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## Turning Off the Tap: Will California Let the Salton Sea Go Down the Drain?

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## TURNING OFF THE TAP: WILL CALIFORNIA LET THE SALTON SEA GO DOWN THE DRAIN?

*“The Salton Sea is always changing and never goes back to the same way it was.”*

*Al Kalin, Imperial Valley Farm Bureau<sup>1</sup>*

### INTRODUCTION

On the east side, a brisk, calm winter morning brings a perfect reflection of the rising sun hitting the mountains across its surface. On the south side, thousands of snow geese fill the sky overhead. A nearby hill consisting of shiny black obsidian indicates the area’s seismic activity. This is the Salton Sea, California’s largest lake, which covers approximately 360 square miles, or 230,000 acres, in the desert in southeastern California.<sup>2</sup> The Sea has no outlet and a high evaporation rate in one of the hottest deserts in North America, which make it more saline than the ocean.<sup>3</sup>

For many years, the Sea attracted millions of migratory birds during the winter due to its diverse habitats and prime location along the Pacific Flyway.<sup>4</sup> Today, however, the Sea is not what it once was: the Sea is in crisis as water inputs decrease and its surface elevation drops. For instance, very few fish-eating birds were observed this winter because even the salt-tolerant tilapia fish struggle to survive in the Sea’s increasingly saline waters.<sup>5</sup> Still, because development has consumed

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1. Telephone Interview with Al Kalin, First Vice President, Imperial Cty. Farm Bureau (Mar. 21, 2019).

2. MAC TAYLOR, CAL. LEGISLATIVE ANALYST’S OFFICE, THE SALTON SEA: A STATUS UPDATE 3 (Aug. 29, 2018), <https://lao.ca.gov/reports/2018/3879/salton-sea-082918.pdf>.

3. *See generally id.*

4. *See* IMPERIAL IRRIGATION DIST. & IMPERIAL CTY., SALTON SEA RESTORATION AND RENEWABLE ENERGY INITIATIVE: FRAMEWORK DOCUMENT 71 (2015), <https://saltonseanow.com/wp-content/uploads/2015/07/Draft-SSRREI-Framework-Document-July-22-2015.pdf> [hereinafter IID RENEWABLE ENERGY].

5. *See* Janet Wilson, *Salton Sea: Fish and the Birds that Fed on Them Wiped out This Winter*, DESERT SUN (Feb. 8, 2019, 4:26 PM),

many of Southern California's wetlands, migratory birds have very few other options for food and shelter.<sup>6</sup>

Moreover, the Sea's receding waters have exposed large areas of lakebed that yield to the harsh desert winds and create hazardous dust, threatening surrounding communities' health and agricultural economies.<sup>7</sup> The residents surrounding the Sea have a strong interest in its health. Over half a million people live within the Salton Sea Air Basin, with approximately one-third in the Imperial Valley, two-thirds in the Coachella Valley, and much smaller populations along the west and east shores of the Sea.<sup>8</sup> Almost 40,000 people live within several miles of the Sea, and the vast majority of this nearby population is poor and Hispanic.<sup>9</sup> Imperial County has an asthma hospitalization rate for children that is much higher than the state average,<sup>10</sup> and hazardous dust from the Sea will exacerbate this existing public health problem.

Also, the farms of the Imperial and Coachella Valleys are significant economic engines for the region. Imperial Valley farms encompass 500,000 acres, while Coachella Valley farms encompass 60,000 acres.<sup>11</sup> One-third of Imperial County's jobs are in agriculture, and in 2010, the two valleys' revenues from agriculture topped two billion dollars.<sup>12</sup> Imperial Valley farmers produce "two-thirds of the lettuce, carrots, broccoli, spinach, onions, and other vegetables consumed in the United States during the winter months."<sup>13</sup>

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<https://www.desertsun.com/story/news/2019/02/08/salton-sea-california-fish-bird-die-off-winter/2818025002/>.

6. TAYLOR, *supra* note 2, at 4.

7. MICHAEL J. COHEN, PACIFIC INST., HAZARD'S TOLL: THE COSTS OF INACTION AT THE SALTON SEA 12, 28 (2014), [https://pacinst.org/wp-content/uploads/2014/09/PacInst\\_HazardsToll.pdf](https://pacinst.org/wp-content/uploads/2014/09/PacInst_HazardsToll.pdf).

8. *Id.* at 11.

9. *Id.*

10. See Marisa Agha, *12,000 Imperial County Children Already Have Asthma. Will Salton Sea Make It Worse?*, SACRAMENTO BEE (Mar. 24, 2017, 3:51 PM), <https://www.sacbee.com/news/politics-government/capitol-alert/article140673403.html>.

11. COHEN, *supra* note 7, at 28.

12. *Id.*

13. IMPERIAL IRRIGATION DIST., A CENTURY OF SERVICE 85 (2011), <https://www.iid.com/home/showdocument?id=4900> [hereinafter IID CENTURY OF SERVICE].

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The perpetual battle for Colorado River water precipitated the Sea's current crisis. Drought conditions and the growing populations of Arizona and Nevada made California stop taking more than its share of the river.<sup>14</sup> Southern California's thirsty coastal cities then moved to buy a reliable water supply from the Imperial Irrigation District, which started transferring water to the coastal cities that had previously flowed to the Sea.<sup>15</sup> Because of the water transfer's drastic impacts on the Sea and its surroundings, urgent action is needed to protect the Sea's wildlife and the surrounding communities' health and economic well-being.

Many private and government entities play a role in the Sea's story, but several are notable for their extensive involvement. The first major player is the Imperial Irrigation District ("IID"). IID is a public utility provider that supplies water and power to the Imperial Valley and a portion of the Coachella Valley.<sup>16</sup> IID conveys water to irrigate more than 500,000 acres of cropland and to serve nine cities south of the Salton Sea.<sup>17</sup> The Colorado River supplies the water via the All-American Canal, stretching eighty miles across the harsh Colorado Desert.<sup>18</sup> IID is the largest single user of Colorado River water and has one of the most senior rights to the river, in the amount of at least 2.6 million acre-feet per year.<sup>19</sup> This allocation is called a "present perfected right," which must be satisfied first in times of shortage.<sup>20</sup> Water runoff from the croplands within IID's service area is the primary source of the Sea's water.<sup>21</sup>

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14. COLO. RIVER BD. OF CAL., DRAFT COLORADO RIVER WATER USE PLAN 16 (May 11, 2000).

15. See TAYLOR, *supra* note 2, at 4.

16. IID CENTURY OF SERVICE, *supra* note 13, at 85.

17. See *IID History*, IMPERIAL IRRIGATION DIST., <https://www.iid.com/about-iid/an-overview/iid-history> (last visited Feb. 15, 2019).

18. *Id.*

19. See *id.* An acre-foot is 326,000 gallons, or enough water for two average households for a year. *What's an Acre Foot?*, WATER EDUC. FOUND., <https://www.watereducation.org/general-information/whats-acre-foot> (last visited Nov. 25, 2019).

20. See ARTHUR L. LITTLEWORTH & ERIC L. GARNER, CALIFORNIA WATER II 328 (2d ed. 2007).

21. TAYLOR, *supra* note 2, at 3.

Second, the Bureau of Reclamation has also played a major role in the Sea's story. The Bureau of Reclamation is an agency within the federal Department of the Interior that manages federal water infrastructure, such as dams and canals, in seventeen western states.<sup>22</sup> The Reclamation Act of 1902 and other laws specifically governing the Colorado River provided the Secretary of the Interior, acting through the Bureau of Reclamation, with the power to make "annual determinations regarding the availability of water" in the Colorado River system.<sup>23</sup> With this power comes the ability to reduce water deliveries if a water shortage occurs on the river.<sup>24</sup>

The San Diego County Water Authority ("SDCWA") is a third stakeholder that has shaped the current Sea. The SDCWA provides water to 3.3 million people in San Diego County via twenty-four member agencies.<sup>25</sup> SDCWA purchased most of its water from a larger water agency until its 2003 water transfer with the Imperial Irrigation District.<sup>26</sup>

Fourth, several conservation organizations are involved in advocating for the Sea and its wildlife. Chief among these are Audubon California ("Audubon") and Defenders of Wildlife ("Defenders"). Audubon is a nationwide conservation organization focused on protecting birds and their habitats and seeks to maintain a healthy Sea as a refuge for migratory birds.<sup>27</sup> Similarly, Defenders is "dedicated to the protection of all native animals and plants in their natural

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22. *See About Us-Mission*, BUREAU OF RECLAMATION, <https://www.usbr.gov/main/about/mission.html> (last visited Apr. 7, 2019)

23. Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead, 73 Fed. Reg. 19,873, 19,874 (Apr. 11, 2008).

24. *Id.*

25. *About Us*, SAN DIEGO CTY. WATER AUTH., <https://sdcwa.org/about-us> (last visited Feb. 16, 2019).

26. *Id.*

27. *Audubon Urges California Officials to Swiftly Implement New Salton Sea Funds*, NAT'L AUDUBON SOC'Y (June 6, 2018), <https://www.audubon.org/news/audubon-urges-california-officials-swiftly-implement-new-salton-sea-funds>.

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communities.”<sup>28</sup> Defenders has worked toward a sustainable solution at the Sea since 2001.<sup>29</sup>

Lastly, the California Natural Resources Agency serves as the lead state agency coordinating restoration activities at the Sea.<sup>30</sup> It works with local and federal governments, and other state agencies, such as the Department of Water Resources, the State Water Resources Control Board, and the Department of Fish and Wildlife, to plan, implement, and monitor projects.<sup>31</sup> These stakeholders and several others have the difficult task of averting a disaster at the Sea. Although their efforts have yielded valuable research and workable plans, they have not yet made significant progress toward saving the Sea.

This Comment suggests that the current short-term restoration plan and long-term proposals for the Sea’s management fail to address serious obstacles to progress and do not adequately engage and incentivize the private sector to harness the profit motive to help restore the Sea. The State must embrace creative solutions to fund long-term management, remove landowner liability issues by using eminent domain, and encourage private sector development of the Sea’s resources. Part I examines the Sea’s origins and rich resources to demonstrate its value to the people of California. The legal background of the Sea, as seen through the lens of the battles over Colorado River water and the massive water transfer that led to the urgent need for action at the Sea, is discussed in Part II. Part III explores the State’s short-term plan to address wildlife habitat degradation and hazardous dust caused by the Sea’s retreat. Part IV describes various long-term proposals to address the Sea’s problems for the remainder of the twenty-first century. Finally, recommendations to fund projects, remove obstacles to progress, and encourage private sector participation in saving the Sea are set forth in Part V.

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28. *Mission and Vision*, DEFENDERS OF WILDLIFE, <https://defenders.org/mission-and-vision> (last visited Apr. 6, 2019).

29. Stephanie Dashiell, *Powering up at the Salton Sea?*, DEFENDERS OF WILDLIFE (July 29, 2013), <https://defendersblog.org/2013/07/powering-up-at-the-salton-sea/>.

30. TAYLOR, *supra* note 2, at 7.

31. *Id.*

## I. THE ENVIRONMENTAL HISTORY OF AN ACCIDENTAL LAKE

The current Salton Sea is not a naturally occurring lake; rather, it was created by accident.<sup>32</sup> Farmers' fervent desire to cultivate the rich soils of an ancient seabed thrust the entire Colorado River out of its banks near the present day town of El Centro to form the Sea in 1905.<sup>33</sup> After they tamed the river, those farmers used the Sea to collect their agricultural runoff, feeding the largest lake in California.<sup>34</sup> The Sea became a rich bird habitat, a productive fishery, and a storied recreation destination.<sup>35</sup> But as the Sea matured, its health faltered, leading to bird and fish die-offs and abandonment of its once-thriving tourist industry.

A. *The Sea's Origins and Heyday*

The Salton Sea's geography has dictated its curious path from a natural haven to a potential disaster. The Sea lies within the Salton Sink, a large valley that is mostly below sea level.<sup>36</sup> The sink is located in the Imperial and Coachella Valleys, which, many millennia ago, held ocean waters from the Gulf of California's Sea of Cortez, a body of water that separates Baja California from mainland Mexico.<sup>37</sup> At this time, the Sea of Cortez's waters extended nearly to Palm Springs, California.<sup>38</sup> Fifty miles east of the Salton Sink, the silt-laden Colorado River built up its own riverbed, creating an extensive natural dam that separated the sink from the Sea of Cortez.<sup>39</sup> Although its ocean connection was cut off, the Salton Sink would contain the meandering flow of the Colorado River when it occasionally jumped its banks and

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32. See GEORGE KENNAN, *THE SALTON SEA: AN ACCOUNT OF HARRIMAN'S FIGHT WITH THE COLORADO RIVER* 40 (1917).

33. *Id.* at 33–35, 40.

34. Taylor, *supra* note 2, at 3.

35. See generally KIM STRINGFELLOW, *GREETINGS FROM THE SALTON SEA: FOLLY AND INTERVENTION IN THE SOUTHERN CALIFORNIA LANDSCAPE, 1905-2005* (2011).

36. Desert Museum, *The Story of Ancient Lake Cahuilla*, *DESERT SUN*, Feb. 15, 1946, at 12, <https://cdnc.ucr.edu/cgi-bin/cdnc?a=d&d=DS19460215.2.85&e=-----en-20-1-txt-txIN-----1>.

37. See *id.*

38. Desert Museum, *supra* note 36.

39. See STRINGFELLOW, *supra* note 35, at 6.

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spilled into the lower-elevation sink.<sup>40</sup> These diverted river flows formed Lake Cahuilla, named after the local native tribe who fished in the lake.<sup>41</sup> While the Salton Sink was a desert for most of the past several hundred years, occasional flood events would temporarily reform Lake Cahuilla, and the lake would evaporate after months or years.<sup>42</sup>

Human efforts to manipulate the Colorado River contributed to the Sea's creation. Boosters and farmers began their efforts to develop the Imperial Valley around the turn of the nineteenth century.<sup>43</sup> Several explorers and settlers recognized the agricultural potential of the Imperial Valley's fine silt soils as early as the mid-1800s, but the absence of water was the limiting factor.<sup>44</sup> In 1901, the California Development Company ("CDC") was contracted to bring Colorado River water to the Imperial Valley.<sup>45</sup> Since much of the Imperial Valley was lower in elevation than the Colorado River, the CDC used gravity to bring its water west to the Valley through the Imperial Canal.<sup>46</sup> In 1904, silt clogged the canal's intake from the river, and a hastily-built second intake allowed water to flow to the Valley, but it did not have an adequate head gate that would protect the canal in the event of a flood.<sup>47</sup>

In 1905, the quick fix to avoid silt buildup in the canal turned into a disaster. Several successive floods deepened and widened the alternate intake to the Imperial Canal, and increasing amounts of the Colorado River's flow entered the canal because it was lower in elevation than the river's bed.<sup>48</sup> The canal could not handle the river's entire flow, and the water jumped the canal's banks in search of the

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40. Desert Museum, *supra* note 36.

41. *Id.*

42. See BUREAU OF RECLAMATION, A SALTON SEA CHRONOLOGY 2 (2016), [http://resources.ca.gov/docs/salton\\_sea/Salton\\_Sea\\_Chronology\\_\(Prehistory-2015\).pdf](http://resources.ca.gov/docs/salton_sea/Salton_Sea_Chronology_(Prehistory-2015).pdf) [hereinafter SALTON SEA CHRONOLOGY].

43. KENNAN, *supra* note 32, at 18.

44. See *id.* at 15.

45. SALTON SEA CHRONOLOGY, *supra* note 42, at 2.

46. KENNAN, *supra* note 32, at 41; SALTON SEA CHRONOLOGY, *supra* note 42, at 3.

47. KENNAN, *supra* note 32, at 33–36.

48. See *id.* at 39–40.



lowest point it could find, which was the Salton Sink.<sup>49</sup> After herculean efforts by the Southern Pacific Railroad and the expenditure of six million dollars, the Colorado River was forced back into its channel in 1907—nearly two years later.<sup>50</sup> This hydrologic accident created the Salton Sea, which filled the lowest portion of the Salton Sink to a depth of roughly forty feet.<sup>51</sup>

In the decades following its creation, the Sea became a water recreation playground. The Imperial Valley's agricultural runoff water from nearly 500,000 irrigated acres fed the Sea, keeping its level relatively stable.<sup>52</sup> During the 1950s and 1960s, the Sea was a world-class recreation destination, made famous by visiting Hollywood celebrities.<sup>53</sup> Golf courses, resorts, and yacht clubs lined the Sea's shores and it became a productive fishery after several non-native fish species were introduced.<sup>54</sup>

The Sea also became a haven for migratory birds seeking food and shelter on their long journey traversing the Americas. The Sea continues to serve as one of the few remaining stops in Southern California on the Pacific Flyway.<sup>55</sup> The Sea's shoreline and marsh habitats, along with introduced fish species, serve as feeding grounds for 400 bird species.<sup>56</sup> As wetlands and other bird habitats, including the massive Colorado River Delta in Mexico, were developed or dewatered throughout the twentieth century, the Sea became a critical link for bird migrations.<sup>57</sup> The Sea's wildlife values were recognized as early as 1930 with the establishment of a federal wildlife refuge,

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49. *Id.*

50. IID CENTURY OF SERVICE, *supra* note 12, at 16–17.

51. See SALTON SEA CHRONOLOGY, *supra* note 42, at 3.

52. TAYLOR, *supra* note 2, at 3; IMPERIAL IRRIGATION DIST., *supra* note 17.

53. STRINGFELLOW, *supra* note 35, at 16.

54. *Id.* at 16, 19.

55. See William M. McLaren, *A Fishery, a Sanctuary, a Sink, and a Disaster: The Often Hapless Management of California's Salton Sea*, 21 HASTINGS W.-NW. J. ENV'T'L L. & POL'Y 141, 150 (2015).

56. *Id.* at 150–51.

57. *Id.*

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currently named the Sonny Bono Salton Sea National Wildlife Refuge, consisting of 35,000 acres, most of which is currently under water.<sup>58</sup>

*B. Environmental Catastrophe Looms*

Despite decades of troubling signs of environmental problems at the Sea,<sup>59</sup> neither the State of California, the federal government, nor any other stakeholders have taken substantial action to stop the Sea's decline. A 2003 water transfer between IID and SDCWA, known as the Quantification Settlement Agreement ("QSA"), reduced IID's use of Colorado River water by as much as 300,000 acre-feet per year, with a concomitant reduction in agricultural runoff to the Sea.<sup>60</sup> As fresh water inflows into the Sea have been reduced, the Sea's area has shrunk and its level has declined, exposing thousands of acres of lakebed to powerful desert winds that create fugitive dust that is hazardous to human health.<sup>61</sup> Further, salinity and contaminants in the Sea have become more concentrated, harming the Sea's fishery and the migratory birds that forage at the Sea and take shelter there.<sup>62</sup>

Starting in 2018, the Sea's sources of water, nearly all of which consist of agricultural runoff, declined by forty percent because of the QSA.<sup>63</sup> This decline could leave up to 100 square miles of playa (dry lakebed) exposed by 2030, which is nearly thirty percent of the Sea's

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58. SALTON SEA CHRONOLOGY, *supra* note 42, at 4; *see also Salton Sea Current and Projected Elevations*, U.S. BUREAU OF RECLAMATION (Apr. 16, 2015), <https://www.usbr.gov/lc/region/programs/SaltonSeaElevationsMap.pdf>.

59. *See generally* COACHELLA VALLEY WATER DIST., THE STORY OF THE COACHELLA VALLEY WATER DISTRICT: MAKING EVERY DROP COUNT SINCE 1918 83 (2018), <http://www.cvwd.org/DocumentCenter/View/3909/The-Story-of-the-Coachella-Valley-Water-District-PDF?bidId=> (noting that "salinity levels have increased to the point where they are now more than 50 percent saltier than the . . . Pacific Ocean. Fish are dying. Only tilapia survive and their days may be numbered.").

60. *See generally* Shannon Baker-Branstetter, Comment, *The Last Stand of the Wild West: Twenty-first Century Water Wars in Southern California*, 38 ENVTL. L. REP. NEWS & ANALYSIS 10726, 10730 (2008) (arguing that the water transfer violated IID's fiduciary responsibility to its customers).

61. COHEN, *supra* note 7, at 12, 14–17.

62. *See* Kim Delfino, *Salton Sea Restoration: Can There be Salvation for the Sea*, 19 PAC. MCGEORGE GLOBAL BUS. & DEV. L.J. 157, 161 (2006).

63. *See* TAYLOR, *supra* note 2, at 5.

current area.<sup>64</sup> It was estimated that 3,500 acres of playa would be exposed to the desert's harsh winds in 2018 alone.<sup>65</sup> Over half a million people live within the Salton Sea Air Basin, with approximately one-third in the Imperial Valley and two-thirds in the Coachella Valley.<sup>66</sup> It is unknown precisely how the playa's wind-blown dust will affect the local population's health, but the estimated cost to treat air quality-related health issues is at least 3.5 billion dollars, and perhaps as much as 37 billion dollars, between now and 2047.<sup>67</sup> The asthma hospitalization rate for children in Imperial County is already much higher than the state average.<sup>68</sup> Also, as the Sea's level declines, it no longer waters the same amount of rich shoreline habitats used by migratory birds.<sup>69</sup>

The increasing salinity of the Sea, along with increasing concentrations of contaminants from agricultural runoff like nitrogen and selenium, will eventually prevent any fish species from living in the Sea, even the hardy tilapia that still inhabit it. This will have accompanying effects on birds that rely on these fish for food.<sup>70</sup> For example, as early as the mid-1990s, algal blooms fed by nutrient-rich agricultural runoff caused low oxygen levels in the Sea that killed millions of tilapia.<sup>71</sup> Birds fed on these dead fish, which carried infectious bacteria, causing birds to sicken or die.<sup>72</sup> Large die-offs occurred among eared grebes (150,000 in 1992), white pelicans (8,500 in 1996), and brown pelicans (1,600 in 1996).<sup>73</sup> Additionally, selenium levels in the Sea are elevated and increasing due to the relatively high concentration of selenium in agricultural runoff that feeds the Sea.<sup>74</sup> Selenium moves up the food chain, bioaccumulating in birds to

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64. *Id.* at 1, 8.

65. TAYLOR, *supra* note 2, at 11.

66. COHEN, *supra* note 7, at 11.

67. *Id.* at 19.

68. *See* Agha, *supra* note 10.

69. TAYLOR, *supra* note 2, at 5.

70. *Id.*

71. STRINGFELLOW, *supra* note 35, at 20.

72. *Id.*

73. *Id.* at 20–21.

74. *See* James G. Setmire & Roy A. Schroeder, *Selenium and Salinity Concerns in the Salton Sea Area of California*, in ENVIRONMENTAL CHEMISTRY OF SELENIUM 220 (William T. Frankenberger, Jr. & Richard A. Engberg eds., 1998).

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concentrations that impair reproduction, including reducing egg hatch rates and causing deformation in birds that do hatch.<sup>75</sup>

Recently, a 2017 fishery monitoring report by the California Department of Fish and Wildlife found a much smaller population of tilapia than previous surveys, but the numbers obtained were within the low ranges of those previous surveys, and the fish were still reproducing.<sup>76</sup> Anecdotal reports indicate that fish-eating birds were much less prevalent in the winter of 2018–2019 than in previous years,<sup>77</sup> with these birds likely bypassing the Sea altogether or stopping briefly and moving on when they find no fish to eat. The Sonny Bono National Wildlife Refuge’s manager noted that he used to see “eared grebes by the millions here,” but he spotted only several hundred this year.<sup>78</sup> The manager also disposed of the carcasses of thousands of birds (mostly ruddy ducks) that died from an avian cholera outbreak.<sup>79</sup> As the Sea’s shoreline recedes and wetlands become scarcer, crowding among birds could bring more disease outbreaks.<sup>80</sup>

## II. THE LEGAL CONTEXT OF THE SALTON SEA

The Sea’s fate is intimately tied to its indirect source—the Colorado River. As the most populous of the Colorado River states, California held considerable clout to use as much water as it wanted, and IID held rights to the vast majority of this water. But as drought brought an era

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75. See *id.* at 217, 219-20; see also Roy Popkin, *Kesterson: Nonpoint Nightmare*, 12 EPA J. 13–14 (1986). Soil in a portion of California’s San Joaquin Valley contained high levels of selenium and an impenetrable clay layer beneath the soil. Thus, agricultural runoff from the farms of this area concentrated selenium and discharged the runoff to the Kesterson Reservoir, and the surrounding area was designated a National Wildlife Refuge. Several years after the refuge was designated in 1972, wildlife diversity plummeted and deformed birds started appearing. The reservoir was ultimately closed as a runoff sump and the U.S. Fish and Wildlife Service kept birds away using hazing methods.

76. CAL. DEP’T OF FISH & WILDLIFE & U.S. FISH & WILDLIFE SERV., SALTON SEA FISHERIES LONG-TERM MONITORING SAMPLING REPORT: SUMMER 2017 5–7 (2017), <http://resources.ca.gov/wp-content/uploads/2018/01/Salton-Sea-Fisheries-Long-Term-Monitoring-Sampling-report-Summer-2017.pdf>.

77. Wilson, *supra* note 5.

78. *Id.*

79. *Id.*

80. See *id.*

of water scarcity, and as Arizona and Nevada fully asserted their own water rights, California was forced to limit its use of Colorado River water. Large water transfers from IID would allow California to live within its means while quenching coastal Southern California's thirst. While this decision would make a casualty of the Salton Sea, California purportedly accepted responsibility to save it.

#### A. *The Law of the River*

The Salton Sea's origin and current troubles originate with the Colorado River and the modern law governing the river's use has a contentious and complex history. Seven states share the Colorado River: Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming.<sup>81</sup> After years of wrangling over how much water each state was entitled to use, all river user states except Arizona signed the Colorado River Compact in 1924.<sup>82</sup> The Colorado River Compact divided these states into the "Upper Basin" and the "Lower Basin," and allocated each basin 7.5 million acre-feet of water per year.<sup>83</sup> The Lower Basin consists of Arizona, California, and Nevada.<sup>84</sup> The Compact's estimate of at least 15 million acre-feet per year of Colorado River flow was ambitious, as that amount was based on measurements from the above-average decades of the 1910s and 1920s.<sup>85</sup> The flow has fallen short of that number for most years in the past century.<sup>86</sup>

The Boulder Canyon Project Act of 1928 enabled the Colorado River Compact by providing for flood protection and water storage and conveyance.<sup>87</sup> However, before the Act became effective, California

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81. IMPERIAL IRRIGATION DIST. & U.S. BUREAU OF RECLAMATION, IMPERIAL IRRIGATION DISTRICT WATER CONSERVATION AND TRANSFER PROJECT: HABITATION CONSERVATION PLAN AND FINAL ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL IMPACT STATEMENT A1-3 (2002).

82. LITTLEWORTH & GARNER, *supra* note 20, at 316. Arizona eventually signed the Colorado River Compact in 1944. *Id.*

83. *Id.*

84. *Id.*

85. See Jennifer Pitt et al., *Two Nations, One River: Managing Ecosystem Conservation in the Colorado River Delta*, 40 NAT. RESOURCES J. 819, 833-34 (2000).

86. LITTLEWORTH & GARNER, *supra* note 20, at 317.

87. *Id.* at 319. It also authorized the Hoover Dam and the All-American Canal. *Boulder Canyon Project Act (1928)*, OUR DOCUMENTS,

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was required to commit to using only 4.4 million acre-feet of the Lower Basin's allocation, along with one-half or less of any surplus beyond 7.5 million acre-feet.<sup>88</sup> The Supreme Court's landmark decision in *Arizona v. California* in 1963 largely upheld the Colorado River allocations as specified in the Boulder Canyon Project Act.<sup>89</sup>

Within California, the major agricultural and urban water users agreed to amicably divide the state's 4.4 million acre-foot allocation, and any surplus, in 1931.<sup>90</sup> IID, the supplier of water to the Imperial Valley and a portion of the Coachella Valley, gained control of the bulk of the agricultural allocation—3,850,000 acre-feet.<sup>91</sup> The Metropolitan Water District of Southern California ("MWD") held the remaining 550,000 acre-feet, while any surplus would be divided between IID and the other agricultural users, MWD, and SDCWA.<sup>92</sup> The *Arizona v. California* decision also allowed the Secretary of the Interior, who managed the river through the Bureau of Reclamation, to "assign water apportioned to but unused by a Lower [Basin] state for beneficial use in another Lower [Basin] state."<sup>93</sup> Thus, California regularly took up to 800,000 acre-feet of unused water from Arizona's and Nevada's allocations throughout the twentieth century.<sup>94</sup> However, as Arizona and Nevada grew and increased their capacity to utilize their full allocations with water infrastructure projects like the Central Arizona Project, California was required to take only its basic apportionment.<sup>95</sup> California's large Colorado River water users began negotiations to conserve and transfer water to stay within California's apportionment, which led to the Quantification Settlement Agreement or "QSA."<sup>96</sup>

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<https://www.ourdocuments.gov/doc.php?flash=true&doc=64> (last visited Dec. 18, 2019).

88. *Id.* at 320.

89. *Id.* at 325.

90. *Id.* at 321.

91. *Id.* at 321–22.

92. *Id.* The MWD provides approximately sixty percent of urban Southern California's water (from Ventura County to San Diego), mostly via its Colorado River Aqueduct or purchases from the California State Water Project. *See id.* at 17–18.

93. COLO. RIVER BD. OF CAL., *supra* note 14, at 12.

94. *See* Timothy N. Forsman, Comment, *What the QSA Means for the Salton Sea: California's Big Blank Check*, 46 ARIZ. ST. L.J. 365, 372 (2014).

95. COLO. RIVER BD. OF CAL., *supra* note 14, at 16.

96. Forsman, *supra* note 94, at 373–74.

*B. The Quantification Settlement Agreement of 2003*

Despite years of vehement disagreement over water allocations, California's major Colorado River water users came together to exchange money for water in late 2003.<sup>97</sup> Because IID held the largest water allocation, nearly all the water reductions and exchanges would come from its portion.<sup>98</sup> IID committed to increase efficiency or leave farmland unplanted to reduce use and to line the leaky All-American and Coachella Canals with concrete to eliminate seepage loss.<sup>99</sup> Additionally, IID agreed to transfer hundreds of thousands of acre-feet of water to SDCWA, the Coachella Valley Water District ("CVWD"), and MWD, ultimately providing 200,000 acre-feet per year to SDCWA by 2021 until at least 2077.<sup>100</sup> The agreement also provided between 50,000 and 100,000 acre-feet per year to either CVWD or MWD by 2018, continuing until at least 2077.<sup>101</sup> Because every acre-foot of conserved and transferred water from IID would not feed the Sea, IID agreed to provide "mitigation" water by leaving thousands of acres of land unplanted until the end of 2017, in gradually increasing amounts of water between 5,000 and 150,000 acre-feet per year.<sup>102</sup> In theory, this mitigation water would allow time for California to plan for and implement projects to manage the effects of reduced inflows to the Sea.<sup>103</sup>

A series of bills in the California State Legislature facilitated the QSA and provided assurances to QSA signatories that they would not be responsible for any adverse effects to the Salton Sea.<sup>104</sup> SB 317 charged the California Resources Agency with creating a long-term plan, called the "Preferred Alternative," to restore the Sea given the

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97. *See generally* IMPERIAL IRRIGATION DIST. ET AL., QUANTIFICATION SETTLEMENT AGREEMENT (Oct. 10, 2003).

98. *See id.* at 10.

99. *See id.* at 11.

100. *See id.* at Exhibit C.

101. *See id.*

102. *See id.*; *see also* TAYLOR, *supra* note 2, at 13, 15.

103. Forsman, *supra* note 94, at 377.

104. *See id.* at 376.

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inevitable decrease in inflows from the QSA.<sup>105</sup> It also specifically shielded IID from liability for any negative effects caused by the water transfers.<sup>106</sup> Furthermore, SB 317 placed responsibility for water transfer-related environmental impacts on the California Department of Water Resources.<sup>107</sup> SB 654 prioritized keeping California within its 4.4 million acre-foot per year allocation and stated that reductions of 800,000 acre-feet per year were required to meet this goal.<sup>108</sup> It also authorized a joint powers authority led by the California Department of Fish and Game (now the Department of Fish and Wildlife) to fund mitigation and restoration, but capped IID's, CVWD's, and SDCWA's required contributions at \$133 million.<sup>109</sup> Most significantly, SB 654 placed "sole responsibility" for the Sea's restoration on the State.<sup>110</sup>

The QSA's Joint Powers Agreement, authorized by SB 654, determined the financial obligations of IID, CVWD, SDCWA, and the State.<sup>111</sup> The three water agencies would contribute a combined \$30 million to the Salton Sea Restoration Fund.<sup>112</sup> They would also contribute \$133 million over several years to mitigate the water transfer's impacts.<sup>113</sup> In return, the State would be "solely responsible for the payment of the costs of and liability for" any required measures to mitigate the effects of the water transfer, taking on an "unconditional contractual obligation of the State of California . . . not conditioned upon an appropriation by the Legislature . . ." <sup>114</sup> The State, and by

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105. S.B. 317, 2003 Leg. (Cal. 2003), [http://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill\\_id=200320040SB317](http://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=200320040SB317).

106. *Id.*

107. *Id.*

108. S.B. 654, 2003 Leg. (Cal. 2003), [http://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill\\_id=200320040SB654](http://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=200320040SB654).

109. *Id.*

110. *Id.*

111. See *Quantification Settlement Agreement Joint Powers Authority Creation and Funding Agreement*, IMPERIAL IRRIGATION DIST. ET AL. 11 (2003), [https://www.sdcwa.org/sites/default/files/files/QSA\\_jpa-funding.pdf](https://www.sdcwa.org/sites/default/files/files/QSA_jpa-funding.pdf); see also *id.*

112. *Id.* at 15.

113. *Id.* at 11.

114. *Id.*



extension, the people of California, were left to deal with the QSA's consequences.

Alarmed by the ways a diminished Sea could affect the health of nearby residents, Imperial County and an environmental group named Protect Our Water and Environmental Rights ("POWER") challenged the QSA in court.<sup>115</sup> The *Quantification Settlement Agreement Cases* consolidated three separate actions: the first, in which IID sought to validate the QSA and related agreements; the second, in which Imperial County challenged the QSA based on alleged California Environmental Quality Act ("CEQA") violations; and the third, in which POWER similarly asserted CEQA violations.<sup>116</sup> The trial court found that most of the QSA violated California's Constitution, but the Court of Appeal reversed, holding that the State's open-ended contractual obligation to pay for any liabilities associated with the QSA water transfer, including its effects on the Salton Sea, did not violate California's constitutional requirement that the legislature appropriate all funds.<sup>117</sup> The appellate court found that the State's unconditional contractual obligation was unenforceable because the water agencies had no "right to enforce that obligation by drawing money from the Treasury without an appropriation by the Legislature."<sup>118</sup> The court's holding on the CEQA actions was mixed, dismissing some claims and remanding others.<sup>119</sup>

Imperial County and the Imperial County Air Pollution Control District also challenged the QSA in federal court.<sup>120</sup> Imperial County alleged that the federal Environmental Impact Statement prepared by the Bureau of Reclamation gauging the QSA's impacts violated the National Environmental Policy Act and the Clean Air Act.<sup>121</sup> The Ninth Circuit disagreed: it found that the Secretary of the Interior violated neither law, dealing a fatal legal blow to the QSA's detractors.<sup>122</sup>

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115. *In re* Quantification Settlement Agreement Cases, 201 Cal. App. 4th 758, 773–74 (2011).

116. *Id.*

117. *Id.* at 775.

118. *Id.*

119. *Id.* at 776.

120. *California v. United States Dept. of the Interior*, 767 F.3d 781, 787 (9th Cir. 2014).

121. *Id.*

122. *Id.*

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POWER ultimately settled the state court actions, agreeing to dismiss further pending appeals in exchange for cash settlements.<sup>123</sup> Consequently, legal roadblocks standing in the way of implementing the QSA were eliminated, leading to drastic reductions in inflows to the Sea starting in 2018.<sup>124</sup>

### III. THE SHORT-TERM SOLUTION

In 2018, the State developed a plan to direct restoration and dust-suppression efforts over the next ten years. Despite the magnitude of the challenges facing the Sea, the stakeholders largely agreed on the best ways to address habitat degradation and hazardous dust in the short-term. The ten-year plan contains specific targets for these projects, but progress toward the plan's goals has been slow.

#### A. *The Stakeholders' Positions*

Despite their drastically different agendas, the Sea's stakeholders have been remarkably supportive of plans to begin restoration projects at the Sea. For example, IID has extensively investigated solutions to address habitat restoration<sup>125</sup> and air quality<sup>126</sup> at the Sea. IID supports a "smaller but sustainable" Salton Sea to preserve wildlife values and protect the health of its customers in the Imperial Valley.<sup>127</sup> The SDCWA has supported IID's research efforts through the QSA's Joint Powers Authority funding agreement and because of its position as the

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123. See Ian James, *IID Reaches Salton Sea-related Legal Settlement*, DESERT SUN (Sept. 21, 2014, 5:51 PM), <https://www.desertsun.com/story/news/environment/2014/09/21/imperial-irrigation-district-salton-sea/16028475/>.

124. See *id.*; see also TAYLOR, *supra* note 2, at 5.

125. See IID RENEWABLE ENERGY, *supra* note 4, at 1, 78 (providing a fifteen-year vision for renewable energy development, especially geothermal energy, as well as wildlife habitat restoration and dust mitigation).

126. See IMPERIAL IRRIGATION DIST., SALTON SEA AIR QUALITY MITIGATION PROGRAM (2016) [hereinafter IID AIR QUALITY].

127. *Salton Sea Restoration and Renewable Energy Initiative*, IMPERIAL IRRIGATION DIST., <https://www.iid.com/energy/salton-sea-initiative> (last visited Apr. 11, 2019).

primary beneficiary of the water transfer that led to decreased inputs to the Sea.<sup>128</sup>

The environmental organizations, particularly Defenders and Audubon, are primarily concerned with maintaining the Sea's habitat. Despite the frequent bird die-offs at the Sea, Defenders still considers it a quality habitat and recognizes that it is the only stopover in Southern California for many birds on the Pacific Flyway.<sup>129</sup> Defenders has encouraged the State to take action for years and has been alarmed at the worsening symptoms of the Sea's stressed health.<sup>130</sup> Audubon also expressed concerns about impacts on the Sea's habitat, as well as air quality impacts on the area's residents.<sup>131</sup>

Because the various stakeholders' interests are aligned, they jointly supported a concrete action plan that required the State to implement habitat restoration and dust-suppression projects at the Sea. In 2014, IID petitioned the State Water Resources Control Board, asking them to revise the 2002 procedural order that authorized the QSA's water transfer to include a timeline for acreage goals for habitat and dust-suppression projects.<sup>132</sup> SDCWA, Audubon, Defenders, and the California Natural Resources Agency supported IID's request, and the revised procedural order ultimately adopted the goals outlined in the Phase I Plan.<sup>133</sup>

### *B. The Phase I Plan*

The QSA-enabling legislation directed the California Resources Agency to present a restoration plan to the legislature, which it did in

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128. Telephone Interview with Kara Mathews, QSA JPA Chief Admin. Officer, San Diego Cty. Water Auth. (Mar. 29, 2019).

129. Telephone Interview with Kim Delfino, Cal. Program Dir., Defenders of Wildlife (Mar. 29, 2019).

130. *Id.*

131. *Audubon Urges California Officials to Swiftly Implement New Salton Sea Funds*, *supra* note 27.

132. CAL. STATE WATER RES. CONTROL BD., DIVISION OF WATER RIGHTS: ORDER WR 2017-1034 3, Exhibit A 2-3 (2017), <https://www.iid.com/home/showdocument?id=16789>; *see also* TAYLOR, *supra* note 2, at 8.

133. *Id.* at 3-4.

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2007.<sup>134</sup> The legislature found the restoration plan's 9.2 billion dollar price tag unappealing, especially as the Great Recession began, and the plan was not approved.<sup>135</sup> Fifteen years after the QSA promised to drastically alter the Sea, the State has created a partial "Phase I" plan ("Plan") to manage habitat, air quality, and water quality until 2028.<sup>136</sup>

Even though the legislature did not adopt a comprehensive plan to restore the Sea in 2007, hundreds of millions of dollars have been allocated to mitigate the impacts of the QSA and restore the Sea.<sup>137</sup> The QSA required IID, CVWD, and SDCWA to pledge \$133 million in inflation-adjusted dollars to mitigate the water transfers, most of which paid IID for mitigation water to the Sea.<sup>138</sup> More than \$700 million has been allocated for the Salton Sea since 2000,<sup>139</sup> yet only one project has been completed.<sup>140</sup> In April 2018, the Torres Martinez Tribe opened a 46-acre wetland project aimed at bird habitat restoration and dust mitigation.<sup>141</sup> In June 2018, an additional \$200 million was directed to the Sea by Proposition 68.<sup>142</sup> Flush with funding and coping with the end of fifteen years of mitigation water being directed to the Sea, the Plan was approved at a time when it could actually be implemented and public support of the Plan would be strong because the Sea's condition was worsening.

The California Natural Resources Agency developed the Plan to address the management needs of the Sea until 2028.<sup>143</sup> The Plan estimates that 48,300 acres of playa will be exposed between 2018 and 2028, fluctuating between 2,800 and 5,600 new acres of exposure per

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134. Forsman, *supra* note 94, at 377.

135. *See generally id.* at 377–78.

136. CAL. NAT. RES. AGENCY, SALTON SEA MANAGEMENT PROGRAM: PHASE I: 10-YEAR PLAN 2 (2018), <http://resources.ca.gov/wp-content/uploads/2018/10/SSMP-Phase-1-10-Year-Plan.pdf> [hereinafter PHASE I PLAN].

137. TAYLOR, *supra* note 2, at 14.

138. *See id.* at 6.

139. *Id.* at 14.

140. *See* Linda Seroy, *First State-Funded Project Completed at the Salton Sea*, SALTON SEA AUTH. (Apr. 17, 2018), <http://saltonseaauthority.org/2018/04/17/news-release-first-state-project-completed-at-salton-sea/>.

141. *Id.*

142. TAYLOR, *supra* note 2, at 14.

143. PHASE I PLAN, *supra* note 136, at 2.

year.<sup>144</sup> Dust-suppression and habitat projects will treat 29,800 acres by 2028, leaving nearly 20,000 acres exposed.<sup>145</sup> The Plan's cost is estimated at 383 million dollars.<sup>146</sup>

The Plan's habitat projects rely on "water backbone infrastructure" at the higher elevations of exposed playa.<sup>147</sup> This "infrastructure" consists of ponds containing a mix of agricultural runoff and Salton Sea water that allow excess water to flow downhill, ultimately contributing to dust suppression at lower elevations.<sup>148</sup> These ponds would allow for an active fishery.<sup>149</sup> Infrastructure will include the following: permanent wetlands consisting of vegetated flooded areas; dry playa habitat, consisting of exposed lakebed, ideally with "woody debris and sparse vegetation to further promote nesting areas;" "mudflat, sandflat, and beach habitat," which are periodically wet, but not permanently flooded; and mid- and deep-water habitat, at depths of six inches to six feet or more.<sup>150</sup> Finally, the Plan's habitat projects accommodate potential geothermal energy development by allowing ample access roads around infrastructure projects.<sup>151</sup>

The Plan also proposes treating some of the exposed playa with dust-control measures. The Plan describes two broad categories of dust-suppression techniques: water-dependent and waterless.<sup>152</sup> Water-dependent methods include establishing salt-tolerant native plants to stabilize the soil, flooding areas periodically to keep the playa wet and thus less prone to wind erosion, and flooding areas to establish a solid salt crust to contain fine dust particles.<sup>153</sup> Water-dependent methods are less desirable than waterless methods because, naturally, they need water and the associated infrastructure to move water to the treatment area.

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144. *Id.* at 5.

145. *Id.* at 5, 7–8.

146. *Id.* at 18.

147. *Id.* at 9.

148. *Id.* at 13.

149. *Id.*

150. *See id.* at 14–15.

151. *Id.* at 13.

152. *Id.* at 16–17.

153. *See id.*

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Waterless methods include surface roughening, moat and row, surface stabilizers, and gravel cover.<sup>154</sup> “Surface roughening” involves tilling an area to create furrows several feet wide that run perpendicular to the prevailing wind direction, which slows surface wind speeds and catches particles in the lower portion of the furrow.<sup>155</sup> The “moat and row” method resembles surface roughening in that it creates furrows; however, it does this on a much larger scale—each moat and row created is about fifty feet wide.<sup>156</sup> The third waterless dust-suppression method, surface stabilizers, consists of applying a manufactured substance to exposed Sea surface, which better enables the surface to resist winds and other impacts. These stabilizers, which include salts, organic non-petroleum, and petroleum compounds, have their intended effect by binding smaller particles together.<sup>157</sup> Gravel cover simply involves covering the exposed surface with a layer of small rocks that the wind cannot move.<sup>158</sup> Surface roughening is the most cost-effective dust-suppression method, costing roughly \$400 per acre as compared to \$36,000 per acre for gravel cover.<sup>159</sup>

Although the Plan proposes pragmatic solutions to address some of the Sea’s issues, it has two significant flaws. First, by 2028, the Plan leaves nearly 20,000 acres of exposed playa untreated.<sup>160</sup> Even though not all of the exposed playa’s areas will produce hazardous dust particles,<sup>161</sup> the Plan assumes that almost half of the exposed playa will not require treatment, which leaves a considerable health risk unaddressed. Second, the Plan relies only on government actors, such as the California Natural Resources Agency, the federal government, and IID, to participate in addressing the Sea’s issues.<sup>162</sup> Finally, the

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154. *Id.* at 17.

155. *See* IID AIR QUALITY, *supra* note 126, at E-8.

156. *See id.* at E-6.

157. Justin Breck et al., *Prioritizing Cost-Effective Dust Mitigation at the Salton Sea* 14–15 (Apr. 2018) (unpublished Master’s thesis, Bren School of Environmental Science and Management, University of California, Santa Barbara), [https://www.bren.ucsb.edu/research/2018Group\\_Projects/documents/Salton\\_Seafare\\_rs\\_Final\\_Report\\_redacted.pdf](https://www.bren.ucsb.edu/research/2018Group_Projects/documents/Salton_Seafare_rs_Final_Report_redacted.pdf).

158. IID AIR QUALITY, *supra* note 126, at E-10.

159. PHASE I PLAN, *supra* note 136, at 17.

160. *Id.* at 7–8.

161. *Id.*

162. *See generally id.* at 2.

Plan mentions alternative uses of the exposed playa, such as geothermal energy development and agriculture,<sup>163</sup> but does not incentivize private interests to become active participants in helping restore the Sea.

The first year of the Plan was marked by continued delay and inaction at the Sea. For instance, the State failed to meet its relatively modest goal of treating 500 acres in 2018.<sup>164</sup> The target of the 500-acre goal lies within a 3,770-acre Species Conservation Habitat project at the south end of the Sea that was permitted in 2013.<sup>165</sup> This project has faced years of delay because IID only recently agreed to provide access to the State's contractors to construct the project.<sup>166</sup> IID owns most of the land at the south end of the Sea and has concerns about liability from habitat and dust-suppression projects facilitated by the State on its property.<sup>167</sup> IID is most concerned about Endangered Species Act restrictions that will attach to its land when endangered species, such as the desert pupfish or Yuma clapper rail, inevitably use the constructed habitat,<sup>168</sup> as well as the State's ability to fund projects for the long term on IID property.<sup>169</sup> As of today, despite the recent access agreement between IID and the State<sup>170</sup> and \$310 million being available for restoration, not a single acre targeted by the Plan has been restored.<sup>171</sup>

#### IV. LONG-TERM SOLUTIONS

While the Sea's path forward over the next ten years is relatively clear, a vision for the Sea for the remainder of the twenty-first century is less so. However, several proposals have emerged since no interest

163. *Id.* at 8.

164. CAL. NAT. RES. AGENCY, 2019 ANNUAL REPORT ON THE SALTON SEA MANAGEMENT PROGRAM 4 (2019), [https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/salton\\_sea/docs/cnra\\_2019\\_final\\_ssmp\\_annual\\_report.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/salton_sea/docs/cnra_2019_final_ssmp_annual_report.pdf) [hereinafter 2019 ANNUAL REPORT].

165. *Id.* at 6.

166. *See IID Acts to Advance Salton Sea Restoration Projects*, IMPERIAL IRRIGATION DIST. (May 7, 2019), <https://www.iid.com/Home/Components/News/News/689/30?arch=1>.

167. *See* Craig Deutsche, *Progress at the Salton Sea: Incremental at Best*, DESERT REPORT 12 (Dec. 2018).

168. Interview with Al Kalin, *supra* note 1.

169. Interview with Kim Delfino, *supra* note 129.

170. *IID Acts to Advance*, *supra* note 166.

171. *Id.* at 5; *see also* 2019 ANNUAL REPORT, *supra* note 164, at 2.

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group currently supports abandoning the Sea. One proposal seeks to divide the Sea into watered and waterless segments. Another proposal promises to restore the Sea to its 1950s heyday by importing water from the ocean via Mexico. A final plan would utilize private industry to help the Sea save itself. Specifically, this plan calls for developing some of the Sea's resources to fund its habitat projects.

*A. Abandonment*

Although it would be the cheapest option in terms of up-front costs, none of the interest groups are currently proposing abandoning the Sea. Abandonment of the Sea, which one author calls the "Hospice Plan," would allow the Sea's salinity to increase unchecked and its area and water level to decrease.<sup>172</sup> Thus, abandoning the Sea would lead to disastrous consequences for wildlife and air quality. Such consequences would include: the complete eradication of tilapia, and thus the absence of fish-eating birds; a drastic decrease in the acreage suitable for bird habitat, with those habitats limited to the length of watercourses of agricultural runoff sources; and large amounts of hazardous dust emanating from the exposed playa. As a result, no stakeholders would likely support such an option.

*B. North Lake*

Soon after the QSA took effect, the Sea's advocates favored a plan that divided the Sea into two seas. The Sea's three major water sources—the New, Alamo, and Whitewater Rivers—would feed a saline lake at the north end of the current Sea.<sup>173</sup> This "North Lake" would have outlets to a hypersaline lake near the current Sea's center.<sup>174</sup> The California Resources Agency settled upon a similar proposal in its 2007 Preferred Alternative mandated by SB 317,<sup>175</sup> but as noted above, its high price tag caused the legislature to defer action on the Sea.<sup>176</sup>

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172. Delfino, *supra* note 62, at 172.

173. *Id.* at 171; *see also Salton Sea Current and Projected Elevations*, *supra* note 58.

174. *Id.*

175. *See generally* Forsman, *supra* note 94, at 376–78.

176. *Id.* at 378.



Despite this, the Preferred Alternative remains the leading state-sanctioned proposal for a sustainable Sea.<sup>177</sup>

The Preferred Alternative divides the Sea into five different areas to manage salinity, habitat, and dust.<sup>178</sup> For instance, the Saline Habitat Complex would be divided by berms into large cells that would provide shallow water habitats of varying salinity.<sup>179</sup> This area would allow foraging diversity for birds and would occur mostly along the Sea's south end.<sup>180</sup> A second area, the Marine Sea, would have a salinity approximately the same as the ocean's, which would allow fish to thrive.<sup>181</sup> This Marine Sea would concentrate in the current Sea's north portion with two narrow arms following its east and west sides.<sup>182</sup> The third area, the Brine Sink, would contain all excess and overflow water to manage salinity in the other water features and would become hypersaline.<sup>183</sup> Approximately 100,000 acres of the Sea would become exposed playa,<sup>184</sup> and dust-control measures would be required on the majority of this acreage. Finally, two Shoreline Waterways would wrap around the southeast and southwest sides of the Sea to convey water from the New and Alamo Rivers to the Marine Sea.<sup>185</sup> Hundreds of miles of berms would divide the various areas, and extensive pipelines, drains, and pumps would connect them.<sup>186</sup>

The Preferred Alternative's version of the North Lake plan has the ancillary benefit of allowing for recreational uses of the Sea, such as

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177. *See generally*, Taylor, *supra* note 2, at 10. Current restoration plans incorporate several aspects of the Preferred Alternative. *See id.* at 10–12.

178. *See* CAL. NATURAL RESOURCES AGENCY, SALTON SEA ECOSYSTEM RESTORATION PROGRAM: FINAL PROGRAMMATIC ENVIRONMENTAL IMPACT REPORT 3-11 (2007), <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Integrated-Regional-Water-Management/Salton-Sea-Unit/Salton-Sea-Ecosystem-Restoration-Program-PEIR/Salton-Sea-Ecosystem-Restoration-Program-Final-PEIR-Vol-1-Ch-1-6-2007.pdf?la=en&hash=7C84BBB5A2A78644D6106461397C7F5E43D43D8C> [hereinafter ENVIRONMENTAL IMPACT REPORT].

179. *Id.* at 3-14 to 3-15.

180. *Id.* at 3-14.

181. *See id.* at 3-15.

182. *Id.* at 3-11.

183. *See id.* at 3-17.

184. *Id.* at 3-11 to 3-13.

185. *Id.* at 3-11.

186. *See id.*

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boating and fishing, which could boost the area's struggling economy.<sup>187</sup> Also, the Preferred Alternative was designed to accommodate reduced inflows to the Sea of 650,000 acre-feet of water per year:<sup>188</sup> nearly 400,000 acre-feet less water than 2018's inflow of 1,040,703 acre-feet.<sup>189</sup> Thus, the Preferred Alternative accounts for potential water conservation efforts and water transfers. However, as noted above, the legislature found the Preferred Alternative's nine billion dollar price tag unpalatable.<sup>190</sup>

### C. Sea-to-Sea

An alternative long-term restoration plan involves importing seawater from the Sea of Cortez to the Sea. Some experts believe an ocean connection provides the only option to address the habitat and air quality issues within a reasonable time frame.<sup>191</sup> Other experts view seawater importation as infeasible, but the California Natural Resources Agency invigorated the idea by requesting specific proposals and attendant funding mechanisms in December 2017.<sup>192</sup> Eleven proposals were submitted; three were selected for further review.<sup>193</sup> Each proposal involves building a pipeline or canal more than 100 miles out from the Sea, across the border with Mexico, to the Sea of Cortez.<sup>194</sup>

The most ambitious of the three proposals, the "Bi-National Canal" proposal, would bring 2.3 million acre-feet of seawater per year to the Salton Sea and would desalinate up to two million acre feet per year.<sup>195</sup>

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187. See Delfino, *supra* note 62, at 171.

188. ENVIRONMENTAL IMPACT REPORT, *supra* note 179, at 3-14.

189. See 2019 ANNUAL REPORT, *supra* note 164, at 11.

190. Forsman, *supra* note 94, at 378.

191. E-mail from Timothy Krantz, Professor of Env'tl. Studies, Univ. of Redlands, to author (Jan. 9, 2019, 16:01 PST) (on file with author).

192. Press Release, Cal. Nat. Res. Agency, Request for Information for Salton Sea Water Importation Projects 1, 3 (Dec. 8, 2017), <http://resources.ca.gov/wp-content/uploads/2017/12/Salton-Sea-Water-Import-RFI.pdf>.

193. Deutsche, *supra* note 167, at 13.

194. *Id.* at 13, 15.

195. GEI Consultants, Presentation: Bi-National Canal for Salton Sea Restoration and Colorado River Augmentation 9 (Oct. 1, 2018), [https://www.dropbox.com/sh/88w2c7kemr98ta2/AAAR9VCtfq2cz4jz58YA1qZma?dl=0&preview=GEI\\_Clinton\\_Salton\\_Sea\\_CNRA\\_Workshop\\_Final\\_PPT\\_V2\\_092818.pdf](https://www.dropbox.com/sh/88w2c7kemr98ta2/AAAR9VCtfq2cz4jz58YA1qZma?dl=0&preview=GEI_Clinton_Salton_Sea_CNRA_Workshop_Final_PPT_V2_092818.pdf).

Five hundred thousand acre-feet of desalinated water per year would maintain the Sea's salinity at a tolerable level for fish, while the remainder would be sold to IID, CVWD, and Mexico to augment their supplies.<sup>196</sup> The desalination process would produce millions of tons of salt yearly that would require disposal, either by returning it to the Sea of Cortez or by another disposal method.<sup>197</sup> The estimated total cost is between three and six billion dollars.<sup>198</sup> Another of the three proposals, the "Salton Sea Water Importation Project," dispenses with the need for desalination and concomitant salt disposal by creating a perimeter lake surrounding a hypersaline lake, with the two water bodies separated by a 150-foot wide levee.<sup>199</sup> This proposal would cost between 1.4 and 3.4 billion dollars, not including the cost to construct the berm separating the perimeter and hypersaline lakes.<sup>200</sup>

The above water importation plans could potentially restore the Sea to its 1950s heyday as a fishing and boating destination while addressing habitat and air quality issues. However, recent tensions between the U.S. and Mexico make any cross-border actions unlikely in the short-term.

#### *D. Monetizing the Sea*

One proposal advocates using the Sea's exposed playa and surrounding lands for large-scale manufacturing and renewable energy development to fund habitat and dust-control projects.<sup>201</sup> The proposal combines the Sea's potential for mineral development with the inexpensive real estate nearby to encourage large-scale manufacturing modeled on Tesla's "Gigafactory" near a dry lake in Nevada, where the automaker harvests lithium to make its batteries.<sup>202</sup> The proposal also highlights the potential solar energy resources of nearby public lands

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196. *See id.* at 11.

197. *See id.* at 15.

198. *Id.* at 12.

199. Cordoba Corp. et al., Presentation: Salton Sea Water Importation Project 5 (Oct. 2, 2018), <https://www.dropbox.com/sh/88w2c7kemr98ta2/AAAR9VCtfq2cz4jz58YA1qZma?dl=0&preview=SaltonSeaWaterImportationProjectOverview+++Coachella.pdf>.

200. Deutsche, *supra* note 167, at 15.

201. McLaren, *supra* note 55, at 158.

202. *Id.* at 158–59.

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and the known geothermal energy potential at the Sea's eastern margin.<sup>203</sup> Indeed, the geothermal plants along the Sea's southeast margin currently produce 327 megawatts of electricity; the development potential may be up to 3,400 megawatts.<sup>204</sup> One company, Controlled Thermal Resources, plans to develop a geothermal plant that would produce power and simultaneously extract lithium and other minerals from the superheated brine used in the power plant.<sup>205</sup> Taxes or fees could be assessed on these developments to finance habitat restoration and dust-suppression projects, which the State has struggled to fund.<sup>206</sup>

While Tesla may not build its next battery factory next to the Salton Sea, the proposal to monetize the Sea's resources brings forth an important concept to encourage private industry to play a part in saving the Sea.

#### V. A WAY FORWARD FOR THE SEA

While the long-term proposals to save the Sea are laudable, they do not provide the diverse range of solutions and stakeholders that the urgent state of the Sea's health requires. The State and the affected local government entities, like IID, should develop alternative funding mechanisms to ensure a stable, long-term source of funding for restoration projects and their maintenance. Also, the State should use its power of eminent domain where necessary to prevent IID or other landowners of the playa from obstructing progress. Finally, the State and other stakeholders should encourage and incentivize development of the Sea's resources by private entities on portions of the playa to fund and supplement the State's habitat and dust-suppression projects.

##### A. Funding

Salton Sea restoration projects require more diverse and reliable funding programs to ensure consistent progress at the Sea. So far, the

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203. *Id.* at 160.

204. IID RENEWABLE ENERGY, *supra* note 4, at 11, 78.

205. See Ivan Penn, *Australian Firm Plans Nation's Largest Geothermal Plant in Imperial Valley*, L.A. TIMES (Jan. 14, 2017, 3:00 AM), <https://www.latimes.com/business/la-fi-geothermal-salton-sea-20170114-story.html>.

206. See McLaren, *supra* note 55, at 160.

majority of funding for the Sea's restoration has derived from voter-approved bonds (365.4 million dollars).<sup>207</sup> The parties to the QSA have provided most of the rest (356.5 million dollars), and the federal government has supplied a minor amount (8.3 million dollars).<sup>208</sup> The State cannot continue to rely on the environmental largesse of the people of California. Any long-term solution will require billions of dollars in capital costs and millions of dollars per year in maintenance costs.<sup>209</sup> The State should begin making significant contributions to the Salton Sea Restoration Fund from general revenues rather than solely relying on bond money. These contributions would provide the State a contingency plan if the voters stopped approving environmental bond measures.

In light of the absence of reliable revenue streams from the State, local government actors around the Sea have pursued other avenues for funding. Riverside County, for instance, created an enhanced infrastructure financing district ("EIFD") that would raise approximately 1.3 billion dollars over fifty years to fund a "North Lake" at the mouth of the Whitewater River.<sup>210</sup> This plan, which would rely on water from the Whitewater River, is a scaled-down version of the Preferred Alternative proposal discussed above.<sup>211</sup> Riverside County would issue bonds to build the 350 million dollar project, and the increased revenues from lakeside development would pay back the bonds and provide additional funds<sup>212</sup> that could be used to manage the North Lake. While this proposal only addresses a small proportion of the Sea's exposed playa that will require treatment, it is attractive because it operates independently of State funding sources.

IID also attempted to tap an alternative source of funding when it tried to leverage its substantial water allocation to obtain federal funds to match state-provided funding for the Sea. Because of the extended

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207. TAYLOR, *supra* note 2, at 14.

208. *Id.*

209. *See* ENVIRONMENTAL IMPACT REPORT, *supra* note 179, at 3-26.

210. Sammy Roth, *Riverside County Says Its New Salton Sea Plan Could Bring Back Tourism, Generate \$1 Billion in Tax Revenue*, DESERT SUN (Oct. 23, 2018, 5:54 PM), <https://www.desertsun.com/story/news/environment/2018/10/23/riverside-countys-new-salton-sea-plan-could-generate-1-billion/1738670002/>.

211. *See id.*; *see also* *Salton Sea Current and Projected Elevations*, *supra* note 58.

212. *Id.*

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drought in the southwestern United States, the Bureau of Reclamation requested that the Colorado River states and their respective major river water users formulate a Drought Contingency Plan (“DCP”) to reduce their water use if supplies reached a critically low level.<sup>213</sup> IID agreed to join the DCP with the other water users only if those users and the Bureau of Reclamation supported IID’s request for 200 million dollars in matching funds from the 2018 federal Farm Bill.<sup>214</sup> California’s congressional delegation included a provision in the 900 billion dollar Farm Bill that made Salton Sea restoration efforts eligible for federal funding, but the funding was not guaranteed.<sup>215</sup>

IID did not obtain its requested guarantees for federal funding, and thus did not join the final DCP agreement between the states and their water users.<sup>216</sup> The DCP moved forward only when MWD agreed to shoulder most of California’s portion of required water use reductions.<sup>217</sup> However, the DCP needed congressional approval, and IID lobbied the California delegation to support a version of the DCP authorization bill that includes Salton Sea restoration funding.<sup>218</sup> On April 8, 2019, Congress passed a bill authorizing the DCP without any special provisions for the Salton Sea.<sup>219</sup> IID sued MWD to block the

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213. See Janet Wilson & Ian James, *Breaking Impasse, Feds Will Include Salton Sea in Seven-state Drought Plan, IID Says*, DESERT SUN (Mar. 1, 2019, 11:18 AM), <https://www.desertsun.com/story/news/2019/03/01/feds-offer-states-few-more-weeks-colorado-river-drought-plan/3029883002/>. A critically low-level water supply is measured by the water level at Lake Mead reaching 1,075 feet above sea level or less. See Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead, *supra* note 23, at 19,885.

214. See Janet Wilson, *Farm Bill Makes Salton Sea Eligible for Millions in Federal Clean-up Funds*, DESERT SUN (Dec. 20, 2018, 3:45 PM), <https://www.desertsun.com/story/news/2018/12/20/2018-farm-bill-makes-salton-sea-eligible-millions-federal-clean-up-funds/2380609002/>.

215. See *id.*

216. *US Official Declares Drought Plan Done for Colorado River*, KPBS (Mar. 19, 2019), <https://www.kpbs.org/news/2019/mar/19/us-official-declares-drought-plan-done-colorado-ri/>.

217. *Id.*

218. See Press Release, Imperial Irrigation Dist., IID Board President Erik Ortega Statement on DCP Federal Legislation (Apr. 2, 2019), <https://www.iid.com/Home/Components/News/News/681/30?backlist=%2fabout-iid%2fnews-resources>.

219. Christopher Conover, *Congress Passes Colorado River Drought Contingency Plan*, ARIZONA PUB. MEDIA (Apr. 8, 2019),

DCP on the same day the President signed the DCP authorization bill.<sup>220</sup> Although such tactics could be seen as holding California's water supply hostage, they may be necessary to force action at the Sea.

### *B. Removing IID Hindrances to Progress*

While IID has been instrumental in advocating for increased funding for Salton Sea projects and in researching potential restoration solutions, its status as the largest non-federal landowner on the Sea has prevented progress. IID owns nearly half of the acreage beneath the Sea—more than 100,000 acres<sup>221</sup>—and has been reluctant to grant easements to the California Natural Resources Agency and its contractors to conduct restoration activities.<sup>222</sup> IID's reluctance stems from its aversion to assume environmental liabilities and doubts about the State's ability to fund projects in the long-term.<sup>223</sup> Although in May 2019 IID and the State entered into an easement agreement to facilitate construction of the Species Conservation Habitat Project, which seeks to restore 3,770 acres on the Sea,<sup>224</sup> this agreement does not prevent future delays in providing the State access to construct other restoration projects. Because of the slow progress with IID, the State should absolve it of any liabilities by taking title to IID's properties beneath the Sea as its recession exposes them.

The California Eminent Domain Law provides authority for a public entity to acquire property from another public entity by eminent domain if the new public use is "more necessary."<sup>225</sup> The State "may exercise the power of eminent domain to acquire . . . property appropriated to public use if the use for which the property is sought to

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<https://www.azpm.org/p/home-articles-news/2019/4/8/149280-congress-passes-colorado-river-drought-contingency-plan/>; see also Janet Wilson, *IID Sues to Halt Colorado River Drought Plan Signed by Trump, Says Officials Ignored Salton Sea*, DESERT SUN (Apr. 17, 2019, 9:58 AM), <https://www.desertsun.com/story/news/environment/2019/04/17/iid-sues-halt-colorado-river-drought-plan-says-mwd-ignored-salton-sea/3496955002/>.

220. Wilson, *supra* note 221.

221. See *Salton Sea Current and Projected Elevations*, *supra* note 58.

222. Interview with Kim Delfino, *supra* note 129.

223. *Id.*

224. *IID Acts to Advance*, *supra* note 166.

225. See CAL. CIV. PROC. CODE § 1240.610 (West 2019).

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be taken is a more necessary public use than the use to which the property is appropriated.”<sup>226</sup> The law further favors the State with a presumption that even the same use is a “more necessary use” than the current public use when the State asserts it.<sup>227</sup> Therefore, the State can acquire title to the exposed playa as needed and facilitate the access required to start implementing the Phase I Plan. California already assumed financial responsibility for the Sea’s management and restoration in the QSA-enabling legislation and the Joint Powers Authority.<sup>228</sup> Thus, the State should take the next logical step and assume responsibility for the land where restoration and dust-control projects will occur.

*C. Alternative Uses: Mineral Extraction, Renewable Energy,  
and Farming*

The State must identify and incentivize alternative methods of dust control and habitat restoration beyond those identified in the Plan and other long-term restoration plans, and include private industry in the process. Although the Sea’s various resources are well-documented, private industries may need an additional reason to participate in addressing the Sea’s water quality, habitat, and hazardous dust issues, especially in a high-tax and high-cost state like California. As is clear from the activities of high-profile corporations over the past several years, including Amazon, tax incentives provide strong reasons to invest resources in an otherwise unremarkable location.<sup>229</sup> The State would gain less revenue from these businesses, but it would not have to spend money on stabilizing the soil or restoring habitat because the businesses’ activities would have this effect.

Similarly, mineral extraction could provide valuable products while stabilizing thousands of acres of exposed playa. As noted above, one company already extracts lithium from superheated brine beneath the

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226. *See id.*

227. CAL. CIV. PROC. CODE § 1240.640 (West 2019).

228. *Quantification Settlement Agreement Joint Powers Authority Creation and Funding Agreement*, *supra* note 111, at 11.

229. *See generally Amazon’s New Virginia Headquarters Get \$23M in County Incentives, Despite Protests*, USA TODAY (Mar. 17, 2019, 12:20 PM), <https://www.usatoday.com/story/money/2019/03/17/amazons-new-virginia-headquarters-get-23-m-county-incentives/3194172002/>.



Sea in conjunction with a geothermal energy project.<sup>230</sup> Many dry lakebeds in the California Desert contain mineral harvesting operations for calcium chloride, sodium chloride, and other salts.<sup>231</sup> An operation on Bristol Dry Lake, near the town of Amboy in the Mojave Desert, harvests calcium chloride using deep furrows (similar to the furrows currently used in surface roughening on the Sea's playa) as evaporation basins to concentrate the salts from the brine.<sup>232</sup> This mineral harvesting method could reduce hazardous dust emissions from the most vulnerable portions of the playa and turn a profit.

Renewable energy projects could also serve this dual purpose of monetizing the Sea's resources and stabilizing exposed playa. As of 2015, eleven geothermal power plants operated within the Salton Sea Known Geothermal Resource Area ("KGRA"), exploiting approximately one-tenth of the estimated 3,400 megawatt geothermal resource.<sup>233</sup> A significant portion of the KGRA encompasses the southeast portion of the Sea.<sup>234</sup> Although geothermal energy development has a relatively small footprint—between ten and twenty acres for each fifty megawatt power plant<sup>235</sup>—these plants could stabilize more than one thousand acres of exposed playa if the resource is fully developed.

The Sea also has significant potential as a solar energy resource. Imperial County's abundant sunlight, relatively inexpensive land, and large expanses of level ground have already made it home to thousands of acres of solar energy plants.<sup>236</sup> Photovoltaic solar projects require at

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230. *Minerals Arm of EnergySource Successful in Lithium Extraction from Geothermal*, THINKGEOENERGY (Oct. 14, 2019), <http://www.thinkgeoenergy.com/minerals-arm-of-energysource-successful-in-lithium-extraction-from-geothermal/>.

231. See Bettina Boxall, *Firm Fights Mojave Water Pumping*, L.A. TIMES (July 13, 2012), <https://www.latimes.com/archives/la-xpm-2012-jul-13-la-me-cadiz-tetra-20120713-story.html>.

232. See *Bristol Dry Lake, California*, STANDARD LITHIUM LTD. (last visited Apr. 5, 2019), <https://standardlithium.com/bristol-dry-lake/>.

233. IID RENEWABLE ENERGY, *supra* note 4, at 78.

234. See *id.* at 81.

235. See *id.* at 93.

236. See Lisa Halverstadt, *Imperial County's Renewable Power Explosion, in One Map*, VOICE OF SAN DIEGO (Oct. 12, 2015), <https://www.voiceofsandiego.org/topics/science-environment/imperial-countys-renewable-power-explosion-in-one-map/>.

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least five acres per megawatt and can stabilize the soil with surface stabilizers or gravel.<sup>237</sup> Solar projects can range from twenty acres<sup>238</sup> to two thousand acres or more.<sup>239</sup> Solar developers have been reluctant to place projects on dry lake beds because of the potential for flood damage and dust covering the panels, but several have been built adjacent to dry lakebeds, including at Harper Dry Lake in San Bernardino County and Ford Dry Lake in Riverside County. As the Sea recedes, the exposed playa will no longer be under constant threat of flooding as would a normal, terminal dry lake. Although large-scale solar projects have impacts on wildlife, including the “lake effect” where birds mistake solar panels for water bodies, these impacts can be addressed through rigorous studies and inclusive planning.<sup>240</sup>

Finally, portions of the Sea’s exposed playa could be used for agriculture. Farmers cultivated the southwest corner of the current Sea before it flooded those fields during its periodic expansions in the twentieth century.<sup>241</sup> Indeed, farmers have already reclaimed seventy acres of the playa for agriculture by leaching the salt out of the soil before planting crops.<sup>242</sup> Portions of the exposed playa with sandy soils—approximately one-quarter of the current exposed playa—are the most suitable for agriculture.<sup>243</sup> The State or IID could incentivize farming on the Sea by providing long-term, low- or zero-rent leases to farmers who agree to reduce or eliminate dust from their fields through farming methods.

Although these proposals may industrialize portions of the Sea, these areas can coexist with wildlife habitat. Defenders views the Sea

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237. See IID RENEWABLE ENERGY, *supra* note 4, at 97. Photovoltaic solar technology turns sunlight directly into energy, while solar thermal technology concentrates solar energy to heat fluid that runs a turbine to generate electricity. *Id.*

238. See generally Halverstadt, *supra* note 238.

239. See K Kaufmann, *Riverside East Solar Zone’s Genesis Project Is Ready*, DESERT SUN (Apr. 24, 2014, 10:23 PM), <https://www.desertsun.com/story/tech/science/energy/2014/04/25/riverside-east-solar-zone-nextera-energy-genesis-ready/8137853/>.

240. Lynsy Smithson-Stanley & Liz Bergstrom, *Why Solar Power Is Good for Birds*, NAT’L AUDUBON SOC’Y (Jan. 9, 2017), <https://www.audubon.org/news/why-solar-power-good-birds>.

241. See IID RENEWABLE ENERGY, *supra* note 4, at 109.

242. Interview with Al Kalin, *supra* note 1.

243. *Id.*

as a multiple-use resource that is large enough to accommodate varied uses.<sup>244</sup> The Plan's shallow-water habitat cells can be located near a geothermal plant if that development is planned in a wildlife-friendly way. Dust-suppression projects can be sited near agriculture. Indeed, the Imperial Valley is already a model of multiple uses existing side-by-side, with geothermal plants adjacent to the Sonny Bono Salton Sea National Wildlife Refuge and solar farms next to alfalfa fields. Thoughtful planning and input from a broad range of private and public stakeholders will lead to success at the Sea. The stakeholders merely need creativity and perseverance—and lots of money—to make the dream of a new Salton Sea a reality.

#### *D. Climate Change: The Wild Card*

Climate change may have a profound impact on the Sea and on the State's restoration efforts. Increased temperatures across the southwestern United States "have significantly altered the water cycle," leading to less reliable water supplies and accompanying drought.<sup>245</sup> The trend in the Colorado River's flow volume has steadily declined since the early 1900s when the river averaged more than fifteen million acre-feet per year. Today, it averages close to thirteen million acre-feet per year.<sup>246</sup> For the Sea specifically, temperatures are projected to increase by at least 2.7 degrees Celsius by 2100 relative to the 1985 baseline.<sup>247</sup> The Sea already loses more than five feet per year to evaporation, and the projected temperature increase will accelerate evaporation rates.<sup>248</sup>

Decreased Colorado River flows combined with higher temperatures will increase the rate of playa exposure at the Sea. Thus, the threats to wildlife and human health may grow in magnitude more quickly than the State expects. The Plan contains no discussion of the potential short- or long-term impacts of climate change on the State's proposed actions at the Sea, which leaves a glaring gap in the

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244. Interview with Kim Delfino, *supra* note 129.

245. Patrick Gonzalez et al., *Southwest*, in *IMPACTS, RISKS, AND ADAPTATION IN THE UNITED STATES: FOURTH NATIONAL CLIMATE ASSESSMENT* 1103 (David Reidmiller et al. eds., 2018).

246. *See id.* at 1105.

247. IID RENEWABLE ENERGY, *supra* note 4, at A-30.

248. *Id.* at A-32.

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conversation about the Sea's future.<sup>249</sup> The uncertainty about climate change's impact on the Sea is all the more reason for the State to act quickly and forcefully by incentivizing private industry to work toward restoration solutions.

## CONCLUSION

The Colorado River has dictated the Salton Sea's fate for millennia.<sup>250</sup> This latest chapter in the Sea's story is no different as the river's human masters cut off the Sea's lifeline without a plan to save it. The QSA signaled a new era of scarcity for the Sea, and more than a decade passed before the State supported a concrete plan to restore it. The Plan provides a short-term vision for the Sea, and the various long-term restoration plans promise either a Sea returned to its former glory or a smaller, fragmented Sea that still serves the needs of wildlife and protects human health.

The main failure in planning for the Sea's future has been an unwillingness to fully engage and incentivize private industry to help address the goals of creating wildlife habitat and suppressing hazardous dust. To date, the State and other stakeholders have emphasized the government's role in directing restoration efforts, yet the State has accomplished very little in the sixteen years since the QSA. The consequences for wildlife and human health are too dire for further delay. The State must pursue a comprehensive approach to tackle the restoration effort now. This approach would include exploring creative funding methods, taking land from obstructionist landowners by using eminent domain, and encouraging development of the exposed playa's resources by the private sector. The Sea's future can be a bright one with cooperation, commitment, and creativity.

*Brendan Hughes\**

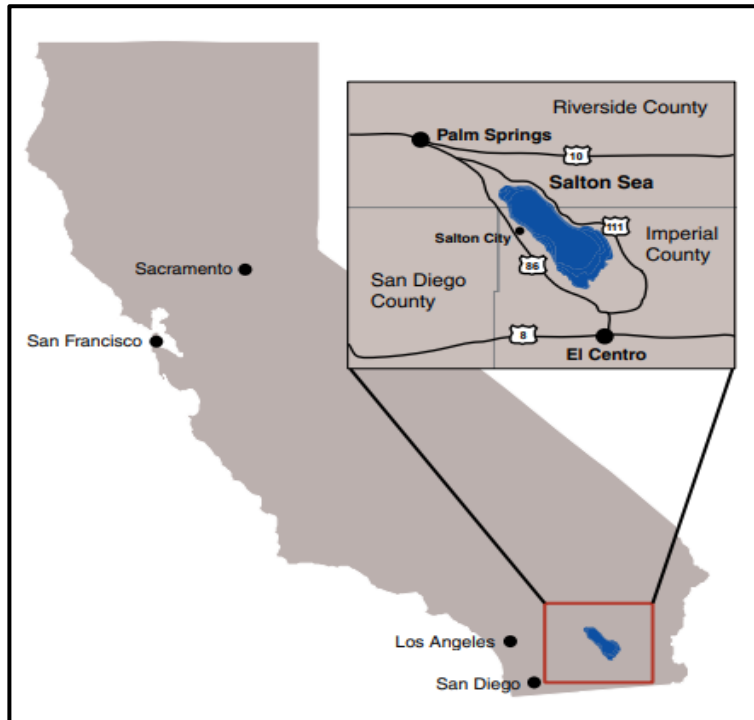
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249. See PHASE I PLAN, *supra* note 136.

250. See Kennan, *supra* note 32, at 6–10.

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Source: MAC TAYLOR, CAL. LEGISLATIVE ANALYST'S OFFICE, THE SALTON SEA: A STATUS UPDATE 4 (Aug. 29, 2018).



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Source: Mac Taylor, Cal. Legislative Analyst's Office, The Salton Sea: A Status Update 10 (Aug. 29, 2018).

Caption: Projected shoreline retreat and proposed management projects to 2028.

