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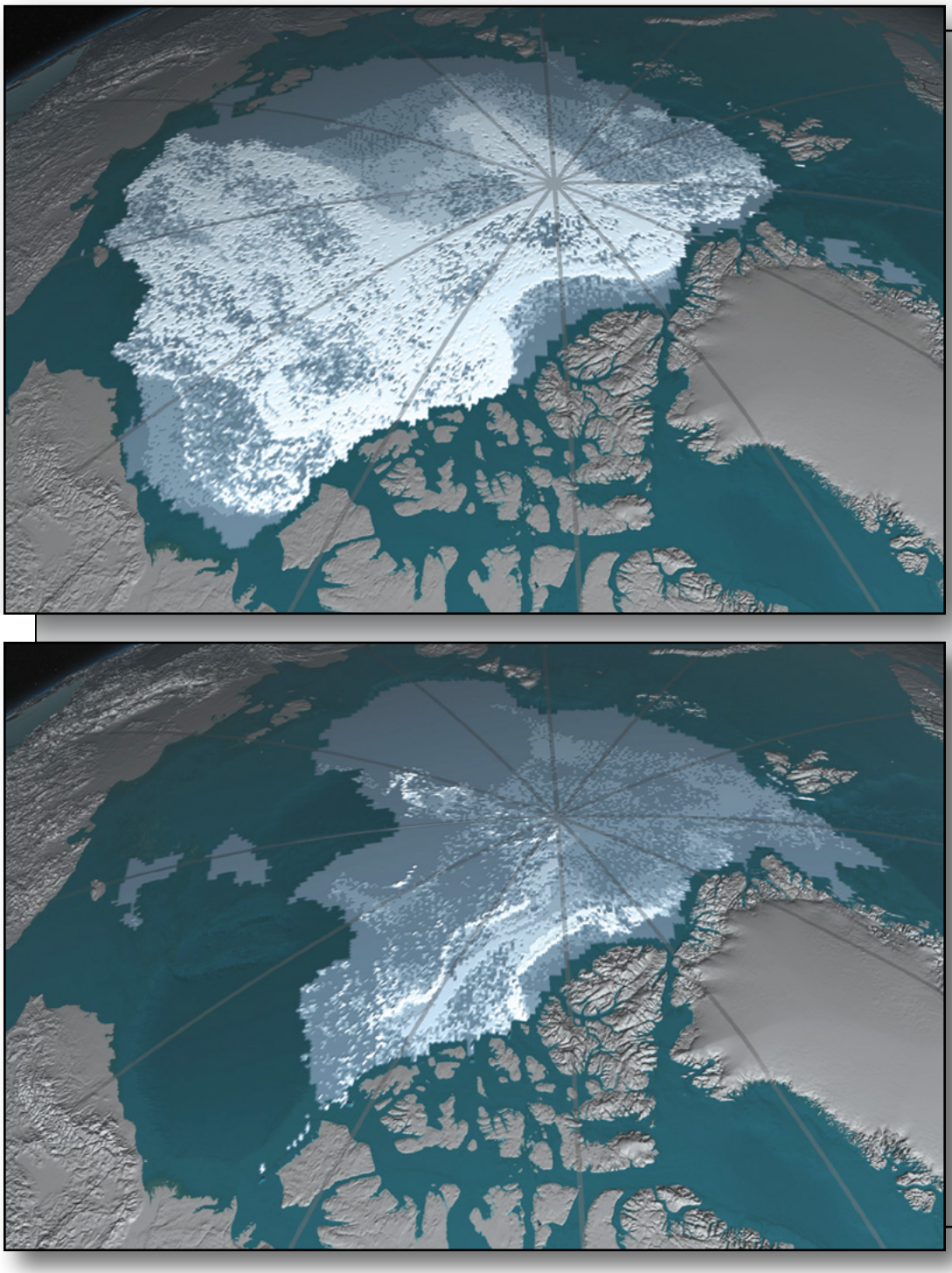

Inside

Image credits: NASA

The area covered by Arctic sea ice at least four years old has decreased from 718,000 square miles (1,860,000 square kilometers) in September 1984, at top, to 42,000 square miles (110,000 square kilometers) in September 2016, at bottom.

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Message from the Chair

As the Environmental and Energy Law Section's newest Chair, I want to take this opportunity to thank our outgoing Chair, Larry Schnapf, for his exemplary leadership in guiding our Section through this time of ever shifting unpredictability. Larry's tireless enthusiasm for CLE opportunities, rebranding our Section, creative activities during our Fall meeting (consistent with his love of baseball) and unceasing interest in talking about anything to do with the Kennedy assassination has made him champion of the Section. His multiple emails each day to the cabinet will actually be missed, and I know we will from time to time enlist him to assist the Section in its activities.

In terms of rebranding our Section, Larry was instrumental in having our Section renamed the Environmental and Energy Law Section. The bar association has never had an energy law section, although the Public Utility Committee (now affiliated with the Business Law Section) has been around for a while. We are hopeful that we can collaborate with the Public Utility Committee from time to time in the future.

With Larry's leadership and those who came before him, the Section is finally moving into the social media age. Under the leadership of Meaghan Colligan, the Section's Social Media Task Force finally launched (after much handwringing by all of us about the appropriate "handle") a twitter account (@NYSBAEELS) and is encouraging all section members to get more involved in "Communities." We are also updating our Section's website and providing opportunities for members of the Section to create their own blogs.

Now, on to more substantive matters…..

In the few short months of President Trump's administration, there has been a shift in emphasis away from the need for a strong, federal approach to protecting the environment. The Trump Administration's extensive regulatory roll backs and freezes, along with a budget proposal that drastically reduces Environmental Protection Agency (EPA) funding and staffing shortages have led to paralysis and uncertainty at the headquarters level. Now, there may be some of you out there who think that reduced funding for EPA is a good thing. But, because of uncertainty in the regions, promised drastic budget cuts, or even through natural attrition, you are not getting the kind of response you have come to expect from EPA. That affects us all, and not just in the enforcement arena. This impacts the continuing and proper functioning of the regulatory community (i.e. permit issuance, compliance review, etc.).

In his Winter/Spring 2017 Message from the Chair, Larry outlined the Trump Administration's strategy regarding regulations and identified environmental regulations targeted for delay, many of which are still in limbo today. Some of the more significant regulations that have been withdrawn, put on hold, or called for review by the Administration include:

- Waters of the United States' Rule (proposed rule extension of comment period issued August 22);
- Accidental Release Prevention Requirements/Risk Management Program (delayed until February 19, 2019);
- Certification of Pesticide Applicators Rule (effective date delayed until May 22, 2018);
- Formaldehyde Emission Standards for Composite Wood Products (withdrawn, direct final rule for labeling relief only effective August 25, 2017).
- Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources (stayed certain requirements for two years but is currently in litigation)
- Guidelines and Standards for the Steam Electric Power Generating Point Source Category (postponed until EPA completes reconsideration of 2015 rule);
- Standards of Performance for Municipal Solid Waste Landfills and Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills (stayed until August 29, 2017);
- Standards of Performance for Greenhouse Gas Emissions From New, Modified, and Reconstructed Stationary Sources: Electric Generating Units (under EPA review); and
- Clean Power Plan (under EPA review).

And, of course, let's not forget the decision of the Administration to withdraw from the 2015 Paris Agreement on climate change, something the editorial board of the *New York Times* called "disgraceful." The Section has taken a leadership role in New York State in trying to, at the very least, inform the public and Section members of the importance of addressing climate change. In 2009, the Bar's Task Force on Global Warming prepared a report that reviewed efforts to address climate change and steps that New York State could take to mitigate greenhouse gas emissions and address the effects of climate change.

The report was approved by the House of Delegates at its April 2009 meeting. Last year, then-President Claire P. Gutekunst asked the Environmental and Energy Law Section to review that report and provide an update. The Section drew upon work by the Elizabeth Haub School of Law at Pace University, which produced an update to the Task Force report in 2011. In March 2017, the Section's Global Climate Change Committee Co-chairs (Michael Gerrard, Kevin Healey, Carl Howard, and Virginia Robbins) worked on a report to the House of Delegates to update the 2011 report and also to identify "Possible New York State Actions to Fight Climate Change in Current Political Environment." This document addresses actions that New York State can undertake as a leader in fighting climate change at a time when federal efforts are expected to slow. The recommendations relate to renewable energy development; the Regional Greenhouse Gas Initiative; motor vehicle standards; appliance standards; electric vehicles; low carbon fuel standard; the State Environmental Quality Review Act; flood mapping; infrastructure planning; securities disclosure; federal deregulation; state climate legislation; and local laws. I presented the Report to the House of Delegates on June 17, 2017, and it was unanimously adopted.

"While a balance between the environment and the economy is always desirable, the nation needs programs that continue to maintain high environmental standards, create a level playing field across the country, and spur research and development into more environmentally sound and profitable business practices."

While a balance between the environment and the economy is always desirable, the nation needs programs that continue to maintain high environmental standards, create a level playing field across the country, and spur research and development into more environmentally sound and profitable business practices. To that end, it is important to promote programs and rules that encourage research, continue to make our industries clean and competitive, and facilitate the remediation and repurposing of contaminated sites. It is critically important to businesses in New York and other states to have rules and policies that are predictable and allow regulated entities to plan appropriately for the future. Likewise, it is crucial for EPA to have enough staff to administer these programs, including those to address permitting and other requests, in an efficient and timely manner.

The Section's Future of Federal Environmental Policy Task Force (FFEP), led by Kevin Healey, Dave Freeman, and Gail Port, has taken a leadership role in articulating the Bar Association's strong objection to President Trump's decision to have the United States withdraw from the Paris Agreement on climate change. In addition, the FFEP prepared a letter to EPA Administrator Pruitt and OMB Director Mulvaney strongly recommending proper funding and support by policy makers for essential environmental programs. The letter was sent in memo form from the Bar (not just the Section) to New York's Congressional delegation in August and a copy of the same was sent to Messrs. Pruitt and Mulvaney. I have encouraged the FFEP to stay active in bringing to Section leadership other opportunities for the Bar to address some of the significant changes that may occur in the future and I want to thank the FFEP for its continued work and patience (with Bar bureaucracy).

As the FFEP has noted, New York State's environment has benefited greatly by having a strong and well-staffed EPA. In addition to possible changes in—and inconsistencies between—federal and State laws, the thought of losing a vibrant federal presence, including through budget cuts and staff reductions, weakens New York State's program because, despite the faith shown, and authority vested, in the State, it lacks the resources to compensate for a weakened EPA. As a result, the partnership and coherent and cohesive working relationship between the two levels of government are assets we do not want to see abandoned.

Meanwhile, New York State continues to move forward in addressing climate change and encouraging the use of renewables. For example, on August 23, 2017, Governor Cuomo issued a press release advising that New York is proposing to update the Regional Greenhouse Gas Initiative (RGGI) to lower carbon pollution by reducing the cap on power plant emissions an additional 30% below 2020 levels by 2030. Even before this announcement, in early June, days after President Trump's announcement, New York and 12 other states formed the U.S. Climate Alliance in response to the Administration's pull-out from the Paris Accord. And, of course, New York is continuing to press on with its Reforming the Energy Vision (RE) strategy and proceeding before the Public Service Commission.

Protecting the environment is not necessarily a partisan issue. Indeed, as noted by the FFEP in the letter it prepared, bipartisan efforts have devised common solutions to critical environmental problems. Many of our bedrock environmental laws—such as the National Environmental Policy Act, the Clean Air Act ("CAA"), and the 1990 CAA amendments—were enacted into law during Republican administrations, with support from both Republicans and

Democrats in Congress. New industries providing hundreds of thousands of well-paying jobs could be fostered by a national program aimed at reducing greenhouse gas emissions. We are seeing this here in New York. This is where environmental and energy policy intersect (among other places) and why rebranding the Section into the Environmental and Energy Law Section makes so much sense.

One other major event happening this fall will be a vote on whether there should be a Constitutional Convention. This spring, the Section polled its Executive Committee as to whether it would support the Bar Association's report recommending that there should indeed be a Constitutional Convention. The Executive Committee voted against supporting the report, mostly because of concerns of what could happen to some of the protections already in the state Constitution, including for example those within Article XIV. At the House of Delegates meeting on June 17, 2017, I presented this majority (but certainly not unanimous) view of the Section; however, the House of Delegates overwhelmingly approved the report recommending that there should be a Constitutional Convention. At last year's annual meeting, the Executive Committee of the Section appointed a Task Force on Environmental Aspects of the NY State Constitution in January of 2017, to study and prepare a written report to submit to the Section's Executive Committee, regarding (1) environmental issues appropriate for consideration in any amendment to the New York Constitution, beyond the issues which the House of Delegate has already determined; (2) constitutional issues relevant to climate change; (3) appropriate provisions for an environmental right in the State Constitution; and (4) any other environmental issues that the Task Force considers important for submission to the Section Executive Committee. The Task Force delivered its report to me on August 23, 2017. In a thoughtful and well-reasoned report, the Task Force made two fundamental recommendations: (1) there should be no changes to Article XIV; and (2) Article I should articulate and provide for the protection of a right to clean and healthy environment. The 18-page report, which, to the credit of the Task Force (led by Katrina Kuh, its Chair), reads more like a law review article, will be posted in Communities and will likely be published in the Pace Law Review.

Finally, a note about our Section and its membership. Frank Piccininni and Rob Stout of our Membership Committee do a great job in trying to drum up interest in our Section. But, it is a difficult job given the declining membership of the Bar as a whole. We need your help, especially with what is happening with environmental policy nationwide and in this state, to encourage environmental and energy lawyers (whether they are just out of law school or have been practicing for 30 years) to join our Section and find an avenue to both have their voices heard and work with the great lawyers we have in our Section.

Kevin Bernstein

Message from the Editor-in-Chief

In the last issue of *The New York Environmental Lawyer,* my message foretold changes as the country transitioned from the Obama administration to the Trump administration. We are more than nine months into the new administration and concern for the well-being of the environment—for the planet—intensifies with every passing day. While the western states burn, and stronger hurricanes than this country has ever seen wipe out islands, including the Virgin Islands and Puerto Rico, and flood our southern cities, the Trump administration refuses to take action to address climate change.

Earlier this year, Trump announced the U.S. will withdraw from the Paris climate deal. Scientists say any delay in U.S. efforts to stop greenhouse gas emissions will lead to higher temperatures. Most scientists agree higher temperatures will cause rising seas, flooding in coastal cities, deadly heat waves and drought in other parts of the world, crop failures, mass extinction, and stronger storms. Indeed, we are already seeing damage as a result of climate change. The photos on our issue cover show the steep decline in Arctic sea ice over the last few decades. Scientists say the disappearance of sea ice is largely a result of climate change, with the Arctic warming at a faster rate than any other region. While it is helpful that the EU and Chinese leaders are working together and planning to push forward with the Paris Accord, the U.S. is the second largest emitter of greenhouse gases. Without its participation, the planet will continue to suffer the consequences of climate change.

Nine Mid-Atlantic and New England states have agreed to cut power plant greenhouse gas emissions by 65 percent by 2030, which is an additional 30 percent below 2020 levels. New York is one of the states participating in this Regional Greenhouse Gas Initiative—the nation's first cap-and-trade program to reduce carbon contributing to global climate change. This is good news, but there are obvious drawbacks to a piecemeal, state-by-state approach to climate change protection. A uniform national program and participation in a global program are absolutely necessary.

For more discourse on climate change, see Carl Howard's blog. You can read his blog posts at the NYSBA EELS website. We are publishing them in *TNYEL*, too. You will find Carl's first three posts in this issue. The next issue will pick up with his fourth and all subsequent posts as of the publication date of that issue.

Of course, climate change is not the only environmental concern we are facing. What is so distressing is the fact that the Trump administration is not just passively failing to protect the environment. Rather, it is taking affirmative steps that are harming the environment. Some recent acts of anti-environmental protection by the Trump administration include: the hiring of climate change deniers to EPA administrator positions; politicizing the offices of environmental justice and NEPA; FERC overriding New York State's decision to reject a gas pipeline; nomination of a former coal executive and violator of health and safety regulations to head the Mine Safety and Health Administration; the push to shrink 10 national monuments or open them to mining, logging, and hunting; EPA cuts to funding for science and research, while spending $25,000 on a soundproof communications booth for Agency Administrator Pruitt—apparently to prevent eavesdropping by EPA staffers.

The phone booth is not EPA Administrator Pruitt's first effort to keep his staff silent. It has been reported that he has attempted to block EPA staffers from disclosing "controlled unclassified information." In response to Pruitt's policies in favor of polluters, EPA staff has shared with the media things like Agency plans, climate reports, and budget cuts. Nevertheless, you will note that *TNYEL*'s *EPA Update*, a regular column and excellent source of news on the work at the Agency and specifically in Region 2, is not included in this issue. Our columnists and colleagues at EPA have made the decision to suspend the column for the time being. We hope to see the return of the informative *EPA Update* in the near future. In the interim, Jay Simpson, an EELS member and former EPA Region 2 Assistant Regional Counsel, is developing a column to fill the gap. Look for Jay's *Not Necessarily the EPA Update* (or something to that effect) in future issues.

For ideas on how you can make change globally while acting locally and how to talk to a Paris Accord skeptic, among other ways for doing your part to protect the environment in the face of the current administration's agenda, I encourage you to visit the NRDC's website (https://www.nrdc.org/trump-environment), and the websites of other environmental activist organizations. As members of the NYSBA Environmental and Energy Law Section, as environmental lawyers, and as individuals, we all must do what we can to protect the environment during this time of turmoil when the federal government has turned away from environmental protection.

Miriam E. Villani

Message from the Student Editorial Board

In 2006, Al Gore's *An Inconvenient Truth* illuminated what scientists already knew: global warming is real and, absent serious changes to business as usual, could eventually lead to global destruction. The documentary gave global warming a realness through pictures, graphs, images, and relatable facts—something that scientists had not been able to do. Former Vice President Al Gore brought global warming to life.

Admittedly, I saw this documentary because I was a big Al Gore fan, not because I was "all about the environment." I recycle, I turn lights off, I unplug my electronics, but I never actively thought about how my actions were contributing to this "global warming phenomenon." *An Inconvenient Truth* changed all of that for me. I left the theater ready to change the world. The truth was no longer inconvenient for me.

Eleven years later, Al Gore's documentary *An Inconvenient Sequel: Truth to Power* has been released. I now realize that the sense of urgency I felt after seeing *An Inconvenient Truth* has dissipated. Watching the trailer for *An Inconvenient Sequel* brought back those same emotions I had 11 years earlier, but I also felt sad, angry, and lost. How could I have done nothing over the past 11 years? How had we, as a country, come to this point? The former Vice President and "almost next president of the United States of America" warned us, but we did not listen. He warned us in *An Inconvenient Truth* that the combination of sea level rise and storm surge would flood the 9/11 memorial, and in November 2012, Hurricane Sandy made good on that promise.

The United States and the world have made some changes. We have begun to transition toward using renewable energies like solar and wind. In 2016, the United Nations Framework Convention on Climate Change (UNFCCC) adopted the Paris Climate Accord in which "virtually every nation in the entire world agreed to get to zero greenhouse emissions." Former President Obama rejected the Keystone Pipeline, established the largest marine reserve in the world, raised fuel efficiency standards, took advantage of the Antiquities Act, and unveiled the Clean Power Plan.

Hope of moving forward may have dissolved with the election of Trump to the White House. During his campaign, Trump promised to "put America first," cancel billions in climate change spending, and end the Environmental Protection Agency (EPA). Although he has yet to make good on those promises, he has certainly made good on others. On March 28, 2017, Trump issued Executive Order No. 13783, which promoted energy independence and economic growth while avoiding regulatory burdens. The order revoked a number of former President Obama's actions, including a 2013 Executive Order to Prepare the United States for the Impacts of Climate Change; a 2013 Presidential Memorandum on Power Sector Carbon Pollution Standards; a 2013 Presidential Memorandum on Mitigating Impacts on Natural Resources from Development and Encouraging Related Private Investments; a 2013 Report of the Executive Office of the President on the President's Climate Action Plan; a 2014 Report of the Executive Office of the President on a Climate Action Plan Strategy to Reduce Methane Emission; and a 2016 Presidential Memorandum on Climate Change and National Security.

The positive action and forward movement accomplished by former President Obama and his staff were gone with one signature. Trump is taking giant leaps backwards to neutralize former President Obama's small steps forward. *An Inconvenient Sequel: Truth to Power* shines a light on this issue, but also gives hope for the future. Al Gore does exactly what he did in *An Inconvenient Truth*. He illuminates what is wrong, what positive changes we have made, and what we need to do to move forward to ensure that we reduce emissions, halt global warming, and put a stop to Trump's incessant need to end all of the positive change that former President Obama initiated.

Linnea E. Riegel
Albany Law '18

Developments in Climate Change: The IPCC Reports

By Carl R. Howard

This is the first of a series of blog posts on climate change. Below I will introduce a few topics and will elaborate on them in future blogs. This blog is intended to inform readers on climate change developments on the ground (physical effects), in Washington (politics), in science, and share good news and bad. I will refer the reader to sources of information worth reading. The best place to start is the IPCC Reports (The Intergovernmental Panel on Climate Change):

Free online at: http://www.ipcc.ch/report/ar5/ (or just Google "IPCC reports").

The four most recent reports are:

1. Climate Change 2013—The Physical Science Basis
2. Climate Change 2014—Impacts, Adaptation, and Vulnerability;
3. Climate Change 2014—Mitigation of Climate Change; and,
4. Climate Change 2014—Synthesis Report.

I suggest you read the Synthesis Report, and start with its Executive Summary. It is written for policy makers (government officials), not for scientists. It is clear and well-written. It was written by literally a thousand different scientists from around the world and it summarizes 36,198 reports on a wide range of indicators globally. If you want to address the topic of climate change intelligently, you need to be familiar with the findings of this report.

In future blogs I will point you to additional sources, but let's start with this.

Conceptually, going forward, imagine a pyramid with Homo sapiens on top. The two boxes supporting H. sapiens are labeled Food and Sustenance from Ocean/Water, and Food and Sustenance from Land. The third row is comprised of two larger boxes labeled Climate Stability, and Political Stability. For simplicity sake, those four boxes are what enable H. sapiens to remain on our lofty perch. As I will show, climate change is degrading all of the structures upon which we depend.

Regarding developments on the ground, in the U.S. the Sierra Nevada mountains received a good snowfall for a change, but the drought that persists in the nation's most fertile and productive agricultural areas is unrelenting. Climate models predict steady warming (although one model suggests that central California may get more precipitation, but it may come in less frequent and hard bursts which may be detrimental to agriculture and likely results in flooding) (elsewhere, as I write, hundreds of people have been killed in heavier than normal flooding in India, Bangladesh and Nepal, with millions of people stranded and in need of rescue) and this situation likely will worsen over time. Heat reduces crop yield, as does drought and intense rainfall. This is a direct threat to our land-based food supply. Such effects are being felt in much of the western U.S. as well as many other parts of the world.

The picture is complex. While there will be many losers, there will also be winners. Under a same business-as-usual scenario, higher yields are predicted for irrigated crops such as wheat, soybean, and sorghum. The increased production in these crops is driven by higher precipitation predicted for the central U.S., combined with higher concentrations of carbon dioxide, which reduces a plant's water requirements.

Related to the western drought, wildfires are again raging in many places in the west and northwest of North America. As heat-related climate change intensifies the further north you go, the northern Boreal forests in north America and Europe are experiencing drying and burning. Again, this is consistent with climate models and the future is likely more of the same. Last year, 90,000 people fled Fort McMurray in Canada. Climate change is not just a problem overseas or in the hard-hit tropics (which has contributed little to climate change, which raises Environmental Justice issues, for a later blog). Climate change is a present global threat, as I will continue to detail. In Russia, about 70 million acres burned in 2012. In June, 2017, wildfires in Portugal killed 62 people and caused enormous damage. Alaska, home to most of the Boreal forest in the United States, had its second-largest fire season on record in 2015, with 768 fires burning more than five million acres.

Earth has warmed 1.4 degrees Fahrenheit since Industrial Revolution (1880s). Most of this warming has occurred since the 1970s, with the 20 warmest years having occurred since 1981 and with all 10 of the warmest years occurring in the past 12 years. The most rapidly warming places on the globe are at the poles, both the

Carl R. Howard is the Co-chair of the Section's Global Climate Change Committee. The views expressed are entirely the author's. The three articles in this section were originally posted in the Global Climate Change Blog of the Environmental and Energy Law Section Community at www.nysba.org/eelscommunity.

Arctic and the Antarctic are experiencing alarming warming, which has resulted in so much ice melt in the Arctic that ships are starting to use the northern passage and oil companies are contemplating oil exploration in newly opened water. In 2012 a record low level in sea ice was measured in the Arctic. In future blogs I'll address the "positive feedback loops" resulting from the loss of reflective ice and the appearance of dark open water, as well as the loop involving warming tundra. There is nothing positive about any of this as that term is typically read.

The immense crack on the Larsen ice shelf in the Antarctic has been widely reported in the popular press. Immense amounts of ice threaten to slide into the ocean now that the "plugs" that had been holding them back are being pushed out by warming air and melting ice and warming seas. Future blogs will address the profound danger of rising sea levels (approximately 8" to date from the start of the industrial revolution), change in the chemical composition of the oceans with the introduction of so much fresh water, and the resulting disruption of ocean currents and its impact on global climate, as well as fish migration disruption, mass coral reef death from acidification, and the implications of all that. The threat to humanity's ocean-based food supply is serious. But the threat this poses to the planet's climate stability is even more so.

Heat waves continue to plague much of Africa and the Middle East and are a major factor in the increasing numbers of starving refugees fleeing those areas and contribute to the failure of states in these regions. More on this crucial point in future blogs as the implications for global political stability are profound as well. Climate models predict that many of these areas may soon be uninhabitable by H. sapiens.

In Washington we have a President who does not believe in climate change and is actively undermining all the gains that the Obama administration made in addressing it. He has appointed an Administrator to EPA who is equally hostile to climate change regulations who in turn has hired as his chief of staff an oil and gas advocate from Oklahoma, both of whom are engaged in furthering the President's pro fossil fuels agenda. Much more on this later as the administration is not aware of the four crucial threats outlined above (i.e., to our food and sustenance from the land and the sea, and to the climate and political stability upon which human civilization depends).

Enough bad news. There is good news. The Paris Agreement that 195 nations have committed to will survive U.S. abdication. Other countries are proceeding in good faith to meet their pledges to reduce their carbon footprints. The Australian city of Adelaide reduced its carbon emissions by 20 percent from 2007 to 2013, even as the population grew by 27 percent and the economy increased by 28 percent. The U.S. may even meet Obama's pledge as so much action is being taken on the national, regional, local and individual (that would be you and me) levels. More on this later too. Portland, OR, has committed to 100% renewable energy by 2050. California set a goal to reduce its carbon emissions by 40 percent below 1990 levels by 2030. Over 10,000 climate initiatives are under way in cities worldwide, according to the C40 Cities Climate Leadership Group, which represents 80 major cities. In Des Moines, Mayor Frank Cownie committed the city to reducing its energy consumption 50 percent by 2030 and becoming "carbon neutral" by 2050. The San Diego Republican mayor, Kevin Faulconer, committed that city to 100 percent renewable energy by 2035.

There is a bipartisan "Climate Solutions Caucus" in the House, which currently has 19 Republicans on it. Many Republicans and conservatives accept that climate change is happening and want to do something about it. Many religious conservatives feel the same. They may not agree that the cause is man-made, but they understand that 97 percent of climate scientists support the theory that the earth is warming and they see the evidence (including record-breaking storms, flooding and tornadoes in the South—Texas, Louisiana, Mississippi, Arkansas and Alabama—with numerous deaths and billions of dollars in lost real estate, infrastructure and business, and a rare April blizzard in Kansas).

The Department of Defense stated quite clearly that it regards climate change as a serious threat to U.S. national security. It will take several blogs, but I'll explain why.

Solar and wind power have made immense gains around the world over the past several years. The plummeting cost of solar panels and wind turbines now enables the production of emissions-free electricity cheaper than burning coal. By 2020, thanks to MidAmerican Energy's planned $3.6 billion addition to its enormous wind turbine operations, 85 percent of its Iowa customers will be electrified by clean energy. The five states that get the largest percentage of their power from wind turbines—Iowa, Kansas, South Dakota, Oklahoma and North Dakota—all voted for Mr. Trump. So did Texas, which produces the most wind power in absolute terms. In fact, 69 percent of the wind power produced in the country comes from states that Mr. Trump carried in November.

Market forces favor renewables as their costs have plummeted so, even with Trump's promotion of fossil fuels, there is very little new exploration going on because the economics of it are so unfavorable. Far more people are currently employed in the renewable energy field than in oil and gas production and this disparity is likely to widen no matter what comes out of Washington. The solar industry employed 200,000 people nationwide in 2016. Nationally the U.S. solar industry workforce is bigger than that of oil and gas construction, and nearly three times the size of the entire coal mining workforce. The world's gradual transition from fossil fuels has opened up a huge global market, estimated to be $6 trillion by 2030, for renewable fuels like wind and solar, for electric cars, for advanced batteries and other technologies.

Here in New York, mandates by Gov. Andrew M. Cuomo led to plans for new green energy over the next 20 years—about 800 megawatts of primarily offshore wind.

Important gains are being realized in energy storage as well (i.e., batteries). EVs (electric vehicles) can now travel over 200 miles between charging, and energy generated by solar and wind can now be more effectively stored and used at night and other slack times.

The transportation sectors in the U.S. and abroad account for about a third of the world's greenhouse gas emissions so it is good news that many countries, cities and car manufacturers have pledged to go green. Norway and India pledged to sell only EVs by 2025 and 2030, respectively. France pledged to end sales of gas powered cars by 2040. Germany stated a goal of 1,000,000 EVs on the road by 2020 (that date has slipped a bit). Volvo is phasing out the internal combustion engine beginning in 2019, switching over entirely to battery power or hybrids. Tesla has a new, lower priced ($35,000) EV, Model 3, it intends to mass produce (about 500,000 people have placed deposits on one).

That's enough for Blog 1. Do read the IPCC summary. It's not long and it's certainly not boring. It may just be the most frightening thing you've ever read. Because it's real.

NYSBA members will be able to post replies and are encouraged to do so. I ask that you stay on point. Please add informative replies relevant to climate change developments on the ground (physical effects), in Washington (politics), in science, and share good news and bad. Please, no pure political rant one way or the other.

Record Warmth and Polar Ice Melt

By Carl R. Howard

July 2017 was the second warmest month on record, just behind July 2016. And it marked the 391st consecutive month with warmer-than-average temperatures, according to NOAA's most recent global climate report (see link, below). The western US was among the most "notable" warm areas along with Australia, southern South America, Mongolia, and China.[1]

2

Globally, 16 of the last 17 years have been the warmest on record, and 2017 is on schedule to break records, too. In the contiguous U.S., average annual temperatures rose between 1901 and 2016 by 1.8 degrees Fahrenheit or 1.0 degree Celsius.

Since 1980, the cost of extreme events for the United States has exceeded $1.1 trillion (not including the billions from Hurricane Harvey in Texas).

If Trump's fossil fuels first approach maintains business as usual levels of greenhouse gas (GHG) emissions, temperatures may increase by 2.5 degrees Fahrenheit over the next few decades, and between 2.8 and 11.9 degrees Fahrenheit by the late 21st century. Anything approaching this higher end risks "catastrophic" consequences (which I will address in a later blog).

You may also be interested to read EPA's recently issued annual *Report on the Environment*. In the ROE we address a series of environmental indicators, and provide data to show "how are we doing" on each. One of the ~31 indicators is greenhouse gas.[2] If you click on the link, and then click on the headings below titled "What the Data Show," you will find this sentence:

> Carbon dioxide concentrations have increased steadily since the beginning of the industrial era, rising from an annual average of 280 ppm in the late 1700s to 401 ppm as measured at Mauna Loa in 2015—a 43 percent increase. … Almost all of this increase is due to human activities (IPCC, 2013).

Also, do see my colleague and NYSBA EELS Global Climate Change Committee Co-chair, Mike Gerrard's outstanding blog, which I highly recommend at http://blogs.law.columbia.edu/climatechange/.

As for facts on the ground, forests in Canada are ablaze. 2.2 million acres have burned so far this year in British Columbia alone. These fires, and others in the Yukon and NW Territories, have been emitting smoke that has reached 8 miles in height. Atmospheric winds carried the smoke to the Arctic where it could speed the melting of the sea and land ice there.

I mentioned in Blog 1 that I would address the threat of melting polar ice and the positive feedback loops that threaten multiple runaway harms. First, the smoke carries carbon and other GHG which add to the warming of the planet. Warmer air does more than just melt the ice on the land which adds to sea level rise (SLR). Warmer air also dries out soil and vegetation and increases evaporation from the seas and water bodies, which loads more water vapor to the atmosphere. Water vapor is a GHG and acts to increase the planet's temperature. More water vapor in the atmosphere leads to heavier, more damaging, rainfalls and snowstorms. Climate models suggest that the Northeast U.S. is particularly vulnerable in this regard (as is the south, especially along the Texas

coast as the waters of the Gulf of Mexico have been so warmed by climate change).

The second harm posed by the drifting smoke is that it carries dark particles which are deposited on the ice. White ice is reflective but as the ice darkens from the deposited particles from the smoke, it absorbs heat, hastening the melting of the ice. As darkened ice reflects less light into space, and as more land and sea is exposed, more light and heat is absorbed by the land and the water increasing the earth's heat. The positive feedback loop is complete: as temperature rises, ice melts, the more that ice melts the less ice reflects light, and the more the earth absorbs heat via land and water. The more heat that is absorbed, the more heat is radiated out, which raises the temperature, which melts more ice, and so on. This is a positive loop in the sense that it feeds on itself to the detriment of the planet and the proper functioning of systems H. sapiens depend on.

Glaciers in the Arctic are shrinking. The massive Greenland ice sheet is melting. Since 2002, it has lost 4,400 billion tons of ice. If it has reached a tipping point, beyond which melting cannot be stopped, then SLR may exceed 21 feet. The havoc that would cause, starting the minute it became clear that the tipping point had been reached, which literally could be any day, threatens the future of human civilization. (I'll explain more in future blogs).

Another threat of similar proportions comes from the thawing of the Arctic tundra. The poles are heating twice as fast as the rest of the planet. An Arctic carbon bomb, in the form of immense amounts of carbon dioxide and methane (20 times as potent as a GHG than CO2), is safely stored in the permafrost of Alaska and Siberia. But rising polar temperatures are melting the permafrost which initiates another positive feedback loop. As temperatures will continue to rise for the foreseeable future, more permafrost will melt, which will release CO2 and methane, which raises the temperature, and releases more CO2 and methane, and so on. And this further melts polar ice and the Greenland ice sheet which adds to SLR and global climate disruptions. This stuff is terrifying, it's real and it is happening.

"A growing body of studies connects dwindling sea ice to wild weather. Reduced winter sea ice and warming seas lead to changing conditions in the air, which triggers potent shifts in the jet stream that controls much of the planet's weather."

The reflection of light into space is known as Albedo. When you hear about the diminishing Albedo Effect chances are you are hearing about the loss of polar ice. As polar ice melts it does numerous destructive things. First it disrupts the food chain with the immense and sudden introduction of fresh water into the salty sea. Second, massive infusions of fresh water disrupts the usual flow of oceanic currents and acts to slow the oceanic currents that ultimately drive the earth's weather systems. Changes have been detected to the usual flow of currents, including the Gulf Stream, due largely to warming water and fresh water infusion, which likely will have other feedbacks we have yet to understand. These currents move immense amounts of heat around the planet and the disruption of this flow is affecting weather patterns in North America and Europe and likely elsewhere.

A growing body of studies connects dwindling sea ice to wild weather. Reduced winter sea ice and warming seas lead to changing conditions in the air, which triggers potent shifts in the jet stream that controls much of the planet's weather. Thus, the shrinking polar ice affects two of the primary drivers of global climate, ocean currents and the jet stream air flow. If we wanted to be more disruptive of the planet's climate stability (a foundational block supporting H. sapiens atop our food pyramid), I doubt we could do better than we are doing.

The third danger posed by melting ice is that the rapid introduction of freshwater into the ocean alters its chemical composition. The absorption of CO2 by the ocean (which leads to acidification as measured by falling pH levels) has resulted in the loss of much of the world's coral reefs with devastating effects both in terms of sea life, shore protection and economic losses (a topic for a later blog).

Recall from Blog 1 H. sapiens proudly sitting atop the food pyramid supported by two blocks (Land-based Food and Sustenance, and Water/Ocean-Based Food and Sustenance) which in turn are supported by two larger blocks (Climate Stability, and Political Stability). The majority of the world's protein derives from the ocean. The oceanic food chain is based on krill and microscopic organisms. The rapidly melting ice and calving glaciers are changing the exquisitely sensitive chemical composition of the ocean that krill and microscopic organisms depend on. Should the foundation of the oceanic food chain be abruptly altered, it would adversely affect all higher levels of aquatic (and other) predators and ultimately man. This threatens to

undermine the Water/Ocean-Based Food and Sustenance block supporting H. sapiens.

Monsoon rains have been a seasonal occurrence but now they bring death and destruction on an unprecedented scale. Prior to Harvey, few in the U.S. were aware of the human death toll in Bangladesh, Nepal and India from floods and mudslides, which has exceeded 1,000 with over 41 million more displaced, missing or in need of assistance. People in Sierra Leone are also suffering from torrential rains and mudslides, with hundreds dead and tens of thousands displaced and in need of emergency assistance. This was the deadliest natural disaster on record for Sierra Leone, just as Harvey delivered the heaviest rainfall ever recorded in the U.S.

Enough doom and gloom. On the bright side it is good to see the leading climate change fighter, Al Gore, so optimistic. In addition to reading the IPCC summary section in the summary report (see Blog 1), please see Gore's films *Inconvenient Truth* and the sequel, *An Inconvenient Sequel, Truth to Power*, and buy and read both companion books. Gore gives numerous examples of how fast things can and have changed for the better. Regarding the speed of technological change, when cell phones first came out in 1980 projections were that by 2000 maybe 900,000 would sell. In fact, by the end of 2000, 109 million cell phones sold, 120 times more than was predicted. And now the same thing is happening with the price of solar and wind energy. Costs are falling faster than anyone predicted. In many instances the cost of electricity from solar or wind is less than half the cost of electricity from burning coal or natural gas (even ignoring costs associated with climate change). Gore writes that in 2016 in the U.S., 70% of all new electricity-generating capacity came from solar and wind while less than two-tenths of 1% came from coal. China has embraced solar and wind energy and canceled the construction of over 100 coal power plants not just because of the economics, but also because of public pressure to improve air quality.

The health benefits from clean, renewable energy are reason enough to pursue it. Fossil fuels not burnt because of wind and solar energy helped avoid between 3,000 and 12,700 premature deaths in the U.S. between 2007 and 2015. Fossil fuels produce large amounts of pollutants like carbon dioxide, sulfur dioxide, nitrogen oxides, and particulate matter, which are responsible for ill-health and negative climate effects. The U.S. saved between $35 billion and $220 billion in that period because of avoided deaths, fewer sick days, and climate-change mitigation.

In addition, the renewable energy field spurs economic growth, creates new jobs, and leads to technology development. This too generates billions of dollars in the U.S. alone.

Politically, in the U.S., nine eastern states in the Regional Greenhouse Gas Initiative, or RGGI (NY, NH, VT, CT, MA, DE, ME, MD, and RI), agreed to cut global-warming pollution from the region's power plants 30 percent between 2020 and 2030. The RGGI states—with five Republican governors and four Democratic governors—together represent the world's sixth largest economy, with $2.8 trillion in GDP. California, where the legislature recently voted to extend its own cap-and-trade program through 2030, falls just behind in GDP, at $2.5 trillion. In 2011, New Jersey's Republican governor, Chris Christie, withdrew his state from the coalition but there is reason to believe New Jersey will rejoin once Christie is gone. Carbon dioxide emissions from the RGGI states have fallen more than 40 percent compared to 2008 levels. In 2016, their annual CO2 emissions fell to just under 80 million tons.

The RGGI group says the proposed caps will cut carbon emissions an additional 132 million tons by 2030, equivalent to taking 28 million cars off the road for one year.

In California, six cities there have mandated that solar panels be installed on roofs of all new homes. South Miami, Florida, is now the first city outside of California to enact a rooftop solar mandate. It may well be too little too late, as the eyes of the world are watching Miami to see what happens to it and its economy as it ultimately floods due to SLR. I have looked in vain for studies of the likely domino effect of failing businesses as the realization takes hold that a major city cannot be saved. Trillions of dollars will be lost effectively overnight as real estate is suddenly worthless, businesses take flight and the physical inundation of the city's infrastructure follows. If anyone is aware of such studies, please let me know.

In Washington the White House missed a deadline in August to release the National Climate Assessment, which details the immediate dangers of climate change. And Trump then *disbanded* the advisory panel tasked with turning this report's findings into policy solutions. You can't make this stuff up. Trump also reversed another Obama rule limiting federally funded construction in flood plains. Houston and parts of Louisiana are now under water.

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Endnotes

1. https://assets.documentcloud.org/documents/3920195/Final-Draft-of-the-Climate-Science-Special-Report.pdf.
2. https://cfpub.epa.gov/roe/indicator.cfm?i=24.

The Need to Move from Carbon-Based Energy to Non-Carbon-Based Energy

By Carl R. Howard

Bill McKibben's *Eaarth* is a must-read. We no longer live on Earth, he argues, we now live on a different planet, called Eaarth. The differences, large and small, are due to climate change. Like the old earth we still have hurricanes, tornadoes, heavy rain and wind, draughts and wildfires, but now these events are deadly, destructive and costly beyond anything we've ever seen. Climate models have predicted this for decades and now it's here, with a vengeance.

Following Irma, Miami Mayor Tomas Regalado said many of his Republican colleagues were wary of being "called crazy or liberals" if they talked about climate. But he said voters on the ground had grown sharply aware of the risks they face. "I don't think my statements are going to change the way the administration thinks or the governor thinks, but let me tell you, people are afraid," Mr. Regalado said. "People are understanding there is a new normal now."

In my blog I'll continue to point out historic, record-breaking events. Most of them are in the Third World and most people in the U.S. are not aware of such events. In Blog 2 I mentioned historic monsoon downpours and flooding with thousands of human deaths and 41 million displaced in Nepal, Bangladesh, India. Those numbers have grown. Niger, too, is suffering from flooding (at least 44 dead, tens of thousands homeless). Here in the U.S., Houston and Florida are flooded and the damage will be long-lasting and cost hundreds of billions of dollars. Numerous Caribbean islands were wiped out. As I write, hurricanes Jose and Maria are approaching. People's lives will be disrupted for years just as people affected by Sandy in New York and New Jersey five years ago are still rebuilding their homes, businesses and lives. Most of those affected in the First World can recover and move on. But for most people affected in the Third World, recovery is much more difficult.

Environmental justice is the term that encompasses this disparity. It is the First World that has grown wealthy and resilient and contributed the lion's share of carbon emissions to the atmosphere. Now we talk about a climate budget, the amount of carbon the atmosphere can safely absorb before runaway global warming occurs. We may be at or dangerously close to that point now, but if we have more time, it's measured in years. How much of the remaining budget does the First World get to emit? How much for the Third World? During the Paris negotiations India's leadership claimed they had a moral duty to provide for the betterment of their people. They asked how the First World had the nerve to urge them to forgo the same kind of development the First World had enjoyed. They had no intention of curtailing their use of fossil fuels unless a better deal was offered to them. It is only just, they argued, that they be allowed to do what others have done to improve their standard of living.

Our collective climate budget is 2900 gigatons of CO2e (carbon dioxide equivalent emissions). Current estimates predict that by 2100 we will be three times over budget, emitting 8,100 gt. Scientists warn that to prevent the worst effects of global warming, we have to keep temperatures from increasing by more than 3.6 degrees Fahrenheit (2.0 degrees Celsius) above the preindustrial level — the upper limit agreed to in the 2015 Paris climate accord. We have already warmed 1.4 degrees Fahrenheit, and we've used up 73% of our climate budget. The world has emitted 2,100 gigatons of CO2e since 1870, mostly from developed countries that prospered and polluted from the Industrial Revolution to today.

The United States, with 4.4% of the world's population, has emitted about 20% of global emissions. Countries in the developed world account for 19% of the world's population but are responsible for more than half of all emissions to date. India and other developing countries have emitted 43% (including China: 13%), other developing countries: 20%, the EU: 17%.

The challenge is to completely move from carbon-based energy to non-carbon based energy within the next 30 years. The first job is to gather public support for such a move. The second task is to chart a way forward. As noted in Blogs 1 and 2, in the U.S., despite the present federal administration, there is a great deal of counter political leadership in the states and cities and corporate and personal initiatives so that the U.S. may meet its Paris pledges. Market forces are moving us away from coal and toward natural gas but that is not enough. We must go further and so far the move to solar, wind and other non-carbon energy is encouraging, but must go faster. The EU, indeed the rest of the world, as evidenced by the Paris accord, does not suffer from the kind of climate skepticism that is unique to the U.S.

The biggest challenge will be elsewhere, including Japan, Canada, Australia and Russia. Canada continues to develop its filthy tar sands and the infrastructure to transport it via pipelines. Growing public pressure seeks to stop it. Russia is a world leader in producing fossil fuels and is a major cause for concern. China is investing massively in solar both for its domestic use and is the world's leading exporter of solar panels. Under new leadership in the US in the future, immense business

opportunities exist for the U.S. to compete in this market. But China's huge population is modernizing and its giant need for energy suggests that it will build over 700 new coal plants. Even equipped with new technology, they will still emit enough C02 that the world's carbon budget will soon been exceeded. Similarly, India is the world's fourth largest emitter of C02, and although it too is investing in solar, and has ratified the Paris accord, it faces enormous pressure to modernize and grow. It has recently canceled numerous coal-fired power plants, but it needs to find energy somewhere. The bad news is that the rest of the world's developing countries will emit more CO2 than developed countries in the foreseeable future unless they are assisted to a new path.

It is imperative that the developed countries assist the developing countries with money and technology to harness their energy from non-carbon sources and skip over the fossil fuel phase that the First World enjoyed. This financial and technological assistance is what the Paris accord requires. As noted, the First World has no moral right to demand anything of the Third World and must instead be generous with aid and technological assistance to help them and the planet survive and prosper. But these Paris promises to provide money and technological assistance have not been fulfilled. Indeed, Trump has openly said the U.S. will not pay its share. America first.

There are limited routes to success. Go back to Blog 1 and click on the link for the IPCC Summary Report where there is a chart demonstrating that in order to stay below 2 degrees Celsius by 2100, even under aggressive carbon reduction strategies, we must not only be completely free of fossil fuels, we must have negative emissions (-107%, or -114%). That means we must learn how to remove CO2 from the atmosphere. Planting trees removes CO2, but not nearly enough. This is a call for a major technological breakthrough that does not exist on a scale anywhere close to providing even a glimmer of hope at this time.

Given our slow pace moving to non-carbon based fuels, many are saying that we will have no choice but to turn to bioengineering. I will address this in a future blog, but the idea is that we will do something huge, like seed the atmosphere with tiny particles that reflect sunlight and cool the planet the way volcanic emissions do. And seed the ocean with chemicals to counter acidification. As bad as things are, we certainly have the capability to make things much worse.

That does not mean we despair. It means we speed our conversion to 100% non-carbon based energy. Gains have been made in energy efficiency in heating and cooling buildings, and using appliances and motors, so growth may continue. But much more is needed.

If all countries, including the U.S., meet their Paris pledges by 2030 and then go on to exceed them, our collective emissions is around 3,900 gt by around 2060. That won't cut it. The only way to stay under our carbon budget (2900 gt) is if all countries eliminate carbon emissions by 2060. In addition, we must plant trees and other carbon absorbing vegetation, stop paving and developing areas currently absorbing carbon and look to capture and sequester carbon. We are fast running out of time. The catastrophic consequences of failure will be addressed in a future blog.

Environmental justice also applies within countries. The wealthy, whose carbon footprint is so much greater than the poor, enjoy comforts and the resources to recover from storms and other "natural" disasters. The poor, who contributed little in terms of emissions, suffer the worst from storms and often lack the connections and knowledge to work the system to get aid.

Two other terms I'd like to introduce are adaptation and mitigation. Countries, states, cities, corporations, and individuals with adequate resources are adapting to climate change. Buildings are being raised, infrastructure fortified, and instead of paving land with impermeable cover, permeable cover is being used to allow the land to absorb rainfall. Coastal and wetland protections are slowly being prioritized.

Mitigation measures include reductions of GHG emissions wherever possible. People are installing solar panels, driving electric cars and hybrids, smaller cars too. The dramatic changes involve the growth of solar and wind energy worldwide, new construction with an eye toward reduced energy use, conscientious use of energy in the home or office, turning the thermostat up a few degrees in warmer weather and down in cooler weather. Using a fan instead of AC. Divestiture has proven to be an effective tool driving social change in moving away from activities and industries that emit carbon.

Look again at the IPCC Summary Report at a long list of possible adaptation and mitigation actions. We have no choice but to adapt to what is coming, to what is here. But we still must mitigate as much as possible every minute of every day in order to keep the planet from warming more than 2.2 degrees F. and to stay under budget.

New York City Mayor Bloomberg's administration developed plaNYC. Take a look at some of the fine thinking and planning on adaptation and mitigation.[1]

Both of New Jersey's legislative environmental committees met recently to talk about fighting climate change and rejoining RGGI (see Blog 2). Like New York, New Jersey has seen abundant evidence of the dangers of climate change. Committee members discussed ways to reduce the state's GHG emissions, and what measures should be considered to adapt to rising sea levels as nuisance flooding is occurring in towns during regular high tides. The NY/NJ region can expect more frequent and longer heat waves. Heavy rain events will be more intense and occur more often. Rising sea levels are

outpacing earlier projections as coastal lands sink at the same time. There was widespread agreement that New Jersey needs to advance home-grown clean energy like solar and offshore wind.

Discussions addressed hard questions that need to be honestly confronted by all of the world's coastal communities. Is it worth spending hundreds of millions of dollars on beach nourishment projects along the coast only to see that sand washed away in the next big storm? Would that money be better spent in buying out flood-prone properties along the coast? And even more challenging, should the State do more to encourage the "managed retreat" from communities on the shore unlikely to survive absent recurring State/public bailouts? At some point, retreat from the coasts is inevitable. When that concept becomes clear, the economic (and social and political) implications will be profound.

The climate change challenge will be won or lost by grassroot efforts. In D.C., at EPA, a political appointee, John Konkus, has been tasked to unearth grants containing "the double C-word." Mr. Konkus aims to eliminate from the agency's research grant solicitations any proposal regarding CC.

EPA Administrator Scott Pruitt recently unveiled a plan to create a "red team" of CC dissenting scientists to challenge the conclusions reached by thousands of scientists over decades of research on climate change. This is a continuation of the strategy of sowing doubt in an area where none exists with regard to anthropocentric influence on CC. Professor Naomi Oreskes has detailed this long-running fraud in her book *Merchants of Doubt*. Mr. Pruitt and Mr. Tillerson at ExxonMobil have long been players in this disgraceful deceit and now will use doubt to further policymaking at the EPA and elsewhere in the Trump administration.

These actions are consistent with earlier actions by Trump. He had instructed Scott Pruitt to kill President Obama's Clean Power Plan which would have reduced carbon dioxide emissions from coal-fired power plants, and Trump ordered Interior Secretary Ryan Zinke to counter Obama-era rules reducing methane emissions from natural gas wells.

Pruitt is also replacing dozens of members on EPA's scientific advisory boards. In March, he dismissed at least five scientists from the agency's 18-member Board of Scientific Counselors, to be replaced with advisers "who understand the impact of regulations on the regulated community." Last month the National Oceanic and Atmospheric Administration dissolved its 15-member climate science advisory committee, a panel set up to help translate the findings of the National Climate Assessment into concrete guidance for businesses, governments and the public.

The House voted 218-195 to strip funding for an Obama-era EPA effort to limit methane emissions from new oil and gas drilling sites.

On Aug. 18, the Interior Department ordered the National Academies of Sciences, Engineering and Medicine to stop work on the health risks of mountaintop-removal coal mining. The $1 million study had been requested by two West Virginia health agencies after numerous studies had found increased rates of birth defects, cancer and other health problems affecting residents near big surface coal-mining operations in Appalachia. The stop work order was issued hours before the scientists were scheduled to meet with affected residents of Kentucky.

The Trump budget proposes to eliminate $250 million from NOAA's coastal research programs that prepare communities for rising seas and destructive storms. EPA's Global Change program faces elimination as well. Budget Director Mick Mulvaney has complained of "crazy things" the Obama administration did to study climate, and stated: "Do a lot of the EPA reductions aim at reducing the focus on climate science? Yes."

But not all of this rush in the wrong direction is going smoothly. Pruitt recently suffered three court losses in two months. In August, the U.S. Court of Appeals for the D.C. Circuit, with all 11 active judges participating, dealt Pruitt a setback in his attempt to loosen limits on methane pollution for thousands of oil and gas facilities. Before that, Pruitt withdrew an attempt to delay important actions on smog pollution due to legal pressure from states and community groups. And in early July a three-judge panel of the D.C. Circuit denied Pruitt's attempt to suspend the methane pollution limits. The full court affirmed that panel's decision in the August 10 ruling.

Eight months into the Trump presidency, he has yet to appoint a single member to the White House Council on Environmental Quality (CEQ), despite the fact that he is required by law to appoint a council to create and recommend policies to improve of the quality of the environment. Simply amazing.

As noted, more responsible action is occurring in the state and city levels. New Jersey set a goal of reducing greenhouse-gas emissions by 80 percent of 2006 levels by 2050. The state still needs to reduce its GHG emissions 75 percent to achieve that goal. Its transportation sector accounts for 46 percent of its GHG emissions and the power industry accounts for 21 percent. It's got a lot of work to be do.

Similarly, New York City's goal is 80% reduction in GHG emissions by 2050.[2]

Some in the GOP recognize the reality of climate change and market forces and are acting in their state's best interests regardless of the nonsense coming from

DC. Republican Gov. Brian Sandoval met with Tesla CEO Elon Musk and vowed to "solidify Nevada's position as a national leader in clean and renewable energy." He also signed a net metering bill for solar (but then vetoed raising the state's clean energy goal).

In North Carolina, the Republican-controlled state legislature agreed to facilitate installation of rooftop solar for residents (but then approved a cap on solar development and dealt a setback to wind power). In California, a handful of Republican lawmakers crossed party lines to extend California's cap-and-trade program for cutting greenhouse gas emissions. And in Congress, 46 House Republicans joined Democrats to protect a climate study in a bill on military programs (but then, many climate caucus members have followed Trump's lead and voted to roll back one regulation after another).

Business tech giants Google, Apple and Facebook moved their energy-hungry data centers to North Carolina and then addressed their commitments to clean energy by lobbying state officials and Duke Energy for favorable renewable energy policy. By 2015, North Carolina was number 2 in the nation, behind California, in cumulative installed solar capacity for the simple reason that solar energy is now inexpensive. North Carolina's first commercial-scale wind farm opened early this year on the state's northeast coast to power Amazon cloud services. The project's payments to private landowners and taxes will inject $1.1 million into the local economy each year.

North Carolina saw the production of more than 34,000 clean energy jobs in 2016, up more than 30 percent over the previous year. That is more than double the number of coal mining jobs in nearby West Virginia, the No. 1 state for coal employment.

Wind power output in Scotland set a new record for the first half of the year. Wind turbines provided around 1,039,001 MWh (megawatt hours) of electricity to the National Grid during June. That was enough to supply the electrical needs equivalent of 118% of Scottish households or nearly three million homes. This means wind generated the equivalent of 57% of Scotland's entire electricity needs. A decade ago skeptics declared that wind energy could only supply 1-2% of a country's power needs. Happily, that is not the case.

There's more good news in terms of batteries and storage. In 2016 Minnesota got about 18 percent of its energy from wind, thereby ranking in the top 10 states in that category, but in terms of installed solar capacity it ranks 28th. Starting in 2019, and for the foreseeable future, the overall cost of building grid-scale storage there will be less than that of building natural gas plants to meet future energy demand. Minnesota currently gets about 21% of its energy from renewables, which isn't bad, but the gap must be filled and current plans are to bring an additional 1,800 megawatts of gas-fired "peaker" plants online by 2028. Natural gas is not the way to go because it is still burning a fossil fuel and because of the large amounts of methane released during fracking (and for many other reasons).

More good news is that the costs of bringing lithium-ion batteries online to stockpile energy for when it's needed is now less costly than building and operating new natural gas plants. Indeed, giant batteries are making an impact on the electricity grid that serves all of New England, which should enhance solar and wind energy development in the region.

Every four seconds, computers at grid operator ISO New England's Holyoke, Massachusetts, headquarters direct their batteries to pull in energy from the grid and store it for later, or to discharge it immediately to the grid. It is a highly efficient way to smooth the ongoing tension between the amount of energy generators are sending to the grid and the amount that customers are demanding. A natural gas plant cannot come anywhere close to this kind of efficient operation.

Grid-scale battery technology is new and very exciting and advancing rapidly. EVs are helping drive this steep learning curve and reduce costs along the way. Moving the electric grid and the transportation sector away from fossil fuels and toward renewables is an essential part of the mitigation effort we must all promote.

The world has awoken to the reality, danger and challenge of climate change. Where the greatest challenge lies, so too there lies our greatest opportunities. Market forces are aiding movement in the right direction in terms of mitigation. But we need to move things along. Rapidly.

I just heard reports of winds gusting to 175 mph on Puerto Rico due to hurricane Maria. Such winds could pick up Lebron James and blow him across a street like a rag doll. How many more people have to be killed, how many more homes have to be destroyed before the U.S. joins the rest of the world and takes this existential threat seriously?

Recall the pyramid from Blog 1 with H. sapiens precariously perched on top. This blog focused mostly on climate instability which threatens our food resources from the oceans and the land (the top two supporting blocs). And, as we are seeing in Africa, the Middle East, and elsewhere, food scarcity and climate disruption also undermines political stability. If we continue to undermine our four essential supporting blocs, the pyramid will collapse.

Endnotes

1. http://www.nyc.gov/html/planyc/downloads/pdf/publications/full_report_2007.pdf.
2. See: http://www1.nyc.gov/site/sustainability/codes/80x50.page (much more on this in a future blog).

Comments on the NYSDEC Proposed Amendments to 6 N.Y.C.R.R. Part 617 SEQRA Implementing Regulations

Environmental & Energy Law Section

The New York State Environmental Quality Review Act, New York Environmental Conservation Law Sections 8-0101 *et seq.* (SEQRA), mandates that all state and local agencies incorporate a review of the environmental impacts of their decisions to undertake, fund or approve their actions. ECL § 8-0113 directed the Commissioner of the Department of Environmental Conservation (DEC) to establish, by regulation, procedures to guide state and local agencies in their implementation of SEQRA. DEC's regulations, which are codified in Part 617 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (NYCRR) were initially promulgated in 1976 and have been amended several times in the 40 years since then, most notably in 1978, 1987 and 1995.[1]

On January 20, 2017, after a lengthy internal review process and with input from a large variety of stakeholders, DEC proposed a new set of regulatory amendments, designed to streamline SEQRA review. The Environmental & Energy Law Section of the New York State Bar Association (the "Section") is pleased to have the opportunity to comment on the proposed amendments to the SEQRA implementing regulations. The following comments were prepared by the Section's Environmental Impact Assessment Committee and have been approved by the Section's Executive Committee.

DEC is certainly to be commended for seeking to streamline the SEQRA process without overly narrowing the scope of environmental review where such review is necessary and desired. Expanding the Type II list, particularly for smaller projects, may help avoid unnecessary costs and delays. Moreover, the proposed regulations' attempt to make scoping a more meaningful process and tying the final scope and the concept of what is complete and adequate for public review will hopefully encourage and allow for more targeted EISs, eliminating the need to waste time and resources providing analyses of issues that are not necessary to a fulsome environmental review of an action.

DEC should also be commended for the significant outreach to all SEQRA stakeholders—environmental groups, the development community and state and local agencies—that went into the creation of these proposals. DEC must walk a fine line between streamlining the process while at the same time avoiding the dilution of SEQRA's mandate to incorporate environmental consideration into agencies' decision-making processes. DEC has managed to walk this line better in some instances than others in the proposed regulations. For example, certain of the newly proposed Type II exemptions appear to have strayed too far into the realm of policy-making through SEQRA exemptions. While adding sustainable development or renewable energy projects to the Type II list would expedite their approval and implementation throughout the state, the proposed regulations cannot promote such projects as a policy goal absent specific legislative authority, or without a showing that all proposed Type II actions have been categorically determined not to have a significant effect on the environment.

The comments below are arranged in sequential order by section of the proposed regulations, followed by proposals for further substantive amendments that were not covered by the proposed regulations and a statement regarding the legislative authority for DEC to adopt certain Type II exemptions in order to promote public policy goals.

Definitions

§ 617.2(af)

The proposed definition of "previously disturbed" is too narrow and contains undefined terms. The proposed definition is currently worded as follows:

> "Previously disturbed" means a parcel of land in a municipal center that was occupied by a principal building used for residential or commercial purposes where the building has been abandoned or demolished.

"Principal building" is an undefined term. It is unclear what this term means or what purpose it serves. We recommend eliminating the term. It is also unclear why it is important that the parcel of land to have been used for "residential or commercial purposes" as opposed to industrial, governmental, or other purposes other than as parkland. Some examples of previously disturbed land that would be excluded from this definition include parking lots, churches, and manufacturing facilities, all of

Opinions expressed are those of the Section/Committee preparing this memorandum and do not represent those of the New York State Bar Association unless and until they have been adopted by its House of Delegates or Executive Committee.

which are commonly found in municipal centers and may have been abandoned or demolished.

General Rules

§ 617.3(a)

Referenced section numbers in amended version are numbered incorrectly. Rather than § 617.5(c)(27), (30), and (37), the corresponding subsection numbers should be § 617.5(c)(29), (32), and (39).

Type I List

§ 617.4(b)(6)(iii)-(iv)

In the newly proposed subsections governing Type I thresholds for parking, there is an overlap in § 617.4(b)(6)(iii) and (iv) that needs to be corrected. § 617.4(b)(6)(iii) applies to municipalities with populations of 150,000 persons or less, and § 617.4(b)(6)(iv) applies to municipalities with populations of 150,000 persons or more. Municipalities with exactly 150,000 persons are covered by both (iii) and (iv).

§ 617.4(b)(9)

We support the proposal to raise the Type I threshold for Unlisted actions that occur in or contiguous to sites listed on the national or State Register of Historic Place to include only unlisted actions that exceed 25 percent of other Type I thresholds, and support the proposal to include sites that have been determined to be eligible for listing in the State Register of Historic Places as part of this Type I threshold.

Type II List

§ 617.5(c)(15)-(16)

The addition of solar project siting, while conceptually a positive addition to the Type II list, should not include urban brownfield sites in the Brownfield Cleanup Program. Part of the goal of the BCP is to promote urban infill. Solar installations may not be appropriate in all areas, may be counter to urban redevelopment goals, and may have potential impacts on neighborhood character.

We also recommend placing a limit on the acreage of solar installations that can be exempted as Type II actions, rather than relying strictly on a five megawatt limit. Solar energy projects involving the physical alteration of 10 acres or more should not be exempted from review. The 10-acre threshold is consistent with the Type I threshold set forth at 6 NYCRR § 617.4(b)(6)(i).

§ 617.5(c)(19)-(22)

We support the adoption of Type II exemptions for infill development/sustainable development in cities, towns, and villages of various sizes at set forth in proposed 6 NYCRR §§ 617.5(c)(19)-(22). We would further recommend the revision of proposed § 617.5(c)(22) to cover cities, towns, and villages of 250,000 to 1,000,000 persons only, and would add a fifth exemption for municipalities of greater than 1,000,000 persons. For the largest category, which would cover New York City, DEC should increase the maximum size for infill developments to 60,000 square feet and clarify that a subway station is a "commuter rail station" for the purposes of qualifying for the exemption. As proposed, the provision would have virtually no impact in New York City, which is in as much need of infill rehabilitation as the rest of the state.

§ 617.5(c)(22)

The language of the proposed new Type II category speaks of sites "within one quarter mile of a commuter railroad station," but the corresponding analysis in the DGEIS states that this category would be appropriate for sites "within one half mile of a passenger train station."[2] The proposed language should be consistent as between the DGEIS and the proposed language of the regulation.

§ 617.5(c)(23)

We support the inclusion of a Type II category for the reuse of existing structures (where consistent with zoning), but note that the term "commercial" is not defined (unlike the term "residential" which is defined). This category could also be expanded to include the reuse of municipally owned structures and community facilities as they are defined in local zoning. It is not clear whether "reuse" limits the structure to its existing size or would also allow expansion of the structure as long as the expansion was consistent with the current zoning.

§ 617.5(c)(45)

While the typical acquisition of parkland would not have the potential for significant adverse environmental impacts, the proposed Type II exemption is overbroad as written and would allow the acquisition of environmentally contaminated parcels for use as parkland, without further SEQRA review. The DGEIS notes that the proposed exemption "does not exempt from SEQR any accompanying management or development plans or construction projects intended for the parkland,"[3] but it is not clear how this exemption would protect against the acquisition and use of contaminated parcels.

We recommend that DEC amend the proposed exemption to include an exception for the acquisition of environmentally contaminated parcels. Environmental contamination could be evaluated using brownfield cleanup standards (for example) in order to determine whether the proposed Type II exemption applies to the acquisition of a particular parcel.

§ 617.5(c)(46)

The proposed exemption for transfers of land for affordable housing should be revised to eliminate the requirement that the land be transferred to a not-for-profit corporation. The status of a corporation as not-for-profit is irrelevant to the appropriate SEQRA analysis, which reviews potential environmental impacts. The DGEIS itself suggests that an alternative would be to eliminate the not-for-profit requirement "since, according to the Division of Housing and Community Renewal, for-profit actors are also involved in the development of affordable housing and the impact would not change based on the character of the transferee."[4] The DGEIS itself thus provides the justification for eliminating the not-for-profit requirement and provides no basis for the inclusion of such a requirement.

§ 617.5(c)(48)

The proposed exemption of brownfield cleanup agreements (BCA) from SEQRA review is a common sense addition to the Type II list, but the proposed language should be modified. As proposed, the Type II exemption for BCAs is written:

> (48) brownfield site clean-up agreements pursuant to Title 14 of Article 27 of the Environmental Conservation Law, provided that design and implementation of the remedy do not commit the Department or any other agency to specific future uses or actions or prevent an evaluation of a reasonable range of alternative future uses of or actions on the remedial site;

The exemption for BCAs should be rewritten, either to strike the references to the "design and implementation of the remedy" and all that follows (strike out all text after "Environmental Conservation Law"), or to clarify that separate actions are being exempted: 1) entry into BCAs; and 2) selection of the remedy and implementation of remedial actions under DEC-approved work plans pursuant to ECL Article 27, Title 14.

A BCA is entered into at the outset of a brownfield cleanup and by nature does not discuss the design and implementation of the remedy, and does not commit agencies to specific future uses or actions. As noted in the DGEIS, remedy selection and implementation of remedial actions are already exempted from SEQRA under 6 NYCRR Part 375-3.11(b).[5] If DEC's intent is to have the Type II exemptions mirror the existing SEQRA exemption of 6 NYCRR Part 375-3.11(b), then the existing language in that brownfield regulation should be copied and added to the Type II list, or incorporated specifically by reference.

Scoping

§ 617.8(a)

We support the proposed revision to make EIS scoping a mandatory requirement.

The text of the proposed regulation in § 617.8(a) should be changed to strike the comma after "potentially significant" in the penultimate sentence so that it is clear that what is being included in the scope of the EIS are "potentially significant adverse environmental impacts." The sentence should be changed to read "Scoping should result in EISs that are focused on relevant, potentially significant adverse environmental impacts."

Online Publication of EIS Documents

§ 617.12(c)(5)

We support the requirement that the lead agency publish its draft and final EIS scopes and draft and final EISs on a publicly available website, but would clarify the phrase "to the extent practicable." In 2017, the cost and technological requirements of posting even large documents such as draft and final EISs, is "practicable" for all lead agencies. We recognize that the text of ECL § 8-0109(4) and (6) contains the phrase "unless impracticable," but DEC should clarify its interpretation of that phrase in order to strictly limit the ability of lead agencies to claim that it is not practicable to publicly post EISs on the basis of cost or availability of website space.

The revisions to this section should also allow for a lead agency to discontinue the website posting of scopes and EISs upon the withdrawal of a proposed action in addition to the current trigger for discontinuance of website publication ("may be discontinued one year after all necessary permits have been issued by the federal, state and local governments").

Further Proposed Amendments

Elimination of Environmental Assessment for Projects in Which Sponsor and Lead Agency Agree an EIS Will Be Required

With the addition of mandatory scoping, consideration should be given to eliminating the need for an Environmental Assessment Form (called an Environmental Assessment Statement in New York City) in situations where it is clear that an EIS will be required. In such cases, the applicant should be permitted to provide a draft scoping memorandum with its application for the underlying approval or funding, upon which a Positive Declaration can be properly based. This would eliminate an unnecessary interim step that does not add anything of substance to the analysis of the potential environmental impacts of a proposed action. Where it is obvious that an EIS will required, there is no need to delay starting the

process for the preparation, filing and administrative review of a form that is in almost all instances superseded by a published EIS scope and a DEIS.

Allow for Conditioned Negative Declarations for Type I Actions

DEC should propose allowing for Conditioned Negative Declarations in Type I Actions. A Conditioned Negative Declaration (CND) may currently be used for an unlisted action that may have significant adverse environmental impacts, but the impact can be eliminated or adequately mitigated by conditions imposed by the lead agency. The existing regulations in 6 NYCRR § 617. 2(h) limit the use of CNDs to unlisted actions; however, there is little reason to continue to exclude Type I actions, which are only *presumed* to have impact, from this more efficient, yet similarly protective procedure.

Promoting Particular Uses Is Not Consistent with SEQRA's Enabling Legislation

As noted in the introduction, the proposed SEQRA regulations cannot promote particular uses (i.e., sustainable development or renewable energy) without a showing that those uses have been categorically determined not to have a significant effect on the environment.

No matter how well intentioned, DEC is overreaching and usurping the role of the legislature in seeking to establish a policy that so-called "sustainable" development is favored. Such a policy can only be established by the legislature.

The ECL explicitly directs DEC to draft regulations, including actions that DEC has labeled "Type II" actions, based on specific criteria. ECL 8-0113 provides that DEC **"shall include . . . [a]ctions or classes of actions which have been determined not to have a significant effect on the environment and which do not require environmental impact statements under this article. In adopting the rules and regulations, the commissioner shall make a finding that each action or class of actions identified does not have a significant effect on the environment."**[6]

DEC cannot make such a finding for many if not all of these "sustainable" favorites. Ten or 25 acres of disturbance for a solar field would have environmental impacts just as a 10 or 25-acre disturbance for billboards or windfarms or anything else. These items would also contradict the existing Type II regulation that says that an agency may adopt its own Type II list but that none of its Type II actions can be Type I actions under the list at 6 NYCRR § 617.4.[7]

There are other provisions that confirm that the intent of SEQRA is for agencies to look, uniformly, at the impact to the environment only. ECL § 8-0111(6) requires that a lead agency render a "determination of whether the action may have a significant effect on the environment." This is the lead agency's only charge in SEQRA; regardless of the other perceived benefits of the project its effects on the environment must be considered.

ECL § 8-0109 also requires that agencies "shall act and choose alternatives which, consistent with social, economic and other essential considerations, to the maximum extent practicable, **minimize or avoid adverse environmental effects,** including effects revealed in the environmental impact statement process."[8] Their mandate is to minimize adverse environmental effects, through, if necessary, an EIS. Section 4 goes on to state "The purpose of a draft environmental statement is to relate environmental considerations to the inception of the planning process, to inform the public and other public agencies as early as possible about **proposed actions that may significantly affect the quality of the environment, and to solicit comments which will assist the agency in the decision making process in determining the environmental consequences of the proposed action."**[9] Further, when findings are issued they similarly have to find that "consistent with social, economic and other essential considerations, **to the maximum extent practicable, adverse environmental effects revealed in the environmental impact statement process will be minimized or avoided."**[10]

In sum, the agency's charge to is look at "adverse environmental effects" in determining how to proceed under SEQRA, not at whether the action is desirable or sustainable.

Endnotes

1. Draft Generic Environmental Impact Statement on the Proposed Amendments to the State Environmental Quality Review Act (SEQRA) Regulations, January 20, 2017 (DGEIS) at page i.
2. DGEIS at 28.
3. DGEIS at 31.
4. DGEIS at 33.
5. DGEIS at 35.
6. ECL § 8-0113(2)(c)(ii) (emphasis added).
7. *See* 6 NYCRR § 617.5(b)(2).
8. ECL § 8-0109(1) (emphasis added).
9. ECL § 8-0109(4) (emphasis added).
10. ECL § 8-0109(8) (emphasis added).

Letter to President Trump on Paris Agreement

At the request of the Section, the following letter was sent by NYSBA President Sharon Stern Gerstman to President Trump regarding his decision to withdraw the United States from the Paris Agreement.

October 20, 2017

President Donald J. Trump
The White House
1600 Pennsylvania Avenue NW
Washington, DC 20500

Dear President Trump:

I am writing on behalf of the New York State Bar Association to register the Association's objection to your decision to have the United States withdraw from the Paris Agreement. The Association's membership of 72,000 attorneys includes approximately 1,000 attorneys in our Environmental & Energy Law Section practicing in the public and private sector, who have devoted their careers to the field of environmental law. We are acutely aware that climate change has evolved from an issue that initially merited further study to an outright crisis demanding prompt and effective action.

We have examined carefully the facts and circumstances set forth in the endangerment finding on greenhouse gas emissions issued by the Environmental Protection Agency. It makes a clear and compelling case for national action on climate change. The symptoms of climate change predicted by scientists – in the form of prolonged droughts, extraordinary heat waves and storm events, wildfires, widespread retreat of glaciers and arctic ice cover, range shifts of plants, animals and insects, ocean acidification, and readily measurable sea level rise – are now unmistakable.

Significantly, numerous studies warn of the devastating impact of climate change in the U.S. in a few decades if effective measures are not soon taken to reduce carbon emissions. Such predictions led the 2016 report of the World Economic Forum to identify the "failure of climate change mitigation and adaptation" to be the *top risk* facing society – ahead of weapons of mass destruction, terrorism and the increasing scarcity of potable water. The Paris Agreement aims to mitigate such risks by holding the increase in global average temperatures to a level that "would significantly reduce the … impacts of climate change."

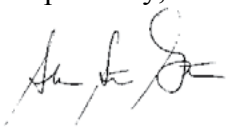
We still have the chance to achieve the goals of the Paris Agreement, but doing so will require society-wide mobilization on a scale not seen since World War II. Such a massive undertaking would require that *all* levels of government, and all sectors of society do their part in reducing our nation's greenhouse gas emissions. It also would require the U.S. to engage with other nations to ensure that they meet the commitments they already have made in the Paris Agreement.

With regard to activity at the state level, herewith for your consideration is a link to our Association's report, *Taking Action on Climate Change in New York: 2017 Update Report*, approved by our House of Delegates in June 2017. http://www.nysba.org/ClimateChangeReport

We respectfully urge you to reconsider the decision to withdraw the United States from this landmark international accord, and that you reverse the course your administration has followed thus far on climate change. In doing so, we note that until recently bipartisan efforts have devised common solutions to critical environmental problems. Indeed, many of our bedrock environmental laws – such as the National Environmental Policy Act, the Clean Air Act ("CAA") and the 1990 CAA amendments -- were enacted into law during Republican administrations, with bipartisan support from Congress. We also note that new industries providing hundreds of thousands of well-paying jobs could be fostered by a national program aimed at reducing greenhouse gas emissions. The explosive employment growth experienced over the last few years in the wind and solar industries well illustrates the employment opportunities that result from clean energy initiative, as pointed out in the U.S. Department of Energy's *U.S. Energy and Employment Report,* January, 2017.

We hope that upon reflection you will realize that your legacy would be far better served if history recorded you as the President who finally broke the partisan logjam that has prevented meaningful action on climate change mitigation.

Respectfully,



Sharon Stern Gerstman
President

Virginia Robbins Receives Prestigious Feinstone Award

Virginia Robbins, a former chair of the Section and current co-chair of the Section's Global Climate Change Committee, received this year's Feinstone Award for her long-time service to SUNY College of Environmental Science and Forestry and to the Syracuse community.

One of the oldest and most respected award programs in the environmental field, the Feinstone Awards program recognizes leaders who care for the environment, encourage volunteerism, and add to society's understanding of environmental issues and their solutions.

Ginny, who has contributed significantly to ESF's mission and has demonstrated a strong commitment to environmental stewardship and sustainability through personal and professional endeavors, has been engaged with ESF for 22 years.

Feinstone Award winner Ginny Robbins with Jonathan Fellows, Kevin Bernstein, and Barry Kogut—all of Bond Schoeneck & King, and her husband Robert Van Gulick.

She served actively on the Board of Directors of ESF College Foundation for 11 years as a director and as its president (for two of those years), and has been an emeritus director since 2007.

She is now an officer of the Abby Lane Housing Corporation, a subsidiary of the Foundation, serving the housing needs of ESF students. Congratulations, Ginny, for this well-deserved recognition!

Environmental & Energy Law Section Fall Meeting Photos

For more photos of the EELS Fall Meeting in Saratoga Springs, see page 95.

New York State Bar Association Environmental & Energy Law Section Report and Recommendations Concerning Environmental Aspects of the N.Y. State Constitution

Adopted by the Task Force on Environmental Aspects of the New York State Constitution
August 23, 2017

Introduction and Executive Summary

The Executive Committee convened the Task Force on Environmental Aspects of the N.Y. State Constitution in January of 2017 with the following purpose:

> study and prepare a written report, to submit to the Section's Executive Committee, regarding (1) environmental issues appropriate for consideration in any amendment to the New York Constitution, beyond the issues which the NYSBA House of Delegate has already determined, and (2) constitutional issues relevant to climate change, and (3) appropriate provisions for an environmental right in the State Constitution, and (4) any other environmental issues that the Task Force considers important for submission to the Section Executive CommitteeFalse[1]

The Task Force has met, consulted, and prepared the Report and Recommendations that follow. As described in greater detail and for the reasons provided, the Task Force recommends:

(I) That no changes be made to Article XIV; and

(II) Article I be amended to set forth an environmental right.

The purpose of the Report is to inform and enrich understanding of environmental issues which may be considered at a Constitutional Convention (should one occur) or with respect to proposals to amend the Constitution through the legislative process.

The New York State Bar Association supports a Constitutional Convention. If a convention is held, the Task Force recommends as follows:

Recommendation I

No changes to Article XIV are needed or advisable

Some analyses of Article XIV[2] have suggested tweaks designed to update and simplify the Article's text without altering its substantive content and protections. The Task Force examined two such suggestions for how the text of Article XIV could be improved (deletion of the "as now fixed by law" clause and repeal of Section 2, the Burd Amendment) and concluded in each case that no change is needed or advisable. The Task Force is also aware of proposals to amend Article XIV that might be raised at a Constitutional Convention and could have the effect of weakening the text. The Task Force does not believe that textual amendment is necessary to improve Article XIV and further recognizes that a Constitutional Convention creates the risk that Article XIV could be weakened.

(1) Evaluating the "as now fixed by law" clause

Article XIV provides in Section 1, "The lands of the state, now owned or hereafter acquired, constituting the forest preserve *as now fixed by law*, shall be forever kept as wild forest lands."[3] The "as now fixed by law" clause is the key to preventing the Legislature from purporting to (re)define the Forest Preserve. The clause anchors the

Membership of the New York State Bar Association Task Force on the Environmental Aspects of the New York State Constitution:

CHAIR:

Katrina Fischer Kuh

MEMBERS:

Claudia K. Braymer
Meaghan Colligan
Timothy Cox
Michael Gerrard
Robert Glennon
Carl Howard
Alan J. Knauf
Robert E. Knoer
Jan S. Kublick
Mary Lyndon
Peter Lehner
Joan Leary Matthews
Rosemary Nichols
Peter S. Paine Jr.
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Nicholas A. Robinson
Daniel Ruzow
Thomas Ulasewicz
Thomas J. Warth
Philip Weinberg
Neil Woodworth

* The opinions expressed are those of the committee preparing this report and do not represent those of the New York State Bar Association unless and until they have been adopted by its House of Delegates or Executive Committee.

This report was originally published in the *Pace Law Review*.

definition in time, in a way serving the "forever" part of the constitutional mandate.

The Constitutional Convention debates of September 7 and 8, 1894 make clear the purpose behind the phrase "as now fixed by law." The delegates knew they were "fixing" the definition of Forest Preserve in a statute not part of the Constitution and that the use of the phrase was intended to prevent the Legislature from changing the definition by changing the statute. On September 7, delegate David McClure, Chairman of the Special Committee on State Forest Preservation which had proposed the Forever Wild Clause explained that he inserted the words "as now fixed by law" in the original draft, saying he was doing so to prevent the Legislature from ever changing the statutory definition of the phrase in Laws of 1893, chapter 332:

> The object of inserting "as now fixed by law" is to prevent the Legislature from at any time limiting the extent of the forest preserves by providing that in a certain county which by the laws of the state is now a part of the forest preserves there should not be included within it, or in any way excepting, any part of the lands within that county. It was thought by the committee desirable to fix it so that as the law now constitutes the forest preserves it shall be understood to be referred to in the Constitution.[4]

The "as now fixed by law" clause thus serves an important function and should be retained.

(2) Evaluating Section 2, the Burd Amendment

Section 2, the Burd Amendment, reserves up to three percent of the Forest Preserve "for the construction and maintenance of reservoirs for municipal water supply, and for the canals of the state."[5] The Burd Amendment is specifically limited to the construction and maintenance of reservoirs for municipal water supplies and for the supplying water to the canals of the State. It does not authorize the use of Forest Preserve for water wells, nor does it authorize the flooding of Forest Preserve for flood control reservoirs or to address river level fluctuations. It is very unlikely a municipality will propose a new water supply reservoir in the Forest Preserve because today's New York State Health Department is very opposed to surface water reservoirs in the Forest Preserve as a source of drinking water and would be unlikely to issue a permit for same. It is even more unlikely that anyone would ever propose a new dam and reservoir for any canal system. Section 2 thus expressly limits any prospective dam and water impoundment project and does so in a manner that renders it extremely unlikely that such a project would be pursued. For those reasons, the Task Force concludes that Section 2 should not be amended or deleted.

The Task Force also recognizes the value of the Section 4 State Nature and Historical Preserve Trust which has been used by land conservationists to protect tens of thousands of acres of scenic and ecologically "unique" lands as part of the State Nature and Historical Preserve Trust created by Section 4.[6] Section 4 provides for State acquisition of lands for a "state nature and historical preserve" located outside of the Forest Preserve.[7] The statutory authority for Article 45 of the Environmental Conservation Law is expressly predicated on Section 4 of Article XIV[8] and Environmental Conservation Law §§ 45-0117 and 51-0703 give effect to this provision by creating a State Nature and Historical Preserve Trust to protect unique natural resources and features of State forests and wildlife management areas designated as "unique areas" to be included in the Trust.

Therefore, the Task Force concludes that there is no need to update or amend the text of Article XIV. The Task Force is further concerned that the following contemporary Adirondack legal controversies might be addressed by the delegates of a Constitutional Convention to the detriment of the "forever wild" character of the Forest Preserve:

- A possible amendment approving an Adirondack Park network of road-like community connector snowmobile trails should the state lose the currently pending *Protect the Adirondacks v. DEC* case challenging the creation of such a snowmobile trail system;
- An amendment to allow all-terrain vehicle use of the great network of existing and future snowmobile trails if climate change threatens the practicality of snowmobile use and its contribution to the economy of communities in the Adirondack Park;
- a Closed Cabin Amendment redux, arising from current DEC proposals like the 5-acre "Unclassified" parcel to facilitate a dining and lodging hut-to-hut/yurt facility on the Forest Preserve lands of the Boreas Tract or other Forest Preserve lands on the 15 identified "hut to hut" trail routes in the Adirondack Park.

Article XIV presently provides robust protection to the Forest Preserve. Even small, well-intentioned changes to the text of Article XIV run the risk of occasioning unintended consequences and open the door to efforts to weaken Article XIV. The Task Force thus recommends that Article XIV should not be amended, changed or modified.

Recommendation II

Article I should articulate and provide for the protection of a right to clean and healthy environment

The Task Force supports the adoption of a constitutional right to a clean and healthful environment. We propose that the right be embodied as a new Section 19 of Article I, which contains other bill of rights provisions such as free speech and equal protection.[9] The beneficial operation of similar provisions in other jurisdictions, the anticipated emergence of climate change-related environmental challenges unprecedented in their severity and complexity, and the limited scope of New York's existing Conservation Bill of Rights augur in favor of the adoption of such a right.

Several states and nations have already adopted constitutional environmental rights[10] and efforts are underway to secure the recognition of environmental rights around the world.[11] In March 2017, the New York State Assembly passed Assembly Bill 6279 which would amend Article I of the Constitution by adding: "Each person shall have a right to clean air and water, and a healthful environment."[12] Most notably in the United States, three states—Pennsylvania, Montana and Hawaii—have enacted constitutional provisions to protect environmental values, which the courts of those states have ruled to be enforceable by citizens. In these jurisdictions, constitutional environmental rights provisions have proven to be environmentally protective, a useful means to require consideration of the interests of future generations, and have not unduly displaced legislative prerogative.

Additionally, emerging environmental threats present unprecedented societal challenges. Vexing environmental problems have emerged within the scope of traditional regulation of air and water quality, such as increased recognition of connections between pollution and asthma rates, awareness of local air pollution hot spots, and the detection of widespread contamination of drinking water with a range of pollutants (such as pharmaceuticals, PFOAs and 1,4 dioxane). More importantly, however, climate change presents challenges that have no historical analog in their scope and complexity and will require a long-term, proactive, and thoughtful governmental response.[13]

Finally, as presently interpreted, the existing Conservation Bill of Rights in Article XIV Section 4 does not function as a robust assertion of environmental right that can help New York meet these unprecedented challenges. The existing Conservation Bill of Rights in Article XIV, section 4, provides in relevant part:

> The policy of the state shall be to conserve and protect its natural resources and scenic beauty and encourage the development and improvement of its agricultural lands for the production of food and other agricultural products. The legislature, in implementing this policy, shall include adequate provision for the abatement of air and water pollution and of excessive and unnecessary noise, the protection of agricultural lands, wetlands and shorelines, and the development and regulation of water resources.

The Conservation Bill of Rights was held in *Leland v. Moran* to afford no "constitutionally protected property right" enforceable in the courts and its substantive charge is both limited in scope and generally understood to be fulfilled by existing environmental statutes.[14]

The analysis that follows (1) undertakes a close examination of the most serious concern expressed about the adoption of a self-executing constitutional environmental right, namely that it will displace legislative and executive authority with in environmental policymaking; and (2) evaluates different constructions and orientations of a constitutional environmental right. This analysis concludes that it is unlikely that adoption of a self-executing environmental right in New York would override basic principles of judicial deference to legislative and executive actions. It also recommends that the right be oriented around the concept of a governmental trust duty enforceable directly by citizens in actions against the government and that it expressly reference the interests of future generations and incorporate ecological principles.

(1) Assessing the implications of a self-executing right

The potential to shift policymaking authority from the legislature to the judiciary is often identified as a chief reason not to constitutionalize environmental rights or duties. For a variety of reasons, legislatures may be more institutionally suited to develop environmental policy.[15] Judicial intervention may, however, be warranted when the legislative process proves inadequate to protect core environmental values,[16] which is particularly likely to occur when, for example, seeking to protect the interests of future generations;[17] additionally, a shift of authority to the judiciary is arguably less troubling from the perspective of democratic representation at the state, as compared to the federal level.[18] And many lament that it is difficult for public environmental rights and concerns to be redressed in New York's courts because New York State environmental statutes lack the citizen-suit provisions found in the major federal environmental statutes.[19] We note the existence of long-running debate about the optimal role for the judiciary in environmental policy and that it undergirds concern about constitutionalizing environmental rights.

To inform assessment of the advisability of incorporating a more robust (self-executing) environmental right in the New York State Constitution, it is thus useful to consider whether and to what extent adopting such a right would, in fact or potential, shift environmental policymaking to the judiciary. The analysis that follows assesses the impact that robust, self-executing constitutional environmental rights have had on the distribution of judicial and legislative authority in those states where such a right or duty is recognized and seeks to envision how such a right might affect judicial authority in New York.

Ultimately, while a robust, self-executing constitutional environmental right would allow for increased judicial participation in significant environmental disputes, it is unlikely that such participation would unduly encroach on the core role of the legislature. States that recognize a robust, self-executing constitutional environmental right have not experienced a radical or undesirable shift of environmental policymaking authority to the judiciary. In Montana, judicial intervention has been relatively limited and reserved for cases presenting unusual and compelling facts. In Hawaii, judicial intervention to enforce constitutional environmental rights has been more common and involved, but is perhaps best characterized as requiring dialogue about and attentiveness to environmental values. And in Pennsylvania, while the judiciary has twice invoked constitutional environmental rights to strike down State statutes, both cases involve disputes about the appropriate development of the State's natural gas reserves through fracking, a factual situation that closely parallels the concerns about environmental damage associated with historical exploitation of Pennsylvania's natural resources that motivated the adoption of its Environmental Rights Amendment.

Additionally, in terms of predicting how New York courts might interpret and apply a similar right, it is useful to note that when New York courts have interpreted self-executing positive constitutional rights addressed to other subjects (such as poverty), they have done so in a manner that largely preserves legislative prerogative. Finally, the text of the environmental right that we recommend for New York is oriented and phrased so as to provide the citizens of New York with a judicial backstop—a means to challenge actions affecting integral environmental values while largely preserving existing mechanisms of environmental policymaking and protection.

Positive constitutional environmental rights and judicial authority

Environmental constitutional rights[20] are typically articulated as positive (second-generation or substantive) rights.[21] The enforcement of positive rights can require courts not only to prevent or stop government action (as would be demanded in the enforcement of negative rights), but further to compel legislative action and thus "immerse[ ] courts more deeply within the affairs of the executive and legislative branches" and raise separation of powers concerns.[22] A review of state judicial interpretation of positive state constitutional rights reveals that courts often deploy doctrines or approaches (political question, finding that an affirmative right is not self-executing, recognizing that the right imposes an affirmative duty on the legislature but giving the legislature broad discretion in defining the scope of the duty, narrowly interpreting the scope of environmental rights provisions, declining to hear cases on procedural grounds (such as standing or ripeness)) that largely preserve the traditional distribution of authority between the judiciary and the legislature and avoid judicial policymaking.[23] These approaches can be seen in New York, where at least one court has held that Section 4, the existing Conservation Bill of Rights, affords no constitutionally protected property right enforceable by courts (effectively treating it as non-self-executing);[24] and, in the context of interpreting Article XVIII, Section 1 (imposing an affirmative obligation to help the needy), courts have largely deferred to the legislature regarding the adequacy of benefits.[25]

In some circumstances, however, courts have applied strict scrutiny to state constitutional affirmative rights (see discussion of application of Montana's environmental right, *supra*) or become deeply enmeshed in defining and overseeing the implementation of policy necessary to satisfy the state constitutional affirmative right (for example, the New Jersey Supreme Court's involvement in school finance litigation).[26] Both of these approaches to interpreting affirmative rights in state constitutions (strict scrutiny and active judicial management) can result in greater judicial policymaking at the expense of legislative prerogative.

To better understand the potential for a constitutional environmental right to give rise to increased policymaking on the environmental by the judiciary, a short review follows of the experience in the three states with positive constitutional environmental rights where those rights have been treated as self-executing and have not been otherwise unduly limited through court interpretation, Hawai'i, Montana and Pennsylvania.[27]

Hawaii

Article XI, Section 1 of the Hawaii Constitution provides:

> For the benefit of present and future generations, the State and its political subdivisions shall conserve and protect Hawai'i's natural beauty and all natu-

> ral resources, including land, water, air, minerals and energy sources, and shall promote the development and utilization of these resources in a manner consistent with their conservation and in furtherance of the self-sufficiency of the State. All public natural resources are held in trust by the State for the benefit of the people.[28]

Article XI, Section 9 of the Hawaii Constitution provides:

> Each person has the right to a clean and healthful environment, as defined by laws relating to environmental quality, including control of pollution and conservation, protection and enhancement of natural resources. Any person may enforce this right against any party, public or private, through appropriate legal proceedings, subject to reasonable limitations and regulation as provided by law.[29]

The trust duty set forth in Article XI, Section 1 coexists with and is defined with reference to common law public trust principles. While it is difficult to discern precisely what the constitutional expression of the trust duty adds to underlying common law public trust doctrine, Hawai'ian courts have been clear that the constitutional expression strengthens the trust duty, observing that through the "constitutional affirmation of a trust duty the people of this state have elevated the public trust doctrine to the level of a constitutional mandate."[30] Courts invoking Section 1 have further suggested that judicial review is more searching when public trust duties are involved, noting that "while agency decisions affecting public trust resources carry a presumption of validity," ultimately "[a]s with other state constitutional guarantees, the ultimate authority to interpret and defend the public trust in Hawai'i rests with the courts of this state."[31] In the context of water resources (most closely aligned with traditional, common law understandings of the public trust doctrine), Hawaiian courts have actively defined[32] and policed the scope of public trust duties, making clear that the public trust doctrine has "independent vitality," to "inform the [State Water] Code's interpretation, define its permissible 'outer limits,' and justify its existence."[33]

While the Section 1 public trust duty has been developed primarily with regard to water resources, it has also been held to encompass lands in the public domain.[34] In *Mauna Kea*, the Supreme Court of Hawai'i held that the Board of Land and Natural Resources had violated, *inter alia*, Article XI, Section 1 of the Hawai'i Constitution as a matter of law by deciding the merits of an application for a permit for a proposed astronomy observatory on Mauna Kea before conducting a contested case hearing in which the public trust doctrine, and the obligations it imposes on the State, could have been duly considered.[35] The court held that Mauna Kea was within the public trust and that "an agency of the State must perform its statutory function in a manner that fulfills the State's affirmative constitutional obligations," namely "fashion procedures that are commensurate to the constitutional stature of the rights involved."[36] Notably, however, the court's decision did not rest solely on the Section 1 trust duty; the court also held that issuance of the permit before a contested case hearing violated the due process rights of parties with standing to assert Native Hawaiian traditional and customary rights.

Hawai'i's constitution also sets forth the right to a clean and healthful environment in Article XI, Section 9. This constitutional right was long referenced by Hawaiian courts primarily to support liberalized standing. However, in *Ala Loop Homeowners*, the Hawaii Supreme Court held that article XI, Section 9 is self-executing and provides an implied private right of action to enforce State laws relating to environmental quality.[37] The court thus held that a neighborhood association had a private right of action to seek to enforce land use statutes against a charter school. In its decision, the court noted the intent of the framers at the 1978 Constitutional Convention to increase public involvement:

> Your Committee believes that this important right deserves enforcement and has removed the standing to sue barriers, which often delay or frustrate resolutions on the merits of actions or proposals, and provides that individuals may directly sue public and private violators of statutes, ordinances and administrative rules relating to environmental quality. The proposal adds no new duties but does add potential enforcers.[38]

Notably, although *Ala Loop Homeowners* would seem to invite suits to enforce state environmental laws, few environmental decisions have relied on *Ala Loop Homeowners* in the intervening seven years. Moreover, the court also signaled deference to the legislature in defining the scope of the constitutional environmental right, observing that Article XI, Section 9 "recognizes a substantive right 'to a clean and healthful environment,' with the content of that right to be established not by judicial decisions but rather 'as defined by laws relating to environmental quality.'"[39]

In Hawaii, then, the constitutional assertion of a public trust duty appears to have resulted in significant judicial oversight, particularly with regard to the development of policy governing water resources (a subject

matter with respect to which there is often some judicial involvement even absent a constitutional provision as a result of the "amphibious" scope of the common law public trust doctrine). Judicial oversight is both substantive (requiring, for example, that intergenerational interests be considered) and procedural (compelling procedures sufficient to assure consideration of public trust values). Judicial intervention does not, however, approach the level of judicial management sometimes seen in the context of other state constitutional positive rights, such as education or assistance to the needy. The judiciary appears to be adding its voice to a dialogue with agencies and the legislature about appropriate considerations and processes in environmental policy—a level of judicial involvement with which even many wary of undue judicial aggrandizement are likely comfortable. The constitutional enshrinement of an environmental right, while interpreted to be self-executing and to provide a right of action to enforce environmental laws, has not yet resulted in notable judicial oversight of environmental policy.

Montana

Montana's constitution provides in relevant part:

> All persons are born free and have certain inalienable rights. They include the right to a clean and healthful environment . . . .[40]
>
> * * *
>
> (1) The state and each person shall maintain and improve a clean and healthful environment in Montana for present and future generations.
>
> (2) The legislature shall provide for the administration and enforcement of this duty.
>
> (3) The legislature shall provide adequate remedies for the protection of the environmental life support system from degradation and provide adequate remedies to prevent unreasonable depletion and degradation of natural resources.[41]

For many years, the Montana Supreme Court referenced the constitutional environmental provisions to uphold State action, but declined to rely on those provisions to "challenge actions harming the environment."[42] However, in 1999, the Montana Supreme Court held that an amendment to Montana's Water Quality Act which excluded certain activities from review under the Act's nondegradation policy, thereby allowing the discharge of arsenic-containing water without environmental review, implicated the right to a clean and healthful environment, and could survive only after the application of strict scrutiny on remand.[43] The Montana Supreme Court found that the right to a "clean and healthful" environment is a fundamental right and that "any statute or rule which implicates that right must be strictly scrutinized and can only survive strict scrutiny if the State establishes a compelling state interest and that its action is closely tailored to effectuate that interest and is the least onerous path that can be taken to achieve the State's objective."[44] Two years later, the Montana Supreme Court applied this holding to private actions, relying on the constitutional provisions to invalidate a private contractual provision that would have required drilling a well through a contaminated aquifer, potentially spreading the contamination.[45]

By invoking strict scrutiny and extending the reach of the constitutional provisions to private actions, these cases would appear to have significant potential to increase judicial policymaking in the environmental realm. The cases, however, have not prompted a flood of litigation or a radical redistribution of policymaking to the judiciary. Few discovered cases have successfully relied on this precedent and, while it is too early to know how case law will evolve, to date the most enduring principle to have emerged is that legislative exemptions to environmental statutes will be subject to close scrutiny. Indeed, the Montana Supreme Court "has begun to demarcate the limits of the MEIC holding" in a manner that "suggests that the court will be deferential to state and local governments" and "will continue to give deference to the interpretations of administrative agencies."[46] In 2012, for example, the Montana Supreme Court limited the scope of its holding that the environmental right is fundamental, subjecting a statute deferring environmental review for a coal strip mining operation until the permitting stage to only rational basis review. The Court's reasoning was that

> the leases themselves do not allow for any degradation of the environment, conferring only the exclusive right to apply for State permits, and because they specifically require full environmental review and full compliance with applicable State environmental laws, the act of issuing the leases did not impact or implicate the right to a clean and healthful environment in Article II, Section 3 of the Montana Constitution.[47]

Nonetheless, in the words of one scholar, "[t]he Montana court's powerful interpretation of the constitutional right to a clean and healthful environment . . . affects agency decisions, thwarts legislative efforts to give pol-

luters and developers statutory breaks from environmental laws, and infuses public debate on environmental issues."[48]

Pennsylvania

Article I, Section 27 of Pennsylvania's constitution, the Environmental Rights Amendment, provides:

> The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic and esthetic values of the environment. Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people.[49]

Section 27 is located in Article I, the Pennsylvania's Declaration of Rights, which also provides for religious freedom, freedom of speech, and protection from unreasonable search and seizure.[50] Section 25 declares that rights set forth in Article I are "excepted out of the general powers of government and shall forever remain inviolate."[51]

Early Pennsylvania cases interpreted Section 27 as a grant of power to the government (as opposed to a limitation upon it) and required only that government decisions challenged as violating Section 27 satisfy a three-part balancing test largely divorced from the Section's text (the Payne test).[52] Courts also came to understand the section to not be self-executing.[53] So construed, Section 27 had little practical effect.

In 2013, in *Robinson Township*, a plurality of the Pennsylvania Supreme Court invoked Section 27, in particular its trust provisions, to strike down as unconstitutional a State statute (Act 13) that amended the 1969 Oil and Gas Act to impose a regulatory structure for unconventional gas development, including *inter alia*, by overriding local ordinances.[54] In deciding that Act 13 violated the Section 27 (primarily its trust clause), the plurality clarified that because Section 27 appears in Article I it imposes a limit on government power and that the right is self-executing.[55]

In *Pennsylvania Environmental Defense Foundation v. Pennsylvania*, the Pennsylvania Supreme Court, this time in a majority decision, expanded on *Robinson Township*, striking down legislation that allowed royalties from oil and gas drilling to be used for non-environmental (general) purposes with consideration of trust duties.[56] *Pennsylvania Environmental Defense Foundation* built on *Robinsons Township* in several important ways, including by expressly overruling the deferential Payne test for assessing violations of the Environmental Rights Amendment and holding that private trust law principles are to be used to interpret the scope of the Commonwealth's trust duty. The majority invoked private trust law and reasoned that the proceeds from the sale of trust assets become part of the corpus of the trust and must be managed consistent with trust purposes; it thus held that the Commonwealth had violated its fiduciary duties in statutes directing the use of trust proceeds for general purposes without consideration of trust purposes.

It is too early to fully appreciate whether and how a reinvigorated Section 27 might shape Pennsylvania law. One expert scholar (writing before *Pennsylania Environmental Defense Foundation* was decided) concluded that most post-*Robinson Township* cases "are more about filling gaps and repairing inadequacies in the existing environmental regulatory system than they are about overturning that system and replacing it with something else. While public constitutional rights undergird the entire regulatory system, they are likely to be applied directly in only a relatively small percentage of cases."[57]

While at first blush *Pennsylvania Environmental Defense Foundation* may seem like use of a constitutionalized environmental right for precisely the type of judicial aggrandizement feared by many, two points bear noting that should temper this concern. First, both occasions on which the Pennsylvania Supreme Court has struck down legislation using the Environmental Rights Amendment have involved a factual situation (rapid, economically-motivated exploitation of a natural resource) that closely mirrors the concerns that animated adoption of the Environmental Rights Amendment (such as the environmental harms from timbering and coal mining).[58] Faced with the rapid scale up of fracking to exploit Pennsylvania's natural gas resources, the Environmental Rights Amendment can thus be viewed as functioning as a judicial backstop, providing the Pennsylvania Supreme Court with a means to strike down state laws that in its view went too far in favoring the short-term economic needs of the present generation over conservation of the underlying natural resource for current and future Pennsylvanians. Additionally, *Pennsylvania Environmental Defense Foundation* turns on the majority's decision to invoke and apply technical aspects of private trust law.

We are doubtful about the propriety of applying technical aspects of private trust law to a constitutionally expressed environmental public trust right and recommend that the drafting and legislative history accompanying the adoption of an environmental right in New York should indicate that it is grounded in the traditional public trust doctrine.[59]

Summary and Conclusions

The more specific and detailed the constitutional right, the more readily we can rely upon strong and consistent judicial intervention in its defense without much risk of judicial aggrandizement.[60] The Forever Wild provision in the New York State Constitution presently functions in this fashion, with courts regularly enforcing its clear constitutional command.[61] However, the defining environmental problems and goals of our generation and the next—including most notably climate change and sustainability—are so wide-ranging and complex in their causes, manifestation, and needed policy response (most of which are difficulty to anticipate) that that they cannot be captured in a neatly defined constitutional command the enforcement of which obviates the need for judicial interpretation and (possibly) more engaged judicial involvement. These issues are nonetheless of central—constitutional—import.

Scholars identify a number of potential benefits of constitutionalizing public rights. Because constitutional rights "trump inconsistent statutes and regulations" they "create a legal bulwark against incursion by the legislative or executive branches."[62] From a federalism perspective, some have theorized that "the identification and enforcement of state constitutional rights can serve as a mechanism by which state governments can resist and, to a degree, counteract abusive exercises of national power."[63] Constitutionalized public rights are also more permanent because it is harder to amend a constitution than to alter statutes or regulations.[64] And some posit that "because of their enduring nature and their higher legal status, public rights of the kind embodied in a bill of rights tend to more easily become part of the broader public discourse and public values over the long term than provisions in statutes or regulations," thereby "foster[ing] the values they embody."[65]

While conceding that a robust, self-executing environmental right (and/or trust duty) carries with it the possibility of an expansion of judicial authority, experience gleaned from three other States and New York's application of other affirmative constitutional rights suggests that there is little risk, in particular in New York, that this will unduly displace legislative prerogative. In the words of one scholar, "courts have seldom invoked substantive environmental provisions to constrain or dictate state policy except in 'transition periods,' when some or all of the political branches of state government have lagged behind public opinion on an important issue."[66] And even where, as in Hawai'i, courts have interpreted constitutional environmental rights and duties in a more expansive fashion, the result has been judicial insistence upon consideration of and respect for core, constitutional environmental values, such as a recognition of the interests of future generations.

(2) Orientation and wording of a constitutional environmental right

There is great variation in the wording of constitutional environmental rights provisions, with constitutional texts ranging from relatively bare assertions of a right to a healthy environment to detailed descriptions of the content of the environmental right.[67] Having reviewed many articulations of constitutional environmental rights, examined how they have functioned (in particular in state constitutions), and considered the specific needs of New York, the Task Force believes that the constitutional text that establishes a constitutional right to a healthy environment should explain that a healthy environment requires the conservation and protection of our natural resources, clarify that natural resources necessary to a healthy environment belong to the people in common, and make clear that the State has the duty to protect these natural resources. The constitutional text should provide guidance for understanding the meaning of the right to a healthy environment by (a) describing it with reference to ecosystems and the services that they provide; (b) making clear that the right is held by and associated duties owed to future generations; and (c) explaining that the natural resources that support a healthy environment constitute a public trust. It should also clarify the government's duty to conserve and protect the public natural resources held in trust for the public and provide a mechanism for New Yorkers (citizens, through application to the judiciary) to require that the government meet its duty.

Specifically, the Task Force recommends that a constitutional environmental right for New York should:

- define the right to a healthy environment to include *inter alia* resilient and diverse ecosystems;
- clarify that the public natural resources of New York furnish the fundaments of a healthy environment and are held in trust by the State for the benefit of the people, including future generations;
- assert the State's duty to conserve and protect New York's public natural resources to safeguard the people's right to a healthy environment; and
- provide for any person to enforce the right against the State and its subdivisions through appropriate legal proceedings.

Together, these principles, which are explained in further detail below, can be used to develop a constitutional environmental right that provides meaningful protection to citizens and direction to courts and legislators as New York navigates modern environmental challenges. A right

incorporating these principles would invite a judicial oversight role and provide the judiciary with sufficient guidance to enable courts to meaningfully engage while defining and limiting the scope of judicial involvement so as to prevent undue encroachment on the legislature's policymaking role.

Ecosystem Frame

Our recommendation to index a healthy environment to resilient and diverse ecosystems reflects a recognition of our embeddedness in and reliance on and impact upon natural systems. This recognition will be important as we seek to achieve sustainability and prepare for and navigate the impacts of climate change. It also reflects an understanding of the relationship between nature and man that accommodates both anthropocentric values (the services that ecosystems provide that advance human well-being) and inherent existence values, including the value of diverse species.

Since the 1970s "growth vs. conservation" has been a recurring dilemma. The goal should be to balance the market's appetite for "resources" within appropriate parameters. We can see that the law we have developed is not preventing the disintegration of many ecosystems. Climate change and low-level chemical exposures are two examples. There is a disjunction between our legal expectations and ecological reality. The fate of our essential ecological infrastructure is uncertain and the legal response not yet adequate.[68]

Meanwhile, ecology and its constituent sciences and tools are developing rapidly. One suggestion for the law that has emerged from ecological studies is that we supplement use of the term "environmental" with the more concrete term(s), "ecological" or "ecosystem." While the "environment" is abstract, ecosystems are physical, local, and temporal. An ecosystem can be mapped and studied. Ecological terminology, frameworks and principles can assist the legal system in protecting the actual environment.[69]

Professionals in ecology and related disciplines are considering how best to manage and preserve ecosystems so that their functional integrity is supported and maintained. The literature on ecosystem services, ecological integrity and sustainability presents new possibilities and reveals the sources of risks we are recognizing now. An important step to addressing these risks should be to acknowledge (or strengthen) the connection between ecosystems and those who live in them, to recognize a grounded legal basis for the inhabitants of ecosystems to participate in its protection.

Public Trust

We recommend indexing the constitutional right to a healthy environment to a government trust obligation. The concept of environmental public trust is historical and familiar, but also dynamic and flexible.[70] In New York, the common law public trust doctrine protects uses of navigable waters and has been extended to safeguard municipal and State parks from being alienated or converted to nonpublic use, to preserve forests, and to protect historic sites.[71] The concept of treating environmental resources as a public trust is likewise reflected in New York statutes.[72] Grounding a constitutional environmental right in traditional public trust concepts thus provides a grounding for judicial interpretation. We fear that judicial reluctance to elaborate on a bare assertion of a right to a healthy environment would result in such a provision laying fallow. Public trust principles can, moreover, guide government response to emerging environmental challenges, like climate change, that require grappling with aggregated harms, future impacts and questions about long term sustainability. The public trust doctrine articulates the existence of some outer limits on private use of natural resources and it reaffirms the democratic goal of broad access to meet the people's common and long term needs and opportunities.

One concern expressed about the creation of a constitutional environmental right is its potential to impact private property rights. We would recommend making an environmental right self-executing only as against the State with respect to satisfaction of its public trust duty. As such, it could not be relied upon to bring suit directly against the owner of private property. Of course, it is possible that in fulfilling its public trust duty to conserve and protect public natural resources to protect the constitutional environmental right the government may adopt laws and regulations that restrict private activity. It is important to note, however, that these actions can just as well be expected to *enhance* private property rights by promoting environmental conditions that improve the enjoyment and value of property.

Concerns might be raised that constitutional affirmation that public natural resources are held as a public trust might prevent private property owners from obtaining just compensation through a regulatory takings claim. A vested property right is a precondition for a regulatory takings claim and for purposes of the Takings Clause, property is defined with respect to "the restrictions that background principles of the [s]tate's law of property and nuisance already place upon land ownership."[73] Thus, a property owner cannot obtain just compensation where background principles of state property or nuisance law (including, possibly, the public trust doctrine) already limit the scope of the property right in the manner of the challenged regulation.[74] Notably, "[g]overnment defen-

dants have successfully raised the public trust doctrine as a defense in a number of takings cases across the country, particularly those involving submerged lands," although whether and under what circumstances the public trust doctrine qualifies as a background principle that will defeat a takings claim remains unsettled.[75]

We think it unlikely that constitutional assertion that public natural resources constitute a public trust will significantly impact private property owners' opportunities to obtain just compensation. It is unclear whether a constitutional assertion of public trust would be deemed a relevant background principle. Moreover, in many cases, the public trust will overlap with other recognized background principles that limit the use of property, such as the exercise of police powers or the prerogative to intervene to prevent private property from being used in a manner that unreasonably interferes with the rights of others, which already forestall takings claims. And, as recently reiterated by the U.S. Supreme Court in *Murr v. Wisconsin*, whether a regulatory taking has occurred typically depends upon the particular facts.[76] We thus do not believe that there is significant risk that articulation of a constitutional public trust and associated duty relating to public natural resources would unduly affect the rights of private property owners.

Enforcement

To be effective, the environmental right should be self-executing by providing for any person to enforce the right against the State and its subdivisions through appropriate legal proceedings. As discussed at length above, absent such an enforcement mechanism, the right may lay fallow and provide little value. Additionally, allowing for citizen enforcement should not occasion undue judicial aggrandizement. One important question raised, however, in structuring a provision to allow for enforcement of the right by citizens against the State is which entities are subject to the duties and responsibilities created by the right and subject to suit. In short, how should the State and its subdivisions be defined and understood?[77]

It would be inadequate to limit suits to actions directly against the New York State Legislature. Actions and decisions with significant impacts on the State's environment and natural resources are commonly undertaken by a multitude of government actors. Having looked to New York statutes which address obligations of government for guidance,[78] the Task Force recommends that the right extend to and be enforceable against the sovereign State of New York, defined as the State, its counties, and chartered municipalities including with the broadest interpretation possible all administrative and legislative bodies, all municipal instrumentalities including without limitation public authorities chartered by the State together with individuals, boards, cooperatives or organization empowered with any authority through the sovereign power of the State.

Conclusion

For the reasons described above, the Task Force recommends that (I) no changes be made to Article XIV; and (II) Article I be amended to set forth an environmental right. Article XIV provides a great value to the citizens of New York and should be maintained in its integrity. Article XIV is not, however, adequate in scope to meet today's pressing and unprecedented environmental challenges. Indeed, the ecosystems within the Forest Preserve cannot be protected in the long term without decisive action to respond to climate change.

We also, therefore, recommend that the New York State Constitution clearly articulate and provide a means for citizens to insist upon respect for core environmental principles through the addition of an environmental right. In some respects, these principles are so fundamental that they can understood to be a condition of sovereignty, part of our social compact. All too often, however, the continued existence of resilient ecosystems capable of supporting and enriching life is assumed and the threats to the same are invisible in their proliferation and diffusion. As we confront existential questions of sustainability and the human impact on life systems, there is value in stating a right understood to exist—that New Yorkers have a right to an environment capable of supporting and sustaining life—and providing a means for citizens and the judiciary to protect it.

Endnotes

1. Memorandum from Nicholas A. Robinson to Lawrence P. Schnapf, Proposals for a Section Task Force on Environmental Aspects of the NY State Constitution (Jan. 27, 2017).
2. Including the New York State Bar Association, *Report and Recommendations Concerning the Conservation Article in the State Constitution (Article XIV)* (approved by the House of Delegates November 5, 2016).
3. N.Y. Const. art. XIV, §1 (emphasis added).
4. See, Robert C. Glennon, "Non-Forest Preserve: Inconsistent Use," *in* Governor's Commission on the Adirondack Park in the Twenty First Century, Technical Report, Vol 1, No. 5, at 76 n. 5.
5. N.Y. Const., art. XIV, sec. 2.
6. The Task Forth further notes that Section 3 of Article XIV creates the legal basis for some 750,000 acres of state forest land and 250,000 acres of state wildlife management areas outside the bluelines of the Adirondack and Catskill Forest Preserve. While Section 3 notes that the strict limits of section 1 of Article XIV do not apply to these lands, section 3 concludes with this strong legal protection for these valuable lands, declaring "that such lands shall not be leased, sold or exchanged, or be taken by any corporation, public or private." N.Y. Const. art. XIV, § 3. Section 3 preserves these valuable lands all across the state from commercial exploitation or sale.
7. N.Y. Const. art. XIV, § 4.
8. See ECL § 45-0101.
9. The Task Force recommends incorporation of an environmental

right in Article I, as opposed to Article XIV, because such a right is appropriately viewed as on par with the other important rights protected in Article I. Additionally, any effort to amend Section 4 of Article XIV to include an environmental right might invite opponents to attempt to delete or weaken Section 5 of Article XIV, its vitally important citizens suit provision. Section 5 is critical, especially to give citizens and advocacy groups the right to sue to protect the "forever wild" character of the Forest Preserve. Existing Article XIV effectively protects the Forest Preserve in the Adirondack and Catskill State Parks. That provision, part of the State Constitution since 1894, is vital to the future of those areas of our State so important environmentally and for tourism and recreation. It should be maintained in its integrity.

10. *See Environment and Natural Resource Provisions in State Constitutions*, 22 J. Land Resources and Envtl. L. 73 (2002) (surveying state constitutional provisions); James R. May & Erin Daley, *Constitutional Environmental Rights Worldwide*, *in* Principles of Constitutional Environmental Law 329 (2011).

11. Delaware Riverkeeper, for example, has a new initiative, For the Generations, "to pursue and secure constitutional protection of environmental rights in states across the nations." Delaware Riverkeeper, For the Generations, *available at* http://www.delawareriverkeeper.org/ongoing-issues/generations (last visited Aug. 8, 2017). Additionally, the draft Global Pact for the Environment provides in Article I, "Every person has the right to live in an ecologically sound environment adequate for their health, well-being, dignity, culture and fulfilment." Preliminary Draft Global Pact for the Environment (June 24, 2017), *available at* https://www.iucn.org/sites/dev/files/content/documents/draft-project-of-the-global-pact-for-the-environment.pdf (last visited Aug. 8, 2017).

12. While we also recommend adoption of a constitutional environmental right in Article 1, the text that we propose differs in some respects for the reasons described *infra*.

13. For a discussion of how the public trust doctrine can guide adaptation to climate change in the context of water resources, *see* Robin Kundis Craig, *Adapting to Climate Change: The Potential Role of State Common-Law Public Trust Doctrines*, 34 Vermont L. Rev. 781 (2009) (describing how state public trust doctrines can support adaptive management for water resources in the context of climate change).

14. Leland v. Moran, 235 F. Supp. 2d 153, 169 (N.D.N.Y. 2002), *aff'd*, 80 Fed. Appx. 133, 2003 WL 22533185 (2d Cir. 2003).

15. *See generally* Barton H. Thompson, Jr., *Environmental Policy and State Constitutions: The Potential Role of Substantive Guidance*, 27 Rutgers L.J. 863, 891-899 (1996) (explaining various reasons why legislatures are a preferred venue for developing environmental policy, including that judicial intervention can reduce incentives for legislative action, legislatures are in a better position to decide environmental tradeoffs which present largely political questions, legislatures are better equipped to engage in fact-finding).

16. *See generally* Jeffrey Omar Usman, *Good Enough for Government Work: The Interpretation of Positive Constitutional Rights in State Constitutions*, 73 Alb. L. Rev. 1459, 1515-16 (2010) (describing the argument that even the expression of general constitutional principles should warrant judicial enforcement in certain circumstances).

17. Barton H. Thompson, Jr., *Constitutionalizing the Environment: The History and Future of Montana's Environmental Provisions*, 64 Mont. L. Rev. 157, 198 (2003) (positing that the "normative argument for constitutional intervention is stronger" with respect to "[e]nvironmental issues that involve future generations, such as the depletion of exhaustible resources, the endangerment of species, global climate change, and the use of long-lived toxics.").

18. State court judges are, for example, more accountable to the electorate and closer to state culture and legal norms and state constitutions can be more easily amended (thereby providing a more feasible means for the citizenry to override judicial constitutional interpretations with which it disagrees). Usman, *supra* note 16, at 1524.

19. *See* Friends of the Earth v. Carey, 535 F2d 165 (2d Cir. 1976) (interpreting federal citizen suit provisions to allow citizens to be "welcomed participants in the vindication of environmental interests").

20. Environmental rights can be expressed in a variety of ways in state constitutions and typically involve the assertion of an affirmative, individual right to a clean and healthy environment (or similar). Many state constitutions also impose trust duties. Most notably, the Hawai'i and Pennsylvania constitutions house both affirmative grants of environmental rights provisions and declare public trust duties and in both states it is the public trust duties that have proved particularly important in key decisions.

21. For a discussion of the distinction between positive and negative constitutional rights, *see* Usman, *supra* note 16, at 1462-1464.

22. *Id.* at 1495.

23. Usman, *supra* note 16, at 1497-1506; Barton H. Thompson, Jr., *Constitutionalizing the Environment: The History and Future of Montana's Environmental Provisions*, *supra* note 17, at 163-65 (2003); Thompson, *Environmental Policy*, *supra* note 15, at 896-97.

24. Leland v. Moran, 235 F.Supp.2d 153, 169 (N.D.N.Y. 2002), *aff'd*, 80 Fed. Appx. 133, 2003 WL 22533185 (2d Cir. 2003). Of note, it is also relatively difficult to demonstrate standing in New York in many environmental public interest cases. Albert K. Butzel; Ned Thimmayya, *The Tyranny of Plastics: How Society of Plastics, Inc. v. County of Suffolk Prevents New Yorkers from Protecting Their Environment and How They Could Be Liberated from Its Unreasonable Standing Requirements*, 32 Pace Envtl. L. Rev. 1, 2 (2015) (lamenting the stringency of standing requirements under SEQRA and documenting that "numerous other states have developed standing doctrines that more capably match the purposes of their environmental protection acts and address the ecological complexities of environmental harms yet also prevent frivolous complaints from disrupting judicial efficiency").

25. Usman, *supra* note 16, at 1504-05; Sylvia Ewald, Note, *State Court Adjudication of Environmental Rights: Lessons from the Adjudication of the Right to Education and the Right to Welfare*, 36 Colum. J. Envtl. L. 413, 445-47 (2011) ("New York courts have taken a relatively conservative approach to welfare rights, and are highly deferential to the legislature in this area.").

26. Usman, *supra* note 16, at 1508-11.

27. Of note, six state constitutions articulate environmental rights, Sylvia Ewald, Note, *State Court Adjudication of Environmental Rights: Lessons from the Adjudication of the Right to Education and the Right to Welfare*, 36 Colum. J. Envtl. L. 413, 420 (2011), although many more address environmental matters in some fashion (including through the identification of government trust duties). Of the state constitutions articulating environmental rights, two environmental rights provisions are not self-executing as they textually require legislative action (Massachusetts, Rhode Island). *Id.* at 423. Another state environmental right provision (Illinois) is explicitly self-executing, but has been interpreted primarily as a means to demonstrate standing in claims based upon other state laws. *Id.* at 426-29. *See also* People v. Pollution Control Bd., 129 Ill. App. 3d 958, 964, 473 N.E.2d 452, 456 (1984) (holding that the intent of the Illinois constitutional environmental rights provision was merely "to remove the special injury requirement for standing" and thus functions only "to ensure standing, not to create substantive causes of action.").

28. HRS Const. Art. XI, § 1.

29. HRS Const. Art. XI, § 9.

30. In re Water Use Permit Applications, 94 Haw. 97, 131, 9 P.3d 409, 443 (2000).
31. In re Water Use Permit Applications, 94 Haw. 97, 143, 9 P.3d 409, 455 (2000).
32. In re Waiola O Molokai, Inc., 103 Haw. 401, 429, 83 P.3d 664, 692 (2004) (exploring the scope of public trust duties relating to water resources).
33. In re Water Use Permit Applications, 94 Haw. 97, 133, 9 P.3d 409, 445 (2000).
34. Morimoto v. Bd. of Land & Natural Res., 113 P.3d 172 (Haw. 2005) (suggesting in dicta that the public trust could apply to biodiversity).
35. Mauna Kea Anaina Hou v. Bd. of Land & Nat. Res., 136 Haw. 376, 409, 363 P.3d 224, 257 (2015).
36. Mauna Kea Anaina Hou v. Bd. of Land & Nat. Res., 136 Haw. 376, 414, 363 P.3d 224, 262 (2015).
37. Cty. of Hawaii v. Ala Loop Homeowners, 123 Haw. 391, 417, 235 P.3d 1103, 1129, 1134 (2010).
38. Cty. of Hawaii v. Ala Loop Homeowners, 123 Haw. 391, 414, 235 P.3d 1103, 1125-26 (2010) (citing to Stand. Comm. Rep. No. 77, in 1 Proceedings of the Constitutional Convention of 1978, at 689–690 (1980)).
39. Cty. of Hawaii v. Ala Loop Homeowners, 123 Haw. 391, 409, 235 P.3d 1103, 1121 (2010) (citing to Stand. Comm. Rep. No. 77, in 1 Proceedings of the Constitutional Convention of Hawai'i of 1978, at 689).
40. Mont. Const. art. II, § 3.
41. Mont. Const. art. IX, § 1.
42. Thompson, *Constitutionalizing the Environment*, *supra* note 17, at 167.
43. MEIC v. DEQ, 296 Mont. 207, 231 (1999).
44. *Id.* at 225.
45. Cape-France Enterprises v. Estate of Peed, 305 Mont. 513 (2001).
46. Ewald, Note, *supra* note 27, at 432-33. *See generally* John D. Echeverria, *State Judicial Elections and Environmental Law: Case Studies of Montana, North Carolina, Washington, and Wisconsin*, 16 Vt. J. Envtl. L. 363, 376 (2015) (observing that "in the last several years, environmental advocates have suffered several important losses in the Supreme Court, suggesting a shift in attitudes on the Court toward environmental cases").
47. N. Plains Res. Council, Inc. v. Montana Bd. of Land Comm'rs, 2012 MT 234, ¶ 19, 366 Mont. 399, 406, 288 P.3d 169, 174 (2012).
48. Jack R. Tuholske, U.S. State Constitutions and Environmental Protection: Diamonds in the Rough, 21 Widener L. Rev. 239, 245 (2015).
49. Pa. Const. art. I, § 27.
50. Pa. Const. art. I, §§ 3, 7, 8.
51. Pa. Const. art. I, § 25.
52. Commonwealth v. Nat'l Gettysburg Battlefield Tower, Inc., 311 A.2d 588, 594 (Pa. 1973); Payne v. Kassab, 312 A.2d 86, 97 (Pa. Commw. Ct. 1973), aff'd, 361 A.2d 263 (Pa. 1976). *See also* Dernbach, *The Potential Meanings of a Constitutional Public Trust*, 45 Envtl. L. 463, 473-78 (2015) (summarizing pre-*Robinson Township* Pennsylvania cases interpreting Section 27).
53. Dernbach, *The Potential Meanings of a Constitutional Public Trust*, *supra* note 52, at 475 (describing the evolution of Pennsylvania caselaw regarding whether Section 27 is self-executing).
54. Robinson Twp. v. Commonwealth, 83 A.3d 901 (Pa. 2013).
55. *Id.* at 948, 964-65 & n. 52.
56. 161 A.3d 911 (June 20, 2017).
57. Dernbach, *The Potential Meanings of a Constitutional Public Trust*, *supra* note 52, at 514.
58. Robinson Twp. v. Commonwealth, 83 A.3d 901, 960-63 (Pa. 2013); *see also* Penn. Envtl. Def. Found. v. Commonwealth, 161 A.3d 911 (June 20, 2017).
59. Penn. Envtl. Def. Found. v. Commonwealth, 161 A.3d 911, 943 (June 20, 2017) (Baer, J., dissenting) (arguing that the Environmental Rights Amendment should be interpreted using the principles of the public trust doctrine as opposed to "precepts of private trust law").
60. Usman, *supra* note 16, at 1516-17 (describing such provisions as "highly specific detailed affirmative rights provisions" and noting that "[r]igorous [judicial] enforcement of highly specific affirmative rights provisions is warranted.").
61. As stated *supra*, we do not recommend tinkering with the language of Article XIV. In light of the large body of case law interpreting the Forever Wild provision (and the extent to which it is indexed to the precise language of that provision), the great benefit it provides, and the potential for efforts to weaken to same (or simply cause inadvertent diminution), should a Constitutional Convention occur, we would recommend that delegates not touch or amend Article XIV in any respect.
62. John C. Dernbach, *The Potential Meanings of a Constitutional Public Trust*, *supra* note 52, at 471-72.
63. James A. Gardner, *State Constitutional Rights as Resistance to National Power: Toward a Functional Theory of State Constitutions*, 91 Geo. L. J. 1003, 1004 (2003).
64. Dernbach, *The Potential Meanings of a Constitutional Public Trust*, *supra* note 52, at 471-72.
65. *Id.*
66. Thompson, *Environmental Policy and State Constitutions*, *supra* note 15, at 865.
67. *E.g.*, Constitution of the Republic of Ecuador, Oct. 20, 2008, art. 413 ("The State shall promote energy efficiency, the development and use of environmentally clean and healthy practices and technologies, as well as diversified and low-impact renewable sources of energy that do not jeopardize food sovereignty, the ecological balance of the ecosystems or the right to water."); art. 414 ("The State shall adopt adequate and cross-cutting measures for the mitigation of climate change, by limiting greenhouse gas emissions, deforestation, and air pollution; it shall take measures for the conservation of the forests and vegetation; and it shall protect the population at risk."), *available from* http://pdba.georgetown.edu/Constitutions/Ecuador/english08.html.
68. Johan Rockström & Mattias Klum, Big World, Small Planet: Abundance Within Planetary Boundaries 64-77 (2015) (identifying key planetary boundaries).
69. The term "ecosystem" refers to the manner or process of how nature constitutes itself, creating the infrastructure we rely upon. The Millennium Ecosystem Assessment defined ecosystem services broadly as "the benefits people obtain from ecosystems. These include provisioning services such as food, water, timber, and fiber; regulating services that affect climate, floods, disease, wastes, and water quality; cultural services that provide recreational, aesthetic, and spiritual benefits; and supporting services such as soil formation, photosynthesis, and nutrient cycling." Millennium Ecosystem Assessment, Ecosystems and Human Well-being: A Framework for Assessment 49, 54-55 (2003).
70. See Mary Christina Wood, Nature's Trust – Environmental Law for a New Ecological Age (Cambridge 2014).
71. Friends of Van Cortlandt Park v. City of N.Y., 95 N.Y.2d 623 (2001) (stating that "our courts have time and again reaffirmed the principle that parkland is impressed with a public trust, requiring

legislative approval before it can be alienated. . .for non-park purposes."); Town of North Elba v. Grimditch, 98 A.D.2d 183, 188 (3d Dep't 2012).

72. See N.Y. Parks Rec. & Hist Preserve Law § 3.0l (protecting State owned parkland throughout the State); N.Y. Parks Rec & Hist Preserve Law § 19.05 (safeguarding historic sites as parks to be protected); N.Y. Envtl. Conservation Law, §15-1601 (McKinney 2011) (declaring that "all the waters of the state are valuable public natural resources held in public trust. . .and this state has a duty as trustee to manage its waters effectively for the use and enjoyment of present and future residents and for the protection of the environment.").

73. Lucas v. S.C. Coastal Council, 505 U.S. 1003, 1029 (1992).

74. *Id.*

75. John D. Echeverria, *The Public Trust Doctrine As A Background Principles Defense in Takings Litigation*, 45 U.C. DAVIS L. REV. 931, 934 (2012).

76. Murr v. Wisconsin, 137 S.Ct. 1933 ("A central dynamic of the Court's regulatory takings jurisprudence, then, is its flexibility. . . . In adjudicating regulatory takings cases a proper balancing of these principles requires a careful inquiry informed by the specifics of the case.").

77. Other states' environmental right provisions vary as to who is covered and who can initiate enforcement. In Pennsylvania, for example, the constitutional text places the duty on the "Commonwealth," which courts have interpreted to include "all levels of government in the Commonwealth." Franklin Twp. v. Com., Dep't of Envtl. Res., 500 Pa. 1, 8–9, 452 A.2d 718, 722 (1982). In Hawai'i, public natural resources are held in trust by "the State," the "State and its political subdivisions shall conserve and protect Hawai'i's natural beauty and all natural resources," and the right to a clean and healthful environment is enforceable by "[a]ny person . . . against any party, public or private. . ." HRS Const. Art. XI, §§ 1, 9.

78. Specifically, the State Environmental Quality Review Act (SEQRA) the Freedom of Information Law (FOIL) as well as the State Administrative Procedures Act (SAPA) and some provisions of the criminal laws all in some way mandate that government function in service to citizens. As such the statutes were crafted to encompass various subsets of government actors. None of the statutes is specifically broad or focused enough to provide language that can be co-opted in whole for use in an environmental right but the statutes' definitions are instructive.

Five-Year Review: Evolving Environmental Law and Advice to "Green" Lawyers

By Alexis Saba

Five years ago, the U.S. environmental legal market was in a state of uncertainty after the 2007-2008 financial crisis, Congress's failure to pass a comprehensive climate change bill, and the Deepwater Horizon oil spill in the Gulf of Mexico. Since that time, the environmental job market has improved, and progress, particularly in addressing climate change and in facilitating renewable energy development, has been made at the state and federal levels. However, the election of President Trump in late 2016, and empowerment of a Congress hostile to environmental regulation threaten to undo many of the hard-fought environmental victories, especially at the federal level. New York State and its municipalities have the opportunity to lead—and New York environmental lawyers are ready to use creativity and innovation to tackle the complex environmental problems facing our communities and planet in this uncertain climate.

I. Introduction

In 2012, I co-authored an article with John Wood, a fellow New York City Environmental Law Leadership Institute (NYCELLI) classmate, about the past and future of environmental law, the next generation of environmental lawyers, and advice for succeeding in a tumultuous job market.[1] At the time, the legal market was still feeling the effects of the Great Recession, and new environmental lawyers were uncertain about their career prospects and what environmental law might look like in 10-20 years. Experienced practitioners interviewed in 2012 predicted that the practice of environmental law in New York would likely remain the same, with an emphasis on brownfields redevelopment, permitting, and due diligence. Although many hoped that government policy regarding clean energy and climate change mitigation and adaptation would create new jobs, they acknowledged that such growth would be slow.

Despite practitioners' concerns with the nation's failure to comprehensively address climate change and the slow pace of job growth, President Obama's re-election in late 2012 ultimately led to significant domestic and international action on environmental issues. In recent years, New York State also developed a progressive clean energy program and started to measure and control drinking water contamination. With the added boost of a growing economy, these efforts have generated more work for environmental lawyers already established in the field and likely translated into new environmental law jobs as well. According to a 2016 article quoting Professor Jason Czarnezki of the Haub School of Law at Pace University, government agencies and nonprofit organizations have hired environmental lawyers "to handle the emergence of renewable energy programs, climate regulation, and food safety legislation, in addition to more traditional air and water quality litigation."[2] David Freeman of Gibbons P.C. noted that the rebounding of the economy has led to more real estate development and corporate deals since the recession, translating into related environmental legal work such as due diligence, brownfield cleanups, and environmental impact reviews.

Nonetheless, the election of President Trump in late 2016, and the rise to power of many agency heads and legislators hostile to action on climate change—and to environmental regulation generally—have brought new uncertainty to the environmental law market. The Trump Administration has promised to roll back Obama-era environmental policies, cut funding to the U.S. Environmental Protection Agency ("EPA") and other agencies that implement environmental policies, and bolster the fossil fuel industry. States like New York, with a history of progressive environmental policies, will be well-positioned to take a leadership role in filling gaps at the federal level—although it is worth considering how much more work New York agencies can handle; the New York State Department of Environmental Conservation's (DEC's) "staffing has been reduced to levels not seen since the early 1980s, despite a substantially increased workload."[3]

Many questions remain about how environmental law might develop at the federal and state levels, but new environmental lawyers say they are looking for a challenge and are ready to use creativity and innovation to

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tackle complex environmental problems in an uncertain climate. This article reflects the thoughts and impressions of both experienced and new environmental lawyers about how environmental law and the job market have changed over the past five years and what we might expect in the future.

II. Environmental Law and Policy Highlights: 2012-Present

A. National Landscape

In the eyes of many environmentalists, the Obama Administration was slow to lead on environmental issues—arguably neglecting to prioritize the Waxman-Markey cap-and-trade bill, which passed the House of Representatives in 2009, but was not taken up in the Senate; failing to utilize the 2010 BP Deepwater Horizon oil spill in the Gulf of Mexico to rally the public around environmental protection; and opening 500,000 miles of U.S. coastal waters to offshore oil drilling in 2010. However, the Obama Administration ultimately achieved numerous environmental successes with the promise of long-term action on climate change, a commitment to energy efficiency and renewable energy, and fresh attention to wildlife and wild places.[4] As discussed in Section III, the Trump Administration and many in Congress have pledged to weaken or overturn these accomplishments. While they have already had some success in this mission, a complete reversal of the Obama Administration's environmental accomplishments likely will not happen as quickly and easily as they hope. Described below are a few highlights from the Obama Administration's tenure.

1. Energy and Climate Change

Passed during President Obama's first term, the American Recovery and Reinvestment Act of 2009 (often called the "stimulus bill") provided approximately $90 billion in financing for clean energy programs. This included $29 billion for improving energy efficiency, $21 billion in incentives for renewable generation, $18 billion for high-speed rail and other trains, $10 billion for modernizing the electric grid, $3 billion for job training, and $3 billion for clean manufacturing tax credits, among other items.[5] Since the Act's passage, and due to a variety of factors, the solar and wind job markets have grown at rates of about 20% annually in recent years, and are each creating jobs about 12 times faster than the rest of the U.S. economy. A study by the Environmental Defense Fund has found that these clean energy jobs often "have higher than average wages, create local economic benefits, and are widely available in markets across the U.S."[6]

The Obama-era EPA undertook numerous significant rulemakings to regulate greenhouse gas emissions, following EPA's finding in 2009 that the current and projected concentrations of the six key greenhouse gases in the atmosphere threaten the public health and welfare of current and future generations (the "endangerment finding").[7] One such rule, the Clean Power Plan (CPP), establishes standards to limit carbon pollution from power plants and a flexible framework for meeting those standards while also, in EPA's words, "advancing clean energy innovation, development and deployment, and laying the foundation for the long-term strategy needed to tackle the threat of climate change."[8] The Union of Concerned Scientists has called the CPP a "climate game changer," given that about 40% of U.S. carbon dioxide emissions come from power plants.[9] The EPA and the National Highway Traffic Safety Authority under the Obama Administration also addressed another large greenhouse gas emitting sector: vehicles, which account for about 20% of U.S. carbon dioxide emissions.[10] Beginning in 2010, the EPA promulgated a series of regulations to increase the fuel economy of cars and trucks, saving trillions of dollars in fuel costs, reducing oil consumption by millions of barrels per day, and decreasing greenhouse gas emissions by billions of metric tons over the lifetime of the vehicles.[11]

"The Obama-era EPA undertook numerous significant rulemakings to regulate greenhouse gas emissions, following EPA's finding in 2009 that the current and projected concentrations of the six key greenhouse gases in the atmosphere threaten the public health and welfare of current and future generations."

In keeping with the Obama Administration's interest in combating climate change and reducing fossil fuel use, President Obama in 2015 blocked development of the Keystone XL pipeline system, which was intended to transport oil from Canada through the U.S., by approving the State Department's finding that the pipeline would not serve U.S. interests.[12] A year later, the U.S. Army Corps of Engineers announced that it would not grant an easement under Lake Oahe for the Dakota Access pipeline, which was intended to transport oil from the Bakken oil fields in North Dakota to Illinois, where it would connect to another pipeline for transport to terminals and refineries in the Gulf of Mexico; the agency called for a full Environmental Impact Statement to evaluate the current route and alternatives, temporarily halting the pipeline project.[13]

The United States also advanced climate action on the international level by helping to negotiate, and then

signing onto, the 2009 Copenhagen Accord[14] and 2015 Paris Agreement[15] at the United Nations Framework Convention on Climate Change (UNFCCC). In Copenhagen, developed and major developing countries agreed, in theory, to limit their emissions and to set targets for doing so.[16] In Paris, the parties to the UNFCCC drafted the 2015 Paris Agreement for achieving the goals of the Copenhagen Accord. The Paris Agreement reaffirms the UNFCCC goal of limiting global temperature increase to below 2 degrees Celsius and seeks to actively limit the increase to 1.5 degrees specifically, in addition to setting commitments regarding climate mitigation and adaptation.[17] Countries must submit plans to increase their emissions reductions by 2020 and every five years thereafter.[18]

2. The Clean Water Rule

The EPA tackled another complicated and controversial environmental issue in revising the Clean Water Act regulations through the Clean Water Rule, also known as the Waters of the United States (WOTUS) Rule. The regulation aims to clarify the jurisdictional scope of the Clean Water Act and to increase protections for waterbodies that are scientifically shown to have the greatest impact on downstream water quality. This goal is accomplished by protecting physical, measurable waters that are next to rivers, lakes, and tributaries—and by protecting water features like prairie potholes and western vernal pools in California, in addition to ditches that function like streams.[19]

3. New Legislation

President Obama signed the Frank R. Lautenberg Chemical Safety for the 21st Century Act of 2016, which amended the Toxic Substances Control Act. The new law requires EPA to evaluate chemicals that are already in use with clear and enforceable deadlines, require increased public transparency for chemical information, include a new safety standard based on risk to human health and the environment, and establish a consistent source of funding for EPA to fulfill its new responsibilities.[20] EPA has already announced the first 10 chemicals that will undergo risk evaluations, which according to Ryan Carra of Beveridge & Diamond, P.C., will likely establish a precedent for future evaluations and are therefore being watched by not only the manufacturers and users of the 10 chemicals but also the entire regulated community. Mr. Carra explains that "the new law significantly changes the way EPA will evaluate and regulate chemicals. The application of new legal language will create uncertainty at first, which typically leads people to call their lawyers." This was the first major update to an environmental statute in 20 years, and it passed in the House and Senate with bipartisan support—two remarkable achievements.[21]

B. New York State Landscape

Governor Cuomo has encountered his fair share of environmental challenges due to a sharp divide in public opinion over the Indian Point nuclear facility, the fate of high-volume hydraulic fracturing for natural gas drilling in New York's portion of the Marcellus Shale formation, and plans for oil and gas related transportation infrastructure. Despite some hurdles, New York has seen numerous environmental successes that will position the state as an energy and environmental leader in the coming years.

1. Clean Energy Initiatives

Like President Obama, Governor Cuomo has encouraged renewable energy development and the modernization of the energy distribution system, with the goal of reducing harmful emissions, combating climate change, and creating a more diverse and reliable energy supply.[22] The State's energy master plan is called Reforming the Energy Vision (REV), which comprises over 40 initiatives[23] and has three main goals to be achieved by 2030: a 40% reduction in greenhouse gas emissions from 1990 levels (jumping to an 80% reduction by 2050), generation of 50% of New York's electricity from renewable sources, and a 23% reduction in buildings' energy consumption from 2012 levels.[24]

One of the REV Renewable Energy initiatives is NY-Sun, which aims to bring affordable solar electric power to 150,000 new homes and businesses by 2020.[25] The solar market has grown about 800% from 2011 to 2016 in New York State, and we can expect it to keep growing thanks to the establishment of the Clean Energy Standard in 2016, which requires at least 50% of New York's electricity to derive from renewable sources by 2030.[26] Part of the Clean Energy Standard will also be met by Governor Cuomo's 2017 commitment to develop 2.4 gigawatts of energy from offshore wind by 2030.[27]

One of the REV Clean Energy Financing initiatives is the NY Green Bank, which is supported by a nearly $1 billion investment and works with the private sector to finance clean-energy projects in New York.[28] The NY Green Bank (and NY-Sun) are part of the Clean Energy Fund, which aims to provide incentives to facilitate the expansion and increased affordability of clean energy in New York, coordinate community demonstration projects and training to support clean energy development across the state, and collaborate with utilities to identify barriers to energy efficiency and clean energy development.[29]

One of the REV Energy Infrastructure Modernization initiatives is the Energy Highway Blueprint: a plan to upgrade and modernize New York's energy infrastructure, which showed its worth shortly after it was presented when Hurricane Sandy hit New York and its neighbors. The Blueprint calls for public and private investment of about $5.7 billion until the year 2022 in 13 key areas, including the development and implementation of contingency plans to prepare for potential large power plant retirements, the evaluation of offshore wind resources, the solicitation of renewable resources as part of New York's Renewable Portfolio Standard, and the funding of Smart Grid demonstration projects.[30]

2. Drinking Water

The nationwide concern about lead in drinking water has not passed New York by. A 2016 New York State law requires all school districts to test their potable water for lead contamination; to report results to parents, the New York Department of Health (DOH), and local government officials; and to implement a lead remediation plan if lead levels are detected at or above 15 parts per billion.[31] Sampling was to occur in all school districts by the end of 2016—and must occur again in 2020 and at least every five years thereafter.[32] DOH and the New York Department of Education released a report in January 2017 describing the initial results and issuing recommendations for short- and long-term measures to address lead contamination.[33] The vast majority of schools have complied; 85% of those located outside of New York City and 91% of those within New York City that reported results to DOH were below the EPA's actionable levels for lead in drinking water.[34]

New York's drinking water has also been under the microscope for contamination by perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS)—persistent, man-made chemicals that are found in fire-fighting foams, coating additives (such as Teflon), and cleaning products.[35] High PFOA levels discovered in the Hoosick Falls, New York public drinking water supply in 2015 kicked off a statewide effort by DOH and DEC to sample drinking water systems near facilities suspected to be frequent users of PFOA and PFOS.[36] The agencies collected 88 samples from 38 drinking water systems and found that "PFOA and/or PFOS was not detected in the majority of samples collected from the public water supplies—and the positive detections in potable drinking water were all well below the [EPA] health advisory level of 70 parts per trillion (ppt) for PFOA and PFOS combined."[37] For reference, PFOA measured at 400 ppt in the Hoosick Falls drinking water supply.[38] Governor Cuomo plans on increasing required testing of drinking water supplies and providing financial assistance to small communities, and he has signed the Clean Water Infrastructure Act of 2017 to invest $2 billion in critical water infrastructure across New York.[39] In addition, DEC finalized its regulations classifying PFOA and PFOS as hazardous substances, thereby requiring proper storage and limiting the release of PFOA and PFOS into the environment.[40]

3. Natural Resources Protection

Governor Cuomo has proposed a variety of initiatives related to and budgeted funding for conservation. For the past two years, the State has fully funded the Environmental Protection Fund, a $300 million investment used to restore habitats and historic sites, revitalize waterfronts, combat invasive species, purchase land for the State's Forest Preserve, and advance recycling programs.[41] Governor Cuomo has proposed the Empire Forest for the Future Initiative, which encourages sustainable forest management on privately owned land and provides grants to local governments and nonprofits to acquire and manage community forests.[42] Complementing these efforts is the proposed Hudson Valley Agricultural Enhancement Program, facilitating the permanent protection of more than 5,600 acres of food-producing farms in the region, and the Empire State Trail, linking the Hudson River Valley Greenway Trail and Erie Canalway Trail, with an expected completion date in 2020.[43]

III. Navigating Today's Environmental Law Job Market and Preparing for Tomorrow

Clearly, great environmental progress has been made on the national and state levels, especially in the areas of energy and climate change, as well as monitoring and regulation of chemicals. But how stable is this progress? The Trump administration has promised to roll back many of Obama's environmental accomplishments, to defund environmental programs, and to reform the way federal agencies promulgate regulations.[44] Further, Alex Leff of Sive Paget & Riesel, P.C. predicts that if Trump succeeds in lowering the tax rate, investors will be less inclined to use renewable energy tax credits to offset tax liability, thereby lowering the capital available for investment in renewable energy projects. While it will face administrative procedure hurdles in trying to undo final regulations and litigation for failing to enforce the law, the Administration does have options for revoking or delaying the enforcement of environmental protections. Congress can use the Congressional Review Act to review and override regulations finalized after May 30, 2016, and the U.S. Department of Justice can stop defending the EPA in numerous pending lawsuits challenging many regulations from the Obama years, such as the CPP and WOTUS Rule.[45]

Already, Trump has started the process for withdrawing the United States from the 2015 Paris Agreement and has issued executive orders asking the EPA to review the CPP and WOTUS Rule; agencies are reconsidering some of Obama's fuel efficiency standards and the Stream Protection Rule, which increased the restrictions on dumping mining waste into waterways; the State Department granted a construction permit for the Keystone XL pipeline; the Army approved the Dakota Access Pipeline; and the EPA has reversed course in now refusing to ban chlorpyrifos (a/k/a Lorsban), a commonly used pesticide with well-established risks to human health.[46] Furthermore, while Trump has signed a federal budget maintaining current funding levels through September 2017, his budget blueprint released in March 2017 proposed to cut funding for the EPA by 31%, to about $5.7 billion: its lowest level in 40 years.[47] To understand the scale of this proposed cut, consider the fact that 40 years ago, EPA was not even tasked with enforcing one of today's most consequential American environmental laws: the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

However, the Trump administration's actions and promises with respect to dismantling environmental pro-

tections create an opportunity for New York to step into the breach—and maybe an opportunity for New York environmental lawyers. Governor Cuomo and Attorney General Eric Schneiderman have made clear that they want New York to be a leader in the face of a federal government set on denial of climate change and decreased enforcement of environmental laws, with Attorney General Schneiderman stating, "if the Trump administration won't meet its legal obligation to ensure basic access to a clean, safe, and healthy environment, I won't hesitate to act to protect New Yorkers."[48] Indeed, Attorney General Schneiderman has already led coalitions of states in bringing legal challenges to the Trump administration's efforts to dismantle the CPP and WOTUS Rule.[49]

Many environmental lawyers interviewed for this article have echoed what the *New York Times* Editorial Board proclaimed: "State governments will serve as an important bulwark against any attempt by President-elect Donald Trump to roll back the progress the United States has made in addressing climate change."[50] Municipalities also have a large role to play in reducing emissions and furthering climate resiliency.[51] For example, New York City has adopted the same aggressive greenhouse gas reduction goals as the State (a 40% reduction from 1990 levels by 2030 and an 80% reduction by 2050)[52] and has developed OneNYC, a comprehensive plan for integrating sustainability goals with economic and racial justice, resiliency, and infrastructure development.[53] Corporations have recognized the trend toward government action on climate change at local to international levels and the strong consumer and shareholder demands for meaningful corporate sustainability programs.[54] Indeed, hundreds of corporations asked Trump to keep the United States in the Paris Agreement,[55] and although that pressure did not prevent Trump from following through on his campaign promise to withdraw, many corporations, states, municipalities, and educational institutions have reaffirmed their commitment to action.

An increase in renewable energy infrastructure development, financing, and purchasing in New York; evaluation of climate change impacts and mitigation measures as part of development projects; and emphasis on sustainability at the corporate level will eventually create jobs for environmental lawyers in New York.[56] According to Barry Kogut of Bond, Schoeneck & King, PLLC, those with experience in areas related to environmental law, such as land use and zoning, construction, real estate financing, and energy law—or those willing to gain such experience—will likely be nimble enough to take advantage of new opportunities. Howard Tollin of SterlingRisk Insurance notes that environmental insurance is also changing and growing to accommodate increasing environmental awareness (regarding mold, for example), more weather-related events, new environmental issues (such as biocontaminants like anthrax), and advances in science that allow for more definitive causation determinations.

Whether job growth comes from New York's robust clean energy programs or from traditional environmental law practices—or both—there is an increasing need for lawyers with a desire and ability to think creatively. Jeffrey Gracer of Sive Paget & Riesel, P.C. envisions New York's environmental lawyers as problem solvers: bringing to bear lawyers' analytical, communication, and advocacy skills to advise clients on how to achieve their increasingly complex short-term and long-term goals, especially in the face of climate change. New environmental lawyers and more seasoned practitioners interviewed for this article exhibited an appetite for work related to climate change (both mitigation and adaptation/resiliency) and clean energy. New and future environmental lawyers are particularly well-positioned to join this growing part of the discipline. Jeremy Kozin of Greenberg Traurig LLP notes that the retirement of environmental law's baby boomer generation, including some of environmental law's founders, will "create opportunities for younger practitioners to play an outsized role in the field." Those entering the field today have had climate change explicitly incorporated into their law school and likely undergraduate education, making them natural problem solvers in this realm, according to Sahana Rao of Sive Paget & Riesel, P.C. Says Surbhi Sarang, an environmental justice fellow at the New York Lawyers for the Public Interest: "Environmental law will need to be more creative and cross-cutting to shape our world into a just and sustainable place to live. Hopefully the field will become more about building new visionary solutions to broken systems than just responding to threats to the environment."

Nonetheless, as much as states and municipalities will take a leadership role in addressing climate change and promoting renewable energy—and as much as they may be left to pick up where federal enforcement leaves off during Trump's tenure—"the political will to enforce environmental laws may vary significantly across different states," notes Margaret Hsieh of the Natural Resources Defense Council. She cautions that "although it is encouraging to see states and municipalities increasingly taking active steps to safeguard human health and the environment, it is questionable how many core environmental problems can be adequately addressed in a piecemeal nature." Even if states want to lead, they may be short-staffed and underfunded. However, Rusty Pomeroy of Beveridge & Diamond, P.C. sees a silver lining for environmental lawyers: there will likely be an increased need for lawyers to understand and advise clients with multijurisdictional operations on potential conflicts among state environmental laws.

New York serves as an example of the various ways in which the environmental law job market may develop. Depending on whether Trump's campaign promises of easing restrictions on oil and gas development become a reality, there may be litigation and/or transactional work in New York related to increased infrastructure development and siting of transmission facilities for a bolstered

oil and gas sector. Michael Dulong of Hudson Riverkeeper has already seen a shift in focus from energy development in New York, such as mining and power plant siting, to energy transmission siting, such as natural gas and oil pipelines and associated infrastructure. Despite New York's investment in clean energy initiatives, the state is also a hub for the movement of oil and gas. There is an existing pipeline network, with plans in the works for two controversial pipelines: the Constitution Pipeline, which would carry natural gas from the Marcellus Shale formation in Pennsylvania to Schoharie County, and the Pilgrim Pipelines, which in one line would carry crude oil from the Bakken Shale formation in North Dakota and Canada brought by rail to Albany and transport it to New Jersey, and in the other line would carry refined products like kerosene north to Albany. Plans to construct crude oil heating facilities at the Port of Albany and expand vessel anchorage grounds in the Hudson River raise concerns that shipment of oil and gas through New York will only increase—and that heavy oil from the Canadian tar sands may be the next product to traverse this transportation network. While New York has some permitting authority for these facilities (DEC denied water permits for the Constitution Pipeline in late 2016 and is requiring an environmental impact statement for the proposed heating facilities at the Port of Albany), it is largely the federal government that regulates interstate pipelines, rail lines, and U.S. Coast Guard-operated anchorage grounds. These developments, especially if hastened and/or expanded under the Trump administration, may lead to increased work for New York environmental lawyers related to zoning, takings, water quality, air quality, and the like, according to Mr. Dulong.

Many environmental lawyers interviewed for this article expressed hope for the environmental law job market in New York in recognition of the potential for new opportunities related to clean energy and climate change mitigation and adaptation, on top of the "bread and butter" environmental legal practice that still exists in a state like New York, with an industrial past that survives in contamination problems today.

IV. Advice to New Environmental Lawyers

With environmental law becoming increasingly connected to other fields such as land use and zoning, energy, construction, project finance, etc., how are new environmental lawyers, or those hoping to become environmental lawyers, supposed to chart their path? Does it make sense to specialize to differentiate yourself from the competition, or generalize in order to take advantage of whatever opportunities may arise in the future?

Experienced environmental practitioners such as Eugene Leff, the former Deputy Commissioner of the DEC, advise new environmental lawyers to develop and refine basic skills such as writing, critical thinking, negotiation, and attention to detail. Maintaining a general curiosity about environmental law and trying to learn as much as possible will help new environmental lawyers spot issues and think creatively. Janice Dean of the New York State Energy Research & Development Authority finds that "it is critical to ground environmental legal experience in the core environmental statutes and to get experience handling bread-and-butter environmental issues." Kathy Robb of Sive Paget & Riesel, P.C. similarly advises new environmental lawyers to understand the theory and policy behind environmental laws to better understand where they came from and how to work with them on a day-to-day basis. For those entering the private sector, David Freeman believes that learning what clients care about will help environmental lawyers become better advocates regardless of specialty. In this vein, Jeffrey Gracer recommends that those new to the field see themselves as invaluable drivers of collaboration, bringing together different people to help solve clients' problems.

A solid foundation in environmental science and policy and hands-on experience through internships and law school clinics help prepare new environmental lawyers for success in the field, whatever that may look like in the future, according to Jeremy Kozin and Sahana Rao. Ms. Rao has found that an education based in science *and* policy "allows lawyers to build a vocabulary that comes in handy and flattens the learning curve later on." Margaret Hsieh reminds new lawyers to seek out mentors who can provide candid, constructive feedback and invest in their professional development. There are plenty of opportunities to get to know New York environmental lawyers and their areas of practice. As Cullen Howe, Legislative Counsel at the New York City Council, notes: "Your next job is as much determined by who you know as what you know, so networking and staying in touch with colleagues is essential."

Creativity, a passion for environmental protection, and good lawyering can lead to some very interesting careers. Lauren Kurtz is the Executive Director of the Climate Science Legal Defense Fund, which helps defend climate scientists who have been sued or threatened with legal action and which works to educate members of the scientific community about legal issues. Alex Leff, shortly after graduating law school and before joining Sive Paget, started his own law practice to facilitate renewable energy investment by providing legal advice to renewable energy project developers, lenders, and tax equity investors. Michael Mahoney, Chief Environmental Counsel at Pfizer Inc., has worked in the company's Environmental Health & Safety compliance and legal groups, which includes providing a broad range of legal services: regulatory advice to and monitoring of the manufacturing facilities, defense against enforcement actions, and counseling on purchase and sale transactions—as well as participating in sustainability and climate change initiatives that span the company and its suppliers. These attorneys, and many others throughout the state, are finding and creating cutting-edge and collaborative legal work that can serve as a model for thoughtful, hard-working new environmental lawyers.

V. Conclusion

The Trump administration's cutbacks to environmental policies and enforcement may make it harder to find an environmental law position with the federal government or in a law firm with a prevalent federal practice, unless that practice supports clients that want to advance litigation and regulatory efforts to roll back Obama-era policies. However, due to New York's progressive climate and energy policies and the strong growth in renewable energy nationwide, New York environmental lawyers will likely find more opportunities in the coming years to engage with complex environmental issues and to collaborate with lawyers from other fields and with non-lawyers to help clients and the government adapt to rapidly changing environmental realities. Experienced environmental lawyers interviewed for this article consistently remarked on the non-linear nature of their careers and how they were able to seize opportunities by remaining curious and always learning. It is worth remembering this wisdom because even though a comprehensive climate and energy policy has been elusive on the federal level, many municipalities, states, and corporations are moving forward. Environmental lawyers can play key roles in advancing this process—now and certainly in the future.

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Asbestos: The Miraculous but Deadly Mineral

By Walter Mugdan

Well over 4,000 years ago people had already discovered the extraordinary properties of a group of minerals we know as *asbestos*. Unlike other rocks, these minerals are made of countless tiny fibers. But like other rocks, these minerals and the fibers of which they are composed are essentially fireproof. Together these two characteristics explain why asbestos was for millennia thought of as an almost miraculous material, and why during the past two centuries it came to be used in an astonishing array of industrial, commercial and consumer products.[1]

Alas, this miracle material is a silent killer that has caused debilitating disease and death for hundreds of thousands—perhaps millions—worldwide.

Asbestos fibers are truly tiny. The fibers you can see with the naked eye are actually composed of many smaller fibers, which are themselves made up of even smaller fibers. These microscopic fibers range from 1/5 to 1/10,000 the width of a human hair. The fibers are long—typically 20 times as long as they are wide.

Size and shape matter. Because they are so tiny, the fibers become readily airborne and are easily inhaled into the lungs. And because they are shaped like needles, they easily become embedded in lung tissue, causing scarring and cellular damage, thought to be the physical mechanisms that cause the diseases.

It seems a cruel trick of nature that a substance so useful in so many ways should also be so dangerous.

The earliest evidence of use comes from Finland, where potters 4,500 years ago mixed asbestos fibers into clay to strengthen earthenware pottery. By the first millennium A.D., from Europe to China, cloth woven from asbestos fibers was being used for its fireproof qualities … or sometimes just to facilitate a neat parlor trick, as when the Persian king Khosrow II would clean his table napkin by throwing it into the fire.

Extensive utilization of the miracle fibers began in the second half of the 19th century with successful manufacture of asbestos yarn in Germany and Scotland. Soon dozens of other uses were invented: fire-retardant coatings for structural components, pipes and pipe insulation, furnace and fireplace brick and cement, electric wire insulation, flooring, roofing, exterior siding, plaster, drywall, joint compound, clothing irons…even children's crayons. By the middle of the 20th century asbestos products were ubiquitous—widely used in both commercial and residential construction as well as consumer products.

Yet the role of asbestos in causing disease had been identified as early as 1898. Lung diseases and early deaths had been noted in asbestos factories and mining towns. In 1900, at Charing Cross Hospital in London, the autopsy of a young man who had died of pulmonary fibrosis after working 14 years in an asbestos textile factory found asbestos fibers in his lungs. In 1902, Britain's Inspector of Factories, Adelaide Anderson, listed asbestos as a harmful industrial substance.

In 1924, the death of Nellie Kershaw, a young woman who had worked seven years in a factory spinning asbestos into yarn, led to the first diagnosis of asbestosis, one of two "signature" diseases associated with asbestos. The other is mesothelioma, a virulent form of cancer that affects the lining of the lungs and other organs; its association with asbestos was confirmed in the 1940s. We now know that hundreds of thousands have died from these two diseases.

The shipbuilding industry used asbestos extensively for fireproofing and insulation on boilers and steam fittings. The workers who applied the stuff were particularly vulnerable. In the United States alone an estimated 100,000 have died, or are terminally ill, from asbestos-related diseases, through exposure from shipbuilding. (This includes family members of workers who brought asbestos fibers home on their clothing, and residents who lived near the shipyards.)

It is estimated that some 10,000 people die each year in the U.S. from asbestos-related diseases. Asbestos workers who smoked are at significantly higher risk than those who did not.

It also became apparent over the decades that asbestos is most dangerous when in "friable" form, which means easily crumbled or pulverized. This makes sense: if asbestos-containing material can easily be crumbled (for example, by crushing between the fingers), then the fibers are likely to be liberated from the "matrix" in which they have been manufactured and become airborne and breathable. That's why asbestos in fluffy insulation is more dangerous than asbestos in a solid concrete matrix.

Despite the relatively early understanding of the terrible health effects of asbestos exposure, use of the material in myriad applications continued to increase. In the U.S. it reached its peak in 1973, with consumption exceeding 800,000 tons that year; worldwide, peak consumption was in 1977 with 4.8 million tons produced.

Since then, asbestos use has fallen significantly. The decline followed creation of the U.S. Environmental Pro-

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tection Agency in 1971. Among the new agency's early actions was a 1973 ban on spray-applied asbestos-containing material for fireproofing and insulating purposes. That was followed in 1975 by a ban on many forms of asbestos pipe insulation, and in 1978 by a ban on additional types of spray-applied surfacing materials.

EPA also regulated renovation and demolition activities that involved removal of asbestos-containing materials. And in 1977, the U.S. Consumer Product Safety Commission banned asbestos use in artificial fireplace embers and wall patching compounds.

In 1989, EPA finally banned asbestos in nearly all uses and products. However, this rule was challenged by the industry and overturned by the U.S. Court of Appeals. As a consequence, a large number of uses remain legal in the U.S., though the amount of asbestos in yearly production is greatly diminished. Continuing uses range from cement shingles, to disk brake pads and clutch facings, to specialized fireproof garments.

Though the U.S. led the way, bans are now broader elsewhere in the developed world, including the European Union, Australia, Hong Kong, Japan, and New Zealand. On the other hand, in places like India, China, Russia, and Brazil, there is continued extensive use of asbestos, primarily in asbestos cement-building products for roofing and siding. Though these products themselves are not friable, cutting and drilling them for installation liberates the asbestos fibers. Similarly, the fibers can be mobilized when pieces fall to the ground and get crushed.

In the U.S., numerous locations where asbestos was mined, manufactured, or disposed have been designated by EPA as Superfund sites. Among the most notorious is the small town of Libby, Montana, where the W.R. Grace company operated a vermiculite mine. Vermiculate is a mineral similar to mica, which is sometimes naturally contaminated by small amounts of asbestos. At its height, the Libby mine supplied 80% of the world's vermiculate, and it did contain asbestos. Not only did many Libby residents work at the mine, but the mine's byproducts were used throughout the town in buildings, backfill and landscaping. Nearly 10% of the population has died from asbestos-related diseases. The federal government criminally prosecuted the W.R. Grace company and seven officials for knowingly endangering the residents, though the defendants were ultimately acquitted. In the meantime, the company declared bankruptcy, and EPA has spent over $425 million on the cleanup of the town, including homes, yards and public areas.

The Grace company bankruptcy was due partially, but not entirely, to the Libby situation. Grace—like over 8,000 other companies involved in some way with asbestos—was named as a defendant in lawsuits by persons suffering from asbestos-related diseases.

The first lawsuits against asbestos manufacturers were brought in 1929 but the number of claims skyrocketed after 1982 when a retired boilermaker won a record award of $2.3 million in compensatory and $1.5 million in punitive damages. In the following decades nearly a million people have filed claims. In response, many of the defendants, like Grace, declared bankruptcy, starting in 1982 with the Johns-Manville Corporation—a Fortune-500 company and, at the time, the largest company ever to file bankruptcy. In due course, more than half the major asbestos manufacturers sought bankruptcy protection. The total costs of asbestos litigation in the U.S. are estimated to eventually reach $250-$275 billion. (Litigation has also occurred in other countries, including Ireland, Scotland, and England, but the awards have not been as large as in the U.S.)

Construction of the first of the twin towers of the ill-fated World Trade Center in New York City was under way when EPA's 1973 ban on spray-on asbestos coating went into effect. The first 40 floors had already been built with asbestos coating. On September 11, 2001, after the terrorist attacks, both towers collapsed. Among the many terrible consequences of the attacks, an estimated 1,000 tons of asbestos was in the huge dust cloud that billowed through lower Manhattan, and in the pile of debris left where the towers had stood. EPA mounted an intensive cleanup throughout the surrounding area, initially focused on outside areas but ultimately including indoor spaces.

Many firefighters and other emergency responders have suffered serious health effects, but these are believed to be primarily associated with exposure while working directly on the debris pile. They were exposed not only to asbestos, but to a mixture of dangerous fumes from the fires that burned for weeks deep within the pile.

To date, there is no evidence that people who lived or worked near the World Trade Center site in the months and years after 9-11 were also harmed by asbestos or other substances. But it is sobering to reflect that the time between harmful exposure to asbestos and the appearance of disease is typically between 10 and 20 years, and can be as long as 40 years. And the U.S. Occupational Safety and Health Administration states: "[T]here is no 'safe' level of asbestos exposure…. Asbestos exposures as short in duration as a few days have caused mesothelioma in humans. Every occupational exposure to asbestos can cause injury or disease; every occupational exposure to asbestos contributes to the risk of getting an asbestos related disease."

Endnote

1. Unlike scholarly articles, this article does not include citations. If readers are interested in pursuing additional information, Wikipedia is a good place to start, as the author has done. At the bottom of the Wikipedia entry are links to many other sources of information about asbestos, a number of which the author also consulted when preparing this article.

Section Forum and Luncheon

May 3, 2017

NYSBA | Albany

From left to right, Robert J. Phaneuf, Jack Nasca, and Robert Cozzy, from the New York State Department of Environmental Conservation in Albany, received awards in recognition of their dedication and significant contributions to the environmental field.

Phaneuf, Nasca, Cozzy Receive Section Awards

The Environmental & Energy Law Section presented awards to longtime New York State Department of Environmental Employees (NYSDEC) Robert J. Phaneuf, Jack Nasca, and Robert Cozzy at the Section's May forum and luncheon event at the Bar Center in Albany.

Phaneuf was recognized for four decades of service at the NYSDEC, particularly in the formulation and implementation of statewide solid and hazardous waste management policy and regulation, his leadership in modernizing the state's solid waste regulations, his commitment in advancing sound science in the state's solid and hazardous waste requirements, his involvement in improving the state's waste infrastructure, his active outreach to the regulated community on solid waste management matters, and his participation and leadership in solid and hazardous waste associations.

The Section recognized Nasca for 36 years of service, as well as his work in implementing the New York State Environmental Quality Review Act to ensure that environmental concerns are addressed in state and local projects, his active outreach providing instruction and guidance to the regulated community, local governments, members of the public and the Section on the scope and requirements of environmental review, and his leadership in developing standards that are practical, achievable and fully protective of the state's environment.

Cozzy was recognized for 30 years of service, particularly in the development, coordination and implementation of New York State Superfund and brownfield cleanup programs, his involvement with the regulated community and municipal governments in restoring contaminated properties to productive use, and his activities with environmental organizations on brownfields issues and initiatives.

Award recipients Robert J. Phaneuf, Jack Nasca, and Robert Cozzy, from the New York State Department of Environmental Conservation in Albany, are joined by colleagues following the presentation of their awards.

Whatever the Political Climate May Be, Corporate America Is Stepping Up to the Challenge of Climate Change

By J. Kevin Healy and Brian M. Jacobson

The Paris Agreement on climate change has been hailed as a "major leap for mankind."[1] However, real progress under this landmark accord will require an immense effort to cut worldwide greenhouse gas (GHG) emissions over the next few decades. This article first discusses whether the legal signals needed to achieve the deep emission reductions required to achieve the goals of the Paris Agreement are being put into place by the federal government. Because that question must be answered resoundingly in the negative, the article also addresses the practical and legal considerations that are leading U.S. business leaders to launch their own efforts to lower GHG emissions. As discussed herein, numerous major companies are pursuing such initiatives vigorously, and some have been doing so for decades. However, voluntary corporate actions will not come close to reducing emissions to the extent that good science advises is required to keep climate change in check. In light of the hard reality that the federal government is not likely to put into place the legal structures needed for sustainable, long-term carbon reduction anytime soon, corporations must protect themselves by understanding and preparing for climate change risks. At the same time, they must advocate for government to put partisan politics aside and address the problem with the honesty and integrity it demands.

Background

The drumbeat from the world's climate scientists has been incessant over the last several decades, alerting society to the fact that profound changes are occurring to our climate, and that without prompt action to reduce substantially the emission of GHGs from human activities such changes will result in significant long-term environmental and the socio-economic impacts.[2] Irrefutable evidence is confirming the accuracy of these warnings—in the form of prolonged droughts, associated agricultural production deficits and social unrest, extraordinary heat waves and storm events, wildfires, a worldwide retreat of glaciers and arctic ice cover, range shifts of plants, animals and insects, ocean acidification, and unmistakable sea level rise.[3]

The effects of climate change are predicted to ramp up sharply over the course of the century under a "business as usual scenario," with effects so profound as to undermine the social and economic foundations of modern society.[4] For example, credible reports predict that extended droughts and the inundation of low-lying coastal areas around the world will force "environmental refugees" to migrate in numbers that are unprecedented in human history.[5] A preview of the strain that such climate-induced migration would place on the social fabric of modern society is provided by the problems now wrenching Europe from the influx of a tiny fraction of the numbers of people requiring resettlement if climate change spins out of control.[6] It is for these reasons that the 2016 report of the World Economic Forum identifies the "failure of climate change mitigation and adaptation" to be the top risk facing society—ahead of weapons of mass destruction, terrorism and the increasing scarcity of potable water.[7]

But all is not bleak on climate change. Remarkable progress has been made by the scientific community over the last few decades to refine climate science, and that progress has enabled policy makers to establish a specific target for the global effort needed to keep the effects of climate change within a range that avoids widespread societal destabilization. That target—the centerpiece of the Paris Agreement—is aimed at " [h]olding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels,

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recognizing that this would significantly reduce the risks and impacts of climate change."[8] Thus, the good work of scientists and policy leaders has transformed the issue of climate change from some inchoate threat into a problem that can be tackled by reducing world-wide GHG emissions to meet a specific target.

Unfortunately, achieving those reductions will be a very heavy lift. According to a report of the White House Climate Action Project, "[T]o, have a good chance (not a guarantee) of avoiding temperatures above [2°C], atmospheric concentrations of carbon dioxide would need to peak below about 400 to 450 ppm and stabilize in the long-term at around today's levels.... In order to stabilize CO2 concentrations at about 450 ppm, global emissions would have to decline by about 60 percent by 2050. Industrialized countries' greenhouse gas emissions would have to decline by about 80 percent by 2050."[9] The "Intended Nationally Determined Contributions" that are the building blocks for the Paris Agreement will not achieve emission reductions at these steep levels, so the parties to that agreement view the commitments as a good beginning, to be adjusted over time.

The U.S. Response to Climate Change from a Legal Perspective

The Anglo-American common law system has evolved over the course of centuries to create the ground rules for an orderly society. As the economy has become more complex so has our legal system, which now consists of a matrix of common law and the statutes, rules, and regulations needed to address arcane matters like securities regulation, tax, and environmental controls.

This combination of judicially created common law, supplemented (and to a material extent supplanted) by statutes and administrative regulation, generally has worked well to provide the codes of behavior needed for predictability in business affairs and in dealings with governmental authorities for more than a century. As new problems have emerged, the courts, legislatures, and governmental agencies have been sufficiently nimble to make the adjustments necessary to keep society—and the economy—generally on track. The U.S. legal system was put to the test by the Great Depression, a time of significant social and economic upheaval. Responding to that catastrophe, the government mounted a vigorous effort to ease the hardship spawned by the economic collapse, while simultaneously addressing its root causes.[10] While the effectiveness of the New Deal in addressing the Great Depression is open to debate, there can be no dispute that the government—and the law—stepped up to the occasion.

The same cannot be said of the climate crisis. Notwithstanding the alarm being sounded by the scientific community, President Trump has announced his intention to withdraw from the Paris Agreement,[11] and the U.S. Environmetnal Protection Agency (EPA) has initiated a rulemaking process to rescind the Clean Power Plan, the regulatory program put into place by the previous administration to achieve the commitments that had been amde by the United States in the accord.[12] Moreover, the Congressional response to climate change continues to be a toxic mix of partisan bickering, denial, and obfuscation. Thus, instead of a comprehensive and rational federal program, we are left with states, localities and regional coalitions devising a patchwork of initiatives to maintain some progress toward addressing the issue.

Unfortunately, the fact that the federal government is unwilling to face up to this impending crisis does not make it go away. Science is warning that time is of the essence and that unless steps are taken to curtail carbon emissions sharply in the next several years—and ultimately to virtually decarbonize the economy—the damage done will be both catastrophic and irreversible.[13]

The Role of Business in Addressing Climate Change

Corporate America did not champion the New Deal reforms. Rather, they were enacted by the federal government in response to a national emergency that many believed to have been caused in large measure by irresponsible business practices.[14] As a result, the business sector was the unwilling target of many of the legislative reforms growing out of the Great Depression. The situation is starkly different with climate change—a problem that is not caused primarily by the activities of the business sector, but by the whole panoply of post-industrial human activities and the emissions generated by those activities from power plants, factories, agricultural facilities, residential, commercial and institutional buildings, and all sorts of mobile sources.[15] Nevertheless, the business sector is in a position to play an outsized role in solving the problem due to the concentrated nature of its emission sources, as well as its ability to tap into technological expertise and capital. In fact, a recent report issued by the Climate Disclosure Project (CDP) and the "We Mean Business" collaborative indicates that by 2030 actions taken by business could cut greenhouse gas emissions by 3.2 billion tons per year, representing 60 percent of the reductions pledged in the Paris Agreement.[16]

But corporate leaders face a conundrum. On the one hand they have no regulatory obligation to expend company resources to address the problem of climate change with the vigor that science demands. On the other hand, they have access to technical experts who can provide them with the cold facts on climate change, undistorted by any political agenda. With that information they can recognize the risks that climate change poses, not only to their own operations, but to the overall stability needed for the economy to operate. Thus, corporate directors and managers are focusing on how they should respond to the issue in light of the fiduciary obligations they owe to their companies.

Climate Change and Fundamental Principles of Corporate Governance

Corporate directors and officers have the duty to provide "good and prudent management" to the corporations they serve,[17] and they must discharge those duties with the care that an ordinarily prudent person in a like position would bring to bear under similar circumstances.[18] Directors and officers are bound by both a duty of loyalty and a duty of care, requiring that they act in the best interests of the corporations they serve. Accordingly, an argument could be made that, facing the specter of climate-induced chaos, corporate leaders could risk liability if they fail to prepare their companies for a changing world, while dramatically reducing GHG emissions from their operations. But that is not the case.

The courts—mindful of the chilling effect that ordinary negligence principles would have on the willingness of competent managers to serve in leadership positions—have established the "Business Judgment Rule" to shield corporate leaders from liability for well-informed, good faith decisions.[19] The Business Judgment Rule creates a "presumption that in making a business decision the directors of a corporation acted on an informed basis, in good faith and in the honest belief that the action taken was in the best interests of the company."[20] "[It] exists to protect and promote the full and free exercise of the managerial power."[21] In addressing an issue of officers' or directors' liability the substance of a particular decision is not at issue, but rather whether "the process employed was either rational or employed in a good faith effort to advance corporate interests."[22] Nonetheless, to enjoy the protection of the Business Judgment Rule, corporate leaders must "have informed themselves 'prior to making a business decision, of all material information reasonably available to them.'"[23] Under the Business Judgment Rule this requirement too is deferential, with a presumption that they have done so.

The presumption of the Business Judgment Rule may be overcome by a showing that the officer or director did not act in good faith or was grossly negligent in failing to take into account readily available material information.[24] Thus, a corporate board that considers the problem of climate change and makes an informed determination to forego any program to reduce GHG emissions in advance of any regulatory requirement likely would be shielded from liability for that determination by the Business Judgment Rule.

The Business Judgment Rule, however, applies to decisions made by a board. It does not apply to oversight duties in the absence of a decision. A failure to act in the face of material concerns may also, potentially, give rise to director liability.[25] Nonetheless, even with potential liability for ignoring red flags, a failure to act in the face of an indefinite business risk such as climate change is unlikely to rise to a level triggering liability.[26]

On the other side of the coin, the Business Judgment Rule also would shield directors and managers from liability for making well-informed decisions to take aggressive action to mitigate and adapt to climate-change—even where those decisions sacrifice some short-term profits. This conclusion is not without controversy, due to the conventional wisdom that corporations have a continuing, overriding duty to maximize profits and enhance shareholder value. The notion of "shareholder primacy" often induces corporate leaders to keep a single-minded focus on quarterly profits, notwithstanding any long-term problems that may be looming. If this view were to control the issue, corporate leaders would be hard-pressed to expend meaningful resources on climate-change related activities not required by law or regulation, because by doing so they would be expending resources—and perhaps forgoing near-term profits—to address a problem not yet having a material effect on earnings.

"The presumption of the Business Judgment Rule may be overcome by a showing that the officer or director did not act in good faith or was grossly negligent in failing to take into account readily available material information."

However, the profit maximization theory, as widely accepted as it may be, does not necessarily reflect the law. Although the courts frequently pay lip service to shareholder primacy they have not actually held corporate officials liable for failing to maximize short-term profits.[27] Thus, the protection afforded by the Business Judgment Rule—and its statutory analogues in many states—allow corporate leaders the flexibility to pursue well-informed climate change adaptation and mitigation initiatives, and to expend corporate resources in doing so.[28]

Of course, nothing would stop an aggrieved shareholder from asserting a claim that the expenditure of funds in response to climate change constitutes "waste" of corporate resources, but such a claim would be unlikely to succeed. A claim of waste faces a high bar, requiring a showing "that the board `irrationally squandered' corporate assets—for example where the challenged transaction served no corporate purpose or where the corporation received no consideration at all."[29] Such a showing is unlikely to result from a corporate response to climate change. Not only is the standard difficult for any plaintiff

to meet generally, but a response to climate change, when well supported by a reasoned and thoughtful analysis, can be seen as serving a corporate purpose. Since maximizing short-term profit is not the only responsibility of directors and officers, a board should not refrain from responding to the strategic threat of climate change out of fear of liability from an allegation based on waste.

This is particularly so because even in the absence of governmental mandates, strong business-related inducements justify aggressive climate action by corporate leaders. Investor coalitions representing many trillions of dollars in assets have launched campaigns to induce responsible climate action by the corporations they finance.[30] To give one example, the group Ceres has organized the Investor Network on Climate Risk (INCR), which consists of more than 120 institutional investors holding more than $14 trillion in assets.[31] Among other things, INCR has filed hundreds of shareholder resolutions on climate change over the last several years, and negotiated withdrawal agreements in which the target companies have committed to disclose and reduce GHG emissions, as well as implement energy efficiency and renewable energy programs.[32]

Similarly, an entity called the Climate Disclosure Project (CDP) is collecting annual climate-related data on behalf of over 800 member investors with more than $100 trillion in assets.[33] Major banks also are looking increasingly into the climate policies of their clients in making investment and loan decisions.[34] Responding to pressures from the financial sector, more than 5,500 companies voluntarily reported on their mitigation and adaptation efforts to CDP in 2015.[35] Moreover, other climate change/sustainability disclosure regimes have cropped up around the world. Most notably, the Global Reporting Initiative (GRI) provides businesses, governmental and other entities with a framework for reporting on their climate change and sustainability programs.[36] That reporting platform is used by more than 3,000 companies worldwide. CDP and GRI have recently aligned their reporting regimes where the information requested overlaps.

The risks climate change pose to the wellbeing of the global economy is underscored by the fact that the Financial Stability Board (FSB)—an international body created by the G20 to safeguard the stability of the world's financial system—has organized a task force chaired by Michael Bloomberg to develop uniform guidelines for the disclosure of climate-change related financial risks in order to "facilitate informed investment, credit and insurance underwriting decisions, and to understand the financial system's exposure to such risks."[37] Last year the task force issued two reports: a "Phase 1 Report" (finding current climate-related disclosure regimes to be "fragmented and incomplete," and setting forth fundamental disclosure principles);[38] and a final report, which sets out a detailed framework for the disclosure of risks and opportunities related to climate change.[39] Additional climate disclosure guidance has been issued by other organizations.[40]

The decision on whether to disclose climate-related information is not one that is purely voluntary for some publicly traded corporations. In 2010, the SEC issued guidance advising that climate change risks should be disclosed in filings under the securities laws for publicly traded companies, to the extent such risks are "material."[41] The guidance identified increasing state and local regulation and the prospect of federal action as potentially having "a significant effect on operating and financial decisions" of companies.[42] SEC further noted that even those not directly regulated could be indirectly impacted financially as their suppliers are affected by the "significant physical effects of climate change that have the potential to have a material effect on a registrant's business and operations."[43]

More specifically, the guidance identifies Item 101, Item 103, Item 503(c), and Item 303 of Regulation S-K as pertinent to potential disclosure obligations. Item 101 includes an express requirement to disclose costs of complying with environmental laws.[44] Item 103 identifies pending legal proceedings, which would include proceedings pursuant to environmental laws and regulations.[45] Item 503(c) is an identification of risk factors that make investing in the company speculative or risky.[46] Item 303, management's discussion and analysis ("MD&A"), is particularly pertinent. SEC's guidance states that "Item 303 requires registrants to assess whether any enacted climate change legislation or regulation is reasonably likely to have a material effect on the registrant's financial condition or results of operation."[47] While an obligation to disclose material risks does not mandate a particular course of action, it does place a spotlight on the impacts of climate change on a corporation.

Thus, large corporations are increasingly disclosing climate-related risks, and are doing so in accordance with SEC guidance and non-governmental protocols. Since good business practice precludes the disclosure of risks without a simultaneous discussion of solutions, those corporations are taking steps to mitigate and adapt to climate change, even in the absence of a governmental mandate to do so.

Business Has Taken a Leading Role in Addressing Climate Change

Climate action is not new to corporate America. For more than two decades some leading corporations including Johnson & Johnson, Walmart, Pfizer, and GE have been diligent in reducing their GHG emissions, and preparing their facilities and operations for the effects of climate change. In 2007 a group of the country's largest companies joined together with environmental groups to form the United States Climate Action Partnership (USCAP), and urged Congress to enact "[m]andatory approaches to reduce greenhouse gas emissions from the

major emitting sectors" including flexible measures such as "cap-and-trade; tax reform . . . or other appropriate policy tools" to "establish a price signal for carbon."[48] When this "call to action" was rejected by the failure of the 2009 Waxman-Markey climate change bill to even see a Senate vote, the USCAP group went dormant.

Nevertheless, corporate action on climate change has increased steadily as predictions from climate scientists continue to darken. CDP reports that almost 90 percent of reporting companies had activities in place in 2015 to lower their carbon footprints, compared to less than half in 2010.[49] Likewise, Ceres reports that 60 percent of the nation's top 100 companies had set GHG emission reduction targets, renewable energy commitments, or both, as of 2013.[50] Increasingly, the targets that are being set are not haphazard, but are being guided by sound economic and environmental principles. For example, almost 200 companies worldwide have made a commitment to adopt "science based targets" to achieve reductions at a rate "consistent with the pace recommended by climate scientists to limit the worst impacts of climate change," and to seek to achieve those targets over the long term.[51] An initiative by CDP, the UN Global Compact, the World Resources Institute (WRI), and WWF provides guidance on how to set such goals.[52]

Moreover, companies are beginning to share information on their efforts to reduce GHG emissions. A framework for such collaboration has been created by the Low Carbon Technology Partnerships initiative (LCTPi) of the World Business Council for Sustainable Development and the We Mean Business collaborative. More than 80 companies have signed on to this "platform for private and public stakeholders to discuss solutions to accelerate low-carbon technology development, and scale up the deployment of business solutions, to a level and speed that are consistent with limiting global warming to below 2°C."[53]

Thus, the corporate record on climate action is considerably better than the one established thus far by the federal government. Indeed, voluntary GHG reductions realized by the business sector could be characterized as impressive if they had come close to putting the U.S. on track to achieve the reductions the scientific community is calling for to avoid catastrophic damage. Unfortunately, that is far from the case: as things now stand there is little prospect for achieving the objective set by the Paris Agreement. In a recent report BP indicated that it projects oil and gas to supply approximately 54 percent of the world's energy needs as of 2035;[54] ExxonMobil is even more bullish, predicting the oil and gas share of the global energy mix will be a whopping 60 percent in 2040.[55] Such predictions of fossil fuel use hardly square with meeting the "well below 2 degrees" goal.

The Path Forward for Corporate America

As the above discussion makes clear, the law affords corporate leaders wide latitude in setting the course on issues of strategic planning such as climate change. However, such discretion is not without limit and may not be so broad as to allow an impending environmental disaster on the scale posed by climate change to be ignored. Whether this issue requires C-level attention turns on the facts and circumstances particular to each corporation.

We have come to the point where any company should, at the very least, assess preliminarily whether its facilities, operations, or business model face risks posed by the changing climate. Such a preliminary assessment should account not only for the direct, but also the indirect physical and regulatory risks that a company may face in the coming years. Potential physical risks range from those that could be immediate and catastrophic, such as the potential for coastal facilities to be inundated by ocean surges associated with more powerful storms. They also could emerge gradually, as agricultural conditions affect raw material supplies or droughts curtail a company's access to potable water. At the same time, evolving regulations may increase fuel prices or require the adoption of emissions control measures that increase the cost of operations. For some corporations, the risks posed by climate change either now are, or soon will be, sufficiently material to require disclosure under the securities laws. For others, they may simply merit attention under principles of prudent corporate management—and plain common sense.

Where the threshold question of whether more detailed climate planning is called for is answered affirmatively, a considerably more complex assessment—often with the assistance of qualified financial, technical, and legal advisors—should ensue.[56] While such plans would differ from one company to another, some elements that would commonly be included are addressed below. In general, companies should address the risks they will face internally as a result of climate change and then turn outward to drive governmental action in a meaningful way.

Emissions Quantification

As climate change begins to take hold, increasingly stringent GHG emission reduction regulations—or some other mechanism placing a "price on carbon"—are likely to be put into place in jurisdictions around the globe. Accordingly, as a company with significant GHG emissions approaches the task of climate planning, it should consider those emissions as a liability, and any reduction in such emissions as an asset. It should understand its emissions profile, and create a plan for how future reductions could be most efficiently accomplished. Moreover, a system should be put into place for the quantification, documentation, and recording of any permanent emissions reduction that could qualify for credit in an existing or future regulatory regime. The Climate Registry provides a good protocol and platform for such quantification and registration.

Energy Efficiency/Distributed Energy

Since a substantial portion of GHG emissions is caused by the burning of fossil fuel for energy, climate regulations that may eventually come to pass are likely to raise the cost of energy. Thus, companies would be well served by comprehensive energy efficiency programs that reduce the amount of fuel and power needed for operations. Initiatives could be accomplished in phases, with those projects providing the most immediate payback being implemented in the first phase, and others proceeding thereafter. Planning should include the consideration of distributed energy sources where appropriate, to provide the company with a more resilient power supply in the face of coming storms.

Asset and Resource Security

Companies with facilities and infrastructure in low-lying coastal areas would be well advised to work with engineers to "harden" those assets to withstand the flooding associated with unusually severe coastal storms. Experts should be consulted to determine whether such facilities are sufficiently insured against storm-related damage, to the extent such insurance is economically available. Assessment of risks posed to other company assets from heat waves, drought, blight, rising sea levels, thawing permafrost, ocean acidification, or disease vectors might also be performed. Likewise, experts might assist the company in examining risks posed to its materials supply chain and developing strategies (such as arrangements with geographically diverse suppliers) that may help mitigate climate-related disruptions.

Due Diligence

Environmental due diligence has become a commonplace aspect of corporate transactions. However, to date such investigations have focused primarily on potential risks and liabilities (such as those posed by hazardous wastes that may have been generated or disposed of by the target company or its predecessors) rather than those associated with climate change. But 21st century environmental concerns will be dominated increasingly by climate change, and the scope of environmental due diligence should be expanded accordingly. All of the topics relevant to climate planning—such as facility integrity, operational resiliency, fuel costs, emissions-related liabilities, supply chain risks, and business model concerns—should be incorporated into the scope of the investigation.

Regulatory Involvement

Notwithstanding the current political situation on the federal level in the U.S., companies should anticipate that the regulatory environment with respect to climate change will be exceedingly dynamic. Accordingly, they should keep a watchful eye on legal developments on the topic in each of the jurisdictions where they operate. Those companies that may be affected materially by impending regulations should consider enrolling as members in trade or other groups focused on climate change, not only to gain access to timely information but also to have a seat at the table in shaping climate regulations as they evolve.

Potential Opportunities

As a company considers the effect that climate change will have on its business, it should be alert to opportunities as well as challenges. One obvious example is the opportunity to realize operational cost savings through improved energy efficiency, which often can be realized with the assistance of tax credits and other government incentives. Reputational, marketing, and new business opportunities often can result from strategic climate planning, as illustrated by the successes of companies like GE, IKEA, and Unilever.

Conclusion

Modern business requires a level of predictability in order to prosper. Scientists worldwide are warning that the orderly society that has nurtured the modern economy over the last century is at risk of being upended by climate change, and that time is running short to avoid severe economic and social disruption. In the face of inaction by the federal government, the task is falling to business and responsible leaders in other sectors to grapple with climate change. Hundreds of corporations are taking up this challenge, and more can be expected to do so as evidence of the gravity of the problem continues to mount.

But there is a limit to how far corporate leaders will go with voluntary GHG emission reductions, because they will not be willing to put their companies at a significant competitive disadvantage through individual climate change mitigation efforts. Thus, it is foolhardy to believe that the deep carbon reductions scientists believe are needed over the coming decades can be achieved without governmental intervention. It can only be hoped that with the good work of corporate America—and other sectors of society—over the next few years the federal government will come to its senses and put into place a well-considered mix of mandates and incentives to achieve an orderly transition to a sustainable economy. In the meantime, corporations that understand the risk and take steps to grapple with it can seek to protect themselves, claim new opportunities, and drive the ultimate statutory and regulatory schemes that will inevitably arise, sooner or later.

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5. *See* http://www.unhcr.org/en-us/climate-change-and-disasters.html. *See also* Oliver Milman, *Pacific nations beg for help for islanders when calamity' of climate change hits,* The Guardian, Oct. 13, 2015, *available at* https://www.theguardian.com/environment/2015/oct/14/pacific-nations-beg-for-help-for-islanders-when-calamity-of-climate-change-hits (relaying Pacific island nations' request for a UN body "to coordinate population movement caused by climate change").
6. Note that monsoon rains in July, 2016 displaced approximately 1.2 million people in India. Associated Press, *Deadly Floods in India Force 1.2 Million People From Homes,* The New York Times, July 26, 2016.
7. World Economic Forum, The Global Risks Report 2016, p. 6, *available at* http://www3.weforum.org/docs/Media/TheGlobalRisksReport2016.pdf.
8. Paris Agreement, Dec. 12, 2015, art. 2, § 1(a).
9. Susan Joy Hassol, *Questions and Answers: Emissions Reductions Needed to Stabilize Climate,* Presidential Climate Action Project, *available at* https://www.climatecommunication.org/wp-content/uploads/2011 /08/presidentialaction.pdf.
10. A wide array of programs was put into place under the New Deal to get people back to work under the auspices of the Civilian Works Administration, Civilian Conservation Corps, and Public Works Administration, and to provide a safety net for the elderly with Social Security. At the same time, a suite of preventative measures was enacted to ensure bank deposits against insolvency through the Federal Deposit Insurance Corporation; to require the disclosure of material information in securities sales and create the Securities Exchange Commission ("SEC") to enforce those requirements.
11. https://www.whitehouse.gov/the-press-office/2017/06/01/statement-president-trump-paris-climate-accord.
12. 82 FR 48035 (October 16, 2017).
13. The World Bank, Turn Down the Heat: Why A 4°C Warmer World Must Be Avoided, Nov. 18, 2012.
14. Reflecting the mood of the time, I. Maurice Wormser, a prominent legal scholar and former dean of Fordham Law School, likened the modern corporation to a "Frankenstein—an artificially created and vitalized monster which became the terror of all living things," and called for a series of reforms needed to bring that "monster" to heel. I. Maurice Wormser, Frankenstein, Incorporated (McGraw-Hill Book Company, 1931).
15. U.S. Environmental Protection Agency, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2014 (EPA 430-R-16-002 Apr. 15, 2016).
16. We Mean Business & CDP, The Business End of Climate Change: How Bold Corporate Action Supported By Smart Policy Can Keep Temperature Rise Below 2°C (2016).
17. *See Alpert v. 28 Williams St. Corp.,* 63 N.Y.2d 557, 569 (N.Y. 1984).
18. Model Bus. Corp. Act, §§ 8.30, 8.42; N.Y. C.L.S. Bus. Corp. § 717.
19. Many states have enacted additional statutory safeguards exculpating directors from liability. Contractual indemnification and insurance may also be available.
20. *Aronson v. Lewis,* 473 A.2d 805, 812 (Del. 1984).
21. *Smith v. Van Gorkom,* 488 A.2d 858, 872 (Del. 1985).
22. *In re Caremark Int'l Inc. Derivative Litig.,* 698 A.2d 959, 967 (Del. Ch. 1996).
23. *Van Gorkom,* 488 A.2d at 872 (quoting *Aronson,* 473 A.2d at 812).
24. *See Van Gorkom,* 488 A.2d at 873.
25. Thus, the Business Judgment Rule was developed to protect actions that constitute an affirmative exercise of a business "judgment." Some courts have declined to extend such protections to a Board's *failure* to act. In *re Caremark,* 698 A.2d at 967, 970. ([L] iability to the corporation for a loss may be said to arise from an *unconsidered failure of the board to act* in circumstances in which due attention would, arguably, have prevented the loss." (emphasis in original)).
26. Wallace, Perry E., *Climate Change, Corporate Strategy, and Corporate Law Duties,* 44 Wake Forest L. Rev. 757, 763 (2009) ("First, and especially pertinent to climate-change issues, the court took a dim view of 'business risk' as a suitable triggering context for fiduciary responsibility.").
27. **L**ynn A. Stout, The Shareholder Value Myth (Cornell Law Faculty Publications, Apr. 19, 2013).
28. *Id.* at 4 n.18 ("In other words, so long as a public company wants to stay public, directors have no legal obligation to maximize either profits or share value.").
29. *White v. Panic,* 783 A.2d 543, 554 (Del. 2001) (quoting *Brehm v. Eisner,* 746 A.2d 244, 263 (Del. 2000)).
30. For example, Ceres—a non-profit organization that self identifies as "advocating for sustainability leadership"—counts more than 1,200 companies as signatories to its Climate Declaration, "a call to action from leading American businesses, urging public, policymakers, and business leaders to seize the economic opportunity in tackling climate change." *See* http://Ceres.org/declaration/resources/climate-declaration-kit-pdf. *See also* INVESTOR PLATFORM FOR CLIMATE ACTIONS, http://investorsonclimatechange.org/initiatives/ (identifying numerous investor initiatives).
31. INCR counts among its members unions, academic institutions, asset management firms, asset managers, pension funds, and private equity funds. A full list is available at https://www. Ceres.org/investor-network/incr/member-directory.
32. CERES maintains a list of shareholder resolutions filed by INCR members, which is available at https://www.Ceres.org/investor-network/resolutions.
33. More information about CDP is available at https://www.cdp.net/en. CDP recently published a report in response to the Paris Agreement, in which it notes, "Measurement and transparency are where meaningful climate action starts, and as governments work to implement the Paris Agreement, CDP will be shining a spotlight on progress and driving a race to net-zero emissions." *Out of the Starting Blocks: Tracking Progress on Corporate Climate Action,* p. 4, CDP, Oct. 2016.
34. For example, in 2008, Citi, JP Morgan Chase and Morgan Stanley released the "Carbon Principles", whereby they pledged to consider greenhouse gas emissions, as well as the potential effect of current and future climate-related regulatory policies when evaluating the financing of fossil fuel generation in the United States. After their release, three more banks signed on—Wells Fargo, Bank of America and Credit Suisse.
35. CDP, *CDP Climate Change Report 2015: The Mainstreaming of Low-Carbon on Wall Street,* p. 4, Nov. 2015, *available at* https://b8f65cb373131b7b15feb-c70d8ead6ced550b4d987d7c03fcddl d.ssl.cf3. rackcdn.com/cms /reports/documents/000/000/ 783/original/CDP-USA-climate-change-report-2015.pdf?1471960506.
36. GRI Standards exist for reporting economic, social, and environmental impacts, with the environmental standards running the gamut of topics from energy and emissions to environmental

compliance and supplier assessment. The standards are available for download at https://www.globalreporting.org/standards/gri-standards-download-center/.

37. *See* "Phase I Report of the Task Force on Climate-Related Financial Disclosures presented to the Financial Stability Board" (Mar. 31, 2016). Retrieved from https://www.fsb-tcfd.org/wp-content/uploads/2016/03/Phase_I_Report_v15.pdf.
38. *Id.*
39. *See* "Recommendations of the Task Force on Climate-Related Financial Disclosures" (December 14, 2016). https://wwwfsb-tcfd.org/publications/.
40. *See, e.g.* ASTM E2718-10, "Standard Guide for Financial Disclosures Attributed to Climate Change" (2016).
41. Commission Guidance Regarding Disclosure Related to Climate Change, 75 FR 6290 (Feb. 8, 2010).
42. *Id.* at 6291.
43. *Id.*
44. 17 CFR 229.101(c)(1)(xii).
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50. *Power Forward 2.0: How American Companies Are Setting Clean Energy Targets and Capturing Greater Business Value,* p. 9, *available at* https://www.Ceres.org/resources/reports/power-forward-2.0-how-american-companies-are-setting-clean-energy-targets-and-capturing-greater-business-value/at_download/file.
51. Science Based Targets, http://sciencebasedtargets.org/commit-to-setting-science-based-targets/.
52. *Id.*
53. *See* We Mean Business, http://www.wemeanbusinesscoalition.org/content/low-carbon-technology-partnerships-initiative.
54. 2015 BP Annual Report and Form 20-5, p. 11 ("Over the next few decades, we think oil and natural gas are likely to continue to play a significant part in meeting demand for energy. They currently account for around 56% of total energy consumption, and we believe they will decrease to about 54% in 2035.").
55. *The Outlook for Energy: A View to 2040,* ExxonMobil, 2016, p. 7, *available at* http://cdn.exxonmobil.com/-/media/global/files/outlook-for-energy/2016/2016-outlook-for-energy.pdf.
56. Andrew J. Hoffman, Director Notes: Developing an Effective Climate Change Strategy 11 (The Conference Board Feb. 2014).

Lessons Learned from Legacy Contaminants of Emerging Concern: Hudson River PCB Dredging

By Robert A. Michaels and Uriel M. Oko

ABSTRACT

Modern environmental regulation prioritizes pollution prevention, but persistent "legacy contaminants" already have been disseminated. Examples include arsenic, lead, chlorinated dioxins, DDT (dichlorodiphenyltrichloroethane), PAHs (polycyclic aromatic hydrocarbons), PCBs (polychlorinated biphenyls), PFCs, and radioactive fallout. Risks posed by some have been recognized for decades. Concern about others is emerging. PCB risks include some of longstanding concern, and others of emerging concern, including emerging evidence of possible autism causation among exposed infants and/or pregnant women. We investigated GE's recently completed seven-year EPA-mandated clamshell dredging project for remediating PCB contamination in the Hudson River Superfund Site. Post-project PCB levels in water and fish are higher than anticipated, suggesting to some the incompleteness of dredging, and the need to extend the project to remove more PCB-bearing sediments. We found, however, that the preponderance of dredged PCB sediment was mobilized by clamshells rather than barged, and much PCB outside of dredge buckets also was mobilized. We attribute excessive PCB levels in the river to inefficiency intrinsic to clamshell dredging, rather than to incompleteness of dredging. We conclude that extension of the dredging project would prolong mobilization processes, allowing PCBs to spread more widely and pose risks in more ecosystems that include endangered fish such as sturgeon, endangered birds such as bald eagles, and people. These lessons should be applied to environmental dredging involving PCBs and other emerging contaminants. They should be embodied in remediation laws, regulations, and enforcement to assure that we leave to our descendants a more positive environmental legacy than that left to us.

INTRODUCTION

Emerging contaminants constitute a subset of legacy contaminants, distinguished by the recency of awareness of their presence and significance in the environment (Sauvé and Desrosiers 2014). An alternative definition inappropriately would include substances not yet in commerce, as they "emerge" as candidates for commercial use. This moving-target definition suggests that emerging candidates for commercial use also are contaminants of emerging concern. They might turn out to be, but not by definition, because their commercial use should be regulated proactively, consistent with their properties and environmental dynamics.

Environmental release of contaminants predating modern regulation often was known to be detrimental. The practice exemplified Garret Hardin's famous "tragedy of the commons" (Hardin 1968), in which private parties exploit public resources, termed "commons," by consuming or degrading them, thereby externalizing costs, which ultimately must be borne by society. This frontier behavior, however, inevitably ran afoul of limiting factors imposed by Malthusian growth of population, associated industry, and resource demand. Growth gradually diminished the commons, and diminished their capacity to absorb insult. Such unaffordable degradation constitutes another basis for "emerging concern" about legacy contaminants. In a review titled *Beyond the roots of human inaction: fostering collective effort toward ecosystem conservation,* Amel, *et al.* (2017) state that *"The term 'environmental problem' exposes a fundamental misconception: Disruptions of Earth's ecosystems are at their root a human behavior problem."* Clearly, finding ways to reverse degradation of the commons and cost externalization is a matter of emerging priority.

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As previously reported,[1] GE recently completed a seven-year EPA-mandated clamshell dredging project to remediate PCB contamination in the Hudson River Superfund Site. Post-project PCB levels in water and fish, however, are higher than anticipated; for example in 2016 requiring the New York State Department of Health (NYS DOH) to recommend further restriction of fish consumption (NYS DOH 2016). NYS DOH issued a "Don't Eat" fish consumption advisory for walleye fish taken from the Hudson River downriver, between the Rip Van Winkle Bridge at Catskill and the Tappan Zee Bridge. This advisory is more stringent than the previous advisory, which recommended limiting intake of walleye to one meal per month. The current advisory was based upon new data showing elevated levels of PCBs in these fish.

In 2007 the U. S. Environmental Protection Agency (EPA) required the General Electric Company (GE) to remediate the Hudson River PCB Superfund Site via dredging. Also in 2007, we reported pro-dredging bias in the form of errors in EPA's baseline health risk assessment (HRA) for Hudson River PCBs; indeed, all nine identified errors were made in the dredging-friendly direction rather than randomly (Michaels and Oko 2007). Permissive HRA findings that resulted from these errors constituted a necessary condition for EPA to conclude that dredging could be accomplished within acceptable health and environmental risk parameters, and to require GE to employ dredging for remediation of the site. The original purpose of site remediation via clamshell dredging was *to reduce safely and substantially the long-term downstream transport of PCBs.*

In 2010 we evaluated dredging Phase 1 (Michaels and Oko 2010), consisting of a one-year attempt, in 2009, to demonstrate the feasibility of "clamshell" dredging as a multi-year remedy for the Hudson River PCB Superfund Site. The 2010 paper reported failure (of GE) to complete a significant fraction of the planned Phase 1 area within the allotted dredging season, and failure (of EPA) to demonstrate the feasibility of implementing Phase 2 within acceptable health risk parameters. Similar conclusions were drawn by EPA's Peer Review Panel for Hudson River PCB dredging (Peer Review Panel 2010). Others more generally have characterized conventional "clamshells" as more typically used for navigational rather than for environmental dredging (for example, Bridges, *et al.* 2008; Palermo, *et al.* 2008):

> Although **conventional dredges normally used for navigation dredging** (e.g., conventional clamshells or cutterheads) can be effective for environmental dredging, evolving technologies for dredge and dredgehead designs (e.g., enclosed buckets, articulated fixed-arm mechanical, swinging ladder cutterheads, and articulated ladder cutterheads) may offer better performance for environmental dredging" (Palermo, et al. 2008, page 257; emphasis added).

Accordingly, we recommended (Michaels and Oko 2010) consideration of hydraulic dredging as originally proposed, or other alternatives to conventional "clamshells." Indeed, EPA specification of 'clamshell' dredging in the Hudson River is unusual, as most PCB dredging from U.S. waters has relied upon hydraulic dredges, which were used, for example, in the New Bedford Harbor in Massachusetts, the Cumberland Bay in Plattsburgh, New York; and the Fox River in Green Bay, Wisconsin.

Notwithstanding the above, EPA required GE to initiate Phase 2 in 2011, after a one-year hiatus, in 2010, for project evaluation, culminating in our paper (Michaels and Oko 2010) and the Peer Review Panel's adverse report (Peer Review Panel 2010). The scope of Year One of Phase 2, in 2011, included completion of the undredged Phase 1 area. As we reported (Michaels and Oko 2010), Phase 1 not only failed but, more fundamentally, it lacked the potential to succeed in demonstrating the feasibility of Phase 2, because Phase 2 posed two problems not posed in Phase 1: (1) dredging in faster-moving water, and (2) confining dredge-disturbed PCB-contaminated sediments to within isolated "hot spots," despite river currents capable of carrying mobilized PCB liquids, dissolved molecules, colloids, and suspended particulates downstream to areas in which future dredging was not planned.

Phase 1 differed from Phase 2 in being conducted largely at one side (the east side) of Rogers Island, where sediment transport was slowed by a nearby stone dam and sediment curtain. Phase 1 also predominantly involved bank-to-bank dredging. Phase 2 involved widely separated PCB "hot spots" and faster moving open river water. Redeposition of mobilized PCB-containing sediments in the Phase 1 area was followed generally by re-dredging, thereby minimizing the impact of dredge-disturbed sediment flow and mobilization beyond the dredging zone. Thus, EPA's authorization to conduct Phase 2 based upon Phase 1 constituted a *non-sequitur.*

Failure of Phase 1 to meet engineering performance standards (EPSs) and health risk criteria (Peer Review Panel 2010) was ominous for Phase 2 (Michaels and Oko 2007, 2010; Peer Review Panel 2010). Implementation of Phase 2 for two years, in 2011 and 2012, and its continuation in 2013 and for years thereafter until completion, together raised five emerging and unique issues that we evaluate here, including the following:

1. **Sediment mobilization:** EPA accuracy in estimating PCB-contaminated sediment mobilized by dredging,
2. **PCB mobilization:** possible PCB loss by desorption from resuspended sediment particles;
3. **Storms:** possibly changing frequency of sediment-mobilizing high flow events,

4. **Endangered species:** *Endangered Species* classification of Hudson River sturgeon, and

5. **Autism:** progress of research into possible PCB causation of autism.

METHODS

Our investigation included reviewing literature, making site visits, attending meetings, and evaluating several exposure and toxicology issues. We conducted three site visits to observe and photograph dredging, each time visiting U.S. EPA's field office in Fort Edward, interviewing EPA and GE personnel and contractors, analyzing dredging data, attending public meetings, and examining scientific and regulatory documents (for example, Harza 1992; NYS DEC 2000, 2003; PSEG NY 2001; Shavit, *et al.* 2003; UN EP 2003, and other sources in References). Our analysis adopts methods of health risk assessment (HRA), critical evaluation of project-related scientific information sources (for example, GE 2009, 2010a, 2010b, n.d.; US EPA 1999, 2000a, 2000b, 2001, 2006, 2010a, 2010b, 2010c, 2010d, 2010e, 2012, n.d.a, n.d.b), and objective scientific peer review. The latter are not a priori methods, and they are not described in detail here. Rather, they consist of diverse methods that are generally typical of peer review by scientists seeking to remain objective. Most essentially, these methods consist of our own disciplined, critical evaluation of the scientific merit with which numerous methods were selected for use and applied prior to dredging, during dredging Phase 1, and during Phase 2.

The scope of our assessment therefore includes our own peer review of GE and EPA methods, findings, and conclusions, such as those reported orally in public meetings, and in written public communications on GE (n.d.) and EPA websites for Hudson River dredging (US EPA n.d.a, n.d.b), and more formally in GE (2009, 2010a, 2010b, app. GE (2009, 2010a, 2010b) and EPA (1999, 2000a, 2000b, 2001, 2006, 2010a, 2010b, 2010c, 2010d, 2010e, 2012) draft and final reports published for consideration by the public, specific interested parties, and members of the Hudson River dredging project peer review panel (Peer Review Panel 2010). Members of the public and other readers of our assessment can judge for themselves whether and to what degree we succeeded in applying the methods of HRA and of peer review objectively. We hope that we have done so completely.

FINDINGS

General. Mobilization of dredge-disturbed sediment was ≥100 times higher than measured by EPA's engineering performance standard (EPS) for resuspension, and no EPS exists to detect, quantify, or reduce downstream sediment redeposition. Much PCB adsorbed to dredge-disturbed sediment desorbs within minutes of mixing into river water. This fugitive molecular and colloidal PCB is transported downstream, but missed in routine resuspension monitoring. Complicating matters, the frequency and intensity of storms is increasing. Invisible to EPSs, storms may scour fugitive PCB-contaminated sediment, and transport it downstream gradually and episodically, over years or decades. Long-term downstream transport of PCBs poses risks to endangered species, possibly including extirpation of sensitive sturgeon from the Hudson River. Finally, recent animal research links PCBs to developmental processes that, in humans, are thought to underlie autism causation, but EPA has failed to address autism risks.

Issue 1, Sediment Mobilization: EPA Accuracy in Estimating PCB-Contaminated Sediment Mobilized by Dredging

Sediment mobilization by dredge jaw closing. Sediment resuspension arising from bucket (clamshell) dredging is reported *to "result from the impact, penetration, and removal* [of the dredge bucket] *from the bottom sediments; leakage while raising it through and out of the water column; and washing during movement through the water column"* (Zappi and Hayes 1991, citing Barnard 1978). Resulting *"suspended solids in the area of influence of the bucket dredge, without hopper barge overflow, can range from 20 to 1,100 mg/L"* (Zappi and Hayes 1991, citing McLellan, *et al.* 1989). A process contributing to sediment mobilization that apparently has been neither addressed nor described previously is generation of a suction force behind closing dredge jaws.

Specifically, the sediment fraction mobilized has been calculated previously relative to a full dredge bucket, but that parameter fails to account for the mobilizing effects of closing dredge jaws on sediment that is situated outside of the bucket. Dredge bucket jaws are constructed of rigid walls of steel that are suspended beneath a rigid non-solid steel superstructure (Fig. 1). The jaws of a typical five-cubic yard (3.85-cubic meter) bucket used in the Hudson River each have an open cross-sectional area of 88 square feet (9.8 sq. M) measuring 7.1 feet (2.2 meters) in width and approximately 4.4 feet (1.3 M) in height, producing a solid cross-sectional area of >30 square feet (3 cubic meters). The superstructure adds another 6.0 feet (1.8 M) of height, producing a total of over 10 feet (3 M).

The total cross-sectional area that moves through river water during closing of each dredge jaw therefore is approximately 50 square feet (4.6 M^2), most of it above river sediment grade [typical dredge jaw penetration depth is up to 1.5 feet (0.5 M), visible as the abraded area at the bottom of the bucket depicted in Fig. 1]. The angle of attack changes (becomes more vertical) as the bucket closes and, of course, the velocity of jaw movement through the water is greatest toward the bottom, which also is the solid portion of the dredge bucket.

As the bucket jaws close, physics requires that they create three strong currents. One current results from compression of water and sediment situated between the closing bucket jaws. It forces water and sediment out of the dredge bucket. The other two currents result from

suction of water and sediment situated in the reduced-pressure zone behind each dredge jaw. These latter two currents exert a force that drags water and sediment, causing them to follow behind moving dredge jaws as they close. All three forces create turbulence. The compressive force, especially because it drives water and sediment upward through the open top of dredge jaws, produces turbulent eddies of sediment typically extending to the river surface, readily visible and varying from gray to black, depending upon location in the river.

The inward-directed suction force exerted in the reduced-pressure zone behind the dredge jaws acts on water much as a moving vehicle acts on air. This force is manifest (for example) by race cars "drafting" close behind another car to accelerate by using the powerful suction force created by the lead car's evacuation of air behind it. The suction force also is made visible as opaque diesel exhausts flow over the tops of moving trucks and are sucked turbulently downward in the trailing low-pressure zone. Physics demands that loose or uncompacted sediment situated outside each opposing jaw of dredge buckets likewise must be sucked off the river bottom during bucket closure. The swirling sediment then is left in the river as the dredge buckets are lifted to the surface and beyond.

Figure 1. Hudson River Dredge Showing Bucket Suspended Beneath Superstructure

Sediment mobilization is quantified by comparison of sediment volumes placed in barges with sediment volumes dredged in each bucket closure. Bucket closures are recorded automatically via computers onboard dredge platforms, and published as the "bucket files" (GE 2010b, Michaels and Oko 2010, EPA 2010a). Sediment that is mobilized behind closing dredge jaws, however, is routinely not quantified in the "bucket files," because such sediment is not dredged and not placed in barges. For example, consider a typical five-cubic yard dredge bucket that penetrates to a sediment depth designed to fill it to 80 percent of full capacity. Its "field capacity" would be four cubic yards (0.8 x 5 cubic yards). If only two of the four cubic yards are barged, by subtraction the inferred mobilization also is two cubic yards, or 50 percent of field capacity.

The mobilization fraction calculated as above excludes turbulent sediment mobilization due to suction generated by each closing dredge jaw. Accordingly, the actual mobilization fraction is higher by the amount disrupted outside each dredge bucket jaw. Physics demands that the compressive force exerted to the interior of dredge bucket walls equals the suction force exerted outside. A reasonable approximation, therefore, is that uncounted sediment mobilization outside dredge buckets roughly equals the amount of sediment that is mobilized within buckets. This approximation also is conservative, inasmuch as the sediment that can be mobilized includes that situated behind each of two dredge jaws. This added mobilization factor gives rise to the possibility of the sediment mobilization fraction exceeding 100 percent of the dredge bucket field capacity. That is, dredge buckets cannot mobilize more sediment than they contain, unless (as described above) they also mobilize sediment that they do not contain.

Estimation of sediment mobilization fraction. We previously made two independent quantitative estimates of the fraction of sediment mobilized when a dredge bucket descends to the river bottom, closes, lifts its load, and transfers its load to a waiting barge (Michaels and Oko 2010). One estimate, based upon the difference between sediment volume enclosed by an open vs. a closed dredge bucket, was a mobilization fraction of approximately 80 percent. The other, based upon analysis of published "bucket files" vs. published barged-sediment data, was approximately 75 percent during Phase 1, Year 1. These values exclude consideration of the new factor described above, i.e., suction creating turbulence behind closing dredge jaws.

A related factor, likewise unquantified (in Michaels and Oko 2010, and also herein), is failure of bucket closure, that is, turbulent mobilization of sediments by descending dredge jaws that cannot close when they encounter obstacles on the river bottom (such as bicycles, automobile tires, logs, boards, rocks, concrete blocks, rebar, and other construction debris). When dredge buckets fail to close, the on-board computer does not record the data in the "bucket files." Indeed, for this reason, the fraction of bucket descents that result in non-closure is unknown, notwithstanding that these bucket descents mobilize sediment in the river. Most essentially, not-

withstanding our inability to quantify some parameters precisely, the factors described above, along with bucket geometry and computerized bucket data, indicate that dredge buckets dumped more material back into the river than into waiting barges. That material remains mobile via physical processes or, if taken up by biota, through ecosystem dynamics.

The two factors described above, though we cannot quantify them exactly, at the least add conservatism to our previously published estimates of 75-80 percent sediment mobilization per bucket closure. This fraction was applicable to dredge buckets, but was significantly (but likewise to an unquantified degree) reduced when considering overall sediment mobilization in Phase 1, because of bank-to-bank dredging. Such redredging in Phase 1, however, is not a feature of Phase 2 (except in its first year, 2011, which included bank-to-bank dredging of the uncompleted Phase 1 area), because Phase 2 addresses widely-spaced PCB "hotspots." Sediments that are resuspended and carried downstream beyond a PCB hotspot may redeposit on a portion of the river bottom that will never be dredged (or redredged). Phase 2 hotspot dredging comprises the preponderance of the 40-mile (64-kM) stretch of the Upper Hudson River that is included in the dredging project, making the per-bucket mobilization fraction highly relevant for Phase 2. Given the preponderant scope of Phase 2, the per-bucket mobilization fraction is relevant in evaluating the Hudson River dredging project in its entirety.

Issue 2, PCB Mobilization: Possible PCB Loss by Desorption from Resuspended Sediment Particles

Estimation of PCB mobilization fraction. Apart from the *sediment* mobilization fraction addressed above is the related issue of the possibly different *PCB* mobilization fraction. PCBs might be mobilized by desorption from dredge-disturbed sediment as particle surfaces encounter relatively PCB-free river water. To the degree that this occurs, PCBs may be mobilized from dredge-disturbed sediment as it falls back to the river bottom or remains suspended (resuspended) in the water column. Such desorption produces free PCBs in the molecular and colloidal phase, which are transported downstream with river water. Free PCBs in river water no longer are adsorbed to clay or silt particles. Sampling of clay or silt particles in routine resuspension monitoring would not capture free PCBs in dissolved or colloidal form.

To develop a more realistic picture of resuspension, we estimate, roughly but quantitatively, the amount of fugitive free PCB that clamshell dredging might have created in Phase 2. Fugitive PCB originates, and primarily is carried by, fine particles of silt, clay, and sand which, together, give rise to free PCB via desorption. Accordingly, we used data on hydraulic dredging to derive information on the size distribution and resuspension of such sediment in moving water like the Hudson River. Available literature (Nau-Ritter, Wurster, and Rowland 1982) indicates that approximately 30 percent of PCB adsorbed to resuspended sediment particles desorbs and enters river water in dissolved or colloidal form within minutes of resuspension. Further, most fine particles ('fines') remain resuspended for hours to weeks before settling, during which they slowly release most if not all of the remaining 70 percent of adsorbed PCB (Schneider 2005). We assume that much or most of the 70 percent is captured by routine resuspension monitoring. The 30 percent that quickly enters the aqueous phase, however, would not be captured in routine particle monitoring for verification of compliance with EPA's EPS for resuspension.

The *mass* of PCBs corresponding to loss of 30 percent desorbed from particles of dredge-disturbed sediment to the aqueous phase is missed in monitoring PCB *concentration* in water, due to river flow variation. We approximate it as follows. We do not know the exact size distribution of resuspended particles, but laboratory development of a dredging elutriate test (DiGiano, Miller, and Yoon 1995) revealed that turbulence mixes a wide range of particle sizes into the water column, but denser particles settle preferentially, leaving behind an elutriate (supernatant) of less dense resuspended particles, of which 90 percent were ≤10-um diameter. The most common size class was 4 um (micrometers). Accordingly, we similarly assume spherical particles of diameter 4 um. Although the particles are resuspended, we assume a heavier-than-water specific gravity of 1.8 which, as they are small, can be maintained in suspension by turbulence in river water. This specific gravity is somewhat lower than 2.6 previously reported for Hudson River sediments (Gruendell, *et al.* 1966; Michaels and Oko 2010), as we also assume here that relatively lighter resuspended particles are enriched in relatively less dense organic matter.

Our 4-um spherical particle model is only a rough guide. Fine particles resuspended after dredge disturbance actually are non-spherical, and some are more porous than others, whereas we assume hard spheres. Both properties increase surface area. For example, clay, an important constituent of silt, is both porous and non-spherical, with particle surface areas of 200-600 m^2/g. Our hard-sphere model therefore is conservative, because porous non-spherical particles have more surface area, can adsorb more PCB, and thus desorb more PCB to river water.

The high surface area of small sediment particles such as clay disproportionately carries resuspended PCB (Anchor Environmental 2003, DiGiano, Miller, and Yoon 1995, Michaels and Oko 2010). We assume that each resuspended hard spherical particle is coated initially with a monolayer of PCB molecules. We also assume an average PCB molecular weight of 240 grams/mole. Table 1 (below) shows the following calculated parameter values:

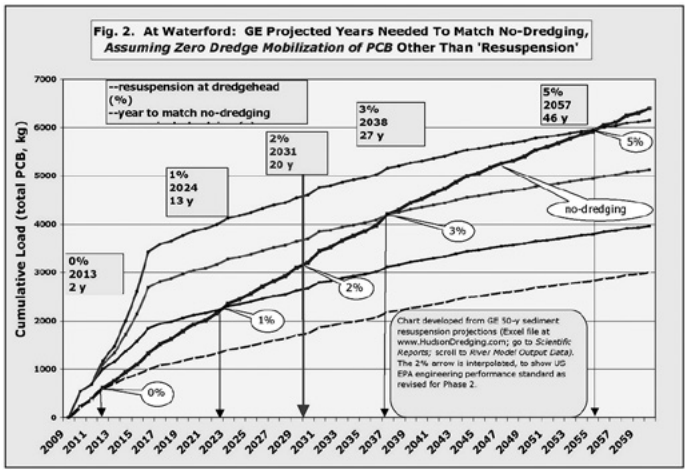
1. The mass of a monolayer of PCB on a 4-um spherical particle is 2.00×10^{-15} g;

2. The mass of a particle of 4-um diameter and specific gravity 1.8 is 6.03 x 10^{-11} g;
3. An 80-percent full 5-cu yd dredge bucket can contain 9.13 x 10^{16} 4-um particles;
4. EPA's 2-percent EPS allows resuspension of 2.44 x 10^{7} kg in the 10-acre Phase 1, Year 1 dredging area; and
5. The estimated mass of PCB desorbed to the river in aqueous phase is 810 kg.

Table 1. PCB Desorption from Resuspended Sediment in 10-Acre Phase 1 Year One Hudson River Dredging Area

Mass of PCB rapidly desorbed from a resuspended spherical sediment particle of diameter 4 microns		
radius of 4-um diameter spherical particle	2	um
surface area of spherical particle of 4-um diameter: $4\pi r^2$	50.3	sq. um
area occupied by one molecule of (decachlorinated) PCB	300	sq Angstroms
area occupied by one molecule of (decachlorinated) PCB	3.00E-06	sq um
PCB molecules in monolayer on one 4-um diameter particle	1.68E+07	PCB molecules
molecular weight (MW) of the PCB molecule	240	g/mole
number of PCB molecules per mole (Avogadro's number)	6.02E+23	PCB molecules
moles of PCB monolayer adsorbed to 4-um diameter particle	2.78.E-17	moles
mass of PCB molecules on one 4-um diameter particle	6.68.E-15	g
fraction of PCB rapidly desorbed and entering river in aqueous phase	0.3	…
mass of PCB rapidly desorbed to water, per 4-um diameter particle	2.00.E-15	g/0.04-um particle
Mass of a resuspended spherical sediment particle of diameter 4 microns		
volume of spherical particle of 4-um diameter: 4/3 πr3	3.35.E+01	cu um
conversion, cu um to liter (= 1000 cu cm)	1.00.E-15	cu um/liter
volume of spherical particle of 4-um diameter: 4/3 pr3	3.35.E-14	liters
specific gravity of 4-um diameter spherical particle	1.8	g/ml = kg/liter
conversion, g/ml to g/cu M	1.00.E-06	(g/cu M)/(g/ml)
specific gravity of 4-um diameter spherical particle	1.80.E+06	g/cu M
mass of spherical particle of 4-um diameter	6.03.E-14	kg/0.04-um particle
mass of spherical particle of 4-um diameter	6.03.E-11	g/0.04-um particle
No. of spherical sediment particles of diameter 4 microns fitting into a 5-cubic yard dredge bucket		
converion, cubic yards to cubic meters	7.65.E-01	cu M/cu yd
volume of 5-cu yd dredge bucket	3.82.E+00	cu M
field capacity if filled to 80 percent of full capacity	3.06.E+00	cu M
volume of spherical sediment particle of diameter 4 um	3.35.E+01	cu um
conversion, cu um to cu M	1.00.E-18	cu M/cu um
volume of spherical sediment particle of diameter 4 um	3.35.E-17	cu M
no. of 4-um spherical sediment particles per 5-cu yd bucket	9.13.E+16	particles/bucket
Allowable resuspension in 10-acre Phase 1, Year 1 dredging area, under EPA's 2-percent EPS		
mass of sediment particles per 5-cu yd dredge bucket	5.50.E+03	kg
EPA engineering performance standard (EPS) for resuspension	2	percent
allowable resuspended particle mass, in accordance with EPS	110.10	kg/5-cu yd bucket
bucket closures in 10-acre area dredged in Phase 1, Year 1	221,521	bucket closures/10 acres
allowable resuspended particle mass, in 10-acre Phase 1, Year 1 area	2.44.E+07	kg/10 acres
Mass of PCB rapidly desorbed to water from resuspended particles in 10-acre Phase 1, Year 1 area		
4-um diameter spherical particles per gram	1.66.E+10	particles/gram
4-um particles resuspended in 10 acre Phase 1, Year 1 area	4.04.E+20	particles
mass of PCB adsorbed as monolayer on resuspended particles	2.70.E+03	kg of PCB adsorbed
mass of PCB rapidly desorbed from resuspended particles	8.10.E+02	kg of PCB desorbed

GE estimates show that the break-even point, at which dredging will have reduced PCB mobilization as much as it has increased it during the dredging project, would be 20 years, assuming compliance with EPA's two-percent EPS for Resuspension. This would bring the break-even year to 2032 (Fig. 2). Under GE's highest mobilization assumption, five percent of sediment is released back to the river "at the dredgehead," in which case dredging will require 46 years to match the effectiveness of the no-action remediation alternative. *That is, no benefit can be expected until the year 2057 at the earliest, optimistically assuming no delays and, critically (see Discussion), no mobilization of PCB sediments other than "resuspension."*



Issue 3, Storms: Possibly Changing Frequency of Sediment-Mobilizing High Flow Events

After the first season of dredging, GE (2010b) reported that sediment samples outside the dredged area *"show that dredging caused wide-spread redistribution of PCB-containing sediments on the surface of the river bottom."* High-flow events already have driven some of this dredge-mobilized sediment downstream (for example, Islam, *et al.* 2012; Michaels and Oko 2010). Indeed, recent years have evinced a trend toward increasing frequency and intensity of storms (Matonse and Frei 2012), including extreme events such as Hurricane Katrina in 2005, Irene in 2011, and Sandy in 2012, all attaining extraordinary energy, largely from warmer ocean water in their path (for example, Trenberth 2007).

Evident global climate change (whatever may be the less-well-known contribution of civilization to it) has been manifest in a concomitant trend toward more frequent high-flow events in rivers and streams, resulting from rainfall, tidal surges, and flooding. Indeed, Matonse and Frei (2012) investigated whether the hydrological impacts of Hurricane Irene and Tropical Storm Lee continue a historical trend toward increasing frequency of extreme hydrological events in New York State's Catskill Mountains and Hudson River Valley region. They found:

> …a marked increase in the frequency of extreme hydrologic events during the last one to two decades. This increasing trend is more evident during the late summer and early fall, the season of the most extreme precipitation events.

This trend, therefore, can be extrapolated to the future, and incorporated into Superfund remediation project assumptions, including assumptions for Hudson River PCB dredging.

Tropical Storms Irene and Lee caused 100-year and 500-year flooding, in which the Mohawk River carved new channels up to 45 feet deep. The storms exerted comparable impacts on the Hudson River. For example, the storms delivered an extraordinary amount of fresh water to the Hudson River watershed, along with a US Geological Survey (US GS) estimate of nearly three million tons (2.7×10^6 kg) of sediment (Wall and Hoffman 2012).

Potential effects of swift river flow include scouring of PCB-laden sediment exposed by dredging to downstream areas, washing away of plantings designed to stabilize the river bottom and reestablish ecosystems, disruption of caps placed over residual PCB-containing sediments, flooding, and depositing PCB sediment on the shore as "flood mud." Islam, *et al.* (2012), investigating the impact of Tropical Storm Irene-associated precipitation on the Hudson River and estuary ecosystem, reported the following:

> Continuous monitoring data at the PCB superfund site at Fort Edward, NY … showed significant and coincident increases in sediment flux (22 metric ton/hr to 2400 metric ton/hr) and stream flow (85 m^3/s to 480 m^3/s) following Irene. In addition, in-situ particle size measurements suggest that significant amounts of small particles (<70 μm diameter) were transported during the flood event…
>
> … Moreover, the contribution of these extreme storm effects to the overall loading is comparable to that of long-term sediment transport under ordinary conditions. This suggests that effects of episodic events should be considered as part of ecosystem management during activities such as navigational channel dredging, remediation projects, and long-term water usage and discharge control.

Issue 4, Endangered species: *Endangered Species* Classification of Hudson River Sturgeon

EPA reported that PCB concentrations in fish tissue in the Upper Hudson River increased five-fold after the

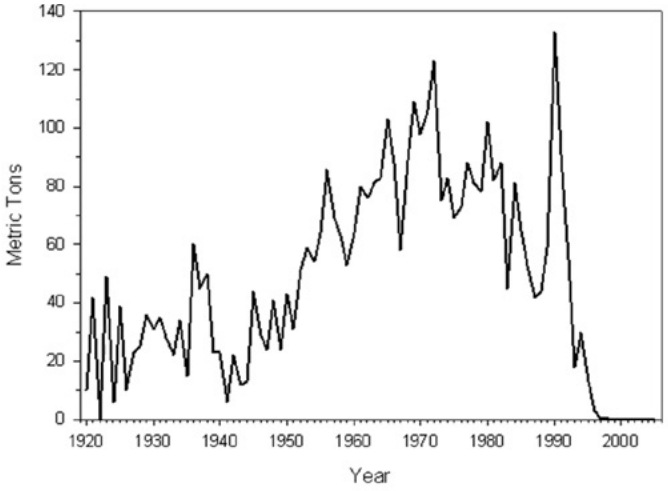
first year of dredging (EPA 2010a, e; 2012, n.d.a, n.d.b.). EPA reported more recently that PCB concentrations in fish tissue in the Upper Hudson River sampling area have returned to normal, presumably due to a combination of contaminated sediment removal and downstream transport of residuals (EPA 2010e; 2012, n.d.a, n.d.b.). Indeed, EPA's Hudson Field Office director David King acknowledged orally at a conference at Marist College (16 January 2013) that 20-30 years might be required for PCB levels in fish tissue to decline again to levels safe for human consumption. Resuspended PCB transported downstream is assumed (by us and by EPA) eventually to reach the Lower Hudson River, which is the principal habitat of two species of sturgeon (Shepherd 2006, U.S. DOC 2012). Indeed, such transport is more than theoretical, but has been documented empirically. Hudson River Natural Resource Trustees reported (NYS, U.S. DOC, and U.S. DOI 2013) that PCB transport (mostly prior to dredging) already has resulted in PCB contamination of the Lower Hudson River:

> The Hudson River Natural Resource Trustees are conducting a natural resource damage assessment (NRDA) to investigate natural resource injuries that may have occurred due to the release of polychlorinated biphenyls (PCBs) from General Electric (GE) facilities at Hudson Falls and Fort Edward, NY. This report summarizes available information on PCB contamination in the Hudson River ecosystem, including historic information, but focusing particularly on data collected and analyzed between 2002 and 2008 as part of ongoing NRDA activities. **The Hudson River, for greater than 200 miles below Hudson Falls, NY, is extensively contaminated with PCBs.** Surface waters, sediments, floodplain soils, fish, birds, wildlife, and other biota are all contaminated with PCBs" [NYS, US DOC, and US DOI 2013, page 1; emphasis added].

The shortnose sturgeon (*Acipenser brevirostrum*) was listed as endangered in 1967, though (in 2006; Shepherd 2006) it appeared to be recovering inasmuch as it has not been a target of fishing since 1967. The U.S. Department of Commerce on February 6, 2012 added the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) to the *Endangered Species List* (U.S. DOC 2012). The Commerce Department must protect sturgeon habitat—principally the Hudson River (Shepherd 2006)—as required by the Federal Endangered Species Act. Loss of habitat is a big part of the problem of loss of sturgeon, inasmuch as the principal alternative loss factor, fishing for either species of sturgeon, has been prohibited for well over a decade, since a moratorium on harvesting wild Atlantic sturgeon was established in 1998, after decades of overfishing. Commercial landings of Atlantic sturgeon crashed before the moratorium was imposed (Fig. 3; Shepherd 2006). The Lower Hudson River, below the Federal Dam at Troy, evidently will be impacted by PCBs for years or decades as contaminated dredge-mobilized sediments are scoured and transported downstream from an increasing area of river bottom in the Upper Hudson River, at Fort Edward and to the south.

Early life stages of sturgeon including larvae and eggs… "caviar"… are particularly susceptible to PCB contamination (EPA 2010c). According to EPA (previous to the official *Endangered Species* classification of the Atlantic sturgeon): *"Fragile populations of threatened and endangered species in the Lower Hudson River, represented by the bald eagle and shortnose sturgeon, are particularly susceptible to adverse effects from future PCB exposure."*

Figure 3. Total Commercial Landings of Atlantic Sturgeon in the U.S. Historically*



*** Source:** Shepherd, G. Status of Fishery Resources off the Northeastern US Atlantic and Shortnose sturgeons: Atlantic (Acipenser oxyrhynchus), Shortnose (Acipenser brevirostrum, National Oceanic and Atmospheric Administration (NOAA), Northeast Fisheries Science Center (NEFSC), Resource Evaluation and Assessment Division, www.nefsc.noaa.gov/sos/spsyn/af/sturgeon, 3 pages, revised December 2006.

By *"future PCB exposure"* EPA (EPA 2010c) meant future exposure if dredging does not occur… but dredging did occur. PCB levels in Lower Hudson River water presumably will vary over space and time as they increase gradually to an undetermined maximum over a period of years or decades, during which annual sturgeon reproductive cycles will be stressed. The degree of stress, and ability of already stressed sturgeon populations to withstand it, both remain unknown.

Modeling of the dynamics of three million tons of sediment loading into the Hudson River following Tropical Storms Irene and Lee, undertaken by Ralston, Geyer, and Warner (2012), revealed the following:

> *The simulated sediment transport showed surprisingly little sediment export—most of the sediment delivered by the storms was*

trapped in the tidal river north of West Point according to the model.

Similar dynamics may be expected from PCB-bearing sediments mobilized by dredging. That is, estuaries can trap sediments and the toxins that they harbor, to the detriment of ecosystems including Hudson River sturgeon occurring below the Federal Dam at Troy.

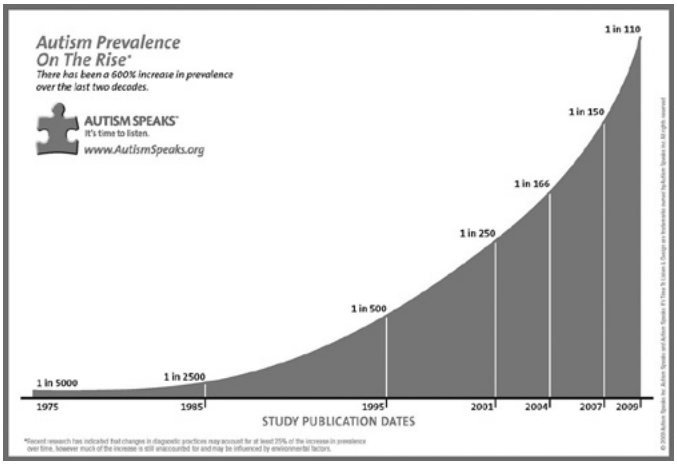
Issue 5, Autism: Research Into Possible PCB Causation of Autism

PCBs are known neurotoxicants (ATSDR 2000). Moreover, PCBs have been implicated in causation of Parkinson's disease (Goldman, et al. 2016), ADHD (Keil and Lein 2016), and autism (Keil and Lein 2016, Landrigan, *et al.,* 2012; Wayman, et al. 2012a, 2012b). PCBs are known developmental neurotoxicants *at environmental levels of exposure.* Based upon prospective epidemiology studies, maternal exposure to PCBs during pregnancy has been linked to dyslexia, attention deficit hyperactivity disorder (ADHD), and loss of cognition (reduced IQ; Winneke 2011). More recent (animal) studies now link PCBs to DNA methylation (Keil and Lein 2016) and to specific developmental processes that, in humans, are thought to underlie causation of autism (Landrigan, *et al.,* 2012; Wayman, *et al.* 2012a, 2012b), most notably the following:

1. stimulation of calcium signaling in the brain that alters nerve cell dendrite branching,
2. increased dendrite growth and branching, and
3. alteration of synapse formation in developing brains (in animal bioassays).

The prevalence of autism has been increasing dramatically in recent decades (Fig. 4; Autism Speaks, n.d.), and today affects 1.13 percent of children (one of 88; Autism Speaks, n.d.; Landrigan, *et al.,* 2012; US DOH 2012) and nearly one of 54 boys (Autism Speaks, n.d.). A substantial portion of the increase in autism prevalence evidently is attributable to environmental factors. Boys are nearly five times more likely than girls to have autism (Autism Speaks, n.d.), suggesting sex-linked inheritance of susceptibility factors, as boys have just a single (maternal) X chromosome which, if damaged, lacks potential compensation from genes in a counterpart (paternal) X chromosome as is the case in girls, who inherit an X chromosome from each parent.

Figure 4. Autism Prevalance Trend



DISCUSSION

Issue 1, Sediment mobilization: EPA Accuracy in Estimating PCB-Contaminated Sediment Mobilized by Dredging

EPA's Engineering Performance Standard (EPS) pointedly refers to "resuspension," not "mobilization." These terms might seem intuitively synonymous but, in EPA parlance, "resuspension" denotes just a minuscule fraction of dredge-mobilization of sediment. A significant "sediment mobilization discrepancy" therefore exists between sediment that is mobilized by dredging versus the much smaller amount of sediment that is measured and reported by GE, and used to document compliance with the EPA "resuspension" EPS. The discrepancy arises from the fact that the preponderance of dredge-resuspended sediment falls back to the riverbed, and remains on the river bottom, still mobile, but unrecorded by GE or EPA because its "resuspension" typically is episodic over years to decades and, in the main, has not yet occurred.

EPA EPSs limit dredge mobilization of sediments to a maximum of two percent "at the dredgehead" (US EPA 2010d, 2010e, n.d.a). Results of EPA modeling using HUDTOX, however, clearly indicated that the two-percent EPS, even for resuspension alone, could not be attained at the dredgehead; indeed, it was redefined upward simply by changing (at least doubling) the estimated mass of PCBs to be dredged (and also the allowable resuspension fraction), and therefore the amount (mass) of allowable PCB "resuspension":

> [The Record of Decision] originally estimated the PCB mass to be removed as approximately 70,000 kg, and the total project cumulative load standard was set at just below 1 percent of this total, or 650 kg. Based on the Phase 1 experience and additional sampling results, the estimated PCB mass for the entire project has been revised to the range 140,000 to 200,000 kg (EPA 2010d, page 4-2).

The sediment mobilization problem also was highlighted by EPA's Hudson River Dredging Peer Review Panel (Peer Review Panel 2010). The Panel's initial draft report (draft of 32), published to elicit comments, made an interesting error, which was followed by a more interesting response by EPA. The Panel's Comment No. 6 stated the following:

> [EPA's] incomplete analysis done for the 2004 EPS does not consider near-field

and far-field PCB deposition rates on the sediment bed surface.

Thus, according to the Peer Review Panel, EPA failed to consider sediment mobilization at the dredgehead ('near field'), where dredged sediments are mobilized. EPA's response to Peer Review Panel Comment No. 6 is highly informative regarding this issue, and exemplifies EPA's worst practice in handling data that might interfere with Agency plans:

> EPA did simulate near field suspended matter transport and settling in its near-field modeling analysis. The HUDTOX model runs did not reflect the near-field settled solids but **did incorporate an estimate of dredging-related suspended solids transport 1000 meters downstream of the dredge. This analysis was the basis for the EPA forecasts of dredging-related resuspension** [EPA 2010b, emphasis added].

Thus, EPA apparently could not meet the two-percent (originally one-percent) EPS limit at the dredgehead, so it declined to apply its HUDTOX modeling results at the dredgehead to forecast dredging-related resuspension quantitatively. Instead, EPA applied results obtained from HUDTOX at a cleaner place in the river, 1,000 meters downstream of dredging. Inasmuch as nearly all dredge-disturbed sediment (orally reported by EPA at roughly 99 percent) falls back to the river bottom near the dredgehead, the use of HUDTOX results from 1,000 meters downstream ignores roughly 99 percent of resuspension occurring at the dredgehead. This is at best misleading and, indeed, the expert Peer Review Panel was misled as indicated by its incorrect criticism (quoted above) that EPA had failed to model resuspension at the dredgehead (in the "near field"). The Agency did do the modeling, but (as EPA stated) declined to use the results.

As explained, sediment mobilization via dredging includes resuspension (at the dredgehead or wherever estimated) as well as the preponderance of dredge-disturbed sediment that falls back to the riverbed and is not barged (which we approximated conservatively at 75-80 percent of the amount initially excavated). This sediment drops back to the river bottom, still mobile, but it is excluded from EPA's resuspension parameter. EPA's statement quoted above therefore shows that the agency justified dredging by ignoring gradual erosion from the river bottom of dredge-mobilized PCB-bearing sediments, which reasonably would be expected to occur over a period of years to decades. The agency thereby also ignored inevitable, though gradual, entry of PCBs from these sediments into downstream water, ecosystems, and air. Thus, in 50 years EPA conceivably might find the river to be in much the same condition from GE dredging up sediments today as it was found to be 50 years ago from GE disposal of PCBs into the river.

The modeling and data handling issues raised above presumably would have come under scrutiny by EPA's Hudson River PCB Dredging Peer Review Panel, but EPA explicitly prohibited the Panel from opining whether dredging should continue, or whether Phase 2, if undertaken, could meet project health goals (Peer Review Panel 2010). Nonetheless, the Peer Review Panel rejected EPA's response, quoted above, concluding in its final report:

> Phase 1 showed that the 2004 EPS [Engineering Performance Standards] for Resuspension, Residuals, and Productivity were not met individually or simultaneously during Phase 1 and cannot be met under Phase 2 without substantive changes. EPA and GE proposed changes to the EPS, but the Panel finds that the new proposed standards from either party would not contribute to the successful execution of Phase 2 [Peer Review Panel 2010, page 84].

The *sediment mobilization discrepancy* discussed above represents more than merely a difference between a predicted vs. a measured parameter value. It represents a fundamental inconsistency in EPA's past justification of the need to dredge versus EPA's current characterization of the performance of the dredging project. The need for dredging was justified by the observed, persistent mobility of PCB sediments requiring, according to EPA, their removal via dredging. In contrast, in the new context of actual dredging, EPA dramatically has altered its concept of mobility. *Mobility* in the dredging project is newly quantified by the minuscule fraction of mobilized ("resuspended") PCBs that is detected at significant distance downstream. Thus, EPA has ignored nearly all sediment and PCB mobilization in evaluating compliance with the Engineering Performance Standard *for resuspension.* In ignoring mobility of PCB-containing dredge-mobilized sediments for gauging compliance with the resuspension EPS, EPA has ignored a much larger degree of PCB sediment mobility than that which constituted EPA's most essential basis for requiring, in 2007, remediation of the Hudson River PCB Superfund Site via dredging.

Failure of EPA to use HUDTOX modeling results at the dredgehead is not the only example of misleading use of modeling or monitoring data by EPA, and should be viewed in this broader context. One example will suffice. In seeking to justify dredging, EPA had prepared a baseline health risk assessment (HRA; EPA 1999, 2000a, 2000b) that excluded all mono- and di-chlorinated PCB congeners based upon a misleading premise, specifically, that these congeners do not bioaccumulate in fish tissue, which contributes to human exposure to PCBs (Michaels and Oko 2007). The mono- and di-chlorinated congeners, even if they bioconcentrate less dramatically than the higher chlorinated congeners, still are present in fish tissue. They should have been present in the HRA.

In the 1960s, Rachel Carson's *Silent Spring* (Carson 1962) famously raised awareness of environmental risks posed by DDT, which is a nearly identical twin of PCBs (Michaels and Oko 2010). Both DDT and PCBs contribute to human health risk by entering air, water, and ecosystems that include food chains terminating in consumption of fish and birds by people. Higher-chlorinated PCBs degrade via dechlorination, resulting in build-up of the mono- and di-chlorinated congeners. Their omission from EPA's HRA, therefore, contributed significantly to obtaining its dredging-permissive results. Indeed, when EPA came under attack by environmental groups for favoring a dredging plan that would remove only 100,000 pounds of PCBs, EPA responded by adding back the mono- and di-chlorinated PCB congeners that initially had been excluded when assessing potential health risks. EPA thereby claimed that the actual amount of PCBs that would be dredged under its "revised" plan would be 150,000 pounds, indicating that, in EPA's own view, the mono- and di-chlorinated congeners that were omitted from the baseline HRA would contribute 50 percent more than the 100,000 pounds of PCBs actually included in the inventory on which the HRA was based (Michaels and Oko 2007).

We conclude that EPA estimation of mobilization of dredge-disturbed PCB-contaminated sediment has been grossly inaccurate. Sediment resuspension has been mismeasured and evidently not limited to within the applicable EPS of two percent of the amount of PCB dredged at the dredgehead. Environmental Performance Standards that address the broader issues of sediment mobilization and spreading to new areas of the river bottom remain non-existent, notwithstanding Peer Review Panel findings that such EPSs are needed. We also conclude, therefore, that any extension of the dredging project as demanded recently by many in the environmental community should be predicated upon Agency remediation of these deficiencies.

Issue 2, PCB Mobilization: Possible PCB Loss by Desorption from Resuspended Sediment Particles

Comparison with EPA mobilization assumptions. EPA Engineering Performance Standards (EPSs; EPA 2010d, 2010e) limit dredge mobilization of PCB in sediments to ≤2 percent *"at the dredgehead,"* which roughly is at the dredging platform. A 2010 EPA "Fact sheet" explicating *Technical Requirements for Phase 2 of Hudson River Dredging* (EPA 2010e) states, for example:

> The amount of PCBs allowed to travel down the river will not be allowed to exceed 2% of the amount of PCBs actually excavated from the river bottom, as measured at designated locations downstream of where the dredging is taking place.

As shown in Table 1 (in *Findings),* this limit routinely has been exceeded substantially, in part because measurement at downstream locations does not reflect the amount of PCBs excavated at the dredgehead, and that eventually will flow down the river. Even if the 2 percent limit were not exceeded at all, however, GE estimates (Fig. 2, in *Findings)* shows that the break-even point, at which dredging will have reduced PCB mobilization as much as it has increased it during the dredging project, would be 46 years. *That is, no benefit can be expected until the year 2057 at the earliest, optimistically assuming no delays and, critically, no mobilization of PCB sediments other than "resuspension."*

Issue 3, Storms: Possibly Changing Frequency of Sediment-Mobilizing High-Flow Events

The documented trend toward more frequent and more intense storms and resulting sediment mobilization (see *Findings)* can be and should be extrapolated to the future, and incorporated into Superfund remediation project assumptions, including assumptions for Hudson River PCB dredging. EPA reported in 2011 that high riverflow caused by Tropical Storms Irene and Lee did not elevate concentrations of resuspended sediment above acceptable guidelines specified in the EPS for resuspension. However, the EPS, as already shown, dramatically underestimates PCB mobilization, and therefore constitutes a poor measure of that parameter.

When storms greatly increase river flow, uncompacted PCB sediments disturbed by dredging are scoured from the river bottom. They enter the swiftly moving water column and are transported downstream. This downstream transport may be invisible to EPA's EPS for resuspension because the increased riverflow simultaneously dilutes the scoured sediments. This dilution reduces PCB concentrations that can be measured in river water, thereby masking the increased scouring of sediment and elevation of the rate of its downstream transport.

Swift river flow events increase downstream transport of PCB sediments to a greater degree if dredging is not suspended during their occurrence. Such episodes presumably would increase the pace of downstream contamination of water, ecosystems, and air. EPA's EPS for resuspension fails to measure these effects, and no EPS exists to measure the resulting increase in the area of newly contaminated river bottom. Future high-flow events, over years to decades, will continue to transport dredge-mobilized PCB sediments episodically downstream, where they will enter water, ecosystems, and air. Indeed, with sufficient dilution from increased river flow, virtually all dredge-disturbed PCB sediment conceivably could be driven downstream by storms and other high-flow events without contravening EPA's EPS for resuspension. Thus, any extension of dredging should be predicated upon adoption of EPSs that effectively quantify and limit *long-term* scouring of dredge-disturbed sediments and resulting increases in the area of newly contaminated river bottom.

Issue 4, Endangered species: *Endangered Species* Classification of Hudson River Sturgeon

In 1999, more than a decade prior to addition of the Atlantic sturgeon to the Endangered Species List, EPA issued an addendum to its baseline ecological risk assessment for the Lower Hudson River (EPA 2010c). The *Addendum,* updated in 2010, evaluated future risks posed up to the year 2018 by PCB transport from the Upper Hudson River to ecosystems in the Lower Hudson River, between the Federal Dam at Troy and the Battery in New York City. As a baseline assessment, it assumes no dredging; indeed it assumes *"the absence of remediation."* Its major conclusions (EPA 2010c, page 6) include the following:

- Fish in the Lower Hudson River are at risk from future exposure to PCBs. Fish that eat other fish (i.e., which are higher on the food chain), such as the largemouth bass and striped bass, are especially at risk. PCBs may adversely affect fish survival, growth, and reproduction;
- Fragile populations of threatened and endangered species in the Lower Hudson River, represented by the **bald eagle** and **shortnose sturgeon,** are particularly susceptible to adverse effects from future PCB exposure [emphasis added];
- The future risks to fish and wildlife are greatest in the upper reaches of the Lower Hudson River and decrease in relation to decreasing PCB concentrations down river. Based on modeled PCB concentrations, many species are expected to be at risk through 2018 (the entire forecast period).

Dredging will continue to increase transport of PCBs from the Upper Hudson River to the Lower Hudson River to a degree exceeding the no-action alternative for the full forecast period. The conclusions of the *Ecological Risk Assessment Addendum,* therefore, reflect consistency of EPA's conclusion of record (EPA 2010c) with our own: that endangered sturgeon, bald eagles, and other species are at risk from continued dredging and PCB mobilization, and therefore with the general principle that environmental health is crucial for food chains and the safety of the human food supply (Hulme 2013).

Our conclusion also is consistent with that of EPA's Hudson River PCB Dredging Peer Review Panel (Peer Review Panel 2010). The Panel concluded in 2010 that EPA had failed to set an allowable sediment loading limit, failed to gather data needed do this, and failed to develop models to predict transport of dredge-mobilized sediment and PCB bioaccumulation based upon Hudson River hydrodynamics. Thus, EPA sampling of resuspended PCB was insufficient, because EPA failed to sample or model the vastly larger quantity of dredge-mobilized PCB resting on the river bottom. EPA, therefore, cannot assure the public that transport of sediment already mobilized by dredging will not increase downstream PCB loads gradually and episodically for decades, threatening ecosystems in the Lower Hudson River. It cannot assure the public and the US Department of Commerce that endangered sturgeon and bald eagles can survive decades of increased PCB transport to the Lower Hudson River. Continued dredging, therefore, should be predicated upon development of appropriate EPSs and compliance with them, which together might enable EPA to make such assurances credibly.

Issue 5, Autism: Research Into Possible PCB Causation of Autism

Treatment of children severely impaired by autism is palliative rather than curative; that is, children with autism typically become adults with autism (Landrigan, *et al.* 2012). Impacts on families of children with autism may be devastating physically, psychologically, and financially. Economic impacts to society likewise are enormous (Autism Speaks n.d.; Landrigan, *et al.* 2012), and may be exacerbated since the American Psychiatric Association in 2013 changed its diagnostic mental illness definitions, combining people with severe autism and others with milder forms (such as those with Asperger's Syndrome) into a single "autism spectrum disorder" (ASD) category (Jabr 2012).

The issue of whether the officially completed GE Hudson River dredging project should be extended to remediate remnant PCBs must be viewed in the context of EPA's longstanding special mandate regarding children's health, embodied by EPA's *Children's Health Risk Initiative* (EPA 2001). In 1997 the Office of Children's Health Protection was instituted within EPA. Its mission was and remains *"to make children's health protection a fundamental goal of public health and environmental protection… [by] ensuring strong standards that protect children's health…"*

Long-term remediation projects undertaken under the Federal Superfund Act or its state equivalents are subject to five-year reviews. As dredging Hudson River PCBs was mandated in 2007, the first five-year review of the project was undertaken as required in 2012 (EPA 2012). Accordingly, one of us (Michaels) informed EPA of the emerging link between PCBs and possible causation of autism and, in a public comment, suggested that the scheduled five-year review address this issue relative to numerous river communities alongside the path of the dredging project. The five-year review (EPA 2012), however, neither addressed this issue substantively, nor alluded to it. Indeed, the word "autism" was absent from the 82-page report. Given the high and increasing prevalence of autism (Fig. 4; Autism Speaks n.d.), and its seriousness, cost, and apparent linkage to environmental agents that may include maternal exposure to PCBs during pregnancy, extending the dredging project should be predicated upon satisfactory consideration of this emerging public health issue.

The next five-year review of the dredging project is underway, scheduled for release in 2017. On 31 May 2017,

EPA released the proposed *Second Five-Year Review* for public comment. As with the first review, the second neither addresses the autism issue nor alludes to it. Indeed, the word "autism" as before is absent from the 81-page report, notwithstanding several reports in the literature that are cited in this paper and, more importantly, were cited in Michaels and Oko (2017), predating by over one month EPA's proposed *Second Five-Year Review.* Indeed, all three of our papers (Michaels and Oko 2007, Michaels and Oko 2010, Michaels and Oko 2017), which are highly critical of EPA's project methods and effectiveness, are excluded from citation and consideration by the proposed *Second Five-Year Review,* just as in 2012 EPA excluded from its first five-year review our two then-existing peer-reviewed published papers.

Will Further Clamshell Dredging Fulfill the Purpose of Dredging?

Clamshell dredging has failed to meet EPA's EPS goal of limiting short-term resuspension to ≤2% of the amount excavated. Consider a numerical illustration based upon the parameters quantified (at least approximately) earlier: 1000 Kg of PCB-contaminated sediment is excavated at the dredgehead. The EPS for resuspension is ≤2%, which is ≤20 Kg. If 25% (≤250 kg) is barged, then 75% (≤750 kg) is mobilized, drastically contravening the 20-Kg EPS. If, as reported orally by EPA, 99% (750 kg x 0.99 = 742.5 kg) falls back to the river bottom near the dredgehead, then just 1% (7.5 kg) remains in the water column. If EPA measured resuspension at the dredgehead, all of this resuspension would be captured in the measurement (742.5 + 7.5 = 750 kg).

A downstream measurement that is made *after* separation of the one percent remaining in the water column from the 99 percent falling back to the river bottom near the dredgehead would capture only the 7.5 Kg remaining in the water column. The location of such a measurement, according to EPA HUDTOX modeling, appears to be ≥1,000 M downstream. The resuspension value obtained at this location (7.5 kg in the example) complies with the EPS for resuspension (20 kg for every 1,000 kg excavated). Measuring or modeling resuspension 1,000 M downstream of dredging, therefore, in this example drastically contravenes the EPS for resuspension by overlooking 742 kg of dredge-disturbed sediment that has fallen back to the river bottom, but is still mobile (no longer buried in the riverbed).

The above numerical example also illustrates that clamshell dredging has failed to fulfill EPA's main, original purpose of dredging: *to reduce safely and substantially the long-term downstream transport of dredge-disturbed PCB sediments.* The 742 kg of sediment that has fallen back to the river bottom in the above example still is mobile, in the sense that it can be and (if not re-dredged) eventually will be transported downstream via episodic high-flow events over years to decades. This redeposited mobile PCB sediment, as illustrated earlier, is invisible to the EPS for resuspension. The EPS, in turn, therefore is blind to long-term health and environmental risks potentially posed to downstream ecosystems.

RECOMMENDATIONS AND CONCLUSIONS

Recommendations

We recommend that the design of any extended or future PCB dredging be improved to comply with EPA's EPS limiting *short-term* resuspension to ≤2% of PCBs in sediment excavated, and adopt EPSs also limiting *long-term* downstream deposition of residual sediments outside of dredge zones. Increasing storm frequency and intensity must be incorporated into prediction of dredging-associated sediment transport. EPSs must limit transport to within levels shown sustainable for survival and reproduction of sturgeon, eagles, and other endangered species in the long term, well beyond several years needed for completion of dredging. EPA likewise must address the potential of dredging to increase the incidence of autism in affected river communities and, if necessary, adopt health protective EPSs. Finally, hydraulic dredging, originally proposed, should be considered as an alternative to conventional "clamshells" for extending and completing remediation of the Hudson River PCB Superfund Site.

Conclusions

Emerging contaminants constitute a subset of legacy contaminants, distinguished by the recency of awareness of their presence and degree of significance in the environment. Their adverse effects should be viewed retrospectively as remediation challenges, and prospectively as lessons that teach and motivate us to avert similar indiscretions in the future. PCB risks include some of longstanding concern, and others of emerging concern, most notably including emerging evidence of possible autism causation among exposed infants and/or pregnant women.

We investigated GE's recently completed seven-year EPA-mandated clamshell dredging project for remediating PCB contamination in the Hudson River Superfund Site. Post-project PCB levels in water and fish are higher than anticipated, suggesting to some the incompleteness of dredging, and the need to extend the project to remove more PCB-bearing sediments. We found, however, that the preponderance of dredged PCB sediment was mobilized by clamshells rather than barged, and much PCB outside of dredge buckets also was mobilized. We attribute excessive PCB levels in the river to inefficiency intrinsic to clamshell dredging, rather than to incompleteness of dredging. We conclude that extension of the dredging project would prolong mobilization processes, allowing PCBs to spread more widely and pose risks in more ecosystems that include endangered fish such as sturgeon, endangered birds such as bald eagles, and people.

Any long-term project, especially if unusually expensive, must be evaluated periodically to assess the degree to which it is fulfilling its purpose. If it is not fulfilling its purpose, it must be redesigned or terminated. *Clamshell dredging was and remains a bad idea for the Hudson River, and has been shown incapable of fulfilling its original purpose of reducing safely and substantially the long-term downstream transport of PCBs.* These lessons should be applied to environmental dredging involving PCBs and other emerging contaminants.

Management of emerging contaminants may include removal from commerce and aggressive remediation. These strategies in any nation may require support via international agreement to prevent displacement of the problem to more permissive nations. Finally, lessons learned from emerging contaminants should be embodied in laws, such as the newly strengthened Toxic Substances Control Act in the United States, as well as in regulations and enforcement to assure that we leave to our descendants a more positive environmental legacy than that left to us.

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Endnote

1. Portions of this article were published previously: Michaels, Robert A; and Uriel M. Oko. *Excessive PCBs in the Hudson River: attributable to incompleteness of dredging, or to seven years of dredging*? Environmental Claims Journal, 29(2):115-40, 2017; online: http://dx.doi.org/10.1080/10406026.2017.1307007, 25 April 2017.

Legal Pot Industry Bugged by Lack of Pesticide Guidance

By Telisport W. Putsavage

In the last 10 years the United States has undergone a dramatic social and legal evolution with respect to attitudes toward marijuana. Both the Pew[1] and Gallup[2] polls continually have shown increasingly greater approval of marijuana use, whether for medical or recreational purposes. Approval levels now exceed 60 percent.

Social Evolution and State Legalization of Marijuana

Pioneered by a few states legalizing various methods of imbibing marijuana or its derivatives, medical marijuana in various forms is now legal in 28 states. While the coasts are heavily represented in this group, such states are spread across the country. Several of the original medical states then legalized adult, or recreational, use. Now eight states and the District of Columbia, including the entire west coast as well as Massachusetts and Maine, have followed suit and legalized adult use, with all providing for personal possession and cultivation and most providing for commercial cultivation and sale. While medical marijuana was legalized by a number of state legislatures, all states legalizing adult use did so by voter referendum. That approach may change as legislatures in New Jersey, Rhode Island and Vermont are considering legalizing adult use.

Industry is also taking note of the market opportunities being created. Scott's Miracle-Gro, a major lawn care and household pesticide producer, has made significant investments in hydroponic equipment and has been pushing EPA to alter its position on pesticide use on marijuana.

The result is that an estimated 60 percent of the U.S. population now lives in a jurisdiction where some form of marijuana use is legal under state law, including 20 percent who live in states where adult use is legal. Significant sums are being invested as states such as California gear up for commercial cultivation and adult use. To the delight of states and municipalities significant tax revenues are already being generated by the marijuana industry. Retail sales in 2016 in Colorado alone were $1.3 billion.[3] Ancillary industries, such as high tech greenhouse lighting, are blossoming. The scale of cultivation in the Denver metro area has impacted warehouse availability and energy conservation plans.

Pesticide Issue: The Label Is the Law

The need to use pesticides in the cultivation of marijuana was almost inevitable, notwithstanding the efforts by some growers to cultivate organically. Marijuana cultivation suffers from the same pest and disease pressure as any large commercial greenhouse operation. However, the circumstance unique to this setting is that any use of a pesticide in the cultivation of marijuana is a violation of federal law.

The use of pesticides is overseen nationally by the U.S. Environmental Protection Agency (EPA) under the authority of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).[4] Under FIFRA every individual pesticide product must be registered and bear a label exactly as prescribed and approved by EPA.[5] The label, the content of which is specified in great detail by FIFRA and EPA regulation, specifies the manner in which the product may be used. In the case of agriculture, the label specifies the crops upon which the product may be used. In addition, any pesticide ingredient to be applied to a food crop must have a "tolerance."[6] A tolerance is a regulatory limit on the residue level of the pesticide allowed to be in any given food product upon which it is to be used. States are authorized under FIFRA to regulate pesticides, including more strictly than EPA if they choose to do so. In addition to registration with EPA, every individual pesticide product must also be registered with each state in which it is sold or distributed.[7]

It is a violation of FIFRA to use a pesticide in a manner inconsistent with its label.[8] In the case of an agricultural pesticide, using a product on a crop not listed on the label would be inconsistent use and thus a FIFRA violation. The problem is that due to its classification as a controlled substance no registered pesticide bears a label specifying marijuana as an allowed crop for its use. Furthermore, marijuana is a food crop but no tolerance exists for any pesticide in marijuana. Since state laws also enforce use of pesticides consistent with their label, use on marijuana also violates state law.

Pesticide Confusion Is One of Many Legal Marijuana-Related Conflicts Between State and Federal Law

The wave of state legalizing marijuana has occurred in the face of federal law that forbids any possession or distribution of marijuana. The legal posture of marijuana is a result of the substance and its derivatives being listed by the U.S. Drug Enforcement Agency (DEA) on Schedule 1 under the Controlled Substances Act.[9] Listing a substance on Schedule 1 is a binding legal determination that the substance is a drug for which there are no beneficial uses and which may not be possessed. Violation is a federal felony. Formal research, which might validate anecdotal claims of effectiveness, is severely limited. The DEA recently reviewed and confirmed the Schedule 1 listing,

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so this topic is unlikely to be revisited in the near future. Notwithstanding this official federal posture, in January, 2017, the National Academies of Science, Engineering and Medicine issued a metastudy finding that some of the medical claims for marijuana have been validated and that generally there are not broad adverse impacts from adult use.[10]

The resulting quandary is virtually unprecedented: conduct legal under widespread state law is a significant Federal crime. As the marijuana industry has developed, it has confronted many issues resulting from this conundrum. Conflict areas have included legal representation, banking and income taxation. Since the commercial cultivation of marijuana is simply another form of large-scale commercial greenhouse agriculture, it is not surprising that conflicts have also arisen with respect to the regulation of pesticides by EPA and the administration of the National Organic Program by the U.S. Department of Agriculture.

Despite the increase in conduct constituting federal crimes, the federal government, as a result of Congressional action and administrative discretion, has with virtually no exception restrained from prosecuting such conduct. The Rohrabacher-Farr Amendment to the Continuing Budget Resolution will through December 8, 2017 preclude the expenditure of federal funds to enforce against state-compliant medical marijuana programs.[11] As of the writing of this article, it is uncertain whether this protection will be continued.

Under the previous administration the Departments of Justice[12] and Treasury[13] issued guidance outlining parameters which would preclude prosecution by federal authorities of both medical and adult marijuana programs operating in compliance with state law. In response to Attorney General Sessions expressing hostility to any marijuana use, the governors of Alaska, Colorado, Oregon and Washington on April 3, 2017 wrote to the Attorney General and the Secretary of the Treasury urging that the administration continue the current posture. The Attorney General wrote back to each governor on July 24, 2017 citing crime statistics in each respective state alleged to be associated with marijuana.

The position of the current administration is expected to be reflected in the report of the Justice Department's Task Force on Crime Reduction and Public Safety, part of whose mission was to examine the current federal posture on state-legalized marijuana. Although a final report has been delayed, indications are that the Task Force is in fact not going to recommend any significant changes in the federal approach.

EPA and States Mutual Efforts to Accommodate Use of Pesticides in Marijuana Cultivation

To date both EPA and the impacted states have responded in a largely realistic fashion to the pressure to accommodate the needs of marijuana cultivators operating under state law.

EPA has followed the overall approach of the administration to stand back. The EPA Office of Pesticide Programs issued guidance on the subject, advising that it would not disturb state efforts to devise regulatory structures.[14] EPA also advised Colorado directly that if the state wanted to provide for the use of a pesticide on marijuana, it should issue a Special Local Needs (SLN) registration under FIFRA for the product.[15] FIFRA authorizes a state to issue an SLN registration as a vehicle to amend the label of an EPA registered product to address a need unique to the state. In this instance the special local need would be the needs of the marijuana industry. The SLN registration would provide the opportunity for the state to add marijuana as a crop on the SLN label.

State Departments of Agriculture, the agencies in these states that regulate pesticides, recognized that an agricultural industry had been legalized under state law and was facing cultivation hurdles that needed to be accommodated. The initial state efforts to address pesticide issues were in the vanguard states of Colorado,[16] Oregon[17] and Washington.[18] Each of these early-adopter states developed their own programs, facing many unanswered questions and ambiguities when trying to fit a permissive structure into a larger prohibitory regulatory structure. In doing so, each state has used its own set of criteria to develop an evolving list of pesticides deemed legal for use on marijuana. Mandatory product testing confirmed numerous uses of pesticides not approved, resulting in product recalls[19] and confirming the need to fill a regulatory vacuum.

As the permitted uses of marijuana have broadened, the process of state pesticide approval has become increasingly complex. Edible products are increasingly popular, and although technically not foods, they present food use pesticide issues. While no tolerances exist for marijuana, states have looked to comparable crops to select products allowed to be detected in edible marijuana products. The use of pesticides on marijuana intended to be smoked presents issues akin to the use of pesticides on tobacco. Although some states have used approval for tobacco use as a basis for allowing use on marijuana, the problem is that there is laboratory data to confirm the effect in tobacco while no such data exists for marijuana. Furthermore, as a species, marijuana presents unique issues related to pesticide use, key among them its strong proclivity to absorb any materials applied to it or on the surrounding soil.

However, the states have not required pesticide registrants to secure state local needs registrations in order for their products to be used on marijuana. To the extent that states have already required that products have a tolerance for a similar crop in order to be approved, there would appear to be no problem with issuing a special local needs registration under FIFRA. Nonetheless it is an

additional administrative burden and to date neither EPA nor the states have required compliance with this process.

Facing an Uncertain Future

Tens of millions of dollars have been invested in the marijuana industry, which in 2016 generated $6.7 billion in nationwide retail sales, but at this point there is uncertainty in every direction. The medical portion of the industry has two more months of protection under the Rohrabacher-Farr amendment, but the entire existence of the adult marijuana industry rests upon the discretion of the federal government heretofore exercised by the Obama administration. There is no sense yet Congress will renew the Rohrabacher amendment, and if so, whether it will be extended to adult use. It remains to be seen whether the Trump administration might continue to exercise discretion in the same manner as the Obama administration. It is within the administrative discretion of the DEA to remove marijuana from Schedule 1 and thus relax its criminal prohibitions and expand medical research opportunities but that is viewed as unlikely. Only a crystal ball could predict the future of the industry.

Endnotes

1. http://www.pewresearch.org/fact-tank/2016/10/12/support-for-marijuana-legalization-continues-to-rise/.
2. http://www.gallup.com/poll/196550/support-legal-marijuana.aspx.
3. http://www.thecannabist.co/2017/02/09/colorado-marijuana-sales-2016/73415/.
4. 7 U.S.C. §§ 136 *et seq.*
5. FIFRA § 3; 7 U.S.C. § 136a.
6. Federal Food, Drug and Cosmetic Act, § 408; 21 U.S.C. § 346a.
7. See for example New York Environmental Conservation Law § 33-0701.
8. FIFRA § 12(a)(1)(G), 7 U.S.C. § 136(a)(1)(G).
9. 21 U.S.C. §§ 801 *et seq.*
10. The National Academies of Science, Engineering and Medicine: *The Health Effects of Cannabis and Cannabinoids: The Current State of Evidence and Recommendations for Research* [January 2017], http://nationalacademies.org/hmd/reports/2017/health-effects-of-cannabis-and-cannabinoids.aspx.
11. Continuing Appropriation Act 2018 and Supplemental Appropriation for Relief Requirements Act (September 8, 2017).
12. *Department of Justice Memorandum from Deputy Attorney General Cole to All United States Attorneys: Guidance on Marijuana Enforcement*, February 14, 2014, https://www.justice.gov/sites/default/files/usao-wdwa/legacy/2014/02/14/DAG%20Memo%20-%20Guidance%20Regarding%20Marijuana%20Related%20Financial%20Crimes%202%2014%2014%20(2).pdf.
13. *Department of the Treasury Financial Crimes Enforcement Network Guidance*, FIN-2014-G001, February 14,2014, https://www.fincen.gov/sites/default/files/shared/FIN-2014-G001.pdf.
14. *Environmental Protection Agency Policy Statement: Pesticide Use on Marijuana*, January 27, 2016, https://www.epa.gov/pesticide-registration/pesticide-use-marijuana.
15. *Letter from Director of the EPA Office of Pesticide Programs to the Colorado Department of Agriculture*, May 19, 2015, https://www.epa.gov/sites/production/files/2016-01/documents/epa_letter_to_cda_5-19-15_slns_for_marijuana.pdf.
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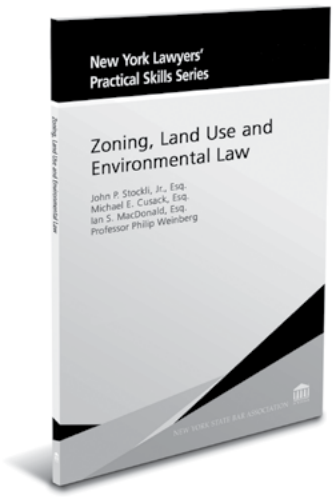

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This practice guide is devoted to practitioners who need to understand the general goals, framework and statutes relevant to zoning, land use and environmental law in New York State. This publication covers traditional zoning laws and land use regulations and highlights environmental statutes enforced by federal, state and local agencies.

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Administrative Decisions Update

Prepared by Robert A. Stout Jr.

In re Alleged Violations of Articles 15 and 25 of the New York State Environmental Conservation Law (ECL) and Parts 608 and 661 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) by Salvatore Accardi, Respondent

Order

Summary of the Decision

The Commissioner concurred with the ALJ's finding that Respondent's construction of decks on two lots it owned violated ECL 15-0505 and 25-0401 (1) and 6 NYCRR 608.5, 661.8 and 661.5 (b)(49) (related to excavation or placement of fill in navigable waters, permit requirements for tidal wetlands and adjacent areas and use guidelines regarding accessory structures). The violations were supported by DEC attorney affirmation, DEC testimony and Respondent's admission to DEC staff that he committed the violations.

With respect to DEC allegations concerning the paving of portions of the regulated tidal wetland adjacent area and installing a dock without a permit, the ALJ found the lack of an admission by Respondent, coupled with a gap of several months between the dates of property acquisitions and the dates of aerial photographs depicting the dock and paving, was insufficient to support the allegations. The Commissioner disagreed, finding an admission relative to the paving of one lot and further finding it "far more probable than not" that Respondent installed the dock and the paving on the other lot.

Background

DEC alleged that Respondent constructed decks in a regulated tidal wetland and adjacent area and in navigable waters of the State; paved a regulated tidal wetland adjacent area without a permit, and installed floating docks in navigable waters of the state and in a regulated tidal wetland. DEC's motion for order without a hearing was denied. Respondent did not attend the hearing.

Ruling of the Commissioner

The Commissioner concurred with the ALJ's finding that the decks were constructed in navigable waters and tidal wetlands and adjacent areas without a permit. This was based on DEC staff testimony as to the location of the structures and Respondent's admission to DEC staff.

With respect to the allegations concerning the partial paving of two lots in a regulated tidal wetland adjacent area without a permit, the Commissioner found sufficient support for the allegations where the ALJ did not. The Commissioner noted that with respect to one of the lots in question, Respondent told DEC staff "(the lot) consisted of nothing but tall weeds and garbage" when he purchased it. Further, Respondent acquired the lot in 2008 and an aerial photograph taken approximately five months earlier shows the lot as being vacant. A 2010 aerial photograph of the lot depicts the improvements.

The Commissioner also found sufficient support where the ALJ did not with respect to the allegations of paving and installing floating docks on the other lot in question. The Commissioner cited an April 2002 aerial photograph which did not evidence any paving or docks. Respondent acquired the lot in July 2003. A subsequent aerial photograph taken in April 2006 depicts the improvements.

The Commissioner noted that the evidentiary standard in enforcement proceedings is a preponderance of the evidence and cited *Matter of Steck*, Order of the Commissioner, March 29, 1993 at 4, which provides that "This standard requires an inquiry into whether the existence of [a] fact … is more probabl[e] than its non-existence (Prince, Richardson on Evidence, Tenth Edition (Sec.) 97)." The Commissioner further noted that "under this standard, a finding of fact may be based upon the direct evidence and the reasonable inferences drawn from that evidence."

Applied to the matter at issue, the Commissioner found that "the direct evidence combined with reasonable inferences taken from this evidence, make it far more probable than not that respondent installed the paving on lot 1461, as well as the floating dock" and that "it is unlikely that a prior owner would have made these improvements shortly before Respondent acquired (the lot)."

The Commissioner further concluded that the proposed civil penalty of $30,000 for all five causes of action was authorized and appropriate and directed Respondent to undertake restoration work. Upon completion of the restoration work pursuant to the Order, $10,000 of the civil penalty would be suspended.

Finally, the Commissioner denied DEC staff's request for an order requiring Respondent to "cease and desist from any and all future violations of the ECL and rules or regulations promulgated pursuant thereto." Such order, the Commissioner concluded, is unnecessary as the Respondent is required to comply with the ECL and applicable regulations.

In re Alleged Violation of Article 27 of the New York State Environmental Conservation Law (ECL) and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) by John McCashion, Respondent

Order

Summary of the Decision

The Commissioner found that Respondent disposed of solid waste (including fill, debris, tires and insulation) on property that is part of the Albany Pine Bush Preserve. Notwithstanding DEC staff's request for a $7,500 civil penalty, the Commissioner, citing the biological and environmental significance of the Pine Bush as an aggravating factor, remanded the matter for further proceedings on the issue of penalty and ordered waste removal to commence.

Background

DEC staff alleged that Respondent violated 6 NYCRR Part 360-1.5(a) by depositing "concrete, asphalt, bricks, soil, gravel, insulation and tires from commercial operations" on land located in the Town of Colonie, constituting part of the Albany Pine Bush Preserve, "one of the largest of approximately only 20 inland pine barrens worldwide."

Respondent failed to file an answer to the Complaint and failed to respond to DEC staff's first motion for default judgment. DEC staff's first motion for default judgment was denied by the ALJ because of a failure to submit proof of facts sufficient to support the claim. A second motion for default judgment was submitted, supported by an attorney's affirmation and affidavits from those with personal knowledge.

Ruling of the Commissioner

The Commissioner found that the default requirements of 6 NYCRR Part 622.15 were satisfied by DEC submissions which established that the disposed materials constituted "solid waste" that was improperly disposed of. (*See* 6 NYCRR Part 360-1.5(a)).

On the issue of civil penalty, the Commissioner noted that DEC staff requested a penalty of $7,500 where ECL 71-2703(1)(a) provides for a civil penalty not to exceed $7,500 for each violation and "an additional penalty of not more than one thousand five hundred dollars for each day during which such violation continues."

The Commissioner, citing the record and the "sensitive and unique environmental area" in which the disposal occurred, remanded the matter to the ALJ for further proceedings on the issue of penalty. Citing the DEC Civil Penalty Policy, June 20, 1990, IV, Penalty Calculations [1. Introduction], the Commissioner noted that "the biological and environmental significance of the Pine Bush would be an aggravating factor in the context of establishing an appropriate penalty for this violation."

Notwithstanding the remand with respect to the issue of civil penalty, the Commissioner ordered injunctive relief to proceed in order to remove the waste. Respondent was directed to provide the Albany Pine Bush Commission and DEC an approvable written plan within 20 days that describes the manner in which the solid waste would be removed and a timetable for its removal. All solid waste was required to be removed down to the sand, but no sand was permitted to be removed. The plan was also to address the revegetation of the impacted area, if revegetation is necessary.

Recent Decisions and Legislation in Environmental Law

Recent Decisions

AquAlliance v. United States Army Corps of Eng'rs, 2017 U.S. Dist. LEXIS 41131 (D.D.C. 2017)

Facts

The plaintiff, AquAlliance, submitted a Freedom of Information Act (FOIA) request to the Sacramento District of the United States Army Corps of Engineers ("Army Corps"), seeking records pertaining to the California Water Fix Project.[1] The Army Corps sent a website link and a CD to AquAlliance containing responsive records.[2] AquAlliance further requested the public notice distribution list of the names and addresses of property owners living along the project.[3] The Army Corps denied this request, deciding that Exemption 6, the withholding of personnel, medical, and similar types of files, of the FOIA applied, and therefore exempted the information from disclosure.[4]

Procedural History

The plaintiff brought this action in the U.S. District Court for the District of Columbia, filing a cross-motion in response to the defendant's motion for summary judgment.[5]

Issue

Whether the U.S. Army Corps of Engineers properly applied Exemption 6 of FOIA to the names and addresses on the distribution list AquAlliance requested?

Rationale

For the first count of this complaint, alleging that the defendant did not conduct an adequate search in violation of FOIA, the plaintiff conceded in its response and cross-motion that the Army Corps' search was reasonable.[6] The court granted summary judgment for the defendant on this claim because of the plaintiff's concession.[7]

In the second count, the plaintiff alleged that the Army Corps unlawfully applied Exemption 6 of FOIA and inappropriately withheld responsive records.[8] The court applied a four-step analysis to determine if FOIA-responsive records were inappropriately withheld. First, the court looked at whether the records in question contained personnel, medical, or similar files.[9] Next, the court determined whether the individuals identified in the records had a significant privacy interest in the information.[10] Third, the court looked at the potential public interest in the disclosure of the information.[11] Fourth, the court balanced the importance of the individual's privacy with the potential interest to the public to determine whether the information should be disclosed.[12] Here, the court found that because the only information that would be disclosed about the individuals on the list would be that their properties were adjacent to the project, the Army Corps did not meet the burden of demonstrating a significant privacy interest.[13] Without a significant privacy interest, the court held that the public interest of shedding light on the performance of the Army Corps had sufficient weight in favor of disclosure.[14] The Court found that the Army Corps had incorrectly applied Exemption 6 of FOIA and the withheld records must be disclosed.[15]

Conclusion

The court granted in part and denied in part the defendant's motion for summary judgment, and granted the plaintiff's cross-motion.[16]

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Endnotes

1. *AquAlliance v. United States Army Corps of Eng'rs*, 2017 U.S. Dist. LEXIS 41131 at 1 (D.D.C. 2017).
2. *Id*. at 2
3. *Id*.
4. *Id*.
5. *Id*. at 10.
6. *Id*. at 4.
7. *Id*.
8. *Id*.
9. *Id*. at 5.
10. *Id*.
11. *Id*.
12. *Id*.
13. *Id*. at 7.
14. *Id*. at 9.
15. *Id*. at 10.
16. *Id*.

Benoit v. Saint-Gobain Performance Plastics Corp., 2017 U.S. Dist. LEXIS 12174 (N.D.N.Y. Aug. 2, 2017).

Facts

This case pertains to 16 consolidated cases stemming from perfluorooctanoic acid (PFOA) in the Village of Hoosick Falls, New York.[1] Plaintiffs alleged that the defendants, Saint-Gobain Performance Plastics Corporation and Honeywell International Inc., contaminated the village's groundwater by discharging PFOA from manufacturing facilities.[2] Plaintiffs alleged that after defen-

dant's employees recovered most of the PFOA solution that was used in its facilities in large trays to make water and stain-resistant fabric,[3] the employees then washed the trays and poured the resulting discharge down floor drains in the facility.[4] The PFOA contaminated discharge seeped into the soil and eventually reached the Village's aquifer.[5] Plaintiffs have alleged that the consumption of PFOA-contaminated water has caused PFOA to accumulate in plaintiffs' blood serum and bodies.[6] The plaintiffs also contended that the contamination in Hoosick Falls has made properties in the area less marketable and resulted in significant property devaluation.[7]

Procedural History

Plaintiffs alleged property damage for defendant's negligence, strict liability, trespass, and nuisance as a result of PFOA contamination of real property owned or rented by plaintiffs, specifically plaintiffs who used the municipal water supply and those with private wells who adequately pleaded their claim.[8] Additionally, plaintiffs sought relief from personal injury sustained by their consumption of PFOA-contaminated water.[9] After the 16 individual complaints were filed, defendants Saint-Gobain and Honeywell moved to dismiss each for failure to state a claim.[10] Defendants also argued that plaintiffs have not suffered a legally cognizable injury to their properties or to their bodies sufficient under New York law.[11]

Issue

Whether defendants are entitled to a motion to dismiss for plaintiffs' failure to state a claim.

Rationale

The court held that because 11 of the plaintiffs are renters and do not allege any ownership interest in their residences, they cannot recover for property they do not own.[12] Plaintiffs' negligence claim survived defendants' motion on the court's public policy concerns based on a holding from the Court of Appeals in *532 Madison Avenue Gourmet Foods, Inc. v. Finlandia Center, Inc.*, 96 N.Y.2d 280, 288 (2001).[13] The court determined in *532 Madison* that nothing prevents a person whose water supply is contaminated by manufacturers from recovering economic damages in an action sounding in tort.[14] If the court agreed with the defendants' view, then a manufacturer may freely contaminate the local drinking water supply, depriving neighboring properties of potable water.[15] The plaintiffs' claim for nuisance survived the defendants' motion for plaintiffs who own a private well.[16] The court points again to *532 Madison*, which states that the owners of private wells have sustained a "special loss" sufficient to maintain a nuisance action.[17] The court held that plaintiffs could not recover for trespass, citing *Ivory v. Int'l Business Machines Corp.*, 116 A.D.3d 121 (App. Div. 2014), where it was held that a trespass claim cannot be premised on groundwater contamination alone.[18] However, the court noted that the plaintiffs with private wells would have been successful if they alleged soil contamination, because of the holding in *Ivory*, where the Appellate Division sustained the plaintiff's trespass claims because the groundwater was the medium through which the contaminant entered the homeowner's soil.[19]

Plaintiffs sought relief for personal injury in the form of medical monitoring.[20] The court granted medical monitoring to the plaintiffs who had an accumulation of PFOA in their blood.[21] The court stayed consistent with similar cases regarding PFOA, such as *Caronia v. Phillip Morris USA Inc.*, 22 N.Y.3d 439 (2013), which allowed plaintiffs to seek medical monitoring as consequential damages.[22]

Conclusion

The court granted in part and denied in part Saint-Gobain's consolidated motion to dismiss for failure to state a claim based on facts specific to the plaintiffs such as PFOA accumulation in the blood and private well ownership. Additionally, an interlocutory appeal was granted pursuant to 28 U.S.C. § 1292(b).[23]

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Endnotes

1. *Benoit v. Saint-Gobain Performance Plastics Corp.*, 2017 U.S. Dist. LEXIS 12174, at 21 (N.D.N.Y. Aug. 2, 2017).
2. *Id.*
3. *Id.* at 22.
4. *Id.*
5. *Id.* at 24.
6. *Id.* at 21.
7. *Id.* at 27.
8. *Id.* 28–29.
9. *Id.* at 29.
10. *Id.* at 32.
11. *Id.*
12. *Id.* at 36.
13. *Id.* at 39.
14. *Id.* at 42.
15. *Id.* at 50.
16. *Id.* at 15
17. *Id.* at 49.
18. *Id.* 48.
19. *Id.*
20. *Id.* at 44.
21. *Id.*
22. *Id.*
23. *Id.* at 54.

***Beekman Delamater Properties, LLC v. Village of Rhinebeck Zoning Bd. of Appeals*, 150 A.D.3d 1099 (2d Dep't 2017)**

Facts

In 2015, the petitioner commenced a CPLR 78 proceeding to challenge the proposed development of a lodging facility adjacent to the petitioner's hotel in the Village of Rhinebeck.[1] The Rhinebeck Zoning Board of Appeals granted the applicant an area variance for the development, adopted two negative declarations issued under the New York State Environmental Quality Review Act (SEQRA), and granted approval to build a lodge.[2] The petitioner sought to invalidate the negative SEQRA declarations, the area variance, and the site plan approval, stating that the project "failed to comport with the Village Center principles pursuant to section 120-19 of the Village of Rhinebeck Zoning Law and would have a negative impact on the character and community."[3]

Procedural History

The Supreme Court denied the petition on all grounds. The petitioner appealed.

Issue

Whether the Zoning Board of Appeals improperly adopted two negative declarations by SEQRA, improperly granted the area variance, and improperly approved the applicant's site plan.

Rationale

The petitioner contended that the Planning Board erred when it determined that the project would not result in a conflict with the community's current plans or goals and claimed that the board erred when determining that the "project would not result in the impairment of the character or quality of important historical, archeological, architectural, or aesthetic resources or existing community or neighborhood character."[4] A court can only review whether a determination under SEQRA was made in violation of procedure, if there was an error of law, or if the decision was arbitrary and capricious or an abuse of discretion.[5] Although a court must review the record to ensure that the agency took a hard look and reasonably analyzed all the relevant areas of environmental concern, the court cannot second-guess an agency's analysis.[6] Here, the court found that the Planning Board took the required hard look at the project and provided a reasoned analysis of why the project would not have an adverse effect on the environment.[7] The board determined that the project would not conflict with the community's current plans or goals and that it would not impair the character or quality of the historical, archeological, architectural, or aesthetic aspects of the community.[8]

The petitioner also contended that the area variance the board granted constituted an error of law. When considering a variance, the board must look at five factors including: (1) whether granting the variance will result in an undesirable change in the character of the neighborhood; (2) whether the benefit to the applicant from the variance can be achieved in another way; (3) whether the variance is substantial; (4) whether the variance will have an adverse impact on the environmental conditions of the neighborhood; and (5) whether the need for the variance was self-created.[9] The court will only determine whether a decision by the Zoning Board was not illegal, irrational, arbitrary, or capricious.[10] Here, the court found that the board properly weighed all the factors. The court reasoned that although the variance called for substantial divergence, the petitioner did not produce any evidence that the proposal would impact the character or environmental conditions of the neighborhood.[11]

Finally, the petitioner argued that the site plan should not have been approved because it did not comport with the Village's principles.[12] The principles include that buildings must be constructed close to the sidewalk, have off-street parking located behind buildings or in interior lots, and should be located on small lots with non-existent front yards.[13] Again, the local planning board is given discretion when determining whether a site plan should be approved, and the court is only allowed to determine whether the board's action was illegal, arbitrary, or an abuse of discretion.[14] The court found that the Planning Board's approval of the site plan was not illegal, arbitrary or capricious, and the applicant's configuration of the lot "met the principles established for the Village Center."[15]

Conclusion

The court held that the Supreme Court properly denied the amended petition and dismissed the proceeding.[16] The Village of Rhinebeck's Zoning Board of Appeals properly adopted two negative declarations by SEQRA, properly granted the area variance, and properly approved the applicant's site plan.

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Endnotes

1. *Beekman Delamater Properties, LLC v. Village of Rhinebeck Zoning Bd. of Appeals*, 150 A.d.3d 1099, 1100 (2d Dep't 2017).
2. *See id*.
3. *Id*.
4. *Id*.
5. *Id*. at 1101.
6. *Id*.
7. *Id*.
8. *Id*.
9. *Id*. at 1102.
10. *Id*. at 1101–02.

11. *Id*.
12. *Id*.
13. *Id*.
14. *Id*. at 1103.
15. *Id*.
16. *Id*.

Sullivan v. St.-Gobain Performance Plastics Corp., No. 5:16-cv-125, 2016 WL 7487723 (D. Vt. Dec. 28, 2016)

Facts

Plaintiffs alleged that Saint-Gobain Performance Plastics Corporation ("Saint-Gobain") caused groundwater and property contamination by discharging perfluorooctanic acid (PFOA) from facilities in Bennington and North Bennington Vermont, and that the contamination resulted in diminished property values and other economic losses.[1]

PFOA is a man-made chemical that is used in a variety of manufacturing and industrial processes such as in the manufacture of non-stick cookware, stain resistant carpets, water-repellant clothing, and food packaging.[2] There is no known environmental breakdown mechanism, and it accumulates with repeated exposure.[3] Accumulation of PFOA in humans causes damage to the blood, liver, kidneys, immune system, and other organs, and causes diseases such as thyroid disease.[4]

ChemFab, Saint-Gobain's predecessor by merger, conducted manufacturing operations in Bennington, Vermont beginning in 1968, and subsequently transferred manufacturing to North Bennington in 1977.[5] The plaintiffs alleged that Saint-Gobain participated in unsafe practices related to the handling, clean-up, or disposal of PFOA from its North Bennington facility into the soil and water, causing environmental contamination around the facility, including contamination in the local groundwater aquifer and numerous private drinking water wells.[6] The plaintiffs contended that as a result of such contamination, they and members of the putative class have suffered diminution of property value.[7]

In March 2016, on the recommendation of the Vermont Department of Health (DOH), the Vermont Department of Environmental Conservation (DEC) designated a Vermont groundwater-enforcement standard for PFOA of 20 parts per trillion (ppt).[8] Saint-Gobain alleged that the case should be dismissed because (1) The PFOA groundwater rules determined by the DOH are not backed by science, and are outside the discretion of the court; (2) PFOA groundwater rules are essential to plaintiff's class definition, and if Saint-Gobain's challenge to the rules is successful, the plaintiff's class and theory of liability would be upset; and (3) the issue of Vermont's groundwater rules is already before the Vermont state courts.[9]

Procedural History

Plaintiffs brought a putative class action for negligence, nuisance, trespass, battery, and strict liability against defendant, Saint-Gobain Performance Plastics Corporation.[10] The defendants filed a Motion to Dismiss or Stay pending the outcome of Saint-Gobain's state court challenges to Vermont's recent PFOA groundwater rules.[11]

Issue

Whether or not the court should grant Saint-Gobain's Motion to Dismiss or Stay on the basis that the case should await the outcome of the pending state court challenges to PFOA groundwater rules before the Vermont state courts.

Rationale

The court disagreed that the analysis of the groundwater rules established by the DOH was outside of the discretion of the court because the questions raised by state law tort claims that the plaintiffs alleged are all within the expertise of judges.[12] Additionally, the plaintiff's claims did not hinge on the 20 ppt groundwater-rule standard, and therefore the plaintiff's theory of liability stands.[13] Furthermore, the court stated that there was no danger of an inconsistent ruling with the Vermont state courts and their determination on the regulation of PFOA if the plaintiffs prevail on their theories and are entitled to remedies, because they seek equitable relief that is not dependent on the 20 ppt standard.[14] Lastly, the court noted that awaiting the resolution of the state administrative and appeals process over the pending regulation of PFOA would cause a substantial delay in this present case.[15] Therefore, resolution of the enforcement standard for PFOA concentrations will have little bearing on the resolution of the plaintiff's state law tort claims.[16]

Conclusion

The court denied Saint-Gobain's Motion to Dismiss or Stay.[17]

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Endnotes

1. *Sullivan v. St.-Gobain Performance Plastics Corp.*, 2016 WL 7487723, No. 5:16-cv-125, at 2 (D. Vt. Dec. 28, 2016).
2. *Id.* at 1.
3. *Id.*
4. *Id.*
5. *Id.*
6. *Id.*
7. *Id.* at 5.
8. *Id*. at 1.
9. *Id*. at 3–5.
10. *Id*. at 1.
11. *Id.*
12. *Id*. at 6.
13. *Id*.

14. *Id*. at 7.
15. *Id*.
16. *Id*.
17. *Id*. at 8.

Entergy Nuclear Operations, Inc. v. New York State Dept. of State, 28 N.Y.3d 279 (2016)

Facts

This matter involves the application from Entergy for an operating license renewal for the Indian Point Power nuclear reactors on the Hudson River.[1] The New York State Department of State determined that the application was subject to review for consistency under New York's Coastal Management Program (CMP).[2] Entergy appealed, contending that the facilities should be exempt from consistency review.[3]

Congress adopted the Coastal Zone Management Act (the Act) in 1972 "to preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation's coastal zone for this and succeeding generations."[4] Integral to the program was encouragement of states "to exercise their full authority" and responsibility of maintaining the integrity of coastal areas[5] through development of a Coastal Management Program (CMP) "setting forth objectives, policies, and standards to guide public and private uses of lands and waters in the coastal zone.'"[6] New York State received authorization to administer the Act under the state's CMP in 1982,[7] including the authority to review applications for federal licenses to ensure consistency with the 44 coastal policies adopted under the CMP.

New York State's CMP provides two exemptions from consistency review.[8] First, the CMP exempts "those projects identified as grandfathered pursuant to [the] State Environmental [Q]uality Review Act [SEQRA] at the time of its enactment in 1976."[9] Second, the CMP exempts projects for which a final Environmental Impact Statement has been prepared prior to the effective date of the New York's Part 600 regulations.[10] The CMP advises applicants to "contact the Department of State" for assistance in determining whether an exemption applies. The CMP lists the issuance of an operating license for a nuclear facility as a reviewable activity that requires the applicant to submit a federal consistency certification to the Department.

Procedural History

The New York Department of State determined that the Indian Point Facility was subject to consistency review under the CMP.[11] Entergy commenced this hybrid CPLR Article 78 proceeding/declaratory judgment action seeking to annul the department's determination and requesting a declaratory judgment that the Indian Point nuclear reactors are not subject to the CMP.[12] The Supreme Court upheld as rational the department's determination that neither exemption in the CMP applied and dismissed the proceeding.[13] The Appellate Division reversed and held that being grandfathered under SEQRA is equivalent to being grandfathered under the CMP, but did not address whether Indian Point met the criteria for the first exemption.[14] The New York Court of Appeals granted the appellant's motion for leave to appeal.[15]

Issue

Whether Entergy and the Indian Point Facility are subject to, or exempt from, consistency review under the CMP.

Rationale

As a preliminary matter, the court noted that the role of judicial review is not to second-guess an agency's interpretation of its own regulations. Rather, "the construction given statutes and regulations by the agency responsible for their administration, if not irrational or unreasonable, should be upheld."[16] Although the CMP is a program, rather than a regulation, the court treated the CMP and the state's interpretation of it as subject to the same deference.

Under the first exemption, consistency review does not apply to "those projects identified as grandfathered pursuant to [the] State Environmental [Q]uality Review Act [SEQRA] at the time of its enactment in 1976."[17] These facilities were initially issued 40-year operating licenses for 1973 and 1975. However, the New York Department of State argued that mere grandfathered *status* under SEQRA does not automatically entitle an applicant to exemption under the CMP.[18] Rather, because the CMP exemption includes the phrase "identified as grandfathered," the court reasoned that there "must have some meaning beyond simply referencing SEQRA, or the exemption would have just said 'grandfathered under SEQRA.'"[19] The court noted that SEQRA initially directed state agencies to identify grandfathered projects; Indian Point was not identified at that time in any agency list.[20] The Court upheld as rational the New York Department of State's interpretation of the first exemption.[21]

The second exemption provides relief for projects for which a final Environmental Impact Statement had been prepared prior to the effective date of the New York's Part 600 regulations. Entergy argued, and the Appellate Division held, that preparation of an EIS under NEPA qualifies the project for exemption. However, the Court of Appeals noted that the exemption from review applies only to a final EIS prepared under SEQRA.[22] The court deferred to the interpretation offered by the Department of State, which "rationally concluded that a federal environmental impact statement issued under NEPA before 1976 is not contemplated by the second exemption because the purpose of the exemption was to ensure that projects on which state agencies had invested

time, effort, and resources in the preparation of a state environmental impact statement would not thereafter be required to undergo a consistency review."[23] The Court also pointed out that Entergy's current application for license renewal involves new circumstances, new parties, new impacts, and even a new application, justifying the State's determination that new environmental analysis would be effective. [24] Contrary to Entergy's position, "Indian Point reactors are not forever exempt from consistency review" simply because the facilities underwent some review under the regulations and circumstances in the early 1970s.[25]

Conclusion

The Court sustained that the Department of State's interpretation of the exemptions in the Coastal Management Program and its conclusion that Entergy's application to re-license the nuclear reactors at Indian Point is subject to consistency review.

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Endnotes

1. *Entergy Nuclear Operations, Inc. v. N.Y. State Dept. of State*, 28 N.Y.3d 279, 284 (2016).
2. *Id.*
3. *Id.* at 288.
4. 16 U.S.C. § 1452 (1).
5. 16 U.S.C. § 1453(12).
6. *Entergy Nuclear Operations, Inc.*, at 285 (*citing* 16 U.S.C. § 1453 (12)).
7. *Id.* at 286.
8. *Id.* at 286–87. *See also* 19 N.Y.C.R.R. §§ 600.2. 600.3, 600.4; Executive Law § 919.
9. *Id.* at 289.
10. *Id.* at 287. *See also* 19 N.Y.C.R.R. § 600.
11. *Id.* at 289.
12. *Id.* at 288.
13. *Entergy Nuclear Operations, Inc. v. N.Y. State Dep't of State,* 42 Misc. 3d 896, 908 (Sup. Ct. 2013).
14. *Entergy Nuclear Operation, Inc. v. N.Y. State Dep't of State*, 125 A.D.3d 21, 25 (3d Dep't 2014).
15. *Entergy Nuclear Operations, Inc.* at 288. *See also Entergy Nuclear Operations, Inc. v. New York State Dep't of State*, 25 N.Y.3d 908 (2015).
16. Quoting *Natural Resources Defense Council, Inc. v. New York State Dept. of Envtl. Conservation*, 25 NY3d 373 (2015).
17. *Id.* at 289.
18. *Entergy Nuclear Operations, Inc.* at 289.
19. *Id.*
20. *Id.*
21. *Id.*
22. *Id*
23. *Id.*
24. *Id.*
25. *Id.*

Rte. 5 Co., LLC v. Village of Fayetteville, 46 N.Y.S.3d (4th Dep't 2017)

Facts

Petitioner commenced an Article 78 proceeding seeking, *inter alia*, to annul certain determinations of respondent, Village of Fayetteville Board of Trustees (Board of Trustees), which resulted in the enactment of Local Law No. 1 of 2015.[1] The Village of Fayetteville's local law No. 1 of 2015 amended the zoning district classification of two parcels following the issuance of a negative declaration of environmental significance under the State Environmental Quality Review Act (SEQRA), providing that the amendment would "take effect only after approval by [the] Onondaga County Department of Transportation and final site plan approval by the Village of Fayetteville Planning Board has been granted."[2]

Before answering the complaint, the Village of Fayetteville and the Board of Trustees filed a joint motion seeking the dismissal of the petition pursuant to CPLR 3211 and 7804 (f). Respondent Goodfellow Construction Management, Ltd., which had applied for the rezoning for a redevelopment project, also submitted an answer and joined the motion.[3] The Supreme Court granted the motion, stating that the petitioner's proceeding was "premature," and that the Board of Trustee's action under SEQRA was "not ripe for judicial review."[4]

Procedural History

Petitioner has appealed the district court's decision to grant the respondent's motion to dismiss, which reasoned that the petitioner's issue at hand was not ripe for review.[5]

Issue

Whether the district court erred in granting the respondent's motion to dismiss, pursuant to CPLR 3211 and 7804 (f), on the notion that the petitioner's proceeding was "premature" and that the Board of Trustee's action under SEQRA was "not ripe for judicial review."[6]

Rationale

Because a "CPLR article 78 proceeding may not be used to challenge a non-final determination by a body or officer," [7] the court looked to determine whether the action by the Board of Trustees was final and binding.[8] There is a two-step approach for this determination. First, the agency must find that the issue inflicts an actual and concrete injury, and second, the injury inflicted must not be prevented or improved by further administrative actions or steps available to the complaining party.[9]

The court found that the petitioner's action was ripe for review because the zoning amendment became final and binding on the date it was filed, regardless of the fact

that the zoning amendment was "conditioned upon successful reviews and approvals by other agencies."[10] Further, the decision making process relevant to the issues raised in the petitioner's complaint was completed when the Board of Trustees issued the negative declaration and amended the zoning laws.[11] No further administrative actions were available precluding review.

Conclusion

The court found that the petitioner's petition was ripe because the Board of Trustees had made a final decision with regard to the issues in the petitioner's complaint. Further administrative actions would not have ameliorated the petitioner's complaint. The court reversed the judgment, denied the respondent's motion for dismissal, reinstated the petitioner's petition, and remitted the matter to the Supreme Court for further proceedings on the petition.[12]

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Endnotes

1. *Rte. 5 Co., LLC v. Village of Fayetteville,* 46 N.Y.S. 3d 765, 766 (4th Dep't 2017).
2. *Id.*
3. *Id.*
4. *Id.*
5. *Id.*
6. *Id.*
7. *Id.* at 767.
8. *Id.*
9. *Id.* (quoting *Best Payphones, Inc. v. Dep't of Info. Tech. & Telecom. of City of N.Y.,* 5 N.Y.3d 30, 34 (2005)).
10. *Rte. 5 Co., LLC,* 147 A.D.3d at 767.
11. *Id.*
12. *Id.*

Our Children's Earth Found. v. Nat'l Marine Fisheries Serv., No. 14-cv-01130-WHO, 2017 U.S. Dist. LEXIS 291130 (N.D. Cal. Mar. 1, 2017)

Facts

In May of 2013, Our Children's Earth Foundation sent nine Freedom of Information Act (FOIA) requests to National Marine Fisheries Service (NMFS).[1] The FOIA requests were in regard to NMFS's "oversight of activities" at Stanford University and how those activities were impacting the Central California Steelhead.[2] Our Children's Earth Foundation believed that the operation of Searsville Lake and Dam was adversely affecting the steelhead by reducing "water flows in San Francisquito Creek."[3] This limited the ability of steelhead to access the upstream spawning habitat. [4] The plaintiffs argued that NMFS's responses were deficient, and brought two separate actions alleging that NMFS and the Fish and Wildlife Service (FWS) failed to comply with FOIA in responding to their requests for documents.[5]

Procedural History

In the course of prior litigation, the parties' cross-motions for partial summary judgment were granted in part and denied in part.[6] The request for declaratory judgment that the NMFS failed to respond to the advocates' FOIA requests and internal appeals within the statutory time limits was granted.[7] The court provided "limited injunctive relief," and required NMFS to provide proof as to how it was curing its violations and how it intended to continue improving.[8] Following the prior judgment, the plaintiffs sought over $700,000 for the costs they incurred while litigating the matter.[9] The defendants both opposed plaintiffs' claim and challenged the "reasonableness of the amount sought."[10]

The plaintiffs are seeking to recover attorney's fees and other costs they incurred while litigating two consolidated claims against the defendant.[11]

Issue

Whether Our Children's Earth Foundation is entitled to be reimbursed for attorney's fees and other costs incurred in the course of their litigation against NMFS under the FOIA provision of 5 U.S.C.S. § 552(a)(4)(E)?

Rationale

The court considered four factors to determine whether Our Children's Earth Foundation was entitled to recover attorney's fees: "(1) the benefit to the public, if any, deriving from the case; (2) the commercial benefit to the complainant; (3) the nature of the complainant's interest in the records sought; and (4) whether the government's withholding of the records sought had a reasonable basis in law."[12]

Under the first factor, the court considered the "degree of dissemination and likely public impact that might result."[13] In this matter, the plaintiffs used the documents to promote compliance with environmental laws.[14] They shared the information with "their members, the press, and the public" through various means.[15] Additionally, the plaintiffs' lawsuit disclosed NMFS's history of noncompliance under FOIA.[16] Therefore, the plaintiffs conferred a benefit on the public.[17]

Under the second and third factors, the court looked at whether the plaintiffs utilized the lawsuit to protect a private or commercial interest.[18] The court also decided whether the suit was public oriented, or commercial in nature.[19] Despite the defendants' argument that the purpose of the lawsuit was to force them to produce documents that the plaintiffs could use, the court decided in favor of plaintiffs, stating that there was a "significant and separate public benefit sought and secured by the

plaintiffs," and the results shed light on NMFS's failure to adequately carry out its agencies duties.[20]

The fourth factor the court considered was whether the government's actions were based in law, or to avoid embarrassment or frustrate the party who requested the information. [21] Here, the court determined that neither NMFS's responses to the FOIA requests nor the litigation position had a "reasonable basis in law." [22] As each factor was sufficiently satisfied, the plaintiffs were entitled to an award of attorney's fees.[23]

The court then performed an analysis of whether the amount requested was reasonable, which included (1) "the hourly rates and" (2) "the number of hours claimed."[24] The rates requested by the plaintiffs were found not reasonable, by a comparison of the reasonable rate in the legal community for similar work.[25] The court allowed the plaintiffs to seek recovery for the work on both claims, but not on work for a never-filed third claim.[26] Additionally, plaintiffs were required to reduce the "excessive and unreasonable" hours claimed for filing motions.[27]

Conclusion

The court granted the plaintiffs' request for attorney's fees, and $3,190.39 in costs, but significantly reduced the amount to be awarded.[28]

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Endnotes

1. *Our Children's Earth Found. v. Nat'l Marine Fisheries Serv.*, No. 14-cv-01130-WHO, 2017 U.S. Dist. LEXIS 29130, at 2 (N.D. Cal. Mar. 1, 2017).
2. *Id.* at 2.
3. *Id*. at 3.
4. *Id*.
5. *Id.*
6. *Id*. at 5.
7. *Id*. at 11.
8. *Id*.
9. *Id*.
10. *Id*.
11. *Id*.
12. *Id*. at 12.
13. *Id*. at 17–18.
14. *Id*. at 19.
15. *Id*.
16. *Id*. at 20.
17. *Id*. at 21.
18. *Id*.
19. *Id*.
20. *Id*. at 24.
21. *Id*.
22. *Id*. at 24–25.
23. *Id*. at 26.
24. *Id*.
25. *Id*. at 29.
26. *Id*. at 41–42.
27. *Id*. at 43.
28. *Id*.

Riverkeeper, Inc. v. New York State Department of Environmental Conservation, 2017 WL 164839 (A.D.3d July 20, 2017)

Facts

The Danskammer Generating Station (the "Station"), located on the Hudson River, uses a "once-through cooling system," wherein water is pumped from the river to cool the units and then returned to the river at a higher temperature.[1] Because temperature can be considered a pollutant under state and federal law, the state was required to obtain a State Pollutant Discharge Elimination System (SPDES) permit from respondent Department of Environmental Conservation (DEC).[2] The Station also was required to obtain a Title V permit because it was a source of hazardous air pollutants pursuant to the federal Clean Air Act. [3]

The then-owner sought to sell the Station at auction after he filed for bankruptcy in 2011.[4] In 2012, a massive storm forced the Station offline and the then-owner had to request an authorization to immediately discontinue the Station's operation.[5] The bidder the owner sold it to planned to demolish the Station.[6] The Public Service Commission (PSC) granted the request in April 2013, but the sale was never completed and regulatory changes restored the Station's financial viability.[7] In June 2014, the PSC authorized a transfer of the Station from another entity to respondent Danskammer Energy ("Danskammer").[8]

As time went on, Danskammer applied for updated SPDES and Title V permits.[9] In August 2014, the DEC issued a negative declaration pursuant to the State Environmental Quality Review Act (SEQRA) and granted final SPDES and Title V permits to Danskammer.[10]

Procedural History

Petitioners appealed the New York State Supreme Court's dismissal of petitioner's claims for the annulment of the SEQRA negative declaration and the final SPDES and Title V permits.[11]

Issues

Whether the DEC's grants of SPDES and Title V permits were arbitrary and capricious, and whether the DEC improperly issued a SEQRA negative declaration.

Rationale

The court's job was not to "substitute [its] judgment for that of the agency responsible for making the deter-

mination, . . . [but to] ascertain only whether there is a rational basis for the decision or whether it is arbitrary and capricious."[12] The agency's decision was not arbitrary or capricious with respect to the SPDES permit because, notwithstanding the petitioner's contention that the discharge of warm water from the Station will occasionally cause the water temperate to exceed the regulatory maximum of 90 degrees, there was nothing improper in allowing temperature to rise above the criteria in small areas near outfalls.[13] The court concluded that, in accordance with New York's "mixing zone" policy, the DEC provided adequate documentation that the rise in temperature would not interfere with spawning areas, nursery areas, or fish migration routes; nor would the rise in temperature be stressful or lethal to fish in the area.[14]

In deciding whether the Title V permit actually required a new source review, as the petitioner contended, the court had to determine whether the owner at the time of the plant's shutdown intended for that shutdown to be permanent.[15] The court held that because the Station had resumed operation less than two years after it was shut down and the operator "continued to maintain the various permits required to run [the Station,]" there was no intent to permanently shut down the Station and that the DEC's determination that the review was not required was correct.[16]

Finally, the court addressed the petitioner's argument that the DEC improperly found "that the permit renewals would have no significant effect upon the environment and [issued] a negative declaration."[17] Because the "DEC observed that the Station's environmental impacts were not new . . . and that the issuance of modified renewed permits would lessen the existing impacts . . . [,]" the court concluded that the DEC's determination was reasonable.[18]

Conclusion

The court rejected each of the petitioner's claims and affirmed the lower court's ruling, without costs.[19]

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Endnotes

1. *Riverkeeper, Inc. v. New York State Department of Environmental Conservation*, 2017 WL 164839, at *1 (A.D.3d July 20, 2017).
2. *Id.*
3. *Id.*
4. *Id.*
5. *Id.*
6. *Id.*
7. *Id.*
8. *Id.*
9. *Id.*
10. *Id.*
11. *Id.*
12. *Id.* at 2 (quoting *Flacke v. Onondaga Landfill Sys.*, 69 N.Y.2d 355, 363 (N.Y. 1987); *DEC of City of N.Y. v. DEC of State of N.Y.*, 120 A.D.2d 166, 169 (2d Dep't 1986)).
13. *Id.*
14. *Id.* at 2–3.
15. *See id.* at 3.
16. *Id.*
17. *Id.* at 4.
18. *Id.*
19. *Id.*

Friends of P.S., Inc. v. Jewish Home Lifecare v. New York State Dep't of Health, 146 A.D.3d 576 (1st Dep't 2017)

Facts

Jewish Home Lifecare (JHL) sought to construct a 20-story nursing home facility in Manhattan that is directly adjacent from Public School (P.S.) 163.[1] The New York State Department of Health (DOH) approved the proposal by JHL to construct the nursing home.[2] Petitioners challenged the approval of the proposal as capricious and inconsistent with DOH's obligations under the State Environmental Quality Review Act (SEQRA).[3]

Procedural History

The Supreme Court of New York County granted the petition seeking to annul a Findings Statement issued by the DOH. Jewish Home Lifecare appealed.[4]

Issue

Whether DOH had failed to take the requisite "hard look" at the environmental effects of, and appropriate mitigation measures for the noise and the lead-containing airborne dust particles that would be generated during the construction of the project, and whether DOH failed to provide a reasoned explanation for its findings.[5]

Rationale

Majority

Judicial review of an agency determination under SEQRA is limited to whether the agency procedures were lawful and whether the agency identified the relevant areas of environmental concern, took a "hard look" at them, and made a "reasoned elaboration" of the basis for its determination.[6] Courts are not supposed to "second-guess thoughtful agency decision-making and, accordingly, an agency decision should be annulled only if it is arbitrary, capricious or unsupported by the evidence."[7] It is the court's province to assure that the agency has satisfied SEQRA both procedurally and substantively.[8] An agency's substantive SEQRA obligations are "governed by a rule of reason and the extent to which particular environmental factors are to be considered varies in accordance with the circumstances."[9]

The DOH took a "hard look" at the issues of noise mitigation and off-site migration of lead-bearing dust when it offered remedial measures to mitigate adverse impacts.[10] The DOH offered air conditioning units and installation of new acoustical windows on the side of the school facing the project site as mitigation measures.[11] The City Environmental Quality Review Technical Manual (CEQRTM) allows noise levels to exceed the impact criteria as long as those levels do not last more than two years.[12] The mitigation measures also would reduce noise levels by 25-30 dBA during the 14 months of the project.[13] DOH recognized that any level of exposure to lead dust in unacceptable, but offered mitigating measures that are accepted by federal and state agencies.[14] The remedial measures offered included a two-foot cap of clean soil over any ground exposed after construction and dust control measures including watering the soil during demolition, excavation, and soil transport to minimize airborne dust.[15]

Petitioners argued that the reports of their experts were not properly addressed.[16] However, the rule is that it is within the agency's discretion to rely on its own experts and consultants.[17] The agency's reliance on its own consultants and experts does not mean the agency failed to take a "hard look."[18]

Dissent

The dissent sought to require the agency to issue a Supplemental Environmental Impact Statement (SEIS) as SEQRA does not allow for an amended Final Environmental Impact Statement (FEIS).[19] The dissent reasoned that children are especially sensitive to noise and relied on the petitioner's expert testimony that the noise would be loud enough to potentially interfere with their wellness and the ability to learn.[20] The dissent recognized the allowed sound level of CEQR is 45 dBA and the noise level of the project would exceed 50 dBA.[21]

The dissent also rejected the DOH's offer of remedial measures because there is no possible way to continuously monitor the air for toxics.[22] The dissent argued that DOH's rejection of the proposed remedial measure of a tent, which experts considered the only available remedial measure, constituted a failure of the agency to take a "hard look" at all relevant mitigation measures or make a reasoned elaboration.[23]

Conclusion

The court found for Jewish Home Lifecare and reversed the lower court's decision that the DOH failed to take a "hard look" at the environmental concerns.

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Endnotes

1. *Friends of P.S., Inc. v. Jewish Home Lifecare*, 146 A.D.3d 576, 576 (1st Dep't 2017).
2. *Id*.
3. *Id*. at 577.
4. *Id*.
5. *Id*. at 581.
6. *Id*. at 577 (citing *Jackson v. New York State Urban Dev. Corp*., 67 N.Y.2d 400, 417 (1986)).
7. *Id*. (citing *Riverkeeper, Inc. v. Planning Bd. of town of Southeast*, 9 N.Y.3d 219, 232 (2007)).
8. *Id*. (citing *Jackson*, 67 N.Y.2d at 416).
9. *Id*. (citing *Akpan v. Koch*, 75 N.Y.2d 561, 570 (1990)).
10. *Id*.
11. *Id*. at 579.
12. *Id*.
13. *Id*.
14. *Id*. at 580.
15. *Id*.
16. *Id*.
17. *Id*.
18. *Id*.
19. *Id*. at 581.
20. *Id*. at 583.
21. *Id*. at 583–84.
22. *Id*. at 586.
23. *Id*. at 586–87.

Recent Legislation

Exec. Order No. 13783, 82 Fed. Reg. 171, Promoting Energy Independence and Economic Growth (March 28, 2017).

President Trump issued an executive order concerning the promotion of energy independence and economic growth on March 28, 2017.[1]

The executive order stated that it is in the national interest to promote the clean and safe development of domestic energy resources while also avoiding regulatory burdens.[2] In recognition of this interest, all heads of relevant executive agencies must immediately review any agency actions that may unduly burden the development of domestic energy resources.[3] Following this review, any regulations found to be unduly burdensome must be suspended, revised, or rescinded.[4]

Additionally, the executive order revoked a number of presidential actions and reports, including: (i) Executive Order 13653 of November 1, 2013 (Preparing the United States for the Impacts of Climate Change), (ii) The Presidential Memorandum of June 25, 2013 (Power Sector Carbon Pollution Standards), (iii) The Presidential Memorandum of November 3, 2015 (Mitigating Impacts on Natural Resources from Development and Encouraging Related Private Investment), (iv) The Presidential Memorandum of September 21, 2016 (Climate Change and National Security), (v) The Report of the Executive

Office of the President of June 2013 (The President's Climate Action Plan), and (vi) The Report of the Executive Office of the President of March 2014 (Climate Action Plan Strategy to Reduce Methane Emissions).[5]

The order also called for the review of the Environmental Protection Agency's Clean Power Plan and the related rules and agency actions.[6] Further, the executive order disbanded the Interagency Working Group on Social Cost of Greenhouse Gases (IWG), withdrawing analysis documents produced and issued by the IWG.[7]

Finally, the order lifted all moratoria on federal land coal leasing activities and required further review of the rule titled "Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources," to determine whether the rule was an undue burden on the development of domestic energy resources.[8]

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Endnotes

1. Exec. Order No. 13783, 82 Fed. Reg. 171, Promoting Energy Independence and Economic Growth (March 28, 2017).
2. *Id.* § 1.
3. *Id.* § 2.
4. *Id.* § 2.
5. *Id.* § 3.
6. *Id.* § 4.
7. *Id.* § 5.
8. *Id.* §§ 6, 7.

No Tax Dollars for the United Nations' Climate Agenda Act, H.R.673

A bill sponsored and introduced in the House by Representative Blaine Luetkemeyer is under consideration in the United States House of Representatives. The bill would prohibit federal agency funds from being used to contribute to the Intergovernmental Panel on Climate Change (IPCC) or the United Nations Framework Convention on Climate Change (UNFCCC)[1](the "Bill").

The Bill was referred to the House Committee on Foreign Affairs on January 24, 2017.[2] The Bill is co-sponsored by 15 Representatives, all of whom are Republicans. The goal of the bill is to ensure that any funds made available to any federal department or agency will not be used to make an assessed or voluntary contribution on behalf of the United States to the IPCC or UNFCCC.[3]

The bill is one of many introduced in the House at the beginning of the Trump presidency to defund environmental research and management.[4] The No Tax Dollars Act is accompanied by: H.R. 861 to terminate the U.S. Environmental Protection Agency; H.R. 958, to eliminate certain unspecified programs of the Environmental Protection Agency; and H.R. 637, the Stopping EPA Overreach Act of 2017, which prohibits the EPA or any other federal agency from regulating greenhouse gases (GHGs).[5]

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Endnotes

1. No Tax Dollars for the United Nations' Climate Agenda Act, H.R. 673, 115th Cong. (2017).
2. *Id.*
3. *Id.*
4. Tanya Lee, *Republicans in Congress Run Amok as Nation Fixates on Trump*, Indian Z (Feb. 23, 2017), https://www.indianz.com/News/2017/023983.asp.
5. *Id.*

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