State of New Hampshire
Site Evaluation Committee
Docket No. 2015-01

In re:
SEA-3, INC.,
Request for Exemption

GREAT BAY STEWARDS WITNESS LIST FOR ADJUDICATORY PUBLIC HEARING

Now comes the Great Bay Stewards (Stewards or GBS) by their undersigned representative, and respectfully submit this List of Witnesses, along with their prefiled testimony pursuant to the Committee's Procedural Order dated June 18, 2015.

1. Peter Kinner
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2. Peter Wellenberger
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4. Fred C. Mason
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Respectfully submitted,
Great Bay Stewards,
By its non-attorney representative,

Dated: August 17, 2015

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Certification

I hereby certify that on this 17th day of August 2015, I emailed a copy of the foregoing List of Witnesses and Pre-filed Testimony to the persons on the Service List of this Docket.

State of New Hampshire
Site Evaluation Committee
Docket No. 2015-01

In re:
SEA-3, INC.,
Request for Exemption

GREAT BAY STEWARDS PREFILED TESTIMONY AND IDENTIFICATION OF WITNESSES FOR ADJUDICATORY PUBLIC HEARING

August 17, 2015

Now comes the Great Bay Stewards (Stewards or GBS) by their undersigned representative, and respectfully submit this identification of witnesses and pre-filed testimony pursuant to the Committee's Procedural Order dated June 18, 2015.

The pre-filed testimony appearing herein is that of Great Bay Steward Board Members Peter Wellenberger, Peter Kinner and Fred Mason as applicable to each. Peter Wellenberger, Peter Kinner, Terry Collins and Fred Mason will serve as witnesses. The Great Bay Stewards, however, reserve all rights to seasonably amend their witness list and update their disclosures as justice may require.

Peter Wellenberger is Executive Director of the Great Bay Stewards and was, for 22 years, the Manager of the Great Bay National Estuarine Research Reserve, and subsequently was the Great Bay – Piscataqua Waterkeeper for the Conservation Law Foundation and Waterkeeper Alliance. He holds an MS in Resource Management and Public Policy from Antioch University New England and a BS from the University of New Hampshire.

Peter Kinner is a marine scientist with 35 years experience as an environmental consultant, ultimately as Senior Vice President and Manager of Northeast and Southeast Operations, Normandeau Associates. He holds an MS in marine studies from the University of Delaware College of Marine Studies and a BA in biology from McDaniel College.

Fred Mason has 37 years of private sector experience, ultimately as Managing Director, Caterpillar Luxembourg, S.a.R.L. and Director, Global Product Source Planning, Caterpillar, Inc. He is a trustee emeriti for the H. John Heinz III Center for Science, Economics and the Environment, and a former liaison delegate to the World Business Council for Sustainable Development. He holds an MBA from the Booth School of the University of Chicago and a BS in economics from Juniata College.

Terry J. Collins, PhD, is the Teresa Heinz Professor of Green Chemistry and Director of the Green Science Institute at Carnegie-Mellon University where he has been a faculty member since 1987. He has a PhD from Auckland University and was a post-doctoral fellow at Stanford University.

Sea-3 wishes to reconfigure and expand its Newington facility located along the Piscataqua River "to provide bulk volume available for shipping by sea to accommodate domestic and foreign product price fluctuations". On January 8, 2015, Sea-3 filed a request with the Site Evaluation Committee for exemption from the certification process of RSA 162-H. The Great Bay Stewards oppose an exemption for Sea-3. The intent of this testimony is to demonstrate that there are aspects of Sea-3's plans that will not be adequately covered by existing regulatory programs or oversight and, further, that a certification proceeding is needed. The Committee and public need to have adequate information to be able to assess the implications of the proposed Sea-3 expansion for the ecosystem of the Great Bay estuary, the safety of children and other visitors to the Great Bay Discovery Center, the potential impacts on the regional economy and the quality of life in the area. This can be done only through a certification proceeding. The Stewards fully recognize the need for energy and do not view the questions and concerns we pose about Sea-3's proposed reconfiguration and expansion as pitting commerce against the environment. Rather, our belief is that a reasoned assessment of Sea-3's plans requires a thoughtful and fact-based assessment of the projected benefits, costs and risks, exactly as envisaged by the NH legislature when it enacted RSA 162-H to assure consideration of "the welfare of the population, private property, the location and growth of industry, the overall economic growth of the state, the environment of the state, historic sites, aesthetics, air and water quality, the use of natural resources, and public health and safety"[1] and "to maintain a balance among those potential significant impacts and benefits".[2] The formatting of this testimony is: background on the Great Bay Stewards; why the Great Bay estuary and its tidal rivers is a valuable ecosystem; why the Great Bay estuary is a major economic asset for the regional and state; risks created by Sea-3's proposed expansion and its supply line; why the Sea-3 expansion should not be exempt from the site certification process established by RSA 162-H.

**The Great Bay Stewards (GBS).** Peter Wellenberger will testify as follows: GBS was founded in 1995 and, in 1997, merged with a predecessor organization, the Great Bay Trust, a group of citizens, scientists and community leaders who organized in 1983 to coordinate and strengthen their efforts to protect the Bay. The Stewards are a non-profit, volunteer organization dedicated to helping to protect the Great Bay and support the Great Bay National Estuarine Research Reserve (GBNERR), including the

[1] Title XII, Public Safety and Welfare, Chapter 162-H, Section 162-H:1
[2] ibid

GBNERR's educational outreach through the Great Bay Discovery Center (GBDC). Members of the Stewards come from all walks of life. They work with staff and scientists from the GBNERR to assist with research, develop and run education programs, and help raise funds for facilities and programs. The Stewards are an Associate Members of the Great Bay Resource Protection Partnership. The Partnership consists of conservation organizations representing regional, state and federal agencies, municipalities and land trusts serving the region. It operates as a voluntary collaborative under the facilitative direction of the Great Bay Coordinator. Partnership organizations provide expertise to accomplish conservation projects.[3]

**The Great Bay estuary is a valuable ecosystem**. Peter Wellenberger and/or Peter Kinner will testify as follows: The Great Bay estuary and its tidal rivers represent a huge asset for the region and state. That value is embodied in the estuary's "natural capital" represented by its mix of plants, animals, fish and microorganisms that, together, function as a unique ecosystem. As discussed below and in the following section, the estuary and its tidal rivers provide habitat for commercial and recreational fishing, support the fast growing oyster aquaculture businesses, are an expansive and attractive location for recreational boating, and increase relative values for properties near clean water -- all of which contribute to increased state and municipal tax revenues. The wetlands, oysters and eelgrass provide natural erosion control, water purification, nitrogen cycling and flood protection that would otherwise require massive investments to achieve with infrastructure. A less obvious, but important aspect of the ecosystem is its biological diversity. The value of biodiversity extends beyond the obvious food, fiber and shelter, to medicines and industrial chemicals. Biological diversity is essentially a vast library for the life sciences that can be drawn upon to improve critical biologically-based enterprises like agriculture and medicine.[4] For example, the horseshoe crabs that breed in the estuary are important to the medical field because their blood can be used to detect bacterial endotoxin that is harmful to humans. Loss of biodiversity, regardless of the cause, means diminishing the biological inventory available for future use in the development of "natural capital". If properly managed and protected, the Great Bay estuary, its watershed and its biodiversity can continue to yield a flow of "ecosystem services". The issue is not academic. The New Hampshire Estuary Spatial Planning Project (NH ESP) is a two-year effort, launched in September 2013, to coordinate the collection, integration, and accessibility of existing spatial data for New Hampshire's Hampton-Seabrook and Great Bay estuaries. The overall goal is to improve decision making by providing economic value estimates for ecosystem services that can be considered when

[3] Great Bay Resource Protection Partnership website, http://www.greatbaypartnership.org/
[4] Dr. Tom Lovejoy, "Biodiversity" in Respect for the Earth, pages 24-25

assessing proposed major projects. The project notes that a "diverse group of organizations around New Hampshire's estuaries is investing substantial resources in oyster, salt marsh, eelgrass, and fisheries protection and restoration. There are also major projects to improve water quality underway with regard to stormwater control and wastewater treatment facility effluent permits, as well as intensified interest in oyster aquaculture. The estuaries face ongoing pressures including, but not limited to, population growth and development, marine transportation, boat moorings, pathogens, invasive species, eutrophication, and climate change".[5]

The large quantities of water that move in and out of the estuary create some of the strongest tidal currents in North America. The tidal range reaches heights of nine feet and, at low tide, leaves half the Bay exposed as mudflats. This tidal exchange structures the Great Bay ecosystem by affecting water quality, habitat extent, and species distributions. The rivers that flow into the Great Bay Estuary drain a watershed that extends more than 1,000 square miles, and this convergence of land and water shapes features and uses of the ecosystem. As another example of economically important ecosystems service, the marshes and wetlands that border the estuary provide critical buffer protection from storm surges and rising tides for the homes, businesses, and towns around the bay. The New Hampshire Multi-Hazard Mitigation Plan highlights the importance of salt marshes to, "provide natural protection against coastal flooding."[6]

An important element of the estuary's uniqueness is its particular mix of diverse habitats including eelgrass beds, mudflats, salt marsh, rocky intertidal, and upland forest and fields. Eelgrass is one of the few underwater marine flowering plants. It has many functions in the estuarine system and is an important food source for some species of waterfowl. Eelgrass beds provide habitat for young fish and invertebrates and the roots help stabilize the bottom sediments. Eelgrass plants also help maintain water quality by filtering the water allowing sediments to settle and then using the excess nutrients for growth.[7] While critically important to the health of the Bay, eelgrass has been adversely effected by nitrates and other pollution. In 2012, the long-term trend in the decline of eelgrass distribution was estimated at 37% estuary wide since 1996.[8]

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[5] The New Hampshire Estuary Spatial Planning Project: Coordinating Data to Assess of Ecosystem Services. Project website

[6] State of New Hampshire Multi Hazard Mitigation Plan 2013, pg. 209

[7] Great Bay National Estuarine Research Reserve website, Natural Heritage, http://greatbay.org/about/heritage.htm

[8] Dr. Frederick Short, Eelgrass Distribution in the Great Bay Estuary for 2012, August 23, 2013, report to The Piscataqua Region Estuaries Partnership

At low tide, more than half of Great Bay is exposed as mudflats. Worms, soft-shelled clams, mud snails, horseshoe crabs, wading birds and many other animals utilize the extensive mudflat habitat for feeding, reproduction and protection from predators. The high densities of worms and bivalves are major attractants for predators such as crabs, birds, and fish. The channel bottom provides a place for fish and invertebrates to move to at low tide. It is also the preferred habitat for oysters, an animal only found in estuaries. Because oysters filter the water to feed, they help to remove pollutants and nutrients.[9]

There are both expansive meadow marshes and narrow fringing marshes along the shores of the bay. They provide important breeding, refuge, and forage habitats for invertebrates, fish, and birds. As organisms move between salt marshes and other estuarine habitats, they help export nutrients and energy to support the complex coastal food web. The NH Department of Fish and Game has identified salt marshes as a critical habitat in the State.[10] Salt marshes are important a variety of ecosystem services including supporting the following species:

- Willet*
- Semipalmated sandpiper
- Common tern
- American bittern
- Black duck
- Short-eared owl
- Seaside sparrow
- Nelson's sharp-tailed sparrow*
- Saltmarsh sharp-tailed sparrow*

*NH *Species of Concern*[11]

The Great Bog and Pickering Brook wetland complex are highly-valued habitats that drain directly into the Great Bay. The Great Bog, a 600 acre wetland complex was identified as a special resource in the seacoast and a management plan was developed for the area in 2006.[12] This area provides habitat and breeding area for numerous plant and animal species. The Bog also protects and

[9] Great Bay National Estuarine Research Reserve website, Natural Heritage, http://greatbay.org/about/heritage.htm
[10] NH Fish and Game Non-Game Program Critical Habitats and Associated Species
[11] The "special concern" list contains (a) species that could become "threatened" in the foreseeable future if conservation actions are not taken or that were recently recovered enough to be removed from the endangered and threatened category and (b) species for which a large portion of their global or regional range (or population) occurs in New Hampshire and where actions to protect these species habitat will benefit the species' global population. Rare Animal List for New Hampshire, New Hampshire Natural Heritage Bureau, July 2013
[12] Great Bog Management Plan, Great Bog Conservation Area, NH Fish and Game, 2006

filters the water entering Pickering Brook and subsequently the Great Bay, helping to protect the water quality of the estuary. It also provides protection for a drinking water source for the City of Portsmouth.

Surrounding portions of the Bay are acres of upland fields and forests. Hardwood forests grow next to the salt marshes. These forested areas are shelter for many of the species that come to the estuary to feed. Many of the fields are still active farms. The land around the bay is classified as some of the most valuable agricultural land in New Hampshire.

These habitats are home to hundreds of bird, fish and plant species, including 23 that are considered threatened or endangered. To highlight a few, the New Hampshire Natural Heritage Bureau lists the Bald Eagle, Northern Harrier, Saltmarsh Sparrow and the American Brook Lamprey eel as either endangered or threatened, all of which live in the estuary. The Great Bay estuary is home to the state's largest concentration of over-wintering Bald Eagles.[13] The NH Audubon Society identifies the Great Bay as an "Important Bird Area", part of an international program to protect areas that provide critical habitat to birds.[14]

**The Great Bay estuary drives regional economic prosperity and growth.** Peter Wellenberger and Fred Mason will testify as follows: Important elements of the regional economy are dependent on preserving the health, quality and safety of the Great Bay estuary, its tidal rivers and ecosystems. Industries such as fishing, lobstering and oystering rely on the water quality and the functioning of the ecosystem. In 2014, 4,939,300 pounds of lobster with a value of some $23, 252,000 and 4,751,350 pounds of other species with a value of over $3.5 million were landed in New Hampshire.[15] The vast majority of these amounts are directly or indirectly dependent on the Great Bay estuary and its tidal rivers for habitat or spawning.

Other key major contributors to the regional economy are also dependent on the Great Bay estuary including businesses that rely on the attractiveness of the area as a destination for tourism or an attractive location in which to live and work. While comprehensive local data are not readily available, as a rough indication, NH Employment Security data indicate that the food and accommodations industry in Rockingham and Strafford Counties employed, on average during the fourth quarter of 2014, a total of some 17,200 people with total annual wages of about $320 million.[16] If, for example, one were to assume that only ten percent of those amounts resulted from the attractiveness of the Great Bay

[13] Great Bay Wildlife Refuge website, http://www.fws.gov/refuge/Great_Bay/about.html
[14] The Great Bay Important Bird Area, http://nhbirdrecords.org/all-articles/Great%20Bay%20IBA.pdf
[15] Source: NH Fish & Game data
[16] NH Employment Security, Economic + Labor Market Information Bureau, http://www.nhes.nh.gov/elmi/index.htm. Annual estimates as 50 x 2014Q4 weekly averages

estuary, the totals are employment of over 1,700 and annual wages of over $30 million. These estimates may be understated due to seasonal trends and, importantly, they do not include hotel and restaurant revenues and tax payments. As another, albeit isolated reference point, 2014 Gross Domestic Product (GDP) for the Leisure and Hospitality industry for NH Coastal Counties is estimated at some $850 million.[17] On a national level, the economy of many coastal areas is based primarily on the natural beauty and bounty of estuaries. Over half the U.S. population lives in coastal areas, including along the shores of estuaries. Coastal watershed counties provided 67 million jobs and contributed $8.7 trillion to the GDP in 2010[18]

**Substantial investments have been made to preserve and protect the Great Bay.** Peter Wellenberger will testify as follows: The Great Bay National Estuarine Research Reserve was designated in 1989 and is one of only 28 recognized by the U.S. Congress as an "estuary of national significance". At the time of its designation, and consistent with provisions of Section 315 of the Coastal Zone Management Act, 16 U.S.C 1461, the State met a group of conditions including one requiring that NH State law provide long-term protection for reserve resources to ensure a stable environment for research. GBNERR's first management plan in 1989, noted that "all agreed that the Bay contains a unique variety of habitats and indigenous species".[19] It also noted that there had long been recognition of the value of the Bay, including a 1945 Great Bay Development Plan, prepared at the request of the legislature, that declared the Great Bay to be "the greatest undeveloped recreational resource in all of New England"[20] As a national research reserve, the estuary is protected for long-term research, water-quality monitoring, education and coastal stewardship. The Reserve begins at the General Sullivan Bridge at Dover Point, seven miles from the mouth of the Piscataqua River and the Gulf of Maine. It encompasses 10,235 acres, including approximately 7,300 acres of open water and wetlands. All of Great Bay and Little Bay are contained within the Reserve boundary as well as the tidal portions of five major river systems: Bellamy, Oyster, Lamprey, Squamscott and Winnicut.[21]

In creating the GBNERR, $61.6 million in federal funds was invested to acquire land around the Bay. The investment was augmented by an additional $16.4 million from the State, municipalities, foundations, NGO's, and individuals. Beyond investments in the GBNERR, municipalities surrounding the Bay have invested or are anticipated to invest over $100 million in wastewater treatment facilities and

[17] National Ocean Economics Program website, http://oceaneconomics.org/Market/coastal/coastalEconResults
[18] National Ocean Economics Program, State of the U.S. Ocean and Coastal Economies, 2014
[19] Great Bay National Estuarine Research Reserve Management Plan, November 1989
[20] ibid
[21] Great Bay National Estuarine Research Reserve webpage

stormwater management to improve water quality in the estuary. Judd Gregg, former NH Governor and former NH Senator who was instrumental in obtaining federal funding for the Reserve has said that "The Great Bay is one of the most extraordinary environmental resources in our state and ensuring the protection of this important ecosystem is critical."[22]

In a recent press release, on the signing of HB 354, Governor Hassan declared "The Great Bay is one of our state's natural treasures, critical to our economy and our high quality of life, and we must do everything that we can to protect its magnificent yet fragile ecosystem".[23]

**Sea-3's proposed expansion increases risks to the Great Bay.** Peter Kinner and Terry Collins will testify as follows: Sea-3's planned expansion will increase rail traffic significantly on the Rockingham Junction - Newington spur owned and operated by Sea-3's supply line, Pan Am Railways. The rail line to the Sea-3 facility runs along the estuary and connecting watersheds for much of the route. In a response to data requests, Mr. Bogan, indicated that Sea-3 expects to receive up to 5,480 cars of propane each year (10,960 cars transited). This represents a thirteen-fold increase in rail traffic over this corridor. The additional traffic dramatically increases the potential for derailments and accidents on the railway and the three trestles that cross parts of the estuary or its watersheds. While accidents and incidents may result in the release in propane, the more probable, likely more frequent and, therefore, the larger concern are potential leaks or spills of diesel fuel, lubricants, or other hazardous cargo due to problems with the tracks or trestles, or human error. In addition to the potential for accidents and incidents, the additional traffic will cause increased potential adverse impacts related to daily rail operations. The most significant impacts to the estuary would occur from accidents or derailments that cause the release of hazardous cargo into the waters of the Great Bay or its watersheds. However, significant and prolonged damage to the estuary, wetlands and habitats could also result from the spilling of fuel from the diesel engines or the release of oil and grease used to lubricate the equipment.

[22] Karen Finogle, quoting Judd Gregg in "Currents of Cooperation: The Forest Society Partners for Protection around Great Bay", Forest Notes, Summer 2007.
[23] Press Release, NH Governor's Office, June 8, 2015

Federal Railroad Administration (FRA) statistics indicate that, although the number of train accidents decreased over the period 2005-2014, the level of damages over $1 million dollars remained constant. Additionally, with the increased transportation of volatile crude oil, there have been a number of rail accidents that have resulted in significant damage and deaths. Of particular note are recent major accidents involving trains handling petroleum products.[24] These included:

- Culbertson ND, 2015
- Mt. Carbon WV, 2015
- Dubuque IA, 2015
- Lynchburg VA, 2014
- Casselton ND, 2013
- Lac-Mégantic QC, 2013
- Parker's Prairie MN, 2013

Although there have not been as many accidents involving rail transport of propane, there are a few of particular note:

- Holliston ND 2014- unscented propane, 40 people evacuated[25]
- Bulls Gap TN 2013- involved four propane cars (no release of propane), RT 66c closed, diesel fuel spilled[26]
- Lincoln, CA, 2011- burning propane tank car at Northern Propane Energy yard. Evacuation of a one mile radius, including the inhabitants of 4000 – 5000 homes[27]
- Shepardsville KY 2007- required evacuation of the area and 18 miles of interstate 65[28]

FRA Accident & Incident Statistics provide an indication of the safety performance of Pan Am Railways for the last four years. During that period, Pan Am had 73 reportable incidents, including 25 accidents (Table 4-1, following page).[29] The FRA provides a standard measure (Accidents & Incidents per million train miles) to compare the performance of railroads. Between 2012 and 2013, Pan Am showed a substantial increase in incidents and this continued into 2015. An examination of the years of 2006 - 2011 indicated that incidents (16-30 per annum)[30] was even more frequent than the recent four years. When comparing the performance of Pan Am versus U.S. railroads overall during the last 3 years, Pan Am's performance was consistently poorer.

[24] The DOT-111 Reader website, http://dot111.info/
[25] Associated Press, August 26, 2014
[26] New York Times News 2013
[27] Associated Press, August 24, 2011
[28] Toledo Blade, January 16, 2007
[29] Federal Railway Administration Accident & Incident Statistics for Pan Am Railways (2015)
[30] ibid

**Table 4-1** Federal Railway Administration Accident & Incident Statistics for Pan Am Railways (2015).

| Category | 2012 | 2013 | 2014 | 2015(partial) | Total |
|---|---|---|---|---|---|
| **Incidents/Accidents** | 11 | 29 | 26 | 7 | 73 |
| **Incidents/Accidents/mil Train Miles** | 6.5 | 15.7 | 14.6 | 13.8 | |
| **National Average Incidents/Accidents/mil train miles (freight)** | 12.3 | 12.8 | 12.9 | 12.0 | |
| **Fatalities** | | 1 | 1 | 2 | 4 |
| **Track Cause** | 3 | 7 | 5 | 1 | 16 |
| **Human Factor Cause** | | 4 | 1 | | 5 |
| **Derailment** | 4 | 12 | 7 | 7 | 30 |

Of the 73 accidents or incidents during the period 2012 to 2015, 30 resulted in derailments. Sixteen of the accidents were the result of track problems and five were the result of human error. Four of accidents resulted in fatalities. Ninety percent of the derailments between 2011-2014 were on Class 1 tracks.

Table 4-2 (following page) provides an overview of types of Pan Am accidents during the period 2012-2014. Of these 11 incidents, eight resulted in derailments; six involved tank cars. At least one incident, the result of human error, caused significant damage.

**Table 4-2** Description of Pan Am accidents 2012-2014 from news reports

| Location | Date | Description | Source |
|---|---|---|---|
| **Newfields, NH** | Feb 2014 | Locomotive fire on unattended engine near Rockingham Junction | http://unionleader.com |
| **Westford, MA** | Feb 2014 | Train derailed on overpass with 5 cars hanging over edge; 2 cars were LPG | http://lowellsun.com |
| **Sacco, ME** | Jan 2014 | Locomotive derailment at intersection; 4.5 hour traffic tie-up | http://presshearld.com |
| **Hermon, ME** | Aug 2013 | Propane car derailment blocking traffic | http://bangor dailynews.com |
| **Veasie, ME** | Jul 2013 | 6 cars derailed; 3 Co2 gas | http://bangor dailynews.com |
| **Mattawamkeage, ME** | Mar 2013 | 15 tank cars of 96 car train derailed; 13 flipped over near Penobscot River; no spillage | http://bangor dailynews.com |
| **South Portland, ME** | Mar 2013 | Derailed tanker car damages 5 other cars including propane tankers | Htt://wmtwtv/news.com |
| **Nashua, NH** | Mar 2013 | 6 cars of a coal train derailed | http://nashuatelegraph.com |
| **Glenville, NH** | Feb 2013 | Human error; brake failure in train assembly; 11 cars derail near residences | http://dailygazette.com |
| **Bucksport, ME** | May 2012 | 31 cars derailed; 2 tanker cars into river; 200fett of track damaged | http://www.abctv/2012/05/26.com |
| **Leeds Jct., ME** | Mar 2012 | Derailment but no cars flipped | http://youtube.com |

Almost any derailment of a Pan Am train on the Rockingham Junction-Newington spur could result in a release directly into the Great Bay, a saltmarsh, or part of the extensive watershed adjacent to the tracks.

The Sea-3 project will increase the average number of trains per week from 2-3 to 12 (six each way). This increases the potential for derailment and subsequent impacts. Any accident or derailment that discharges hazardous cargo, diesel fuel, oil or other contaminants into one of the salt marshes, the Great Bog or elsewhere adjacent to railroad, has the potential to impact important habitat and one or more species of concern. Propane released as a result of an accident could result in a significant fire if

conditions (concentration, temperature, wind) are right, with the potential to burn trees, wetland vegetation and grassland areas bordering the tracks. Additionally, the increased length and frequency of train movements may impact wildlife habitat and movement in or on the border of the Great Bay estuary. The recent NH Wildlife Action Plan (draft 2015)[31] highlights the importance of the coastal wetlands and salt marshes as critical habitat. In the Plan, roads and railroads are the primary type of transportation corridors identified in the habitat and species risk assessment as potentially impacting wildlife. The potential impacts of rail corridors to wildlife are: habitat fragmentation; barriers to wildlife movement; mortality and habitat loss due to defoliation and vegetation management.

The number of derailments or accidents that will occur has not been projected. The Great Bay Stewards believes the probability and potential impact of incidents and accidents related to increased rail volume must be assessed a safety and environmental impact study under the SEC certification process.

There are three trestles that cross the estuary and its tributaries: Squamscott River; Winnicut River; and the North Mill Pond outlet. These trestles are primarily wooden structures that have been creosoted. They all straddle tidal waters and are prone to sub-surface scouring from tides and ice. There have been numerous requests for the engineering and safety evaluations of these structures. To date, Pan Am has refused to release these reports so the structural stability of the trestles is unknown. In addition, there is no information as to if these structures are capable of handling the substantial increase in the number and length of heavy trains required by the Sea-3 project.

An accident on any of these trestles, either by a structural failure or a derailment, has the potential to spill cargo, fuel, lubricants, or other contaminants into the water. Such a spill would have the potential to spread throughout the estuary because of the fast moving currents in the Piscataqua River and the rest of the Great Bay Estuary. NOAA tide charts[32] indicate that the Piscataqua is one of the 50 fastest tidal currents in the US (3.6kt flood, 4.0kt ebb at Noble Island). Any spill from the North Mill Pond Bridge or from the Sea-3 facility will spread quickly throughout the estuary. A dye study conducted for the Portsmouth sewage treatment plant by NHDES in December 2012 showed that a release of effluent from the facility, downstream from the North Mill Pond and the SEA-3 facility can reach Dover Point/Little Bay in just over 4.5 hours and the Bellamy River shortly after that.[33] The current

[31] New Hampshire Wildlife Action Plan, NH Fish & Game website, http://www.wildlife.state.nh.us/wildlife/wap.html
[32] NOAA Tide Chart 2015 http://tidesandcurrents.noaa.gov/
[33] NH Department of Environmental Services website, http://des.nh.gov/organization/divisions/water/wmb/shellfish/harvest-closures.htm

speed in the estuary is so fast that DES indicated that harvesting of shellfish in certain areas must be tightly controlled to prevent harvesters from taking shellfish that has been exposed to accidental plant discharges. Although the study did not examine the North Mill Pond area, it is likely that a spill in that area would have a similar effect. Further upstream, current speeds are less (2.0kt), but still strong enough to quickly spread any contaminants up into the marshes of the Squamscott River or throughout the Great Bay.

GBS believes that, as an element of the supply line for the proposed Sea-3 expansion, these trestles needs to be examined to assess their ability to handle the increased traffic. Furthermore, GBS believes it is imperative to determine how a spill response would be undertaken if an accident were to occur at any of these locations. Is there a plan for spill response and is the equipment available for rapid deployment? If an emergency response is dependent on the use of boats, how will they operate at low tide when navigability in the Bay is reduced to narrow channels? The winter brings additional challenges for any spill in the estuary. Have Pan Am and Sea-3 response plans been developed to address mitigation and cleanup during winter and ice conditions in the upper estuary?

As evidenced by the currents in the estuary, any response needs to be rapid to insure contaminants are not dispersed widely. Significant and vulnerable natural resources exist in the estuary including oyster beds, eel grass beds and licensed aquaculture operations. NH Fish and Game has expended substantial funds to remove a dam and restore anadromous fish stocks in the Winnicut River. A similar effort is now planned for the Exeter/Squamscott River next year. Any trestle accidents could significantly impact these restoration efforts.

Daily operations along railroad tracks result in deposits of oil and grease, trace metals and other contaminants. In a study conducted of railways in Poland, polycyclic aromatic hydrocarbons (PAHs) and heavy metals (Pb, Cd, Cu, Zn, Hg, Fe, Co, Cr, and Mo) were observed in soil and plant samples collected in different areas of a railway junction.[34] The investigations showed significant increases in PAHs and heavy metals in comparison with the concentration determined in the same areas from a study 13 years earlier. The main source of PAHs in railway areas derives from substances such as machine grease, fuel oils and transformers oils. Another important source of PAHs is creosote, which is a common

[34] B. Wiłkomirski, B. Sudnik-Wójcikowska, H. Galera, M. Wierzbicka, and M. Malawska. 2010. Railway transportation as a serious source of organic and inorganic pollution. Water Air Soil Pollution. 2011 Jun; 218(1-4): 333–345.

impregnation agent for outdoor wood structures, including railway ties. Liu et.al., similarly found trace metal contamination in adjacent to rails in China.[35]

Although the data from these studies cannot be directly extrapolated to the Rockingham Junction- Newington spur because of differing environmental conditions and frequency of trains, it does indicate the need to examine potential pollutants that could enter the watershed of the Great Bay estuary after being deposited on the road bed. The determination of a high level of contamination should signal the need for renovation, including the changing the ballast bed and exchanging creosote-soaked wooden railway ties for pressure treated or concrete ties.

Brooks, in a microcosm study for the US Fish and Wildlife, found that creosote leaks from new ties into the ballast on the road bed.[36] Under the controlled conditions the creosote traveled laterally up to 60cm the first year after the placement of newly creosoted ties. Some migration may have occurred in the second year at lower concentrations.

The results of these studies indicate the need to establish baseline data in areas on the spur adjacent to the habitats critical to Great Bay, as well as at the Sea-3 facility. The SEC certification process should require a monitoring program to determine the levels of contaminants and their potential impacts (toxicity, carcinogenicity and mutagenicity) to the animal and plant species or, at a minimum, assure unfettered access for NH Fish & Game and/or NH Department of Environmental Services experts to enable them to do so. With the proposed increase in the number of trains and the replacement of ties, any monitoring study should be repeated if the new operating regime is permitted, to determine if the increase in traffic changes the contaminations levels in sediments or water.

The railroads use herbicides and defoliants, along with bush cutters, to control growth along the rail corridors. GBS believes it is important for Pan Am to identify what herbicides are being used and the frequency of their use on the Rockingham-Newington spur. In addition, the SEC should require the railroad to submit information on the toxicity of these chemicals (MSDS) to plants, animals and humans and the persistence of these chemicals in the environment. GBS is particularly concerned about the application of any herbicides in the area of the Discovery Center in Greenland because of the number of children that are in the area throughout the year. The railroad should coordinate with the Discovery

[35] Liu H, Chen LP, Ai YW, Yang X, Yu YH, Zuo YB. Heavy metal contamination in soil alongside mountain railway in Sichuan, China. Environmental Monitoring and Assessment. 2009;152:25–33. doi: 10.1007/s10661-008-0293-7

[36] Brooks, K 2004 Polycyclic Aromatic Hydrocarbon Migration From Creosote-Treated Ties Into Ballast and Adjacent Wetlands. Pap. FPL-RP-617. Madison, WI: U.S. Department of Agriculture, Forest Service, Forest Products Laboratory. 53 p.

Center on application times and frequency so as to reduce the potential for adverse effects on these children.

The change in operations at Sea-3 to enable them to handle trains of up to 16 cars per train, six days per week will require Sea-3 staff to operate safely 24/7. Mr. Bogan has stated that the staff coverage of the current 16 employees is sufficient. Will this be the case with the six day per week schedule? Will additional staffing be required? A study of 242 accidents of storage tanks that occurred in industrial facilities internationally over a period of 40 years (up to 2006) analyzed the causes that lead to accidents.[37] The results show that 74% of accidents occurred in petroleum refineries, oil terminals or storage facilities. Fire and explosion accounted for 85% of the accidents. Thirty percent of the accidents (72) were caused by human errors, including poor operations and maintenance. Other causes were equipment failure, sabotage, crack and rupture, leak and line rupture, static electricity, open flames etc. The authors contend that most of those accidents would have been avoided if good engineering had been practiced.

Similarly, in a U.S. Coast Guard report to Congress on the causes of oil spills, human error factors were identified in 45.4 percent of incidents. The most frequently identified human factors across all vessel and casualty types are inattention, procedural error, and mistiming.[38] Fatigue, willful violation, illegal drug use, and alcohol use were reported but were much less frequent. Based on this type of information, GBS believes that the SEC should, as part of the certification process, include a study of safety procedures, training and staffing revisions at the Sea-3 facility related to the proposed operational changes.

The Sea-3 facility requires several permits as part of the expansion project. In his testimony, Mr. Bogan indicated that they have received permits for Alteration of Terrain and Shoreline Impact Permit outside of the SEC process.[39] Further, he indicates that they will need to apply for a change in their Clean Air Act (CAA) permit and their Stormwater Permit. In contradiction to their testimony regarding permit compliance, Sea-3 had a violation of their CAA permit detected in March of 2012. Sea-3 entered into an Expedited Settlement Agreement with the U.S. Environmental Protection Agency (EPA) for alleged violations of Section 112(r) of the Clean Air Act. An EPA inspection determined that the facility had failed to conduct certain process equipment testing and calibrations as specified in its Risk

[37] James I. Changa,*, Cheng-Chung Lin. 2006. A study of storage tank accidents. Journal of Loss Prevention in Process Industry (19).
[38] USCG (2012). Improvements to Reduce Human Error and Near Miss Incidents. Report to Congress
[39] Mr. Paul Bogan Pre-File Testimony SEA-3 SEC waiver process

Management Plan as required under Section 112(r)(7) of the risk management program regulations. Sea-3 corrected the violations and paid a penalty of $2,400.[40]

In changing the stormwater management system to address changes on the site, we would hope that Sea-3 will strive for zero discharge to the estuary. The EPA is currently negotiating strict nitrogen limits (3-8%) for the sewage treatment plants discharging into the estuary. These communities expect to spend $100-150 million to achieve these goals. Unfortunately, these plants are responsible for only about 30% of the nitrogen entering the system. Other nonpoint sources contribute to the remaining 70%. Sea-3, as an element of their expansion, could help reduce that load by utilizing innovative solutions in their designs and sizing the systems in anticipation of the effects of climate change.

GBS believes that all of the permit applications should be reviewed as part of the SEC process. Under the SEC process all of the conditions can then be considered together in the context of the entire project so that any requirements or mitigation can be stipulated as part of the certification. This will make it clear to the applicant and the public that all requirements have been addressed and mitigation has been undertaken as part of a coordinated process.

An additional risk to be assessed, managed and mitigated relates to a human element of the Great Bay ecosystem. Each year, under the GBNERR educational mission, the Great Bay Discovery Center (GBDC) hosts thousands of school children. Some are young as age three; most are school students in the first through fourth grades. Many are transported in the approximately 80 to 100 school buses that come to the GBDC during a typical school year. The GBDC facilities are located at distances of approximately 80, 130 and 170 feet from the rail line. Ingress and egress for the Center requires crossing the rail line and the crossing is not equipped with either automated signals or barriers. If an accident were to occur while a train is at the crossing, access by emergency vehicles would be impossible. Safety of the supply line as it traverses the area of the Discovery Center is thus a key concern.[41]

[40] US Environmental Protection Agency, Enforcement History Online, http://echo.epa.gov/enforcement-case-report?id=01-2012-1704

[41] During the period July 1, 2014 to June 30, 2015, 13,628 instructional hours were provided at the GBDC. These hours do not include visits by children and adults that were not under an instructional program. Source: GBDC records.

**The Site Evaluation Committee process is appropriate and needed.** Peter Kinner and Fred Mason will testify as follows: In its prefiled written testimony of June 26, 2015, Sea-3 asserts that its operations provide a reserve of propane that can be released during periods of peak demand and this helps stabilize prices.[42] However, between October 2013 and March 2014, propane prices in New Hampshire spiked by more than 27%.[43] Mr Bogan indicates that Sea-3 elected not to respond to the propane shortage until "the price [between U.S. domestic and imported propane] narrowed enough that we were able to bring in several ships in early 2014".[44] Sea-3 re-entered the market when price levels enabled it to exceed costs. If operating legally and ethically, a business should not be faulted for responding to market opportunities in a manner that generates the best return for the investors. The difficulty this creates is for those weighing the costs, risks and benefits of the proposed Sea-3 reconfiguration and expansion. If/when the proposed Sea-3 expansion is implemented, it will be able to receive propane by rail, compress it and store it such that it can then be loaded into tankers for export. If, as is expected, foreign price levels for propane provide a larger profit opportunity than distribution to customers in New England, given past practice and rational economic behavior, Sea-3 would be expected to favor exports. Assuming this will not be done requires a leap of faith.

Against the uncertain and, to date, undemonstrated benefits of a reconfigured Sea-3 operation helping to provide stable supply and prices, the citizens of the region and state face significant costs to upgrade safety equipment along Sea-3's supply line, develop hazardous material emergency evacuation plans and equip and train emergency responders. Additionally they face the likelihood of diminished values for residential properties located in proximity to the rail line.

In addition to the known and knowable costs, there are what are potentially huge risks to the Great Bay estuary, its tidal rivers, it ecosystem. These risks are caused by operations at the Sea-3 facility and along the entirety of its supply line. In the opinion of the Great Bay Stewards these are considerations that the legislature intended to be assessed, addressed and, where needed, mitigated when it enacted RSA 162-H. In our view, enabling Sea-3 and its supply line to circumvent the SEC certification process would be a grave disservice to the citizens of the state and dereliction of the stewardship responsibilities required of all to exercise best efforts to preserve and protect the

[42] Prefiled Direct Testimony of Paul N. Bogan, Vice President of Sea-3, Inc., June 26,2015, Page 11; Prefiled Direct Testimony of Mr. Joseph Rose says that "reliable and stable supply and pricing are what are customers most want. The facility at Sea-3 would provide that".
[43] U.S. Energy Information Administration, Weekly New Hampshire Propane Residential Price (Dollars per Gallon), 1990 -2015 data series
[44] Prefiled Direct Testimony of Paul N. Bogan, Vice President of Sea-3, Inc., June 26,2015, Page 10

environmental, economic and recreational value of the Great Bay estuary for future generations. Sea-3's request for exemption from the requirements of the RSA 162-H certification process should be denied.

Respectfully submitted**,**

Great Bay Stewards,

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