

**IN THE COURT OF APPEALS OF THE STATE OF NEW MEXICO**

AKILAH SANDERS-REED,  
by and through her parents Carol  
and John Sanders-Reed, and  
WILDEARTH GUARDIANS,

Plaintiffs/Appellants,

vs.

Ct. App. No. 33,110

SUSANA MARTINEZ,  
in her official capacity as Governor  
of New Mexico, and  
STATE OF NEW MEXICO,

Defendants/Appellees.

COURT OF APPEALS OF NEW MEXICO  
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**BRIEF OF STATE REPRESENTATIVE GAIL CHASEY, ET AL. AS *AMICI CURIAE* IN SUPPORT OF APPELLANTS SEEKING REVERSAL**

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T.M. Bull Bennett, et al., <i>Third National Climate Assessment Draft Report, Ch. 12 – Tribal, Indigenous, and Native Lands and Resources</i> (2013).....	23
Elizabeth Burakowski & Matthew Magnusson, <i>Climate Impacts on the Winter Tourism Economy in the United States</i> (2012).....	14
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Eleanor Dictaan-Bang-oa, <i>Perishing Past and Pride: Indigenous Women and Climate Change</i> , 2 <i>Women in Action</i> 47–50 (2009).....	22
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Zoltan Grossman, <i>Indigenous Nations' Responses Climate Change</i> , 32 <i>Am. Indian Cult. Res. J.</i> 5-27 (2008) .....	22
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Preston Hardison & Terry Williams, <i>Culture, Law, Risk and Governance: The Ecology of Traditional Knowledge in Climate Change Adaptation</i> , 120 <i>Climatic Change</i> 531 (2013) .....	22
Brian H. Hurd & Julie Coonrad, <i>Climate Change and Its Implications for New Mexico's Water Resources and Economic Opportunities</i> , New Mexico State University, Technical Report 45, <a href="http://aces.nmsu.edu/pubs/research/economics/TR45/welcome.html">http://aces.nmsu.edu/pubs/research/economics/TR45/welcome.html</a> .....	11, 21
Intergovernmental Panel on Climate Change, <i>IPCC Fourth Assessment Report: Climate Change 2007 (AR4)</i> , 1.1 (2007) .....	6
Sarah Krakoff, <i>American Indians, Climate Change, and Ethics for a Warming World</i> , 85 <i>Denv. U. L. Rev.</i> 865 (2008) .....	22
Los Alamos National Laboratory, <i>Climate change cripples forests</i> , News Release (Oct. 1, 2012) .....	18
Kathy Lynn et al., <i>The Impacts of Climate Change on Tribal Traditional Foods</i> , 120 <i>Climatic Change</i> 545 (2013) .....	21

Julie K. Maldonado et al., <i>The Impact of Climate Change on Tribal Communities in the US: Displacement, Relocation, and Human Rights</i> , 120 <i>Climatic Change</i> 601 (2013).....	21
Phillip W. Mote, <i>Climate-Driven Variability and Trends in Mountain Snowpack in Western North America</i> , 19 <i>J. Climate</i> 6209 (2006).....	12
NASA Earth Observatory, <i>Drought Dries Elephant Butte Reservoir</i> (July 26, 2013) .....	13
National Integrated Drought Information System, <i>U.S. Drought Portal</i> , <a href="http://www.drought.gov/drought/news/new-mexico-setting-new-records-drought">http://www.drought.gov/drought/news/new-mexico-setting-new-records-drought</a> .....	12
Erik J. Nelson, et al., <i>Climate change’s impact on key ecosystem services and the human well-being they support in the US</i> , 11(9) <i>Front. Ecol. Envt.</i> 483 (2013) ..	19
New Mexico Governor’s Drought Task Force, <i>Drought and Health</i> , <a href="http://www.nmdrought.state.nm.us/df_health.html">http://www.nmdrought.state.nm.us/df_health.html</a> .....	19, 20
New Mexico Governor’s Drought Task Force, <i>Drought Impact on Our Economy</i> , <a href="http://www.nmdrought.state.nm.us/fin_economy.html">http://www.nmdrought.state.nm.us/fin_economy.html</a> .....	19
New Mexico Governor’s Drought Task Force, <i>Fire Information</i> , <a href="http://www.nmdrought.state.nm.us/fire_info.html">http://www.nmdrought.state.nm.us/fire_info.html</a> .....	16, 17, 18
New Mexico Governor’s Drought Task Force, <i>Monitoring Working Group, February 2014 – Meeting Agenda</i> , <a href="http://www.nmdrought.state.nm.us/MonitoringWorkGroup/2014/2014_Feb.html">http://www.nmdrought.state.nm.us/MonitoringWorkGroup/2014/2014_Feb.html</a> .....	7
NOAA, Earth System Research Lab, <i>Ongoing Scientific Assessment of the 2010 Western Russia Heatwave</i> , (Sept. 2010) .....	8
NOAA, National Climatic Data Center, <i>State of the Climate, National Overview for Annual 2009</i> (2009).....	12
NOAA National Climatic Data Center, <i>Wildfires – June 2013</i> , <a href="http://www.ncdc.noaa.gov/sotc/fire/2013/6">http://www.ncdc.noaa.gov/sotc/fire/2013/6</a> .....	17

Andrea J. Ray et al., <i>Climate Change in Colorado: A Synthesis to Support Water Resources Management and Adaptation</i> (2008).....	8, 15
Margaret Hiza Redsteer, et al., <i>Monitoring and Analysis of Sand Dune Movement and Growth on the Navajo Nation, Southwestern United States</i> , US Geological Survey, Fact Sheet 2011-3085 (2011) .....	24
Margaret Hiza Redsteer, et al., <i>Assessment of Climate Change in the Southwest United States: Ch. 17 – Unique Challenges Facing Southwestern Tribes</i> (2013).....	23
Robert Repetto, <i>New Mexico’s Rising Economic Risks from Climate Change</i> , 4 (2012).....	14
Bob Roehr, <i>AAAS Coalition Explores Perspectives of Indigenous Communities on Climate Change</i> , American Association for the Advancement of Science News Release (Feb. 6, 2012) .....	22
Jan Salick & Anja Byg, <i>Indigenous Peoples and Climate Change</i> , Tyndall Centre for Climate Change Research, Oxford (2007) .....	22
Victoria Tauli-Corpuz & Aqqaluk Lynge, <i>Impact of Climate Change Mitigation Measures on Indigenous Peoples and on their Territories and Lands</i> , New York: UN Permanent Forum on Indigenous Issues (2008).....	22
Rebecca Tsosie, <i>Keynote Address: Indigenous Peoples and Global Climate Change: Intercultural Models of Climate Equity</i> . 25 J. Env’t. L. & Litig. 7 (2010) .....	22
United States Global Change Research Program (USGCRP), <i>Global Climate Change Impacts in the United States</i> (Thomas R. Karl, et al. eds. 2009).....	<i>passim</i>
Garrit Voggeser et al., <i>Cultural Impacts to Tribes from Climate Change Influences on Forests</i> , 120 Climatic Change 615 (2013) .....	21
Garrit Voggeser, <i>The Tribal Path Forward: Confronting Climate Change and Conserving Nature</i> , <i>The Wildlife Professional</i> , 24–30 (Winter 2010).....	22
Kyle Powys Whyte, <i>Justice Forward: Tribes, Climate Adaptation and Responsibility in Indian Country</i> , 120 Climatic Change 517 (2013).....	21

Daniel R. Wildcat, *Introduction: climate change and indigenous peoples of the USA*, 120 *Climatic Change* 509 (2013).....21

A. Park Williams, et al., *Temperature as a potent driver of regional forest drought stress and tree mortality* (2012).....18

## IDENTITY AND INTERESTS OF THE *AMICI CURIAE*<sup>1</sup>

**Gail Chasey**, Ph.D, J.D., is a State Representative in the New Mexico House for the 18th District, serving her 9th term. She is Chair of the House Judiciary Committee. As a dedicated advocate for the environment, Representative Chasey supports Appellants in this case.

Formed in 1988, **Amigos Bravos** is a statewide river conservation organization guided by social justice principles and dedicated to preserving and restoring the ecological and cultural integrity of New Mexico's water and the communities that depend on it. While rooted in science and the law, their work is inspired by the values and traditional knowledge of New Mexico's diverse Hispanic and Native American land-based populations, with whom they collaborate. Amigos Bravos' mission is to return New Mexico's rivers and the Río Grande watershed to drinkable quality wherever possible and to contact quality everywhere else; to see that natural flows are maintained and where those flows have been disrupted by human intervention to see that they are regulated to protect and reclaim the river ecosystem by approximating natural flows; to preserve and restore the native riparian and riverine biodiversity; to support the environmentally

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<sup>1</sup> No counsel for either appellants or appellees authored this *amicus* brief in whole or in part. Similarly, no counsel for a party made a monetary contribution intended to fund the preparation or submission of the brief.



sound and sustainable traditional ways of life of indigenous cultures; and to ensure that environmental justice and social justice go hand-in-hand.

Amigos Bravos' vision of having rivers so clear and clean we can bend to our knees, cup our hands, and drink directly from those waters without fear was handed to them by Pueblo Indian and native Hispanic Elders almost 30 years ago. That vision, which was a reality in northern New Mexico only one lifetime ago, requires the wisdom, knowledge, and participation of all New Mexicans in the effort to address social and political pressures poisoning our waters. Climate change threatens our state's rivers and water resources, and the communities that rely on them, and our ability to leave future generations with the legacy vision of the Pueblo Indian and native Hispanic Elders requires urgent action to reduce carbon emissions.

**Sierra Club** is a national nonprofit organization of approximately 600,000 members dedicated to exploring, enjoying, and protecting the wild places of the earth; to practicing and promoting the responsible use of the earth's ecosystems and resources; to educating and enlisting humanity to protect and restore the quality of the natural and human environment; and to using all lawful means to carry out these objectives. Like the river for which it's named, the Sierra Club's Rio Grande Chapter is comprised of five local groups covering New Mexico and West Texas. The region stretches from alpine tundra to Chihuahuan desert and

everything in between. The Sierra Club's concerns encompass the health and environmental consequences of climate change, including higher summer smog levels in urban areas, more severe droughts, more frequent and severe storms, record numbers of wildfires, record crop losses, loss of species diversity, and many other effects. The Club has successfully implemented several public interest campaigns in its efforts to combat climate change, such as the Beyond Coal Campaign. Appellants' efforts to protect the atmospheric resource and the constitutional public trust rights of New Mexicans in this case is consistent with the goals of the Club.

**Diné Citizens Against Ruining our Environment (Diné CARE)** is a membership organization by and for the Diné, the People. Diné is the word by which the Navajo people refer to themselves. It means, roughly, "the people." Diné CARE's members are not only those who are leaders in their communities, but all those Diné who strive to maintain a relationship with Mother Earth based on balance and harmony. For Diné CARE, membership means taking up the cause of honoring our Earth, and honoring the perspective toward Mother Earth that has been handed down to us from our ancestors. They are local, community people working together on issues that affect our communities.

The **Climate Change Leadership Institute (CCLI)** is a civil society based non-profit organization dedicated to addressing climate disruption and

spearheading the clean energy revolution. With these aims in mind, CCLI does annual direct action projects, gives out climate leadership seed grant awards, offers student internships and stewardship workshops, and provides local avenues for people to take responsibility.

The **Chaco Alliance** is a grassroots citizens' group dedicated to protecting and preserving Chaco Culture National Historical Park. The Alliance formed in early 2006 in response to citizen concerns over the paving of the main access road to Chaco Culture National Historical Park, a World Heritage Site. In 2009, over 10,000 acres near the Park were protected from oil and gas leasing thanks to the efforts of the Chaco Alliance in cooperation with other non-governmental organizations and the Hopi Tribe. The Chaco Alliance continues to work with its organizational and tribal partners in actions aimed at establishing a protective zone around the Park. The Alliance is concerned that threats from climate change will adversely impact the natural high desert climate and resources of Chaco Culture National Historical Park.

## ARGUMENT

*Climate change is very real and it is impacting our bottom line in the State of New Mexico.... Things are only going to get worse if we don't act and begin to address some of these conditions. If we have any hope of reversing the effects of climate change—and we truly must—it is critical we embrace this challenge now and that we lead the world in innovation, in efficiency, and in clean energy.*

– Senator Martin Heinrich<sup>2</sup>

*New Mexico and the Southwest are at the bull's-eye when it comes to climate change.*

– Senator Tom Udall<sup>3</sup>

Climate change is already impacting the Southwest and will continue to affect New Mexicans in increasingly significant ways in the decades to come. These changes will affect nearly all aspects of New Mexican's lives, including our health and safety, our food and water sources, our property, our recreation, our natural and cultural resources, our energy supply, our economy, and our livelihoods. Young New Mexicans and future generations will suffer the greatest impacts.

This brief is submitted in support of Plaintiffs' appeal asking the Court to declare that the atmosphere is a public trust resource for New Mexicans and that the State has an obligation as trustee to prevent further substantial impairment of

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<sup>2</sup> 160 Cong. Rec. S1425, S1426 (March 10, 2014) (statement of Senator Martin Heinrich), *available at* <http://www.gpo.gov/fdsys/pkg/CREC-2014-03-10/pdf/CREC-2014-03-10-senate-bk2.pdf>.

<sup>3</sup> *Id.* at S1459 (statement of Senator Tom Udall).

the atmosphere.

Climate change is unequivocally human-induced.<sup>4</sup> The present rate of global heating is occurring as a result of human activities that release heat-trapping greenhouse gases (GHGs) and intensify the Earth's natural greenhouse effect, at an accelerated rate, thereby changing Earth's climate.<sup>5</sup> Climate change is occurring now, damaging both natural and human systems, and if unrestrained, will alter the planet's habitability.<sup>6</sup>

The cumulative effects of climate change in New Mexico translate into unprecedented natural resource and economic impacts for the state, putting further pressure on all aspects of our economy and public systems in the years to come. Most importantly, climate change will leave our youngest generation and future

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<sup>4</sup> United States Global Change Research Program (USGCRP), *Global Climate Change Impacts in the United States*, 12 (Thomas R. Karl, et al. eds. 2009) [hereinafter *Global Climate Change Impacts Report*], available at <http://globalchange.gov/what-we-do/assessment/previous-assessments/global-climate-change-impacts-in-the-us-2009>; Intergovernmental Panel on Climate Change, *IPCC Fourth Assessment Report: Climate Change 2007 (AR4)*, 1.1 (2007), available at [http://www.ipcc.ch/publications\\_and\\_data/ar4/syr/en/mains1.html#1-1](http://www.ipcc.ch/publications_and_data/ar4/syr/en/mains1.html#1-1) (“Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level.”).

<sup>5</sup> USGCRP, *Global Climate Change Impacts Report*, *supra* note 4, at 13 (“The global warming of the past 50 years is due primarily to human-induced increases in heat-trapping gases.”).

<sup>6</sup> USGCRP, *Global Climate Change Impacts Report*, *supra* note 4, at 12 (“Thresholds will be crossed, leading to large changes in climate and ecosystems. . . Future climate change and its impacts depend on choices made today.”).

generations with substantially altered natural systems and impaired public resources. As the Court considers the public trust obligation of the State to New Mexicans today and tomorrow, *Amici* submit to the Court this accounting of what our state and federal agencies and representatives and top experts report the climate change impacts in New Mexico are today and will be in the future.

## **I. Climate Change in New Mexico**

The climate of the Southwest is changing. Over the last century, the average annual temperature in the Southwest has increased about 1.5°F.<sup>7</sup> Experts predict that average annual temperatures will rise an additional 2.5 – 8.5°F by the end of the century.<sup>8</sup> Warming in the Southwest is projected to be greatest in the summer.<sup>9</sup> Significant warming trends already exist across the state and additional warming will continue, at an accelerated rate of change.

Moderate to extreme drought covers more than 96 percent of the state of New Mexico.<sup>10</sup> Winter precipitation in 2013-2014 has been below normal to non-

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<sup>7</sup> Environmental Protection Agency, *Climate Impacts in the Southwest*, <http://www.epa.gov/climatechange/impacts-adaptation/southwest.html> (last updated Sept. 9, 2013); USGCRP, *Global Climate Change Impacts Report*, *supra* note 4, at 129.

<sup>8</sup> USGCRP, *Global Climate Change Impacts Report*, *supra* note 4, at 129.

<sup>9</sup> Environmental Protection Agency, *Climate Impacts in the Southwest*, <http://www.epa.gov/climatechange/impacts-adaptation/southwest.html> (last updated Sept. 9, 2013).

<sup>10</sup> New Mexico Governor's Drought Task Force, *Monitoring Working Group, February 2014 – Meeting Agenda*,

existent with a statewide average of only 3 percent of normal precipitation. January 2014 was the driest January on record.<sup>11</sup> February through April will also likely be drier than average, especially over the southwest half of New Mexico.

A synthesis report on water management and adaptation from Colorado, found that the average increase in temperatures in our neighbor to the north over the past 30 years has been about 2°F, but that by 2050, average summer temperatures in Colorado will rise by an additional 5°F and winter temperatures will rise by 3°F.<sup>12</sup> New Mexico can expect similar changes.

The increased heat from climate change can destroy crops, trigger wildfires, exacerbate air pollution, and cause increased illnesses and deaths.<sup>13</sup> New Mexico already faces larger wildfires, reduced winter snowpack, drier summers, and severe flooding when it does rain. The year 2012 was the hottest year ever recorded in New Mexico's history and three of the state's largest wildfires burned in the last four years.

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[http://www.nmdrought.state.nm.us/MonitoringWorkGroup/2014/2014\\_Feb.html](http://www.nmdrought.state.nm.us/MonitoringWorkGroup/2014/2014_Feb.html)  
(last visited Mar. 18, 2014).

<sup>11</sup> *Id.*

<sup>12</sup> Andrea J. Ray et al., *Climate Change in Colorado: A Synthesis to Support Water Resources Management and Adaptation*, 1 (2008), available at [http://wwa.colorado.edu/publications/reports/WWA\\_ClimateChangeColoradoReport\\_2008.pdf](http://wwa.colorado.edu/publications/reports/WWA_ClimateChangeColoradoReport_2008.pdf).

<sup>13</sup> See, e.g., USGCRP, *Global Climate Change Impacts Report*, *supra* note 4, at 89-98; NOAA, Earth System Research Lab, *Ongoing Scientific Assessment of the 2010 Western Russia Heatwave*, (Sept. 2010), available at <http://www.esrl.noaa.gov/psd/csi/events/2010/russianheatwave/prelim.html>.

Scientific experts have shown that these impacts from human-caused climate change, which are already occurring and threatening our state, are only going to worsen in coming years and decades. Because of New Mexico's naturally drier climate, and significant reliance on winter snowpack during the hot summer season, New Mexico and the Southwest more broadly, are especially vulnerable to drought, heat waves, and wildfires, as discussed in more detail herein.

Climate change threatens the vast precious public resources of our great state, and the only thing that will slow these effects of climate change and protect our resources for present citizens and future generations is the urgent and comprehensive reduction of carbon emissions, led by every government around the world, including here in New Mexico.

## **II. Reduced Snowpack, Drought, and Heatwaves Adversely Impact Water Supplies, Agriculture, and Winter Tourism Industry.**

In 2004, former governor Bill Richardson said, “[w]ater is not only the lifeblood of New Mexico, it is the most urgent environmental and economic development issue across the Western United States.”<sup>14</sup> Climate change is threatening and reducing New Mexico's “lifeblood.”

The combination of warming and drought in the entire Southwest region has already contributed to decreased snowpack and lowered Colorado River flows,

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<sup>14</sup> New Mexico Governor's Drought Task Force, *Drought Impact on Our Economy*, [http://www.nmdrought.state.nm.us/fin\\_economy.html](http://www.nmdrought.state.nm.us/fin_economy.html) (last visited Mar. 19, 2014).



which are both critical water sources for the region.<sup>15</sup> The U.S. Environmental Protection Agency and other federal agencies predict that future warming will produce more severe droughts in the region, and further reduce water supplies.<sup>16</sup> A reliable water supply in the Southwest is essential for the people, agriculture, ecosystems, and energy supply. Water allocations in the region, which are already constrained by century-old agreements, are difficult to meet. Groundwater supplies are also stressed, with decreased rates of recharge.<sup>17</sup> Experts have warned that climate change will only worsen these already challenging conditions.<sup>18</sup>

Warmer temperatures in New Mexico will also lead to higher rates of water consumption, reduced snowpack, diminished and earlier spring runoff, more open water evaporation, and drier soil conditions.<sup>19</sup> Each of these changes reduces streamflow, dwindles reservoirs, and exacerbates drought. Not only will predicted human-caused climate change lessen the already dwindling availability of surface and ground water, these changes will also increase the demand for, and conflict

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<sup>15</sup> USGCRP, *Global Climate Change Impacts Report*, *supra* note 4, at 129-30.

<sup>16</sup> *Id.*; Environmental Protection Agency, *Climate Impacts in the Southwest*, <http://www.epa.gov/climatechange/impacts-adaptation/southwest.html> (last updated Sept. 9, 2013).

<sup>17</sup> USGCRP, *Global Climate Change Impacts Report*, *supra* note 4, at 129-30.

<sup>18</sup> USGCRP, *Global Climate Change Impacts Report*, *supra* note 4, at 129-31.

<sup>19</sup> John R. D'Antonio, *The Impact of Climate Change on New Mexico's Water Supply and Ability to Manage Water Resources*, iv (2006), available at <http://www.nmdrought.state.nm.us/ClimateChangeImpact/completeREPORTfinal.pdf>.

over, available water throughout the century.<sup>20</sup>

The reduced predictability of summer precipitation also creates instability for New Mexico's water supply.<sup>21</sup> Summer monsoons and thunderstorms provide important water supplies in the dry season, though they cannot make up for the decreased streamflow from diminished snowpack.<sup>22</sup>

A 2008 report from New Mexico State University states that “[s]ocial, economic and environmental systems in water-scarce New Mexico and throughout the arid southwest are vulnerable to disruptions in water supplies that are likely to accompany future climate changes.”<sup>23</sup>

The changes in the water cycle increase the potential for, and severity of, severe storms, flooding, and droughts.<sup>24</sup> Even in arid regions like the southern region of New Mexico, increased precipitation is likely to cause flash flooding, and

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<sup>20</sup> USGCRP, *Global Climate Change Impacts Report*, *supra* note 4, at 130-31.

<sup>21</sup> D'Antonio, *supra* note 19, at 4-15; 160 Cong. Rec. S1425 (March 10, 2014) (statement of Senator Martin Heinrich).

<sup>22</sup> *Id.*

<sup>23</sup> Brian H. Hurd & Julie Coonrad, *Climate Change and Its Implications for New Mexico's Water Resources and Economic Opportunities*, New Mexico State University, Technical Report 45, <http://aces.nmsu.edu/pubs/research/economics/TR45/welcome.html> (last visited Mar. 19, 2014).

<sup>24</sup> Environmental Protection Agency (EPA), *Technical Support Document for Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act*, 111 (December 7, 2009) [hereinafter *TS Endangerment Findings*], available at [http://www.epa.gov/climatechange/Downloads/endangerment/Endangerment\\_TSD.pdf](http://www.epa.gov/climatechange/Downloads/endangerment/Endangerment_TSD.pdf).

will be followed by more drought.<sup>25</sup>

These changes are already occurring. Droughts in the southwestern United States have increased in frequency and severity within the last fifty years, coincident with rising temperatures.<sup>26</sup> In 2009, more than half of the United States received above normal precipitation; yet the southwestern United States had one of its driest periods.<sup>27</sup> Less water in reservoirs combined with summer and fall water stresses will become a growing concern and have profound consequences for water use in the Southwest.<sup>28</sup> According to the U.S. Drought Monitor, New Mexico just endured the driest two-year period on record for the state.<sup>29</sup>

The Rio Grande Valley, a central source of water in the state has shown dramatic changes in the extent of snow cover and the amount of water stored in

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<sup>25</sup> *Id.* at 115, 149

<sup>26</sup> *Id.* at 148.

<sup>27</sup> NOAA, National Climatic Data Center, *State of the Climate, National Overview for Annual 2009* (2009), available at <https://www.ncdc.noaa.gov/sotc/national/2009/13#precip>.

<sup>28</sup> Tim P. Barnett et al., *Human-Induced Changes in the Hydrology of the Western United States*, 319 *Science* 1080 (2008); N.S. Christensen & D.P. Lettenmaier, *A Multimodal Ensemble Approach to Assessment of Climate Change Impacts on the Hydrology and Water Resources of the Colorado River Basin*, 3 *Hydrology & Earth Sys. Sci.* 3727 (2007); Phillip W. Mote, *Climate-Driven Variability and Trends in Mountain Snowpack in Western North America*, 19 *J. Climate* 6209, 6209 (2006).

<sup>29</sup> National Integrated Drought Information System, *U.S. Drought Portal*, <http://www.drought.gov/drought/news/new-mexico-setting-new-records-drought> (last visited Mar. 19, 2014).

that snow.<sup>30</sup> The 2014 winter has seen a fraction of the snow and runoff from that snow that is typical for New Mexico.<sup>31</sup> Elephant Butte Reservoir, the largest reservoir in the state at just over 2 million acre-feet was at only 3% of its capacity in July 2013.<sup>32</sup> With rising temperatures and decreased snowpack, it no longer holds enough water to irrigate the 90,000 acres of farmland it supports in New Mexico and provide half of the water supply for El Paso, Texas.<sup>33</sup>

Drought and heat waves leave a devastating imprint on New Mexico's agriculture industry. New Mexico is home to iconic crops such as red and green chilis, pistachios, peanuts, and pecans.<sup>34</sup> All of these crops are dependent upon irrigation and rely upon the Rio Grande.<sup>35</sup> Warming beyond modest increases will likely harm the region's agriculture, particularly threatening specialty crops

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<sup>30</sup> 160 Cong. Rec. S1425 (March 10, 2014) (statement of Senator Martin Heinrich).

<sup>31</sup> *Id.*

<sup>32</sup> NASA Earth Observatory, *Drought Dries Elephant Butte Reservoir* (July 26, 2013), available at <http://earthobservatory.nasa.gov/IOTD/view.php?id=81714>; 160 Cong. Rec. S1425 (March 10, 2014) (statement of Senator Martin Heinrich).

<sup>33</sup> Zack Guido, *Drought on the Rio Grande*, NOAA (Oct. 4, 2012), available at <http://www.climate.gov/news-features/features/drought-rio-grande>; 160 Cong. Rec. S1425 (March 10, 2014) (statement of Senator Martin Heinrich).

<sup>34</sup> 160 Cong. Rec. S1425 (March 10, 2014) (statement of Senator Martin Heinrich); Zack Guido, *The Costs of Drought on the Rio Grande*, NOAA (Nov. 12, 2012), available at <http://www.climate.gov/news-features/features/costs-drought-rio-grande>.

<sup>35</sup> 160 Cong. Rec. S1425 (March 10, 2014) (statement of Senator Martin Heinrich); Zack Guido, *The Costs of Drought on the Rio Grande*, NOAA (Nov. 12, 2012), available at <http://www.climate.gov/news-features/features/costs-drought-rio-grande>.

dependent on more narrow temperature ranges.<sup>36</sup> A 2012 study found that by the year 2020, New Mexico's ranching and agriculture industries will suffer \$73 million in losses annually due to climate change.<sup>37</sup>

Climate change is causing late seasonal snow, less snow coverage, earlier wet snow avalanches, and generally shorter snow seasons.<sup>38</sup> The increasing temperatures and decrease in snowpack in the Southwest have enormous economic consequences for the winter tourism industry, which includes skiing, snowshoeing, and snowmobiling.<sup>39</sup> The financial ramifications ripple throughout the whole economy. New Mexico has a \$182 million ski industry, and winter tourism in the state provides more than 3,100 jobs.<sup>40</sup> During the 2011-2012 season, New Mexico lost approximately \$48 million in revenue due to the lack of snow.<sup>41</sup> As snow levels continue to decrease, New Mexico's economy will increasingly suffer the consequences of a struggling industry.

### **III. Forest Wildfires and Climate Change Threats to Forest Ecosystems and Vegetation Zones**

Human-caused climate change is also changing where vegetation and forests

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<sup>36</sup> USGCRP, *Global Climate Change Impacts Report*, *supra* note 4, at 134.

<sup>37</sup> Robert Repetto, *New Mexico's Rising Economic Risks from Climate Change*, 4 (2012).

<sup>38</sup> USGCRP, *Global Climate Change Impacts Report*, *supra* note 4, at 133.

<sup>39</sup> USGCRP, *Global Climate Change Impacts Report*, *supra* note 4, at 133; Elizabeth Burakowski & Matthew Magnusson, *Climate Impacts on the Winter Tourism Economy in the United States* (2012).

<sup>40</sup> Burakowski & Magnusson, *supra* note 39, at 27.

<sup>41</sup> *Id.*

can survive, and it poses numerous threats to their survivability.

[The] number and frequency of forest fires and insect outbreaks are increasing in the interior West, the Southwest, and Alaska . . . The growth of many crops and weeds is being stimulated. Migration of plant and animal species is changing the composition and structure of arid . . . and other ecosystems.<sup>42</sup>

Because of rising temperatures, the microclimate of the mountains is expected to migrate upward in elevation and the Desert Southwest microclimate is expected to progress up into the valleys of the Western Slope.<sup>43</sup> A synthesis report on New Mexico's neighbor to the north shows that by 2050, the January climate of the Eastern Plains of Colorado is expected to shift northward by around 150 miles.<sup>44</sup> Vegetation zones that existed in New Mexico as recently as the 1990s no longer exist in the state because they have moved north due to increasing temperatures and changes in precipitation.<sup>45</sup>

In 2000-2003, severe drought combined with unusually high temperatures caused a significant die-off of piñon pine forests in the Four Corners region of the state. Piñon pines are a very drought-tolerant species having survived many dry periods in the past. However, the sustained high temperatures and drought of 2000-

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<sup>42</sup> EPA, *TS Endangerment Findings*, supra note 24, at 41 (quoting USCCSP, Backlund et. al., 2008a); see also Nancy B. Grimm, et al., *The impacts of climate change on ecosystem structure and function*, 11(9) *Front. Ecol. Env't.* 474, 478 (2013), available at <http://www.esajournals.org/doi/pdf/10.1890/120282>.

<sup>43</sup> Ray et al., supra note 12, at 1.

<sup>44</sup> *Id.*

<sup>45</sup> EPA, *TS Endangerment Findings*, supra note 24, at 108.

2003 made the piñon pines more susceptible to pine-bark beetle infestations. In some areas of the Four Corners region, more than 90% of the trees died, resulting in significant changes to the structure and function of the ecosystem.<sup>46</sup>

The federal government has warned that increasing temperatures and reduced snowpack along with earlier spring runoff with drier soils and vegetation will increase the acreage burned by wildfires. Climate change can also lead to subtle shifts in the way wildfires move, resulting in “runaway fires” that may appear under control only later to rekindle.<sup>47</sup> Indeed, severe historic wildfires in the Western United States have quadrupled in recent years.<sup>48</sup>

New Mexico’s Drought Monitoring Working Group determined in August 2012 that the previous 24 months were the warmest and driest in New Mexico history.<sup>49</sup> During that same period, major fires burned in many parts of New Mexico, including the two largest fires in state history.<sup>50</sup> During the summer of 2011, fires blackened large areas near Raton and Ruidoso, as well as in the Gila

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<sup>46</sup> USGCRP, *Global Climate Change Impacts Report*, *supra* note 4, at 131-32; *see also* William R. L. Anderegg, et al., *Consequences of widespread tree mortality triggered by drought and temperature stress*, 3 *Nature Climate Change* 30 (2013), available at <http://www.nature.com/nclimate/journal/v3/n1/full/nclimate1635.html>.

<sup>47</sup> USGCRP, *Global Climate Change Impacts Report*, *supra* note 4, at 131.

<sup>48</sup> USGCRP, *Global Climate Change Impacts Report*, *supra* note 4, at 95.

<sup>49</sup> New Mexico Governor’s Drought Task Force, *Fire Information*, [http://www.nmdrought.state.nm.us/fire\\_info.html](http://www.nmdrought.state.nm.us/fire_info.html) (last visited Mar. 19, 2014).

<sup>50</sup> *Id.*

National Forest of southwestern New Mexico.<sup>51</sup> The Las Conchas fire near Santa Fe devoured nearly 40,000 acres in the course of one day in late June 2011, and ended up being the largest New Mexico wildfire at that time.<sup>52</sup> The Las Conchas fire ultimately burned 156,000 acres, causing catastrophic losses to the Pueblo of Cochiti and the Pueblo of Santa Clara<sup>53</sup> and the loss of several ecosystem services.<sup>54</sup> However, in the dry spring of 2012, the Whitewater Baldy Complex fire in southwestern New Mexico grew to nearly 300,000 acres in size, surpassing the Las Conchas fire from the prior year.<sup>55</sup> Then in 2013, the Silver Fire, east of Silver City burned over 138,000 acres, another to add to the list of record-setting wildfires.<sup>56</sup>

New Mexico's Ponderosa Pine forests have naturally developed with regular forest fires, but they are intolerant to the extremely hot and large forest fires stoked by a warming climate, like Las Conchas and Whitewater Baldy Complex. Studies by Los Alamos National Laboratory have revealed that a significant portion of

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<sup>51</sup> *Id.*

<sup>52</sup> *Id.*

<sup>53</sup> *Id.*

<sup>54</sup> Nancy B. Grimm, et al., *Climate-change impacts on ecological systems: introduction to a US assessment*, 11(9) *Front. Ecol. Envt.* 456, 461 (2013), available at <http://www.esajournals.org/doi/pdf/10.1890/120310>.

<sup>55</sup> New Mexico Governor's Drought Task Force, *Fire Information*, [http://www.nmdrought.state.nm.us/fire\\_info.html](http://www.nmdrought.state.nm.us/fire_info.html) (last visited Mar. 19, 2014).

<sup>56</sup> NOAA National Climatic Data Center, *Wildfires – June 2013*, <http://www.ncdc.noaa.gov/sotc/fire/2013/6> (last visited Mar. 19, 2014).



high elevation conifer forests in New Mexico will be gone by mid-century.<sup>57</sup> These forests provide opportunities for recreation, and habitat for wildlife, but they also support the watersheds on which New Mexicans depend.

These severe and atypical burns threaten New Mexico's surface water resources as well due to severe flooding and erosion problems that follow, reducing reservoir storage and surface water quality and usability.<sup>58</sup> As one example, the City of Santa Fe had to cease diverting water from the Rio Grande when ash from the Las Conchas fire contaminated the river upstream of the City's intake.<sup>59</sup> Likewise, Bonito Lake near Ruidoso, an essential source of water for the City of Alamogordo, became unusable from silt and ash runoff caused by the Little Bear fire.<sup>60</sup> It may remain unusable for years.<sup>61</sup>

In addition to the human and environmental costs of wildfires, fighting them also incurs significant cost to taxpayers. According to the journal *Frontiers in Ecology and the Environment*, taxpayers now pay over \$1 billion per season to

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<sup>57</sup> A. Park Williams, et al., *Temperature as a potent driver of regional forest drought stress and tree mortality* (2012), available at [http://www.researchgate.net/publication/231416131\\_Temperature\\_as\\_a\\_potent\\_driver\\_of\\_regional\\_forest\\_drought\\_stress\\_and\\_tree\\_mortality/file/d912f5069c2e9316b9.pdf](http://www.researchgate.net/publication/231416131_Temperature_as_a_potent_driver_of_regional_forest_drought_stress_and_tree_mortality/file/d912f5069c2e9316b9.pdf); Los Alamos National Laboratory, *Climate change cripples forests*, News Release (Oct. 1, 2012), available at <https://www.lanl.gov/newsroom/news-releases/2012/October/10.01-climate-change-cripples-forest.php>.

<sup>58</sup> New Mexico Governor's Drought Task Force, *Fire Information*, [http://www.nmdrought.state.nm.us/fire\\_info.html](http://www.nmdrought.state.nm.us/fire_info.html) (last visited Mar. 19, 2014).

<sup>59</sup> *Id.*

<sup>60</sup> *Id.*

<sup>61</sup> *Id.*

fight and suppress forest wildfires.<sup>62</sup>

#### **IV. Human Health and Economic Impacts**

The drought plaguing New Mexico leads to water and food shortages and is likely to have long-term economic and health impacts on New Mexican citizens and future generations.<sup>63</sup> In addition to increased food insecurity from decreases in agricultural productivity, some economic systems in New Mexico are strictly dependent on successful agriculture.<sup>64</sup> The harvest periods are a critical time and vulnerable to the increased drought and heat.<sup>65</sup>

In addition to reducing availability of water for irrigation, drought also threatens the quality and quantity of the drinking water supply and the capacity of sanitation systems, both of which can displace human populations.<sup>66</sup> Other possible public health implications from drought include adverse impacts on air quality and diminished living conditions because of scarce energy.<sup>67</sup> An increase in the incidence of malnutrition, illness, and disease are other factors associated with

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<sup>62</sup> Erik J. Nelson, et al., *Climate change's impact on key ecosystem services and the human well-being they support in the US*, 11(9) *Front. Ecol. Envt.* 483, 484-85 (2013), available at <http://www.esajournals.org/doi/pdf/10.1890/120312>.

<sup>63</sup> New Mexico Governor's Drought Task Force, *Drought Impact on Our Economy*, [http://www.nmdrought.state.nm.us/fin\\_economy.html](http://www.nmdrought.state.nm.us/fin_economy.html) (last visited Mar. 19, 2014).

<sup>64</sup> *Id.*

<sup>65</sup> *Id.*

<sup>66</sup> *Id.*; New Mexico Governor's Drought Task Force, *Drought and Health*, [http://www.nmdrought.state.nm.us/DTF\\_health.html](http://www.nmdrought.state.nm.us/DTF_health.html) (last visited Mar. 19, 2014).

<sup>67</sup> New Mexico Governor's Drought Task Force, *Drought and Health*, [http://www.nmdrought.state.nm.us/DTF\\_health.html](http://www.nmdrought.state.nm.us/DTF_health.html) (last visited Mar. 19, 2014).

increased drought conditions, in addition to other mental and physical health problems resulting from low quality and quantities of water, and increase in dust.<sup>68</sup> The frequency, intensity, and duration of conditions conducive to air pollution are exacerbated with warming temperatures, thereby threatening the health and well-being of people who suffer from respiratory illnesses like asthma and pulmonary disease.<sup>69</sup> As discussed earlier, threats to public safety from an increase in the number and severity of forest and range fires will persist.<sup>70</sup>

The health implications of drought are numerous and far reaching. Some drought-related health effects are experienced in the short-term and can be directly observed and measured. However, the slow rise or chronic nature of drought can result in longer term, indirect health implications that are not always easy to anticipate or monitor.<sup>71</sup>

Longer-lasting and more intense heat waves will deplete electricity supplies as more people use air conditioning, increasing the risk of brownouts and blackouts. This could become even more problematic as the timing of river flows decreases the capacity of hydroelectric systems.<sup>72</sup>

Substantial and transformational disruption to New Mexico's agricultural and rural economy can be expected in the future as climate changes. Under the best economic and institutional assumptions, direct economic losses of up to \$100 million are estimated, largely suffered in the agricultural sector under relatively

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<sup>68</sup> *Id.*

<sup>69</sup> USGCRP, *Global Climate Change Impacts Report*, *supra* note 4, at 92-93.

<sup>70</sup> New Mexico Governor's Drought Task Force, *Drought and Health*, [http://www.nmdrought.state.nm.us/dtf\\_health.html](http://www.nmdrought.state.nm.us/dtf_health.html) (last visited Mar. 19, 2014).

<sup>71</sup> *Id.*

<sup>72</sup> USGCRP, *Global Climate Change Impacts Report*, *supra* note 4, at 13.

severe climate changes by 2080, with an additional \$200 million in indirect economic losses anticipated.<sup>73</sup>

However, even these economic impact estimates likely undervalue the severity of climate disruption to come, and may not account for significant transactional costs in settling water rights disputes or the values that lost agricultural services provide for ecosystems and society.<sup>74</sup>

## V. Tribal and Cultural Impacts

Experts, scientists, and scholars overwhelmingly agree that Native Americans and tribal communities are being profoundly devastated by the impacts of climate change.<sup>75</sup> These communities face the loss of their land, culture,

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<sup>73</sup> Hurd & Coonrad, *supra* note 23.

<sup>74</sup> Hurd & Coonrad, *supra* note 23.

<sup>75</sup> Randall S. Abate et al., *Climate Change and Indigenous Peoples: The Search for Legal Remedies* (Randall S. Abate & Elizabeth Ann Kronk eds., 2013); K. Cozzetto et al., *Climate change impacts on the water resources of American Indians and Alaska Natives in the U.S.*, 120 *Climatic Change* 569 (2013), available at <http://link.springer.com/article/10.1007/s10584-013-0852-y>; Julie K. Maldonado et al., *The Impact of Climate Change on Tribal Communities in the US: Displacement, Relocation, and Human Rights*, 120 *Climatic Change* 601 (2013), available at <http://link.springer.com/article/10.1007/s10584-013-0746-z>; Kathy Lynn et al., *The Impacts of Climate Change on Tribal Traditional Foods*, 120 *Climatic Change* 545 (2013), available at <http://link.springer.com/article/10.1007/s10584-013-0736-1>; Garrit Voggesser et al., *Cultural Impacts to Tribes from Climate Change Influences on Forests*, 120 *Climatic Change* 615 (2013), available at <http://link.springer.com/article/10.1007/s10584-013-0733-4>; Kyle Powys Whyte, *Justice Forward: Tribes, Climate Adaptation and Responsibility in Indian Country*, 120 *Climatic Change* 517 (2013), available at <http://link.springer.com/article/10.1007/s10584-013-0743-2>; Daniel R. Wildcat, *Introduction: climate change and indigenous peoples of the USA*, 120 *Climatic*

spiritual connections, health, and economic viability. Although climate change threatens the entire United States, Native Americans are more likely to be impacted by climate change, because of their unique characteristics.

New Mexico is home to many Native Americans and tribal communities, who are among the most vulnerable to climate change impacts in the state. With the rising temperatures and drought conditions discussed above, Native Americans living on reservations face serious impacts from limited access to water

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Change 509 (2013), available at <http://link.springer.com/article/10.1007/s10584-013-0849-6>; Preston Hardison & Terry Williams, *Culture, Law, Risk and Governance: The Ecology of Traditional Knowledge in Climate Change Adaptation*, 120 *Climatic Change* 531 (2013), available at <http://link.springer.com/article/10.1007/s10584-013-0850-0>; Robert M. Figueroa, *Indigenous peoples and cultural losses*, in *The Oxford Handbook of Climate Change* 232-259 (J.S. Dryzek et al. eds., 2011); Zoltan Grossman, *Indigenous Nations' Responses Climate Change*, 32 *Am. Indian Cult. Res. J.* 5-27 (2008); Rebecca Tsosie, *Keynote Address: Indigenous Peoples and Global Climate Change: Intercultural Models of Climate Equity*, 25 *J. Env't. L. & Litig.* 7 (2010); Garrit Voggeser, *The Tribal Path Forward: Confronting Climate Change and Conserving Nature*, *The Wildlife Professional*, 24-30 (Winter 2010); Eleanor Dictaan-Bang-oa, *Perishing Past and Pride: Indigenous Women and Climate Change*, 2 *Women in Action* 47-50 (2009); Sarah Krakoff, *American Indians, Climate Change, and Ethics for a Warming World*, 85 *Denv. U. L. Rev.* 865 (2008); Bob Roehr, *AAAS Coalition Explores Perspectives of Indigenous Communities on Climate Change*, American Association for the Advancement of Science News Release (Feb. 6, 2012); Jan Salick & Anja Byg, *Indigenous Peoples and Climate Change*, Tyndall Centre for Climate Change Research, Oxford (2007); Victoria Tauli-Corpuz & Aqqaluk Lynge, *Impact of Climate Change Mitigation Measures on Indigenous Peoples and on their Territories and Lands*, New York: UN Permanent Forum on Indigenous Issues (2008).

resources.<sup>76</sup> Because these communities are often tied to specific areas of land, such as reservations, it is impossible for Native Americans to leave these areas to either escape the effects of climate change or perhaps to follow migratory species moving to new ranges without abandoning their land, their culture, and without risk to their legal rights.<sup>77</sup>

For these Southwestern tribes, climate change and the scarcity of water also threaten local infrastructure, food sovereignty, access to culturally important species of plants and animals, and their traditional ways of life.<sup>78</sup> The deleterious impact of warming on the timing of snowmelt can also adversely affect tribes that follow traditional harvesting cycles.

The oral accounts of tribal elders and traditional knowledge validates what western science has shown about the changing climate of the Southwest. For

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<sup>76</sup> Margaret Hiza Redsteer, et al., *Assessment of Climate Change in the Southwest United States: Ch. 17 – Unique Challenges Facing Southwestern Tribes*, 389 (2013), available at <http://swccar.org/sites/all/themes/files/SW-NCA-color-FINALweb.pdf>; T.M. Bull Bennett, et al., *Third National Climate Assessment Draft Report, Ch. 12 – Tribal, Indigenous, and Native Lands and Resources*, 447 (2013), available at <http://ncadac.globalchange.gov/download/NCAJan11-2013-publicreviewdraft-chap12-tribal.pdf>.

<sup>77</sup> See USGCRP, *Global Climate Change Impacts Report*, supra note 4, at 101.

<sup>78</sup> Margaret Hiza Redsteer, et al., *Assessment of Climate Change in the Southwest United States: Ch. 17 – Unique Challenges Facing Southwestern Tribes*, 391 (2013), available at <http://swccar.org/sites/all/themes/files/SW-NCA-color-FINALweb.pdf>; T.M. Bull Bennett, et al., *Third National Climate Assessment Draft Report, Ch. 12 – Tribal, Indigenous, and Native Lands and Resources*, 447 (2013), available at <http://ncadac.globalchange.gov/download/NCAJan11-2013-publicreviewdraft-chap12-tribal.pdf>.

instance, Dr. Margaret Hiza Redsteer of the U.S. Geological Survey, an expert on climate science and Southwestern tribal lands, has shown that the sand dunes across the Navajo Nation are migrating due to climate change.<sup>79</sup> Oral accounts from elders confirm what the scientific measurements show, namely that the dune migration poses immediate dangers to tribal lands by way of damaged infrastructure, a reduction in the arable and rangelands, and dust storms that compromise public health.<sup>80</sup>

As the land and environment in New Mexico change due to climate change, many Native communities are faced with devastating impacts on their culture, spirituality and traditions, especially as land and water are literally lost to the elements. The unique impacts of climate change on Native communities in New Mexico should be taken into consideration by this Court.

## CONCLUSION

*Amici* hereby respectfully request that the Court uphold Appellants' rights as beneficiaries of public trust resources and declare that the State must affirmatively act as trustee over the atmospheric resource, which all New Mexicans, including future generations, depend upon for their livelihoods and well-being.

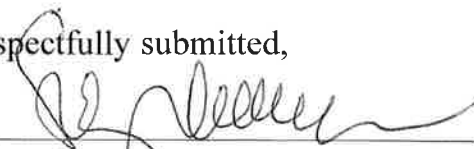
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<sup>79</sup> Margaret Hiza Redsteer, et al., *Monitoring and Analysis of Sand Dune Movement and Growth on the Navajo Nation, Southwestern United States*, US Geological Survey, Fact Sheet 2011-3085 (2011), available at <http://pubs.usgs.gov/fs/2011/3085/>.

<sup>80</sup> *Id.*

DATED this 27<sup>th</sup> day of March, 2014.

Respectfully submitted,



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Steven Sugarman  
Counsel for *Amici Curiae*



**CERTIFICATE OF SERVICE**

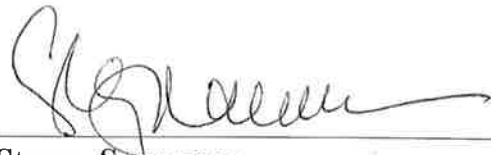
I hereby certify that on the 27th day of March, 2014, I served a true and correct copy of the foregoing Brief of State Representative Gail Chasey, et al. as *Amici Curiae* in Support of Appellants Seeking Reversal to the following via First Class

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