accessed 15/07/2019].

²⁵⁹ J. C. Mohawk, 'Review of *the ecological Indian: myth and history* by Shepard Krech III', *Great Plains Research: A Journal of Natural and Social Sciences*, 11, 1 (2001). Available online; <https://digitalcommons.unl.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1547&context=greatplainsresearch> [Accessed 23/07/2019].

²⁶⁰ N. B. Collins, 'Nuclear waste in Indian Country: A paradoxical trade', *Law and Inequality: a Journal of Theory and Practice*, 12, 2 (2017). Available online: <https://scholarship.law.umn.edu/cgi/viewcontent.cgi?article=1449&context=lawineq> [Accessed 23/07/2019].

²⁶¹ J. Porter (ed.), *Place and Native American Indian history and culture*. (Switzerland: Peter Lang AG, 2007). 21.

²⁶² Vecsey, 'American Indian environmental religions'. 30.

settlement, battles were waged between the settlers, who believed the land was theirs for the taking, and the 'Indians', who already lived on said land. The unique sovereign status of tribes was officially consolidated, in Euro-American eyes, by way of treaty-making; the United States Constitution granted Congress 'the authority to engage in relations with the tribes, thereby firmly placing tribes within the constitutional fabric of [the] nation'.²⁶³ From 1778, these federally recognised tribes engaged in treaty-making, which 'established unique sets of rights, benefits and conditions' to the tribe at hand, in return for the surrendering of much of their land.²⁶⁴ Tribal sovereignty was seen to be a barrier to the United States economic expansion, however, and treaty-making ceased in 1871. This occurred due to the widespread belief among Congressional offices that the Native American tribes were not nations in their own right; they were instead 'entirely dependent for survival on the U.S. government'.²⁶⁵ Although the consequent 1871 Indian Appropriation Act claimed that 'no obligation of any treaty lawfully made and ratified with any such Indian nation or tribe prior to March 3, 1871, shall be hereby invalidated or impaired',²⁶⁶ tribal leaders were not consulted about the Act as their sovereign status should have required. The lack of involvement of tribal leaders in the creation of this Act mirrors that of many environmental decisions made throughout the United States in the past, present, and, if there are no fundamental changes, likely the future too; this must be addressed. As of 2018, there were 573 tribal entities that were federally recognised and 326 Federal Indian reservations.²⁶⁷ Such Indian reservations are areas of land that have been set aside for one or more tribes as permanent lands for them to live on, 'under treaty or other agreement with the United States, executive order, or federal statute or administrative action'.²⁶⁸ Since, theoretically, federally recognised tribes should be approached on a nation to nation basis, they have the authority to regulate and

²⁶³ United States Department of the Interior, *Indian Affairs*. (N.D.) Available on: <https://www.bia.gov/frequently-asked-questions> [Accessed 19/07/2019].

²⁶⁴ *ibid*

²⁶⁵ M. G. Hirsch, '1871: the end of Indian treaty-making', *Magazine of Smithsonian's National Museum of the American Indian*, 15, 2, (2014). Available online: <https://www.americanindianmagazine.org/story/1871-end-indian-treaty-making> [Accessed 19/07/2019].

²⁶⁶ Future treaties with Indian tribes, 25 U.S. Code, Ch. 3, §71. N.D. Available online: <https://www.law.cornell.edu/uscode/text/25/71> [Accessed 23/07/2019].

²⁶⁷ Bureau of Indian Affairs, 'Indian entities recognized by and eligible to receive services from the United States Bureau of Indian affairs', *Federal Register*, 84,22. (2019).

²⁶⁸ United States Department of the Interior, *Indian Affairs*.

implement law on their lands, without the influence of the state within which they are located. As a result, it would typically be believed that Indian rights to water would generally go undisputed, and they would be free from the problem that the general public often face in the form of pollution from dumping or corporate entities, for example. The following sections of this study will demonstrate that this is often not the case.

Environmental Justice in Native American Water Rights

For many Native Americans, environmental injustices in water are often presented in the form of legal or physical issues. The removal of tribal rights to water, or the pollution of their bodies of water, impact a community's quality of life with limitations placed upon eating, drinking and bathing. Furthermore, physical and legal issues with water even directly impact the surrounding culture that is implicit within many Native American tribes. Rights to water have been a long-disputed issue in Native American relations with the United States. During the first waves of settlement, Europeans would often take water with little to no regard for Native American needs or connections to it. William Hagan notes that the initial removal of Indians and acquiring of land was often justified by settlers through the application of the teachings of the Bible. Hagan suggests that one such offender claimed that the book of Genesis encouraged the subduing of the environment and domination of living beings, while another argued, on a more pragmatic level, that to not take the land was to prevent the progress of mankind.²⁶⁹ Even following the creation of federal reserves, specifically set aside for tribes, some Native Americans found themselves facing issues claiming the water on that land, and often still do today. In some cases, settlers began removing water from Native American reserves to 'improve' their own land, or they polluted reserve water by way of upstream resource collection such as mining.²⁷⁰ One such instance occurred in the arid lands of Arizona, wherein the Maricopas and Pimas

²⁶⁹ W. T. Hagan, 'Justifying dispossession of the Indian: the land utilization argument' in C. Vecsey & R. W. Venables, *American Indian environments: ecological issues in Native American history*. (New York: Syracuse University Press, 1980). 65-80:66, 68.

²⁷⁰ B. Bienkowski, 'Pollution, poverty and people of colour: a Michigan tribe battles a global corporation', *Scientific American*, 12 June 2012. [Online]. Available online: <https://www.scientificamerican.com/article/pollution-michigan-tribe-battle-global-corp/> [Accessed 13/07/2019].

reservation was created in 1859, with 'ample water for their needs from the Gila River'.²⁷¹ Throughout the 1870s and 1880s, this water was diverted upstream, with the level of water that reached the Native American reservation plummeting as a result. In the already arid state of Arizona, this proved problematic for the agriculture-based economy that the tribes survived on.²⁷² In this case, instead of finding viable solutions to distribute sufficient water back to the Maricopas and the Pimas, the Interior Department saw it as an opportunity to move the tribes along, suggesting that they move to Oklahoma. This is just one of many such cases experienced by Native American tribes throughout the United States. Some, however, were lucky enough to have their rights reinforced when threatened.

The Winters Doctrine came about following a case in which the United States government fought for rights to water on behalf of the residents of the Fort Belknap Native American Reservation, which was created in 1888. The case has been deemed a landmark in the reassertion of Native American water rights.²⁷³ It came about following the diversion of water in the Milk River upstream by settlers hoping to irrigate hay in the early 1900s. The decision made by the courts has been interpreted as a combination of the riparian doctrine and the prior appropriation doctrine. It was applied to best suit the needs of the Gros Ventre and Assiniboine who inhabited Fort Belknap Reservation, which was located in what would later become the state of Montana. Lloyd Burton, author of 'The American Indian Water Rights Dilemma' and *American Indian Water Rights and the Limits of Law*, suggested that the case of *Winters v. United States* applied the riparian doctrine on the basis that 'title to land abutting a stream carries the right to withdraw for "reasonable use" waters from the stream';²⁷⁴ the Fort Belknap Reservation bordered the Milk River. The prior appropriation doctrine was applied through its argument that 'a strict hierarchy of rights is based on the chronological order in which users first began to appropriate waters from a given source'.²⁷⁵ The decision of the Supreme Court in *Winters v. United States* (1908) thereby stated that because the diversion of Milk River to Fort Belknap

²⁷¹ Hagan, 'Justifying dispossession of the Indian'. 77.

²⁷² D. H. Damico, 'Stealing the Gila: the Pima agricultural economy and water deprivation, 1848-1921', *Humanities and Social Sciences online* (2012). Available online: <https://networks.h-net.org/node/15526/reviews/15667/holladay-damico-dejong-stealing-gila-pima-agricultural-economy-and> [Accessed 25/07/2019].

²⁷³ McCool, 'Precedent for the Winters Doctrine'. 164.

²⁷⁴ Burton, 'The American Indian water rights dilemma'. 11.

²⁷⁵ Burton, 'The American Indian water rights dilemma'. 11.

reservation was created before the diversion to the settler's land upstream, the Gros Ventre and Assiniboine had rights to almost all water in the River- 5000 miners inches of water.²⁷⁶ The Supreme Court decision could certainly be said to be an early instance of environmental justice for Native Americans; the United States government encouraged a non-discriminatory process of acquiring rights to water. Throughout the case, the Supreme Court adhered to the idea presented in *Worcester v. Georgia* (1832) that 'owing to the Indians' lack of understanding of both the written word and the Anglo-American legal system, ambiguities in treaties should generally be decided in Indians' favor'. The decision was based upon 'a rule of fairness',²⁷⁷ an act which is generally advocated for today in environmental justice activism. While the Winters' Doctrine did not seriously consider the Native American's reasons for wanting the water supply from Milk River, the case still argued for their benefit. It granted the right to Milk River water based upon the potential to make the reservation economically beneficial in the area of agriculture. By applying the rule of fairness in the *Winters v. United States* case, the Supreme Court gave hope to other Native American tribes that looked to challenge rights to water.

The *Winters* case has recently been useful to one tribe in California, the Agua Caliente Band of Cahuilla Indians, who recently had some success in the water rights case they are currently involved in. The Ninth Circuit Court of Appeals recently denied a petition by the Coachella Valley Water District (hereafter CVWD) *et al*, which sought to appeal the 2013 decision that claimed the Agua Caliente Tribe had reserved rights to the Coachella Valley Aquifer.²⁷⁸ The decision on 7 March 2017 stated that 'we hold that the creation of the Agua Caliente Reservation carried with it an implied right to use water from the Coachella Valley aquifer'.²⁷⁹ It made use of the *Winters* Supreme Court ruling, affirming that 'federal reserved water rights are directly applicable to Indian reservations',²⁸⁰ utilising the argument that:

²⁷⁶ Shurts, *Indian reserved water rights*. 3.

²⁷⁷ R. B. Collins, 'The future course of the Winters Doctrine', *Colorado Law Scholarly Commons*, 56, (1985). 481-494: 482.

²⁷⁸ Coachella Valley Water District, *Information about Agua Caliente Lawsuit*. (2019). Available online: <https://www.cvwd.org/331/Information-About-Agua-Caliente-Lawsuit> [Accessed 13/07/2019].

²⁷⁹ United States Court of Appeals for the Ninth Circuit, *Agua Caliente Band of Cahuilla Indians, United States of America v. Coachella Valley Water District et al*. 7 March 2017. Available online: <https://www.cvwd.org/DocumentCenter/View/3364/Appeals-Court-Ruling-March-7-2017-PDF?bidId=> [Accessed 13/07/2019].

²⁸⁰ *ibid*, 3.

Because the United States intended to reserve water when it established a home for the Agua Caliente Band of Cahuilla Indians, the district court did not err in determining that the government reserved appurtenant water sources - including groundwater- when it created the Tribe's reservation in the Coachella Valley. The panel also held that the creation of the Agua Caliente Reservation carried with it an implied right to use water from the Coachella Valley aquifer.²⁸¹

While the case is not yet over, and the defendants are still aiming to appeal the decisions made in favour of the Tribe,²⁸² the current rulings look positive for the Agua Caliente Tribe. Furthermore, this case demonstrates the impact that the *Winters* case can have on present water right disputes. As a result, the Winters Doctrine provides significant hope for many Native American tribes in their claims for water rights. The crude removal of these water rights over the last few centuries can be deemed clear acts of environmental injustice, but the case of *Winters* demonstrates an instance in which the United States worked on behalf of Native Americans to achieve justice.

Nature as an Equal Being: A Spiritual Connection

While some Native American communities have a unique relationship to the United States itself, many also have a distinct relationship with the environment and nature. Each individual Native American has the freedom to interpret everything around them for themselves,²⁸³ however, many tribes have an understanding of the environment that has been passed down by generations of ancestors. Some tribes have spiritual understandings of water, encouraged by the suggestion that it is the

²⁸¹ *ibid*, 3-4.

²⁸² Coachella Valley Water District, *Supreme Court denies petition to hear water rights case*. (2019). Available online: <http://www.cvwd.org/CivicAlerts.aspx?AID=235> [Accessed 13/07/2019].

²⁸³ R. Kerven, *Native American myths: collected 1636-1919*. (Morpeth: Talking Stone, 2018). 17.

‘source of life’,²⁸⁴ and that therefore it should be worshipped. Most Native Americans recognise that ‘all material things: food, shelter, clothing, tools came from nature, and the power to use these materials also came from nature’.²⁸⁵ June-Ann Greeley furthers this argument, claiming that ‘water exists as an autonomous and primeval element to be encountered with humility, respect, joy, and caution’.²⁸⁶ While each tribe often has their own spiritual ideas, there appears to be a general consensus among many Native Americans that ‘everything...is equally alive and equally integrated into a balance of life’,²⁸⁷ and as a result, the land is not inferior to the people. Instead, it is perceived that spirits, guardian spirits, or even “Owners”, as Christopher Vecsey refers to them in his chapter on ‘American Indian Environmental Religions’, could ‘provide or deny Indians their survival’.²⁸⁸ This further increases the importance of environmental health and justice upon Native American lands. One such Tribe that demonstrates this form of connection to a specific body of water is the aforementioned Agua Caliente Band of Cahuilla Indians. The Tribe is connected to a ‘spiritual underworld populated by nukatem, or ancient sacred beings’ through the Agua Caliente Hot Mineral Spring.²⁸⁹ Furthermore, the Tribe also makes use of the Spring for healing purposes, a practice that is borne out of the story of the Cahuilla Maiden.²⁹⁰ Tribal understandings of the Cahuilla Maiden suggest that the Maiden tried to save a baby in the Hot Mineral Spring, but did not survive. The Tribe states that ‘her selfless attempt has taught many generations not to fear the spring, and to respect the spiritual healing it can provide’.²⁹¹ This is just one of many understandings among Tribal entities and their relationships with spiritual bodies of water.²⁹²

²⁸⁴ S. Merfeld, *Taos Blue Lake*, (2019). Available online: <https://sites.coloradocollege.edu/indigenoustraditions/sacred-lands/taos-blue-lake/> [Accessed on 13/07/2019]. Sarah Merfeld of Colorado College notes how the Taos Pueblo Tribe sees the Blue Lake as central to their religious beliefs and practices, but also as the source of all life.

²⁸⁵ Vecsey, ‘American Indian environmental religions’. 13.

²⁸⁶ J. Greeley, ‘Water in Native American spirituality: liquid life – blood of the earth and life of the community’, *Green Humanities*, 2 (2017). 156-179: 158.

²⁸⁷ C. Vecsey & R. W. Venables, *American Indian environments: ecological issues in Native American history*. (New York: Syracuse University Press, 1980). ix.

²⁸⁸ Vecsey, ‘American Indian environmental religions’. 15.

²⁸⁹ Agua Caliente Band of Cahuilla Indians, *Cultural history*. (2019). Available online: <http://www.aguacaliente.org/content/History%20and%20Culture/> [Accessed 13/07/2019].

²⁹⁰ Agua Caliente Band of Cahuilla Indians, *Deep impressions*. (2019). Available online: <http://www.aguacaliente.org/content/deep%20impressions/> [Accessed 13/07/2019].

²⁹¹ *ibid*.

²⁹² Greeley, ‘Water in Native American spirituality’. Greeley outlines a number of Tribes that have significant spiritual connections to water. She notes that not all water myths have positive connotations, with some inciting fear and caution into Tribes. This further demonstrates the difference in tribal

It is often believed that the desecration of sacred natural sites, pollution of the environment, or the wrongful use of resources could end in the defilement and/or removal of the actual guardian spirits. Moreover, in these cases, the spirits could decide to remove the benefits of the environment from the Native Americans, due to the fact they were unable to care for the nature of their land. The Blackfeet Tribe (also known as Blackfoot) in Montana, are particularly connected to water, as tribal member Rosalyn LaPier describes. Although the Blackfeet Water Rights Settlement Act was only signed into law in 2016, ratifying 'the water rights compact between the Blackfeet Tribe and Montanan',²⁹³ LaPier explains that some Blackfeet religious teachings have revolved around the protection of water for decades, if not centuries. She explains that one such teaching claims 'the Soyitapi, divine water beings,...instructed the Blackfeet to protect their home, the water world'.²⁹⁴ The existence of 'villages, homes, animals and plants' in the water world meant that there were 'restrictions for humans against eating animals from the Water realm'.²⁹⁵ As a result, the Blackfeet tribe see water as a sacred place, through which individuals were taught the 'religious rituals and moral restrictions on human behaviour'.²⁹⁶ 'Impacts and risks to the social, cultural, and spiritual practices of Native peoples must be included in identifying and addressing risks to health' within environmental justice proceedings.²⁹⁷ Currently, there is a clear preference towards scientific and empirical risk assessment. This is often limited to the consideration of the material purpose of water and the physical health impacts that contamination may have upon a person, as opposed to the decimation of a Native peoples' community and 'religion'. Considering, as Lynn White notes, that 'human ecology is deeply conditioned by beliefs about our nature and

understandings surrounding water, aiding the argument that not all Tribes have the same spiritual connections.

²⁹³ Blackfeet Nation, *Water compact: chronology* (2017). Available online: <http://blackfeetnation.com/watercompact/chronology/> [Accessed 23/07/2019].; Congress.gov, H.R. 5633- Blackfeet Water Rights Settlement Act, 2016. Available online: <https://www.congress.gov/bill/114th-congress/house-bill/5633>. [Accessed 22/08/2019].

²⁹⁴ R. R. LaPier, 'Why is water sacred to Native Americans?', *The Conversation*, Internet Edition. 21 March 2017. Available online: <http://theconversation.com/why-is-water-sacred-to-native-americans-74732> [Accessed 18/07/2019]. See also: R. R. LaPier, *Invisible reality: storytellers, storytakers, and the supernatural world of the Blackfeet*. (Lincoln: University of Nebraska Press & American Philosophical Society, 2017). 25-27.

²⁹⁵ LaPier, *Invisible reality*. 27.

²⁹⁶ LaPier, 'Why is water sacred to Native Americans?'; LaPier, *Invisible reality*. 25-27.

²⁹⁷ M. Arquette et al, 'Holistic risk-based environmental decision making: a Native perspective', *Environmental Health Perspective*, 110, 2, (2002). 259-264: 261.

destiny- that is, by religion',²⁹⁸ it is odd that much of the literature in the field fails to consider the environmental injustices faced by tribal communities from a spiritual perspective alongside the legal, physical, and scientific debates. In his 2002 article on the limits of conventional risk assessment in environmental management, Jason Corburn noted that the socio-economic surroundings of individuals should be taken into account before deciding the level of risk that an environmental injustice might carry. He notes that 'risk assessments have become so disassociated from on-the-ground realities, EPA and other governmental bodies have recommended a risk-characterization process that includes cumulative hazards and more meaningful public discourse'.²⁹⁹ Encouraging a community-based cumulative exposure approach would allow for the consideration of certain Native American cultural connections to the environment. This is yet to have occurred in official risk assessment, although Corburn's suggestions still bring further hope that an adoption of a cumulative exposure assessment might happen in the future.

Western disregard for spiritual connections to nature

Vine Deloria Jr., a renowned Native American author from the Standing Rock Sioux Tribe in South Dakota, noted that 'Native Americans hold land —places— as having the highest possible meaning, and all their statements are made with this reference point in mind'.³⁰⁰ In stark contrast, western versions of worship, particularly that of Christianity, focussed on God almost as though it were a person, rather than a place of worship; this was the dominant religion of the European settlers. Importantly, Christianity's relationship with the environment is also different. It is widely understood in Christianity that the environment, nature, and the animals are available for the use of humans, who are the superior beings of the world. Lynn White notes that where all men had once been a part of nature, following the progress of early technology in the seventh-century onwards, 'he was now the exploiter of nature'.³⁰¹ Deloria Jr. conceptualises the Christian idea of nature as 'the rejection of creation as a living ecosystem and the concept of nature as depraved, an object for exploitation and

²⁹⁸ White, Jr., 'The historical roots of our ecological crisis'. 1205.

²⁹⁹ Corburn, 'Environmental justice, local knowledge, and risk'. 464.

³⁰⁰ V. Deloria, Jr., *God is red: a Native view of religion*. (Colorado: Fulcrum Publishing, 2003). 61.

³⁰¹ White, Jr., 'The historical roots of our ecological crisis'. 1205.

nothing more'.³⁰² In Christian understandings of the Creation, it is noted that the earth, plants and animals exist 'explicitly for man's benefit and rule: no item in the physical creation had any purpose save to serve man's purposes'.³⁰³ As a result, Christian European settlers, and arguably, many of those who are not tribal members today, do not acknowledge many of the Native American spiritual links to nature as valid or correct. As with Christopher Columbus upon his 'discovery' of America, many whites believe(d) themselves superior to any and all Native Americans due to the differences in culture, language and religion. Joy Porter points out that 'because they did not speak *his* [Columbus'] language, he deemed them to have no conceptual language at all'.³⁰⁴ The dismissal of Native American spiritual connections to the environment arguably follow the same pattern. It seems, therefore, that the majority of the United States population neither identifies with, nor understands, the concept of 'nature' as an equal entity to humans that can control life and death. As a result, environmental justice, including its laws and regulations, do not reflect tribal understandings. Environmental injustices appear to occur when 'humans attempt to master rather than to live in harmony with nature', as many Native Americans try to do.³⁰⁵ As a result, many environmental harms upon tribal land are created by 'outsider' communities to the Native Americans on federal reserves.

Voluntary Environmental Injustice

What must be considered, however, is the existence of tribal entities that further enable environmentally harmful practices. Some tribes will allow toxic waste dumping (often nuclear), or other forms of pollutions on their land, in return for some form of economic gain. Bullard and Johnson claim that 'some industry and governmental agencies have exploited the economic vulnerability of Indian nations'.³⁰⁶ This would suggest that the economic deprivation that many Native American tribes live in is a recognised weakness among those looking to move and distribute their waste pollution. While these wastes are technically taken on 'voluntarily', it is

³⁰² Deloria, Jr., *God is red*. 51.

³⁰³ White, Jr., 'The historical roots of our ecologic crisis'. 1205.

³⁰⁴ Porter, *Native American environmentalism*. 14.

³⁰⁵ Waters, 'Christian theological resources'. 850.

³⁰⁶ Bullard & Johnson, 'Environmental justice'. 571.

important to question whether these 'wilful' communities are merely acting out of economic necessity. These decisions are likely not made easily and instead appear to be more a case of desperation, with the aim of drawing the community out of economic poverty. As stipulated by Bullard and Johnson, these are acts of 'Radioactive colonialism',³⁰⁷ supporting the suggestion that environmental injustices can be deemed to be a form of colonisation when undertaken against Native Americans.

Native Americans are notoriously known to be some of the poorest in American society; their minority status, combined with high levels of low-income and poverty within their communities, increases the likelihood of environmental justices occurring on their land. Native American individuals included in the U.S. Census have a mean income of under \$20,000, in comparison to approximately \$35,000 for white individuals.³⁰⁸ To demonstrate further disparity and disadvantage, it must be noted that 25.4 per cent of the Native American population live in poverty, over double the 11.4 per cent of whites in poverty.³⁰⁹ As a result of their economic deprivation, it is possible to infer that Native American tribal leaders would actively look for new avenues of income and, depending on how desperate they are, nuclear waste siting may be the most viable method. The Department of Energy offers grants of a \$100,000, 'to study the prospect of "temporarily" storing nuclear waste for a half century under its MRS [monitored retrievable storage] program'.³¹⁰ This is Phase I of the process to host the toxic waste dump, which began in 1987 with the creation of the Office of Nuclear Waste Negotiator, who oversaw the federal Monitored Retrievable Storage (hereafter MRS) sites.³¹¹ The Nuclear Information and Resources Service notes that out of the 500 federally recognised tribes approached, approximately 3.7 per cent responded to calls for Phase I; the Service claims that this is

³⁰⁷ *ibid*

³⁰⁸ United States Census Bureau, *Selected population profile in the United States: 2017 American community survey 1-year estimates*. (2019). Available online: https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_17_1YR_S0201&prodType=table [Accessed 23/07/2019].

³⁰⁹ United States Census Bureau, *Selected population profile*.

³¹⁰ Bullard & Johnson, 'Environmental justice'. 571.

³¹⁰ *ibid*

³¹¹ Nuclear Information and Resource Service, *Radioactive racism: the history of targeting Native American communities with high-level atomic waste dumps*. (Maryland: Nuclear Information and Resource Service, N.D.) Available online: <https://www.nirs.org/wp-content/uploads/radwaste/scullvalley/historynativecommunitiesnuclearwaste06142005.pdf> [Accessed 24/08/2019].

40 times higher than that of state counties approached.³¹² Following this, should a community choose to move to other phases, more money is promised. Phase II-A would result in another \$200,000 requiring 'a more focused investigation of potential sites and local response', while Phase II-B would begin formal negotiations to host the MRS facility.³¹³ The desire to take on environmentally harmful toxic wastes, therefore, could be attributed to the promise of a bulk sum of money that could potentially alleviate the economic hardship that some Native American communities faced.

Similarly, levels of education, which could drastically impact Native American understanding of injustices, including how to prevent and fight against them, are also lower among Native Americans, placing them at a further disadvantage. The US Census Bureau estimated in 2017 that the percentage of Native Americans with education less than a high school diploma sits at 19.8 per cent, almost double the same among white civilians.³¹⁴ Access to education would further enhance involvement in environmental justice, as the definition suggests should be the case. With a lack of education, suffering Native Americans may not know what the problems are or how to even begin to address them. Furthermore, lack of involvement in environmental decision-making may be deemed a lack of sovereignty to some Native American leaders. For example, for some leaders in the Skull Valley Goshute Tribe, who were considering hosting a Nuclear Waste Site in 1992, the involvement in these discussions 'allowed voice through access, standing, and influence and their narratives of voice articulate an empowerment'.³¹⁵ Although other members of the tribe disagreed with this view, in some cases these discussions enabled tribal leaders to display their political identity and sovereignty through the involvement of environmental decision-making, further encouraging Nuclear Waste depositories on their lands. When lack of education is combined with economic deprivation, Native Americans face double the hinderances to achieving environmental justice on their lands, both by the fault of others, and by their own hands. Greater access to education for Native American communities could

³¹² Nuclear Information and Resource Service, *Radioactive racism*.

³¹³ Nuclear Information and Resource Service, *Radioactive racism*.

³¹⁴ United States Census Bureau, *Selected population profile*.

³¹⁵ T. Clarke, 'The construction of Goshute political identity: negotiation of voice regarding nuclear waste policy development', *Frontiers in Communication*, 2:2. Available online: <https://www.frontiersin.org/articles/10.3389/fcomm.2017.00002/full> [Accessed 24/08/2019].

further enhance their understandings of environmental justice and injustice, and perhaps enable them to seek less harmful avenues of income when desperate.

This chapter has demonstrated the benefits of the very necessary broadening out of environmental justice studies to include other minority races, exploring relationships between state, federal, and tribal entities within an investigation into the history of Native American sovereignty. The chapter has demonstrated that environmental justice for Native Americans is significantly important because certain acts of environmental harm can impact their sovereignty and identity (both political and cultural). Daniel Brook notes that not only does waste dumped on their lands affect the environment itself, but 'illegal dumping threatens tribal sovereignty because it creates the conditions that make federal government intervention on the reservation more likely'.³¹⁶ If this occurs, Native Americans appear dependent on the United States government, as was suggested in the 1871 Indian Appropriations Act.³¹⁷ This chapter has also discussed the legal water rights of tribal entities, exhibiting that in some cases, water rights are being granted through the use of the ground-breaking 1908 *Winters Doctrine*. Alongside a discussion of the differences between western and Native American understandings of cultural connections to the environment, this further demonstrates that the scope of environmental justice must be widened to encapsulate a plethora of new evidence. This thesis has shown that environmental justice has been achieved in some cases, whilst also noting that there are unique precursors and mechanisms hindering its achievement. Much like Flint, the precursors affecting some Native American communities are often a result of financial situations and potential lack of understanding that could be attributed to low education levels.

³¹⁶ D. Brook, 'Environmental genocide: Native Americans and toxic waste', *The American Journal of Economics and Sociology*, 57, 1, (1998). 105-113: 109.

³¹⁷ Indian Appropriations Act 1871, 25 U.S. Code, Ch. 3, §71. (2011). Available online: <https://web.archive.org/web/20120317074540/http://uscode.house.gov/download/pls/25C3.txt> [Accessed 23/08/2019].

CONCLUSION

While insufficient attention has been paid to unsafe water within environmental injustice literature, social and academic awareness surrounding this problem is quickly increasing. As demonstrated by this study, more recent works, such as those by Mona Hanna-Attisha,³¹⁸ have begun to focus on water injustices within the United States. This study has argued that environmental justice needs to be reconsidered, redefined, and re-evaluated as a field, paradigm, and tool for activism. It has demonstrated that a much environmental justice literature has focussed too heavily on early, conventional understandings of the concept, and have been slow to evolve to suit the environmental issues that are more prevalent today.

The first chapter of the study explored the roots of environmental justice, considering early links to the study of environmental history and the civil rights movement. Early environmental thought evolved from the concepts of wilderness thinking, promoted heavily by Frederick Jackson Turner from the early 1890s.³¹⁹ The study of environmental history evolved alongside the needs of the country, with the concepts of preservation and conservation suiting the progression of the developing capitalist economy. Preservation promoted the aesthetically pleasing 'natural growth' of landscapes, resulting in the creation of the National Parks Service on 25 August 1916 and the encouragement of green tourism as a profit from environment.³²⁰ The conservation movement saw the development of environmental thought from the desire of 'sublime' landscapes to the encouraged need of more efficient resource management. Here, the protection of natural resources were promoted for a long-term, profit-led relationship between humans and the environment. Following concern for resource management from the 1930s onwards, a number of federal reforms focussed on environmental growth and sustainable use of limited resources,³²¹ as outlined within the chapter. Whilst these appeared to be beneficial for the restoration of the environment, the Acts promoted by FDR here instead just encouraged the

³¹⁸ Hanna-Attisha, *What the eyes don't see.*; Hannah-Attisha, et al, 'Elevated blood lead-level'.

³¹⁹ Turner, 'The significance of the frontier'.

³²⁰ National Park Service, *Organic Act of 1916*.

³²¹ Andrews, 'Recovering FDR's environmental legacy'. 222-223.; See also W. C. Everhart, *The National Park Service*. (Boulder, Westview Press, 1983).

overuse of natural resources on a long-term basis. The 1960s and 1970s saw the fear of overconsumption develop into a fear of ‘what *are* we consuming?’; land, air and water pollution became prevalent concerns among the public, with environmental literature in the histories and sciences reflecting these concerns. As the chapter explored, Carson’s *Silent Spring* helped to encourage public awareness of the issue of chemical pollutants, becoming a hugely influential text in environmentalism and ecology. The public’s heightened anxiety surrounding the air they breathed, the land they lived upon, and the water they drank, was capitalised upon by Nixon’s administration. Although not for his own genuine concern of the environment,³²² Nixon enacted a plethora of environmental policies in the early 1970s, which encouraged cleaner air, land, and water.

Simultaneously the chapter explored the civil rights movement of the 1950s and 1960s, demonstrating its role in the creation of the environmental justice movement. The evolving study of environmental history combined with civil rights activists to create a ‘grass roots social movement...[that was] capable of generating fundamental social change’.³²³ Civil rights activists became incredibly important in the first environmental justice protests that would highlight the racial disparity in toxic waste siting, such as that in Warren County. As a result, early understandings of environmental justice were borne out of the argument that minority communities, particularly African Americans, bore the brunt of environmental problems in the United States. This study has demonstrated that, while often correct, this conclusion can fail to consider the historical depth of the injustice. Only with the turn of the twenty-first-century did more environmental justice studies begin to diverge from the conventional focus of race as the main factor in injustices. Studies by Pulido, Corburn, and Chakraborty have fuelled the argument for a broader consideration of socio-economic factors and cumulative hazards within environmental justice.³²⁴

The second chapter of this study explored the importance of considering the historical context that surrounds an environmental injustice, before arguing that present social and economic situations must also be applied when investigating the cause of an injustice. Two cases of unsafe drinking water demonstrated the need of

³²² Rinde, ‘Richard Nixon and the rise of American environmentalism’,

³²³ Morris, ‘A retrospective on the civil rights movement’. 527.

³²⁴ Pulido, ‘Rethinking environmental racism’.; Corburn, ‘Environmental justice, local knowledge, and risk’.; Chakraborty, Collins, Grineski, ‘Environmental justice research’.

considering the historical and socio-economic factors that surround environmental issues. As mentioned in Chapter One, water necessitates the broadening of the environmental justice paradigm to encompass disciplines that are beyond the usual remit of the field. Residents in both Camp Lejeune, North Carolina, and Flint, Michigan, were poisoned by a plethora of chemicals in their drinking water; the second chapter explored the mechanisms at play within these water injustices and considered the context in which they occurred. This study argues that the Flint water crisis was a product of the history of the city itself, which was driven by a racist, profit-based system. The exploration of precursors to the water crisis in 2014 enabled the study to consider the roles that were played by Flint's declining economy, housing patterns and migration, and the surrounding natural environment. What followed was an understanding that these historical factors, although occurring decades before, still influenced the water crisis in contemporary Flint; conventional environmental justice studies have often considered injustices only at the point of crisis, as opposed to delving into the historical contexts that surrounds them. Furthermore, an in-depth analysis of the factors at play during the time of the actual crises, both in Flint and Camp Lejeune, would demonstrate the need for environmental justice to employ a multidisciplinary approach. The case studies demonstrate the importance of racial disparities in environmental injustices, as per the conventional understandings in the field, but also go on to explore other mechanisms, such as individual and agency corruption, state and federal governance, and lead toxicity and poverty. In doing so, the study has shown the ways law, politics, and science are often closely linked with environmental injustices, demonstrating the limitations of approaching the field from a single discipline.

In line with conventional understandings of environmental justice, early literature was often liable to focus on a single minority group; this was frequently African Americans.³²⁵ The third chapter of this thesis argues for the expansion of the scope of environmental justice to incorporate a number of minority groups. It shows that African Americans are subject to disproportionate environmental harms but goes further to demonstrate that Native Americans also bear this burden. In studying the relationship of specific Native American tribes to water, a number of environmental

³²⁵ Bullard, *Dumping in Dixie*.

injustices have been uncovered; these relate to legal, physical, and spiritual water injustices. Here, the study of water in Native American environmental justice broadens the field to consider unique issues that do not necessarily apply to other minority communities. The chapter explores the sovereignty of Native American tribes, before considering the impact this has had on tribal water rights. An examination of the 1908 *Winters v. United States* Supreme Court case explores the strength of tribal claims to sovereignty, with this study further demonstrating a number of cases in which the ruling was used to the advantage of Native Americans in the years following. The spiritual relationships that Native Americans hold to water have been significantly affected by environmental injustices; this is an area that is little researched in environmental justice studies. The chapter considers the differences between Native American approaches to nature, place, and space, and Western understandings of the environment; the relationships that the Agua Caliente Band of Cahuilla Indians and the Blackfeet Tribe are considered in depth, demonstrating individual tribal understandings. It argues that the differences in Native American and Western understandings of the environment have previously been used to justify the environmental domination of tribal land and continue to play significant roles in modern environmental injustices. Finally, the exploration of Native American water injustices adds to Chapter Two's thesis, demonstrating further mechanisms influencing the environmental issues facing tribal communities. It investigates the 'voluntary' or 'wilful' involvement in environmentally harmful practices on Native American land, suggesting that not all tribes adhere to the Western belief that these communities are environmentally friendly.³²⁶ In doing so, the study further expands the mechanisms considered to include a nuanced discussion of the influence that poverty and education can have on personal involvement in environmental justice.

Overall, this study reinforces the argument that recent environmental justice texts are starting to make; while racially charged decisions are often to blame for environmental injustices, it is not as simple as conventional literature might have readers believe. Traditional understandings of environmental injustices would claim that governments and corporations are deliberately and intentionally seeking out

³²⁶ S. Krech, *The ecological Indian: myth and history*. (New York: W. W. Norton & Company, 1999).

minority communities and harming them in acts of blatant racism.³²⁷ Instead, this study suggests that while racism is still the key factor in environmental injustices, it is often borne out of historical racism; the precursors explored in Chapter Two demonstrate that racial attitudes have played a role in many factors that influenced the occurrence of the Flint water crisis, for example.³²⁸ A wider exploration of water injustices across the United States would likely demonstrate that this is the case in many environmental issues; ‘this isn’t just Flint’s fight’.³²⁹ Future literature in environmental justice would benefit from further exploration into water injustices, not merely within the United States, but expanding globally to determine the historical contexts and factors that influence these events. This study highlights the need to do this, demonstrating how unique relationships with water can change the form and significance of the injustice being faced. Furthermore, it is hoped that environmental policy can draw from studies such as these, to address the issues that have occurred, both before and within water injustices. Anna Clark, for example, notes that ‘federal and state authorities need to recalibrate their responsibility to local governments, casting a close eye on everything from revenue sharing to environmental regulation’;³³⁰ issues such as past housing segregation, lack of infrastructure funding, and individual corruption, which all affect the achievement environmental justice, could be included within this. While the study of environmental justice itself will benefit from an expanded framework, citizens across the globe could reap the rewards of an improved understanding of environmental injustices within policy-making.

³²⁷ Bullard, *Dumping in Dixie*.

³²⁸ Pulido, ‘A critical review’.; Clark, *The poisoned city*.; Bridge Magazine, *Poison on tap*.

³²⁹ Clark, *The poisoned city*. 214.

³³⁰ Clark, *The poisoned city*. 215.

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