Appendix I

Transporting Crude Oil in New York State:

A Review of Incident Response and Prevention Capacity

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Status Update

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STATE OF NEW YORK
DEPARTMENT OF HEALTH

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Introduction

North American production of crude oil has boomed in the last five years, helping to position the United States as the leading worldwide producer. The Bakken shale oil formation, which underlies parts of Montana, North Dakota, Saskatchewan, and Manitoba, is responsible for much of the new oil production in the U.S. and Canada. In the absence of pipelines from the Bakken formation, railroads transport much of this newly-produced crude oil to refineries and ports across the country. Domestic shipments of crude oil by rail have grown from 9,500 train car loads in 2008 to 407,642 loads in 2013, an increase of over 4,000 percent.[1]

Despite having no refineries, as much as 1,000 miles of New York State's 4,100-mile rail network is part of this rail pipeline from the northern Great Plains. The Port of Albany has become a major hub for crude oil transshipment and storage, receiving crude oil by rail and transferring them to ships or barges that further transport the crude oil down the Hudson River. Significant volumes pass by rail through the Capital Region en route to refineries in the Mid-Atlantic States. Communities in 22 counties, including Buffalo, Syracuse, Utica, Albany and Plattsburgh as well as nearly all of the state's major waterways, are subject to this network.

In recognition of the increased risk of accidents and public concerns associated with the significant volume of crude oil transported through New York State, on January 28, 2014, Governor Andrew M. Cuomo issued Executive Order 125 (EO 125), directing state agencies to immediately conduct a coordinated review of New York State's crude oil incident prevention and response capacity. In EO 125, Governor Cuomo called upon state agencies to address the following specific issues:

> (i) the State's readiness to prevent and respond to rail and water incidents involving petroleum products;
> (ii) statutory, regulatory, or administrative changes needed at the State level to better prevent and respond to incidents involving the transportation of crude oil and other petroleum products by rail, ship, and barge;
> (iii) the role that local governments across the State play in protecting their communities and their residents from spills of petroleum products shipped by rail and water; and
> (iv) enhanced coordination between the State and federal agencies to improve the State's capacity to prevent and respond to incidents involving the transportation of crude oil and other petroleum products by rail, ship, and barge.

On April 30, 2014, five state agencies submitted to the Governor a report entitled "Transporting Crude Oil in New York State: A Review of Incident Prevention and Response Capacity" (EO 125 Report). These agencies included the Department of Transportation (NYSDOT), Department of Environmental Conservation (NYSDEC), Department of Health (NYSDOH), Division of Homeland Security and Emergency Services (DHSES), and Energy Research and Development Authority (NYSERDA). The report provided an overview of the crude oil boom and New York State's capacity to effectively prevent and respond to incidents involving the transportation and storage of crude oil. It included 27 recommendations for action by the federal government as well as steps that could be taken by state and local governments and industry.

[1] According to the Association of American Railroads

Progress Report on Report Recommendations

Since the EO 125 Report was issued, New York State agencies have continued to implement the recommendations identified in the report and continue to press actions needed at the federal level and from the crude oil production and rail transport industries. This status update outlines the many actions taken by State agencies over the past six months to work with federal and local partners, to implement new procedures, and to work with the oil production and transportation industries to best protect New York's citizens and resources from the risk posed by crude oil shipments. As further detailed in this report, the State will continue to address the vulnerabilities posed by crude-by-rail transport and urge the federal government and affected industries to act swiftly to address issues over which the State has no authority.

Continued Need for Expeditious Federal Action

The federal government is vested with exclusive statutory and regulatory authority over the interstate transportation of crude oil. Therefore, it is incumbent on the federal government to match the State's aggressive commitment to protecting New Yorkers affected by the sharp expansion of this industry. In response to New York State's urging, Federal agencies have begun to update regulations covering the standards for tank cars used in the transport of flammable volatile crude oils and have started the federal rulemaking process to require the crude-by-rail industry develop comprehensive oil spill plans, similar to what are already in place for tanker vessels and barges.

On May 7, 2013, the U.S. Department of Transportation (USDOT) issued an Emergency Order requiring railroad carriers to inform first responders about crude oil being transported through their towns and communities. The railroads provide that information to DHSES in its role as the lead for the State Emergency Response Commission (SERC). Through the SERC, DHSES has shared that information with local governments and the public.

New York has repeatedly called for the expeditious implementation of new tank car standards and effective operational controls by the federal government. On July 23, 2014, USDOT issued two regulatory proposals. The first proposal is USDOT's "Notice of Proposed Rule Making (NPRM) for Hazardous Materials: Enhanced Train Car Standards and Operational Controls for High-Hazard Flammable Trains." [2] The NPRM proposes new tank car standards and operational controls to increase crude-by-rail safety; however, the timetable for implementation of this rule is unacceptably slow. New York and other states have called for USDOT to move even faster to protect residents affected by crude-by-rail transport and to provide the tank car manufacturers the assurance they need to move forward with new car production.

The second USDOT proposal, "Advanced Notice of Proposed Rulemaking (ANPRM) for Hazardous Materials: Oil Spill Response Plans (OSRPs) for High-Hazard Flammable Trains,"[3] seeks to address the loophole New York identified in the federal Oil Pollution Act of 1990 (OPA 90), whereby crude oil trains are not subject to the comprehensive oil spill plans that govern vessel and barge transport because tank cars are treated as individual containers, none of which meet the 42,000 gallon OPA 90 threshold. This

[2] Docket No. PHMSA-2012-0082 (HM-251)
[3] Docket No. PHSA-2014-015 (HM-251B)

is a common sense proposal that aligns federal regulatory standards and must be implemented as soon as possible.

On September 29, 2014, New York submitted comments on the two federal proposals. While specific changes are recommended (see Appendices 6 and 7, pages 34 and 45, respectively), New York strongly urges USDOT to finalize both rulemakings as quickly as possible.

FRA also issued an NPRM governing the "Securement of Unattended Equipment,"[4] which is intended to strengthen existing regulations and to codify many of the additional securement requirements included in FRA's Emergency Order 28 (EO 28) which was issued following the tragic derailment in Lac-Megantic, Quebec on July 6, 2013. New York State submitted comments to the docket on November 6, 2014 (see Appendix 8, page 50).

The EO 125 Report also called on federal emergency response agencies to work with the State on spill contingency plans. Since then, the State secured the commitment of the U.S Coast Guard (USCG), the Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric Administration (NOAA) to expedite emergency response activities. In addition, in consultation with NYSDEC, this year USEPA inspected four Major Oil Storage Facilities (MOSF) in New York which are used to transfer crude oil from rail tank cars to other transportation modes. These facilities are licensed by NYSDEC, but are also subject to federal regulatory requirements and inspections. The coordinated inspections held in 2014 demonstrate the State's commitment to work with federal agencies to best protect New Yorkers from potential oil spills from these facilities.

Table 1: Progress on Recommended Federal Actions

Federal / International Recommendations	4/30 Status	11/30 Status
1 The Pipeline and Hazardous Material Safety Administration should finalize new and retrofitted tank car regulations immediately	**Begun, not complete**	**USDOT issued proposed regulations on 7/23/14. New York State issued constructive comments on 9/29/14 and urged expeditious finalization. The details of New York's recommended amendments to the proposed rules are addressed in general comment #3 of the NPRM letter (Appendix 6, page 34).**
2 The Federal Railroad Administration (FRA) should strengthen the voluntary measures put forward by the American Association of Railroads (AAR) and codify them in regulations	**Petition sent to USDOT**	**USDOT issued proposed regulations on 7/23/14. New York State issued constructive comments on 9/29/2014. The federal NPRM addresses some of the voluntary measures put forward by the AAR. All identified safety measures should be codified into the finalized rule. See general comment #4 of the NPRM letter (Appendix 6, page 34).**

[4] Docket No. FRA-2014-0032

Federal / International Recommendations		4/30 Status	11/30 Status
3	The United Nations, which assigns unique hazardous materials identifiers, should recommend new classifications based on crude oil characteristics to enable appropriate packaging and to inform response personnel as to the qualities of the crude oil	**Canadian and U.S. governments have requested; petition sent to UN in support**	**The UN has yet to act upon this important petition.**
4	FRA regulations governing the requirement for railroads to develop route-specific contingency plans should be updated as trains carrying crude oil in DOT-111 tank cars do not currently meet the volume threshold, which is done by container, rather than the total volume of the train	**Petition sent to USDOT**	**USDOT issued proposed regulations on 7/23/14. New York State issued constructive comments on 9/29/2014 and urged the expeditious closing of the comprehensive oil spill response plan loophole through regulations called for in the federal Oil Spill Pollution Act of 1990. See the response to question #1 of the ANPRM letter (Appendix 6, page 34).**
5	USDOT must restore cuts and increase the amount of matched funding available through the Hazardous Materials Emergency Preparedness (HMEP) grant program to account for the increased risk to New York State from crude oil transiting federally-regulated travel corridors	**Petition sent to USDOT**	**As part of its 2015 funding application, DSHES will request an increase in funding available to improve New York's ability to address planning, preparedness and response efforts specific to the transportation of crude-by-rail. New York calls upon USDOT to approve the much-needed request.**
6	USCG, EPA and NOAA should expedite the update of environmental and contingency response plans	**Begun, not complete**	**New York State secured the commitment of federal agencies to update environmental and contingency response plans. Since that time, New York has worked in concert with the USCG, USEPA, and NOAA to identify information sources necessary to update these plans.**
7	FRA should expeditiously amend its regulations to make industrial facility railroads subject to the same standards and inspection protocols as general system railroads	**Petition sent to USDOT**	**USDOT did not address this issue in either the NPRM or ANPRM. New York State included a request for USDOT to address industrial facility track (general comment #4) in its letter on the NPRM (Appendix 6, page 34).**
8	USCG and EPA should update the delayed Oil Spill Research and Technology Plan as soon as feasible	**Plan in draft; update 17 years overdue**	**New York State secured the commitment of the USCG and USEPA to update this critical plan. USCG and USEPA will provide an update timeline in the coming months.**

Federal / International Recommendations		4/30 Status	11/30 Status
9	USCG should establish a civilian planning position in Sector NY in order to provide organizational continuity to better support New York State-centric preparedness and response	**Petition sent to USCG**	**The USCG responded to New York's request on 5/12/14. The USCG noted that additional civilian planning staff would be hired for the USCG District Office in Boston and uniformed USCG members would be added for Sector NY. New York State remains concerned that uniformed USCG members will bear the bulk of the planning responsibilities in New York, which fails to address long term institutional memory concerns.**
10	USCG should review the Vessel Response Plans of the tanker and tugs carrying crude oil in New York State to ensure their response protocols account for the unique risks posed by Bakken and Canadian tar sands crude oil	**Petition sent to USCG**	**New York State has coordinated with the USCG to utilize the existing inventory and to fill the gaps noted in response coverage. The Coast Guard has stated that it is exploring enhancements to the Response Resource Inventory of spill response assets in a given area, and will focus on ensuring that VRPs, contingency plans, and response resources are coordinated and reflect that response protocols are adequate, and that exercises ensure the plan's effectiveness.**
11	The U.S. Department of Homeland Security should update the authorized equipment list eligible for grant funding to include crude oil firefighting equipment	**Petition sent to USDHS**	**On 6/9/14, USDHS confirmed amended eligibility rules to include crude oil firefighting equipment.**

State Implementation of 4/30 Report Recommendations

The EO 125 Report detailed 12 recommendations the State should implement in order to reduce the State's vulnerability from accidents/spills related to the transport of crude oil. State agencies have and will continue to aggressively implement Governor Cuomo's crude oil transport safety agenda to ensure the safest possible transshipment of crude oil products through New York State, and to work with the most affected communities to protect public health.

As a direct result of the Governor's aggressive response to crude-by-rail issues, NYSDOT's rail safety inspection program has been strengthened and expanded. As part of his 2014-15 Executive Budget, the Governor included five additional railroad inspectors to augment the existing inspection partnership with the Federal Railroad Administration (FRA). NYSDOT has hired all five inspectors, and they have started the FRA-mandated six to twelve-month certification and training period. One inspector has earned initial FRA certification, two more will be certified by the end of the year, and the remaining two have started the process.

Collectively, the addition of these new rail inspectors will significantly enhance New York's ability to monitor the safety of rail operations throughout the State. In addition to an increased capacity to inspect track structures and tank car equipment, expanded capabilities include the enforcement of applicable regulations affecting the rail transport of crude oil and other hazardous materials and train crew compliance with operating rules. Additionally, NYSDOT will administer civil service exams for the

rail inspector positions, so that if a position becomes open due to retirement or attrition, NYSDOT has a pool of qualified personnel able to fill the position quickly.

Additionally, New York State has created an interagency working group to increase training and drill opportunities, working in partnership with federal and local governments and crude-by-rail companies. Since April 30, New York State has led or partnered on the following training and rehearsal activities:

- On May 6-7, 2014, DHSES conducted a two-day training drill at the Port of Albany to simulate risks associated with ignitable liquids such as crude oil;
- In June 2014, CSX Transportation partnered with the State to provide railroad and tank car training for local and State responders in the Hudson Valley, Albany, Syracuse and Buffalo;
- DHSES has increased the emphasis upon crude oil-related training available and delivered to fire departments and is updating and developing new training programs;
- On October 21, 2014, Canadian Pacific sponsored NYSDEC spill containment boom training for local first responders on the Hudson River in Albany;
- On October 30, 2014, NYSDEC held tabletop drills with terminal operator, Global Partners, at their Port of Albany facility
- On November 4, 2014, NYSDEC held tabletop drills with terminal operator, United Riverhead, at their facility on Long Island; and
- DHSES is working with the railroads to increase coordination and cooperation regarding training exercises they provide or coordinate.

Additional State Actions

As the State has worked with federal and local agencies and the affected industries, new challenges emerged in response to which the State has begun to take decisive action. These actions complement the steps taken above to implement the recommendations that emerged from the EO 125 Report.

Aggressive Inspection Blitzes

At Governor Cuomo's direction, NYSDOT has undertaken a targeted campaign to inspect train tracks and crude oil tankers in areas where the shipment of crude oil by rail has increased dramatically. Working in conjunction with FRA, NYSDOT has conducted seven rail inspection "blitzes" this year.[5] The inspections focus on tracks, track hardware and tank car mechanical safety equipment, including wheels and brakes. The state/federal teams also perform hazardous material inspections to ensure that the tank cars are in compliance with federal safety regulations, including valves, valve closures, and placards that describe the cargo being shipped. They also check tank car inspection and pressure test dates.

Sites which have been the focus of inspection blitzes include:

- Canadian Pacific Rail
    - Mainline from Rouse's Point to Albany
    - Kenwood Yard (Albany)
    - West Albany Yard (Colonie)

[5] NYSDOT conducted inspection blitzes on the following dates: February 27, March 26, April 30, June 17, July 16, September 24, and October 15, 2014.

- CSX Transportation
  - Mainline rail across the state (Selkirk - Buffalo) (Buffalo-Selkirk-New Jersey line)
  - Selkirk Rail Yard (Selkirk)
  - Frontier Rail Yard (Buffalo)
  - Niagara Rail Yard (Niagara Falls)

The inspection blitzes have produced the following results:

- Inspected 6,664 rail cars, including 4,656 DOT-111 cars;
- Inspected approximately 2,564 miles of track;
- Detected 740 track and rail equipment defects, including 12 hazardous materials defects which were corrected by the railroads:
  - Rail equipment and hazardous material defects are typically corrected prior to departure from the yard; or, the affected cars are taken out of service until such time that repairs can be completed
  - Critical track defects require an immediate reduction of allowable track speeds until repairs are undertaken; non-critical track defects must be completed within 30 days
- The joint NYSDOT/FRA rail safety enforcement program provides a safety quality assurance role in identifying safety defects and working with the railroads to promptly address them before they escalate to a derailment or other potential crude oil incident.

Strategic and Tactical Guidance for Fire Departments

In October 2014, the Office of Fire Prevention and Control within DHSES released strategic and tactical guidance for fire department operations during the initial phases of a rail incident involving crude oil.[6] This guidance was provided in recognition that any significant derailment involving a crude oil spill or fire will likely require a large scale and multi-agency response from all levels of government. The guidance builds upon existing materials, such as the Emergency Response Guidebook (ERG), to assist fire department personnel with making strategic decisions and to provide guidance and recommendations for the tactics appropriate for a crude-by-rail incident.

The guidance also includes estimates of the foam and water supplies needed for scenarios including a single rail car involved in fire with exposure to two additional cars and a three-car scenario with exposures. These scenarios serve to illustrate the level of resources that may be required to provide for effective operations for fire and vapor suppression and can assist fire departments with both pre-incident planning and response efforts. The guidance document, which will be updated and redistributed as necessary, is available on the DHSES website (http://www.dhses.ny.gov/ofpc/alerts-bulletins/information/documents/2014/crude-oil.pdf).

[6] Available at: http://www.dhses.ny.gov/ofpc/alerts-bulletins/information/documents/2014/crude-oil.pdf

Improving Spill Response

As part of NYSDEC's implementation of the recommendations in the EO 125 report, work is proceeding to increase planning and preparedness to respond to spills of crude oil that might occur along the rail transportation corridors. An important aspect of this work is an initiative to carefully identify and evaluate sensitive environmental resources and public infrastructure along the corridors. NYSDEC is developing a baseline inventory of these "sensitive receptors" from a variety of sources. Once this baseline inventory is complete, NYSDEC intends to complete outreach to local emergency response agencies in each of the affected counties to seek additional information, confirm the baseline data, and obtain input on hot spots to prioritize response actions among these receptors. As this information becomes complete, NYSDEC will develop "Geographic Response Plans" (GRPs) to provide specific response strategies and tactics to protect the priority sensitive receptors that have been identified. Once developed, these GRPs would be made available to local, State and federal response agencies so that the response measures identified could be implemented as quickly and effectively as possible in the event of a spill of crude oil near a priority receptor.

To accomplish all of these tasks, NYSDEC will need assistance from consultants knowledgeable and experienced in collecting, organizing and evaluating the data and then producing the GRPs. NYSDEC estimates that the cost of this consultant assistance will be approximately $500,000. On October 3, 2014, NYSDEC requested that the Office of the State Comptroller, as the fund administrator, release the necessary resources (see Appendix 3, page 25). NYSDEC received an unsatisfactory response and will continue to press the Comptroller to release the funds immediately (see Appendix 4, page 29).

Table 2: Progress on Recommended State Actions

State Recommendations	4/30 Status	11/30 Status
1 New York State should hire additional railroad inspectors and train new and existing staff in other inspection program components	**Hiring process begun**	**Governor Cuomo s Executive Budget called for five additional NYSDOT rail inspectors, who have all been hired and begun the FRA mandated 6 12 month training period.**
2 The Navigation Law should be amended to enable greater Oil Spill Fund program capabilities	**Legislative language being considered**	**New York State will evaluate this and all proposals with a fiscal component as part of the State's budget making process.**
3 The State should partner with federal, local, and industry partners to increase the number, frequency, and variety of preparedness training opportunities and drills	**Planning begun**	**New York State has created an interagency working group to increase training and drill opportunities, working in partnership with federal and local governments and oil production and transportation companies.**
4 New York State should enact legislation to require crude oil producers to provide information on the volume and characteristics of crude oil transiting the state	**Legislative language being considered**	**New York State considered legislative language to address the lack of information on the amount of crude oil transported through New York State, but federal action through the USDOT 5/7/14 emergency order addressed the information need for state and local responders.**

State Recommendations		4/30 Status	11/30 Status
5	The State should develop a one-stop web portal that provides access to emergency points of contact, training, grants and other preparedness and response resources	**Planning begun**	**New York State will release the one-stop web portal by the end of the year.**
6	New York State should partner with federal, industry and local response organizations to develop and deploy a comprehensive, geographically-tiered equipment network to ensure timely and effective response in underserved areas	**Planning begun**	**New York State is in the process of finalizing a tiered response equipment deployment. New York State will also integrate response system assets and abilities, along with those provided by the railroads, into the standardized spill and fire response planning process being developed by the interagency working group.**
7	New York State should develop a comprehensive database of available response equipment to support timely and effective response	**Planning begun**	**New York State will release the database of available assets when the one-stop web portal is finalized. Foam equipment data from survey of County Fire Coordinator's is available on DHSES's web page. A map of the state will display assets for each county.**
8	New York State should partner with EPA and USCG to expand upon existing environmental and contingency plans and develop Geographic Response Plans for all areas of the state	**Agreement in place; State participation subject to funding**	**EPA has obligated funding to update response plans, USCG has expedited updates. NYSDEC will continue to urge the Comptroller to release the funds for the State portion.**
9	New York State should promulgate regulations that require placing oil containment booms around waterborne transfers and only allow transfer operations in locations that meet state regulatory requirements or have USCG approval	**Regulatory language being considered**	**Fire hazards associated with booming around a ship during transfer are being examined, along with other issues involved in rule making.**
10	New York State should amend existing legislation to improve rail incident reporting requirements and ensure railroad reporting compliance	**Legislative language being considered**	**New York State will evaluate legislative language for the coming legislative session.**
11	New York State should develop more effective airborne contaminant plume modeling capability to assist first responders	**Review and planning process underway**	**New York State convened a modeling comparison workshop with a Bakken crude oil scenario on October 20, 2014. State and federal representatives participated in the workshop. A final report will be completed by 12/31/14.**

State Recommendations		4/30 Status	11/30 Status
12	The Disaster Preparedness Commission should conduct a review of current federal, state, local, and industry response plans to ensure efficient planning and application	**Review begun**	**New York State formed an inter agency working group (DHSES, NYSDEC, NYSDOH, and NYSDOT) to improve coordination and integration of planning, preparedness and response through the development, adoption, and maintenance of a standardized response plan. This group met with the Class I railroads (Norfolk Southern, Canadian Pacific, and CSX Transportation) to discuss increased coordination of training exercises and response efforts where practical and effective to do so. EPA has participated in working group meetings/calls since September 2014, and USCG began attending group meeting in October. This planning effort will provide the basis for spill and fire response drills and exercises.**

The Railroad and Oil Producers Must Act to Protect New Yorkers

In the EO 125 Report, State agencies recommended the railroad and crude oil industries undertake critical actions to protect New Yorkers. The crude oil transportation industry's actions must mirror the seriousness, aggressiveness and commitment to safety that the State is demanding of itself and its federal partners. Crude oil producers, railroads, shippers, storage and trans-loading facilities, and, ultimately, out-of-state refineries — each of whom are profiting from this boom — must commit to the highest possible standards to ensure that this industry can be operated safely. No state can afford another crude oil incident.

New York State is disappointed with the crude oil producers' unwillingness to invest in critical equipment that would reduce the volatility of Bakken crude. The dissolved gases in Bakken crude contributed to the severity of the Lac-Megantic incident. On October 21, 2014, NYSDEC Commissioner Joe Martens and NYSDOT Commissioner Joan McDonald wrote North Dakota Governor Jack Dalrymple to urge him to move forward expeditiously with a proposed rulemaking before the North Dakota Industrial Commission (NDIC), which would require gas separation prior to making the crude oil available for shipment. North Dakota, as the primary producer of Bakken crude, is uniquely positioned to require such measures before the crude enters the federally-regulated rail transportation network. On November 13, 2014, the NDIC proposed draft regulations and signaled they would vote in favor of the measure later this month.

On April 30, 2014 immediately following the State agencies' report, Global Partners, one of the terminal operators at the Port of Albany, announced that it would phase out the use of inadequate DOT-111 tank cars in favor of CPC-1232 cars, which the industry agreed to voluntarily upgrade to in 2011 due to inability of the federal government to set new standards. Global Partners claims the majority of cars carrying crude into their Port of Albany facility are now the CPC-1232 model.

While the CPC-1232 cars provide some additional protections, the April 30, 2014 incident in Lynchburg, VA, in which CPC-1232 cars were breached along with older DOT-111 tank cars, reveals the urgency of finalizing the new federal tank car standard for high-hazard flammable trains. The railroad

manufacturing industry reports that it is standing by, ready to build, but needs to know the specification to which they must build.

Table 3: Progress on Recommended Industry Actions

Industry Recommendations	4/30 Status	11/30 Status
1 The American Petroleum Institute (API) along with its member oil companies should commit to reducing the volatility of Bakken crude before submitting a tank car for shipment	**Petition sent to API**	**New York State urged the federal**
2 The Class I railroads should implement a web-based information access system to provide real-time information on hazardous materials		
3 AAR in conjunction with API should clarify and expand community engagement requirements outlined but not explained in the voluntary measures undertaken by the railroads		
4 Class I railroads should conclude their computer model-based route risk analysis, which accounts for twenty seven factors affecting the transportation of hazardous material by rail, as soon as practical and update it regularly		

Conclusion

Since January 2014, when Governor Cuomo signed Executive Order 125 directing state agencies to conduct a coordinated review of New York State's crude oil incident prevention and response capacity, significant progress has been made to better protect New York's communities and environment from the potential risks associated with the transport of crude oil.

In the state's April 2014 EO 125 report, state agencies identified 27 recommendations for state government, federal government and industry to reduce risks and increase safety in the transport of crude oil. To date, State agencies have started to implement all 12 state government recommendations and have completed five. Specifically, New York State has taken 66 actions to better prepare state and local responders in the event of a crude oil incident (see Appendix 1, page 16). New York State will continue to work to fully implement all 12 recommendations.

Of the 11 federal government recommendations, one has been implemented while progress has been made on six recommendations, such as regulations to improve standards for tank cars and updating environmental and contingency response plans. While New York State is pleased these regulations have been proposed, they need to be promulgated as quickly as possible to provide for the safety of New Yorkers and the environment. No progress has been made on implementing four federal government recommendations.

While the rail industry has made progress on one recommendation and instituted several voluntary measures outside of the report's recommendations, the oil production industry has actively opposed taking protective measures.

While New York State has implemented important safety measures to better protect the state's cities, towns and villages, challenges remain to further improve the federally regulated rail industry. New York State is committed to seeing all recommendations in the report implemented in a timely manner. The State will continue to urge federal officials and industry to expeditiously take measures to further safeguard New Yorkers.

With all of these efforts, New York State remains the most aggressive state in the nation in pursuing actions that will help to ensure the public and the environment are protected from the risks associated with the federally regulated transport of crude oil.

Appendices

Appendix One	Timeline of Federal, State, and Industry Actions
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Appendix Four	Executive Deputy Comptroller for Operations John Traylor's response to NYSDEC Deputy Commissioner Gene Leff
Appendix Five	Commissioners Martens and McDonald Letter to Governor Dalrymple of North Dakota
Appendix Six	New York State Comments on USDOT Notice of Proposed Rulemaking [Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains]
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Appendix Eight	New York State Comments on USDOT Notice of Proposed Rulemaking [Securement of Unattended Trains]

Timeline of Federal, State, and Industry Actions

Jan 28, 2014	**Governor Andrew M. Cuomo issues Executive Order 125 directing several state agencies to do a top-to-bottom review of accident prevention and response capacity related to rail and water shipments of crude oil from the Bakken oil fields in North Dakota, Manitoba and Alberta, Canada.**
Jan 28, 2014	NYS Departments of Environmental Conservation, Health, Transportation and the Division of Homeland Security and Emergency Services issue a letter to federal partners regarding concerns related to the transportation, storage, and transfer of crude oil.
Feb 12, 2014	NYSDEC holds a public informational meeting with Global Oil and the public at Giffen Memorial Elementary School.
Feb 21, 2014	*In response to New York State calls for immediate, decisive protective measures, the US Department of Transportation and the nation's major freight railroads announce agreement to institute voluntary operating practices: increased track inspections; braking systems; use of rail traffic routing technology; lower speeds; community relations; increased trackside safety technology; increased emergency response training and tuition assistance; and emergency response planning.*
Feb 21, 2014	Members of Governor Andrew M. Cuomo's office meet with senior representatives of the U.S. Departments of Transportation and Homeland Security and the Environmental Protection Agency to urge the federal government to expeditiously promulgate regulations and to update critical emergency preparedness plans.
Feb 25, 2014	USEPA, in consultation with NYSDEC, completes a Spill Prevention, Control and Countermeasure (SPCC) inspection of Global Partner's Port of Albany Major Oil Storage Facility (MOSF). Global Partners was found to be in compliance with its SPCC requirements.
Feb 26, 2014	*Federal regulators issue emergency rules requiring extensive tests on crude oil moving by rail, concluding the system had become "an imminent hazard to public health, safety and the environment."*
Feb 26, 2014	USEPA, in consultation with NYSDEC, completes an SPCC inspection of Buckeye's Port of Albany MOSF. The inspection detailed minor concerns. Buckeye is in the process of upgrading certain portions of its facility and will make those repairs as part of its upgrade.
Feb 28, 2014	Governor Andrew M. Cuomo announces rail inspection blitzes in Albany and Buffalo.
Mar 3, 2014	Governor Andrew M. Cuomo issues a letter to USDOT and USDHS Secretaries urging federal officials to expedite and strengthen rail safety standards that would require rail companies to report derailments, the federal government to increase inspections, and the federal government to petition the UN for a new unique identifier for Bakken crude oil during transport.

Mar 5, 2014	NYSDOT announces $10,000 fine to CSX Rail for failing to make timely notification of two derailments that occurred in February in Albany and Ulster counties.
Mar 6, 2014	*USDOT issues an emergency order requiring all shippers to test product from the Bakken region to ensure the proper classification of crude oil before it is transported by rail, while also prohibiting the transportation of crude oil in the lowest-strength packing group.*
Mar 12, 2014	NYSDEC Commissioner Joe Martens meets with Albany community groups.
Mar 14, 2014	Deputy Secretaries Karen Rae and Basil Seggos issue a letter to Edward R. Hamberger, President and CEO of the Association of American Railroads (AAR). This letter requests an opportunity to meet to discuss the industry's support for stronger regulations and to improve coordination with the industry in order to better prevent and respond to accidents.
Mar 24, 2014	NYSDEC issues Notice of Incomplete Application to Global Partners for its application at their New Windsor facility
Mar 24, 2014	NYSDEC Commissioner Martens writes to USEPA Administrator Gina McCarthy to request that USEPA immediately update the Inland Area Contingency Plan for New York and to assist in the development of General Response Plans in critical locations across the state.
Mar 26, 2014	NYSDOT completes second rail inspection blitz in Albany and Buffalo.
Mar 31-Apr 4, 2014	Four DSHES/OFPC staff complete foam operations training conducted at Texas Engineering and Extension Service's (TEEX) fire training facility by National Foam.
Apr 9-10, 2014	NYSDEC sponsors a Regional Response Team (RRT) II meeting in Albany. RRT II is co-chaired by the USCG and USEPA and is responsible for petroleum spills in New York and New Jersey. NYSDEC Commissioner Joe Martens addressed the group. DHSES staff participated in the meeting as well.
Apr 10, 2014	As a result of the RRT II meeting, NYSDEC, USCG and USEPA agree to a partnership to update environmental and contingency response plans.
Apr 23, 2014	NYSDOT, FRA Regional Administrator and CSX Division Manager meet to discuss operational and safety issues with crude oil unit train activities in New York State.
Apr 28-May 2, 2014	As part of their emergency preparedness training, New York's National Guard and Air National Guard members simulate a train accident that resulted in hazardous material spills that created casualties and threaten communities near the site.
Apr 29, 2014	DHSES Commissioner Jerome Hauer sends a petition to USDHS to request foam and associated equipment be added as items eligible for USDHS grant funds. USDHS confirms that these items are eligible on June 16, 2014.
Apr 29, 2014	NYSDOT Commissioner Joan McDonald and DHSES Commissioner Jerome Hauer issue a letter to Jack Gerard, President and CEO of the American Petroleum Institute (API), seeking his support in encouraging all members of the API to actively mitigate dissolved gases to decrease the risk in transporting crude oil by rail.

Apr 29, 2014	NYSDOT Commissioner Joan McDonald issues a letter to USDOT Secretary Anthony Foxx and AAR President Edward Hamberger, requesting their support in two areas: • improving the current voluntary operating practices which USDOT and AAR have agreed to by better recognizing that human factors are the cause of 47% of the railroad incidents in New York State. Human factors in the packaging of petroleum products also should be addressed by USDOT and AAR; and • expanding the definition of high-threat-urban-areas (HTUAs) in New York State to include all metropolitan areas with a population of 50,000 or more. Currently, only New York City and Buffalo are designated as HTUAs in New York.
Apr 29, 2014	A second letter to Secretary Foxx from Commissioners McDonald and Hauer, issued that same day, makes several recommendations to strengthen State/federal rail safety enforcement capabilities.
April 29, 2014	NYSDEC Commissioner Joe Martens issues a letter to Admiral Robert Papp, Commander of the USCG, urging action by the Coast Guard in four areas: • completing the development of best practices for responding to oil spills, as required by the federal Oil Pollution Act of 1990; • completing updates of Area Contingency Plans and Geographic Response Plans in critical locations across New York State; • ensuring that Coast Guard-required Vessel Response Plans fully address the hazards presented by crude oil transport by barge; and • establishing a civilian planning position in Sector NY to better support preparedness and response activities in New York State.
Apr 30, 2014	***Transporting Crude Oil in New York State: A Review of Incident Prevention and Response Capacity*** with 26 recommended actions to be undertaken by federal, State, and industry is submitted to Governor Andrew M. Cuomo pursuant to EO 125.
Apr 30, 2014	Governor Andrew M. Cuomo writes to President Barack Obama to request that the federal government expedite several actions which are needed to ensure the protection of New York's communities and natural resources. (See Appendix 2, page 23)
Apr 30, 2014	DHSES Commissioner Jerome Hauer issues a letter to USDOT, requesting an increase in funding available to DHSES (OEM and OFPC) via the HMEP grant program.
May 6-7, 2014	DHSES conducts a two-day training drill at the Port of Albany to simulate risks associated with ignitable liquids such as crude oil.
May 12, 2014	NYSDOT announces that it is fining Canadian Pacific the maximum allowed, $5,000, for failing to report the derailment of four tank cars carrying crude oil at the Kenwood Yard in Albany.

May 13, 2014	The New York State Department of Civil Service approves two new rail safety inspection titles (Operating Practices Inspector and Hazardous Materials Inspector), allowing NYSDOT to expand into these important new inspection disciplines related to crude oil safety.
May 13, 2014	USEPA, in consultation with NYSDEC, completes an SPCC inspection of United Riverhead's MOSF in Riverhead, NY. Minor issues were noted, and all but one have been rectified. United Riverhead is waiting for approval from the local fire marshal.
May 20, 2014	USEPA, in consultation with NYSDEC, completes an SPCC inspection of West Seneca Terminal's MOSF in West Seneca, NY. The facility was found to be in compliance with all requirements.
May 28, 2014	NYSDOT staff meets with FRA Regional staff and CP Rail management to discuss operational and safety issues with crude oil unit train activities in New York State.
May 28, 2014	NYSDOT staff also meets with FRA Regional staff and the Brotherhood of Maintenance of Way union employees to discuss operational and safety issues related to crude oil transport in New York State.
May 29, 2014	Members of Governor Andrew M. Cuomo's office meet with members of President Obama's staff to raise New York State concerns about crude-by-rail security.
June 2014	NYSDOT hires two new rail safety inspectors (Track & Structure and Motive Power & Equipment) which will allow NYSDOT to increase its capacity to perform track structures and rail car equipment inspections related to crude oil safety.
June 2, 2014	NYSDOT holds a joint meeting with FRA Regional staff and CSX to discuss ongoing operational and safety issues with crude oil unit train activities in New York State.
June 2, 2014	DHSES (OEM and OFPC) distribute updated guidance within the HMEP grant application to the Local Emergency Planning Committees (LEPC) of each county to update local and county-level plans, including HM Response Plans required by GML 204f, and link or integrate those plans as necessary. Counties are required to do so prior to the application due date of September 1, 2014.

June 2014-present	Initial meetings between DHSES/OFPC and NYSDEC to discuss EO 125 recommendations common to both agencies expand to include OEM, NYSDOH and NYSDOT. An interagency working group of these core agencies is formed to integrate planning efforts to include spill response, fire response and public health. The group is focusing on adding fire and public health planning content into the existing spill response Area Contingency and Geographic Response Plan model used by the Regional Response Team (USEPA/USCG) to allow integration of local, county, State and Federal response to any crude oil incident. Plans will also provide the basis for multi-agency response drills and functional exercises. Working group has scheduled bi-weekly meetings and/or conference calls (7+ meetings including August 21 meeting with Class I RR's). USEPA begins participating in meetings in September and the USCG attends the meeting slated for October 29, 2014.
June 2014-present	DHSES/OFPC requests that Counties review and update Hazardous Materials Response Plans required by GML 204f to ensure crude oil risk is adequately addressed. OFPC staff has met with over 28 counties to assist with review and update of these plans. Effort is ongoing.
June/ July 2014	Railroad and tank car training for local and State responders in the Hudson Valley, Albany, Syracuse, and Buffalo is sponsored by CSX Transportation.
Summer 2014-present	DHSES/OFPC offers an updated Live Fire Foam Operations course. 163 student completions in eight courses completed this year to date in Albany, Cattaraugus, Chautauqua, Erie, Niagara (2), and Onondaga counties and at the Academy of Fire Science. An additional two courses take place during the week of 10/27/14 in Ulster County.
July 2014	OFPC staff member completes "Crude by Rail" training program conducted by the Association of American Railroads (AAR) at their training facility in Pueblo, Colorado.
July 1, 2014	Nineteen DHSES/OFPC staff complete vendor-provided foam operations training reviewing operation of OFPC's foam trailer
July 8, 2014	Governor Andrew M. Cuomo's office convenes a meeting, attended by staff from NYSDOT, NYSDEC, NYSDHSES and NYSDOH, with Class I railroads CSX, CP, Norfolk Southern to discuss crude oil transport safety, security and preparedness.
July 10, 2014	NYSDOT and FRA participate in tabletop exercise hosted by Amtrak to discuss prevention and preparedness activities related to crude oil transport and incidents.
July 11, 2014	DHSES, on behalf of the State Emergency Response Commission (SERC), distributes information to counties in response to a USDOT emergency order concerning railroads transporting one million or more gallons of crude oil in a single train. The DHSES information is sent to New York counties through which these trains transit.
July 22, 2014	NYSDOT participates in webinar with FRA and state managers on crude oil transportation and the FRA/PHMSA proposed rulemaking.

Aug 7, 2014	DHSES/OFPC distributes a survey to the County Fire Coordinator of each county to identify the existing foam supplies and equipment currently available at the local and county levels. As of October, 33 counties and NYC (FDNY) have responded to the survey. This data has been compiled into a database and will be available via the DHSES-maintained Crude Oil Webpage to be released prior to the end of the year. It will be updated as additional survey data is returned. Railroad and other assets will be added as well.
Sep 2014	NYSDOT hires two new rail safety inspectors (Hazardous Materials) which completes the addition of five new inspectors to NYSDOT's rail safety inspection program.
Sep 19, 2014	Four DHSES/OFPC staff complete vendor-provided foam operations training addressing fire department operations at fuel terminals and highway incidents with an emphasis upon crude oil.
Sep-Oct 2014	DHSES/OFPC acquires an additional foam response trailer, additional foam concentrate inventory, and places into service four additional trailers to transport that inventory to support local and county supplies at any crude oil incident. Trailers are pre-positioned in Albany, at the State Preparedness Training Center in Oriskany and at the Academy of Fire Science in Montour Falls.
Oct 2014	Two DHSES/OFPC staff attend firefighting training at the Texas Engineering and Extension Service's (TEEX) facility conducted by National Foam.

Oct 3, 2014	NYSDEC requests that the Office of the State Comptroller, as the Oil Spill Fund administrator, release the necessary resources (see Appendix 3, page 25). NYSDEC received an unsatisfactory response and will continue to press the Comptroller to release the funds immediately (see Appendix 4, page 29).
Oct 8, 2014	OFPC releases Strategic and Tactical Guidance for Rail Incidents Involving Crude Oil to provide initial guidance and recommendations to the fire service for any potential crude by rail incident.
Oct 15, 2014	State hosts conference call to follow up on the August 21 meeting between the interagency working group and representatives from RONY, CP and CSX. Discussion involves the status of ongoing efforts; planning for proposed tabletop exercises with CSX for crude oil incident scenarios involving their rail line; and proposing a similar exercise with CP.
Oct 21, 2014	NYSDEC Commissioner Joe Martens and NYSDOT Commissioner Joan McDonald issue a letter to Governor Jack Dalrymple of North Dakota, urging the North Dakota Industrial Commission to act quickly on regulations to require the treatment of Bakken crude oil prior to shipment. If approved, these regulations would enhance safety and reduce the risk to states through which the Bakken crude oil is transported (See Appendix 5, page 32). On November 13, 2014, the NDIC proposed draft regulations and signaled they would vote in favor of the measure later this month.
Oct 21, 2014	Boom deployment and oil spill training is sponsored by Canadian Pacific Railroad in the Albany area. This training involved DEC, DHSES, and local responders.
Oct 21, 2014	DHSES staff leads a plume modeling workshop to assess the State's crude oil incident plume modeling capabilities. OEM, OCT, DEC, OFPC, DOH, DOT, DMNA/CST, DTRA, NOAA, and IMACC representatives support the workshop. An AAR/plume model report is in draft form and is forthcoming.
Oct 30, 2014	A tabletop drill is held, sponsored by Global at its facility in the Port of Albany.
Nov 4, 2014	A training and equipment deployment drill is scheduled with United Riverhead and local responders at its facility on Long Island.
Spring 2015	Local Responder and Spill Responder training is planned along the upper Hudson River or Lake Champlain.

STATE OF NEW YORK
EXECUTIVE CHAMBER
ALBANY 12224

ANDREW M. CUOMO
GOVERNOR

April 30, 2014

The Honorable Barack Obama
President of the United States of America
The White House
1600 Pennsylvania Avenue, NW
Washington, DC 20500

Dear President Obama:

As a result of the recent boom in domestic petroleum production, New York State is experiencing a dramatic increase in the number of crude oil trains passing through the state from production areas in the Upper Midwest to refineries in the Mid-Atlantic and Canada. This type of crude oil, known as Bakken crude, is highly volatile and is being transported in significant volume across the country by inadequate rail tank cars. New York and all the states subject to this crude oil boom are extremely vulnerable to the impacts of a derailment, spill, fire, or explosion, as demonstrated by three catastrophic incidents in the last nine months involving such trains. I urge your immediate attention to this issue.

On January 28, 2014, I issued Executive Order 125 directing New York State agencies to evaluate New York's capacity to prevent and respond to crude oil accidents. Today, the agencies issued their findings and recommendations to me and a copy of their report is enclosed. The report determines that, while the State can and will undertake aggressive actions to protect our communities and natural resources, New York's readiness depends almost entirely on appropriate federal regulation of the industry. Thus, the report identifies a series of federal actions that should be expeditiously implemented. I ask that you prioritize the following federal actions:

1. Finalize the Pipeline and Hazardous Material Safety Administration's new tank car regulations to remove the inadequate DOT-111 tank car from crude-by-rail service;
2. Strengthen and codify into federal regulation the voluntary safety measures adopted by railroad companies governing the shipment of crude oil;
3. Update critical environmental and contingency response plans and partner with New York State to develop area-specific geographic response plans to protect New York and its environment; and
4. Develop appropriate classification and testing of Bakken and similar crude oils in order to provide critical information to state and local emergency responders who would be on the front lines of any incident.

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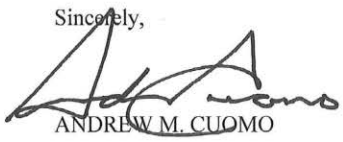
The report also suggests actions that New York State will undertake to supplement areas of federal primacy. These include increasing inspections, prepositioning spill and fire response equipment, increasing training and readiness drills for state and local first responders, and enacting legislation to ensure timely rail incident reporting. New York will continue to aggressively pursue measures that ensure its safety. However, the fundamental responsibility for the safe transportation of crude oil across the country resides with federal agencies.

Sincerely,



ANDREW M. CUOMO

Enclosure

New York State Department of Environmental Conservation
Deputy Commissioner
Office of Remediation & Materials Management, 14th Floor
625 Broadway, Albany, New York 12233-1010
Phone: (518) 402-2794 • **Fax:** (518) 402-8541
Website: www.dec.ny.gov

Joe Martens
Commissioner

OCT 0 3 2014

Mr. John Traylor
Executive Deputy Comptroller for Operations
Office of the State Comptroller
110 State Street
Albany, NY 12236

Dear Mr. Traylor:

In recent meetings, our agencies have discussed the use of the New York Environmental Protection and Spill Compensation Fund (Spill Fund) to improve the State's readiness to respond to spills of crude oil that may occur due to the great increase in crude oil transportation across the State. The Department of Environmental Conservation (DEC) believes that the increased volume in crude oil transportation increases the risk of spills and that we should act expeditiously to improve our preparedness. This is a necessary complement to the steps being taken by the state and federal Departments of Transportation and others to prevent spills, particularly from rail transportation of crude oil. This letter lays out additional detail to support our request to use the Spill Fund for planning, purchase and deployment of spill response equipment, and training and exercises to increase our preparedness.

As you know, both the Navigation Law (Article 12, Section 176) and Environmental Conservation Law (Article 17, Title 10) mandate that DEC undertake oil and hazardous material spill prevention, response, and remediation. Under state and federal Law, DEC is also responsible for collaborating with the United States Coast Guard (USCG), the United States Environmental Protection Agency (USEPA), and other federal agencies in planning, preparedness, and response to spills. DEC represents New York State on the Regional Response Team, which is responsible for these efforts under the National Contingency Plan and National Response Framework. Further, Governor Cuomo's Executive Order 125 (EO-125) directed DEC to review the State's current spill prevention plans and preparedness. In light of the above, we have concluded that several actions are needed to address the increased risk of spills associated with the increase in crude oil transportation in New York. These include:

1) updating and enhancing the "Inland Area Contingency Plans" for areas that include the railroad transportation corridors used for crude oil shipments. The corridors currently in use traverse the west shore of Lake Champlain and the Mohawk River Valley--both areas with potentially significant public health and environmental risks should an incident occur. The Plan updates will include identifying sensitive environmental resources and human infrastructure that need protection (e.g., water supplies) within the corridors. Specific "Geographic Response Plans" (GRPs) will need to be developed to prepare for response actions at these sensitive locations;
2) updating the existing "Coastal Area Contingency Plan" covering another major transportation artery, the Hudson River, including updating the existing GRPs;

3) pre-deploying spill response equipment at sensitive locations to be used by local response agencies during an incident until the arrival of Oil Spill Response Organizations (OSROs) that will bring additional specialized staff and equipment. OSROs may be engaged by responsible parties or government agencies (state or federal); and
4) providing additional staff at DEC for planning, training, exercises, and response actions.

GRPs are localized response plans called for in the Oil Pollution Act of 1990, which provide tactical response strategies for areas of sensitive environmental or socio-economic resources. GRPs are map-based plans with specific instructions for first responders. GRPs identify initial actions that can be taken by local first responders to protect the identified sensitive resources from an oil spill. They include contact names, numbers, response asset locations, and operational instructions. To be effective, they are developed with input from various stakeholders, tested, shared with local responders, coupled with routine training and drills, and periodically updated. GRPs currently being developed for sensitive locations along the railroad corridors (including completely inland areas) are being modelled after those developed by the Massachusetts Department of Environmental Protection for the coastal areas of that state. (See http://grp.nukaresearch.com). The USEPA has made $250,000 available to convert any Geographic Response Plan created during the process of writing the Inland Area Contingency Plan into an electronic format available for general use.

DEC has begun working with the USEPA and USCG to update the Area Contingency Plans and GRPs in accordance with the Oil Pollution Act of 1990. The National Oceanographic and Atmospheric Administration (NOAA) of the United States Department of Commerce is also engaged, providing technical support to the USCG and USEPA in both planning, readiness, and response to oil and hazardous materials spills. Using funds obligated by Congress for recovery from Hurricane Sandy, NOAA has been able to direct contractual funds to update the Environmental Sensitivity Indexes (ESIs) for the coastal areas of Long Island Sound, New York Harbor and the Hudson River Estuary. Due in large part to a request from the State of New York, priority has been given to the update of Long Island Sound and Hudson River estuary sections, and it is expected that these maps and databases will be updated by early 2015. These ESIs will become a part of the existing Area Contingency Plans, and will help formulate updated GRPs for these areas.

The USCG has made $125,000 available this federal fiscal year to be used for contractual support for the creation or upgrade of GRPs in the Coastal Zones of Long Island Sound, the Hudson River, and New York Harbor. The USCG has indicated that they are requesting a similar amount for the next federal fiscal year.

DEC is committed to support all of the efforts undertaken by these federal agencies to improve planning and preparedness efforts in New York. However, without additional funding, these efforts will be delayed. The increased risk due to crude oil transportation exists now. Our plans to increase preparedness will not only serve to better protect public health and safety and the environment but will also help to safeguard the Spill Fund from larger expenses due to increased spill impacts that could result from a lack of adequate preparedness.

The prudence of investing in preparedness for spills is obvious. A major accident involving a tank vessel carrying 50,000,000 gallons of crude oil down the Hudson River toward an out-of-state refinery could threaten both water supply intakes and ecologically sensitive wetlands. Time is of the essence in such an event. The cost of responding to the drinking water threat and the shoreline contamination could increase exponentially as time passes without effective countermeasures. Charges and third-party claims against the Spill Fund could thus balloon in a direct relationship to any delay.

DEC previously shared with you an estimate of the capital costs associated with DEC's planned actions. The first task is to prepare Sensitive Resource Maps for the inland areas, identify sensitive locations, and develop GRPs for each location. The estimated cost to hire a contractor to assist in the development of GRPs for the inland areas is $500,000, based on the costs for the Massachusetts Department of Environmental Protection to implement its GRP initiative. Once tasked, the contractor would assist with the outreach to local response agencies and emergency managers and work with DEC, other state agencies, and our federal partners to complete the necessary reports and plans. The work product will be maps for the rail corridors and GRPs with strategies and tactics for each sensitive area. As part of the development of the GRPs, the equipment and staffing required to carry out an effective response will be identified. As stated above, it is expected that the resources of the responsible party, along with those of the state and federal contractual Oil Spill Response Organizations (OSROs), will be available for response to an incident, but often not for eight to 24 hours. It is this gap in response that falls to the local response agencies to fill. A great deal of the rail routes across New York are in lightly populated, undeveloped areas, where there are no oil spill response assets located. Equipment made available for immediate use by local responders can greatly mitigate the impacts of spills.

The second item in the capital cost estimate is the purchase and deployment of response trailers containing spill containment, collection, and diversion equipment to be made available to local response agencies at key locations. In Massachusetts, this has been local fire departments or Hazardous Materials Response Teams. Contractor support is necessary not only for the development of the GRPs, but also for training of local response agencies.

The annual costs are associated with trailer inspections and maintenance as well as periodic training and exercises. It is expected that these activities will be carried out mostly by contractors with direction and oversight provided by DEC staff. We have learned from the experience of Massachusetts (and in similar programs in New York created by the Office of Fire Prevention and Control), that this annual inspection and maintenance program is necessary to ensure the continued viability of the response assets. Our current estimate includes identifiable long-term costs for equipment maintenance, training and exercises. However, there may be other unanticipated costs.

DEC, along with its state and federal partners, intends to create steering committees to help create and carry out these tasks. Along with other partner agencies, including the NYS Office of Emergency Management, NYS Office of Fire Prevention and Control, and NYS Department of

Health, DEC will need to engage with the appropriate response organizations within each area to form these steering committees. This outreach will take place through formal notice and also be shared at venues of opportunity, such as NYS Office of Emergency Management regional meetings, Local Emergency Planning Committee (LEPC) meetings, and other similar venues. Although regional steering committees are envisioned in all nine DEC regions, the initial committees will be formed in those regions which comprise the rail corridors.

DEC understands the Office of the State Comptroller's (OSC) concerns about the long-term financial viability of the Spill Fund. The current projections of costs needed to initally implement the EO-125 recommendations represeent DEC's best estimates at this time. Other unanticipated costs may arise and we recognize that these will need to be discussed with OSC to ensure that any future costs would not endanger the viability of the Spill Fund. Further, DEC is open to starting a dialogue with you and the Division of the Budget on the long-term health of the fund. This dialogue will help us prepare potential 2015-16 Executive Budget Article VII recommendations.

DEC believes all of the actions outlined above are needed to reduce the incidence and severity of spills to insure the long-term viability of the Spill Fund to address the new issues facing us with the increase in crude oil transport in the State and to ensure we can maintain our current response program. Using Spill Fund resources now on the actions outlined above is an essential and appropriate way to safeguard the fund by reducing possible future fund expenditures.

DEC is committed to continuing our long and productive relationship with OSC to ensure that the Spill Fund is used to provide maximum protection for public health and safety and the environment. We request OSC's approval of the immediate expenditure of $500,000 to take a substantial step in addressing this current challenge and are committed to working together to provide a strong, viable Spill Fund. Please contact me if you would like to further discuss these important initiatives.

Sincerely,

Eugene J. Leff

Eugene J. Leff
Deputy Commissioner for Remediation and
Materials Management

ec: S. Baker, OSC
Commissioner Martens
M. Gerstman
R. Schick
M. Ryan
A. English
D. Farrar

THOMAS P. DiNAPOLI
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STATE OF NEW YORK
OFFICE OF THE STATE COMPTROLLER
110 STATE STREET
ALBANY, NEW YORK 12236

November 13, 2014

Mr. Eugene Leff
Deputy Commissioner
Department of Environmental Conservation
625 Broadway, 14th Floor
Albany, New York 12236

Dear Mr. Leff:

We are in receipt of your letter of October 3, 2014 requesting that the New York Environmental Protection and Spill Compensation Fund (Fund) provide resources toward the Department of Environmental Conservation's (DEC) implementation of Executive Order 125.

Specifically, DEC is requesting $500,000 toward the development of Geographic Response Plans (GRP). This would be part of a larger effort to update and enhance the Island Area and Coastal Area Contingency Plans, pre-deploy and maintain spill response equipment at sensitive areas to be used by local response agencies and add additional staff at DEC for planning, training, exercises and response actions. The total estimated cost by DEC staff for this effort is over $2 million with at least $112,000 in recurring annual costs. Your letter also points out that there are likely to be additional unanticipated costs that will arise. Finally, DEC's EO 125 report outlines participation and resource needs for other state and local response agencies as well.

Our understanding is that GRP costs can be financed using available federal funding from the United States Coast Guard and the Environmental Protection Agency, and we assume there are no impediments to DEC moving forward with GRP development utilizing these funds. We understand that costs associated with a recent preparedness drill in the Port of Albany were supported in part by the industry.

We are appreciative of DEC's efforts to develop a plan to deal with the important issue of addressing the increased risk of spills from crude oil transportation in New York State. The Fund certainly recognizes and agrees that investing in preparedness for such spills is important from both a financial and environmental perspective. However, we also have a responsibility to protect the State's ability to finance and conduct ongoing spill cleanup operations. As you note, we must ensure that any future costs from this proposal do not endanger the viability of the Fund.

From a financial perspective, while the Fund currently has a positive cash balance, current projections already forecast a potential deficit if spending and revenue trends continue. These projections demonstrate that we will have to carefully manage existing Fund operations in order to avoid a deficit in the current Financial Plan period, especially with the solvency of the Fund dependent on the recoupment of monies expended for cleanups. Given the new threat posed by potentially large oil spills along our transportation corridors, it is critical that the Fund be fully capitalized.

As a policy matter, there is a need for more clarification by the Executive around the appropriate role of the Fund in any oil spill prevention strategy. For example, given the large multi-agency, intergovernmental effort required to develop and implement an effective spill response program, it may make sense to finance all or a large portion of this effort outside the Fund so that public safety costs can be sufficiently addressed, including potential grants to first responders.

As a legal matter, Article 12 of the Navigation Law does not specifically provide for spending on oil spill prevention efforts absent an existing discharge. While DEC may incur certain costs under the Department's administrative budget, such costs may only be paid from the Fund upon the certification of the Fund Administrator pursuant to Navigation Law section 186(2). As you know, we require that the necessary backup and supporting documentation for these specific expenditures be provided in advance to the Fund to allow for the Administrator's certification prior to encumbrance.

Conversations with the Department, the Division of the Budget and other stakeholders that have taken place subsequent to receipt of your letter indicate all sides recognize the need for a comprehensive, sustainable EO 125 funding solution. Our expectation is that the Executive would address this in the SFY 2015-16 Executive Budget by delineating the specific plan of finance and new program requirements that are necessary for implementation of EO 125 without negatively impacting the Fund. We appreciate your willingness to include us in discussions on this plan, and are happy to provide any appropriate assistance.

We recognize that the ability of DEC to respond quickly to a major oil spill along a rail or marine transportation corridor is crucial to ensure public safety and protect the State's natural resources. We also have an obligation to maintain the Fund's viability. In light of these obligations, and in the absence of a comprehensive EO 125 funding plan, we regret that we cannot at this time advance Fund resources to seed your initiative.

We look forward to continuing our discussions on this very important issue.

Very truly yours,

John Traylor
Executive Deputy Comptroller
Office of Operations and
Fund Administrator

STATE OF NEW YORK

October 21, 2014

The Honorable Jack Dalrymple
Governor of the State of North Dakota
600 East Boulevard Avenue
Bismarck, ND 58505-0100

Dear Governor Dalrymple:

As a result of the recent boom in domestic petroleum production, New York State is experiencing a dramatic increase in the number of crude oil trains passing through the state from production areas centered in your state to refineries in the Mid-Atlantic and Canada. New York State is concerned with the volatility of Bakken crude oil and believes all the states subject to the boom continue to be vulnerable to the impacts of derailment, spill, fire or explosion. The devastating accidents in Lac Megantic, Quebec and Casselton, North Dakota demonstrate the critical need to address this issue.

New York State has worked hard to increase the safety of crude-by-rail since Governor Cuomo issued Executive Order 125, directing state agencies to evaluate the capacity to prevent and respond to crude oil incidents. On April 30, 2014, New York's environmental, transportation, health, energy, and homeland security agencies issued a report with recommendations for action at the federal, state, and industry levels. The report contains a priority recommendation that dissolved gas should be removed from Bakken crude prior to shipment in order to reduce its volatility. In recent comments on the proposed federal regulations on improved tank car standards, New York State again urged the U.S. Department of Transportation to require such pre-treatment. As this is a common practice in other oil producing areas, New York State believes it is not only prudent for health and safety purposes but also economically feasible. Importantly, the rail transportation industry strongly supports safer tank car standards and removal of dissolved gas prior to shipment.

While the federal government continues to develop more stringent regulations, New York State urges North Dakota to act swiftly on these regulations to require treatment of Bakken crude oil prior to shipment under the proposed rule amendment currently under consideration by the North Dakota Industrial Commission (Case No. 23084).

Federal oversight of the interstate railroad network and tank car standards explicitly preempts states from independently regulating crude transport once the crude enters the railroad network. Once crude oil is shipped, neither New York nor any other state can regulate or impede shipments, as long as the shipments are in compliance with federal rules. Those rules are outdated and woefully inadequate, but until the federal government finalizes new regulations, states are subject to the legal principle of preemption. Therefore, North Dakota, through its oversight of oil and gas wells, is uniquely positioned to enhance safety and reduce downstream risk to many states before the crude oil enters the federally-regulated railroad network.

No single action will fully address our concerns, and a comprehensive approach including improved railroad safety, enhanced tank cars, increased emergency responder resources and training, and on-site stabilization of crude oil, is imperative. Only through such a comprehensive approach will we reduce the risk involved with shipping high-hazard contents. We appreciate your consideration and partnership on this issue.

Sincerely,

Joseph J. Martens, Commissioner
Dept. of Environmental Conservation

Joan McDonald, Commissioner
Dept. of Transportation

STATE OF NEW YORK

September 29, 2014

The Honorable Anthony Foxx
Secretary
U.S. Department of Transportation
1200 New Jersey Avenue S.E.
Washington, D.C. 20590

Re: Comments – Docket No. PHMSA–2012–0082 (HM–251)

Dear Secretary Foxx:

In recent years, the number of trains transporting crude oil through New York has increased significantly, resulting in increased risks of spills, threats to public health and safety, and potential damage to the environment. These risks have been dramatically demonstrated by derailments, spills, and fires in Lac-Megantic, Canada; North Dakota; Pennsylvania; Alabama; Virginia and elsewhere. Four crude oil train car derailments have occurred in New York State in the last year, though fortunately with no spills.

On January 28, 2014, Governor Andrew M. Cuomo issued Executive Order 125 (EO 125), directing a comprehensive evaluation of New York's readiness to prevent and respond to incidents involving the transportation, storage and transshipment of crude oil. In response to EO 125, a report, "Transporting Crude Oil in New York State: A Review of Incident Prevention and Response Capacity," was created as the result of a coordinated review conducted by five state agencies. USDOT reviewed the report with the ten critical federal recommendations and package of state administrative, regulatory, and legislative actions.

The recommendations for federal action include a request for USDOT to expeditiously strengthen its rules by replacing or retrofitting rail tank cars that have been deemed inadequate, as nearly 82 percent of tanks cars carrying Bakken crude across the nation are DOT-111 cars with a poor safety record, Federal investigations have confirmed that designs flaws make them susceptible to damage and loss of hazardous materials during a derailment. In addition, the report calls for USDOT to mandate and strengthen the voluntary railroad industry measures implemented by the American Association of Railroads (AAR) and its members.

Governor Cuomo remains committed to the partnership fostered between New York State and relevant federal agencies on these issues. Further, enhancing practices and strengthening regulations to ensure public health and safety and the protection of natural resources are critical. New York State urges USDOT to expedite the promulgation of these regulations to ensure the safety of those living and working along crude oil transportation corridors.

New York State respectfully submits the following comments for the Notice of Proposed Rule Making (NPRM) for Hazardous Materials: Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains [Docket No. PHMSA–2012–0082 (HM–251)].

A. General comments are presented first, followed by specific comments responding to the questions posed within the NPRM.

1. No single action will fix this problem; need a range of actions to comprehensively address safety issues:

New York State stresses that any new regulations enacted should include actions that enhance safety from multiple approaches influenced by risk analysis. These approaches should include improvements to tank cars carrying crude oil, enhanced braking standards, appropriate speeds for trains with high-hazard contents, attention to the human factors involved in causing incidents, proper classification of contents at the site of shipment, degasifying crude oil at the shipment site, planning for incidents, response drills and training, and partnerships between all levels of government, the railroads and industry. Only with such a comprehensive approach will we reduce the risk involved with shipping high-hazard contents.

2. Establishment of the requirements for "High-Hazard Flammable Train" (HHFT) designation:

New York State strongly supports the intent of this rulemaking in updating and clarifying the regulations to prevent and mitigate the consequences of a train accident involving flammable liquids.

3. Enhanced standards for both new and existing tank cars:

For tank cars constructed after 10/1/15 that will be used for HHFT service, the NPRM has offered three (3) options for establishing a new DOT Specification 117 tank car. New York State strongly recommends adoption of Option 1, the FRA and PHMSA-designed car (or equivalent) which will provide the higher degree of tank car integrity and enhanced safety features as indicated in Table 2, page 45010.

New York State also agrees that existing tank cars will be used in HHFT service should be modified to meet the Option 1 performance requirements (except for top fittings protection). Those cars which are not retrofitted should be retired or repurposed.

New York State stands with other states and communities to reinforce the need to expedite the new tank car standards. Without such standards the tank car industry cannot do their part in building a safer tank car. They stand ready to build safer tank cars, but are waiting on the federal government to set the standards and harmonize them with Canadian standards. This delay is creating a backlog that will take years to clear.

4. Strengthening of the AAR voluntary measures by codifying them in regulation:

New York State appreciates the fact that the AAR and its member railroads voluntarily implemented a number of worthwhile measures which contribute to the safe rail transport of crude oil. However, New York State remains adamant that all eight provisions of the voluntary agreement as outlined in page 45034 need to be codified in regulation in order to ensure that a sustained commitment to the goals of these voluntary measures is maintained.

In addition to recommending the codification of the AAR voluntary measures, New York State again calls upon USDOT to amend its regulations to require that industrial railroad/track facilities be in conformance with the same standards and protocols that apply to the general system of railroads. In a letter to Secretary Foxx on 4/29/14, New York State requested that "FRA should move expeditiously to amend its regulations to require owners of industrial plant rail systems to perform and document periodic track inspections subject to review/audit by federal/state rail inspection staff."

New York State has the following comments regarding the proposed regulatory framework for the three voluntary measures considered in the NPRM:

1. *Rail routing risk assessment*

   We support the proposed planning requirement for carriers to perform a routing analysis that considers 27 key safety and security factors in making route selections, as well as the expansion of these planning requirements to apply to HHFTs. These factors should be regularly updated with fresh data and evaluated for relevancy. Further, the factors and manner in which they are weighted in the analysis should be transparent. New York State suggests that the 27 factors should also be used in a risk analysis to determine resource allocation for response scenarios. Finally, New York State suggests adding a factor for economic risk as different potential accident sites vary in their economic vulnerability.

2. *Reduced operating speeds*

   New York State remains committed to the imposition of speed restrictions for HHFTs which contain any tank cars not meeting the enhanced tank car standards proposed by this rulemaking. New York State recognizes that urban settings provide unique vulnerabilities and that a risk analysis-based speed limit that factored in location-specific conditions could be substituted for a blanket speed limit in urban areas. Such an approach, which New York State recommends be funded by the railroads and audited by federal and State agencies, could reduce the impact of uniform speed limitations on passenger and other freight rail services.

3. *Enhanced Braking*

   New York State agrees with the proposed requirement that all HHFTs be equipped with alternative brake signal propagation systems. Additionally, New York State understands that all HHFTs will be operated with either electronic controlled pneumatic brakes, a two-way end of train device or distributed power, depending upon the outcome of the tank car standard proposal and implementation timing.

5. Reducing the volatility of Bakken crude oil prior to presenting a tank car for shipment:

New York State has urged the American Petroleum Institute and its members to commit to reducing the volatility of Bakken crude through a degasification process at the load point. New York State strongly supports PHMSA's efforts to engage the industry through this rulemaking process.

New York State remains committed to reducing the risk posed by the transportation of Bakken crude-by-rail, and industry efforts to advance degasification will significantly mitigate the challenges faced by our first responders related to crude oil transport and HHFTs.

6. PHMSA should consider/recommend the establishment of a unique identification number (UN) for Bakken crude oil unless the commitment is made to reduce its volatile characteristics:

Although classification and characterization of mined liquids and gases are a major topic covered in the NPRM, the specific issue of assigning a unique UN identifier to Bakken crude oil has not been addressed. The only reference in the NPRM to the issue of differentiating Bakken crude from other crude oil products is noted in Section V. B. p. 45042, which states: "With regard to the identification of Bakken crude oil versus crude oil extracted from other geographic locations, DOT acknowledges that the Hazardous Materials Regulations current shipping paper requirements do not distinguish Bakken crude oil from crude oil sourced in other locations. This may present compliance and enforcement difficulties, particularly with regard to subsequent railroads transporting petroleum crude after interchange(s) with an originating or subsequent carrier. DOT explained in the FAQ's document that railroads and offerors should work together to develop a means for identifying Bakken crude oil prior to transport, such as a Standard Transportation Commodity Code (STCC) number that identifies the crude oil by its geographic source."

Unfortunately, the use of a STCC on the waybill will be of little use to local first responders in identifying the tank car contents and associated risks during an incident. A hardcopy waybill in a burning engine car does little to inform first responders as to the threat they face.

7. Addressing human factors that contribute to rail incidents:

Positive Train Control

Positive Train Control (PTC) is set to be completed by 12/31/15, but an extension is under consideration. Given that PTC systems will effectively address many human factors that lead to incidents, USDOT should make every effort to maintain the current implementation schedule.

The NPRM discusses PTC and acknowledges its associated benefits in Section II. C., p. 45027, including the prevention of:

- Train-to-train collisions;
- Over speed derailments;
- Incursion into an established work zone; and
- Movement through a main line switch in the improper position.

Although there is no discussion in this NPRM regarding any extension of the proposed implementation date beyond 12/31/15, we urge USDOT to maintain the current implementation schedule, at least along major crude oil routes.

B. Specific Comments to Questions Posed in the NPRM:

A. High-Hazard Flammable Train (Page 45040)

> *Proposed definition of a "High-Hazard Flammable Train" (HHFT) as 20 or more carloads of flammable liquids (including crude oil and ethanol).*
>
> New York State supports the definition of the HHFT as proposed. While recognizing the hazard posed by the derailment and subsequent spill or fire involving the failure of even one or two DOT-111 rail cars as shown by the Lynchburg, Virginia incident on April 30 of this year, this definition will establish a reasonable threshold for application of the routing and speed requirements proposed for HHFTs.

B. Notification to State Emergency Response Commissions of Petroleum Crude Oil Train Transportation (Page 45040)

> *1. Whether codifying the requirements of the Order in the HMR is the best approach for the notification requirements, and whether particular public safety improvements could be achieved by requiring the notifications be made by railroads directly to emergency responders, or to emergency responders as well as SERCs or other appropriate state delegated entities.*

The SERC provides an appropriate mechanism to receive and disseminate the information provided by the railroads in response to USDOT's May 7, 2014 Order requiring notification.

2. Whether the 1,000,000-gallon threshold is appropriate, or whether another threshold such as the 20-car HHFT threshold utilized in this NPRM's other proposals is more appropriate. If you believe that a threshold other than 1,000,000 gallons is appropriate, please provide any information on benefits or costs of the change, including for small railroads.

Replacement of the 1 million gallon threshold with the 20-car proposed definition of an HHFT will provide for consistency between railroads regardless of size and better reflect the hazard posed by these shipments.

3. Comments regarding parallel notification requirements for any affected TERCs.

Recommend parallel sharing of information with TERCs consistent with the Security Sensitive (SSI) determination noted in comment to question 4 below.

4. Comments regarding the other topics addressed in the FAQ's document. In particular, PHMSA seeks comments on the confidential treatment of data contained in the notifications to SERCs, and the adoption of a means for identifying Bakken crude oil prior to rail transportation.

As the information provided to the SERC was limited to the average number of trains, the counties those trains are transiting through and the main rail lines used, the information provided was determined by New York State to not be SSI, nor can this information be readily limited or protected from any individuals motivated to identify it as the main rail lines are not secret or difficult to identify by readily available means and unit trains are readily identifiable by the number and type of rail cars. Adoption of a means to identify Bakken crude oil, or other "sweet" crudes with higher volatility than "traditional" crude oil prior to shipment would be beneficial from a response perspective to allow a more accurate and complete picture of the hazard present. Further, New York State needs to understand where these shipments are growing to determine planning and response needs.

5. Whether PHMSA should place restrictions in the HMR on the disclosure of the notification information provided to SERCs or to another state or local government entity.

As long as the information provided remains limited to average number of trains, counties impacted, and primary routes, no restriction of the distribution of this information should be enacted by PHMSA.

6. Whether such information should be deemed SSI, and the reasons indicating why such a determination is appropriate, considering safety, security, and the public's interest in information.

See the comment provided in #4 above.

C. Rail Routing (Page 45042)

New York State supports the planning requirement set forth in the NPRM for carriers to perform an increased risk assessment for improving public safety and environmental protection via routing analysis that considers 27 key safety and security factors in making route selections, as well as the expansion of these planning requirements to apply to HHFTs. As mentioned above, these factors, their weighting, and the data that support the analysis should be regularly updated, and a factor reflecting economic risk should be added.

D. Classification and Characterization of Mined Liquids and Gases (Page 45042)

New York State supports this proposed rule requiring offerors to better classify and test the components of mined liquids and gases and to certify the results. Current regulations require certification by the shipper that the package is suitable for the material shipped; "Operation Classification" has shown that the proper identification and classification of Bakken crude oil is commonly being neglected by shippers/oil companies. New York State also encourages industry to implement methods to degasify the crude oil prior to transport. Further processing including the stabilization of crude oil by removing volatile components and pressure would make the resulting crude oil safer to transport in HHFTs.

From a response perspective – while ensuring that products are properly classified, packaged, and labeled is important – response personnel will likely continue to treat all crude oil as a "worst case" scenario involving a higher volatility and more flammable product. Until proven otherwise, this is due to lack of information and is consistent with the initial guidance provided by ERG guide page 128 which covers a wide range of ignitable liquids.

a. Speed Restriction (Page 45046)

New York State supports speed restrictions for all HHFTs with tank cars not meeting or exceeding the proposed performance standards for the DOT Specification 117 tank car.

1. What would the effects be of a 40-mph speed limit for HHFTs on other traffic on the network, including passenger and intermodal traffic, under each of the three described Options?

The enhanced safety from lower speeds from trains transporting crude oil will likely impact passenger trains that share corridors in New York State. The less uniform the speed profile of trains in a given corridor, the more infrastructure is needed to support fluid train operations (to allow for more frequent meeting/passing and overtaking). Similarly, when the infrastructure is held fixed, this condition lowers the overall capacity of the corridor and leads to slower and less reliable train operations.

7. What other geographic delineations—in addition to HTUAs and cities with 100,000 people or more—should PHMSA consider as an Option for a 40-mph speed restriction in the absence of a proposed DOT 117 tank car?

New York State recognizes that urban settings provide unique vulnerabilities and that a risk analysis-based speed limit that factored in location-specific conditions could be substituted for a blanket speed limit in urban areas. Such an approach, which New York State recommends be funded by the railroads and audited by federal and State agencies, could reduce the impact of uniform speed limitations on passenger and other freight rail services. This analysis should be conducted as the DOT-111 cars are phased out so that when new tank cars are in service any appropriate speed restrictions can be in effect. Further the analysis should be transparent and shared with the appropriate state partners.

8. How would the safety benefits of the proposed speed limits change if combined with the proposed braking systems?

The reduction in kinetic energy, increased reaction time for crews to take precautionary action, and enhanced braking system performance would be additive benefits from a safety perspective. This addresses human factor causes in rail incidents.

b. Alternative Brake Signal Propagation Systems (Page 45048)

As PHMSA has offered evidence that both improved braking and distributed power offer a reduction in kinetic energy of any derailment, with a corresponding reduction in risk of tank failure during a derailment, New York State recommends that these protections be combined with increased protection in tank cars, and not be limited to cars of a certain type (DOT 111) or serve to justify a reduction in those protection standards.

5. How would the safety benefits of the proposed braking systems change if combined with the proposed speed limits and tank car standards?

Again, New York State considers these complementary benefits to be additive from a safety perspective. Redundancy of safety systems/features would generally be considered a positive or desired outcome.

F. New Tank Cars for High-Hazard Flammable Trains (Page 45051)

New York State strongly recommends the selection of the FRA/PHMSA Designed Car described as (Option 1) for new car construction. The increased tank thickness, head

shields, rollover protection, and enhanced braking requirements will contribute significantly to the survivability of the tank car protections. The establishment of new tank car standards must be set as soon as possible so that the rail car production industry can begin production of safer tank cars.

4. What additional safety features not discussed here, if any, should PHMSA consider? If so, please provide detailed estimates on the costs and benefits of individual safety features.

New York State recommends consideration be given to recessing or utilizing an internal valve for the bottom outlet, as is referenced in the discussion on Bottom Outlet Protection on p. 42, and as is in place on DOT-406/407 tank trucks, in order to provide increased protection for that valve should a derailment occur.

b. DOT Specification 117- Performance Standard (Page 45057)

New York State supports the goal of the proposed performance standard which is intended to encourage innovation in tank car designs (including materials of construction and tank car protection features) while providing an equivalent level of safety as the DOT Specification 117. This will avoid a narrowly prescriptive approach which may preclude new and beneficial design alternatives which may be able to achieve an equivalent performance outcome.

G. Existing Tank Cars for High-Hazard Flammable Trains (Page 45058)

4. Should the CPC-1232 cars be exempted from some or all of the retrofitting requirements described here? If so, what are the benefits and costs of those exemptions?

The incident in Lynchburg, VA on April 30th of this year may suggest that the CPC-1232 cars have not solved the problem. However, New York State looks forward to the NTSB's recommendations to craft a regulatory action on this question.

In addition, while DOT's September 6, 2013 ANPRM, NTSB Recommendation R-12-5, and some commenters and petitions linked enhanced tank car specifications and retrofitting of existing tanks cars to only packaging group I and II materials, this NPRM proposes packaging requirements for all flammable liquids in a HHFT, regardless of packing group. Table 22 provides PHMSA's rational for including flammable liquids in packing groups I, II, and III (Page 45062).

1. Are there any relatively lower hazard, lower risk flammable liquids that could potentially be exempt from the enhanced car standards for HHFT?

New York State is not aware of any lower risk flammable liquids that should be exempt from the enhanced HHFT car standards. Any flammable liquid in trains of 20 cars or more (as in the proposed definition of HHFT) would represent a significant flammability risk should a derailment or spill occur.

2. Is the current exception for combustible liquids sufficient to incentivize producers to reduce the volatility of crude oil for continued use of existing tank cars?

New York State is not positioned to evaluate the economics of reducing volatility. However, given that degasification equipment is standard in other oil production regions, New York State finds it hard to believe that oil producers cannot make the economics work.

6. Fire and explosion risk of Class III Flammable liquids

a. What characteristics of a released flammable liquid significantly affect the likelihood and consequence of fire or explosion upon release?

b. What physical or environmental features of a release affect the likelihood and consequence of fire or explosion upon release?

c. What existing scientific information is available concerning the explosion hazards of hydrocarbons and other liquids?

d. What types of flammable liquids are most susceptible to a high-consequence detonation explosion upon release?

e. What data exists on the relationship between liquid properties and fire and blast zone size?

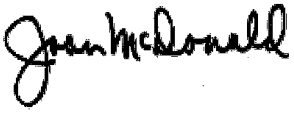
In general, additional data and evaluation is required to better identify the answers sought. Specific to Bakken crude oil transportation by rail, actual incidents have indicated that ignition related to the derailment itself is likely. As the spilled product is unconfined, "explosions" may have been primarily due to the failure of tanks from fire exposure, resulting in heat induced tears, and as such, likely produce more of a thermal event than an explosion with true blast effects.

7. Should shippers be allowed to petition PHMSA for an exemption from the requirements for HHFT based on the properties of Class III liquids? What should be considered (e.g. chemical properties, historical data, scientific information) before issuing an exemption?

Other than public safety or national security issues, significant justification should be required for any exemption considered for a Class III liquid. Regular operations should not be justification for exemption.

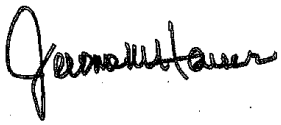
We greatly appreciate your consideration of these comments as well as your continued efforts to work with New York State and our other federal partners in striving to improve the safety of crude oil transportation by rail.

Sincerely,



Joan M. McDonald, Commissioner
New York State Department of Transportation

Joseph J. Martens, Commissioner
New York State Department of Environmental Conservation



Jerome M. Hauer, Ph.D., MHS, Commissioner
New York State Division of Homeland Security and Emergency Services

STATE OF NEW YORK

September 29, 2014

The Honorable Anthony Foxx
Secretary
U.S. Department of Transportation
1200 New Jersey Avenue S.E.
Washington, D.C. 20590

Re: Comments – Docket No. PHSA-2014-015 (HM-251B)

Dear Secretary Foxx:

In recent years, the number of trains transporting crude oil through New York has increased significantly, resulting in increased risks of spills, threats to public health and safety, and potential damage to the environment. These risks have been dramatically demonstrated by derailments, spills, and fires in Lac-Megantic, Canada; North Dakota; Pennsylvania; Alabama; Virginia and elsewhere. Four crude oil train car derailments have occurred in New York State in the last year, though fortunately none resulted in spills.

On January 28, 2014, Governor Andrew M. Cuomo issued Executive Order 125 (EO 125), directing a comprehensive evaluation of New York's readiness to prevent and respond to incidents involving the transportation, storage and transshipment of crude oil. In response to EO 125, a report, "Transporting Crude Oil in New York State: A Review of Incident Prevention and Response Capacity," was created as the result of a coordinated review conducted by five state agencies. USDOT reviewed the report containing ten critical federal recommendations including a recommendation to update regulations to require route-specific contingency plans for trains carrying crude oil.

Governor Cuomo remains committed to the partnership fostered between New York State and relevant federal agencies on these issues. Enhancing industry practices and strengthening regulations are critical to ensuring public health and safety and protection of natural resources. New York State urges USDOT to expeditiously promulgate regulations to safeguard the safety of those living and working along crude oil transportation corridors.

New York State respectfully submits the following comments on the Advanced Notice of Proposed Rule Making (ANPRM) for Hazardous Materials: Oil Spill Response Plans (OSRP) for High-Hazard Flammable Trains [Docket No. PHSA-2014-015 (HM-251B)]. The comments are presented as responses to the specific questions posed within the ANPRM.

Comments on the specific questions posed on page 45082:

1. *When considering appropriate thresholds for comprehensive OSRPs, which of the following thresholds would be most appropriate and provide the greatest potential for increased safety? What thresholds would be most cost-effective?*
   a. 1,000,000 gallons or more of crude oil per train consist;
   b. An HHFT of 20 or more carloads of crude oil per train consist;
   c. 42,000 gallons of crude oil per train consist; or
   d. Another threshold.

   New York State recommends Option C: 42,000 gallons of crude oil per train consist. This would maintain consistency with the existing threshold for comprehensive Oil Spill Response Plans (OSRP) while recognizing the hazard posed by the derailment of even a small number of crude oil cars as evidenced by the derailment and subsequent fire in Lynchburg, Virginia in April, 2014. Comprehensive OSRPs for the railroads should be based on the same requirements imposed upon the owners and operators of vessels as dictated by the Federal Water Pollution Control Act as amended by the Oil Pollution Act of 1990 (OPA 90).

2. *In exploring the applicability of comprehensive OSRP requirements to trains carrying large volumes of crude oil, are the requirements of comprehensive OSRPs clear enough for railroads and shippers to understand what would be required of them? If not, what greater specificity should be added?*

   The use of comprehensive OSRPs is not a new concept. As stated in the ANPRM, the OSRPs are currently mandated by OPA 90. Facility Response Plans are required by USEPA for facilities which meet a quantity threshold and operators are required to submit plans and have preset agreements for response to releases of hazardous materials. Similar requirements apply to vessels (ships, barges, tankers, etc.) that meet a quantity threshold. The ability to complete these plans is widely held by personnel in industry, government, and the consulting arena, and we strongly urge PHSMA to extend this existing practice to rail transport. New York State believes the requirements of OSRPs are clear enough for railroads and shippers to understand what is required of them.

3. *In exploring the applicability of comprehensive OSRP requirements to trains carrying large volumes of crude oil, are there elements that should be added, removed, or modified from the comprehensive OSRP requirements? Please consider the regulations covering other modes of transporting crude oil (such as pipelines), and the relevant differences between modes of operation, in your response.*

   One significant change that New York State recommends has to do with the anticipated environmental impacts that comprehensive OSRPs submitted by railroads must address. The requirement that such a plan "identifies and ensures by contract or other means the availability of private personnel to remove, to the extent practicable, a worst case discharge (including that resulting from fire or explosion) and to mitigate or prevent a substantial threat of such a discharge" must address the impacts of discharges upon land and groundwater, as well as those that impact surface waters.

   Additionally, OSRPs should clearly identify the roles and responsibilities of a shipper's own personnel and supporting contractors, including how they would integrate into the local (public agency) incident management system, as well as what role and responsibilities the shipper anticipates or expects local, county/regional and State agencies to play, prior to any incident. This would allow for increased awareness of the responsibilities of all parties and provide for an increased ability to meet those responsibilities or identify gaps which need to be addressed.

New York State emphasizes the continued need for regular exercise of these OSRPs, including the need for unannounced drills, in order to ensure that these plans remain current and widely shared among the local and regional emergency responders. The plans should be updated periodically (every three years) and reviewed when updated.

4. *What costs might be incurred in developing comprehensive OSRPs and submitting them to FRA for approval? To the extent possible, please provide detailed estimates.*

   New York State calls on the federal government to set the standards for OSRPs and ascertain cost estimates to develop the plans based on those standards.

5. *What costs might be incurred to procure or contract for resources to be present to remove discharges? In these estimates, what are your assumptions about the placement of equipment along the track, types of equipment, and maximum time to contain a worst-case discharge?*

   New York State stresses the importance of using risk analysis to determine the areas of highest vulnerability or most areas that have impediments to access for first responders. New York State acknowledges that costs are associated with response and recovery but at this time cannot estimate the cost without a risk analysis. Additionally, a risk analysis is necessary to determine the best allocation of resources along shipping corridors of crude oil. It is suggested that the same 27 factors used for the rail re-routing analysis be used for such a risk analysis exercise. Those factors and their respective "weights" in the analysis should be transparent and regularly reviewed and updated for relevancy. Further, the federal government needs to set the standards for response time for private partners according to the risk analysis to be sure that sufficient resources can be marshaled. Local government first responders will likely be the first on the scene of an incident and the railroads and industry must be prepared to assist with extraordinary measures in response and recovery.

   As an example of the costs associated with response, New York State has provided the estimates for foam concentrate, a key resource. The cost for 600 or more gallons of Class B foam concentrate estimated as necessary for fire control and post-fire vapor suppression for an incident involving a single DOT-111 rail car carrying crude oil, pursuant to the flow rates identified in NFPA 11, exceeds $23,000 at current New York State Contract pricing. Combined with the costs of the apparatus needed to apply "finished" foam onto a fire or spill, the estimated cost can total $40,000 or more per unit. The challenges of having sufficient equipment available within the response time needed to protect the public and the environment are great. A risk analysis would help New York State determine the appropriate allocation of those resources. The federal government should identify resources which could be available to states, local governments and first responders for the purchase of equipment and materials.

6. *What costs might be incurred to conduct training, drills, and equipment testing? To the extent possible, please provide detailed estimates.*

   To be most effective, training, drills, and exercises should include each agency that would respond to an actual incident to an incident in a defined area to allow verification of performance, increase interoperability and identify any gaps in coverage or capability. Costs associated with doing so include the costs of providing staffing (backfills) for career fire departments and other response agencies and consumables required for effective and realistic training such as training foam. Staffing backfill costs will vary by jurisdiction but can be significant, and if not addressed, limit participation of critical response agencies with a corresponding negative impact upon effectiveness.

7. *It is assumed that most railroads and shippers currently have basic OSRPs in place. What, if any, aspects beyond the basic plan requirements do these plans voluntarily address? To what extent do current plans meet the comprehensive OSRP requirements, including procurement or contracting for resources to be present to respond to discharges?*

   To date, the railroads and associated shippers have not shared their OSRPs with New York State as they currently are not required to under federal law or regulations.

8. *To what extent should recent commitments to the Secretary of Transportation's "Call to Action," and other voluntary industry actions, inform the exploration of additional planning requirements for trains carrying large volumes of crude oil? For example, how should voluntary emergency response equipment inventories and hazardous material training efforts be factored into the exploration of additional planning requirements? Should PHMSA require that resources be procured to respond on a per route basis, or at the state/county/city/etc. level? What is the rationale for your response?*

   While recognizing the existing efforts of the AAR and the individual railroads to provide emergency response training and pre-position response equipment inventories and supplies, to be most effective these efforts must further integrate and be coordinated with local, county/regional, state and federal planning, preparedness and response efforts. This expanded effort must be formalized and reflected in OSRPs. The adoption of formal regulations requiring these measures should ensure a level playing field across the United States for all companies engaged in this industry. It would also ensure that all areas of the country have equal access to assets.

   Instead of requiring that resources be procured on a route or locality basis, New York State believes that both physical and human resources should be available to respond within a set timeframe based on risk. Areas of high risk (i.e., frequently traveled routes, locations near sensitive resources, etc.) need to be identified and should get high priority for resource allocation. Analysis of any gap in response coverage should also merit special action by the railroads and shippers.

   An important aspect of initial response is the ability of local response agencies to protect themselves and their response area. Even a 2 to 3 hour privately supported response time leaves a gap to be filled by local responders. These local resources should be provided training and equipment to cover this time period. Funding by the railroads, shippers, or the federal government should be provided to local agencies along the routes of the crude oil trains so they have the proper training and response posture.

   A good example is the Traffic Incident Management (TIM) model promoted by USDOT. Here in New York State, NYSDOT, State Police, the Division of Homeland Security and Emergency Services and local governments have a strong TIM with participation by agency heads, executive staff, and front line staff.

9. *Should PHMSA require that the basic and/or the comprehensive OSRPs be provided to State Emergency Response Commissions (SERCs), Tribal Emergency Response Commissions (TERCs), Fusion Centers, or other entities designated by each state, and/or made available to the public? Should other federal agencies with responsibilities for emergency response under the National Contingency Plan (e.g., U.S. Coast Guard, EPA) also review and comment on the comprehensive OSRP with PHMSA?*

The OSRP should be made available to SERCs, and other entities charged with emergency planning in the states. The information contained in these plans can be distributed to the local and regional emergency planning and response agencies using the same conditions and agreements for security currently in use to share similar plans developed pursuant to OPA 90. Release of the non-security sensitive portions of these plans to the public can also be accommodated using the policies already established for the Area Contingency Plans established by OPA 90. PHMSA can also benefit from the experience of the US Coast Guard, USEPA, and their state partners for the review of these proposed OSRPs. The policies already in place for the review and approval of the Contingency Plans required by OPA 90 could be applied to the OSRPs.

We greatly appreciate your consideration of these comments as well as your continued efforts to work with New York State and our other federal partners in striving to improve the safety of crude oil transportation by rail.

Sincerely,

Joan M. McDonald, Commissioner
New York State Department of Transportation

Joseph J. Martens, Commissioner
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November 6, 2014

U. S. Department of Transportation
Dockets Management Facility
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1200 New Jersey Avenue, SE
Washington, DC 20590

Docket Number: FRA-2014-0032

To Whom It May Concern:

In recent years, the number of trains transporting crude oil through New York has increased significantly, resulting in increased risks of spills, threats to public safety, and potential damage to the environment. These risks have been dramatically demonstrated by derailments, spills, and fires in Lac-Megantic, Canada; North Dakota; Pennsylvania; Alabama; Virginia and elsewhere. Four crude oil train car derailments have occurred in New York State in the last year, though fortunately with no spills.

New York State strongly supports the provisions of the Federal Railroad Administration's (FRA's) Executive Order 28 (EO 28) which was issued following the crude oil derailment and its devastating impacts in Lac Megantic, Quebec on July 6, 2013; and which serves as the source document for this proposed rule making. EO 28 was issued by FRA to address the immediate dangers arising from unattended rail equipment which is left unsecured on mainline tracks; and its six securement-related requirements govern when, where, and how certain hazardous materials tank cars may be left unattended.

On January 28, 2014, Governor Andrew M. Cuomo issued Executive Order 125 (EO 125), directing a comprehensive evaluation of New York's readiness to prevent and respond to incidents involving the transportation, storage and transshipment of crude oil. In response to EO 125, a report, "Transporting Crude Oil in New York State: A review of Incident Prevention and Response Capacity", was created as a result of a coordinated review conducted by five state agencies. That report offered ten critical federal recommendations and a package of state administrative, regulatory, and legislative actions.

Governor Cuomo remains committed to the partnership fostered between New York State and relevant federal agencies on these issues. Further, enhancing practices and strengthening regulations to ensure public health and safety and the protection of natural resources are critical.

NYSDOT respectfully submits the following comments for the Notice of Proposed Rule Making (NPRM): Securement of Unattended Equipment (FRA Docket No. FRA-2014-0032, Notice No. 1).

C. Current Securement Regulations and Related Guidance (p. 53361)

1. FRA issued Technical Bulletin MP&E 2010-01, Enforcement Guidance Regarding Securement of Equipment with Title 49 Code of Federal Regulations Section 232.103(n) (TB 10-01). While FRA continues to believe that the securement requirements of § 232.103 are not met where there is a complete failure to apply even a single hand brake on unattended equipment, FRA also recognizes that there are times when it is necessary to have unsecured equipment, such as during switching activities when assembling and disassembling trains within classification yards. Therefore, TB 10-01 provides guidance regarding alternative forms of securement in such instances.

FRA seeks comments on clarifying the rule to address the provisions of Technical Bulletin 10-01 in the final rule. (p. 53362)

NYSDOT is in agreement with adding the requirement that at least one hand brake must be applied except in limited circumstances, such as when skates or retarders are applied in a classification yard. This will add clarity to the general requirements for securing unattended equipment.

III. Section-by-Section Analysis (p. 53364)

1. FRA also notes that this proposed rule does not include the portion of Emergency Order 28 that requires railroads to review, verify, and adjust, as necessary, existing requirements and instructions related to the number of hand brakes to be set on unattended trains and vehicles, and to review and adjust, as necessary, the procedures for verifying that the number of hand brakes is sufficient to hold the train or vehicle with the air brakes released. It was FRA's concern that existing railroad processes and procedures related to setting and verifying hand brakes on unattended trains and equipment were not sufficient to hold all trains and vehicles in all circumstances. FRA believes that the railroads have fulfilled this requirement and thus there is no need to include it in this proposed rule.

FRA seeks comments on the exclusion of this Emergency Order 28 requirement here. (p. 53364)

Section 232.103(n)(1) clearly stipulates that "Railroads shall develop and implement a process or procedure to verify that the applied hand brakes will sufficiently hold the equipment with the air brakes released." NYSDOT concedes that periodic review, verification and adjustment of those processes and procedures are an inherent obligation of the railroads. Therefore, given FRA's expressed confidence that the railroads have fulfilled this requirement, NYSDOT agrees that it is unnecessary to include it in this proposed rule.

Proposed Amendments to 49 CFR Part 232 (p. 53364)

Section 232.103 General Requirements for all Train Brake Systems

1. Proposed paragraph (n)(6) defines the type of cars covered by these requirements and is intended to ensure that proposed paragraphs (n)(7) and (n)(8) apply only to equipment that includes loads. Specifically, paragraph (n)(6) provides that the substantive requirements of paragraphs (n)(7) and (n)(8) will apply to :

    (1) any loaded freight car containing PIH material, including anhydrous ammonia and ammonia solutions; or

    (2) twenty (20) or more loaded cars or loaded intermodal portable tanks of any one or any combination of PIH materials (including anhydrous ammonia and ammonia solutions), or any flammable gas, flammable or combustible liquid, explosives or a hazardous substance listed at § 173.31(f)(2) of this title.

    FRA notes that this language is broader than the language used in PHMSA's NPRM on Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains (HHFTs). *See* 79 FR 45016 (Aug. 1, 2014). In that rule, PHMSA proposed certain new requirements for HHFTs, which it defines as "a train comprised of 20 or more carloads of a Class 3 flammable liquid and ensures that the rail requirements are more closely aligned with the risks posed by the operation of these trains." 79 FR at 45017. Paragraph (n)(6) proposes new securement requirements that would cover a single PIH tank car. Moreover, where the proposed PHMSA rule would only cover trains with 20 or more carloads of flammable liquids, paragraph (n)(6) proposes to cover situations where there are 20 or more carloads or loaded intermodal portable tanks of PIH materials, flammable gases, flammable or combustible liquids, explosives, other hazard substances listed at § 173.31(f)(2), or any combination thereof.

    FRA seeks comment on this proposal and also seeks comment on whether a defined term should be used for equipment covered under paragraph (n)(6). (p. 53365)

From the standpoint of public safety, NYSDOT supports FRA's broadening the language of this rule to include the securement of unattended equipment transporting hazardous materials beyond those defined as HHFTs in PHMSA's earlier NPRM.
A "defined term" for the equipment covered under paragraph (n)(6) which would provide a simple way to differentiate it from those defined elsewhere in regulation (e.g.HHFTs) would be advantageous.

2. The proposed regulatory text exempts residue cars from consideration. Residue cars are defined by PHMSA under the HMRs. FRA will continue to rely on the HMRs for this definition, even if amended. Together, FRA and PHMSA are concurrently considering new regulations relating to the placement in trains of cars containing hazardous materials. In that effort, loaded and residue cars may be treated the same. FRA does not believe that any resulting train placement regulation would affect the securement regulations we are considering in the instant proceeding. Nevertheless, the parties have expressed concerns that such inconsistent use may foster confusion or be "pitted against one another.

    FRA seeks further comment explaining how such confusion or conflict may manifest itself. (p. 53365)

Exempting residue cars from the requirements of this proposed rule would appear contradictory to the language contained throughout the Hazardous Material Regulations (HMRs). The HMR's have been written from a perspective that a packaging which contains residue remains potentially hazardous.
Although FRA does not believe that any resulting train placement regulation would affect the securement regulations we are considering, it is not clear what particular advantage is gained by granting this exception for residue cars. From a risk perspective, it would seem reasonable to treat all placarded residue cars as potentially hazardous until such time that they are cleaned and purged, including for the purposes of securement.
In order to avoid the potential for confusion in terms of interpreting the HMR's, NYSDOT contends that the provisions which apply to residue cars should remain consistent throughout. Therefore, we recommend that the exclusion outlined in 232.103(n)(6)(ii) be omitted from the proposed rule.

3. Proposed paragraph (n)(7)(i), however, differs from Emergency Order 28 in one manner. It allows a railroad to leave a train or equipment unattended on mainline track that is running through a yard or on mainline track that is adjacent to the yard without covering the location in the railroad's plan. This change is based on feedback received during the SWG meetings, which voted unanimously to adopt the proposed language in paragraph (n)(7)(i), with the recommendation of the full RSAC to move forward with the regulatory provision.

   FRA seeks comments on its treatment of tracks adjacent to the yard. (p.53366)

Given that there are vast differences in surrounding population densities and in the amount of railroad activity that takes place at different rail yards, NYSDOT believes that there should be no differentiation in plan requirements simply because the mainline tracks go through or are adjacent to rail yards. There are many railroad yards located in rural areas of New York State with limited rail operation activity, low population density and in which ambient lighting may be poor or nonexistent. In a letter to President Obama dated September 23, 2014, Governor Cuomo recently outlined New York's safety concerns in and around the areas in which crude-by-rail trains dwell. Sufficient analysis of the safety risks and any mitigating circumstances should be part of a railroad's plan for all mainline tracks and sidings irrespective of whether those tracks go through or are adjacent to a rail yard.

4. FRA has decided not to continue the recordation requirement based on experience in enforcing Emergency Order 28. FRA has found that requiring recordation of securement information is superfluous because the verification requirement ensures that two individuals consulting with each other make certain that the appropriate securement method is used. The intent of the recordation requirement was to ensure the communications are taking place. FRA has found over the last year that communications occur in the course of the verification process. Therefore, it does not believe requiring railroads to make a record of each securement event is necessary to ensure proper securement.

Nevertheless, *FRA seeks comment concerning enforcement of the verification requirement, absent recordation. (p. 53366)*

Removing the recordation requirement would make enforcement of 232.103(n) extremely challenging. NYSDOT supports the provisions of Emergency Order 28, which currently requires railroads to have a written record of the number of hand brakes applied to an unattended train based upon communications between the train crew and qualified employee. This approach establishes a documented basis which is subject to verification by rail safety enforcement personnel. Having a written record of the number of brakes applied also aids the incoming train crew in its assessment of how many hand brakes need to be released before the train continues its movement; a train operated with a hand brake left applied inadvertently can result in severe wheel damage and an increased potential for a derailment to occur.
Given that the proposed rule fails to codify the appropriate number of hand brakes to be set (based upon weight, number of rail cars and track gradient), and is proposing to eliminate the recordation provision of EO 28, our ability to verify that adequate securement of unattended trains and equipment has been achieved will be significantly diminished.
NYSDOT strongly recommends that the recordation requirement be maintained in the proposed rule.

[Note: In reviewing the provisions of (n)(8) including related passages in (n)(7), some confusion has arisen. There appears to be some ambiguity regarding paragraph (n)(7)(ii) as it relates to the provisions of paragraph (n)(8)(i), as follows:

Paragraph (n)(7)(ii) refers to trains described in 232.103(n)(6) which are "left unattended on a main track or siding that *runs through, or is directly adjacent to a yard*" and states that the requirements of paragraph 8(i) and 8(ii) *shall apply*. However, paragraph (n)(8)(i) states, "Where a freight train or standing freight car or cars as described in paragraph (n)(6) of this section is left unattended on a main track or siding *outside of a yard, and not directly adjacent to a yard*, an employee responsible for securing the equipment shall verify with another person qualified to make the determination that the equipment is secured in accordance with the railroad's processes and procedures."

The wording *shall apply* would seem to render the provisions of paragraph (n)(7)(ii) moot, since it appears to default to the provisions of paragraphs (n)(8)(i) and (n)(8)(ii) for all trains left unattended, irrespective of their location relative to a yard.

NYSDOT is in agreement with the requirement that an employee responsible for securing the equipment shall verify with another qualified person that the equipment is secured in accordance with railroad procedures for all trains left unattended. Based upon our interpretation as written, we would suggest that paragraph (n)(7)(ii) could be omitted and the wording of (n)(8)(i) could be changed to: "Where a freight train or standing freight car or cars as described in paragraph 232.103(n)(6) of this section is left unattended on a main track or siding, an employee responsible for securing the equipment shall verify.....etc."]

5. Proposed paragraph (n)(8)(ii) requires further protection of the locomotive to prevent movement of unattended equipment that could be caused by unauthorized access to the locomotive cab. The language approved by the SWG (Securement Working Group of the Railroad Safety Advisory Committee) provided that the controlling locomotive cab shall be locked on locomotives capable of being locked or the reverser on the controlling locomotive shall be removed from the control stand and placed in a secure location. FRA has made slight alterations to the language in paragraph (n)(8)(ii) from the language that was approved by the SWG in order to more accurately address the lock requirement. FRA understands that the reverser provision is intended for the interim period until locks are installed or when a locomotive has been equipped with a lock but the lock has become inoperative. FRA also notes that under this proposal a railroad would be free to require both the locking of the locomotive and the removal of the reverser. FRA does not intend to limit a railroad to just one or the other.

   FRA seeks comment on this understanding, particularly as to whether the alternative of becomes broken or otherwise ineffective or whether, in the interest of safety redundancy, the regulations should require railroads to both lock cab doors and to remove reverser handles. (p. 53366)

NYSDOT supports the view that redundancy of safety or security procedures is beneficial in terms of addressing risk. Therefore, we are in agreement that both the locomotive cab door lock should be engaged (if operative) and the reverser should be removed and secured where feasible when the train is left unattended.

6. In most instances, FRA would consider a locomotive with an ineffective locking mechanism to be noncompliant with paragraph (n)(8)(ii) if the locomotive is left unattended with the reverser remaining in the control stand. FRA recognizes that there may be times when a locomotive's lock becomes inoperative and its reverser cannot be removed, thus making compliance with proposed paragraph (n)(8)(ii) nearly impossible. Accordingly, for such instances, FRA proposes an exception under paragraph (n)(8)(iii). FRA believes that application of this exception would only be utilized on the rare occasion where older locomotives with integrated reversers may be utilized or where weather conditions make the reverser necessary for operations (i.e., to prevent the locomotive from freezing).

   FRA seeks comments on the intent, application, and language of this proposed exception. (p. 53367)

The data provided in the analysis section of the NPRM indicates that the cost associated with repairing or replacing a locking mechanism is relatively small. It is accepted that the goal of this particular exception is to provide relief in the rare instances where "non-conforming" equipment (e.g. locomotive cabs without operative locks or removable reversers) would require. However, given the acknowledged security concerns inherent with leaving trains unattended, consideration should be given to requiring that the affected equipment be attended until such time that the inoperative locking mechanisms can be repaired or replaced in conformance with paragraph (n)(8)(ii).

7. Under this proposal, FRA expects that the crew will discuss the equipment that is impacted, the responsibilities of each employee involved in the securement of a train or vehicle, the number of hand brakes that will be required to secure the affected equipment, the process for ensuring that securement is sufficient, how the verification will be determined, and any other relevant factors affecting securement.

FRA seeks comments on whether these expectations are reasonable, accurate, and either sufficiently comprehensive or somehow lacking. (p. 53367)

The specific job briefing requirements should be left up to the railroads. NYSDOT agrees that effective policies and procedures are important. However, our larger concern remains the ability to record or document the actions taken in accordance with those policies and procedures. As previously noted, a more uniform approach to ensuring that unattended trains are left with a sufficient number of hand brakes could be accomplished by codifying in regulation the appropriate number of hand brakes required given the weight, number of cars, and track gradient. This would ensure uniformity amongst all railroads, and would allow inspectors the ability to verify that unattended trains are left with the required amount of hand brakes applied.

8. FRA recognizes that in some instances, there may only be one crew member performing a switch or operation and that would have to secure equipment alone at the end of the activity. FRA believes that the issue of self-satisfying a job briefing is best left to the railroad when complying with part 218.

FRA seeks comments on how to apply this requirement in a situation involving a single person crew and how it interrelates with part 218. (p. 53367)

NYSDOT acknowledges that single person crews pose a challenge in terms of ensuring that the safety benefits inherent with effective job briefings are assured in all instances, including single-person operations. At a minimum, the procedures for conducting job briefings should be established in the railroad's operating rules or in its timetable special instruction for all locations and operations to ensure that expectations are clearly established.

9. Under paragraph (n)(10), FRA is proposing to require railroads to develop procedures to ensure that a qualified railroad employee inspects all equipment that any emergency responder has been on, under, or between for proper securement before the rail equipment or train is left unattended. As it may be necessary for emergency responders to modify the state of the equipment for the performance of their jobs by going on, under, or between equipment, it is critical for the railroad to have a qualified employee subsequently inspect the equipment to ensure that the equipment continues to be properly secured before it is again left unattended. Paragraph (n)(10) states:
" Each railroad shall adopt and comply with procedures to ensure that, as soon as safely practicable, a qualified employee verifies the proper securement of any unattended equipment when the railroad has knowledge that a non-railroad emergency responder has been on, under, or between the equipment."

FRA seeks comments on what should be considered "as soon as safely practicable." (p. 53367)

Clearly, the type and severity associated with any emergency event will significantly influence the definition of "as soon as safely practicable". NYSDOT would recommend that, given their significant training regarding personal safety and protection, the first responders on-site would be a reasonable 'real time' resource to provide the requisite guidance in each case.

NYSDOT consulted with counterparts from the NYS Division of Homeland Security and Emergency Services (DHSES), Office of Fire Prevention and Control (OFPC) on this topic. OFPC recommends that for scenarios in which first responders access unattended equipment without the on-site presence of railroad personnel , effective communication and coordination will be critical in assuring that the incident scene and access to the equipment be turned over to the appropriate railroad representative (i.e. "qualified employee") when it is has been determined safe to do so. In no case should the affected equipment be left in a potentially unsafe or unattended condition prior to the arrival of railroad personnel designated by the railroad to inspect and assume responsibility for that equipment and its proper securement.

Section 232.105 General Requirements for Locomotives (p.53367)

1. FRA proposes a new paragraph (h) to §232.105 to provide further requirements concerning locking mechanisms on locomotive doors. While proposed §232.103(n)(8)(ii) provides securement controls for the controlling locomotive cab that is left unattended on a mainline track or siding as part of a train that meets the minimum quantities of hazardous materials established in §232.103(n)(6)(i), FRA believes that additional requirements should apply to all locomotives left outside of a yard.

   FRA also proposes to include this requirement in § 232.105 so that it applies to all locomotives left unattended outside of a yard or on a track immediately adjacent to a yard, not just those locomotives defined under § 232.103(n)(6).

   FRA seeks comment on this requirement. (p. 53367)

NYSDOT supports the intent of this proposal to provide securement controls for all locomotives left unattended outside of a yard. The proposed 232.105 requires that locomotives have operative locks by 2017; however, other than the language in paragraph (n)(8)(ii) for hazardous trains as defined in paragraph (n)(6)(i), there is no requirement for the train crew to apply the lock. We suggest additional wording to that included in paragraph (n)(8)(ii) to cover all unattended locomotives on mainline tracks and sidings regardless of the lading carried by the train.

2. *For the purposes of this regulation, "operative" means that, when applied, the locking mechanism will reasonably be expected to keep unauthorized people from gaining access into a locomotive*

while the locomotive is unoccupied. However, in doing so, the railroad must assure that ingress and egress is provided for in normal circumstances and emergencies.

FRA seeks comments on this understanding. (p. 53368)

NYSDOT believes that the proposed definition is reasonable. It is understood that whatever type of locking mechanism is provided by the railroad would be based upon its effectiveness and appropriate functionality to accommodate the required ingress/egress under all conditions.

3. FRA also seeks information and comments on the possibility of a qualified person finding difficulty accessing the locomotive cab in the event of an unintentional movement of the equipment. (p. 53368)

Based upon our response to 2. above, we would rely upon the railroad to develop appropriate procedures to address this scenario. In the event there is unintentional movement of the equipment as described, and access to the cab is problematic, we would expect that the qualified person would likely attempt to apply the hand brake from the outside of the locomotive.

Thank you for providing this opportunity to submit comments. NYSDOT urges FRA to strongly consider the comments and recommendations of this Department. If you have any questions, please feel free to contact Clifford Thomas, Director of the Rail Safety Bureau at (518) 457-7475.

Sincerely,

Joan McDonald

Joan McDonald
Commissioner

Appendix II

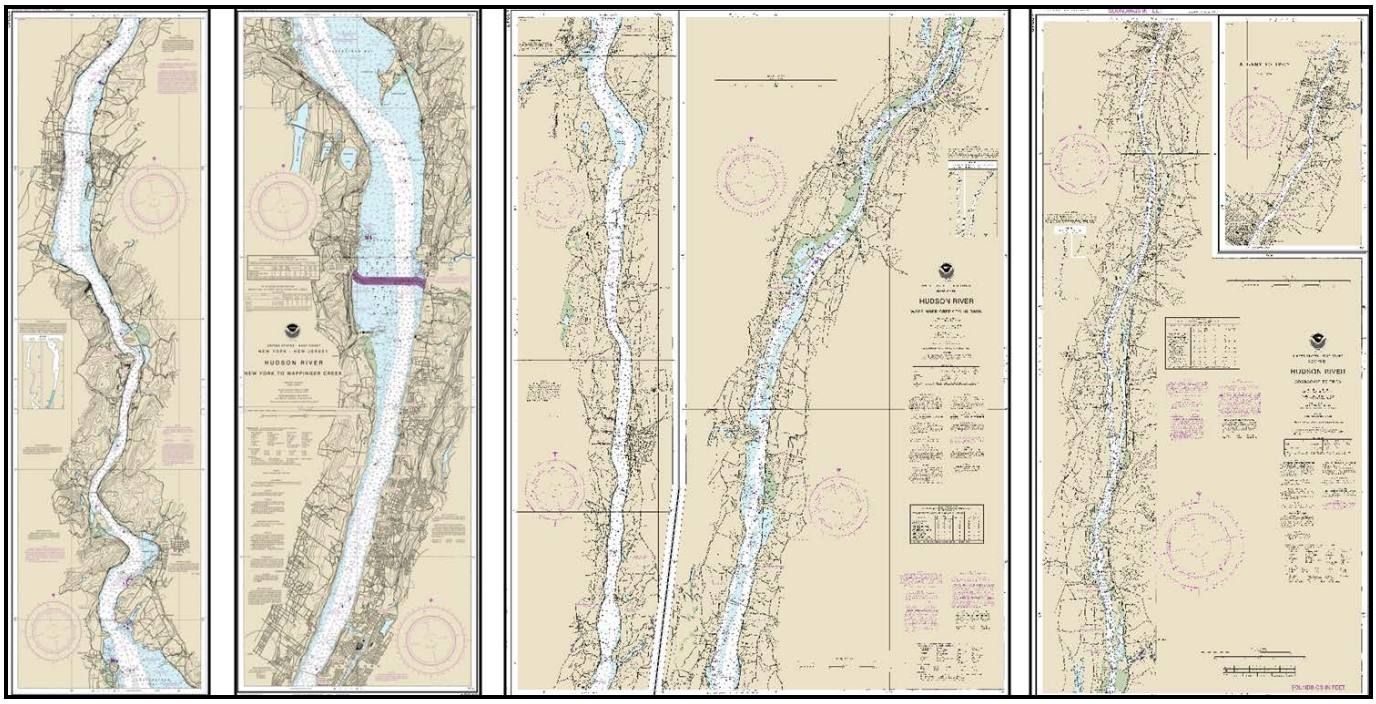
Ports and Waterways Safety Assessment Workshop Report Hudson River, New York

United States Coast Guard Marine Transportation Systems Directorate

Ports and Waterways Safety Assessment

Workshop Report

Hudson River, New York



United States Coast Guard
Marine Transportation Systems Directorate

Providing Navigation Safety Information
for America's Waterways Users

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Background and Purpose

The United States Coast Guard (USCG), Marine Transportation System Directorate, is responsible for developing and implementing policies and procedures that facilitate commerce, improve safety and efficiency, and inspire dialogue with port and waterways users with the goal of making waterways as safe, efficient, and commercially viable as possible.

Through the 1997 Coast Guard Appropriations Act, the Coast Guard was directed to establish a process to identify minimum user requirements for new Vessel Traffic Service (VTS) systems in consultation with local officials, waterways users and port authorities, and also to review private / public partnership opportunities in VTS operations. The Coast Guard convened a National Dialogue Group (NDG) comprised of maritime and waterway community stakeholders to identify the needs of waterway users with respect to Vessel Traffic Management (VTM) and VTS systems. The NDG was intended to provide the foundation for the development of an approach to VTM that would meet the shared government, industry, and public objective of ensuring the safety of vessel traffic in U.S. ports and waterways, in a technologically sound and cost effective way.

From the NDG came the development of the ***Ports and Waterways Safety Assessment (PAWSA) Waterways Risk Model,*** and the ***PAWSA workshop process***. PAWSA is a disciplined approach designed to identify major waterway safety hazards, estimate risk levels, evaluate potential mitigation measures, and set the stage for the implementation of selected risk reduction strategies. The process involves convening a select group of waterway users and stakeholders and facilitating a structured workshop agenda to meet the risk assessment objectives. A successful workshop requires the participation of professional waterway users with local expertise in navigation, waterway conditions, and port safety. In addition, stakeholders are included in the process to ensure that important environmental, public safety, and economic consequences are given appropriate attention as risk interventions are identified and evaluated.

The long-term goals of the PAWSA process are to:

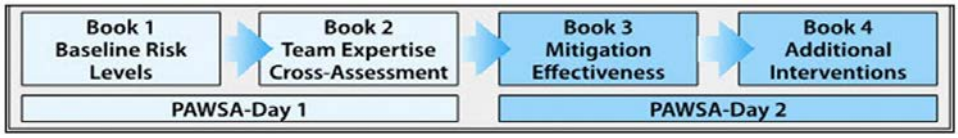
1) Provide input when planning for projects to improve the safety of navigation,
2) Further the Marine Transportation System (MTS) goals of improved coordination and cooperation between government and the private sector, and involving stakeholders in decisions affecting them,
3) Foster development and/or strengthen the roles of Harbor Safety Committees within each port, and
4) Support and reinforce the role of Coast Guard Sector Commanders/Captains of the Port (COTP) in promoting waterway and vessel traffic management activities within their geographic areas of responsibility.

In total, 58 ports/waterways have been assessed using the PAWSA process. The risk assessment process represents a significant part of joint public-private sector planning for mitigating risk in waterways. When applied consistently and uniformly in a number of waterways, the process is expected to provide a basis for making best value decisions for risk mitigation investments, both on the local and national level. The goal is to find solutions that are cost effective and meet the needs of waterway users and stakeholders.

PAWSA Waterway Risk Model and Workshop process

The PAWSA Waterway Risk Model includes variables dealing with both the causes of waterway casualties and their consequences. In the Waterway Risk Model, risk is defined as a function of the probability of a casualty and its consequences. The diagram below shows the six general risk categories, and corresponding risk factors, that make up the Waterway Risk Model.

Waterway Risk Model					
Vessel Conditions	**Traffic Conditions**	**Navigational Conditions**	**Waterway Conditions**	**Immediate Consequences**	**Subsequent Consequences**
Deep Draft Vessel Quality	Volume of Commercial Traffic	Winds	Visibility Impediments	Personnel Injuries	Health and Safety
Shallow Draft Vessel Quality	Volume of Small Craft Traffic	Water Movement	Dimensions	Petroleum Discharge	Environmental
Commercial Fishing Vessel Quality	Traffic Mix	Visibility Restrictions	Bottom Type	Hazardous Materials Release	Aquatic Resources
Small Craft Quality	Congestion	Obstructions	Configuration	Mobility	Economic



- ***Vessel Conditions*** – The quality of vessels and their crews that operate on a waterway.
- ***Traffic Conditions*** – The number of vessels that use a waterway and how they interact with each other.
- ***Navigational Conditions*** – The environmental conditions that vessels must deal with in a waterway.
- ***Waterway Conditions –*** The physical properties of the waterway that affects vessel maneuverability.
- ***Immediate Consequences*** – The instantaneous impacts to the port as a result of a vessel casualty.
- ***Subsequent Consequences*** – The longer-term impacts felt days, months, and even years afterwards.

Workshop activities include a series of discussions about the port/waterway attributes and the vessels that use the waterway, followed by completion of work books to establish baseline risk levels, evaluate the effectiveness of existing risk mitigations, and identify additional risk intervention strategies to further reduce risk in the port / waterway. Work book 1 is used to numerically evaluate the baseline risk levels using pre-defined qualitative risk descriptions for pre-defined risk factors. Work book 2 is used to assess the expertise of each other with respect to the risk categories in the model. Those expertise assessments are used to weight inputs obtained during the other steps in the workshop process. Work book 3 is used to evaluate how effective the mitigation strategies are at reducing risks, and to determine if the risks are well balanced or not. For those risk factors where risk is judged to be not well balanced by existing mitigations, participants use work book 4 to identify additional risk intervention strategies and then evaluate how effective those new strategies could be at reducing risks.

Hudson River PAWSA Workshops

PAWSA workshops to assess navigation safety on the Hudson River were held in Poughkeepsie, New York on 7-8 November 2017 and in Albany, New York on 15-16 November, 2017. The purpose was to bring waterway users, stakeholders and members of the Hudson River community together for collaborative discussions regarding the quality of vessels and crews that operate on the waterway; the volume of commercial, non-commercial and recreational small craft vessel traffic using the waterway, and the ability of the waterway to handle current and future increases in traffic volume levels.

The goal of the Hudson River PAWSA workshops was to foster improved coordination and cooperation among government and private sector stakeholders, provide waterway community members with an effective tool to evaluate risks to safe navigation, and begin work toward long term solutions tailored to local circumstances.

The sponsor of the Hudson River PAWSA workshops was Rear Admiral Steven Poulin, Commander of the First Coast Guard District. Admiral Poulin conducted a press conference before each workshop explaining his reasons for sponsoring the workshops, which included a record number of comments the Coast Guard received in response to its 2016 Advanced Notice of Proposed Rulemaking (ANPRM) seeking public input on a proposed rule on new anchorage grounds on the Hudson River. Admiral Poulin described the Hudson River as a national treasure, and he intended for the PAWSA process to provide the Coast Guard with a better understanding of the risks on the waterway and what measures may be implemented to address those risks.

Admiral Poulin opened the workshop proceedings by welcoming participants and observers, explaining the Coast Guard's commitment to process transparency, to help identify risks on the river and what current and potential mitigations may reduce risks, and to work collaboratively with all stakeholders to find the best solutions possible to protect the Hudson River and vessels operating on it. He emphasized the PAWSA process was not a substitute for rulemaking, rather it would better inform the Coast Guard to understand the risks and determine what the next steps might be at reducing those risks.

Over the two day workshops, participants discussed and then numerically evaluated each of the 24 risk factors in the PAWSA model. Baseline risk levels were first evaluated using pre-defined qualitative risk descriptions for each risk factor. Participants then discussed existing risk mitigation strategies, evaluated how effective the mitigation strategies were at reducing risk, and then determined if the risks were well balanced. For those risk factors not balanced by existing mitigation, the participants discussed additional risk mitigation strategies and evaluated how effective they would be at reducing risks if implemented.

The results of the baseline risk levels, existing risk mitigations, additional risk intervention strategies, and participant comments and observations are outlined in this report. Nautical charts of the Hudson River were displayed for reference, and to annotate geographic locations associated with participant comments and observations.

Conclusion

The goals of a PAWSA workshop are to further the Marine Transportation System objective of improved coordination and cooperation between government and the private sector, and to involve stakeholders in decisions affecting them. A PAWSA also provides the Coast Guard and members of the waterway community with an effective tool to evaluate risk and work toward long term solutions tailored to local circumstances that are both cost effective and meet the needs of waterway users and stakeholders. In support of this goal, this report should be viewed as a starting point for continuing dialogue within the Hudson River maritime community.

As discussed in the report, two separate workshops were held in Poughkeepsie and Albany, NY. Over each two day workshop, participants discussed, and then numerically evaluated, each of the 24 PAWSA model risk factors, considered impacts of current mitigations, and proposed additional mitigations to reevaluate potential impacts on the highest remaining risk categories. After workshop participants considered existing risks and mitigations, the highest areas of concern (and scores) included:

- Small Craft Quality (8.5);
- Petroleum Discharge (8.0);
- Economic (7.6);
- Obstructions (7.1);
- Aquatic Resources (6.9); and
- Visibility Restrictions (6.6).

Some of the most commonly recommended additional participant proposals included: creating a Hudson River Safety Committee (HRSC); increasing boating safety education (training, brochures, licensing); providing greater anchorage regulation clarity (creating new anchorage grounds w/ time limits, implementing Regulated Navigation Areas (RNA) to ban anchoring); improving real-time information dissemination (bridge cameras accessibility, VHF radio use/ carriage requirements, Automatic Identification System (AIS) blind spots/ gaps); increasing enforcement; and improving emergency spill response (increasing capabilities, identifying sensitive areas, increasing federal agencies on-river presence, prohibiting oil barges from laying at anchor). Though reduced by the additional potential mitigations discussed by participants, the final remaining significant risk factors (and new scores) were:

- Small Craft Quality (6.3 from 8.5);
- Petroleum Discharge (6.5 from 8.0);
- Economic (7.1 from 7.6); and
- Aquatic Resources (6.0 from 6.9).

Besides our continuing effort to support the stand-up of the HRSC the Coast Guard has not yet made any decisions regarding establishing anchorages or using other waterways management tools to manage navigation risk on the Hudson River. The Coast Guard will use this PAWSA report, together with other information, to determine whether, and to what extent, regulatory actions are needed.

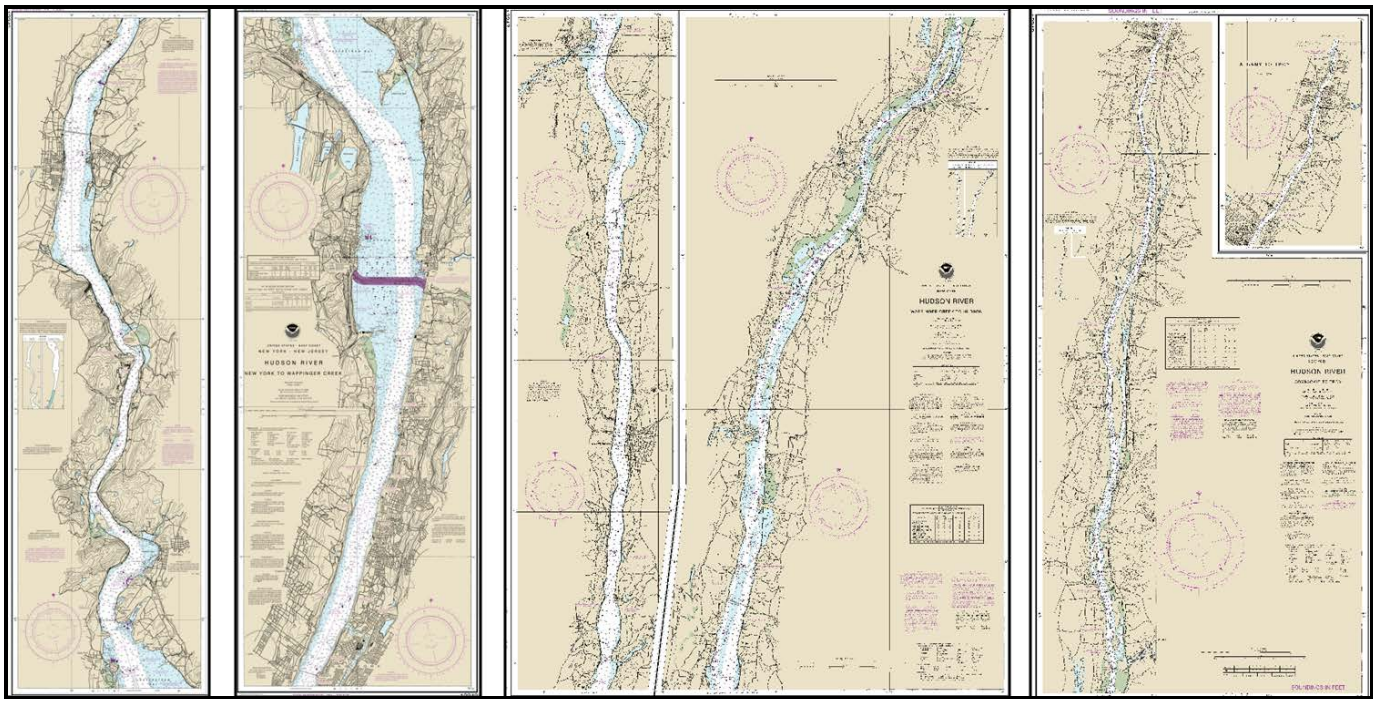
During the PAWSA workshops we acknowledged that the existing anchorage regulations are unclear, and we are considering how those regulations could be made more readily understood. We have no outcome timelines at this time. Any other substantive rulemaking effort associated with the Hudson River will follow Coast Guard public notice and comment rulemaking procedures to allow for public participation in the process.

The United States Coast Guard, Marine Transportation System Management Directorate, extends a sincere appreciation to the workshop participants for their contributions to the Hudson River PAWSA workshops. Their expertise was critical to the success of the workshop, and their recommendations will greatly assist the Coast Guard as it continues to work with Hudson stakeholders and the State of New York to further improve safety and efficiency for the Hudson River.

Section 1: Hudson River PAWSA - Assessment Area

The assessment area for both workshop included all waters of the Hudson River north of the Tappen Zee Bridge to Albany, New York.

Nautical charts referenced and displayed were 12343, 12347 and 12348.



Section 2: Baseline Risk Levels

The first step in the Hudson River PAWSA workshop was to complete PAWSA book 1 to determine a baseline risk level value for each risk factor in the Waterway Risk Model. To establish the baseline risks level, participants discussed as a large group each of 24 applicable risk factors in the Waterways Risk Mode, then each of the 15 teams of 2-3 selected a qualitative description for each risk factor that best described the conditions in the assessment area. These qualitative descriptions were converted to discrete values using numerical scales that were developed during earlier PAWSA workshops.

On those scales, 1.0 represents low risk (best case) and 9.0 represents high risk (worst case), with 5.0 being the mid-risk value. Risk values highlighted in red (values at or above 7.7) denote very high baseline risk levels; risk values highlighted in green (values at or below 2.3) denote very low baseline risk levels. Figure 3 below shows that the baseline risk level values for both workshops.

Baseline Risk Levels					
Vessel Conditions	Traffic Conditions	Navigational Conditions	Waterway Conditions	Immediate Consequences	Subsequent Consequences
Deep Draft Vessel Quality	Volume of Commercial Traffic	Winds	Visibility Impediments	Personnel Injuries	Health and Safety
2.8	3.2	1.8	7.9	7.4	8.1
Shallow Draft Vessel Quality	Volume of Small Craft Traffic	Water Movement	Dimensions	Petroleum Discharge	Environmental
2.7	5.4	3.7	6.7	6.3	8.2
Commercial Fishing Vessel Quality	Traffic Mix	Visibility Restrictions	Bottom Type	Hazardous Materials Release	Aquatic Resources
3.0	6.4	4.3	5.5	5.8	7.1
Small Craft Quality	Congestion	Obstructions	Configuration	Mobility	Economic
8.4	5.5	7.1	6.4	8.0	6.8

Poughkeepsie

Baseline Risk Levels					
Vessel Conditions	Traffic Conditions	Navigational Conditions	Waterway Conditions	Immediate Consequences	Subsequent Consequences
Deep Draft Vessel Quality	Volume of Commercial Traffic	Winds	Visibility Impediments	Personnel Injuries	Health and Safety
2.33	4.8	2.5	8.4	7.6	9.0
Shallow Draft Vessel Quality	Volume of Small Craft Traffic	Water Movement	Dimensions	Petroleum Discharge	Environmental
2.7	5.3	5.2	7.4	9.0	7.9
Commercial Fishing Vessel Quality	Traffic Mix	Visibility Restrictions	Bottom Type	Hazardous Materials Release	Aquatic Resources
5.6	5.5	5.0	6.0	9.0	5.6
Small Craft Quality	Congestion	Obstructions	Configuration	Mobility	Economic
8.0	5.3	5.4	9.0	9.0	7.8

Albany

Section 3: Team Expertise Cross-assessment

The second step in the Hudson River PAWSA workshops was completing a team expertise cross-assessment for all 15 teams. While every PAWSA workshop participant brought significant expertise and perspective strengths, the team expertise cross-assessment was used to weigh the relative strengths of each team with respect to the six overall risk categories. The results of the cross-assessments were then used to weight the inputs that each team provided in the other workbooks completed during the workshop.

After being presented with the concepts underlying the model, each participant team was asked to discuss how their background and experience aligned with the model. They then presented their self-assessment to the other teams to help all teams understand one another's varying degrees of expertise strength. After all teams spoke, each of the other 14 teams then evaluated whether the presenting team was in the top, middle, or lower third of all teams present with respect to knowledge and expertise in the six risk category areas.

Through this process, participants assessed their own and all the other participant teams' level of expertise for all six categories in the Waterway Risk Model. The table below breaks down the participants' expertise assessments for each risk category.

Team Expertise -- Distribution

Risk Category	Top 1/3	Mid 1/3	Lower 1/3
Vessel Conditions	39%	36%	26%
Traffic Conditions	56%	19%	25%
Navigational Conditions	56%	32%	12%
Waterway Conditions	31%	54%	15%
Immediate Consequences	42%	48%	10%
Subsequent Consequences	47%	40%	13%
All Categories Average	45%	38%	17%

Poughkeepsie

Team Expertise -- Distribution

Risk Category	Top 1/3	Mid 1/3	Lower 1/3
Vessel Conditions	39%	32%	30%
Traffic Conditions	44%	40%	16%
Navigational Conditions	45%	38%	17%
Waterway Conditions	34%	56%	10%
Immediate Consequences	54%	32%	14%
Subsequent Consequences	42%	26%	32%
All Categories Average	43%	37%	20%

Albany

Section 4: Existing Risk Mitigations

The third step in the Hudson River PAWSA workshop had participants evaluate the effectiveness of existing mitigation strategies in reducing the risk level for each risk factor. Participants discussed existing risk mitigations for all risk factors in the model, and then evaluated how effectively they thought the mitigations reduced risk. Some key points include:

- Risk factors shown in green there was consensus that risks were well balanced by existing mitigations.
- Risk factors shown in red there was consensus that risks were not balanced by existing mitigations.
- Risk factors shown in yellow there was no consensus that risks were balanced by existing mitigations.
- Consensus is defined as 2/3 of the workshop participant teams in agreement.

Mitigation Effectiveness

Vessel Conditions		Traffic Conditions		Navigational Conditions		Waterway Conditions		Immediate Consequences		Subsequent Consequences	
Deep Draft Vessel Quality		Volume of Commercial Traffic		Winds		Visibility Impediments		Personnel Injuries		Health and Safety	
2.8	2.5	3.2	3.3	1.8	1.7	7.9	6.5	7.4	6.3	8.1	7.2
Balanced		Rising		Balanced		Balanced		Balanced		Maybe	
Shallow Draft Vessel Quality		Volume of Small Craft Traffic		Water Movement		Dimensions		Petroleum Discharge		Environmental	
2.7	2.5	5.4	5.5	3.7	4.2	6.7	6.3	6.3	6.6	8.2	7.9
Balanced		Balanced		NO		Balanced		Rising		Maybe	
Commercial Fishing Vessel Quality		Traffic Mix		Visibility Restrictions		Bottom Type		Hazardous Materials Release		Aquatic Resources	
3.0	2.5	6.4	7.1	4.3	5.4	5.5	5.2	5.8	5.8	7.1	6.9
Balanced		NO		Rising		Balanced		Maybe		Maybe	
Small Craft Quality		Congestion		Obstructions		Configuration		Mobility		Economic	
8.4	8.5	5.5	5.7	7.10	7.12	6.4	6.2	8.0	7.4	6.8	7.5
NO		NO		Rising		Balanced		Balanced		Rising	

Poughkeepsie

Mitigation Effectiveness

Vessel Conditions		Traffic Conditions		Navigational Conditions		Waterway Conditions		Immediate Consequences		Subsequent Consequences	
Deep Draft Vessel Quality		Volume of Commercial Traffic		Winds		Visibility Impediments		Personnel Injuries		Health and Safety	
2.3	1.9	4.8	4.6	2.5	2.4	8.4	6.6	7.6	6.5	9.0	7.9
Balanced		Balanced		Balanced		Balanced		Balanced		Balanced	
Shallow Draft Vessel Quality		Volume of Small Craft Traffic		Water Movement		Dimensions		Petroleum Discharge		Environmental	
2.7	2.2	5.3	5.2	5.2	5.3	7.4	6.6	9.0	8.0	7.9	7.6
Balanced		Maybe		Balanced		Balanced		Maybe		Maybe	
Commercial Fishing Vessel Quality		Traffic Mix		Visibility Restrictions		Bottom Type		Hazardous Materials Release		Aquatic Resources	
5.6	4.3	5.5	5.5	5.0	5.0	6.0	5.1	9.0	7.8	5.6	6.2
Balanced		Balanced		Maybe		Balanced		Maybe		Rising	
Small Craft Quality		Congestion		Obstructions		Configuration		Mobility		Economic	
8.0	7.9	5.3	5.3	5.4	5.4	9.0	7.2	9.0	7.3	7.8	7.6
NO		Balanced		Balanced		Balanced		Balanced		Maybe	

Albany

Risk Factor	
Book 1 Score	Book 2 Score
Consensus Reached?	

	EXPLANATION
Book 1 Score	Level of risk - not taking into account existing mitigations
Book 3 Score	Level of risk - taking into account existing mitigations
Balanced	Consensus that risks are well balanced by existing mitigations
Maybe	No consensus that risks are well balanced by existing mitigations
Rising / NO	Consensus that existing mitigations DO NOT adequately balance risk

Section 5: Additional Risk Intervention Strategies

The last step in the workshop process was to complete book 4 by exploring potential additional mitigation strategies. Participants suggested additional risk interventions to further reduce risk, and then evaluated how successfully a proposed strategy could be at lowering risk levels.

For the Poughkeepsie workshop, additional mitigation strategies were discussed for those risk factors where there was consensus that risks were not adequately balanced by existing mitigations (Rising/No from the previous page), with the exception of the Volume of Commercial Traffic risk factor. Due to workshop time limitations and the relatively low mitigated risk level of 3.3, book 4 was not completed for this risk factor.

For the Albany workshop, like the Poughkeepsie workshop, additional mitigation strategies were discussed for those risk factors where there was consensus that risks were not adequately balanced by existing mitigations (Rising/No from the previous page). In addition, time remained to also complete book 4 for the Volume of Small Craft Traffic and the Visibility Restrictions risk factors.

The table below shows the new level of risk if taking the actions recommended by the participants.

Additional Interventions

Vessel Conditions	Traffic Conditions	Navigational Conditions	Waterway Conditions	Immediate Consequences	Subsequent Consequences
Deep Draft Vessel Quality	Volume of Commercial Traffic	Winds	Visibility Impediments	Personnel Injuries	Health and Safety
Balanced	(Book 4 not completed)	Balanced	Balanced	Balanced	(Book 4 not completed)
Shallow Draft Vessel Quality	Volume of Small Craft Traffic	Water Movement	Dimensions	Petroleum Discharge	Environmental
Balanced	Balanced	Nav / Hydro Info	Balanced	Coordination / Planning	(Book 4 not completed)
		4.0		6.5	
Commercial Fishing Vessel Quality	Traffic Mix	Visibility Restrictions	Bottom Type	Hazardous Materials Release	Aquatic Resources
Balanced	Coordination / Planning	Nav / Hydro Info	Balanced	(Book 4 not completed)	(Book 4 not completed)
	6.7	5.1 Caution			
Small Craft Quality	Congestion	Obstructions	Configuration	Mobility	Economic
Coordination / Planning	Coordination / Planning	Nav / Hydro Info	Balanced	Balanced	Coordination / Planning
5.5	5.1 Caution	7.0 Caution			7.1

Poughkeepsie

Additional Interventions

Vessel Conditions	Traffic Conditions	Navigational Conditions	Waterway Conditions	Immediate Consequences	Subsequent Consequences
Deep Draft Vessel Quality	Volume of Commercial Traffic	Winds	Visibility Impediments	Personnel Injuries	Health and Safety
Balanced	Balanced	Balanced	Balanced	Balanced	Balanced
Shallow Draft Vessel Quality	Volume of Small Craft Traffic	Water Movement	Dimensions	Petroleum Discharge	Environmental
Balanced	Rules & Procedures	Balanced	Balanced	(Book 4 not completed)	(Book 4 not completed)
	5.1 Caution				
Commercial Fishing Vessel Quality	Traffic Mix	Visibility Restrictions	Bottom Type	Hazardous Materials Release	Aquatic Resources
Balanced	Balanced	Radio Communications	Balanced	(Book 4 not completed)	Other Actions
		4.3			6.0
Small Craft Quality	Congestion	Obstructions	Configuration	Mobility	Economic
Voluntary Training	Balanced	Balanced	Balanced	Balanced	(Book 4 not completed)
6.3					

Albany

Risk Factor	
Intervention Category	
Risk Improvement	

	EXPLANATION
Intervention Category	Intervention category that most participants selected to further reduce risks
Risk Improvement	The expected level of risk that would be obtained if new mitigations measures were implemented
CAUTION - NO CENSUS ALERT	When Caution is displayed, an intervention strategy other than the one displayed was judged to provide more risk reduction that the one displayed. This is an indicator that the teams were divided in their opinions about what actions should be taken to further reduce risks for that factor. It indicates there is possibility more than "one" best mitigation measure to achieve further risk reduction.

Appendix A

Poughkeepsie Workshop – Participants

Randy Alstadt	Water Plant Administrator, Poughkeepsie
Frank Bergman	Hudson River Boat and Yacht Club Association, Inc.
John Bowie	The Vane Brothers Company
Joshua Buck	U.S. Coast Guard, Sector NY
Karen Caldwell	Pace University
Paul Chevalier	Hudson River Pilots
Tracey Corbitt	Westchester County Planning
Frank Csulak	NOAA, Office of Response and Restoration
Charles Cushing	Hudson River Waterfront Alliance
Roger Downs	Sierra Club Atlantic Chapter
Jerry Faiella	Historic Hudson River Towns
Ray Fusco	Paddle Sports
Chris Gardella	Tilcon Stone Quarry
Robert Haan	Dutchess County Medical Reserve Corps
Joe Hayes	Recreational Boater
Randall Hintz	U.S. Army Corps of Engineers, New York District
Scott Ireland	Hudson River Pilots
Eric Johansson	Tug and Barge Committee of New York/New Jersey
Scott Keller	Hudson River Valley National Heritage Area
Gregg Kenney	New York State, Department of Environmental Conservation
Steve Kress	McAllister Towing
Daniel Lemons	Village of Hastings-on-Hudson
John Lipscomb	Riverkeeper, Inc.
Joseph Long	Mohawk-Hudson Council of Yacht Clubs
John Madsen	University of Delaware
Jay Moritz	U.S. Coast Guard, Sector NY
Ian Mulcahy	U.S. Coast Guard Cutter KATHERINE WALKER
Mark Pacicca	Miller Environmental Group
James Quinn	New York State, Department of Environmental Conservation
Jay H. Reichgott	Reichgott Engineering, LLC

Stephan Ryba	U.S. Army Corps of Engineers, New York District
George Samalot	Samalot Marine
Michael St. Jeanos	New York State, Department of Environmental Conservation Police Dept.
Richard Stefanski	New York State, Office of Parks, Recreation and Historic Preservation
Ned Sullivan	Scenic Hudson, Inc.
David Vejar	NOAA Office of Coast Survey
Adam Whaley	U.S. Coast Guard, Aids to Navigation Team Saugerties NY
Deborah Wick	National Response Corporation
Stephanie Wojtowicz	New York Secretary of State Office
Sam Zapadinsky	Hudson River Pilots

Poughkeepsie Workshop - Observers

Allison Biasotti	Senator Chuck Schumer Office
Carolyn Blackwood	Resident, Rhinecliff, NY
Hayley Carlock	Scenic Hudson, Inc.
Erin Doran	Riverkeeper, Inc.
Margaret Doyle	Student, Pace University
Kathy Fallon	Congressman Mike Faso (NY-19) Office
Audrey Friedrichsen	Scenic Hudson, Inc.
Ann Gallelli	Trustee in the Village of Croton-on-Hudson
Harold Leath	Congressman Sean Maloney (NY-18) Office
Ed Leblanc	U.S. Coast Guard, Sector South Eastern New England
Ryan LeRoy	Miller Environmental Group
Althea Mullarkey	Scenic Hudson, Inc.
Shawn Sappington	U.S. Coast Guard, Aids to Navigation Team Saugerties NY
Christina Thomas	Student, Pace University
Brian Vahey	The American Waterways Operators
Christopher Whitson	Assemblyman Frank Skartados (104th District) Office

Albany Workshop – Participants

Alan Bish	Reinauer Transportation Cos., LLC
Collin Bryant	Coeymans Marine Towing
John Burgman	Albany Yacht Club
Haley Carlock	Scenic Hudson, Inc.
Ian Corcoran	Hudson River Pilots
Scott Croft	BoatUS
John Cronin	Pace University
Jay Dahleiden	Kirby Offshore Marine
Stephen Doherty	Hudson River Pilots
Dagmar Etkin	Environmental Research Consulting
Mark Foley	Constitution Federal Pilots
Dewayne Fox	Delaware State University
Matt Franklin	New York State, Department of Environmental Conservation Police Dept.
Robert Friedman	Natural Resources Defense Council
Charles Furman	Global Companies
Amy Gitchell	U.S. Army Corps of Engineers
Rob Goldman	New York State Marine Highway Transportation Co., LLC
Manna Jo Greene	Hudson River Sloop Clearwater
Greg Hitchen	U.S. Coast Guard, Sector NY
Justin Kaczynksi	U.S. Coast Guard Cutter WIRE
Scott Keller	Hudson River Valley Greenway
Ed Kelly	New York/New Jersey Maritime Association
John Lipscomb	Riverkeeper, Inc.
Wayne Lopez	Columbia County Sheriff
Matthew Maraglio	New York Department of State
Hugh McCrory	U.S. Waterways Transportation LLC
Sam Merrett	Hudson Cruises, Inc.
Nancy Nodop	Recreational Boater
Mark Pacicca	Miller Environmental Group
Margaret Phelan	Resident, Port Ewen, New York
James Quinn	New York State, Department of Environmental Conservation

Eric Rivera	U.S. Coast Guard
Allen Rowe	Ulster County Sheriff
Richard Slingerland	Hudson River Waterfront Alliance
Richard Stefanski	New York State, Office of Parks, Recreation and Historic Preservation
Joseph Steyer	Ulster County Sheriff
Nicolette Vaughan	U.S. Coast Guard
Charles Wesley	New York State, Energy Research and Development Authority
Nick Zachos	Resident, Hudson, New York

Albany Workshop – Observers

Jen Benson	Riverkeeper, Inc.
Tim Berguson	Senator Sue Serino (NY-41) Office
Joshua Buck	U.S. Coast Guard
Erin Doran	Riverkeeper, Inc.
Andrew Feron	Hudson River Sloop Clearwater
Amanda Fallon	Senator Terence Murphy (NY-40) Office
Richard Hendrick	Albany Port District Commission
Daniel Hubbard	U.S. Coast Guard
Larry Justice	Hudson River Maritime, Inc.
Bernie Kelly	Global Companies
Ryan McAllister	Congressman John Faso (NY-19) Office
Althea Mullarkey	Scenic Hudson, Inc.
Jeff Parker	Kirby Offshore Marine
Johnathan Schafler	U.S. Coast Guard
Shereen Sheikh	New York State, Office of Parks, Recreation and Historic Preservation
Christopher Whitson	Assemblyman Frank Skartados (NY-104) Office
Bethany Wieczorek	New York State General Services
Kristin Williams	Assemblywoman Didi Barrett (NY-106) Office
Jeff Wright	New York State Bridge Authority
Brian Vahey	The American Waterways Operators

Appendix B

Poughkeepsie Workshop - Participant Comments on Trends in the Port and Existing Risk Mitigations

The participants are the local subject matter experts, and these comments capture their opinions, providing a general sense of the ideas discussed during the workshop. These comments provide various perspectives representing widely different interests.

Deep Draft Vessel Quality:

Trends/Observations:

- Deep draft vessels are generally in great condition, and the pilots, masters and crews are extremely proficient.
- The majority of deep draft vessels coming up the river are well maintained. Crew proficiency can vary from ship to ship, but it is generally "upper shelf".
- Vessel quality has improved, but there is still the risk of an incident due to mechanical failures and human error.
- The majority of deep draft vessels are foreign flagged, but they generally don't increase waterway risk. They have been boarded and piloted by a state-registered Sandy Hook Pilot prior to entering the Hudson River.
- There are good communications between the Sandy Hook pilots and the Hudson River Pilots. If a safety or material condition issue is identified on a vessel, that information is relayed to the Hudson River pilots.
- Foreign-flagged vessels transit the river as far as Albany. Mixed crew nationalities can increase risk. Most of the deep draft vessels are bulk cargo vessels carrying cargo such as salt or iron. These vessels are typically of lower quality when compared to tankers.
- There is a low probability of an incompetent crew or poor quality vessel transiting the Hudson River due to pre-arrival screening, Coast Guard Port State Control (PSC) inspections and internal company vetting programs and procedures.
- Deep draft vessels are responsive on the radio. Pilots are good at communicating with other vessels and letting them know their intentions.

Existing Mitigations:

- All deep draft vessels are vetted and evaluated by the Coast Guard for safety concerns.
- US Coast Guard Port State Control inspections evaluate the condition of the ship, the company's operating history, the classification society, and prior inspection history.
- New York has some of the highest quality pilot training in the country. Pilots have the power to "veto" a transit due to vessel or weather conditions.
- Vessel boardings occur near the Indian Point nuclear power plant and before entering New York Harbor. Problem vessels are identified before entering the confined waters of the Hudson River.
- International Maritime Organization (IMO) International Safety Management Code provides international standards for the safe management and operation of ships and for pollution prevention.

- Ship Inspection Report Program (SIRE) system. SIRE is a tank vessel risk assessment tool that is used by industry to track and document a tank vessel's compliance with safety and inspection requirements.
- The International Convention of Standards of Training, Certification and Watchkeeping (STCW) sets qualification standards for masters, officers and watch personnel on seagoing merchant ships.
- The U.S. Coast Guard issues certificates of inspection and marine credentialing.

Shallow Draft Vessel Quality:

Trends/Observations:

- Tug and barges can be big (approaching deep draft size). They are more cost efficient to operate due to manning requirements.
- Passenger vessels transit the river seasonally. There is a daily commuter ferry between Haverstraw and Ossining. The quality of these passenger vessels is good.
- Tug and barges represent most commercial traffic on the river. All are U.S. manned and built. They are double hulled and twin-screwed. Overall quality is excellent as supported by various inspection and audit programs.
- Barges at anchor usually have bright deck lights illuminated for safety reason. Some residents feel the barges may be displaying too many lights.

Existing Mitigations:

- Stringent safety standards and inspections requirements for tugs, barges and passenger vessels.
- SIRE (Ship Inspection and Reporting) inspections are conducted every 6 months.
- The Oil Company International Marine Forum (OCIMF) Tanker Management Self-Assessment (TMSA) program is used by oil companies to improve their safety management systems.
- USCG Sub-chapter M inspection requirements for towing vessels. Many companies have already begun implementing new safety and environmental standards for towing vessels. (46 CFR Chapter I, Subchapter M – Towing Vessels supersedes the jurisdiction of the Occupational Safety and Health Administration (OHSA) and any state regulations on vessel design, construction, alteration, repair, maintenance, operation, equipping, personnel qualifications and manning. Subchapter M will be phased in over a six-year period for existing vessels. Although the law took effect in July 2016, existing vessels will not be required to meet most of its requirements until July 20, 2018.)
- The Towing Management Safety System (TMSS) has greatly improved operational safety.
- Crews go through extensive training: firefighting, bridge resource management, radar, and navigation training.
- Crews on spill response vessels are trained semi-annually and annually.
- Passenger vessels are inspected annually by the USCG. Inspections include a review of watch standing, crew training, and emergency procedures.
- Anchored vessels are manned at all times in the river.
- Mariners are subject to drug-testing and undergo physical examinations.
- The mindset of mariners and shipping companies has shifted from strictly profit driven to safety driven.
- Double hulled tank barges protect the oil cargo and reduce the probability of a hull breach and oil spill.

Commercial Fishing Vessel Quality:

Trends/Observations:

- Commercial fishing is limited to a small herring fishery on the Hudson. Vessel quality is similar to small craft. Commercial fishing may grow as the river becomes cleaner, but there are no large-scale commercial fishing vessel operations on the Hudson River.

Small Craft Quality:

Trends/Observations:

- There is heavy recreational traffic on the Hudson River, but it is seasonal (April to October).
- Vessel quality varies widely; it's the largest variable and risk. There are lot of small plastic craft that may not be in great repair. Fiberglass paddle craft can be better quality. Sea-going kayaks with cockpit covers are adequate for the Hudson River.
- The power driven recreational vessels are usually older.
- Power boating has diminished or leveled off in recent years, but paddle craft use has exploded. This is especially true between the Tappan Zee Bridge and the Bear Mountain Bridge. Paddle craft users are usually unaware of the best safety practices, and they are not required to take a boating safety course.
- There are boating safety programs available and sometimes required for recreational operators. Until a couple years ago, required boating safety courses included 6 hours of classroom training. A 4-hour, online class is now an alternative to the classroom requirement, which may be less effective than the classroom training.
- Vessels are getting faster (70-80+ mph), and there are various waterfront bars on the river.
- Some recreational boats only have one person onboard. This can increase risk in the case of a vessel casualty.
- Small boaters are generally not experienced with the river's tides and currents.
- Navigation proficiency, including the use of onboard navigation equipment, is not as great in the recreational community. They may not understand the danger to themselves or others.
- Local recreational boating guides are careful and knowledgeable.
- Approximately 38% of recreational boating fatalities are associated with paddle craft. In the last couple years, paddle craft deaths have increased despite the number of total fatalities decreasing.
- In general, the quality of recreational vessels and education of users has increased over the past 20-30 years.

Existing Mitigations:

- All personal watercraft operators must take a boating safety course.
- All recreational boaters born after May 1996 must take a boating safety course.
- All vessel operating in NYS must have a Personal Flotation Device (PFD) onboard and in addition boaters on vessels under 21 ft must wear a PFD from Nov 1-May 1.
- All river communities, except for one, have a marine patrol. The state has marine patrols as well.
- The USCG promotes a robust recreational boating safety program. This is supported by the USCG Auxiliary courses, courtesy dockside examinations, outreach and training.

- There are seated field sobriety tests that can be completed on a rocking/moving vessel. This has increased law enforcement's ability to enforce Boating While Intoxicated (BWI) laws.
- New York State has the Tiffany Heitkamp Law: driving and boating infractions can be considered together by the courts.
- The popular paddle craft launch points have experienced guide services and outfitters nearby. Outfitters coordinate with the state to promote boating safety.
- More paddle craft users are seeking education. Boating safety classes and inspections are popular.
- Bright stickers are put on paddles to increase the visibility of paddle craft.
- Commercial operators use sound signals to warn recreational boaters.
- New York State enforces the Inland Rules of the Road, and sound producing devices are required.
- The state provides boating safety training for law enforcement officials.
- There is a web platform for safe boating in the area: www.thesafeharbor.us

Volume of Commercial Traffic:

Trends/Observations:

- USACE Waterborne Commerce data suggests there was a 19% reduction in transits and 9.9% decrease in tonnage over the past 6 years. This data may not be accurate because it's based on industry reporting. In some cases, these estimates are lower than actual transits/tonnage.
- Reasonable annual cargo estimates: 1.5 billion gallons of gasoline, 1.3 billion gallons of home heating oil, and 6.5 million tons of dry bulk.
- Number of cargo handling facilities and permits has increased in recent years.
- Cargo volume is a function of consumer demand and regional projects. For example, a windmill project temporarily increased shipments of windmill parts.
- Commercial traffic volume is relatively high when compared to other similar waterways. However, it is not high when compared to the nation's biggest ports such as New York or Houston.
- Over a period of 20 years, traffic has remained relatively stable except for petroleum shipments. Petroleum shipments fluctuate greatly with consumer demand.
- The Hudson River is designated as a Marine Highway by the Maritime Administration (MARAD).
- The US Army Corps of Engineers (USACE) classifies the river as a "high use" waterway (carrying over a million tons of cargo per year).
- There is usually a minimum of 8 commercial ship movements per day on the Hudson River.

Existing Mitigations:

- Vessels must have detailed voyage plans.
- Shipping companies and vessels communicate and coordinate.
- Automatic Identification System (AIS) carriage requirements.
- Security calls are used frequently and alert mariners to known or possible dangers.
- Convoys are formed for ice breaker escorts.

- Existing anchorages promote the safe management of traffic volume. These traditional anchorages have been used for over 100 years. A Coast Pilot in 1966 states vessels anchor off Kingston to await transit to Albany. The ability and authority for masters to stop due to inclement weather conditions is critical.
- A vessel in distress can anchor at any time and in any location. However, this does not mitigate risks associated with routine traffic management practices.

Volume of Small Craft Traffic:

Trends/Observations:

- Recreational vessel traffic is seasonal and weekend based.
- Striper season (recreational fishing) can significantly increase traffic from April to June.
- Marine events, such as 4th of July, can drastically increase traffic.
- The number of small boat rental facilities is increasing. There are currently about a dozen.
- The volume of small craft motorized vessels is relatively constant, but paddle craft volume is on the rise.
- Gas prices can influence small craft traffic volumes. Higher gas prices equates to lower numbers of small craft out on the water.

Existing Mitigations:

- The state has a local waterfront use program that includes harbor management plans for recreational boating. These can have restrictions for small craft traffic management. Only one community in the study area has one of these harbor management plans.

Traffic Mix:

Trends/Observations:

- There's significant risk associated with the mix of paddle craft and larger commercial vessels. Commercial operators usually experience conflicts with paddle craft on almost every trip.
- Small vessels sometimes anchor in the channel, which poses problems to deep draft vessel transits.
- The entire river is a mixed use waterway except during the winter. From November to April, the waterway is single (commercial) use.
- Sea planes have had near misses with kayaks or paddle craft.

Existing Mitigations:

- Experienced kayakers transit across the river in a wide line which presents a small target for commercial vessels.
- Harbor management plans include policies for managing the traffic mix.
- Good radio communication between sailboat regatta managers and commercial traffic.
- Many yacht clubs and marinas on the river regularly communicate and discuss safety issues.

Congestion:

Trends/Observations:

- Roundout Creek, Catskill Creek, and Espouse Creek are areas that can be particularly congested with recreational boaters on the weekends.
- There is an amphitheater on the water in Albany, north of the port facilities, which sometimes attracts large numbers of small craft.

Existing Mitigations:

- Great communication between pilots and shipping companies.
- The anchorage bullets from the "Volume of Commercial Traffic" also mitigate congestion issues.

Winds:

Trends/Observations:

- From a commercial perspective, the winds are typically moderate and from the west. Besides extreme weather events, winds do not affect normal operations.
- Hurricanes and other extreme events can cause vessels from the lower river to seek shelter in the upper river.
- All waterway users have adequate and accurate weather forecasting tools.

Existing Mitigations:

- Weather forecasts are readily available, accurate, and adequate. These forecasts are used by both commercial and recreational boaters.

Water Movement:

Trends/Observations:

- Tides and currents can make the river dangerous in almost all areas.
- Winds and tides can be a dangerous combination.
- Water movement can create risky interactions between commercial vessel and small recreational traffic.
- The current and water elevation can fluctuate greatly depending on the weather. This impacts voyage planning for commercial traffic.
- Tidal currents usually max out at 2 kts.

Existing Mitigations:

- Water movement is incorporated in voyage planning.
- Tide and current predictions are readily available and accurate.
- There is a certified tide station at Turkey Point. It is part of a sea level and climate change study.

- The NOAA Hydrographic Division completed a new bottom survey in 2016, and the data is under review. It should be added to charts relatively soon.

Visibility Restrictions:

Trends/Observations:

- Fog is seasonal.
- Kingston to Hudson and Castleton to Albany usually have fog from midnight to 0900.
- Most common fog is radiation fog in the fall. This generally burns off in the morning after sunrise.
- North and South winds can produce fog.
- Snow and heavy rain can restrict visibility.

Existing Mitigations:

- There is a live camera on Saugerties Lighthouse (www.saugertieslighthouse.com) that can be used to assess visibility. In the future, existing bridge cameras could be used in the same way.
- Electronic aids to navigation (ATON) supplement physical ATON.

Obstructions:

Trends/Observations:

- Ice can form from January to March, and it fluctuates from year to year. The effect on navigation can be huge. Ice can influence the following: visibility, aids to navigation discrepancies, and transit times (4x longer transit). Silver Point, Worlds End, and Kingston can be choke points. Plate ice can be up to 1.5 ft thick, and refrozen brash can be up to 6 ft thick. Brash builds up in choke points. Drifting ice can cause vessels to drag anchor.
- Lots of debris enters the river following: precipitation events greater than 1 inch, high tide with calm winds, and lock openings in the Spring. This debris can include up to full size trees.
- Construction projects and submerged cables can be obstructions. Some submerged cables are abandoned and on top of the sediment. Cables running parallel to the channel can be hazardous because of questions regarding the exact location.
- Marinas located close to the channel can be obstructions.
- There are few fixed fishing structures. The shad fishery is closed, but there are some nets used for herring.

Existing Mitigations:

- Vessels communicate with each other.
- Convoys are formed for ice breaking escorts.
- The USCG has a regulated navigation area that has horsepower restrictions based on ice thickness.
- The USCG tracks vessel transits during ice conditions.

Visibility Impediments:

Trends/Observations:

- Bridges can obstruct visibility, especially for small vessels.
- AIS coverage is intermittent from Tarrytown to Albany.
- For a small vessel's height of eye, background lighting from large communities can obstruct lighted aids to navigation. The risk is greatest is areas south of Stony Point.
- Railroad lights can be confused for vessel lights when transiting south through Worlds End. Some vessels have run aground because of this.

Existing Mitigations:

- AIS, radar, and bridge to bridge communications reduce risks associated with visibility impediments.

Dimensions:

Trends/Observations:

- There are air draft concerns with the Mid-Hudson and Castleton bridges for deep draft vessels.
- Ice tracks can be restricted to 100 ft wide.
- Perceived channel width can be less than actual channel width, especially in the southern portions of the river.

Existing Mitigations:

- The river was surveyed in 2016.
- Portions of the river can be shut down for shipping large equipment.
- Good communication and planning between the shipping industry and the USCG.

Bottom Type:

Trends/Observations:

- The river channel bottom is usually soft. There is more sand and gravel north of Catskill.
- There are rocky outcroppings near the channel edges in areas just north and south of Kingston.

Existing Mitigations:

- The NOAA nautical charts are updated weekly, and chart discrepancies can easily be reported. NOAA quickly responds to chart discrepancies.

Configuration:

Trends/Observations:

- There are several turns and bends greater than 45 degrees. Some of them include Four Mile Point, Bear Mountain Bridge, Worlds End, Kingston, Silver Point, Catskill, and Hudson.
- From Kingston to Albany (45 miles), it is long and narrow. There are few points to bail out; it's the point of no return. Hyde Park Anchorage doesn't always serve as an adequate point of no return because fog conditions can quickly change north of the anchorage.
- Due to the length of the river, waterway and environmental conditions can significantly change during a transit. Transit time can fluctuate between 12 hours and 36 hours.
- There are two vessels that take 300 to 500 passengers from NYC to the Bear Mountain Bridge or Cold Spring. Recreational vessels will also make this transit over the course of several days. These transits are seasonal, usually during "leaf peeper" season.
- The length of the river is a risk. Shipping orders or assignments can change while enroute to a facility.

Existing Mitigations:

- In general, the aids to navigation are adequate.
- The quality of nautical publications has improved.
- There are no fleeting operations in the anchorages in question.

Personnel Injuries:

Trends/Observations:

- "Leaf peeper" cruises: Sea Streak has about 500 people and Circle Line has about 340 people. American Cruise Line vessels have 200 to 300 passengers, and there are usually 2-3 on the river at a time.
- The Rip Van Winkle (Kingston), Dutch Apple (Albany), and Captain JP (Troy) have around 300 to 400 passengers.
- Even the death of 12 people would be catastrophic. The probability is low, but the impact is high.

Existing Mitigations:

- Commercial vessels and their crews conduct extensive trainings and drills.
- There is a multi-agency committee that meets twice a year to discuss past incidents and training opportunities. There is also a regional committee.
- Education reduces the risk of personnel injuries.
- There is a robust local response capability to respond to and treat personnel injuries.

Petroleum Discharge:

Trends/Observations:

- Primary petroleum shipments: Ethanol (2-3 trips per year), asphalt (demand driven by construction projects), gasoline, and home heating oil.
- The average barge varies, about 50,000 barrels, and the maximum is about 155,000 barrels.
- Tankers are typically carry about 80,000-220,000 barrels.
- Bakken crude shipments headed south from Albany have decreased due to crude oil prices. Some argue the decrease in shipments is due to increased rail capacity.
- LNG is taking over heavy fuel oil. This may result in a decrease in petroleum shipments, but recent trends have been increasing.
- There limited locations to deploy large response equipment.
- No two spills are the same, and all responses are different. The general rule of thumb is 10-20% recovery.
- Local first responders are not capable of handling a medium or major spill.

Existing Mitigations:

- Response plans are well established and routinely practiced with drills. However, they will not alleviate all risk; there will be an impact if there is a major spill.
- The state has pre-staged spill response equipment and regularly conducts exercises.
- Contracted Oil Spill Response Organizations (OSRO) have equipment staged throughout the entire river. The OSRO is inspected by their clients and the Environmental Protection Agency.
- There are several OSROs in the state, and they all work well together.
- The USCG has spill response assets and equipment.
- There are substantial federal requirements for response plans and equipment.
- There has been a significant improvement in overall spill response capability over the past 20 years.
- The design of the vessels/barges and facilities minimizes the risk of spills.
- There are efforts underway to develop better spill modeling on the Hudson River.

Hazardous Materials Release:

Trends/Observations:

- Some PCB-contaminated sediments and materials are shipped by barge on the river.
- Urea and calcium chloride are shipped on the river.

Existing Mitigations:

- The mitigations listed in the “Petroleum Discharge” section are also applicable to the “Hazardous Materials Release” risk factor.

Mobility:

Trends/Observations:

- North of Kingston any grounding or incident would likely close the river. South of Kingston a closure would depend on the severity of the incident.
- Ice can severely restrict mobility. One vessel becoming beset in ice can stop traffic.
- Rail or facility accidents could close the river or affect marine mobility.
- West Point and Indian Point are particularly sensitive to closures.
- An incident in the Hudson Highlands could easily result in a waterway closure.

Existing Mitigations:

- There is good communication amongst the pilots.
- The Captain of the Port has broad authority to manage risks that could impact mobility. This includes establishing safety zones.
- Commerce could be shipped by road or rail, but this does not necessarily reduce risk. The road and rail infrastructure is extensive.
- There is good communication to notify mariners of port closures or interruptions. There is a formal written policy to notify traffic in the immediate area and appropriate authorities.
- State marine law enforcement training includes safety zone implementation and enforcement.
- There are multi-agency exercises that improve communication between agencies.

Health and Safety:

Trends/Observations:

- The river is the only drinking water source in the area. A serious spill could render hundreds of thousands of people without water.
- Perceived health and safety issues can be just as bad as an actual issue. This is particularly important for economic effects.
- Some port and waterfront facilities are located near populated areas. Even tug idling affects air quality.
- Most communities along the river are under 25,000 people. Cities such as Albany, Poughkeepsie, and Newburgh have greater populations.
- Bridge damage could affect marine and roadway safety.
- Tidal variations can impact north/south movement of a floating hazard. It can take 20+ days for an object to float from Albany to New York City due to the tide.

Existing Mitigations:

- Medical and transportation infrastructure is great and well developed.
- There is a medical reserve corps that educates the public in disaster preparedness.

- New York State recently transitioned from an agency organized response to an emergency management organized response. Emergency response is one of the Governor's top priorities.
- There is an area emergency response plan that involves the local communities.

Environmental:

Trends/Observations:

- Atlantic sturgeon, shortnose sturgeon, and their critical habitat are federally protected by NOAA. Their critical habitat is throughout the entire river. The Fish and Wildlife Service has other federally protected species.
- Most of the river is environmentally sensitive; it's more than 50% but probably less than 90%.
- Hyde Park is a critical area for Atlantic sturgeon from May to July.
- Port Ewen is an overwintering area for shortnose sturgeon.
- Marlboro is a spawning area for shortnose sturgeon.
- Shortnose sturgeon are found all the way up Troy, and Atlantic sturgeon are found up to Kingston.
- The NY Department of State has designated significant habitat areas. There areas include Kingston, the Hudson Highlands, and the Flats. There are about 35 of these areas, and they are in the deeper portions of the river.
- North of the salt line (around West Point) the freshwater estuary/wetlands are rare. These wetlands are sensitive.
- There are about 200-300 different species of fish in the river, but there also birds and mammals that could be affected.
- Haverstraw Bay is important habitat for bald eagles and common loons.
- The state has designated many areas as scenically significant.
- Anchors can damage benthic habitat.
- The river has already experienced many environmental setbacks (i.e., PCB contamination).

Existing Mitigations:

- There are shore cleanup and restoration efforts underway.
- Engineering practices for coastal restoration are mature.
- Environmental mitigation measures are covered by other categories such as "Vessel Quality".
- Hudson River Emergency Management Association has collected environmental data for 20 years.
- The Hudson River Estuary Plan provides funding for stabilization and restoration.
- There is a Hudson River Comprehensive Restoration Plan: www.thehudsonweshare.org
- Communities are outspoken and aware of environmental issues.
- Federal agencies complete a national restoration damage assessment to formulate restoration plans.
- The "Riverkeeper" model was started at the Hudson River, and there are expertise in the area.

Aquatic Resources:

Trends/Observations:

- The river is a spawning area for some fish species. Indirectly, the river contributes to aquatic resources throughout the Eastern Seaboard.

- Recreational fishing is important on the river.
- According to the state, Haverstraw Bay and other areas are important to recreational and commercial fisheries. These are the 35 significant habitat areas as mentioned in the "Environmental" category.
- There is a significant population that subsistence fishes.

Existing Mitigations:

- The mitigations listed in the "Environmental" section are also applicable to the "Aquatic Resources" risk factor.

Economic:

Trends/Observations:

- Many towns have dedicated money to revitalizing the riverfront habitat and parks.
- Tourism is important to the area, and it contributes $5.2 billion/year to the regional economy. Recreational boating contributes $184 million/year to the area's economy.
- Maritime commerce is significant. Issues with home heating oil, gasoline, and heavy lift shipments would be costly. Disruptions to the heavy lift equipment could have indirect impacts to other areas of the country.
- Damage to bridges would greatly affect the everyday life of local citizens.
- The river's connection to the Port of New York could result in a national impact.
- New York State ships 28 million tons of marine cargo per year. This value of shipped manufactured goods is $96.4 billion per year. This contributes $32 billion to the state's economy.
- The economy of shoreline communities is shifting from industrial manufacturing to tourism. This could make the communities more vulnerable to pollution or changes in water quality.
- Shortage of heating oil could be detrimental. There would be direct and indirect impacts.

Existing Mitigations:

- There are robust road and rail networks in the area.
- If a 3rd party is impacted by a spill, they can file a claim with the responsible party. If the claims exceed the liability limit, claims can be filed under the Oil Spill Liability Trust Fund (OSLTF).
- Ice breakers facilitate the movement of commerce in the winter. The Hudson River is the USCG First District's top ice breaking priority.
- There are methods to facilitate the movement of priority cargo (i.e., heating oil) in the case of an incident.

Appendix C

Albany Workshop - Participant Comments on Trends in the Port and Existing Risk Mitigations

The participants are the local subject matter experts, and these comments capture their opinions, providing a general sense of the ideas discussed during the workshop. These comments provide various perspectives representing widely different interests.

Deep Draft Vessel Quality:

Trends/Observations:

- Deep draft vessels are generally great quality. Quality has significantly increased over the past 15 years, and most vessels are new. All crews are licensed. The crew quality can vary, but all deep draft vessels have pilots aboard. Pilots have great communication with the USCG, VTS, and other waterway users. They pass issues and concerns to authorities. Pilots are also extraordinarily qualified and courteous.
- Bulk carrier quality is usually less than vessels transporting higher-value cargo.
- Deep draft vessel casualties are rare and occur mostly in the southern portion of the river.
- Ships are required to run on diesel in coastal areas, but some ships were not designed to maneuver with a diesel plant. This can impact maneuverability in narrow portions of the river.
- Some new technology actually increases risk. For instance, a modern propulsion plant may shut down entirely due to a faulty lube oil sensor.

Existing Mitigations:

- USCG Port State Control inspection program is used to vet vessels prior to arriving in US ports.
- Vessels submit a 96-hour notice of arrival, and high risk vessels are inspected.
- Vessels check in/out with the VTS as they enter and depart the river in New York Harbor.
- All mechanical issues are reported to the USCG before they enter the river.
- All deep draft vessels have state pilots on board. The pilots take annual physical exams and proficiency exams. The number of pilots is continually monitored to ensure there are enough to meet demand.
- Foreign flagged vessel captains are certified by their respective flag states. Foreign vessels must comply with Safety of Life at Sea (SOLAS) requirements. Most crews on foreign flagged vessels are proficient in English.
- Any vessel entering the United States must have a Certificate of Fiscal Responsibility. All vessels, including tankers and non-tankers, must also have a vessel response plan. The plan requires the

designation of an Oil Spill Response Organization (OSRO) and ensures they have the equipment to respond to an incident

- Some tankers are doubled hulled.
- Private cargo facilities also vet ships.
- Industry is driving a culture of safety.

Shallow Draft Vessel Quality:

Trends/Observations:

- Some hazardous cargo is transported in double hulled barges.
- Crews are vetted and U.S. licensed.
- Navigation season is limited due to ice, so there is a high operational tempo during the open season.
- Vessels are new with an average age of about 6 years old.
- Masters and engineers have certification and qualifications.
- Shipping companies have training sessions ever year, which include simulators and bridge resource management topics.
- There may be safety issues associated with crew fatigue. However, companies do maintain crew management standards, and there are federal crew rest requirements. Companies employ a computer program called Watch Keeper 3 to assist in developing watch schedules.
- Some incidents may be attributed to a lack of local knowledge, but the USCG and shipping companies have recency requirements for captains and pilots to ensure they remain proficient for the route that they are navigating.
- There are ferries between Ossining and Haverstraw and Newburgh and Beacon. Ferry operators are proficient, and the vessels are well maintained.

Existing Mitigations:

- Shallow draft vessels (towing vessels) will soon be subject to sub-chapter M requirements. Many companies are voluntarily meeting sub-chapter M requirements before the implementation deadline.
- All tankers and tank barges subject themselves to additional inspections/requirements: International Convention on Standards of Training, Certification and Watchkeeping (STCW); Ship Inspection Report Program (SIRE); and internal inspections.
- Tank barges are double hulled.
- US crews are some of the best qualified crews in the world.
- Navigation technology is top notch, and it has improved safety.
- Tugs/barges don't have pilots, but the captains are certified and proficient to operate on the river.

- Some towing vessel companies expand the bridge crew to three people while operating on the river. They also complete a risk assessment before every evolution/transit. It's in the company's best interest to safely transport cargo.
- Vessel system redundancy is being implemented. For equipment, there is a backup to the backup. Furthermore, redundant systems are independent of each other.
- Most tugs and barges are new and many burn cleaner fuel than required. Their emissions are below the federal standards.
- Shallow and deep draft vessels must comply with ballast water and discharge regulations.

Commercial Fishing Vessel Quality:

Trends/Observations:

- There is a temporary prohibition on most commercial fishing. Shad and sturgeon are closed. Crab and herring are the only active fisheries.
- When more fisheries were open, vessels were 15-20 foot open skiffs constructed of fiberglass. Crews were experienced and usually consisted of 1 or 2 people.
- There are traditional fishing areas on the river. If the prohibition is lifted in the future, these areas could be impacted by the establishment of anchorages.

Existing Mitigations:

- Not applicable due to the lack of commercial fishing vessels.

Small Craft Quality:

Trends/Observations:

- There are recreational boats on the river from Memorial Day to Labor Day. The majority know what they're doing but some don't.
- Pilots have issues with recreational boaters on almost every trip. Examples include anchoring and water skiing in the channel.
- Jet skis and paddle craft are a huge risk on the river. Some people have a serious lack of knowledge, especially with complying with the rules of the road.
- Some recreational boaters aren't aware of river dangers such as rocks and currents. They generally lack the proficiency of commercial operators.
- Commercial operators will warn each other of the presence of kayak groups.
- A decrease in USCG Auxiliary presence on the river has increased recreational boating risk.

- A boating safety course isn't required for everyone, but some yacht clubs and marinas require insurance and their own training.
- Licensing is a great way to raise government funds, but it might not be a cure all for recreational boating safety. The most effective mitigation is education.

Existing Mitigations:

- Some local marinas have their own signs and rules regarding alcohol consumption on recreational vessels.
- Kayakers are encouraged to put reflective tape/stickers on their paddles.
- The state mitigates with education and enforcement. They provide grants and boating safety classes. They reimburse local authorities for marine patrols. A boating safety class is mandatory for PWC operators and motor boat operators born after May 1, 1996. The state is currently focusing outreach efforts on the paddle craft community.
- There are multiple opportunities for education: online, state parks classes, USCG Auxiliary, and U.S. Power Squadron.
- There are paddle craft outfitters and guides. These organizations promote boating safety.
- Over enforcement can be a concern. There are some instances of people being boarded several times in a single day. However, boaters can display proof of a boarding to avoid further boarding's. Local authorities focus on safety, not just enforcement. Stops result in education, not tickets.
- New York State provides grants for communities that would like to establish a harbor management program.
- Over 23,000 New York recreational boaters took a boating safety class in 2015.
- There is a website and video recently created for traffic mix: www.safeharbor.us

Volume of Commercial Traffic:

Trends/Observations:

- There are 600,000 transits per year in New York Harbor. Based on VTS checkout/in data, there are at least 3,000 transits per year on the Hudson River above the Holland Tunnel.
- In addition to what passes through New York Harbor, there are vessels such as rock boats that only transit above the VTS zone.
- USACE Waterborne Commerce Data from 2015: 1,441 commercial deep draft transits and 14,344 commercial shallow draft transits; 15,785 transits per year and approximately 43 per day.
- USACE Waterborne Commerce Data may not be accurate. Pilots have seen cargo that was not included in the data.

- Even with moderate traffic, there can be delays due to weather and berth congestion. Traffic volume doesn't necessarily correlate with the frequency and length of delays. Maximum delays are around 24 hours.
- There is traffic in Tarrytown for construction of the new Tappan Zee Bridge.

Existing Mitigations:

- All vessels must have detailed voyage plans.
- Great communication on the water and between shipping companies.

Volume of Small Craft Traffic:

Trends/Observations:

- Recreational vessel traffic is seasonal and weather dependent. Traffic is greatest during summer weekends with nice weather. The busiest days are July 4th, Labor Day, and Memorial Day. Hudson River boaters are fair weather boaters.
- The number of registered motor boats in New York State has leveled off at about 400,460. However, the number of paddle craft has exploded. There are now 12 paddle craft outfitters on the river.

Existing Mitigations:

- Increased outreach to promote responsible traffic management.
- A ferry and kayak collision in New York Harbor increased this topic's visibility and interest.
- There is a speed limit when vessels are within 100 ft of the shore, piers, anchored vessels, etc.
- Enforcement is increased during popular boating periods such as the 4th of July.
- The Coast Guard establishes safety zones and issue permits for marine events.
- There are areas where recreational boaters cannot transit. Examples of these areas include near Indian Point and the Tappan Zee Bridge. These safety and security zones shown on nautical charts and are published in the federal regulations and local notice to mariners.

Traffic Mix:

Trends/Observations:

- Lots of conflicts between recreational boaters and commercial traffic. Conflicts are seasonal because recreational traffic is seasonal.
- Traffic mix is really bad on the 4th of July and other periods of high recreational traffic.

Existing Mitigations:

- Commercial vessels have a look out and constantly monitor radio traffic.
- Some educational programs emphasize safe interactions between commercial and recreational vessels. The Hudson River Valley Greenway's program focuses on this.
- There is communication between commercial vessels. They warn each other of risky small craft.

Congestion:

Trends/Observations:

- North of Kingston there can be congestion due to ice.
- All communities with boat clubs/ramps can be congested.

Existing Mitigations:

- Events that are a hazard to navigation must be permitted. This may include safety zones and notifications (LNM, BNM).
- USACE permits structures in the waterway, including those associated with marine events.
- Vessels use VHF radios, AIS, and radars to mitigate congestion.

Winds:

Trends/Observations:

- Winds are generally out of the west or northwest. They usually come at the worst time, and northwest winds can be difficult for commercial vessels.
- Winds are well forecasted, and the forecasts are improving.
- Winds pose the greatest risk in areas that are narrow or congested (above 4-mile Point).
- Wind direction and speed varies by season.
- Climate change could be causing more extreme weather events.

Existing Mitigations:

- Mitigated by voyage planning and accurate forecasting.

Water Movement:

Trends/Observations:

- Voyage planning is greatly influenced by tides and currents.
- Snow melt and rains increase currents. This can lead to strong currents in the Port of Albany.
- There is a lack of real-time sensors/data.

- Tides and currents could impact oil spill containment and clean up.
- Currents don't exceed 5 kts, unless there is an extreme weather event.
- Opposing winds and currents can create chop that is difficult for paddle craft.
- Water releases and freshets can increase risk. Sometimes these events can even pull buoys under the water.
- Water movement is generally not well understood by recreational boaters.

Existing Mitigations:

- Transits and passing arrangements are planned according to tide and current predictions.
- Tidal predictions are accurate, especially since the models were updated with new data.
- Voyage plans incorporate keel clearance.
- Local area knowledge and broadcast communication mitigate risk associated with water movement.
- NOAA maintains tide and current sensors, and they are committed to updating them.

Visibility Restrictions:

Trends/Observations:

- Fog can be patchy, but it's a game changer for commercial traffic. Pilots and tug captains will avoid fog, which means they will try to anchor or remain moored.
- Fog is seasonal. It is usually worse in the spring and fall.
- Fog can be dangerous for kayakers as well. If kayakers must go out in the fog, they tend to stick close to the shore.
- Commercial fisherman must go out to save their nets, regardless of restricted visibility. Fixed nets were traditionally set below Peekskill.
- According to the National Climate Data Center, there are about 25 days of dense fog a year in the Hudson Valley. However, this might not accurately describe conditions on the river.
- There are microclimates on the river, and visibility conditions can change rapidly.
- Heavy rain and snow can be worse than fog because it clutters the radar.
- Glare can be a problem on clear days.

Existing Mitigations:

- There is great communication on the waterway. Mariners will seek visibility information from other vessels underway.
- Captains and pilots have the authority to terminate a voyage because of restricted visibility. They will not proceed north to the narrow sections if visibility is poor.
- If already underway, anchoring is the primary mitigation strategy.
- Technology helps, but its benefits are limited due to the narrowness of the channel.

Obstructions:

Trends/Observations:

- Bridges can be obstructions. Pilots prefer 2-3 ft of excess air draft.
- Cable and pipelines are obstructions, and some aren't charted.
- Ice is major obstruction. Some crews lack experience in ice. Ice drags buoys off station, and it is difficult to meet or overtake in ice. Vessel interactions with ice can break docks and marina infrastructure.
- Commercial traffic can destroy fishing nets. Not a relevant issue for today's fishing practices.
- Most incidents have occurred near reefs. They are obstructions, but they are habitat for aquatic resources.
- Some fuel storage locations have transfer pipes that protrude onto the pier.
- Sometimes kayakers are mistaken for debris fields or birds.

Existing Mitigations:

- Communication between captains/pilots and USCG cutters improve the effectiveness of ice breaking operations.
- Ice operations are well managed. The USCG has an annual ice breaking meeting and conducts daily overflights.
- Captains and pilots are experienced in ice.
- Vessels form convoys that are escorted by a USCG ice breaker.
- Commercial vessels will slow down to limit wake damage to private structures and docks. However, this isn't always effective.
- There are horsepower restrictions during the ice season.
- The USACE has a crane barge on the river, and it's capable of removing obstructions.
- Mariners report obstructions and warn others.

Visibility Impediments:

Trends/Observations:

- Background lighting is bad near Catskill, Newburgh Water Plant, Tarrytown, Haverstraw Bay, and Albany.
- There are dark shadows near Hudson.
- Port of Coeymans can be lit up.
- Silver Point Range near German Reach can be too bright. Sometimes it's blinding.
- There are some blind spots for AIS and VHF coverage, especially in the Hudson Highlands.

Existing Mitigations:

- Commercial operators communicate well when approaching turns and bends. Some recreational boats listen to this communication.
- There are minimum lighting requirements for stationary barges.
- Vessels carry a chart and VHF radio.

Dimensions:

Trends/Observations:

- Up to Kingston the channel is 600 ft wide. Above Kingston the channel is 400 ft wide. Project depth is 32 ft.
- The channel is constantly shoaling, and shoaling affects a ship's movement.
- Pilots will review recent surveys, and avoid meeting in shallow areas.
- There are certain areas where commercial vessels will avoid meeting. Meeting locations are usually planned well in advance. Communication is key.

Existing Mitigations:

- Shipping companies will limit their draft based on under keel clearance calculations. If the calculations don't match reality, they won't make the trip.
- Mitigations from other categories also apply to dimensions.

Bottom Type:

Trends/Observations:

- Eel grass is in shallow areas where light meets the bottom.
- Short-nosed and Atlantic sturgeon require a hard bottom for spawning. Some areas with a hard bottom are just above Hyde Park, Poughkeepsie Yacht Club, and across from Esopus Meadows Light.
- New York State has designated some bottom types as critical habitats.
- Sand wave bottoms are important habitat for sturgeon. This bottom type is near Crum Elbow.
- North of Kingston and in the Hudson Highlands is rocky and narrow.

Existing Mitigations:

- Bottom types are charted and publically available.
- USACE and state permits regulate submerged or overhead cables.
- The river was recently surveyed by NOAA.

Configuration:

Trends/Observations:

- Many turns are greater than 45 degrees.
- Many secondary channels/creeks meet the river. For example, Rondout Creek in Kingston.

Existing Mitigations:

- Passing arrangements are carefully coordinated.
- Technology helps determine ideal meeting locations for vessels.
- Pilots rarely transit between Hudson and Albany at night.

Human Injuries:

Trends/Observations:

- Haverstraw Ferry can have about 150 passengers.
- The Dutch Apple has a capacity of about 125 passengers.
- JP Cruise lines can carry over 200 passengers.
- Small cruise ships are seasonal and can carry up to 300 passengers.
- The Rip Van Winkle, the Spirit of the Hudson, and the Eureka can have 150-200 passengers.
- There is a high-speed ferry from NYC to Cold Spring.
- The Pride of the Hudson in Newburgh can carry about 75 people.
- Seastreak Ferry can carry up to 500 passengers. They have a fall foliage cruise on the Hudson River.
- Surge of water from commercial vessels may injure owners of beached vessels or people on floating docks.
- Towing companies will not looking into a potential hire's credentials or medical waivers.

Existing Mitigations:

- Local authorities train at least monthly. Some exercises are with interagency and local partners.
- Passenger vessels must do drills as part of USCG inspections. They also must have emergency response plans.
- There is search and rescue training available at the Port of Albany.
- Commercial operators must have physical exams to maintain Coast Guard credentials. These are well documented, and the requirements are enforced.

Petroleum Discharge:

Trends/Observations:

- Most petroleum moves by tank barge. Tank barges are usually 80,000 barrels, and the largest tank barges are 150,000 barrels. Most units are articulated tug barges.
- There are petroleum and asphalt tankers.
- Barge drafts range from 19-30 ft, depending on cargo type and amount.
- You can never clean up all the spilled oil.
- Equipment may not be provided quickly enough, and local authorities may not be experienced in spill response.

Existing Mitigations:

- Aids to Navigation Team Saugerties has a USCG oil spill response kit.
- The Oil Spill Removal Organization (OSRO) has response equipment staged along the river. The OSROs work together. They are annually inspected by the USCG and their clients. They serve vessels and facilities. They are well versed in emergency response operations.
- Port facilities have oil spill response equipment, and they are evaluated on their ability to use the equipment.
- There are large spill response exercises involving multiples agencies and stakeholders.
- The USCG maintains an area contingency plan. It covers local, state, and federal responsibilities. It is a 1000-page document that is comprehensive. The committee meets monthly.
- Vessel quality and crew training prevent spills.
- Vessels and facilities have response plans.
- There are advanced oil spill models.
- OSROs are subject to government initiated, unannounced exercises.
- 1000 ft boom must be deployed within 1 hr and vacuum equipment must be onscene within 2 hours. Tier 1 equipment is well staged and would be onscene quicker than 12 hours.
- Facilities are well lit and extensively inspected before, during, and after the offload of petroleum products.
- Petroleum offload/onload hose gaskets are replaced before every use.
- Hoses on barges are pressure tested every year and replaced every 5 years.
- The state has established geographic response plans (GRPs), and the USCG has geographic response strategies (GRSs).
- The state does training with local fire departments, and state response assets are robust.
- The USCG and state have funds dedicated to responses. These can be used if there isn't a responsible party.
- The USCG has a national response center that manages notifications.
- Mariners must report all spills, regardless if they caused it.

Hazardous Materials Release:

Trends/Observations:

- Liquid fertilizer, urea, molasses, calcium chloride, magnesium chloride, and ethanol are transported on the river.
- Some of the tankers carrying hazardous cargos exceed 40,000 DWT.

Existing Mitigations:

- Some mitigation strategies are covered in the "Petroleum Discharge" section.
- Recovery efforts depend on the environmental fate of specific chemicals.

Mobility:

Trends/Observations:

- According to modeling, a worst-case discharge (150,000 barrels of petroleum) in Kingston would spread from Saugerties to Yonkers. It would impact traffic on the entire stretch because the river is narrow.
- A petroleum spill would likely result in a waterway closure.
- The river will shut down if a vessel runs aground.

Existing Mitigations:

- Closures are continually monitored and assessed by the Captain of the Port.
- The Port of New York adds salvage and heavy lift resources.
- The USCG can activate its marine transportation system recovery unit (MTSRU).

Health and Safety:

Trends/Observations:

- There are 7 different water intakes on Hudson River. Most are near Kingston and Poughkeepsie. There are no backups for these drinking water systems.
- About 1.5 million people live on the water from Yonkers to Albany.
- Home heating oil is a important commodity. Inability to ship refined petroleum products could impact the health and safety of the region.

Existing Mitigations:

- The national response center notifies appropriate authorities.
- The state health department has water quality rapid response teams.

- The state watch center has a system to bring all agencies and expertise together.
- There are state grants and mechanisms to fund health/safety recovery efforts.

Environmental:

Trends/Observations:

- The state has designated most of the river a significant habitat.
- The freshwater wetlands above the salt line are globally rare.
- There are locations, such as Con Hook and Diamond Reef, where navigational hazards are close to sensitive habitats.
- The river is the largest superfund site in the nation. It is vulnerable to pollution because it has already been polluted so much.
- Sinking oils could have serious impacts because some of the fish are benthic.
- Contrary to popular belief, the Hudson River is not healthy. The fisheries have collapsed.
- Some portions of the river have been designated essential fish habitat by NMFS.

Existing Mitigations:

- There are ongoing cleanup and remediation efforts.
- The predictive modeling has aspects related to long-term environmental consequences.
- There is an ongoing effort to update the area contingency plan (ACP). Updates so far have greatly improved preparedness.
- There are habitat maps available that outline critical habitat areas. These areas are included in the new ACP.

Aquatic Resources:

Trends/Observations:

- Striped bass is the number one recreational species in the United States. The Hudson River is 1 of 3 producing estuaries for striped bass in the United States.
- The Hudson River estuary is important for the health of fisheries along the eastern seaboard. The marshes and tidal stretches are important spawning areas for the Atlantic coast herring, striped bass, blue fish, and blue crab.
- Commercial fishing has existed on the Hudson, but it doesn't exist right now. Just because it doesn't exist, doesn't mean it's not important.
- There is subsistence fishing on the river, and there is recreational fishing.
- Eating fish from the river can be dangerous because they are contaminated.

Existing Mitigations:

- This topic was covered in the "Environmental" section.
- There are recreational fishing regulations.
- There are efforts to clean up the river and decrease fish contamination.

Economic:

Trends/Observations:

- The river has spawning grounds and are important to fisheries along the entire eastern seaboard.
- Disruptions to home heating oil and gasoline shipments could have a regional impact. It would be difficult to find an alternative transportation system, and prices would skyrocket.
- Expensive, heavy lift cargo is also important. Some pieces of equipment are shipped internationally.
- The river is important to tourism, and tourism drives the local economy. Tourism is susceptible to river pollution.
- There is a passenger and cargo rail line on the river. An issue with the rail line could impact the waterway.
- On an average day, 5 million gallons of fuel are shipped on the river. This equates to about 400 trucks per day.
- A New York City economic study suggested barges in New York Harbor eliminated 3.1 million trucks per year.

Existing Mitigations:

- Cargo could be rerouted to other cities.
- The Marine Transportation System Recover Unit (MTSRU) would minimize economic impact. There are thresholds and guidelines for standing up the MTSRU.
- Maintaining the MTS is one of the Coast Guard's top priority.
- The Hudson River is extremely vital to the regional economy, and reducing all risk is difficult.
- There are not enough trucks to transport the fuel oil shipped on the Hudson River.
- The state does table top exercises that include contingency operations for port disruptions.
- The state is completing a regional resilience assessment program. It reviews every piece of energy infrastructure in the state.
- Vessels can anchor nearby and restart operations immediately.

Appendix D

Poughkeepsie Participants – Potential Additional Risk Mitigation Strategies

The participants are the local subject matter experts, and these comments capture their opinions, providing a general sense of the ideas discussed during the workshop. They also provide various perspectives concerning each risk mitigation strategy representing widely different interests.

Small Craft Quality:

- Create a Hudson River Harbor Safety Committee.
- Create a Hudson River specific website with boating information; post the link on signs at marinas.
- Promote vessel safety education at small craft launch points and marinas, use local parks and recreation officials to promote boating safety.
- Place signs near launch points and marinas that highlight the danger of large vessels in the channel.
- Dedicate more law enforcement resources and increase outreach efforts.
- Encourage the use of VHF marine radios by small craft operators.
- Implement a mandatory small craft operator licensing program.
- Increase recreational boating regulations and requirements.
- Develop a video describing “best practices” for commercial/recreational interactions on the water, incorporate traffic mix and other local information in boating safety courses.
- Create an industry and kayaker exchange program.
- Expand the boating safety courses to cover more aspects of commercial traffic.
- Develop a brochure that “big box” stores can distribute when they sell paddle craft.
- Encourage manufacturers to put safety decals and reflectors on paddle craft.

Traffic Mix:

- Incorporate traffic mix and other local information in boating safety courses.
- Establish a Hudson River Harbor Safety Committee.
- Improve long-range and/or contingency planning and better coordinate activities, improve dialogue between waterway users and stakeholders.
- Require mandatory training for small craft operators, kayakers and paddle borders that emphasizes the risks of operating near commercial vessels.
- Increase outreach and voluntary boating safety programs.
- Expand AIS coverage.
- Required small craft to carry VHF radios.

- Require regatta sponsors to be escorted by a vessel that has a VHF radio.
- Expand training opportunities for small craft operators, kayakers and paddle borders.
- Place signs at marinas that include how to access safe boating information and education resources.

Congestion:

- Establish a Hudson River Harbor Safety Committee.
- Improve coordinating and planning between the different waterway user types.
- Incorporate traffic mix and other local information in boating safety courses.
- Expand the VTS in New York to cover the Hudson River to Albany.
- Federally designate historically used anchorages.
- Establish a Regulated Navigation Area for the entire river.
- Increased information sharing on traffic congestion.
- Promote increased training for tour boat operators, require the carriage of VHF radios on tour boats. Improve the ability to communicate bridge-to-bridge or ship-to-shore.

Water movement:

- Increase the number of real-time data sensors for tides, currents, and bridge air gaps.
- Improve accuracy of existing navigation and hydrographic sensors.
- Expand AIS coverage and information sharing.
- Expand NOAAs Physical Oceanographic Real-Time System to cover the Hudson River to Albany.
- Expand the VTS in New York to cover the Hudson River to Albany.

Visibility Restrictions:

- Make bridge cameras accessible to the maritime community.
- Expand NOAAs Physical Oceanographic Real-Time System to cover the Hudson River to Albany.
- Expand the VTS in New York to cover the Hudson River to Albany.
- Improve information sharing between from federal stakeholders (USCG, NOAA, etc) and waterway users.
- Establish federally designated anchorages. Define “emergency” in the anchorage regulations. Establish anchorage areas that are for “emergency” only. The definition of emergency should not include parking or staging. In the anchorage regulations, replace the word “emergency” with “for purposes of safe navigation”. The anchorages should be available, clearly marked, and used for short-term emergency purposes. Eliminate “long-term” from the anchorage regulations.
- Relax conditions allowing vessels to anchor for something less than a “great emergency” such as adverse weather or a mechanical condition.
- Designate anchorages in appropriate and strategic locations, and define time limits and the definition of emergency or circumstantial anchoring.

- Establish a Regulated Navigation Area for the entire river.
- Expand AIS coverage.

Obstructions:

- Establish federally designated anchorages.
- Define “emergency” in federally designated anchorages.
- Expand AIS coverage.
- Improve clearing of debris from the river.
- Improve ice breaking capacity.

Petroleum Discharge:

- Encourage reporting of spills by the public.
- Increase types and quantities of emergency response equipment to increase response capability.
- Conduct dispersant modeling to evaluate impacts.
- Provide funding for equipment for local emergency responders.
- Display contact information to report spills on signs at small boat marinas and boat ramps.
- Improve long-range and/or contingency planning and better coordinate activities.
- Improve dialogue between waterway users, stakeholders, emergency responders and members of the general public
- Conduct an inter-agency emergency response drill for the upper Hudson River.
- Train local responders on contents and use of the Federal Government Area Contingency Plan (ACP).

Economic:

- Identify resources for individuals to seek compensation when they have been impacted by a spill, ensure redundancy in the supply of resources to impacted communities, increase Federal and State relief funding.
- Provide education for the general public on the Oil Spill Liability Trust Fund.
- Prohibit oil laden barges to remain at anchorage in order to avoid and prevent the economic impact of spills.
- Increase the types and quantities of emergency response equipment to increase response capability.
- Increase storage capacity for heating oil reserves.
- Increase ice breaking capacity.
- Develop emergency response plans that provide for alternate heating oil transportation.
- Provide funding for equipment for local emergency responders.

Appendix E

Albany Participants Comments – Potential Additional Risk Mitigation Strategies

The participants are the local subject matter experts, and these comments capture their opinions, providing a general sense of the ideas discussed during the workshop. They also provide various perspectives concerning each risk mitigation strategy representing widely different interests.

Small Craft Quality:

- Establish a Hudson River Harbor Safety Committee.
- Increase Boating While Intoxicated enforcement.
- Expand education on importance of Personnel Flotation Devise usage.
- Extend Boating While Intoxicated (BWI) laws to kayak and paddle craft operators.
- Improve US Coast Guard Auxiliary presence, outreach, and courtesy inspections.
- Pay US Coast Guard Auxiliary members to improve membership.
- Host a "Captains and Paddlers" exchange event on the Hudson River.
- Increase Federal grant money for State National Boating Safety Programs.
- Rebuild local boating safety outreach programs - people that go from marina to marina.
- Implement stricter boating safety education requirements.
- Increase the number of on the water training programs.

Volume of Small Craft Traffic:

- Require small craft liability insurance similar to automobile insurance requirements.
- Require an on water practical examination and licensing for small craft operators.
- Expand boating safety education and outreach programs.
- Require mandatory boating safety education, training and licensing for small craft operators.
- Automatically issue small craft operator licenses, but make them subject to revocation for serious violations such as BWI.
- Require mandatory boating safety education every 10 years and not just for those born after a certain date.
- Increase enforcement of existing boating safety regulations.
- Require carriage of VHF marine radios by small craft operators and monitoring of VHF channel 13.
- Require training on the Inland Navigation Rules of the Road for small craft operators.

Visibility Restrictions:

- Establish a Hudson River Harbor Safety Committee.
- Improve AIS coverage and carriage requirements, install more AIS repeater stations.
- Improve collection and dissemination of real-time weather data.
- Improve the federal presence on the river: EPA, NOAA, USACE, USCG.
- Make Hudson River bridge crossing cameras accessible to the maritime community.
- Expand the VTS in New York to cover the Hudson River to Albany.
- Dredge west of Hudson, so there are channels on both sides of the island.
- Increase frequency of Safety Broadcast Notice to Mariners.
- Install additional Aids to Navigation (ATON).
- Limit vessel sizes so that (vessels) are not tide restricted (due to vessel draft) during their transits
- Establish commercial moorings.
- Do not categorically excluded anchorages from National Environmental Policy Act (NEPA) requirements.
- Define “Great Emergency” in the anchorage regulations.
- Specify time limits for anchorages.
- Avoid placing anchorages in aquatic habitat areas.
- Implement federal anchorages as proposed in the ANPRM.

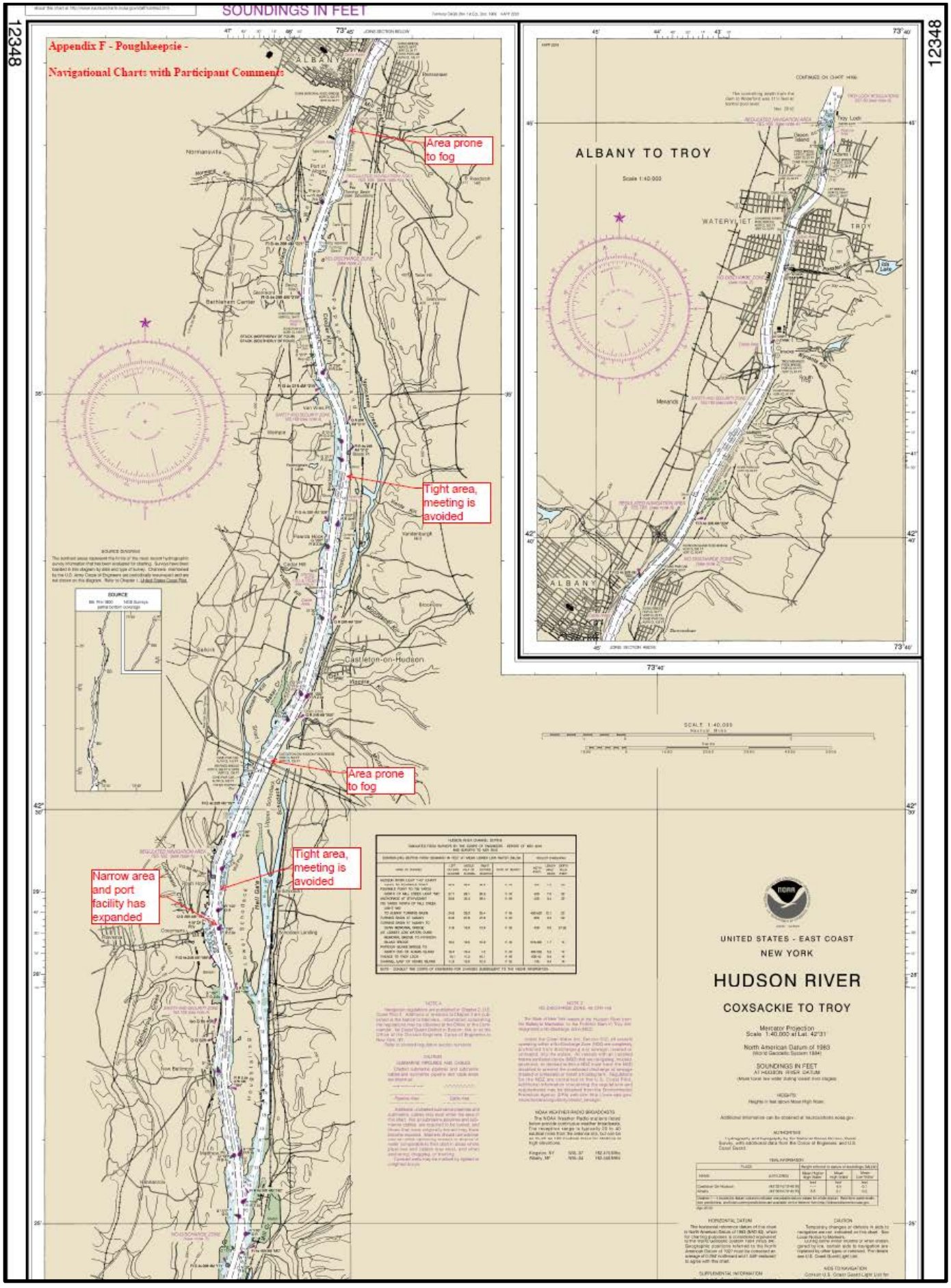
Aquatic Resources:

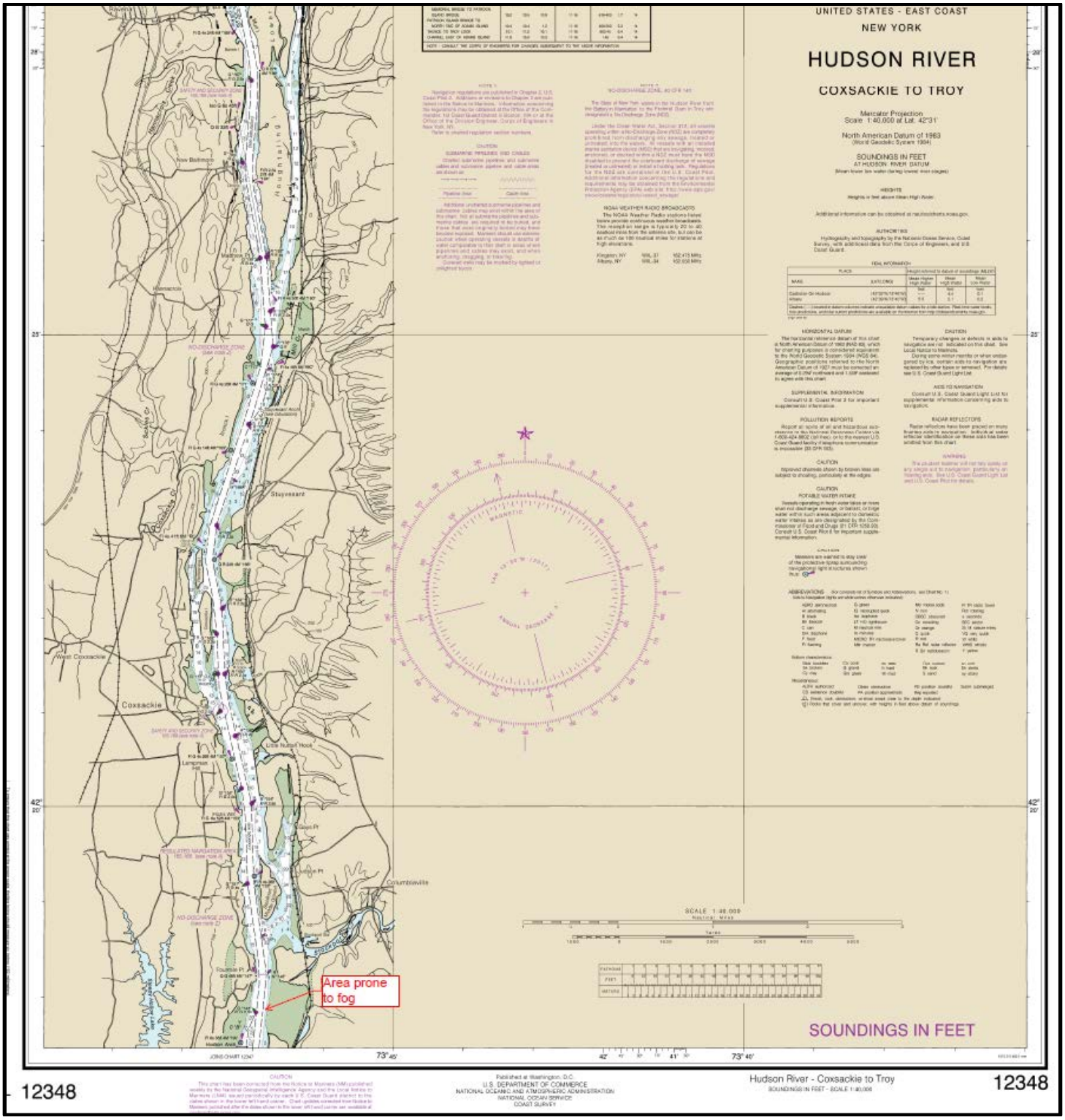
- Ensure contingency plans identify sensitive area for booming.
- Place aquatic habitat and spawning locations on navigational charts.
- Prohibit fishing in close proximity to power plants.
- Conduct more aquatic resource studies.
- Expand emergency response capabilities and resources.
- Dredge remaining PCB’s from the Hudson River.
- Improve hazardous materials spill preventative measures in environmentally sensitive areas.
- Increase the types and quantities of emergency response equipment to increase response capability.
- Improve long-range contingency planning and better coordinate activities.
- Create a dynamic relationship between the shipping industry and fishery biologists to identify locations for anchorage areas.
- Enhance communications between the shipping industry and waterway users.
- Restore local knowledge of the importance of Hudson River aquatic resources.

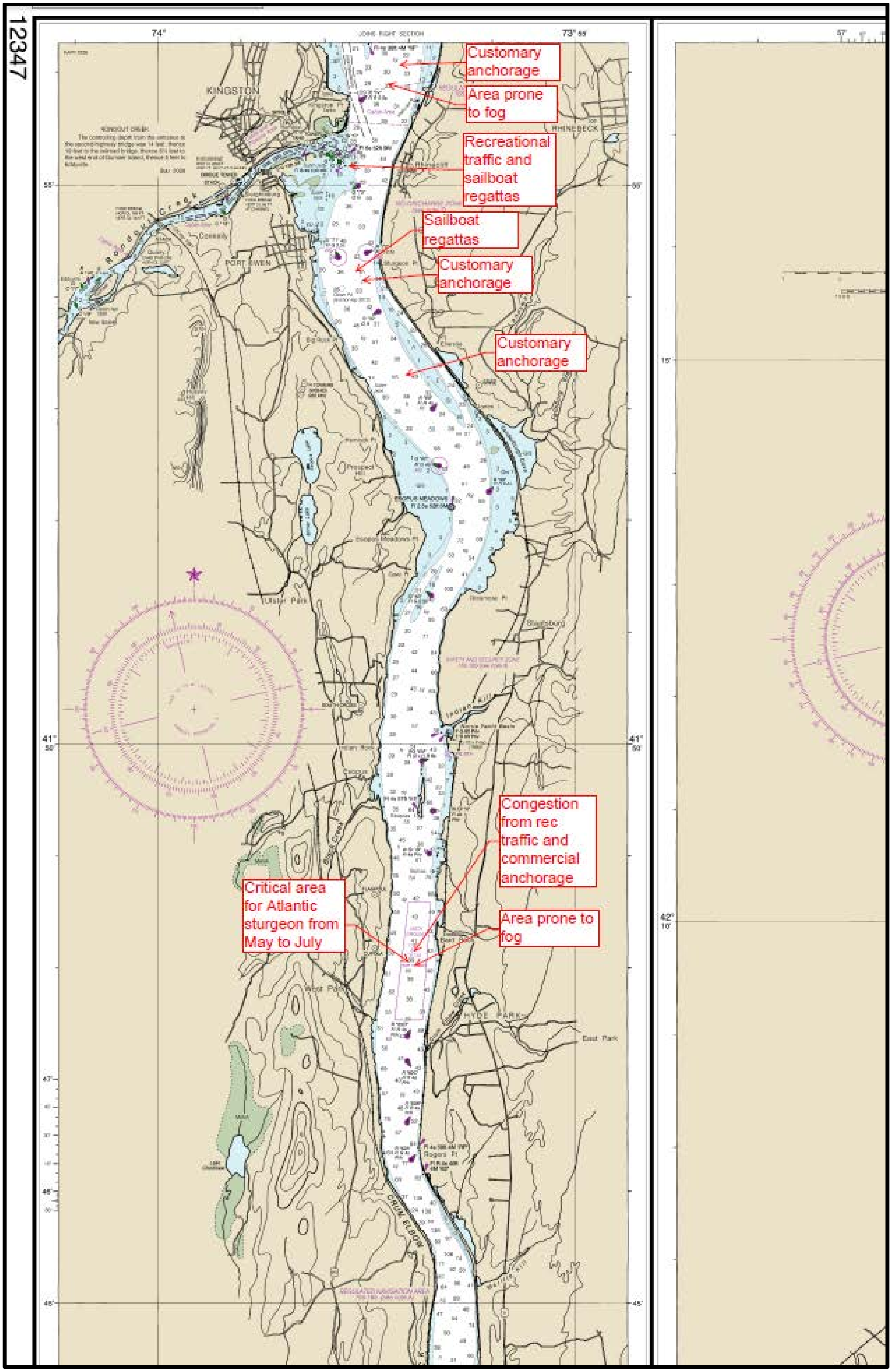
- Increased enforcement of fisheries regulations.
- Increase inventories of emergency response equipment.
- Expand the VTS in New York to cover the Hudson River to Albany to increase spill response capabilities.
- Be proactive and aggressively champion the management of Hudson River species.
- Improve capability to immediately respond and protect critical habitats.

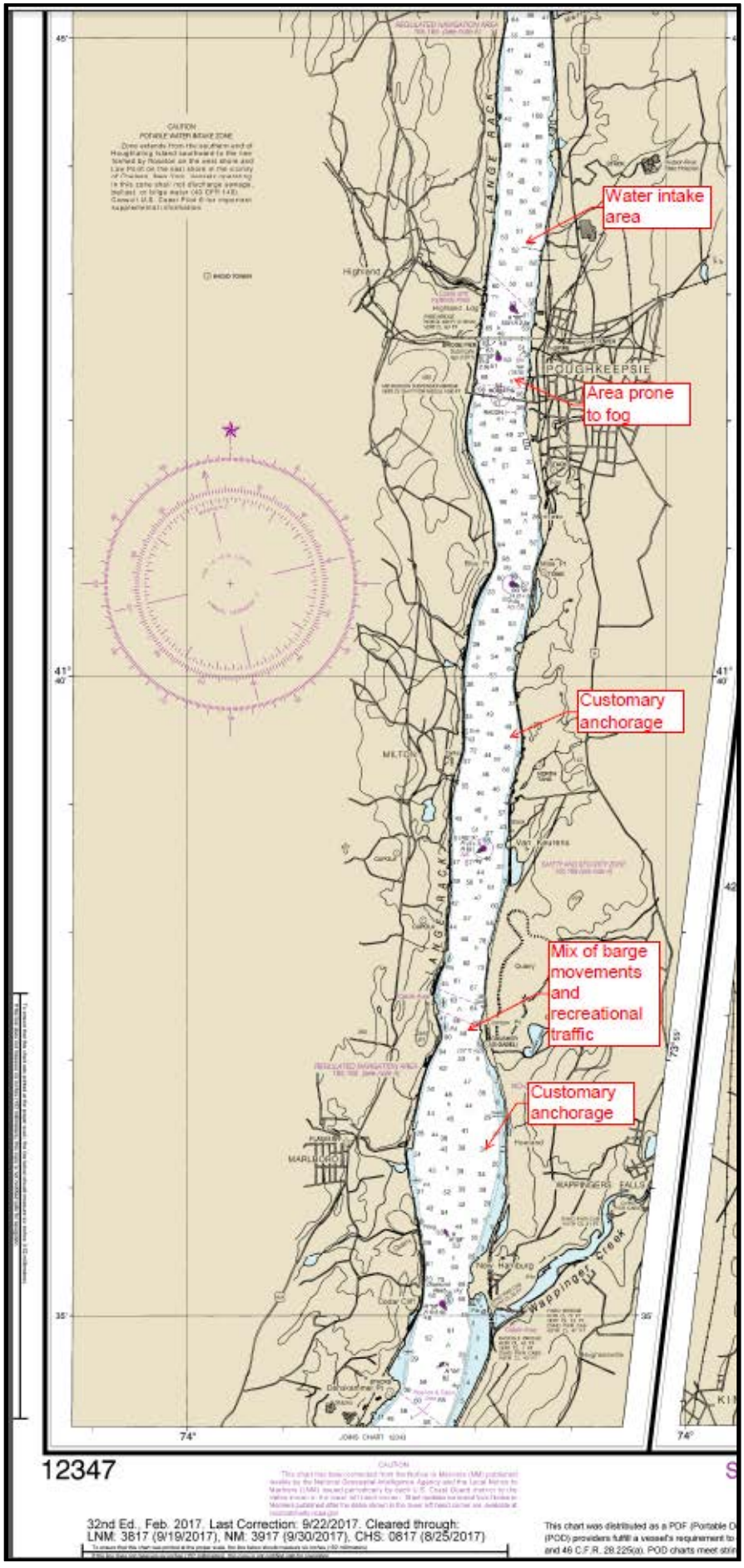
Appendix F

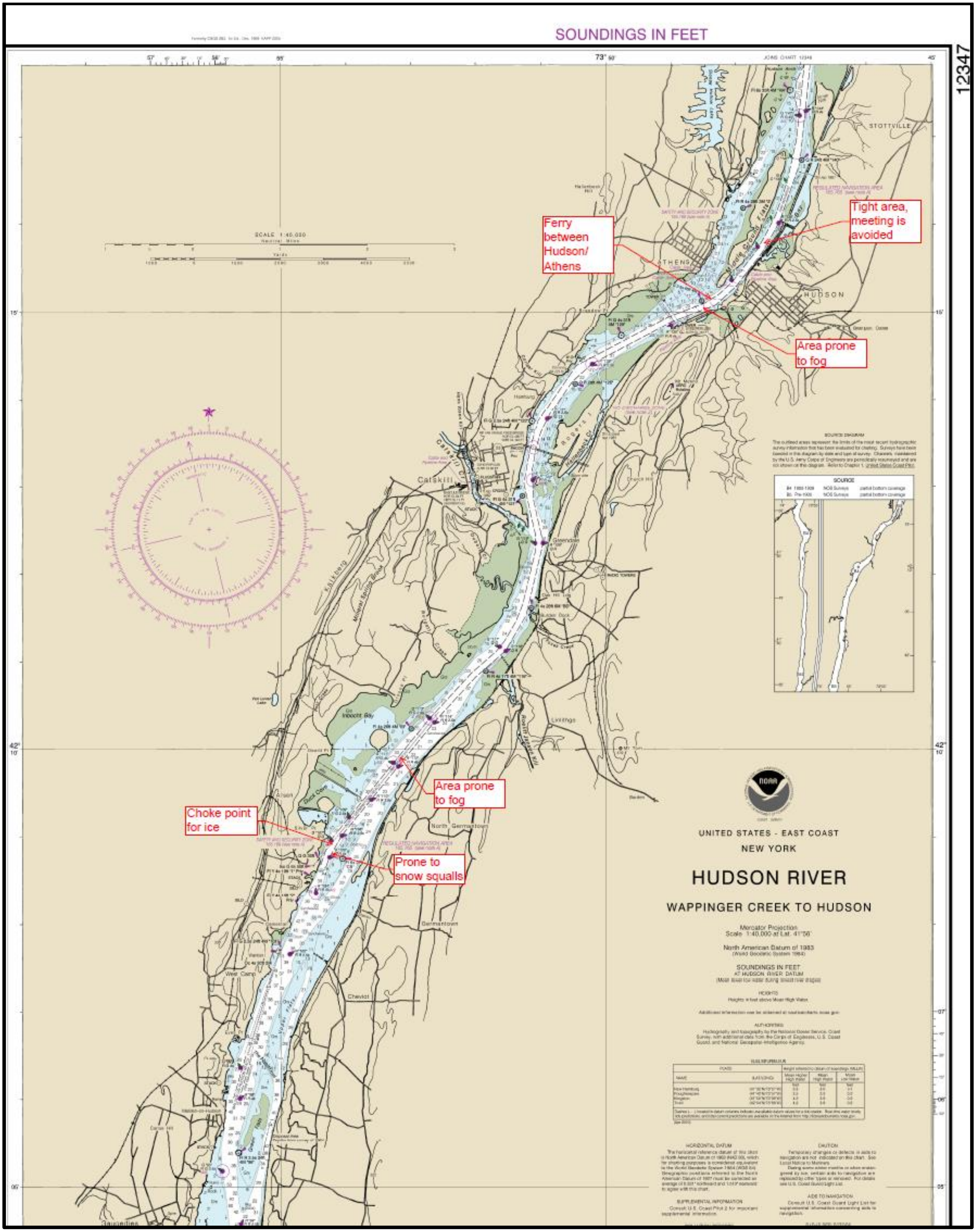
Poughkeepsie - Navigation Charts with Participant Comments

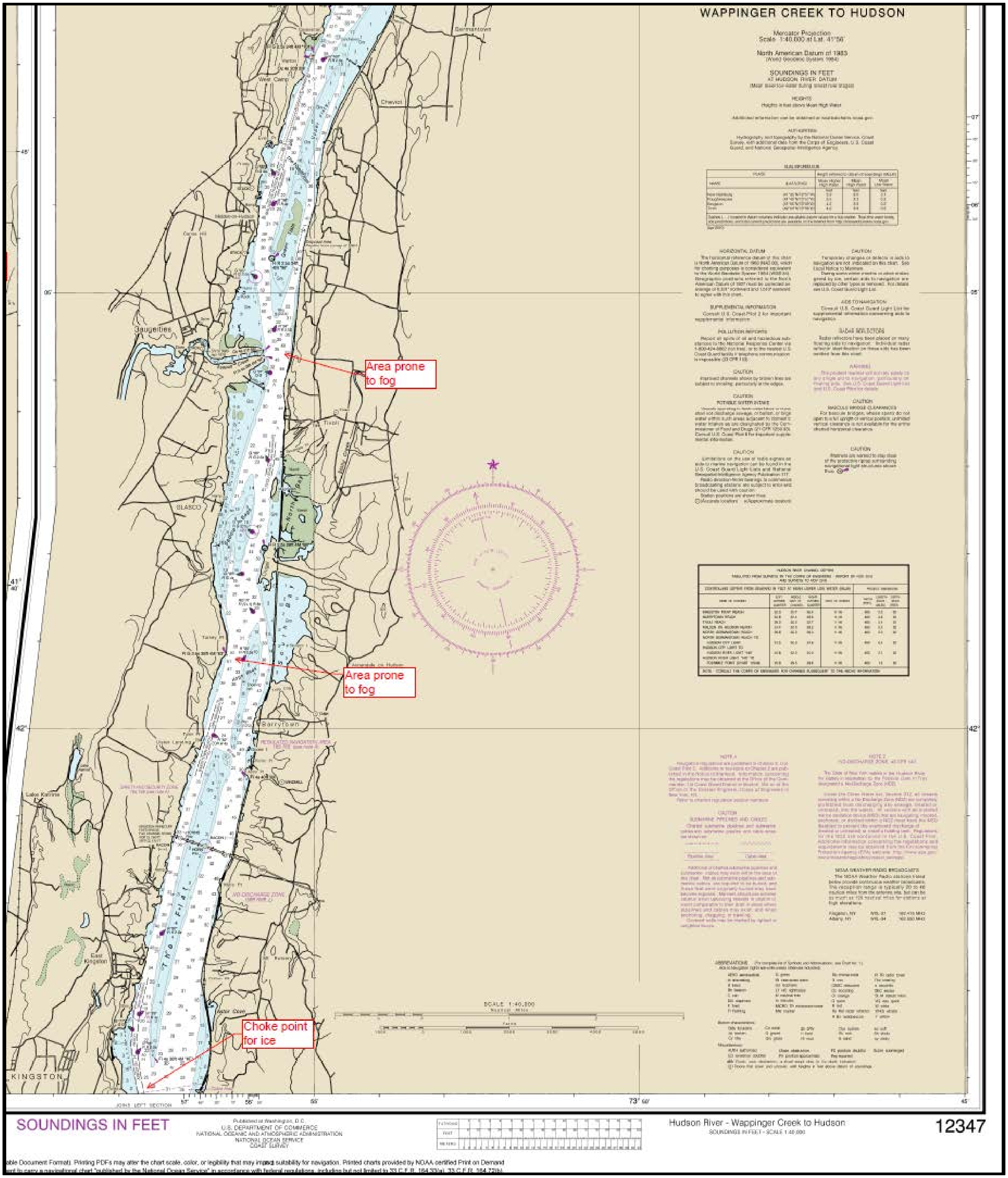

12348
SOUNDINGS IN FEET
Appendix F - Poughkeepsie -
Navigational Charts with Participant Comments
Area prone to fog
Tight area, meeting is avoided
Area prone to fog
Tight area, meeting is avoided
Narrow area and port facility has expanded
ALBANY TO TROY
Scale 1:40,000
UNITED STATES - EAST COAST
NEW YORK
HUDSON RIVER
COXSACKIE TO TROY
Mercator Projection
Scale 1:40,000 at Lat. 42°31'
North American Datum of 1983
(World Geodetic System 1984)
SOUNDINGS IN FEET
AT HUDSON RIVER DATUM
HEIGHTS
Heights in feet above Mean High Water.
SUPPLEMENTAL INFORMATION
AIDS TO NAVIGATION

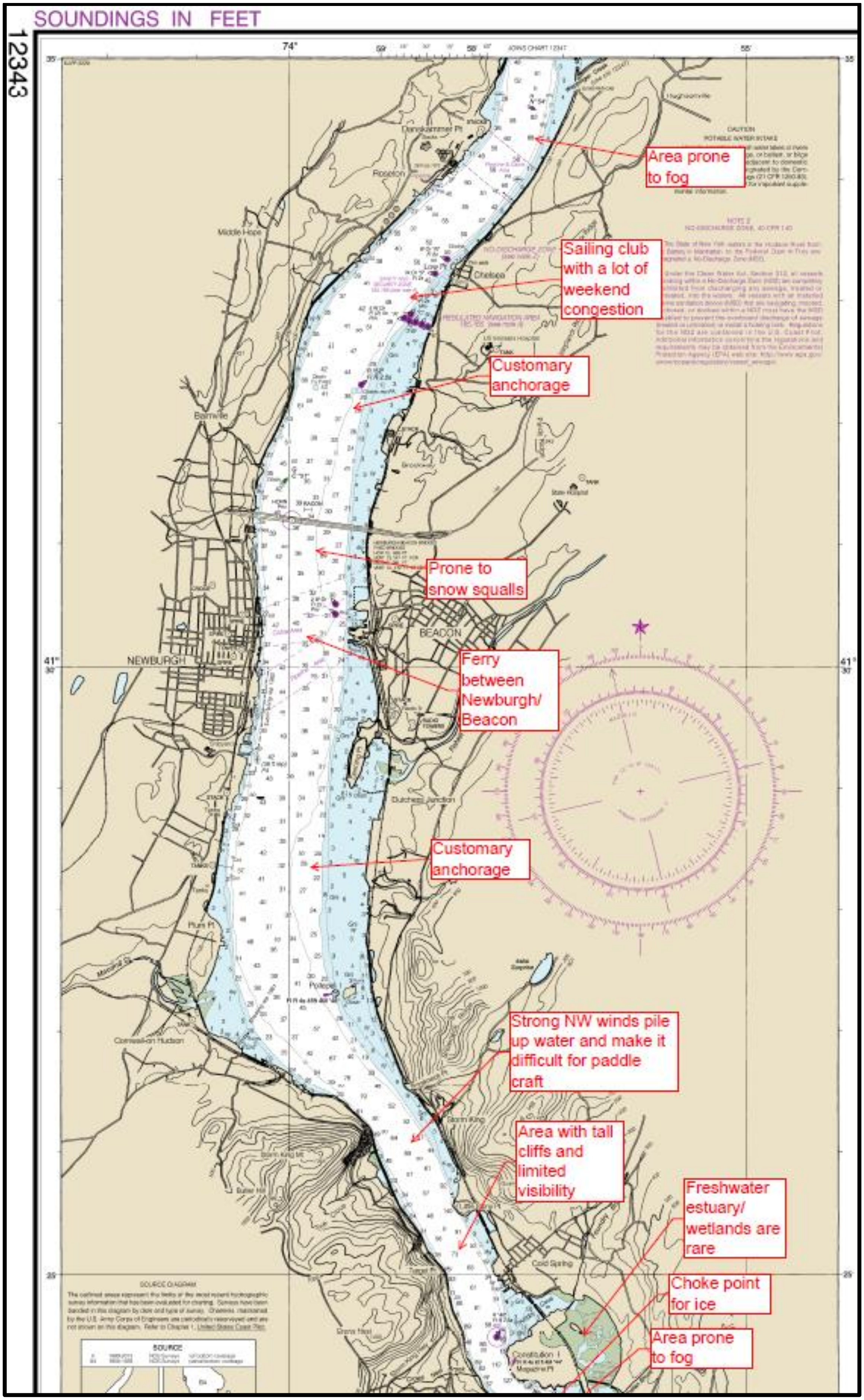

UNITED STATES - EAST COAST
NEW YORK
HUDSON RIVER
COXSACKIE TO TROY
Mercator Projection
Scale 1:40,000 at Lat. 42°31'
North American Datum of 1983
(World Geodetic System 1984)
SOUNDINGS IN FEET
AT HUDSON RIVER DATUM
Coxsackie
West Coxsackie
Stuyvesant
Columbiaville
Area prone to fog
SOUNDINGS IN FEET
12348
Hudson River - Coxsackie to Troy
SOUNDINGS IN FEET - SCALE 1:40,000
12348

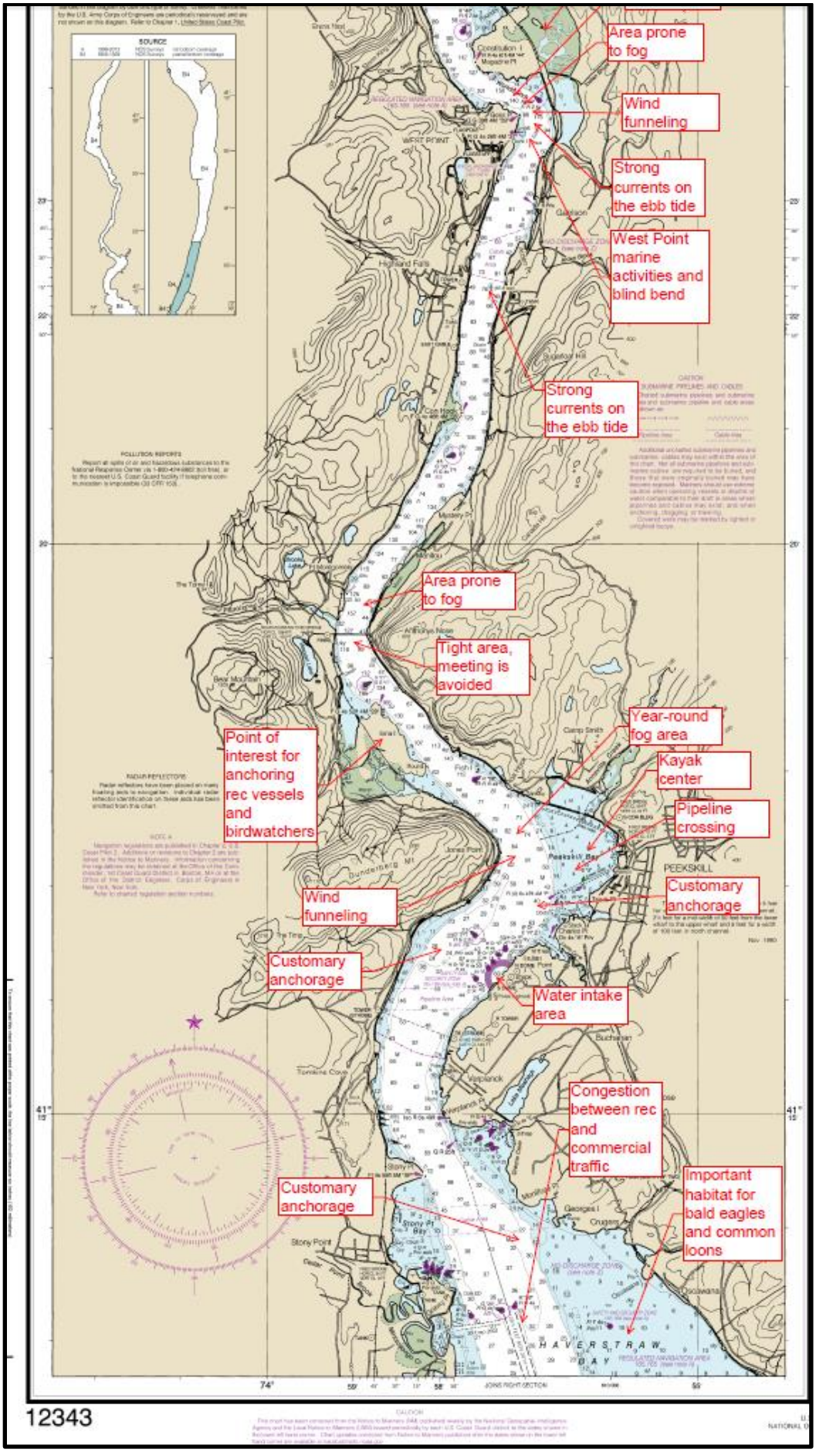

12347
Customary anchorage
Area prone to fog
Recreational traffic and sailboat regattas
Sailboat regattas
Customary anchorage
Customary anchorage
Congestion from rec traffic and commercial anchorage
Critical area for Atlantic sturgeon from May to July
Area prone to fog
KINGSTON
RHINEBECK
PORT EWEN
HYDE PARK

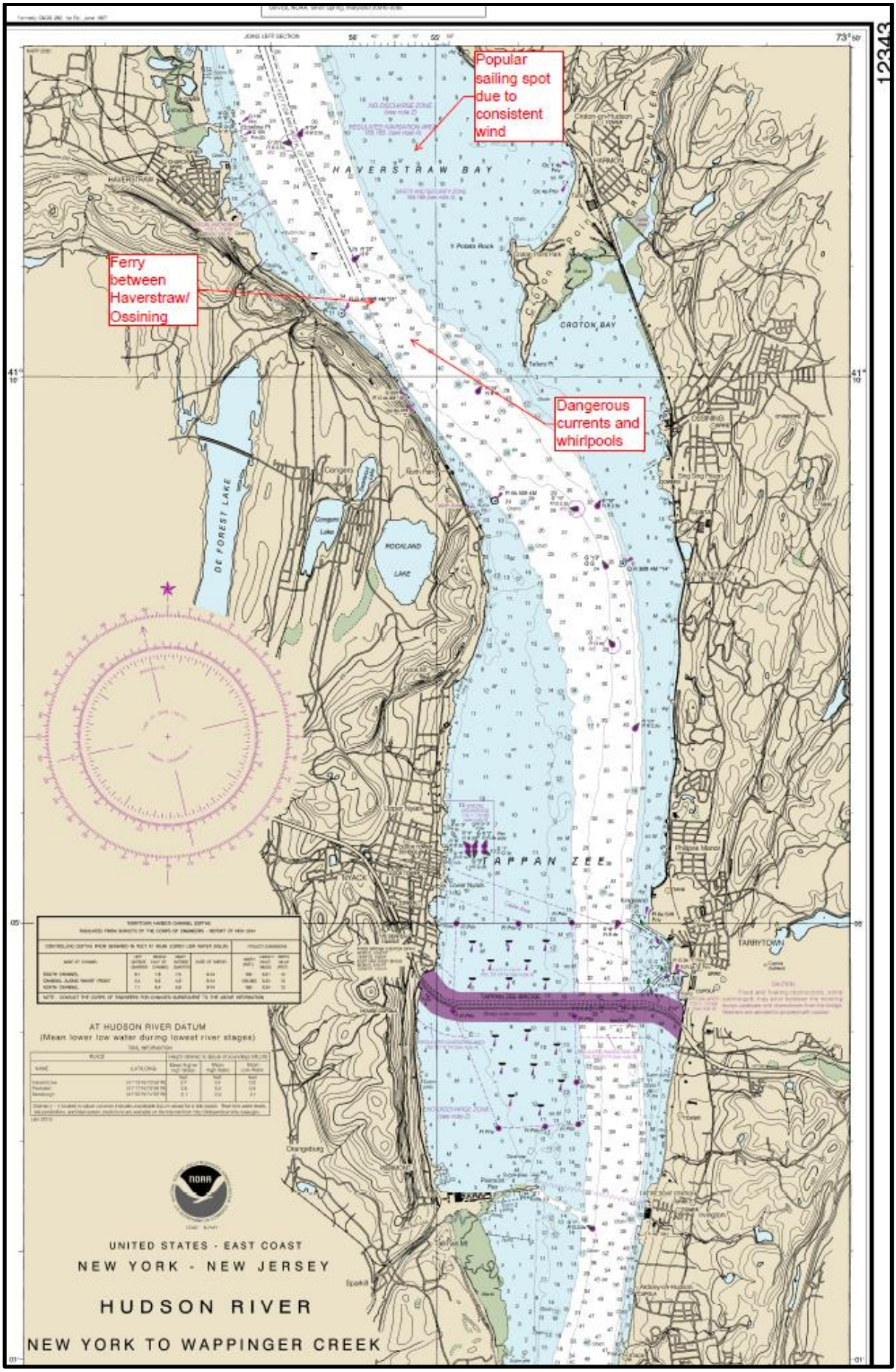

Water intake area
Area prone to fog
Customary anchorage
Mix of barge movements and recreational traffic
Customary anchorage
POUGHKEEPSIE
MILTON
MARLBORO
Wappinger Creek
12347
32nd Ed., Feb. 2017. Last Correction: 9/22/2017. Cleared through:
LNM: 3817 (9/19/2017), NM: 3917 (9/30/2017), CHS: 0817 (8/25/2017)


SOUNDINGS IN FEET
12347
73° 50'
STOTTVILLE
ATHENS
HUDSON
Catskill
Germantown
North Germantown
West Camp
Cheviot
Inbocht Bay
Ferry between Hudson/ Athens
Tight area, meeting is avoided
Area prone to fog
Area prone to fog
Choke point for ice
Prone to snow squalls
UNITED STATES - EAST COAST
NEW YORK
HUDSON RIVER
WAPPINGER CREEK TO HUDSON
Mercator Projection
Scale 1:40,000 at Lat. 41°56'
North American Datum of 1983
(World Geodetic System 1984)
SOUNDINGS IN FEET
AT HUDSON RIVER DATUM


WAPPINGER CREEK TO HUDSON
Mercator Projection
Scale 1:40,000 at Lat. 41°56'
North American Datum of 1983
SOUNDINGS IN FEET
AT HUDSON RIVER DATUM
Area prone to fog
Area prone to fog
Choke point for ice
Germantown
Cheviot
Saugerties
Tivoli
Barrytown
KINGSTON
SOUNDINGS IN FEET
Hudson River - Wappinger Creek to Hudson
12347

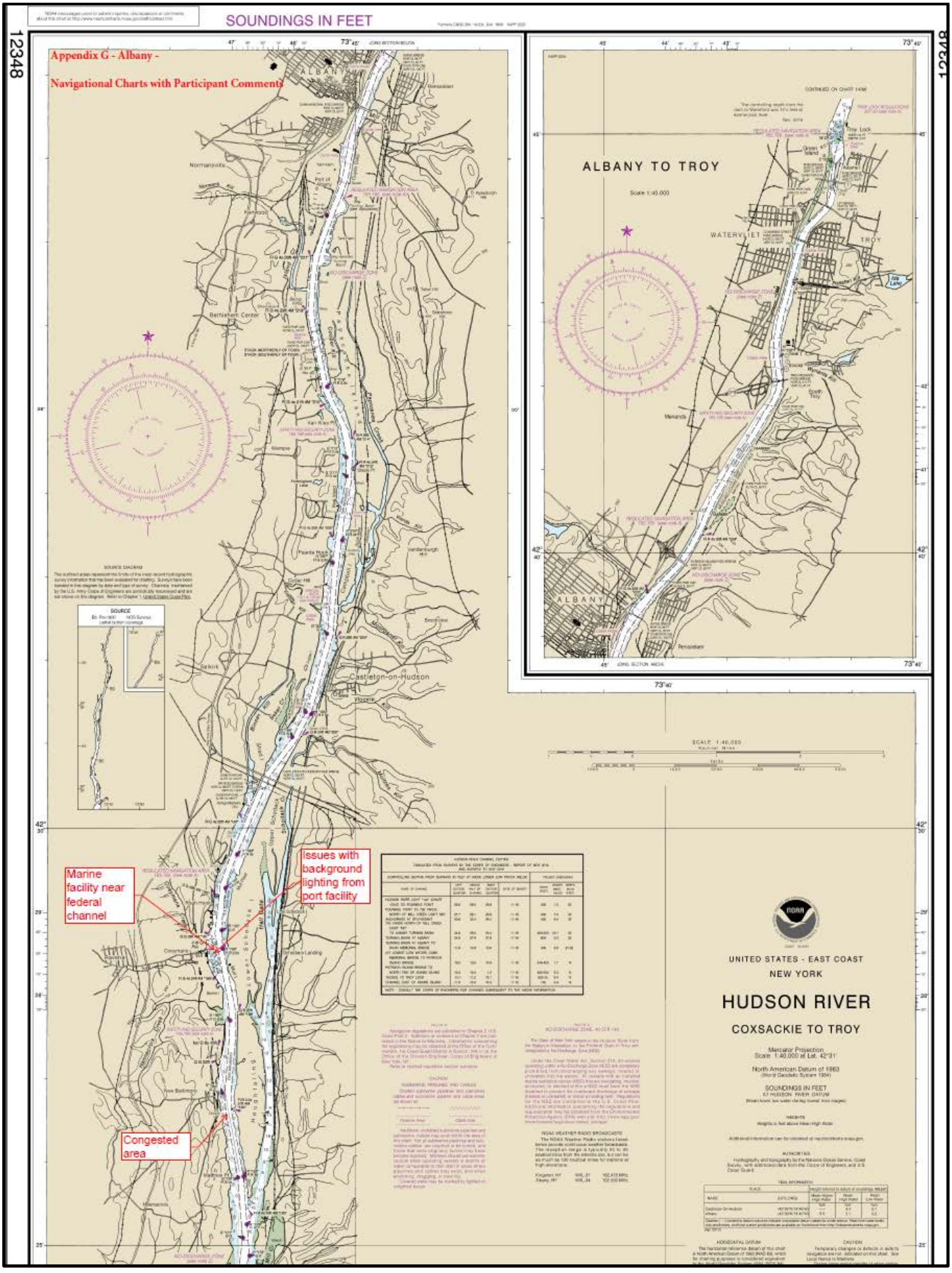

SOUNDINGS IN FEET
12343
Area prone to fog
Sailing club with a lot of weekend congestion
Customary anchorage
Prone to snow squalls
Ferry between Newburgh/ Beacon
Customary anchorage
Strong NW winds pile up water and make it difficult for paddle craft
Area with tall cliffs and limited visibility
Freshwater estuary/ wetlands are rare
Choke point for ice
Area prone to fog
NEWBURGH
BEACON

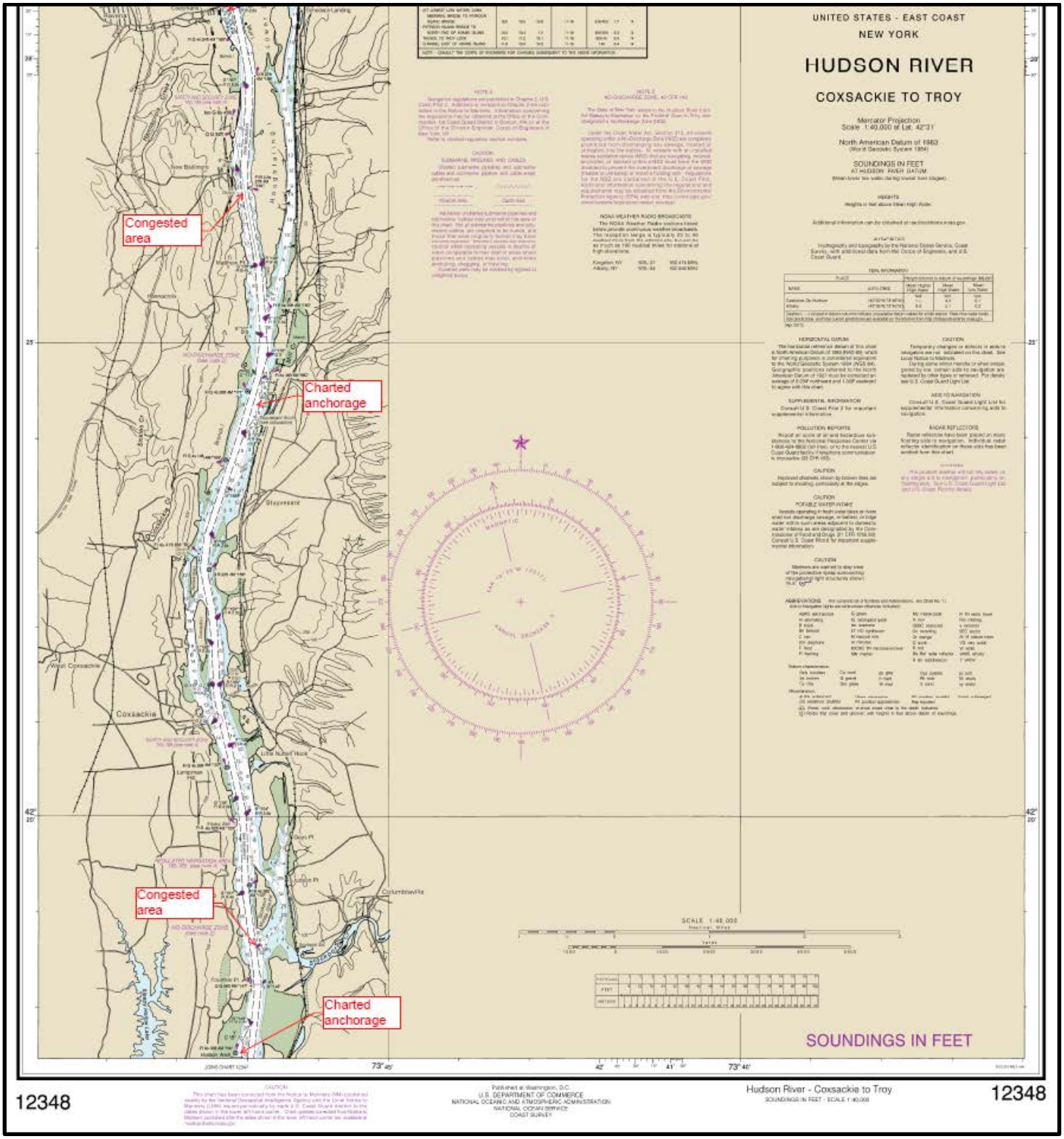

Area prone to fog
Wind funneling
Strong currents on the ebb tide
West Point marine activities and blind bend
Strong currents on the ebb tide
Area prone to fog
Tight area, meeting is avoided
Year-round fog area
Kayak center
Pipeline crossing
Point of interest for anchoring rec vessels and birdwatchers
Customary anchorage
Wind funneling
Customary anchorage
Water intake area
Congestion between rec and commercial traffic
Customary anchorage
Important habitat for bald eagles and common loons
12343

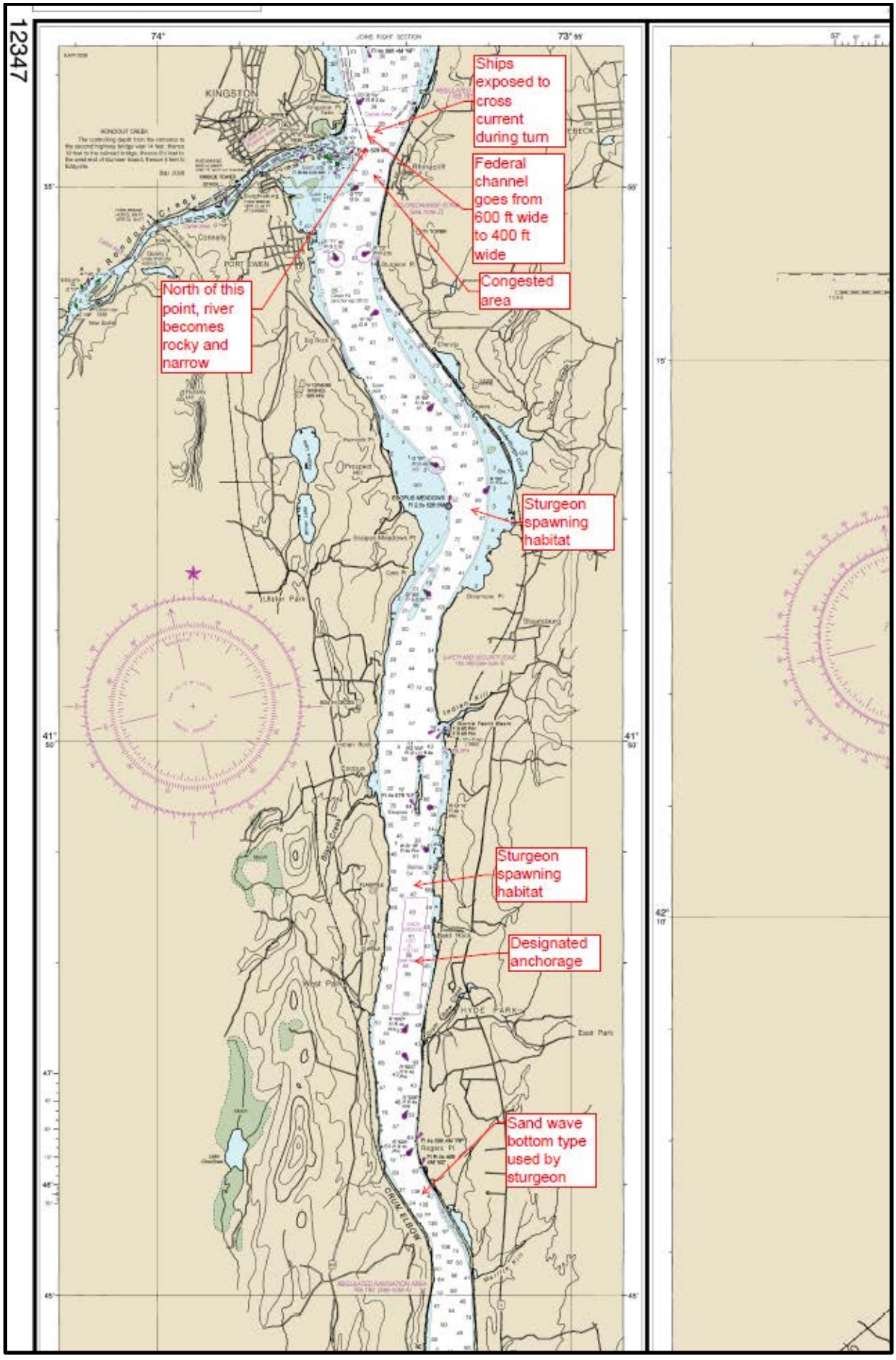

Popular sailing spot due to consistent wind
Ferry between Haverstraw/ Ossining
Dangerous currents and whirlpools
HAVERSTRAW BAY
CROTON BAY
TAPPAN ZEE
DE FOREST LAKE
ROCKLAND LAKE
AT HUDSON RIVER DATUM
(Mean lower low water during lowest river stages)
UNITED STATES - EAST COAST
NEW YORK - NEW JERSEY
HUDSON RIVER
NEW YORK TO WAPPINGER CREEK
12343

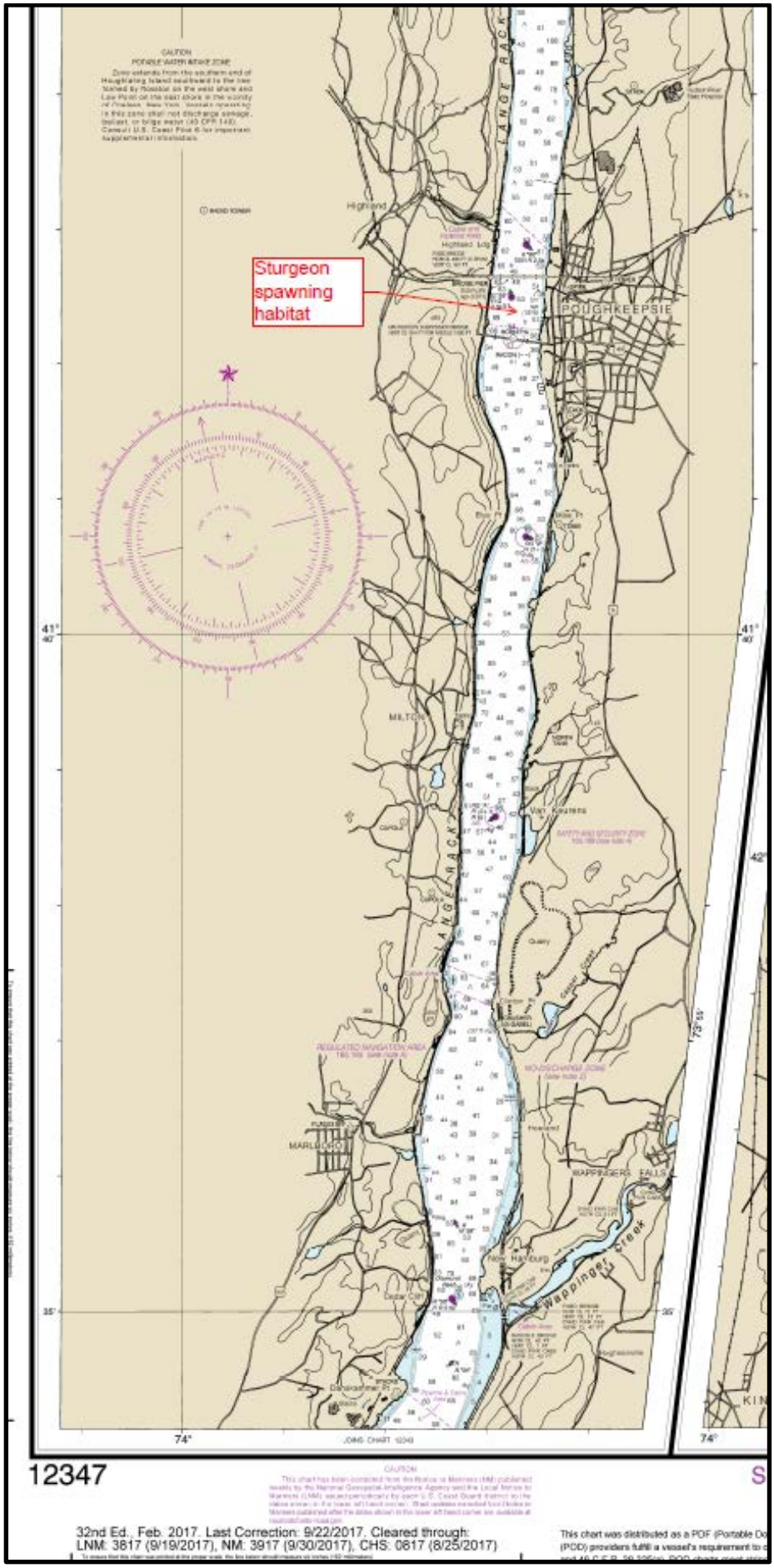
Appendix G

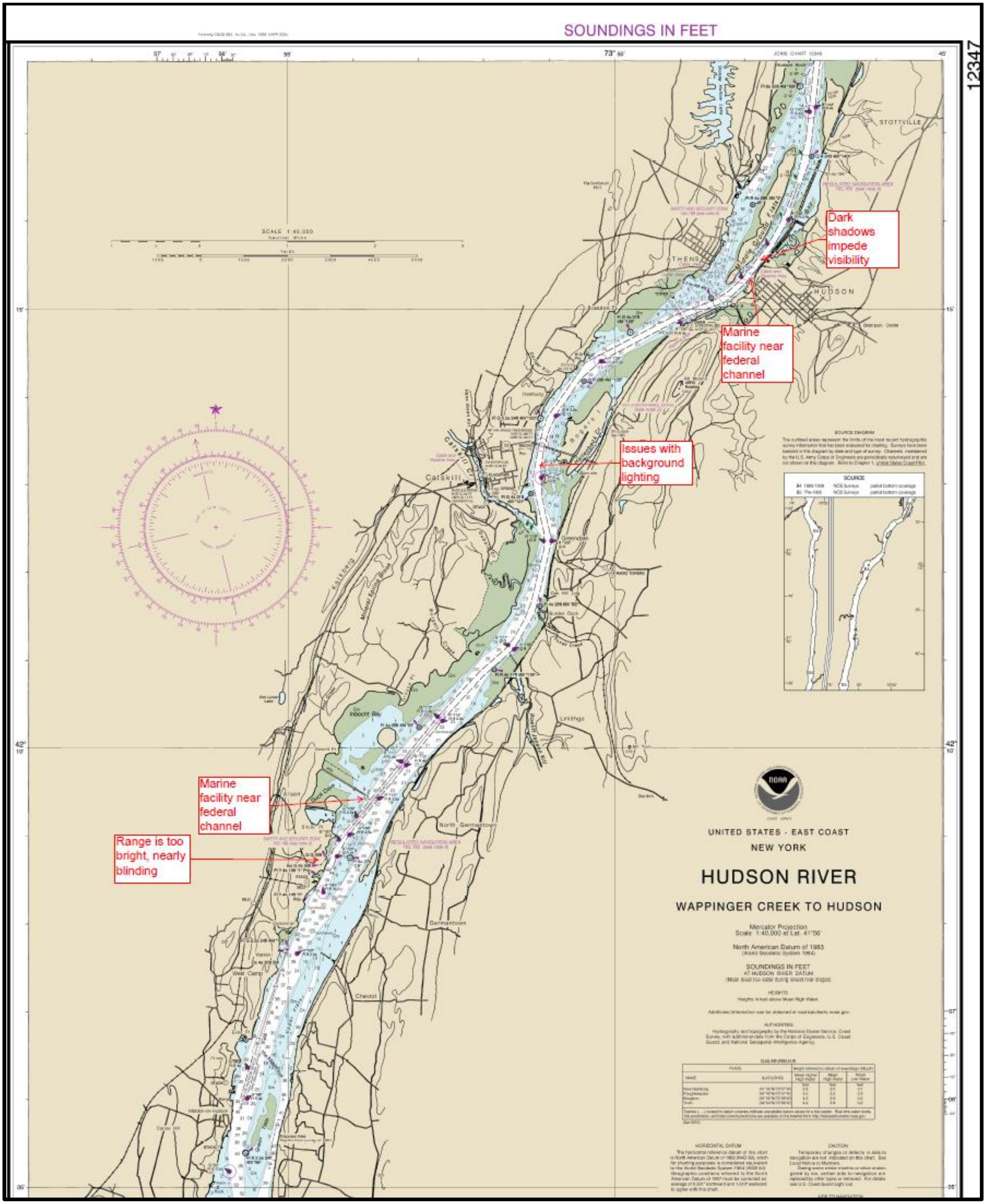
Albany - Navigation Charts with Participant Comments

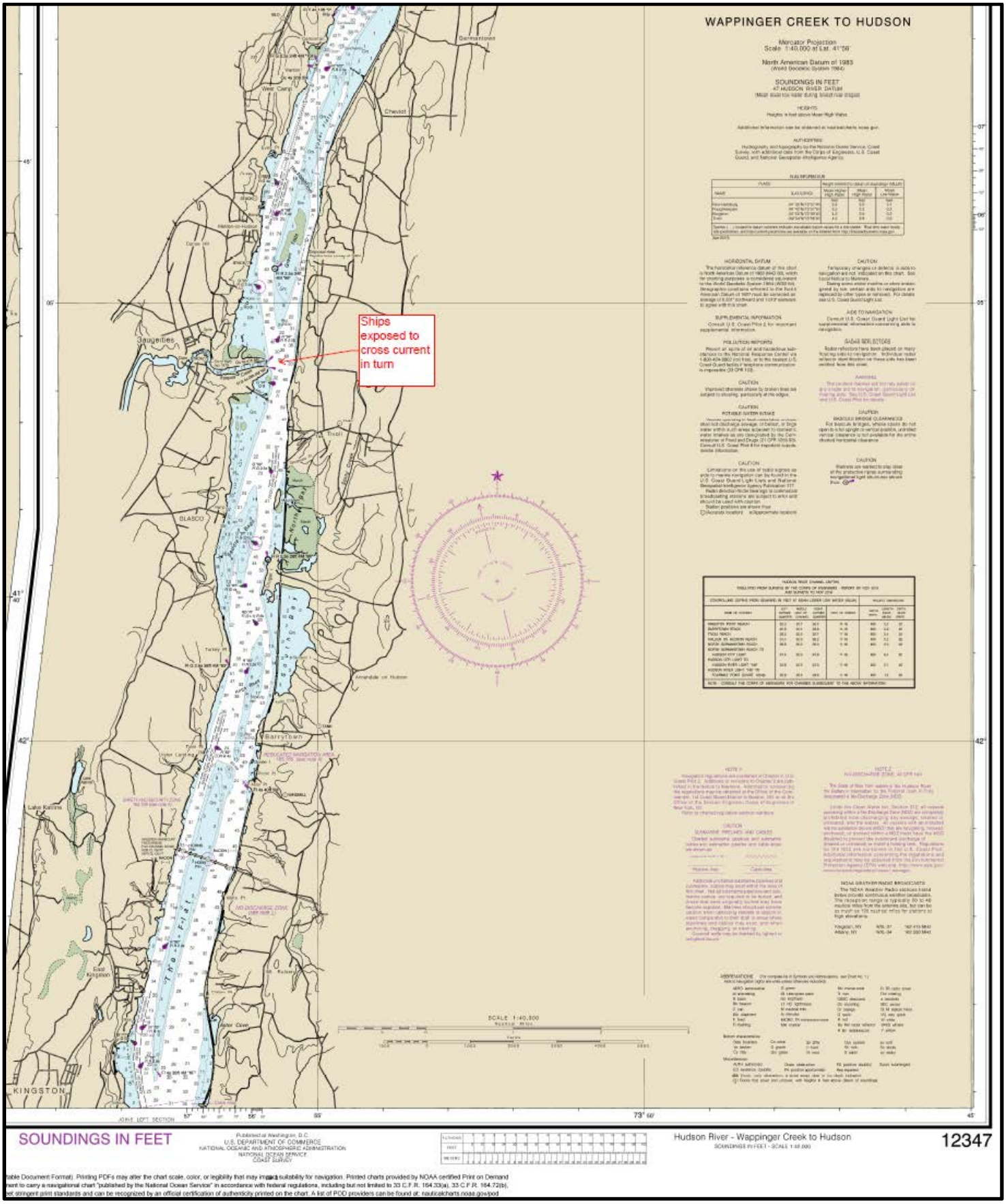

12348
SOUNDINGS IN FEET
Appendix G - Albany -
Navigational Charts with Participant Comments
ALBANY TO TROY
Marine facility near federal channel
Issues with background lighting from port facility
Congested area
UNITED STATES - EAST COAST
NEW YORK
HUDSON RIVER
COXSACKIE TO TROY

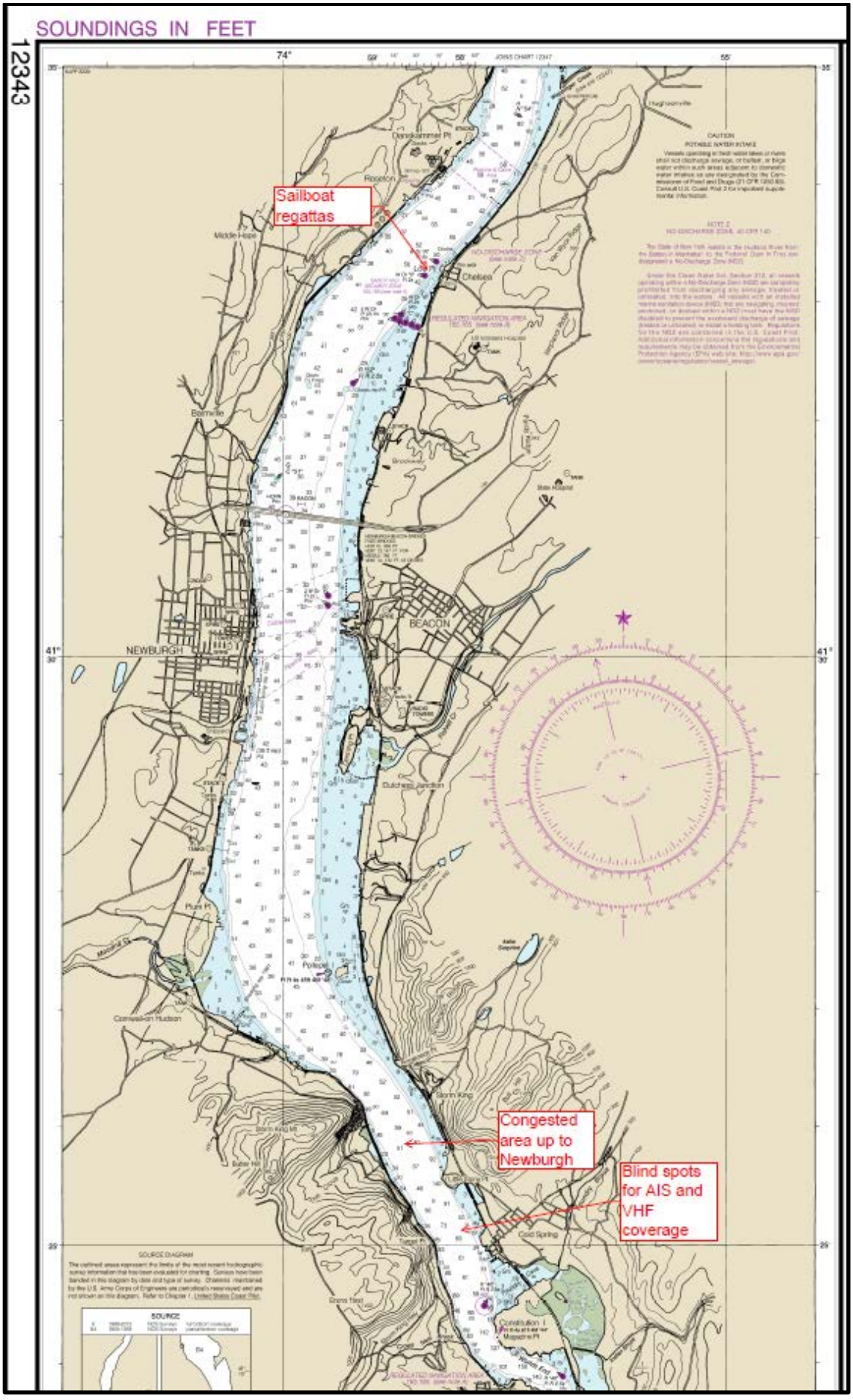

UNITED STATES - EAST COAST
NEW YORK
HUDSON RIVER
COXSACKIE TO TROY
Mercator Projection
Scale 1:40,000 at Lat. 42°31'
North American Datum of 1983
(World Geodetic System 1984)
SOUNDINGS IN FEET
AT HUDSON RIVER DATUM
Congested area
Charted anchorage
Congested area
Charted anchorage
Coxsackie
Stuyvesant
Columbiaville
SCALE 1:40,000
SOUNDINGS IN FEET
12348
Hudson River - Coxsackie to Troy
SOUNDINGS IN FEET - SCALE 1:40,000
12348

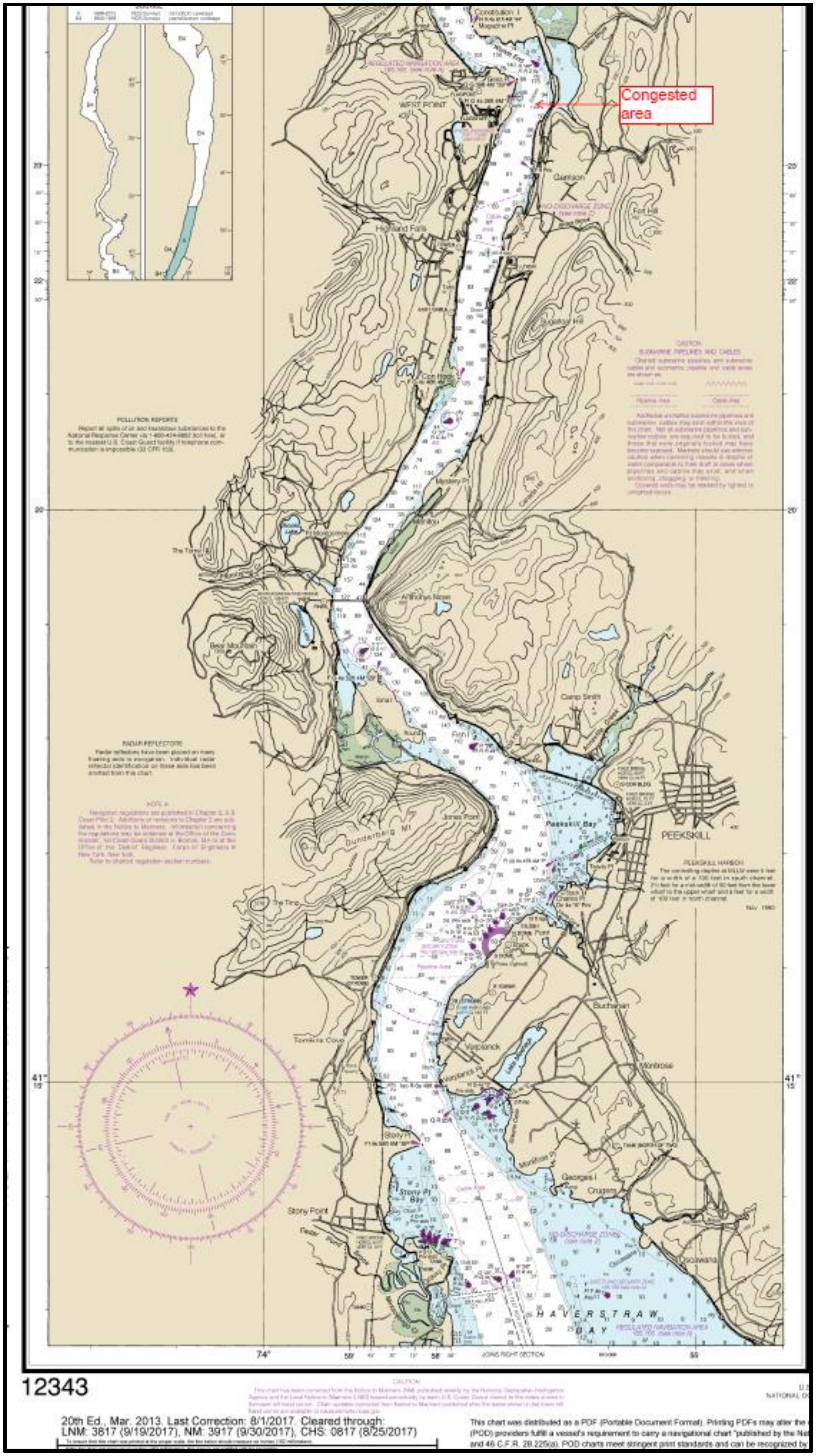

12347
Ships exposed to cross current during turn
Federal channel goes from 600 ft wide to 400 ft wide
Congested area
North of this point, river becomes rocky and narrow
Sturgeon spawning habitat
Sturgeon spawning habitat
Designated anchorage
Sand wave bottom type used by sturgeon
KINGSTON
PORT EWEN
HYDE PARK
CRUM ELBOW

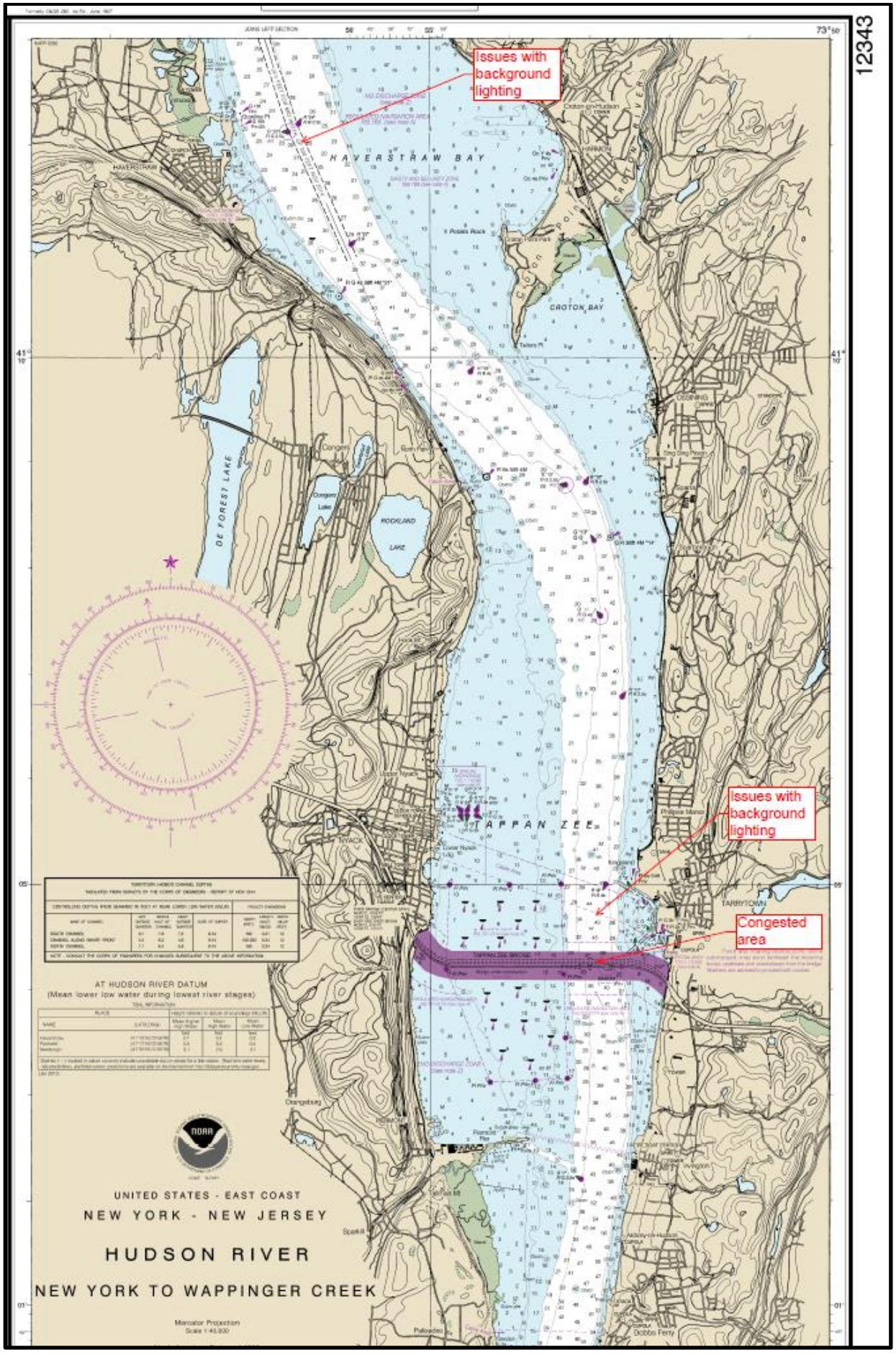

Sturgeon spawning habitat
POUGHKEEPSIE
MILTON
MARLBORO
WAPPINGERS FALLS
Wappinger Creek
LANGE RACK
41°
40'
74°
12347
32nd Ed., Feb. 2017. Last Correction: 9/22/2017. Cleared through:
LNM: 3817 (9/19/2017), NM: 3917 (9/30/2017), CHS: 0817 (8/25/2017)


SOUNDINGS IN FEET
12347
Dark shadows impede visibility
Marine facility near federal channel
Issues with background lighting
Marine facility near federal channel
Range is too bright, nearly blinding
STOTTVILLE
ATHENS
HUDSON
Catskill
North Germantown
Germantown
West Camp
Cheviot
UNITED STATES - EAST COAST
NEW YORK
HUDSON RIVER
WAPPINGER CREEK TO HUDSON
Mercator Projection
Scale 1:40,000 at Lat. 41°56'
North American Datum of 1983
(World Geodetic System 1984)
SOUNDINGS IN FEET
AT HUDSON RIVER DATUM
HEIGHTS
HORIZONTAL DATUM
CAUTION
SOURCE DIAGRAM




SOUNDINGS IN FEET
12343
Sailboat regattas
Congested area up to Newburgh
Blind spots for AIS and VHF coverage
NEWBURGH
BEACON
Chelsea
Roseton
Middle Hope
Balmville
Dutchess Junction
Cornwall-on-Hudson
Storm King
Cold Spring
Constitution I
SOURCE DIAGRAM
SOURCE


Congested area
WEST POINT
Garrison
Highland Falls
Sugarloaf Hill
Anthonys Nose
Bear Mountain
Camp Smith
Dunderberg Mt
Peekskill Bay
PEEKSKILL
Tomkins Cove
Buchanan
Verplanck
Montrose
Stony Point
Georges I
Crugers
Oscawana
HAVERSTRAW BAY
POLLUTION REPORTS
RADAR REFLECTORS
NOTE A
PEEKSKILL HARBOR
CAUTION
SUBMARINE PIPELINES AND CABLES
NO-DISCHARGE ZONE
JOINS RIGHT SECTION
12343
20th Ed., Mar. 2013. Last Correction: 8/1/2017. Cleared through:
LNM: 3817 (9/19/2017), NM: 3917 (9/30/2017), CHS: 0817 (8/25/2017)
This chart was distributed as a PDF (Portable Document Format). Printing PDFs may alter the
(POD) providers fulfill a vessel's requirement to carry a navigational chart "published by the Na
and 46 C.F.R. 28.225(a). POD charts meet stringent print standards and can be recognized by


12343
Issues with background lighting
HAVERSTRAW BAY
CROTON BAY
OE FOREST LAKE
ROCKLAND LAKE
TAPPAN ZEE
Issues with background lighting
Congested area
AT HUDSON RIVER DATUM
(Mean lower low water during lowest river stages)
UNITED STATES - EAST COAST
NEW YORK - NEW JERSEY
HUDSON RIVER
NEW YORK TO WAPPINGER CREEK
Mercator Projection
Scale 1:40,000

Appendix H

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Appendix I

Abbreviations and Acronyms

ACP – Area Contingency Plan
AIS – Automated Identification System
ANPRM – Advance Notice to Proposed Rule Making
ATON – Aids to Navigation
BWI – Boating While Intoxicated
COTP – Captain of the Port
EPA – Environmental Protection Agency
GRP – Geographic Response Plans
GRS – geographic Response Strategies
HRSC - Hudson River Safety Committee
IMO – International Safety Management
MARAD – Marine Highway by the Maritime Administration
MTS – Marine Transportation System
MTSRU – Marine Transportation System Recovery Unit
NDG – National Dialogue Group
NEPA – National Environmental Policy Act
NMFS – National Marine Fisheries Service
NOAA – National Oceanic Atmospheric Administration
NYC – New York City
OCIMF – Oil Company International Marine Forum
OSLTF – Oil Spill Liability Trust Fund
OSRO – Oil Spill Response Organization
PAWSA – Ports and Waterways Safety Assessment
PCB - Polychlorinated Biphenyl
PDF – Personal Flotation Device
PSC – Port State Control
RNA – Regulated Navigation Areas
SIRE – Ship Inspection Report Program
SOLAS – Safety of Life at Sea
STCW – Standards of Training Certification of Watchkeeping
TMSA – Tanker Management Self-Assessment
TMSS – Towing Management Safety System
USACE – United States Army Corps of Engineers
USCG - United States Coast Guard
VHF – Very High Frequency
VTM – Vessel Traffic Management
VTS – Vessel Traffic Service

Appendix III

REPORT ON NDAA HUDSON RIVER ANCHORAGE STUDY

HUDSON RIVER SAFETY, NAVIGATION & OPERATIONS COMMITTEE

HUDSON RIVER SAFETY, NAVIGATION & OPERATIONS COMMITTEE

REPORT ON NDAA HUDSON RIVER ANCHORAGE STUDY

HUDSON RIVER SAFETY, NAVIGATION & OPERATIONS COMMITTEE

June 28, 2021

Captain R.J. Schultz, USCG
Chief, Prevention Division First Coast Guard District
408 Atlantic Ave
Boston, MA 02110

RE: Hudson River Safety, Navigation & Operations Committee NDAA Anchorage Study

Dear Captain Schultz,

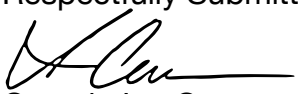
This report from the Hudson River Safety, Navigation & Operations Committee is the culmination of three months of focused committee meetings. From the beginning, our goal was to provide meaningful and relevant information that would assist the USCG and US Congress in the NDAA Anchorage Study.

Our committee represents a broad spectrum of Hudson River stakeholders with varied views on Hudson River-related issues. All of our members were given the opportunity to and encouraged to contribute to this report. The committee representatives from the USCG and all of the other governmental agencies were extremely helpful in assisting the committee during the preparation of this report.

My hope is that the information and recommendations in this report can be put to use in order to enhance the safety of navigation, environmental protection and effectiveness of the marine transportation system on the Hudson River.

Please contact me with any questions or requests.

Respectfully Submitted,



Captain Ian Corcoran
Chairman, HRSNOC

Enclosures: (1) HRSNOC Steering Committee Member List
(2) 2020 HRSNOC Resolution
(3) HRSNOC Study Elements - Member Input
(4) Commercial Anchorage Research Working Group Report
(5) Non-Commercial Risk Research Working Group Report - PAWSA

BACKGROUND

The Hudson River Safety, Navigation & Operations Committee (HRSNOC) was formed as a result of the 2017 Hudson River Ports and Waterways Safety Assessment (PAWSA). The formation of a safety committee was a consistent risk mitigation recommendation throughout both Hudson River PAWSA workshops. The HRSNOC mission is to provide a forum to facilitate outcomes that enhance and promote safety of property and personnel, environmental protection and operational effectiveness unique to the Hudson River region and its associated activities.

To date, our committee has met regularly and successfully engaged stakeholders and governmental agencies in order to improve communication, encourage collaboration and enhance navigational safety on the Hudson River. Considerable time was spent on recreational boating safety and recreational/commercial vessel interaction as this was one of the major risks identified at the PAWSA workshops. The New York State Parks Department's Marine Services Bureau worked with the HRSNOC to create public service print and radio ads. This continues to be an ongoing topic for our committee at our meetings.

Another major finding in the PAWSA was the ambiguity that exists in current anchorage regulations. Ambiguity and confusion will only degrade navigational safety on the Hudson River. Those responsible for operating commercial vessels must have the proper regulatory guidance in order to make the most prudent operational decisions.

In October 2018, the HRSNOC held a public meeting to present various safety related issues to the general public. We presented several issues affecting navigational safety and polled public attendees so that we could rank the issues by importance to the public. The Hudson River anchorage issue ranked first on the list.

As with both PAWSA workshops, the Hudson River anchorage issue loomed over our meetings because of the widespread controversy over the 2016 ANPRM anchorage proposal. The HRSNOC first began to address the anchorage topic as it relates to the development of submarine cable and pipeline infrastructure within the Hudson River. In 2020, the HRSNOC Steering Committee drafted and adopted a resolution to advise regulatory agencies with jurisdiction over the placement of river-bottom cables and pipelines on or under the bed of the Hudson River of the committee's deep concerns that these structures only be permitted if they do not interfere with the ability of commercial vessels to anchor in the Hudson River.

Throughout the spring of 2021 the committee held a series of meetings in order to provide a response to the Congressionally mandated provision directing the Coast

Guard, in consultation with the HRSNOC, to conduct an anchorage study of the Hudson River north of Tarrytown, New York.

STUDY SCOPE

The study specifically addresses three points:

(1) The nature of vessel traffic including vessel types, sizes, cargoes, and frequency of transits.
(2) The risks and benefits of historic practices for commercial vessels anchoring.
(3) The risks and benefits of establishing anchorage grounds on the Hudson River.

The HRSNOC began by seeking input from all of our voting members to address the points of the study. We have compiled and included this qualitative and quantitative data as reference for this study. Additionally, data was compiled from the Sector New York USCG Vessel Traffic System (VTS) to ascertain the number of commercial vessels that check out of the VTS system northbound in the Hudson River. Data from the Hudson River Pilot's Association shows the number of ocean-going ships transiting the Hudson River over the last several years and the number of those vessels that anchor in the Hudson River. The transit data is contained in the Commercial Anchorage Research Working Group report.

Two working groups were formed to address the specific benefits, risks, potential locations and guidelines of Hudson River anchorages. One working group was headed by the tug & barge industry representative committee member and included a Hudson River Pilot. The other working group, the Risk Working Group, was headed by the marine environmentalist committee member. Representatives from Coast Guard Sector New York and the U.S. Army Corps of Engineers were available to these working groups in order to answer any policy or technical questions. These working groups were encouraged to also identify measures that may serve to mitigate some of the need for commercial vessels to anchor in the Hudson River.

Working groups were formed at our April 29, 2021 HRSNOC meeting. The working groups were tasked with providing relevant reports and recommendations to the steering committee. These working groups were approved by the HRSNOC without dissent. Working group reports were due for presentation to the HRSNOC steering committee at our May 26, 2021 meeting for discussion and committee input.

The Commercial Anchorage Research Working Group presented the attached report at the May 26, 2021 meeting. The Risk Working Group requested that the 2017 Hudson River PAWSA report be considered their report.

For the June 17, 2021 meeting the Risk Working Group provided an additional working group report. This additional report was three weeks late but still considered by the committee. The committee asked that the Risk working group revise the report for relevancy and resubmit. Ultimately, on June 28, 2021, the committee voted to reject the second working group report of the Risk working group because of lack of relevancy.

Working Group Members

Commercial Anchorage Research Working Group
Eric Johansson (Chair) - Tug & Barge Industry Representative
Paul Chevalier - Hudson River Pilots

Risk Working Group
John Lipscomb (Chair) - Riverkeeper
Jen Benson - Riverkeeper

WORKING GROUP FINDINGS

The Commercial Anchorage Research Working Group headed by the tug & barge industry representative committee member, which also included a Hudson River Pilot, was tasked with identifying the benefits and best locations for additional Hudson River anchorages. This working group submitted a comprehensive report (see attached). Included in this report is commercial vessel movement data, comparisons to other inland waterways' anchorage capacity and detailed analysis of customary anchorage areas within the Hudson River. The working group determined that the current available designated anchorage capacity is inadequate and therefore creates unnecessary risk. This report identifies four historic anchorage areas on the Hudson River that the working finds most suitable to be designated as official anchorages. The report also identifies measures that could serve to mitigate some of the need for commercial vessels to anchor on the Hudson River. This working group collaborated with the HRSNOC recreational boating representative and HRSNOC human powered boating representative.

The Risk Working Group headed by the marine environmentalist committee member was tasked with identifying the risks associated with establishing anchorage grounds on the Hudson River. This working group requested that the 2017 Hudson River Ports and Waterways Safety Assessment (PAWSA) workshop report prepared by the U.S. Coast Guard be considered as its report. The PAWSA report is included in full with this report.

CONCLUSIONS

The Hudson River connects inland New York State ports and terminals to NY/NJ harbor and the world beyond. By the year 2025 the worldwide demand for maritime commerce is expected to double from 2018 levels.[1] In addition to the predictions for maritime commerce levels to drastically increase, energy demands are signaling change for the future of the Hudson River. The move to create offshore wind farms in coastal waters of the northeastern United States will have an impact on Hudson River vessel traffic levels as ports along the river will play a role in this industry. The Port of Albany was recently selected to be the nation's first offshore wind turbine tower and transition piece manufacturing facility[2].

The future submarine transmission cable projects running much of the length of the Hudson River below Albany will complicate navigation in the years to come as more of the river-bottom becomes off-limits to anchoring due to the placement of cable lines. The Champlain Hudson Power Express (CHPE) project is permitted[3] while the Catskills Renewable Connector project has began surveying the Hudson River for its proposed project[4].

Much has changed since the 2017 PAWSA. The HRSNOC has had representatives from the CHPE project and the Equinor offshore wind project give presentations to the HRSNOC steering committee as both of these projects will have an impact on navigation on the Hudson River. These new competing energy project interests on the Hudson River and the forecasted increase in demand for maritime commerce must be accounted for as we move forward in anchorage discussions and policy.

Our Commercial working group determined that the current designated anchorage capacity on the Hudson River is insufficient and causes risks to safety of navigation and the effectiveness of the marine transportation system. This working group identified the areas they found most suitable for newly designated anchorages. The working group also cited the U.S. Cybersecurity and Infrastructure Security Agency recommendation that the USCG consider certain areas be reserved for anchoring in extreme events, immediate response and recovery operations.

The DOT has several guiding principles regarding the MTS[5]. Among the most relevant of these guiding principles for this report:

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[1] Maritime Commerce Strategic Outlook, US Coast Guard, 2018

[2] Equinor-Port of Albany Press Release, Equinor 11/12/2020

[3] chpexpress.com

[4] https://www.essgroup.com/news/marine-surveys-catskills-renewable-connector/

[5] US Dept of Transportation (2020) Goals & Objectives for a Stronger Maritime Nation: A Report to Congress, Washington, DC, 17 p.

- A safe, modern, and efficient transportation system is essential to our economic well-being: Well-planned investments in the MTS benefit the Nation's global and domestic trade, economic competitiveness, jobs, mobility, safety, security, and the environment.
- The MTS must be resilient and flexible
- Maritime transportation has the capacity to alleviate future traffic congestion
- MTS participants must be good stewards of the environment

As with other waterways in the United States, the Hudson River supports many activities including personal boating, drinking water, recreational activities and the likelihood of river-bottom energy transmission in the near future. These activities, coupled with the designation of much of the Hudson River as significant aquatic coastal fish & wildlife habitats[6] and the designation of critical habitat for sturgeon[7], results in public interest in policy related to the Hudson River.

"Balancing these competing activities in the maritime domain with those of the MTS is crucial to economic prosperity, marine safety, and navigation. However, as the waterways become more constrained, they inevitably become more politicized."[8]

Moving forward, the proposed siting for newly designated anchorages should be identified by the maritime interests that rely on these anchorage areas. In order to manage this process in the future, the US Coast Guard must have authority to establish these areas on the Hudson River, just as the US Coast Guard has this authority in other waterways in the United States. The safety of navigation and the health, resiliency, and efficiency of the marine transportation system must be preserved and be able to evolve as the use of the Hudson River and river-related activities evolve.

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[6] NY State Department of State Significant Coastal Fish & Wildlife Habitats, https://dos.ny.gov/significant-coastal-fish-wildlife-habitats

[7] 50 USC §226.225 - Critical habitat for the Gulf of Maine, New York Bight, Chesapeake, Carolina, and South Atlantic distinct population segments (DPSs) of Atlantic Sturgeon

[8] Maritime Commerce Strategic Outlook, US Coast Guard, 2018

RECOMMENDATIONS

MITIGATION MEASURES

The steering committee of the HRSNOC voted to support the mitigation measures identified by the Commercial Anchorage Research Working Group on page 26 of the working group report. The HRSNOC encourages the implementation of the following:

- Extending the Vessel Traffic Service System (VTS) from the Port of New York/New Jersey to the Port of Albany.
- Establishing time constraints for proposed and future federally designated Hudson River anchorages not related to emergency, weather or visibility restrictions.
- Requiring sailing vessel races/events, long distance swimming contests, crew/rowing practices & races, as well as large group kayak adventures to check in/out with VTS and to be made aware of expected commercial vessel movements or anchorings.
- Installation of reduced visibility sensors
- Installation of tide/current meters
- Installation of real-time air gap sensors at Cuomo/Tappan Zee Bridge, Poughkeepsie and Castleton Bridges.
- Installation of weather stations (similar to Turkey Point) located in Albany, Castleton, Hudson, Kingston, Poughkeepsie, Newburgh, West Point, Peekskill and Tarrytown.

ANCHORAGES

- Take steps to clarify the regulatory language concerning anchoring on the Hudson River.
- In future regulations, preserve the clause to not prevent the master or pilot of a vessel operating on the Hudson River from taking actions necessary to maintain the safety of the vessel or to prevent the loss of life or property[9].
- Continue to empower the US Coast Guard to define and establish anchorage grounds for vessels in the Hudson River whenever it is manifest to the US Coast Guard that maritime or commercial interests of the United States require such anchorage grounds for safe navigation[10].

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[9] Elijah E. Cummings Coast Guard Authorization Act of 2020, H.R. 6395 *section* 8437 - *subsection* (c) SAVINGS CLAUSE

[10] 33 USC §471 - Establishment by Secretary of Homeland Security of anchorage grounds and regulations generally

Hudson River Safety, Navigation & Operations Committee
6/21/21

Steering Committee Member Organizations (Voting Members)

- Tug & Barge Industry - Eric Johansson, TBHCA
- State Pilots - Ian Corcoran, HRPA
- Shipping Agents - Frank Stiffen, J. Curran & Co
- Albany Port District Commission - Rich Hendrick
- Recreational Boaters - Scott Croft, BoatUS & HRBYCA
- OSRO - Mark Pacicca, Miller Environmental
- Human Powered Boaters - Scott Keller
- Terminal Operators - Larry Justice, HRMIA
- Marine Environmentalists - John Lipscomb, Riverkeeper
- Riverfront Community Group - Randy Alstadt, Hudson 7

Steering Committee Government Agency Members

- USCG
- USACE
- NOAA
- NYSDEC
- NYS Parks
- NYSDOS
- MARAD
- NYS Police
- NYS Canal Corp
- NYSDOT
- NYSERDA

HUDSON RIVER SAFETY, NAVIGATION & OPERATIONS STEERING COMMITTEE

RESOLUTION

WHEREAS the Hudson River Safety, Navigation and Operations Committee has concluded that commercial vessels must be able to safely anchor in the Hudson River as may on occasion be required;

WHEREAS certain entities have applied to various regulatory agencies for permits to place structures such as cables and/or pipelines on or below the bed of the Hudson River in areas which may create a hazard to safe navigation by impeding a commercial vessel in its ability to safely anchor when required; now therefore, be it

RESOLVED, that the Hudson River Safety, Navigation and Operations Committee shall advise the regulatory agencies having jurisdiction over permitting the placement of structures such as cables and pipelines on or under the bed of the Hudson River of its deep concerns that the placement of structures of any type only be permitted in a way that will insure the ability of commercial vessels to anchor in the Hudson River in a manner that will ensure the safety of the vessel, crew, cargo, other vessels and local communities.

HRSNOC STEERING COMMITTEE BENEFIT/RISK MEMBER INPUT

(1) *The nature of vessel traffic including vessel types, sizes, cargoes, and frequency of transit*

Vessel Types:
Bulk Carrier Ships
Tanker Ships
General Cargo Sips
Heavy Lift Ships
Articulated Tug & Barges
Traditional Tug & Barges
Yachts
Recreational Vessels

Approximate Vessel Sizes:
Bulk Carrier: length 656’ breadth 106’
General Cargo/Heavy Lift: length 450’ breadth 80’
Tanker: length 600’ breadth 106’
Articulated Tug/Barge Units w/ Tank Barges: up to 600’ length breadth 80’
Traditional Tug/Barge Units: Liquid, Dry Bulk & Deck Barges - Towing, pushing and alongside
Ships: up to 750’ in length
Yachts: typically over 150’ length

Vessel Cargoes:
Aggregate, sand/stone
Rock Salt
Cement
Clinker Cement
Scrap Iron
Gypsum
Bauxite
Grain
Slag
Mill Scale
Gasoline
Jet Fuel
Diesel
Heating Oil
Asphalt
Ethanol
Calcium Chloride
Magnesium Chloride
Urea
Molasses
General Cargo (Wood. Pulp, Steel, Lumber, Paper)
Heavy Lift (Generators, Steam Turbines)
Project Cargo (Wind Turbine Parts, Bridge Parts, Rail Cars)
Recyclables

Vessel Frequency:
(1) Cont'd

State Pilots:
- Average 260 ship transits/year

Tug & Barge Operators:
- Average 4500 transits/year

(2) The *risks and benefits of historic practices for commercial vessels anchoring:*

State Pilots:

Risks:
- Ambiguous language in regulatory framework causes confusion and the likelihood of poor decision-making, thereby increasing risk to safety and the environment.
- When too many vessels want to anchor in the limited available designated anchorage space.
- The uncertainty of knowing if the limited designated anchorage area is occupied.
- Lack of designated anchorage areas, historic areas are not designated

Benefits:
- Allows vessels to await berth availability
- Waiting for berth within fifty-five miles of the berth encourages efficiency in the marine transportation system and related supply lines
- Designated anchorages establish areas where cables & pipelines may not interfere with anchors
- Gives large vessels a place to await tide, daylight & visibility. North of Kingston there are no appropriate areas for a large vessel to plan to anchor.

Tug & Barge Operators:

Risks:
- Critical for navigation safety, the compromise of historical anchorage will have a direct negative risk input to navigation safety and critical supply chains.
- Lack of designation of historic anchorage areas fails to protect anchorage areas from intrusion of proposed cable projects.
- Uncertainty of whether historic anchorage area availability when required for safety.
- Confusion regarding status of anchored vessels in historic anchorage areas without designated anchorage.
- Lack of designated anchorage areas leads to uncertainty of other anchored vessels, specifically vessels unfamiliar with the location of safe historic anchorage areas.

Benefits:
- Navigation Safety
- Supply Chain Management
- Safe haven during episodic storms
- Port Ewen/Big Rock area shields units during ice season and is the last safe have anchoring area prior to transiting the narrow north end of the River.
- The port industry of New York and New Jersey accounted for nearly $12 billion in tax revenue, supported our 500,000 jobs and was responsible for $36.1 billion in personal and $99.5 billion in business income in the region in 2019.

(3) *The risks and benefits of establishing anchorage grounds on the Hudson River*

State Pilots:

Benefits:
- Will provide vessels safe areas to anchor close to the berth for efficiency of the marine transportation system, efficiency of related supply lines and keeping local ports and terminals competitive
- Will provide areas for vessels to await improving weather conditions, visibility, favorable tide and daylight
- Will provide options for multiple vessels to anchor in the case of unplanned berth availability or river closure
- Preserve areas customarily used in locations adjacent to narrow areas of the Hudson River such above and below the Hudson Highlands
- Provide vessels with an alternate anchorage in case of congestion at Hyde Park
- Historically used anchorages will be depicted on the nautical chart, enhancing safety of navigation
- Protects needed anchorage areas from future river bottom cables and pipelines
- Gives vessels seeking safe refuge a safe anchorage during extreme weather events
- Eliminates confusion of where vessels may anchor
- Designated anchorage areas will keep vessels from anchoring in areas of river bottom infrastructure (cables, pipelines, municipal water intakes)

Tug & Barge Operators:

Benefits:
- Port Ewen and Big Rock historic anchorages are ideally located to shelter vessels during ice season, staging grounds for ice convoys, and is the last deep water anchorage before Albany.
- Navigation safety
- Mariner safe-haven during episodic storms, vital for safety of crew, vessel and cargo.
- Supply chain resiliency
- Availability of historic anchorages largely responsible for record low pollution events in the Hudson River in the past decades.

Recreational Boaters:

Risks:
- Interference with sailing regattas

Marine Environmentalist:

Risks/Benefits:
- Reflected in PAWSA

Human Powered Boating:

Risks/Benefits:
- Reflected in PAWSA

Vessel Agents:

Benefits:
- Efficiency of marine transportation system

Riverfront Community Group:

Risks:
- Safety of water supply
- Time limit on vessels anchored to prohibit long-term storage

Marine Terminal Operators:

Benefits:
- Efficient transport of products
- Vessels need safe anchorage areas
- Leave areas to designate to experts

All

Nature of V

Hudson River

201

Stat

Tonnages moved by

Vessel
miles south of

2020

Basic

Types of anchors used by vessels on the Hudson River

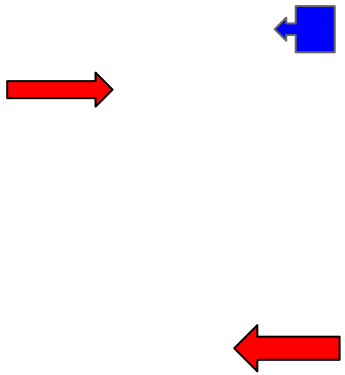
Stockless

- Most common on commercial

Chartlet Report Key:

Anchorage area or historical spot used by commercial vessel to anchor:

N



Historical

-

Ex

1. Long Island Sound - 7

4. Chesapeake Bay - No code or law to prevent vessels from anchoring

o Baltimore - 9

Risk and Benefits of establishing anchorage grounds on the Hudson River

- Historical anchorage locations have been utilized by professional mariners without opposition for centuries to mitigate

Risk and Benefits of establishing anchorage grounds on the Hudson River

- The major risk to all anchorages is subsea obstructions. New applications of cable routes are intending to be laid in the

Benefit with Historical

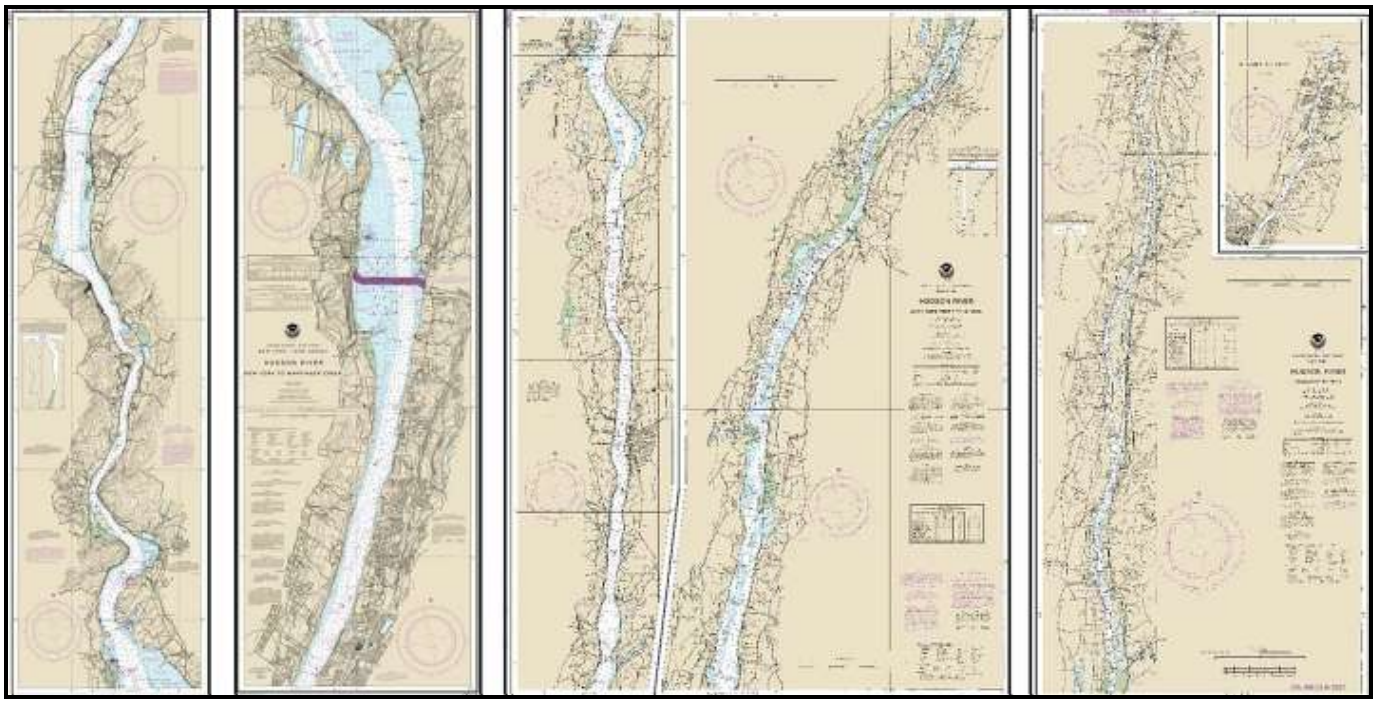
K

Items which could assist Hudson River commercial traf
designated anchorages:

Ports and Waterways Safety Assessment

Workshop Report

Hudson River, New York



United States Coast Guard
Marine Transportation Systems Directorate

Providing Navigation Safety Information
for America's Waterways Users

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Background and Purpose

The United States Coast Guard (USCG), Marine Transportation System Directorate, is responsible for developing and implementing policies and procedures that facilitate commerce, improve safety and efficiency, and inspire dialogue with port and waterways users with the goal of making waterways as safe, efficient, and commercially viable as possible.

Through the 1997 Coast Guard Appropriations Act, the Coast Guard was directed to establish a process to identify minimum user requirements for new Vessel Traffic Service (VTS) systems in consultation with local officials, waterways users and port authorities, and also to review private / public partnership opportunities in VTS operations. The Coast Guard convened a National Dialogue Group (NDG) comprised of maritime and waterway community stakeholders to identify the needs of waterway users with respect to Vessel Traffic Management (VTM) and VTS systems. The NDG was intended to provide the foundation for the development of an approach to VTM that would meet the shared government, industry, and public objective of ensuring the safety of vessel traffic in U.S. ports and waterways, in a technologically sound and cost effective way.

From the NDG came the development of the ***Ports and Waterways Safety Assessment (PAWSA) Waterways Risk Model,*** and the ***PAWSA workshop process***. PAWSA is a disciplined approach designed to identify major waterway safety hazards, estimate risk levels, evaluate potential mitigation measures, and set the stage for the implementation of selected risk reduction strategies. The process involves convening a select group of waterway users and stakeholders and facilitating a structured workshop agenda to meet the risk assessment objectives. A successful workshop requires the participation of professional waterway users with local expertise in navigation, waterway conditions, and port safety. In addition, stakeholders are included in the process to ensure that important environmental, public safety, and economic consequences are given appropriate attention as risk interventions are identified and evaluated.

The long-term goals of the PAWSA process are to:

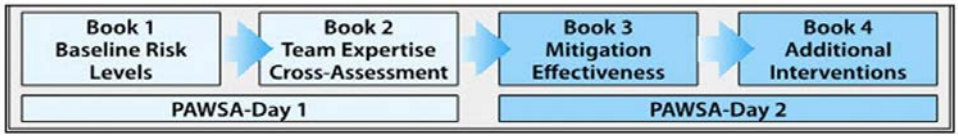
1) Provide input when planning for projects to improve the safety of navigation,
2) Further the Marine Transportation System (MTS) goals of improved coordination and cooperation between government and the private sector, and involving stakeholders in decisions affecting them,
3) Foster development and/or strengthen the roles of Harbor Safety Committees within each port, and
4) Support and reinforce the role of Coast Guard Sector Commanders/Captains of the Port (COTP) in promoting waterway and vessel traffic management activities within their geographic areas of responsibility.

In total, 58 ports/waterways have been assessed using the PAWSA process. The risk assessment process represents a significant part of joint public-private sector planning for mitigating risk in waterways. When applied consistently and uniformly in a number of waterways, the process is expected to provide a basis for making best value decisions for risk mitigation investments, both on the local and national level. The goal is to find solutions that are cost effective and meet the needs of waterway users and stakeholders.

PAWSA Waterway Risk Model and Workshop process

The PAWSA Waterway Risk Model includes variables dealing with both the causes of waterway casualties and their consequences. In the Waterway Risk Model, risk is defined as a function of the probability of a casualty and its consequences. The diagram below shows the six general risk categories, and corresponding risk factors, that make up the Waterway Risk Model.

Waterway Risk Model					
Vessel Conditions	**Traffic Conditions**	**Navigational Conditions**	**Waterway Conditions**	**Immediate Consequences**	**Subsequent Consequences**
Deep Draft Vessel Quality	Volume of Commercial Traffic	Winds	Visibility Impediments	Personnel Injuries	Health and Safety
Shallow Draft Vessel Quality	Volume of Small Craft Traffic	Water Movement	Dimensions	Petroleum Discharge	Environmental
Commercial Fishing Vessel Quality	Traffic Mix	Visibility Restrictions	Bottom Type	Hazardous Materials Release	Aquatic Resources
Small Craft Quality	Congestion	Obstructions	Configuration	Mobility	Economic



- ***Vessel Conditions*** – The quality of vessels and their crews that operate on a waterway.
- ***Traffic Conditions*** – The number of vessels that use a waterway and how they interact with each other.
- ***Navigational Conditions*** – The environmental conditions that vessels must deal with in a waterway.
- ***Waterway Conditions –*** The physical properties of the waterway that affects vessel maneuverability.
- ***Immediate Consequences*** – The instantaneous impacts to the port as a result of a vessel casualty.
- ***Subsequent Consequences*** – The longer-term impacts felt days, months, and even years afterwards.

Workshop activities include a series of discussions about the port/waterway attributes and the vessels that use the waterway, followed by completion of work books to establish baseline risk levels, evaluate the effectiveness of existing risk mitigations, and identify additional risk intervention strategies to further reduce risk in the port / waterway. Work book 1 is used to numerically evaluate the baseline risk levels using pre-defined qualitative risk descriptions for pre-defined risk factors. Work book 2 is used to assess the expertise of each other with respect to the risk categories in the model. Those expertise assessments are used to weight inputs obtained during the other steps in the workshop process. Work book 3 is used to evaluate how effective the mitigation strategies are at reducing risks, and to determine if the risks are well balanced or not. For those risk factors where risk is judged to be not well balanced by existing mitigations, participants use work book 4 to identify additional risk intervention strategies and then evaluate how effective those new strategies could be at reducing risks.

Hudson River PAWSA Workshops

PAWSA workshops to assess navigation safety on the Hudson River were held in Poughkeepsie, New York on 7-8 November 2017 and in Albany, New York on 15-16 November, 2017. The purpose was to bring waterway users, stakeholders and members of the Hudson River community together for collaborative discussions regarding the quality of vessels and crews that operate on the waterway; the volume of commercial, non-commercial and recreational small craft vessel traffic using the waterway, and the ability of the waterway to handle current and future increases in traffic volume levels.

The goal of the Hudson River PAWSA workshops was to foster improved coordination and cooperation among government and private sector stakeholders, provide waterway community members with an effective tool to evaluate risks to safe navigation, and begin work toward long term solutions tailored to local circumstances.

The sponsor of the Hudson River PAWSA workshops was Rear Admiral Steven Poulin, Commander of the First Coast Guard District. Admiral Poulin conducted a press conference before each workshop explaining his reasons for sponsoring the workshops, which included a record number of comments the Coast Guard received in response to its 2016 Advanced Notice of Proposed Rulemaking (ANPRM) seeking public input on a proposed rule on new anchorage grounds on the Hudson River. Admiral Poulin described the Hudson River as a national treasure, and he intended for the PAWSA process to provide the Coast Guard with a better understanding of the risks on the waterway and what measures may be implemented to address those risks.

Admiral Poulin opened the workshop proceedings by welcoming participants and observers, explaining the Coast Guard's commitment to process transparency, to help identify risks on the river and what current and potential mitigations may reduce risks, and to work collaboratively with all stakeholders to find the best solutions possible to protect the Hudson River and vessels operating on it. He emphasized the PAWSA process was not a substitute for rulemaking, rather it would better inform the Coast Guard to understand the risks and determine what the next steps might be at reducing those risks.

Over the two day workshops, participants discussed and then numerically evaluated each of the 24 risk factors in the PAWSA model. Baseline risk levels were first evaluated using pre-defined qualitative risk descriptions for each risk factor. Participants then discussed existing risk mitigation strategies, evaluated how effective the mitigation strategies were at reducing risk, and then determined if the risks were well balanced. For those risk factors not balanced by existing mitigation, the participants discussed additional risk mitigation strategies and evaluated how effective they would be at reducing risks if implemented.

The results of the baseline risk levels, existing risk mitigations, additional risk intervention strategies, and participant comments and observations are outlined in this report. Nautical charts of the Hudson River were displayed for reference, and to annotate geographic locations associated with participant comments and observations.

Conclusion

The goals of a PAWSA workshop are to further the Marine Transportation System objective of improved coordination and cooperation between government and the private sector, and to involve stakeholders in decisions affecting them. A PAWSA also provides the Coast Guard and members of the waterway community with an effective tool to evaluate risk and work toward long term solutions tailored to local circumstances that are both cost effective and meet the needs of waterway users and stakeholders. In support of this goal, this report should be viewed as a starting point for continuing dialogue within the Hudson River maritime community.

As discussed in the report, two separate workshops were held in Poughkeepsie and Albany, NY. Over each two day workshop, participants discussed, and then numerically evaluated, each of the 24 PAWSA model risk factors, considered impacts of current mitigations, and proposed additional mitigations to reevaluate potential impacts on the highest remaining risk categories. After workshop participants considered existing risks and mitigations, the highest areas of concern (and scores) included:

- Small Craft Quality (8.5);
- Petroleum Discharge (8.0);
- Economic (7.6);
- Obstructions (7.1);
- Aquatic Resources (6.9); and
- Visibility Restrictions (6.6).

Some of the most commonly recommended additional participant proposals included: creating a Hudson River Safety Committee (HRSC); increasing boating safety education (training, brochures, licensing); providing greater anchorage regulation clarity (creating new anchorage grounds w/ time limits, implementing Regulated Navigation Areas (RNA) to ban anchoring); improving real-time information dissemination (bridge cameras accessibility, VHF radio use/ carriage requirements, Automatic Identification System (AIS) blind spots/ gaps); increasing enforcement; and improving emergency spill response (increasing capabilities, identifying sensitive areas, increasing federal agencies on-river presence, prohibiting oil barges from laying at anchor). Though reduced by the additional potential mitigations discussed by participants, the final remaining significant risk factors (and new scores) were:

- Small Craft Quality (6.3 from 8.5);
- Petroleum Discharge (6.5 from 8.0);
- Economic (7.1 from 7.6); and
- Aquatic Resources (6.0 from 6.9).

Besides our continuing effort to support the stand-up of the HRSC the Coast Guard has not yet made any decisions regarding establishing anchorages or using other waterways management tools to manage navigation risk on the Hudson River. The Coast Guard will use this PAWSA report, together with other information, to determine whether, and to what extent, regulatory actions are needed.

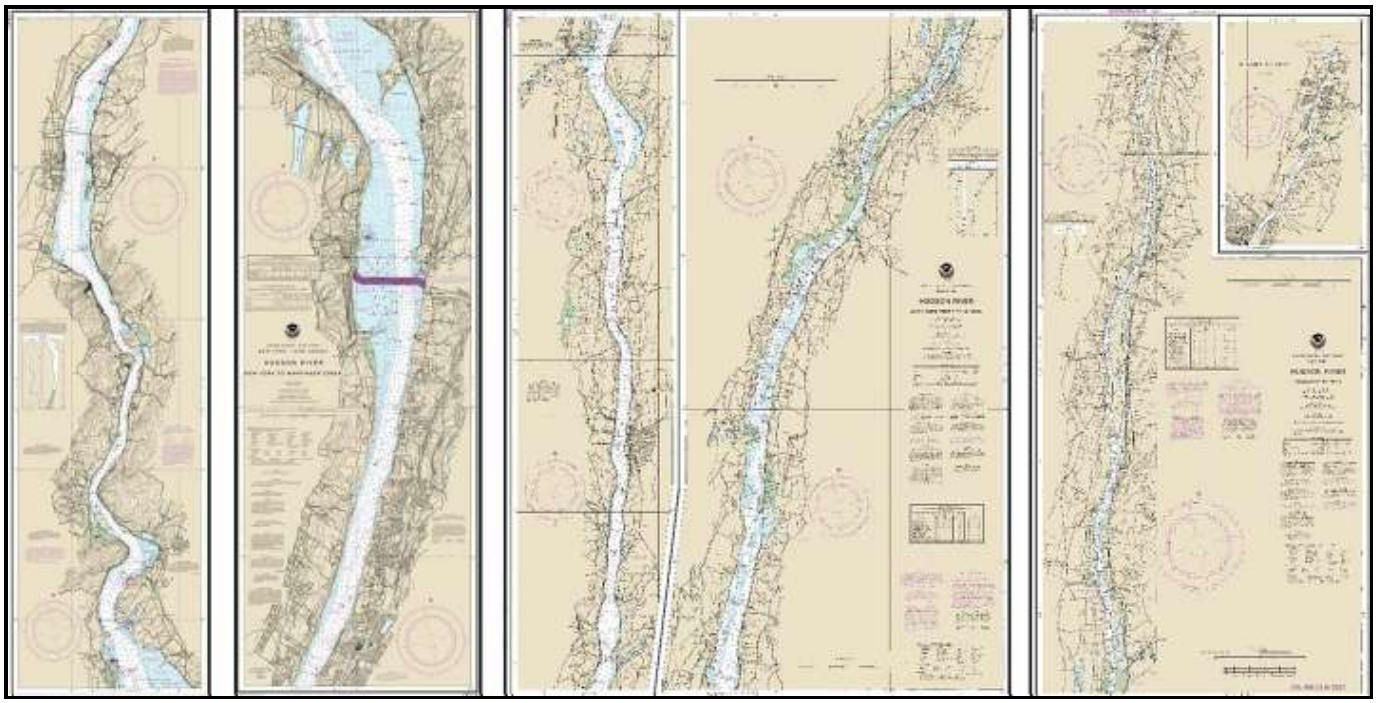
During the PAWSA workshops we acknowledged that the existing anchorage regulations are unclear, and we are considering how those regulations could be made more readily understood. We have no outcome timelines at this time. Any other substantive rulemaking effort associated with the Hudson River will follow Coast Guard public notice and comment rulemaking procedures to allow for public participation in the process.

The United States Coast Guard, Marine Transportation System Management Directorate, extends a sincere appreciation to the workshop participants for their contributions to the Hudson River PAWSA workshops. Their expertise was critical to the success of the workshop, and their recommendations will greatly assist the Coast Guard as it continues to work with Hudson stakeholders and the State of New York to further improve safety and efficiency for the Hudson River.

Section 1: Hudson River PAWSA - Assessment Area

The assessment area for both workshop included all waters of the Hudson River north of the Tappen Zee Bridge to Albany, New York.

Nautical charts referenced and displayed were 12343, 12347 and 12348.



Section 2: Baseline Risk Levels

The first step in the Hudson River PAWSA workshop was to complete PAWSA book 1 to determine a baseline risk level value for each risk factor in the Waterway Risk Model. To establish the baseline risks level, participants discussed as a large group each of 24 applicable risk factors in the Waterways Risk Mode, then each of the 15 teams of 2-3 selected a qualitative description for each risk factor that best described the conditions in the assessment area. These qualitative descriptions were converted to discrete values using numerical scales that were developed during earlier PAWSA workshops.

On those scales, 1.0 represents low risk (best case) and 9.0 represents high risk (worst case), with 5.0 being the mid-risk value. Risk values highlighted in red (values at or above 7.7) denote very high baseline risk levels; risk values highlighted in green (values at or below 2.3) denote very low baseline risk levels. Figure 3 below shows that the baseline risk level values for both workshops.

Baseline Risk Levels

Vessel Conditions	Traffic Conditions	Navigational Conditions	Waterway Conditions	Immediate Consequences	Subsequent Consequences
Deep Draft Vessel Quality	Volume of Commercial Traffic	Winds	Visibility Impediments	Personnel Injuries	Health and Safety
2.8	3.2	1.8	7.9	7.4	8.1
Shallow Draft Vessel Quality	Volume of Small Craft Traffic	Water Movement	Dimensions	Petroleum Discharge	Environmental
2.7	5.4	3.7	6.7	6.3	8.2
Commercial Fishing Vessel Quality	Traffic Mix	Visibility Restrictions	Bottom Type	Hazardous Materials Release	Aquatic Resources
3.0	6.4	4.3	5.5	5.8	7.1
Small Craft Quality	Congestion	Obstructions	Configuration	Mobility	Economic
8.4	5.5	7.1	6.4	8.0	6.8

Poughkeepsie

Baseline Risk Levels

Vessel Conditions	Traffic Conditions	Navigational Conditions	Waterway Conditions	Immediate Consequences	Subsequent Consequences
Deep Draft Vessel Quality	Volume of Commercial Traffic	Winds	Visibility Impediments	Personnel Injuries	Health and Safety
2.33	4.8	2.5	8.4	7.6	9.0
Shallow Draft Vessel Quality	Volume of Small Craft Traffic	Water Movement	Dimensions	Petroleum Discharge	Environmental
2.7	5.3	5.2	7.4	9.0	7.9
Commercial Fishing Vessel Quality	Traffic Mix	Visibility Restrictions	Bottom Type	Hazardous Materials Release	Aquatic Resources
5.6	5.5	5.0	6.0	9.0	5.6
Small Craft Quality	Congestion	Obstructions	Configuration	Mobility	Economic
8.0	5.3	5.4	9.0	9.0	7.8

Albany

Section 3: Team Expertise Cross-assessment

The second step in the Hudson River PAWSA workshops was completing a team expertise cross-assessment for all 15 teams. While every PAWSA workshop participant brought significant expertise and perspective strengths, the team expertise cross-assessment was used to weigh the relative strengths of each team with respect to the six overall risk categories. The results of the cross-assessments were then used to weight the inputs that each team provided in the other workbooks completed during the workshop.

After being presented with the concepts underlying the model, each participant team was asked to discuss how their background and experience aligned with the model. They then presented their self-assessment to the other teams to help all teams understand one another's varying degrees of expertise strength. After all teams spoke, each of the other 14 teams then evaluated whether the presenting team was in the top, middle, or lower third of all teams present with respect to knowledge and expertise in the six risk category areas.

Through this process, participants assessed their own and all the other participant teams' level of expertise for all six categories in the Waterway Risk Model. The table below breaks down the participants' expertise assessments for each risk category.

Team Expertise -- Distribution

Risk Category	Top 1/3	Mid 1/3	Lower 1/3
Vessel Conditions	39%	36%	26%
Traffic Conditions	56%	19%	25%
Navigational Conditions	56%	32%	12%
Waterway Conditions	31%	54%	15%
Immediate Consequences	42%	48%	10%
Subsequent Consequences	47%	40%	13%
All Categories Average	45%	38%	17%

Poughkeepsie

Team Expertise -- Distribution

Risk Category	Top 1/3	Mid 1/3	Lower 1/3
Vessel Conditions	39%	32%	30%
Traffic Conditions	44%	40%	16%
Navigational Conditions	45%	38%	17%
Waterway Conditions	34%	56%	10%
Immediate Consequences	54%	32%	14%
Subsequent Consequences	42%	26%	32%
All Categories Average	43%	37%	20%

Albany

Section 4: Existing Risk Mitigations

The third step in the Hudson River PAWSA workshop had participants evaluate the effectiveness of existing mitigation strategies in reducing the risk level for each risk factor. Participants discussed existing risk mitigations for all risk factors in the model, and then evaluated how effectively they thought the mitigations reduced risk. Some key points include:

- Risk factors shown in green there was consensus that risks were well balanced by existing mitigations.
- Risk factors shown in red there was consensus that risks were not balanced by existing mitigations.
- Risk factors shown in yellow there was no consensus that risks were balanced by existing mitigations.
- Consensus is defined as 2/3 of the workshop participant teams in agreement.

Mitigation Effectiveness

Vessel Conditions		Traffic Conditions		Navigational Conditions		Waterway Conditions		Immediate Consequences		Subsequent Consequences	
Deep Draft Vessel Quality		Volume of Commercial Traffic		Winds		Visibility Impediments		Personnel Injuries		Health and Safety	
2.8	2.5	3.2	3.3	1.8	1.7	7.9	6.5	7.4	6.3	8.1	7.2
Balanced		Rising		Balanced		Balanced		Balanced		Maybe	
Shallow Draft Vessel Quality		Volume of Small Craft Traffic		Water Movement		Dimensions		Petroleum Discharge		Environmental	
2.7	2.5	5.4	6.5	3.7	4.2	6.7	6.3	6.3	6.6	8.2	7.9
Balanced		Balanced		NO		Balanced		Rising		Maybe	
Commercial Fishing Vessel Quality		Traffic Mix		Visibility Restrictions		Bottom Type		Hazardous Materials Release		Aquatic Resources	
3.0	2.5	8.4	7.1	4.3	5.4	5.5	5.2	5.8	5.8	7.1	6.9
Balanced		NO		Rising		Balanced		Maybe		Maybe	
Small Craft Quality		Congestion		Obstructions		Configuration		Mobility		Economic	
8.4	8.5	5.5	6.7	7.10	7.12	6.4	6.2	8.0	7.4	6.8	7.5
NO		NO		Rising		Balanced		Balanced		Rising	

Poughkeepsie

Mitigation Effectiveness

Vessel Conditions		Traffic Conditions		Navigational Conditions		Waterway Conditions		Immediate Consequences		Subsequent Consequences	
Deep Draft Vessel Quality		Volume of Commercial Traffic		Winds		Visibility Impediments		Personnel Injuries		Health and Safety	
2.3	1.9	4.8	4.6	2.5	2.4	8.4	6.6	7.6	6.5	9.0	7.9
Balanced		Balanced		Balanced		Balanced		Balanced		Balanced	
Shallow Draft Vessel Quality		Volume of Small Craft Traffic		Water Movement		Dimensions		Petroleum Discharge		Environmental	
2.7	2.2	5.3	5.2	5.2	5.3	7.4	6.6	9.0	8.0	7.9	7.6
Balanced		Maybe		Balanced		Balanced		Maybe		Maybe	
Commercial Fishing Vessel Quality		Traffic Mix		Visibility Restrictions		Bottom Type		Hazardous Materials Release		Aquatic Resources	
5.6	4.3	5.5	5.5	5.0	5.0	6.0	5.1	9.0	7.8	5.6	6.2
Balanced		Balanced		Maybe		Balanced		Maybe		Rising	
Small Craft Quality		Congestion		Obstructions		Configuration		Mobility		Economic	
8.0	7.9	5.3	5.3	5.4	5.4	9.0	7.2	9.0	7.3	7.8	7.6
NO		Balanced		Balanced		Balanced		Balanced		Maybe	

Albany

Risk Factor	
Book 1 Score	Book 2 Score
Consensus Reached?	

	EXPLANATION
Book 1 Score	Level of risk - not taking into account existing mitigations
Book 3 Score	Level of risk - taking into account existing mitigations
Balanced	Consensus that risks are well balanced by existing mitigations
Maybe	No consensus that risks are well balanced by existing mitigations
Rising / NO	Consensus that existing mitigations DO NOT adequately balance risk

Section 5: Additional Risk Intervention Strategies

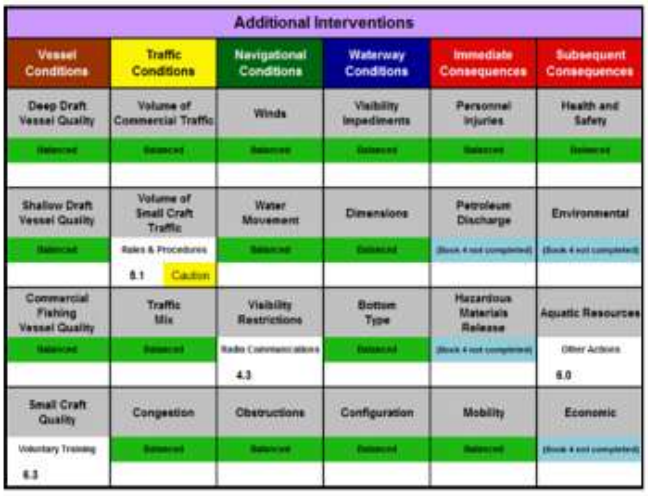
The last step in the workshop process was to complete book 4 by exploring potential additional mitigation strategies. Participants suggested additional risk interventions to further reduce risk, and then evaluated how successfully a proposed strategy could be at lowering risk levels.

For the Poughkeepsie workshop, additional mitigation strategies were discussed for those risk factors where there was consensus that risks were not adequately balanced by existing mitigations (Rising/No from the previous page), with the exception of the Volume of Commercial Traffic risk factor. Due to workshop time limitations and the relatively low mitigated risk level of 3.3, book 4 was not completed for this risk factor.

For the Albany workshop, like the Poughkeepsie workshop, additional mitigation strategies were discussed for those risk factors where there was consensus that risks were not adequately balanced by existing mitigations (Rising/No from the previous page). In addition, time remained to also complete book 4 for the Volume of Small Craft Traffic and the Visibility Restrictions risk factors.

The table below shows the new level of risk if taking the actions recommended by the participants.

Additional Interventions					
Vessel Conditions	Traffic Conditions	Navigational Conditions	Waterway Conditions	Immediate Consequences	Subsequent Consequences
Deep Draft Vessel Quality	Volume of Commercial Traffic	Winds	Visibility Impediments	Personnel Injuries	Health and Safety
Balanced	(Book 4 not completed)	Balanced	Balanced	Balanced	(Book 4 not completed)
Shallow Draft Vessel Quality	Volume of Small Craft Traffic	Water Movement	Dimensions	Petroleum Discharge	Environmental
Balanced	Balanced	Nav / Hydro Info	Balanced	Coordination / Planning	(Book 4 not completed)
		4.0		6.5	
Commercial Fishing Vessel Quality	Traffic Mix	Visibility Restrictions	Bottom Type	Hazardous Materials Release	Aquatic Resources
Balanced	Coordination / Planning	Nav / Hydro Info	Balanced	(Book 4 not completed)	(Book 4 not completed)
	6.7	8.1 Caution			
Small Craft Quality	Congestion	Obstructions	Configuration	Mobility	Economic
Coordination / Planning	Coordination / Planning	Nav / Hydro Info	Balanced	Balanced	Coordination / Planning
5.5	8.1 Caution	7.0 Caution			7.1



Additional Interventions					
Vessel Conditions	Traffic Conditions	Navigational Conditions	Waterway Conditions	Immediate Consequences	Subsequent Consequences
Deep Draft Vessel Quality	Volume of Commercial Traffic	Winds	Visibility Impediments	Personnel Injuries	Health and Safety
Balanced	Balanced	Balanced	Balanced	Balanced	Balanced
Shallow Draft Vessel Quality	Volume of Small Craft Traffic	Water Movement	Dimensions	Petroleum Discharge	Environmental
Balanced	Rules & Procedures	Balanced	Balanced	(Book 4 not completed)	(Book 4 not completed)
	8.1 Caution				
Commercial Fishing Vessel Quality	Traffic Mix	Visibility Restrictions	Bottom Type	Hazardous Materials Release	Aquatic Resources
Balanced	Balanced	Radio Communications	Balanced	(Book 4 not completed)	Other Actions
		4.3			6.0
Small Craft Quality	Congestion	Obstructions	Configuration	Mobility	Economic
Voluntary Training	Balanced	Balanced	Balanced	Balanced	(Book 4 not completed)
6.3					

Poughkeepsie

Albany

Risk Factor	
Intervention Category	
Risk Improvement	

	EXPLANATION
Intervention Category	Intervention category that most participants selected to further reduce risks
Risk Improvement	The expected level of risk that would be obtained if new mitigations measures were implemented
CAUTION - NO CENSUS ALERT	When Caution is displayed, an intervention strategy other than the one displayed was judged to provide more risk reduction that the one displayed. This is an indicator that the teams were divided in their opinions about what actions should be taken to further reduce risks for that factor. It indicates there is possibility more than "one" best mitigation measure to achieve further risk reduction.

Appendix A

Poughkeepsie Workshop – Participants

Randy Alstadt	Water Plant Administrator, Poughkeepsie
Frank Bergman	Hudson River Boat and Yacht Club Association, Inc.
John Bowie	The Vane Brothers Company
Joshua Buck	U.S. Coast Guard, Sector NY
Karen Caldwell	Pace University
Paul Chevalier	Hudson River Pilots
Tracey Corbitt	Westchester County Planning
Frank Csulak	NOAA, Office of Response and Restoration
Charles Cushing	Hudson River Waterfront Alliance
Roger Downs	Sierra Club Atlantic Chapter
Jerry Faiella	Historic Hudson River Towns
Ray Fusco	Paddle Sports
Chris Gardella	Tilcon Stone Quarry
Robert Haan	Dutchess County Medical Reserve Corps
Joe Hayes	Recreational Boater
Randall Hintz	U.S. Army Corps of Engineers, New York District
Scott Ireland	Hudson River Pilots
Eric Johansson	Tug and Barge Committee of New York/New Jersey
Scott Keller	Hudson River Valley National Heritage Area
Gregg Kenney	New York State, Department of Environmental Conservation
Steve Kress	McAllister Towing
Daniel Lemons	Village of Hastings-on-Hudson
John Lipscomb	Riverkeeper, Inc.
Joseph Long	Mohawk-Hudson Council of Yacht Clubs
John Madsen	University of Delaware
Jay Moritz	U.S. Coast Guard, Sector NY
Ian Mulcahy	U.S. Coast Guard Cutter KATHERINE WALKER
Mark Pacicca	Miller Environmental Group
James Quinn	New York State, Department of Environmental Conservation
Jay H. Reichgott	Reichgott Engineering, LLC

Stephan Ryba	U.S. Army Corps of Engineers, New York District
George Samalot	Samalot Marine
Michael St. Jeanos	New York State, Department of Environmental Conservation Police Dept.
Richard Stefanski	New York State, Office of Parks, Recreation and Historic Preservation
Ned Sullivan	Scenic Hudson, Inc.
David Vejar	NOAA Office of Coast Survey
Adam Whaley	U.S. Coast Guard, Aids to Navigation Team Saugerties NY
Deborah Wick	National Response Corporation
Stephanie Wojtowicz	New York Secretary of State Office
Sam Zapadinsky	Hudson River Pilots

Poughkeepsie Workshop - Observers

Allison Biasotti	Senator Chuck Schumer Office
Carolyn Blackwood	Resident, Rhinecliff, NY
Hayley Carlock	Scenic Hudson, Inc.
Erin Doran	Riverkeeper, Inc.
Margaret Doyle	Student, Pace University
Kathy Fallon	Congressman Mike Faso (NY-19) Office
Audrey Friedrichsen	Scenic Hudson, Inc.
Ann Gallelli	Trustee in the Village of Croton-on-Hudson
Harold Leath	Congressman Sean Maloney (NY-18) Office
Ed Leblanc	U.S. Coast Guard, Sector South Eastern New England
Ryan LeRoy	Miller Environmental Group
Althea Mullarkey	Scenic Hudson, Inc.
Shawn Sappington	U.S. Coast Guard, Aids to Navigation Team Saugerties NY
Christina Thomas	Student, Pace University
Brian Vahey	The American Waterways Operators
Christopher Whitson	Assemblyman Frank Skartados (104th District) Office

Albany Workshop – Participants

Alan Bish	Reinauer Transportation Cos., LLC
Collin Bryant	Coeymans Marine Towing
John Burgman	Albany Yacht Club
Haley Carlock	Scenic Hudson, Inc.
Ian Corcoran	Hudson River Pilots
Scott Croft	BoatUS
John Cronin	Pace University
Jay Dahleiden	Kirby Offshore Marine
Stephen Doherty	Hudson River Pilots
Dagmar Etkin	Environmental Research Consulting
Mark Foley	Constitution Federal Pilots
Dewayne Fox	Delaware State University
Matt Franklin	New York State, Department of Environmental Conservation Police Dept.
Robert Friedman	Natural Resources Defense Council
Charles Furman	Global Companies
Amy Gitchell	U.S. Army Corps of Engineers
Rob Goldman	New York State Marine Highway Transportation Co., LLC
Manna Jo Greene	Hudson River Sloop Clearwater
Greg Hitchen	U.S. Coast Guard, Sector NY
Justin Kaczynksi	U.S. Coast Guard Cutter WIRE
Scott Keller	Hudson River Valley Greenway
Ed Kelly	New York/New Jersey Maritime Association
John Lipscomb	Riverkeeper, Inc.
Wayne Lopez	Columbia County Sheriff
Matthew Maraglio	New York Department of State
Hugh McCrory	U.S. Waterways Transportation LLC
Sam Merrett	Hudson Cruises, Inc.
Nancy Nodop	Recreational Boater
Mark Pacicca	Miller Environmental Group
Margaret Phelan	Resident, Port Ewen, New York
James Quinn	New York State, Department of Environmental Conservation

Eric Rivera	U.S. Coast Guard
Allen Rowe	Ulster County Sheriff
Richard Slingerland	Hudson River Waterfront Alliance
Richard Stefanski	New York State, Office of Parks, Recreation and Historic Preservation
Joseph Steyer	Ulster County Sheriff
Nicolette Vaughan	U.S. Coast Guard
Charles Wesley	New York State, Energy Research and Development Authority
Nick Zachos	Resident, Hudson, New York

Albany Workshop – Observers

Jen Benson	Riverkeeper, Inc.
Tim Berguson	Senator Sue Serino (NY-41) Office
Joshua Buck	U.S. Coast Guard
Erin Doran	Riverkeeper, Inc.
Andrew Feron	Hudson River Sloop Clearwater
Amanda Fallon	Senator Terence Murphy (NY-40) Office
Richard Hendrick	Albany Port District Commission
Daniel Hubbard	U.S. Coast Guard
Larry Justice	Hudson River Maritime, Inc.
Bernie Kelly	Global Companies
Ryan McAllister	Congressman John Faso (NY-19) Office
Althea Mullarkey	Scenic Hudson, Inc.
Jeff Parker	Kirby Offshore Marine
Johnathan Schafler	U.S. Coast Guard
Shereen Sheikh	New York State, Office of Parks, Recreation and Historic Preservation
Christopher Whitson	Assemblyman Frank Skartados (NY-104) Office
Bethany Wieczorek	New York State General Services
Kristin Williams	Assemblywoman Didi Barrett (NY-106) Office
Jeff Wright	New York State Bridge Authority
Brian Vahey	The American Waterways Operators

Appendix B

Poughkeepsie Workshop - Participant Comments on Trends in the Port and Existing Risk Mitigations

The participants are the local subject matter experts, and these comments capture their opinions, providing a general sense of the ideas discussed during the workshop. These comments provide various perspectives representing widely different interests.

Deep Draft Vessel Quality:

Trends/Observations:

- Deep draft vessels are generally in great condition, and the pilots, masters and crews are extremely proficient.
- The majority of deep draft vessels coming up the river are well maintained. Crew proficiency can vary from ship to ship, but it is generally "upper shelf".
- Vessel quality has improved, but there is still the risk of an incident due to mechanical failures and human error.
- The majority of deep draft vessels are foreign flagged, but they generally don't increase waterway risk. They have been boarded and piloted by a state-registered Sandy Hook Pilot prior to entering the Hudson River.
- There are good communications between the Sandy Hook pilots and the Hudson River Pilots. If a safety or material condition issue is identified on a vessel, that information is relayed to the Hudson River pilots.
- Foreign-flagged vessels transit the river as far as Albany. Mixed crew nationalities can increase risk. Most of the deep draft vessels are bulk cargo vessels carrying cargo such as salt or iron. These vessels are typically of lower quality when compared to tankers.
- There is a low probability of an incompetent crew or poor quality vessel transiting the Hudson River due to pre-arrival screening, Coast Guard Port State Control (PSC) inspections and internal company vetting programs and procedures.
- Deep draft vessels are responsive on the radio. Pilots are good at communicating with other vessels and letting them know their intentions.

Existing Mitigations:

- All deep draft vessels are vetted and evaluated by the Coast Guard for safety concerns.
- US Coast Guard Port State Control inspections evaluate the condition of the ship, the company's operating history, the classification society, and prior inspection history.
- New York has some of the highest quality pilot training in the country. Pilots have the power to "veto" a transit due to vessel or weather conditions.
- Vessel boardings occur near the Indian Point nuclear power plant and before entering New York Harbor. Problem vessels are identified before entering the confined waters of the Hudson River.
- International Maritime Organization (IMO) International Safety Management Code provides international standards for the safe management and operation of ships and for pollution prevention.

- Ship Inspection Report Program (SIRE) system. SIRE is a tank vessel risk assessment tool that is used by industry to track and document a tank vessel's compliance with safety and inspection requirements.
- The International Convention of Standards of Training, Certification and Watchkeeping (STCW) sets qualification standards for masters, officers and watch personnel on seagoing merchant ships.
- The U.S. Coast Guard issues certificates of inspection and marine credentialing.

Shallow Draft Vessel Quality:

Trends/Observations:

- Tug and barges can be big (approaching deep draft size). They are more cost efficient to operate due to manning requirements.
- Passenger vessels transit the river seasonally. There is a daily commuter ferry between Haverstraw and Ossining. The quality of these passenger vessels is good.
- Tug and barges represent most commercial traffic on the river. All are U.S. manned and built. They are double hulled and twin-screwed. Overall quality is excellent as supported by various inspection and audit programs.
- Barges at anchor usually have bright deck lights illuminated for safety reason. Some residents feel the barges may be displaying too many lights.

Existing Mitigations:

- Stringent safety standards and inspections requirements for tugs, barges and passenger vessels.
- SIRE (Ship Inspection and Reporting) inspections are conducted every 6 months.
- The Oil Company International Marine Forum (OCIMF) Tanker Management Self-Assessment (TMSA) program is used by oil companies to improve their safety management systems.
- USCG Sub-chapter M inspection requirements for towing vessels. Many companies have already begun implementing new safety and environmental standards for towing vessels. (46 CFR Chapter I, Subchapter M – Towing Vessels supersedes the jurisdiction of the Occupational Safety and Health Administration (OHSA) and any state regulations on vessel design, construction, alteration, repair, maintenance, operation, equipping, personnel qualifications and manning. Subchapter M will be phased in over a six-year period for existing vessels. Although the law took effect in July 2016, existing vessels will not be required to meet most of its requirements until July 20, 2018.)
- The Towing Management Safety System (TMSS) has greatly improved operational safety.
- Crews go through extensive training: firefighting, bridge resource management, radar, and navigation training.
- Crews on spill response vessels are trained semi-annually and annually.
- Passenger vessels are inspected annually by the USCG. Inspections include a review of watch standing, crew training, and emergency procedures.
- Anchored vessels are manned at all times in the river.
- Mariners are subject to drug-testing and undergo physical examinations.
- The mindset of mariners and shipping companies has shifted from strictly profit driven to safety driven.
- Double hulled tank barges protect the oil cargo and reduce the probability of a hull breach and oil spill.

Commercial Fishing Vessel Quality:

Trends/Observations:

- Commercial fishing is limited to a small herring fishery on the Hudson. Vessel quality is similar to small craft. Commercial fishing may grow as the river becomes cleaner, but there are no large-scale commercial fishing vessel operations on the Hudson River.

Small Craft Quality:

Trends/Observations:

- There is heavy recreational traffic on the Hudson River, but it is seasonal (April to October).
- Vessel quality varies widely; it's the largest variable and risk. There are lot of small plastic craft that may not be in great repair. Fiberglass paddle craft can be better quality. Sea-going kayaks with cockpit covers are adequate for the Hudson River.
- The power driven recreational vessels are usually older.
- Power boating has diminished or leveled off in recent years, but paddle craft use has exploded. This is especially true between the Tappan Zee Bridge and the Bear Mountain Bridge. Paddle craft users are usually unaware of the best safety practices, and they are not required to take a boating safety course.
- There are boating safety programs available and sometimes required for recreational operators. Until a couple years ago, required boating safety courses included 6 hours of classroom training. A 4-hour, online class is now an alternative to the classroom requirement, which may be less effective than the classroom training.
- Vessels are getting faster (70-80+ mph), and there are various waterfront bars on the river.
- Some recreational boats only have one person onboard. This can increase risk in the case of a vessel casualty.
- Small boaters are generally not experienced with the river's tides and currents.
- Navigation proficiency, including the use of onboard navigation equipment, is not as great in the recreational community. They may not understand the danger to themselves or others.
- Local recreational boating guides are careful and knowledgeable.
- Approximately 38% of recreational boating fatalities are associated with paddle craft. In the last couple years, paddle craft deaths have increased despite the number of total fatalities decreasing.
- In general, the quality of recreational vessels and education of users has increased over the past 20-30 years.

Existing Mitigations:

- All personal watercraft operators must take a boating safety course.
- All recreational boaters born after May 1996 must take a boating safety course.
- All vessel operating in NYS must have a Personal Flotation Device (PFD) onboard and in addition boaters on vessels under 21 ft must wear a PFD from Nov 1-May 1.
- All river communities, except for one, have a marine patrol. The state has marine patrols as well.
- The USCG promotes a robust recreational boating safety program. This is supported by the USCG Auxiliary courses, courtesy dockside examinations, outreach and training.

- There are seated field sobriety tests that can be completed on a rocking/moving vessel. This has increased law enforcement's ability to enforce Boating While Intoxicated (BWI) laws.
- New York State has the Tiffany Heitkamp Law: driving and boating infractions can be considered together by the courts.
- The popular paddle craft launch points have experienced guide services and outfitters nearby. Outfitters coordinate with the state to promote boating safety.
- More paddle craft users are seeking education. Boating safety classes and inspections are popular.
- Bright stickers are put on paddles to increase the visibility of paddle craft.
- Commercial operators use sound signals to warn recreational boaters.
- New York State enforces the Inland Rules of the Road, and sound producing devices are required.
- The state provides boating safety training for law enforcement officials.
- There is a web platform for safe boating in the area: www.thesafeharbor.us

Volume of Commercial Traffic:

Trends/Observations:

- USACE Waterborne Commerce data suggests there was a 19% reduction in transits and 9.9% decrease in tonnage over the past 6 years. This data may not be accurate because it's based on industry reporting. In some cases, these estimates are lower than actual transits/tonnage.
- Reasonable annual cargo estimates: 1.5 billion gallons of gasoline, 1.3 billion gallons of home heating oil, and 6.5 million tons of dry bulk.
- Number of cargo handling facilities and permits has increased in recent years.
- Cargo volume is a function of consumer demand and regional projects. For example, a windmill project temporarily increased shipments of windmill parts.
- Commercial traffic volume is relatively high when compared to other similar waterways. However, it is not high when compared to the nation's biggest ports such as New York or Houston.
- Over a period of 20 years, traffic has remained relatively stable except for petroleum shipments. Petroleum shipments fluctuate greatly with consumer demand.
- The Hudson River is designated as a Marine Highway by the Maritime Administration (MARAD).
- The US Army Corps of Engineers (USACE) classifies the river as a "high use" waterway (carrying over a million tons of cargo per year).
- There is usually a minimum of 8 commercial ship movements per day on the Hudson River.

Existing Mitigations:

- Vessels must have detailed voyage plans.
- Shipping companies and vessels communicate and coordinate.
- Automatic Identification System (AIS) carriage requirements.
- Security calls are used frequently and alert mariners to known or possible dangers.
- Convoys are formed for ice breaker escorts.

- Existing anchorages promote the safe management of traffic volume. These traditional anchorages have been used for over 100 years. A Coast Pilot in 1966 states vessels anchor off Kingston to await transit to Albany. The ability and authority for masters to stop due to inclement weather conditions is critical.
- A vessel in distress can anchor at any time and in any location. However, this does not mitigate risks associated with routine traffic management practices.

Volume of Small Craft Traffic:

Trends/Observations:

- Recreational vessel traffic is seasonal and weekend based.
- Striper season (recreational fishing) can significantly increase traffic from April to June.
- Marine events, such as 4th of July, can drastically increase traffic.
- The number of small boat rental facilities is increasing. There are currently about a dozen.
- The volume of small craft motorized vessels is relatively constant, but paddle craft volume is on the rise.
- Gas prices can influence small craft traffic volumes. Higher gas prices equates to lower numbers of small craft out on the water.

Existing Mitigations:

- The state has a local waterfront use program that includes harbor management plans for recreational boating. These can have restrictions for small craft traffic management. Only one community in the study area has one of these harbor management plans.

Traffic Mix:

Trends/Observations:

- There's significant risk associated with the mix of paddle craft and larger commercial vessels. Commercial operators usually experience conflicts with paddle craft on almost every trip.
- Small vessels sometimes anchor in the channel, which poses problems to deep draft vessel transits.
- The entire river is a mixed use waterway except during the winter. From November to April, the waterway is single (commercial) use.
- Sea planes have had near misses with kayaks or paddle craft.

Existing Mitigations:

- Experienced kayakers transit across the river in a wide line which presents a small target for commercial vessels.
- Harbor management plans include policies for managing the traffic mix.
- Good radio communication between sailboat regatta managers and commercial traffic.
- Many yacht clubs and marinas on the river regularly communicate and discuss safety issues.

Congestion:

Trends/Observations:

- Roundout Creek, Catskill Creek, and Espouse Creek are areas that can be particularly congested with recreational boaters on the weekends.
- There is an amphitheater on the water in Albany, north of the port facilities, which sometimes attracts large numbers of small craft.

Existing Mitigations:

- Great communication between pilots and shipping companies.
- The anchorage bullets from the "Volume of Commercial Traffic" also mitigate congestion issues.

Winds:

Trends/Observations:

- From a commercial perspective, the winds are typically moderate and from the west. Besides extreme weather events, winds do not affect normal operations.
- Hurricanes and other extreme events can cause vessels from the lower river to seek shelter in the upper river.
- All waterway users have adequate and accurate weather forecasting tools.

Existing Mitigations:

- Weather forecasts are readily available, accurate, and adequate. These forecasts are used by both commercial and recreational boaters.

Water Movement:

Trends/Observations:

- Tides and currents can make the river dangerous in almost all areas.
- Winds and tides can be a dangerous combination.
- Water movement can create risky interactions between commercial vessel and small recreational traffic.
- The current and water elevation can fluctuate greatly depending on the weather. This impacts voyage planning for commercial traffic.
- Tidal currents usually max out at 2 kts.

Existing Mitigations:

- Water movement is incorporated in voyage planning.
- Tide and current predictions are readily available and accurate.
- There is a certified tide station at Turkey Point. It is part of a sea level and climate change study.

- The NOAA Hydrographic Division completed a new bottom survey in 2016, and the data is under review. It should be added to charts relatively soon.

Visibility Restrictions:

Trends/Observations:

- Fog is seasonal.
- Kingston to Hudson and Castleton to Albany usually have fog from midnight to 0900.
- Most common fog is radiation fog in the fall. This generally burns off in the morning after sunrise.
- North and South winds can produce fog.
- Snow and heavy rain can restrict visibility.

Existing Mitigations:

- There is a live camera on Saugerties Lighthouse (www.saugertieslighthouse.com) that can be used to assess visibility. In the future, existing bridge cameras could be used in the same way.
- Electronic aids to navigation (ATON) supplement physical ATON.

Obstructions:

Trends/Observations:

- Ice can form from January to March, and it fluctuates from year to year. The effect on navigation can be huge. Ice can influence the following: visibility, aids to navigation discrepancies, and transit times (4x longer transit). Silver Point, Worlds End, and Kingston can be choke points. Plate ice can be up to 1.5 ft thick, and refrozen brash can be up to 6 ft thick. Brash builds up in choke points. Drifting ice can cause vessels to drag anchor.
- Lots of debris enters the river following: precipitation events greater than 1 inch, high tide with calm winds, and lock openings in the Spring. This debris can include up to full size trees.
- Construction projects and submerged cables can be obstructions. Some submerged cables are abandoned and on top of the sediment. Cables running parallel to the channel can be hazardous because of questions regarding the exact location.
- Marinas located close to the channel can be obstructions.
- There are few fixed fishing structures. The shad fishery is closed, but there are some nets used for herring.

Existing Mitigations:

- Vessels communicate with each other.
- Convoys are formed for ice breaking escorts.
- The USCG has a regulated navigation area that has horsepower restrictions based on ice thickness.
- The USCG tracks vessel transits during ice conditions.

Visibility Impediments:

Trends/Observations:

- Bridges can obstruct visibility, especially for small vessels.
- AIS coverage is intermittent from Tarrytown to Albany.
- For a small vessel's height of eye, background lighting from large communities can obstruct lighted aids to navigation. The risk is greatest is areas south of Stony Point.
- Railroad lights can be confused for vessel lights when transiting south through Worlds End. Some vessels have run aground because of this.

Existing Mitigations:

- AIS, radar, and bridge to bridge communications reduce risks associated with visibility impediments.

Dimensions:

Trends/Observations:

- There are air draft concerns with the Mid-Hudson and Castleton bridges for deep draft vessels.
- Ice tracks can be restricted to 100 ft wide.
- Perceived channel width can be less than actual channel width, especially in the southern portions of the river.

Existing Mitigations:

- The river was surveyed in 2016.
- Portions of the river can be shut down for shipping large equipment.
- Good communication and planning between the shipping industry and the USCG.

Bottom Type:

Trends/Observations:

- The river channel bottom is usually soft. There is more sand and gravel north of Catskill.
- There are rocky outcroppings near the channel edges in areas just north and south of Kingston.

Existing Mitigations:

- The NOAA nautical charts are updated weekly, and chart discrepancies can easily be reported. NOAA quickly responds to chart discrepancies.

Configuration:

Trends/Observations:

- There are several turns and bends greater than 45 degrees. Some of them include Four Mile Point, Bear Mountain Bridge, Worlds End, Kingston, Silver Point, Catskill, and Hudson.
- From Kingston to Albany (45 miles), it is long and narrow. There are few points to bail out; it's the point of no return. Hyde Park Anchorage doesn't always serve as an adequate point of no return because fog conditions can quickly change north of the anchorage.
- Due to the length of the river, waterway and environmental conditions can significantly change during a transit. Transit time can fluctuate between 12 hours and 36 hours.
- There are two vessels that take 300 to 500 passengers from NYC to the Bear Mountain Bridge or Cold Spring. Recreational vessels will also make this transit over the course of several days. These transits are seasonal, usually during "leaf peeper" season.
- The length of the river is a risk. Shipping orders or assignments can change while enroute to a facility.

Existing Mitigations:

- In general, the aids to navigation are adequate.
- The quality of nautical publications has improved.
- There are no fleeting operations in the anchorages in question.

Personnel Injuries:

Trends/Observations:

- "Leaf peeper" cruises: Sea Streak has about 500 people and Circle Line has about 340 people. American Cruise Line vessels have 200 to 300 passengers, and there are usually 2-3 on the river at a time.
- The Rip Van Winkle (Kingston), Dutch Apple (Albany), and Captain JP (Troy) have around 300 to 400 passengers.
- Even the death of 12 people would be catastrophic. The probability is low, but the impact is high.

Existing Mitigations:

- Commercial vessels and their crews conduct extensive trainings and drills.
- There is a multi-agency committee that meets twice a year to discuss past incidents and training opportunities. There is also a regional committee.
- Education reduces the risk of personnel injuries.
- There is a robust local response capability to respond to and treat personnel injuries.

Petroleum Discharge:

Trends/Observations:

- Primary petroleum shipments: Ethanol (2-3 trips per year), asphalt (demand driven by construction projects), gasoline, and home heating oil.
- The average barge varies, about 50,000 barrels, and the maximum is about 155,000 barrels.
- Tankers are typically carry about 80,000-220,000 barrels.
- Bakken crude shipments headed south from Albany have decreased due to crude oil prices. Some argue the decrease in shipments is due to increased rail capacity.
- LNG is taking over heavy fuel oil. This may result in a decrease in petroleum shipments, but recent trends have been increasing.
- There limited locations to deploy large response equipment.
- No two spills are the same, and all responses are different. The general rule of thumb is 10-20% recovery.
- Local first responders are not capable of handling a medium or major spill.

Existing Mitigations:

- Response plans are well established and routinely practiced with drills. However, they will not alleviate all risk; there will be an impact if there is a major spill.
- The state has pre-staged spill response equipment and regularly conducts exercises.
- Contracted Oil Spill Response Organizations (OSRO) have equipment staged throughout the entire river. The OSRO is inspected by their clients and the Environmental Protection Agency.
- There are several OSROs in the state, and they all work well together.
- The USCG has spill response assets and equipment.
- There are substantial federal requirements for response plans and equipment.
- There has been a significant improvement in overall spill response capability over the past 20 years.
- The design of the vessels/barges and facilities minimizes the risk of spills.
- There are efforts underway to develop better spill modeling on the Hudson River.

Hazardous Materials Release:

Trends/Observations:

- Some PCB-contaminated sediments and materials are shipped by barge on the river.
- Urea and calcium chloride are shipped on the river.

Existing Mitigations:

- The mitigations listed in the “Petroleum Discharge” section are also applicable to the “Hazardous Materials Release” risk factor.

Mobility:

Trends/Observations:

- North of Kingston any grounding or incident would likely close the river. South of Kingston a closure would depend on the severity of the incident.
- Ice can severely restrict mobility. One vessel becoming beset in ice can stop traffic.
- Rail or facility accidents could close the river or affect marine mobility.
- West Point and Indian Point are particularly sensitive to closures.
- An incident in the Hudson Highlands could easily result in a waterway closure.

Existing Mitigations:

- There is good communication amongst the pilots.
- The Captain of the Port has broad authority to manage risks that could impact mobility. This includes establishing safety zones.
- Commerce could be shipped by road or rail, but this does not necessarily reduce risk. The road and rail infrastructure is extensive.
- There is good communication to notify mariners of port closures or interruptions. There is a formal written policy to notify traffic in the immediate area and appropriate authorities.
- State marine law enforcement training includes safety zone implementation and enforcement.
- There are multi-agency exercises that improve communication between agencies.

Health and Safety:

Trends/Observations:

- The river is the only drinking water source in the area. A serious spill could render hundreds of thousands of people without water.
- Perceived health and safety issues can be just as bad as an actual issue. This is particularly important for economic effects.
- Some port and waterfront facilities are located near populated areas. Even tug idling affects air quality.
- Most communities along the river are under 25,000 people. Cities such as Albany, Poughkeepsie, and Newburgh have greater populations.
- Bridge damage could affect marine and roadway safety.
- Tidal variations can impact north/south movement of a floating hazard. It can take 20+ days for an object to float from Albany to New York City due to the tide.

Existing Mitigations:

- Medical and transportation infrastructure is great and well developed.
- There is a medical reserve corps that educates the public in disaster preparedness.

- New York State recently transitioned from an agency organized response to an emergency management organized response. Emergency response is one of the Governor's top priorities.
- There is an area emergency response plan that involves the local communities.

Environmental:

Trends/Observations:

- Atlantic sturgeon, shortnose sturgeon, and their critical habitat are federally protected by NOAA. Their critical habitat is throughout the entire river. The Fish and Wildlife Service has other federally protected species.
- Most of the river is environmentally sensitive; it's more than 50% but probably less than 90%.
- Hyde Park is a critical area for Atlantic sturgeon from May to July.
- Port Ewen is an overwintering area for shortnose sturgeon.
- Marlboro is a spawning area for shortnose sturgeon.
- Shortnose sturgeon are found all the way up Troy, and Atlantic sturgeon are found up to Kingston.
- The NY Department of State has designated significant habitat areas. There areas include Kingston, the Hudson Highlands, and the Flats. There are about 35 of these areas, and they are in the deeper portions of the river.
- North of the salt line (around West Point) the freshwater estuary/wetlands are rare. These wetlands are sensitive.
- There are about 200-300 different species of fish in the river, but there also birds and mammals that could be affected.
- Haverstraw Bay is important habitat for bald eagles and common loons.
- The state has designated many areas as scenically significant.
- Anchors can damage benthic habitat.
- The river has already experienced many environmental setbacks (i.e., PCB contamination).

Existing Mitigations:

- There are shore cleanup and restoration efforts underway.
- Engineering practices for coastal restoration are mature.
- Environmental mitigation measures are covered by other categories such as "Vessel Quality".
- Hudson River Emergency Management Association has collected environmental data for 20 years.
- The Hudson River Estuary Plan provides funding for stabilization and restoration.
- There is a Hudson River Comprehensive Restoration Plan: www.thehudsonweshare.org
- Communities are outspoken and aware of environmental issues.
- Federal agencies complete a national restoration damage assessment to formulate restoration plans.
- The "Riverkeeper" model was started at the Hudson River, and there are expertise in the area.

Aquatic Resources:

Trends/Observations:

- The river is a spawning area for some fish species. Indirectly, the river contributes to aquatic resources throughout the Eastern Seaboard.

- Recreational fishing is important on the river.
- According to the state, Haverstraw Bay and other areas are important to recreational and commercial fisheries. These are the 35 significant habitat areas as mentioned in the "Environmental" category.
- There is a significant population that subsistence fishes.

Existing Mitigations:

- The mitigations listed in the "Environmental" section are also applicable to the "Aquatic Resources" risk factor.

Economic:

Trends/Observations:

- Many towns have dedicated money to revitalizing the riverfront habitat and parks.
- Tourism is important to the area, and it contributes $5.2 billion/year to the regional economy. Recreational boating contributes $184 million/year to the area's economy.
- Maritime commerce is significant. Issues with home heating oil, gasoline, and heavy lift shipments would be costly. Disruptions to the heavy lift equipment could have indirect impacts to other areas of the country.
- Damage to bridges would greatly affect the everyday life of local citizens.
- The river's connection to the Port of New York could result in a national impact.
- New York State ships 28 million tons of marine cargo per year. This value of shipped manufactured goods is $96.4 billion per year. This contributes $32 billion to the state's economy.
- The economy of shoreline communities is shifting from industrial manufacturing to tourism. This could make the communities more vulnerable to pollution or changes in water quality.
- Shortage of heating oil could be detrimental. There would be direct and indirect impacts.

Existing Mitigations:

- There are robust road and rail networks in the area.
- If a 3rd party is impacted by a spill, they can file a claim with the responsible party. If the claims exceed the liability limit, claims can be filed under the Oil Spill Liability Trust Fund (OSLTF).
- Ice breakers facilitate the movement of commerce in the winter. The Hudson River is the USCG First District's top ice breaking priority.
- There are methods to facilitate the movement of priority cargo (i.e., heating oil) in the case of an incident.

Appendix C

Albany Workshop - Participant Comments on Trends in the Port and Existing Risk Mitigations

The participants are the local subject matter experts, and these comments capture their opinions, providing a general sense of the ideas discussed during the workshop. These comments provide various perspectives representing widely different interests.

Deep Draft Vessel Quality:

Trends/Observations:

- Deep draft vessels are generally great quality. Quality has significantly increased over the past 15 years, and most vessels are new. All crews are licensed. The crew quality can vary, but all deep draft vessels have pilots aboard. Pilots have great communication with the USCG, VTS, and other waterway users. They pass issues and concerns to authorities. Pilots are also extraordinarily qualified and courteous.
- Bulk carrier quality is usually less than vessels transporting higher-value cargo.
- Deep draft vessel casualties are rare and occur mostly in the southern portion of the river.
- Ships are required to run on diesel in coastal areas, but some ships were not designed to maneuver with a diesel plant. This can impact maneuverability in narrow portions of the river.
- Some new technology actually increases risk. For instance, a modern propulsion plant may shut down entirely due to a faulty lube oil sensor.

Existing Mitigations:

- USCG Port State Control inspection program is used to vet vessels prior to arriving in US ports.
- Vessels submit a 96-hour notice of arrival, and high risk vessels are inspected.
- Vessels check in/out with the VTS as they enter and depart the river in New York Harbor.
- All mechanical issues are reported to the USCG before they enter the river.
- All deep draft vessels have state pilots on board. The pilots take annual physical exams and proficiency exams. The number of pilots is continually monitored to ensure there are enough to meet demand.
- Foreign flagged vessel captains are certified by their respective flag states. Foreign vessels must comply with Safety of Life at Sea (SOLAS) requirements. Most crews on foreign flagged vessels are proficient in English.
- Any vessel entering the United States must have a Certificate of Fiscal Responsibility. All vessels, including tankers and non-tankers, must also have a vessel response plan. The plan requires the

designation of an Oil Spill Response Organization (OSRO) and ensures they have the equipment to respond to an incident

- Some tankers are doubled hulled.
- Private cargo facilities also vet ships.
- Industry is driving a culture of safety.

Shallow Draft Vessel Quality:

Trends/Observations:

- Some hazardous cargo is transported in double hulled barges.
- Crews are vetted and U.S. licensed.
- Navigation season is limited due to ice, so there is a high operational tempo during the open season.
- Vessels are new with an average age of about 6 years old.
- Masters and engineers have certification and qualifications.
- Shipping companies have training sessions ever year, which include simulators and bridge resource management topics.
- There may be safety issues associated with crew fatigue. However, companies do maintain crew management standards, and there are federal crew rest requirements. Companies employ a computer program called Watch Keeper 3 to assist in developing watch schedules.
- Some incidents may be attributed to a lack of local knowledge, but the USCG and shipping companies have recency requirements for captains and pilots to ensure they remain proficient for the route that they are navigating.
- There are ferries between Ossining and Haverstraw and Newburgh and Beacon. Ferry operators are proficient, and the vessels are well maintained.

Existing Mitigations:

- Shallow draft vessels (towing vessels) will soon be subject to sub-chapter M requirements. Many companies are voluntarily meeting sub-chapter M requirements before the implementation deadline.
- All tankers and tank barges subject themselves to additional inspections/requirements: International Convention on Standards of Training, Certification and Watchkeeping (STCW); Ship Inspection Report Program (SIRE); and internal inspections.
- Tank barges are double hulled.
- US crews are some of the best qualified crews in the world.
- Navigation technology is top notch, and it has improved safety.
- Tugs/barges don't have pilots, but the captains are certified and proficient to operate on the river.

- Some towing vessel companies expand the bridge crew to three people while operating on the river. They also complete a risk assessment before every evolution/transit. It's in the company's best interest to safely transport cargo.
- Vessel system redundancy is being implemented. For equipment, there is a backup to the backup. Furthermore, redundant systems are independent of each other.
- Most tugs and barges are new and many burn cleaner fuel than required. Their emissions are below the federal standards.
- Shallow and deep draft vessels must comply with ballast water and discharge regulations.

Commercial Fishing Vessel Quality:

Trends/Observations:

- There is a temporary prohibition on most commercial fishing. Shad and sturgeon are closed. Crab and herring are the only active fisheries.
- When more fisheries were open, vessels were 15-20 foot open skiffs constructed of fiberglass. Crews were experienced and usually consisted of 1 or 2 people.
- There are traditional fishing areas on the river. If the prohibition is lifted in the future, these areas could be impacted by the establishment of anchorages.

Existing Mitigations:

- Not applicable due to the lack of commercial fishing vessels.

Small Craft Quality:

Trends/Observations:

- There are recreational boats on the river from Memorial Day to Labor Day. The majority know what they're doing but some don't.
- Pilots have issues with recreational boaters on almost every trip. Examples include anchoring and water skiing in the channel.
- Jet skis and paddle craft are a huge risk on the river. Some people have a serious lack of knowledge, especially with complying with the rules of the road.
- Some recreational boaters aren't aware of river dangers such as rocks and currents. They generally lack the proficiency of commercial operators.
- Commercial operators will warn each other of the presence of kayak groups.
- A decrease in USCG Auxiliary presence on the river has increased recreational boating risk.

- A boating safety course isn't required for everyone, but some yacht clubs and marinas require insurance and their own training.
- Licensing is a great way to raise government funds, but it might not be a cure all for recreational boating safety. The most effective mitigation is education.

Existing Mitigations:

- Some local marinas have their own signs and rules regarding alcohol consumption on recreational vessels.
- Kayakers are encouraged to put reflective tape/stickers on their paddles.
- The state mitigates with education and enforcement. They provide grants and boating safety classes. They reimburse local authorities for marine patrols. A boating safety class is mandatory for PWC operators and motor boat operators born after May 1, 1996. The state is currently focusing outreach efforts on the paddle craft community.
- There are multiple opportunities for education: online, state parks classes, USCG Auxiliary, and U.S. Power Squadron.
- There are paddle craft outfitters and guides. These organizations promote boating safety.
- Over enforcement can be a concern. There are some instances of people being boarded several times in a single day. However, boaters can display proof of a boarding to avoid further boarding's. Local authorities focus on safety, not just enforcement. Stops result in education, not tickets.
- New York State provides grants for communities that would like to establish a harbor management program.
- Over 23,000 New York recreational boaters took a boating safety class in 2015.
- There is a website and video recently created for traffic mix: www.safeharbor.us

Volume of Commercial Traffic:

Trends/Observations:

- There are 600,000 transits per year in New York Harbor. Based on VTS checkout/in data, there are at least 3,000 transits per year on the Hudson River above the Holland Tunnel.
- In addition to what passes through New York Harbor, there are vessels such as rock boats that only transit above the VTS zone.
- USACE Waterborne Commerce Data from 2015: 1,441 commercial deep draft transits and 14,344 commercial shallow draft transits; 15,785 transits per year and approximately 43 per day.
- USACE Waterborne Commerce Data may not be accurate. Pilots have seen cargo that was not included in the data.

- Even with moderate traffic, there can be delays due to weather and berth congestion. Traffic volume doesn't necessarily correlate with the frequency and length of delays. Maximum delays are around 24 hours.
- There is traffic in Tarrytown for construction of the new Tappan Zee Bridge.

Existing Mitigations:

- All vessels must have detailed voyage plans.
- Great communication on the water and between shipping companies.

Volume of Small Craft Traffic:

Trends/Observations:

- Recreational vessel traffic is seasonal and weather dependent. Traffic is greatest during summer weekends with nice weather. The busiest days are July 4th, Labor Day, and Memorial Day. Hudson River boaters are fair weather boaters.
- The number of registered motor boats in New York State has leveled off at about 400,460. However, the number of paddle craft has exploded. There are now 12 paddle craft outfitters on the river.

Existing Mitigations:

- Increased outreach to promote responsible traffic management.
- A ferry and kayak collision in New York Harbor increased this topic's visibility and interest.
- There is a speed limit when vessels are within 100 ft of the shore, piers, anchored vessels, etc.
- Enforcement is increased during popular boating periods such as the 4th of July.
- The Coast Guard establishes safety zones and issue permits for marine events.
- There are areas where recreational boaters cannot transit. Examples of these areas include near Indian Point and the Tappan Zee Bridge. These safety and security zones shown on nautical charts and are published in the federal regulations and local notice to mariners.

Traffic Mix:

Trends/Observations:

- Lots of conflicts between recreational boaters and commercial traffic. Conflicts are seasonal because recreational traffic is seasonal.
- Traffic mix is really bad on the 4th of July and other periods of high recreational traffic.

Existing Mitigations:

- Commercial vessels have a look out and constantly monitor radio traffic.
- Some educational programs emphasize safe interactions between commercial and recreational vessels. The Hudson River Valley Greenway's program focuses on this.
- There is communication between commercial vessels. They warn each other of risky small craft.

Congestion:

Trends/Observations:

- North of Kingston there can be congestion due to ice.
- All communities with boat clubs/ramps can be congested.

Existing Mitigations:

- Events that are a hazard to navigation must be permitted. This may include safety zones and notifications (LNM, BNM).
- USACE permits structures in the waterway, including those associated with marine events.
- Vessels use VHF radios, AIS, and radars to mitigate congestion.

Winds:

Trends/Observations:

- Winds are generally out of the west or northwest. They usually come at the worst time, and northwest winds can be difficult for commercial vessels.
- Winds are well forecasted, and the forecasts are improving.
- Winds pose the greatest risk in areas that are narrow or congested (above 4-mile Point).
- Wind direction and speed varies by season.
- Climate change could be causing more extreme weather events.

Existing Mitigations:

- Mitigated by voyage planning and accurate forecasting.

Water Movement:

Trends/Observations:

- Voyage planning is greatly influenced by tides and currents.
- Snow melt and rains increase currents. This can lead to strong currents in the Port of Albany.
- There is a lack of real-time sensors/data.

- Tides and currents could impact oil spill containment and clean up.
- Currents don't exceed 5 kts, unless there is an extreme weather event.
- Opposing winds and currents can create chop that is difficult for paddle craft.
- Water releases and freshets can increase risk. Sometimes these events can even pull buoys under the water.
- Water movement is generally not well understood by recreational boaters.

Existing Mitigations:

- Transits and passing arrangements are planned according to tide and current predictions.
- Tidal predictions are accurate, especially since the models were updated with new data.
- Voyage plans incorporate keel clearance.
- Local area knowledge and broadcast communication mitigate risk associated with water movement.
- NOAA maintains tide and current sensors, and they are committed to updating them.

Visibility Restrictions:

Trends/Observations:

- Fog can be patchy, but it's a game changer for commercial traffic. Pilots and tug captains will avoid fog, which means they will try to anchor or remain moored.
- Fog is seasonal. It is usually worse in the spring and fall.
- Fog can be dangerous for kayakers as well. If kayakers must go out in the fog, they tend to stick close to the shore.
- Commercial fisherman must go out to save their nets, regardless of restricted visibility. Fixed nets were traditionally set below Peekskill.
- According to the National Climate Data Center, there are about 25 days of dense fog a year in the Hudson Valley. However, this might not accurately describe conditions on the river.
- There are microclimates on the river, and visibility conditions can change rapidly.
- Heavy rain and snow can be worse than fog because it clutters the radar.
- Glare can be a problem on clear days.

Existing Mitigations:

- There is great communication on the waterway. Mariners will seek visibility information from other vessels underway.
- Captains and pilots have the authority to terminate a voyage because of restricted visibility. They will not proceed north to the narrow sections if visibility is poor.
- If already underway, anchoring is the primary mitigation strategy.
- Technology helps, but its benefits are limited due to the narrowness of the channel.

Obstructions:

Trends/Observations:

- Bridges can be obstructions. Pilots prefer 2-3 ft of excess air draft.
- Cable and pipelines are obstructions, and some aren't charted.
- Ice is major obstruction. Some crews lack experience in ice. Ice drags buoys off station, and it is difficult to meet or overtake in ice. Vessel interactions with ice can break docks and marina infrastructure.
- Commercial traffic can destroy fishing nets. Not a relevant issue for today's fishing practices.
- Most incidents have occurred near reefs. They are obstructions, but they are habitat for aquatic resources.
- Some fuel storage locations have transfer pipes that protrude onto the pier.
- Sometimes kayakers are mistaken for debris fields or birds.

Existing Mitigations:

- Communication between captains/pilots and USCG cutters improve the effectiveness of ice breaking operations.
- Ice operations are well managed. The USCG has an annual ice breaking meeting and conducts daily overflights.
- Captains and pilots are experienced in ice.
- Vessels form convoys that are escorted by a USCG ice breaker.
- Commercial vessels will slow down to limit wake damage to private structures and docks. However, this isn't always effective.
- There are horsepower restrictions during the ice season.
- The USACE has a crane barge on the river, and it's capable of removing obstructions.
- Mariners report obstructions and warn others.

Visibility Impediments:

Trends/Observations:

- Background lighting is bad near Catskill, Newburgh Water Plant, Tarrytown, Haverstraw Bay, and Albany.
- There are dark shadows near Hudson.
- Port of Coeymans can be lit up.
- Silver Point Range near German Reach can be too bright. Sometimes it's blinding.
- There are some blind spots for AIS and VHF coverage, especially in the Hudson Highlands.

Existing Mitigations:

- Commercial operators communicate well when approaching turns and bends. Some recreational boats listen to this communication.
- There are minimum lighting requirements for stationary barges.
- Vessels carry a chart and VHF radio.

Dimensions:

Trends/Observations:

- Up to Kingston the channel is 600 ft wide. Above Kingston the channel is 400 ft wide. Project depth is 32 ft.
- The channel is constantly shoaling, and shoaling affects a ship's movement.
- Pilots will review recent surveys, and avoid meeting in shallow areas.
- There are certain areas where commercial vessels will avoid meeting. Meeting locations are usually planned well in advance. Communication is key.

Existing Mitigations:

- Shipping companies will limit their draft based on under keel clearance calculations. If the calculations don't match reality, they won't make the trip.
- Mitigations from other categories also apply to dimensions.

Bottom Type:

Trends/Observations:

- Eel grass is in shallow areas where light meets the bottom.
- Short-nosed and Atlantic sturgeon require a hard bottom for spawning. Some areas with a hard bottom are just above Hyde Park, Poughkeepsie Yacht Club, and across from Esopus Meadows Light.
- New York State has designated some bottom types as critical habitats.
- Sand wave bottoms are important habitat for sturgeon. This bottom type is near Crum Elbow.
- North of Kingston and in the Hudson Highlands is rocky and narrow.

Existing Mitigations:

- Bottom types are charted and publically available.
- USACE and state permits regulate submerged or overhead cables.
- The river was recently surveyed by NOAA.

Configuration:

Trends/Observations:

- Many turns are greater than 45 degrees.
- Many secondary channels/creeks meet the river. For example, Rondout Creek in Kingston.

Existing Mitigations:

- Passing arrangements are carefully coordinated.
- Technology helps determine ideal meeting locations for vessels.
- Pilots rarely transit between Hudson and Albany at night.

Human Injuries:

Trends/Observations:

- Haverstraw Ferry can have about 150 passengers.
- The Dutch Apple has a capacity of about 125 passengers.
- JP Cruise lines can carry over 200 passengers.
- Small cruise ships are seasonal and can carry up to 300 passengers.
- The Rip Van Winkle, the Spirit of the Hudson, and the Eureka can have 150-200 passengers.
- There is a high-speed ferry from NYC to Cold Spring.
- The Pride of the Hudson in Newburgh can carry about 75 people.
- Seastreak Ferry can carry up to 500 passengers. They have a fall foliage cruise on the Hudson River.
- Surge of water from commercial vessels may injure owners of beached vessels or people on floating docks.
- Towing companies will not looking into a potential hire's credentials or medical waivers.

Existing Mitigations:

- Local authorities train at least monthly. Some exercises are with interagency and local partners.
- Passenger vessels must do drills as part of USCG inspections. They also must have emergency response plans.
- There is search and rescue training available at the Port of Albany.
- Commercial operators must have physical exams to maintain Coast Guard credentials. These are well documented, and the requirements are enforced.

Petroleum Discharge:

Trends/Observations:

- Most petroleum moves by tank barge. Tank barges are usually 80,000 barrels, and the largest tank barges are 150,000 barrels. Most units are articulated tug barges.
- There are petroleum and asphalt tankers.
- Barge drafts range from 19-30 ft, depending on cargo type and amount.
- You can never clean up all the spilled oil.
- Equipment may not be provided quickly enough, and local authorities may not be experienced in spill response.

Existing Mitigations:

- Aids to Navigation Team Saugerties has a USCG oil spill response kit.
- The Oil Spill Removal Organization (OSRO) has response equipment staged along the river. The OSROs work together. They are annually inspected by the USCG and their clients. They serve vessels and facilities. They are well versed in emergency response operations.
- Port facilities have oil spill response equipment, and they are evaluated on their ability to use the equipment.
- There are large spill response exercises involving multiples agencies and stakeholders.
- The USCG maintains an area contingency plan. It covers local, state, and federal responsibilities. It is a 1000-page document that is comprehensive. The committee meets monthly.
- Vessel quality and crew training prevent spills.
- Vessels and facilities have response plans.
- There are advanced oil spill models.
- OSROs are subject to government initiated, unannounced exercises.
- 1000 ft boom must be deployed within 1 hr and vacuum equipment must be onscene within 2 hours. Tier 1 equipment is well staged and would be onscene quicker than 12 hours.
- Facilities are well lit and extensively inspected before, during, and after the offload of petroleum products.
- Petroleum offload/onload hose gaskets are replaced before every use.
- Hoses on barges are pressure tested every year and replaced every 5 years.
- The state has established geographic response plans (GRPs), and the USCG has geographic response strategies (GRSs).
- The state does training with local fire departments, and state response assets are robust.
- The USCG and state have funds dedicated to responses. These can be used if there isn't a responsible party.
- The USCG has a national response center that manages notifications.
- Mariners must report all spills, regardless if they caused it.

Hazardous Materials Release:

Trends/Observations:

- Liquid fertilizer, urea, molasses, calcium chloride, magnesium chloride, and ethanol are transported on the river.
- Some of the tankers carrying hazardous cargos exceed 40,000 DWT.

Existing Mitigations:

- Some mitigation strategies are covered in the "Petroleum Discharge" section.
- Recovery efforts depend on the environmental fate of specific chemicals.

Mobility:

Trends/Observations:

- According to modeling, a worst-case discharge (150,000 barrels of petroleum) in Kingston would spread from Saugerties to Yonkers. It would impact traffic on the entire stretch because the river is narrow.
- A petroleum spill would likely result in a waterway closure.
- The river will shut down if a vessel runs aground.

Existing Mitigations:

- Closures are continually monitored and assessed by the Captain of the Port.
- The Port of New York adds salvage and heavy lift resources.
- The USCG can activate its marine transportation system recovery unit (MTSRU).

Health and Safety:

Trends/Observations:

- There are 7 different water intakes on Hudson River. Most are near Kingston and Poughkeepsie. There are no backups for these drinking water systems.
- About 1.5 million people live on the water from Yonkers to Albany.
- Home heating oil is a important commodity. Inability to ship refined petroleum products could impact the health and safety of the region.

Existing Mitigations:

- The national response center notifies appropriate authorities.
- The state health department has water quality rapid response teams.

- The state watch center has a system to bring all agencies and expertise together.
- There are state grants and mechanisms to fund health/safety recovery efforts.

Environmental:

Trends/Observations:

- The state has designated most of the river a significant habitat.
- The freshwater wetlands above the salt line are globally rare.
- There are locations, such as Con Hook and Diamond Reef, where navigational hazards are close to sensitive habitats.
- The river is the largest superfund site in the nation. It is vulnerable to pollution because it has already been polluted so much.
- Sinking oils could have serious impacts because some of the fish are benthic.
- Contrary to popular belief, the Hudson River is not healthy. The fisheries have collapsed.
- Some portions of the river have been designated essential fish habitat by NMFS.

Existing Mitigations:

- There are ongoing cleanup and remediation efforts.
- The predictive modeling has aspects related to long-term environmental consequences.
- There is an ongoing effort to update the area contingency plan (ACP). Updates so far have greatly improved preparedness.
- There are habitat maps available that outline critical habitat areas. These areas are included in the new ACP.

Aquatic Resources:

Trends/Observations:

- Striped bass is the number one recreational species in the United States. The Hudson River is 1 of 3 producing estuaries for striped bass in the United States.
- The Hudson River estuary is important for the health of fisheries along the eastern seaboard. The marshes and tidal stretches are important spawning areas for the Atlantic coast herring, striped bass, blue fish, and blue crab.
- Commercial fishing has existed on the Hudson, but it doesn't exist right now. Just because it doesn't exist, doesn't mean it's not important.
- There is subsistence fishing on the river, and there is recreational fishing.
- Eating fish from the river can be dangerous because they are contaminated.

Existing Mitigations:

- This topic was covered in the "Environmental" section.
- There are recreational fishing regulations.
- There are efforts to clean up the river and decrease fish contamination.

Economic:

Trends/Observations:

- The river has spawning grounds and are important to fisheries along the entire eastern seaboard.
- Disruptions to home heating oil and gasoline shipments could have a regional impact. It would be difficult to find an alternative transportation system, and prices would skyrocket.
- Expensive, heavy lift cargo is also important. Some pieces of equipment are shipped internationally.
- The river is important to tourism, and tourism drives the local economy. Tourism is susceptible to river pollution.
- There is a passenger and cargo rail line on the river. An issue with the rail line could impact the waterway.
- On an average day, 5 million gallons of fuel are shipped on the river. This equates to about 400 trucks per day.
- A New York City economic study suggested barges in New York Harbor eliminated 3.1 million trucks per year.

Existing Mitigations:

- Cargo could be rerouted to other cities.
- The Marine Transportation System Recover Unit (MTSRU) would minimize economic impact. There are thresholds and guidelines for standing up the MTSRU.
- Maintaining the MTS is one of the Coast Guard's top priority.
- The Hudson River is extremely vital to the regional economy, and reducing all risk is difficult.
- There are not enough trucks to transport the fuel oil shipped on the Hudson River.
- The state does table top exercises that include contingency operations for port disruptions.
- The state is completing a regional resilience assessment program. It reviews every piece of energy infrastructure in the state.
- Vessels can anchor nearby and restart operations immediately.

Appendix D

Poughkeepsie Participants – Potential Additional Risk Mitigation Strategies

The participants are the local subject matter experts, and these comments capture their opinions, providing a general sense of the ideas discussed during the workshop. They also provide various perspectives concerning each risk mitigation strategy representing widely different interests.

Small Craft Quality:

- Create a Hudson River Harbor Safety Committee.
- Create a Hudson River specific website with boating information; post the link on signs at marinas.
- Promote vessel safety education at small craft launch points and marinas, use local parks and recreation officials to promote boating safety.
- Place signs near launch points and marinas that highlight the danger of large vessels in the channel.
- Dedicate more law enforcement resources and increase outreach efforts.
- Encourage the use of VHF marine radios by small craft operators.
- Implement a mandatory small craft operator licensing program.
- Increase recreational boating regulations and requirements.
- Develop a video describing “best practices” for commercial/recreational interactions on the water, incorporate traffic mix and other local information in boating safety courses.
- Create an industry and kayaker exchange program.
- Expand the boating safety courses to cover more aspects of commercial traffic.
- Develop a brochure that “big box” stores can distribute when they sell paddle craft.
- Encourage manufacturers to put safety decals and reflectors on paddle craft.

Traffic Mix:

- Incorporate traffic mix and other local information in boating safety courses.
- Establish a Hudson River Harbor Safety Committee.
- Improve long-range and/or contingency planning and better coordinate activities, improve dialogue between waterway users and stakeholders.
- Require mandatory training for small craft operators, kayakers and paddle borders that emphasizes the risks of operating near commercial vessels.
- Increase outreach and voluntary boating safety programs.
- Expand AIS coverage.
- Required small craft to carry VHF radios.

- Require regatta sponsors to be escorted by a vessel that has a VHF radio.
- Expand training opportunities for small craft operators, kayakers and paddle borders.
- Place signs at marinas that include how to access safe boating information and education resources.

Congestion:

- Establish a Hudson River Harbor Safety Committee.
- Improve coordinating and planning between the different waterway user types.
- Incorporate traffic mix and other local information in boating safety courses.
- Expand the VTS in New York to cover the Hudson River to Albany.
- Federally designate historically used anchorages.
- Establish a Regulated Navigation Area for the entire river.
- Increased information sharing on traffic congestion.
- Promote increased training for tour boat operators, require the carriage of VHF radios on tour boats. Improve the ability to communicate bridge-to-bridge or ship-to-shore.

Water movement:

- Increase the number of real-time data sensors for tides, currents, and bridge air gaps.
- Improve accuracy of existing navigation and hydrographic sensors.
- Expand AIS coverage and information sharing.
- Expand NOAAs Physical Oceanographic Real-Time System to cover the Hudson River to Albany.
- Expand the VTS in New York to cover the Hudson River to Albany.

Visibility Restrictions:

- Make bridge cameras accessible to the maritime community.
- Expand NOAAs Physical Oceanographic Real-Time System to cover the Hudson River to Albany.
- Expand the VTS in New York to cover the Hudson River to Albany.
- Improve information sharing between from federal stakeholders (USCG, NOAA, etc) and waterway users.
- Establish federally designated anchorages. Define “emergency” in the anchorage regulations. Establish anchorage areas that are for “emergency” only. The definition of emergency should not include parking or staging. In the anchorage regulations, replace the word “emergency” with “for purposes of safe navigation”. The anchorages should be available, clearly marked, and used for short-term emergency purposes. Eliminate “long-term” from the anchorage regulations.
- Relax conditions allowing vessels to anchor for something less than a “great emergency” such as adverse weather or a mechanical condition.
- Designate anchorages in appropriate and strategic locations, and define time limits and the definition of emergency or circumstantial anchoring.

- Establish a Regulated Navigation Area for the entire river.
- Expand AIS coverage.

Obstructions:

- Establish federally designated anchorages.
- Define “emergency” in federally designated anchorages.
- Expand AIS coverage.
- Improve clearing of debris from the river.
- Improve ice breaking capacity.

Petroleum Discharge:

- Encourage reporting of spills by the public.
- Increase types and quantities of emergency response equipment to increase response capability.
- Conduct dispersant modeling to evaluate impacts.
- Provide funding for equipment for local emergency responders.
- Display contact information to report spills on signs at small boat marinas and boat ramps.
- Improve long-range and/or contingency planning and better coordinate activities.
- Improve dialogue between waterway users, stakeholders, emergency responders and members of the general public
- Conduct an inter-agency emergency response drill for the upper Hudson River.
- Train local responders on contents and use of the Federal Government Area Contingency Plan (ACP).

Economic:

- Identify resources for individuals to seek compensation when they have been impacted by a spill, ensure redundancy in the supply of resources to impacted communities, increase Federal and State relief funding.
- Provide education for the general public on the Oil Spill Liability Trust Fund.
- Prohibit oil laden barges to remain at anchorage in order to avoid and prevent the economic impact of spills.
- Increase the types and quantities of emergency response equipment to increase response capability.
- Increase storage capacity for heating oil reserves.
- Increase ice breaking capacity.
- Develop emergency response plans that provide for alternate heating oil transportation.
- Provide funding for equipment for local emergency responders.

Appendix E

Albany Participants Comments – Potential Additional Risk Mitigation Strategies

The participants are the local subject matter experts, and these comments capture their opinions, providing a general sense of the ideas discussed during the workshop. They also provide various perspectives concerning each risk mitigation strategy representing widely different interests.

Small Craft Quality:

- Establish a Hudson River Harbor Safety Committee.
- Increase Boating While Intoxicated enforcement.
- Expand education on importance of Personnel Flotation Devise usage.
- Extend Boating While Intoxicated (BWI) laws to kayak and paddle craft operators.
- Improve US Coast Guard Auxiliary presence, outreach, and courtesy inspections.
- Pay US Coast Guard Auxiliary members to improve membership.
- Host a "Captains and Paddlers" exchange event on the Hudson River.
- Increase Federal grant money for State National Boating Safety Programs.
- Rebuild local boating safety outreach programs - people that go from marina to marina.
- Implement stricter boating safety education requirements.
- Increase the number of on the water training programs.

Volume of Small Craft Traffic:

- Require small craft liability insurance similar to automobile insurance requirements.
- Require an on water practical examination and licensing for small craft operators.
- Expand boating safety education and outreach programs.
- Require mandatory boating safety education, training and licensing for small craft operators.
- Automatically issue small craft operator licenses, but make them subject to revocation for serious violations such as BWI.
- Require mandatory boating safety education every 10 years and not just for those born after a certain date.
- Increase enforcement of existing boating safety regulations.
- Require carriage of VHF marine radios by small craft operators and monitoring of VHF channel 13.
- Require training on the Inland Navigation Rules of the Road for small craft operators.

Visibility Restrictions:

- Establish a Hudson River Harbor Safety Committee.
- Improve AIS coverage and carriage requirements, install more AIS repeater stations.
- Improve collection and dissemination of real-time weather data.
- Improve the federal presence on the river: EPA, NOAA, USACE, USCG.
- Make Hudson River bridge crossing cameras accessible to the maritime community.
- Expand the VTS in New York to cover the Hudson River to Albany.
- Dredge west of Hudson, so there are channels on both sides of the island.
- Increase frequency of Safety Broadcast Notice to Mariners.
- Install additional Aids to Navigation (ATON).
- Limit vessel sizes so that (vessels) are not tide restricted (due to vessel draft) during their transits
- Establish commercial moorings.
- Do not categorically excluded anchorages from National Environmental Policy Act (NEPA) requirements.
- Define “Great Emergency” in the anchorage regulations.
- Specify time limits for anchorages.
- Avoid placing anchorages in aquatic habitat areas.
- Implement federal anchorages as proposed in the ANPRM.

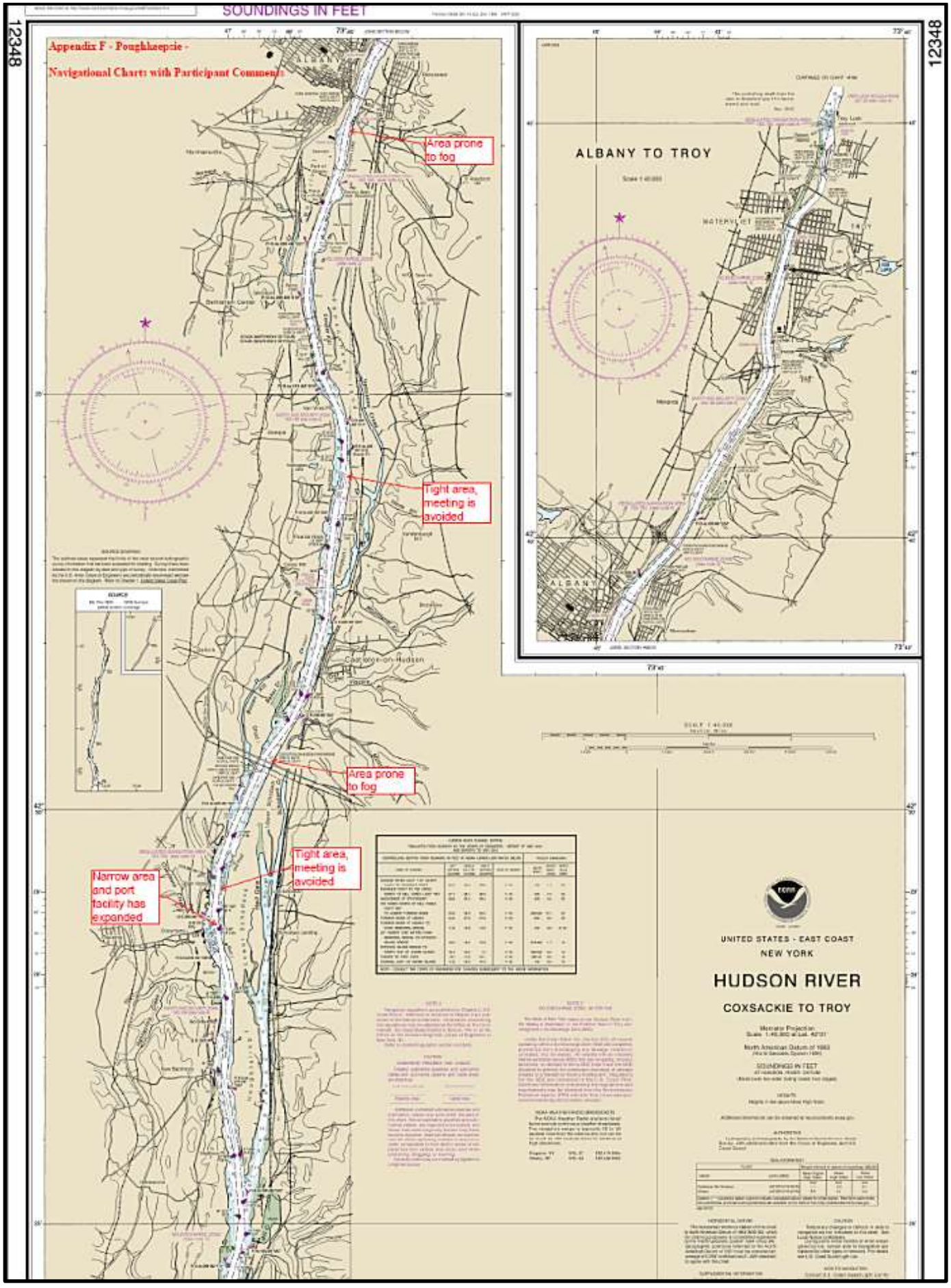
Aquatic Resources:

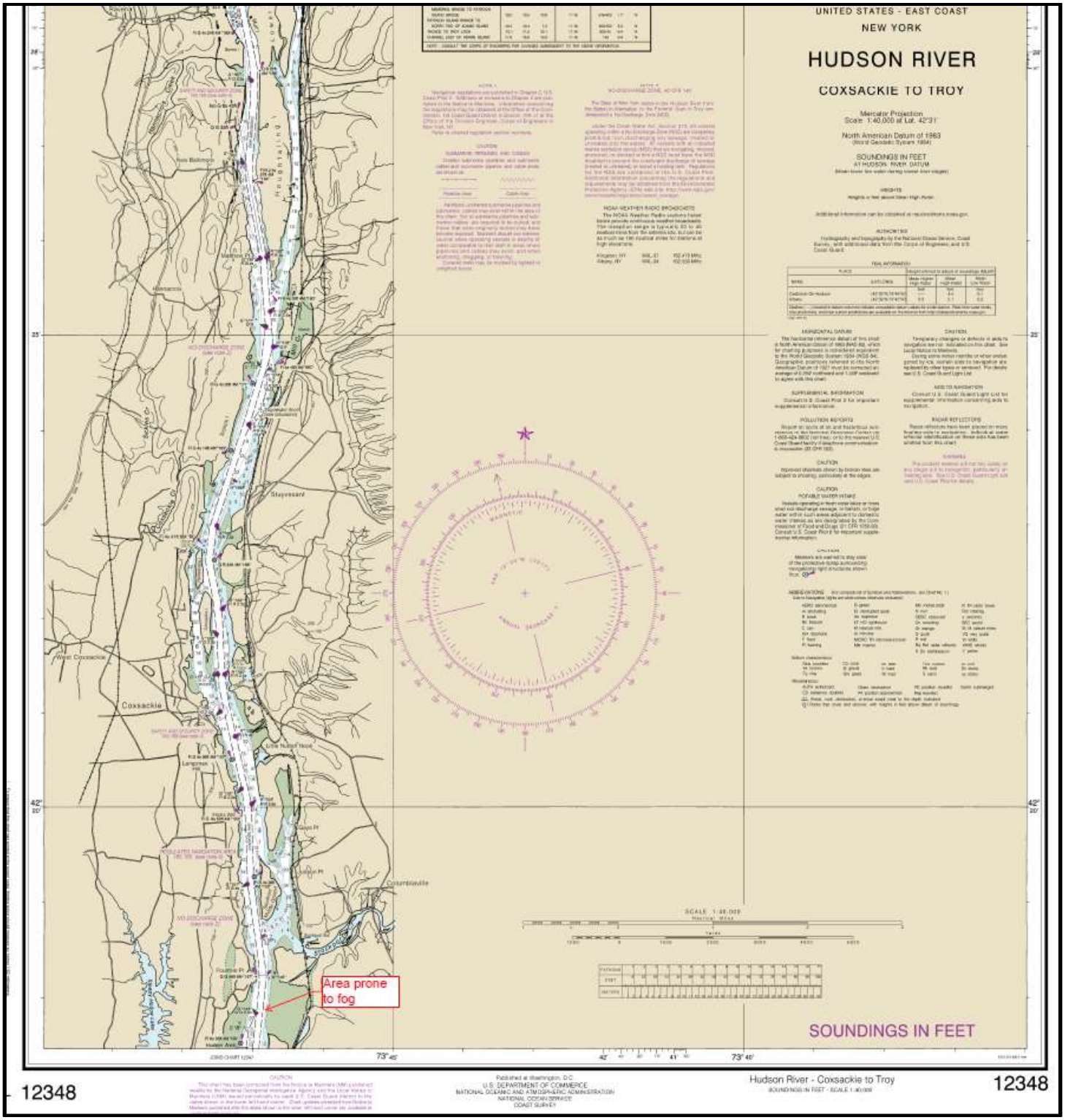
- Ensure contingency plans identify sensitive area for booming.
- Place aquatic habitat and spawning locations on navigational charts.
- Prohibit fishing in close proximity to power plants.
- Conduct more aquatic resource studies.
- Expand emergency response capabilities and resources.
- Dredge remaining PCB’s from the Hudson River.
- Improve hazardous materials spill preventative measures in environmentally sensitive areas.
- Increase the types and quantities of emergency response equipment to increase response capability.
- Improve long-range contingency planning and better coordinate activities.
- Create a dynamic relationship between the shipping industry and fishery biologists to identify locations for anchorage areas.
- Enhance communications between the shipping industry and waterway users.
- Restore local knowledge of the importance of Hudson River aquatic resources.

- Increased enforcement of fisheries regulations.
- Increase inventories of emergency response equipment.
- Expand the VTS in New York to cover the Hudson River to Albany to increase spill response capabilities.
- Be proactive and aggressively champion the management of Hudson River species.
- Improve capability to immediately respond and protect critical habitats.

Appendix F

Poughkeepsie - Navigation Charts with Participant Comments


12348
SOUNDINGS IN FEET
Appendix F - Poughkeepsie -
Navigational Charts with Participant Comments
Area prone to fog
Tight area, meeting is avoided
Area prone to fog
Tight area, meeting is avoided
Narrow area and port facility has expanded
ALBANY TO TROY
UNITED STATES - EAST COAST
NEW YORK
HUDSON RIVER
COXSACKIE TO TROY
12348


UNITED STATES - EAST COAST
NEW YORK
HUDSON RIVER
COXSACKIE TO TROY
Mercator Projection
Scale 1:40,000 at Lat. 42°31'
North American Datum of 1983
(World Geodetic System 1984)
SOUNDINGS IN FEET
AT HUDSON RIVER DATUM
Coxsackie
Stuyvesant
West Coxsackie
Columbiaville
Area prone to fog
SOUNDINGS IN FEET
12348
Hudson River - Coxsackie to Troy
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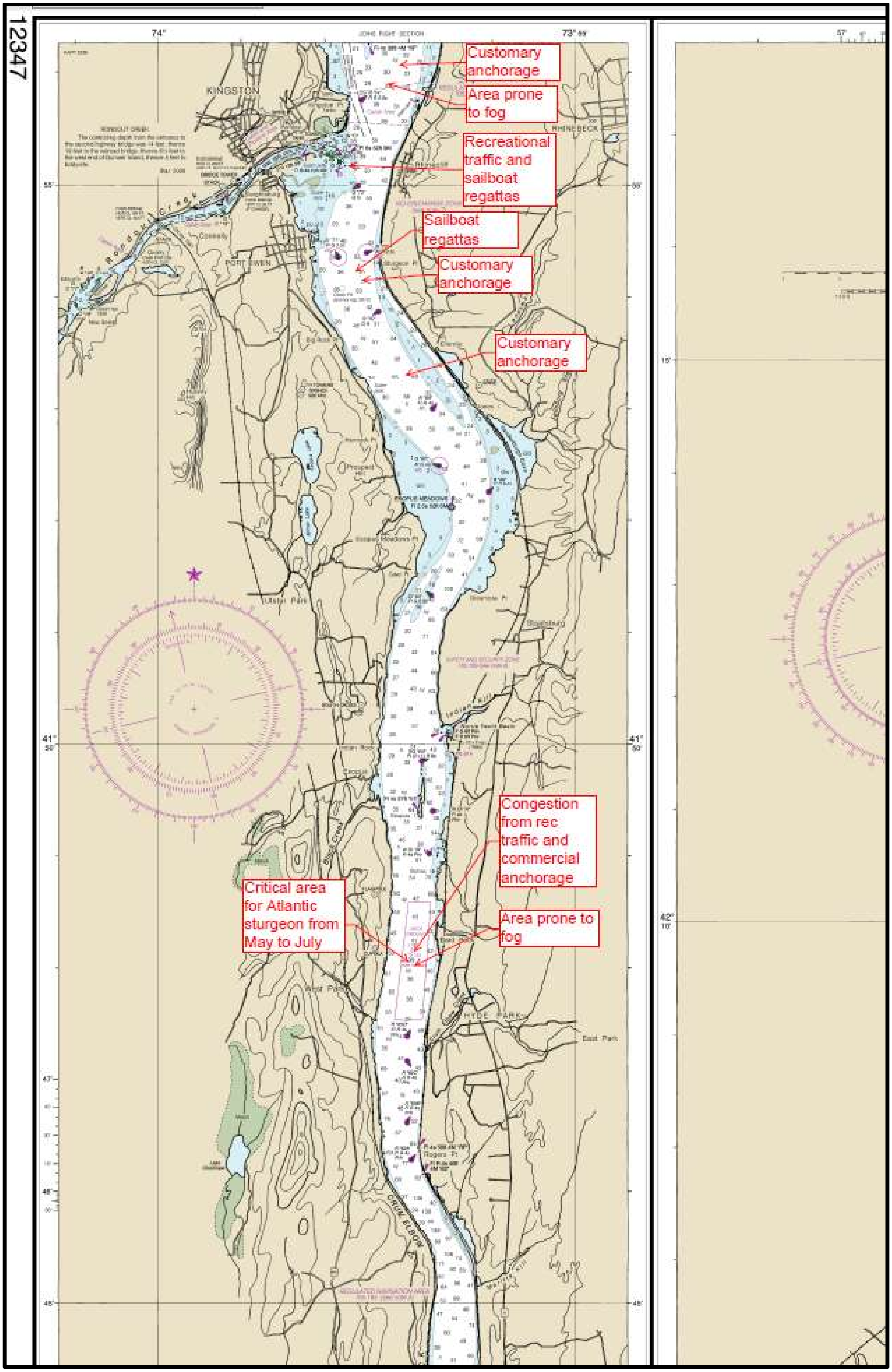
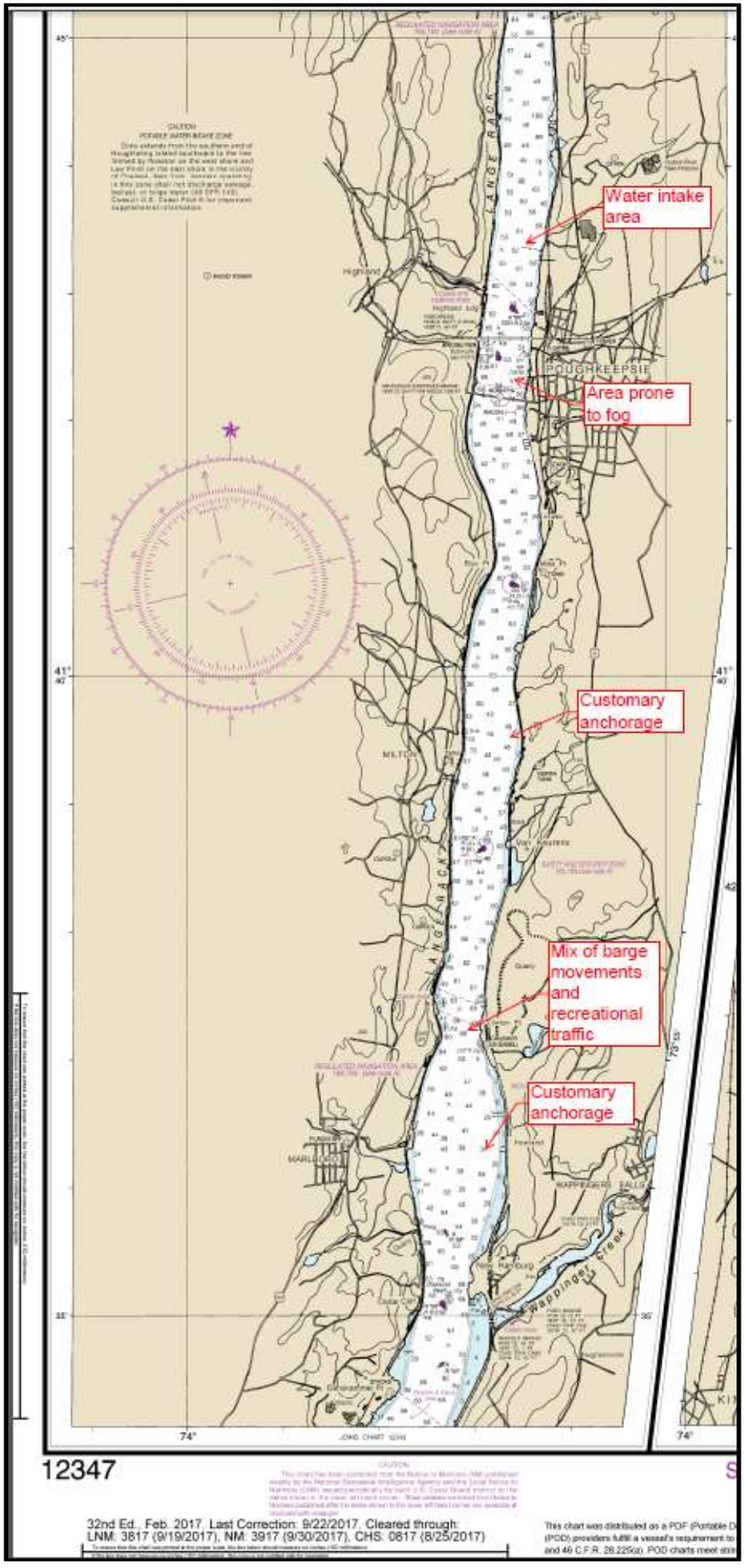
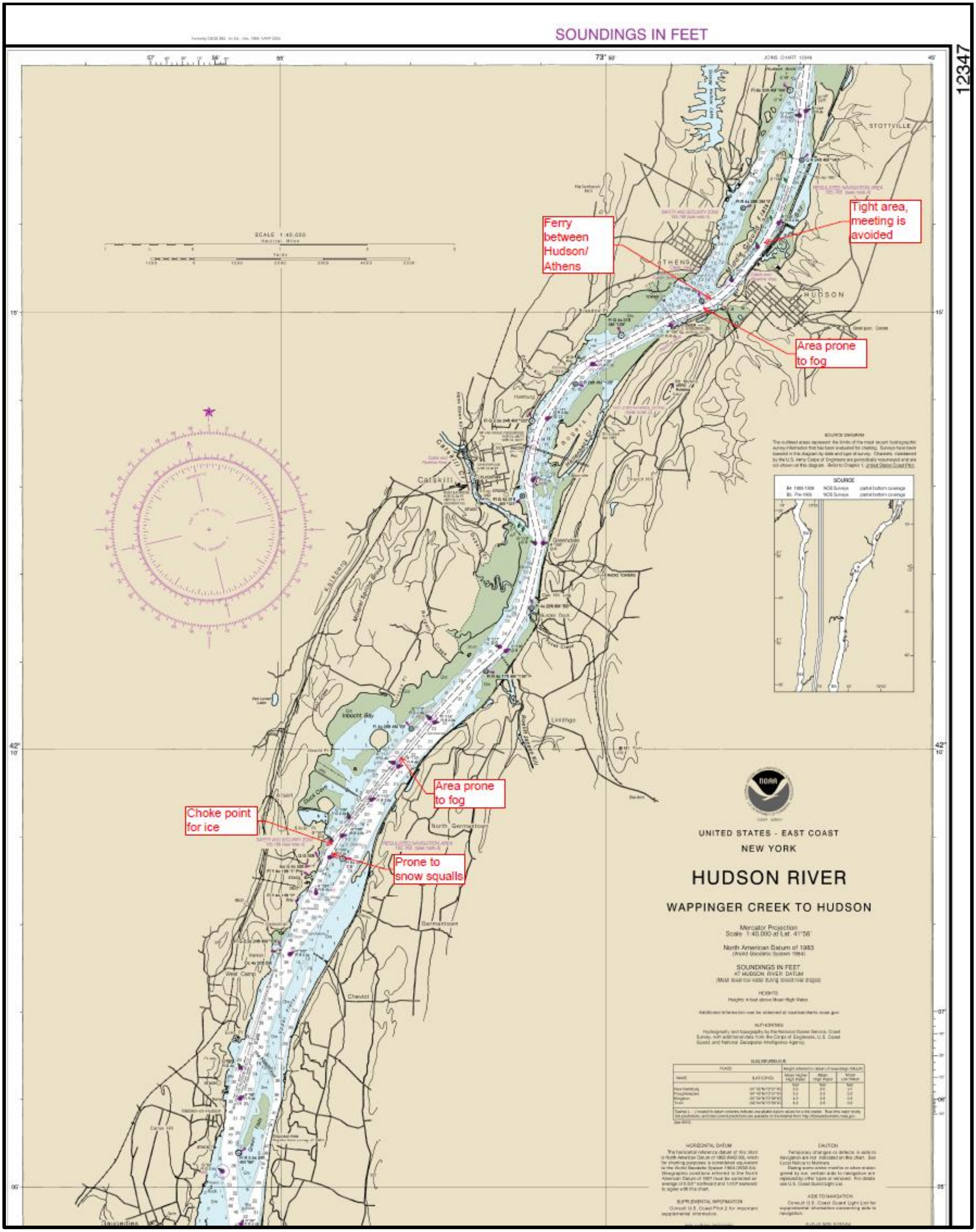
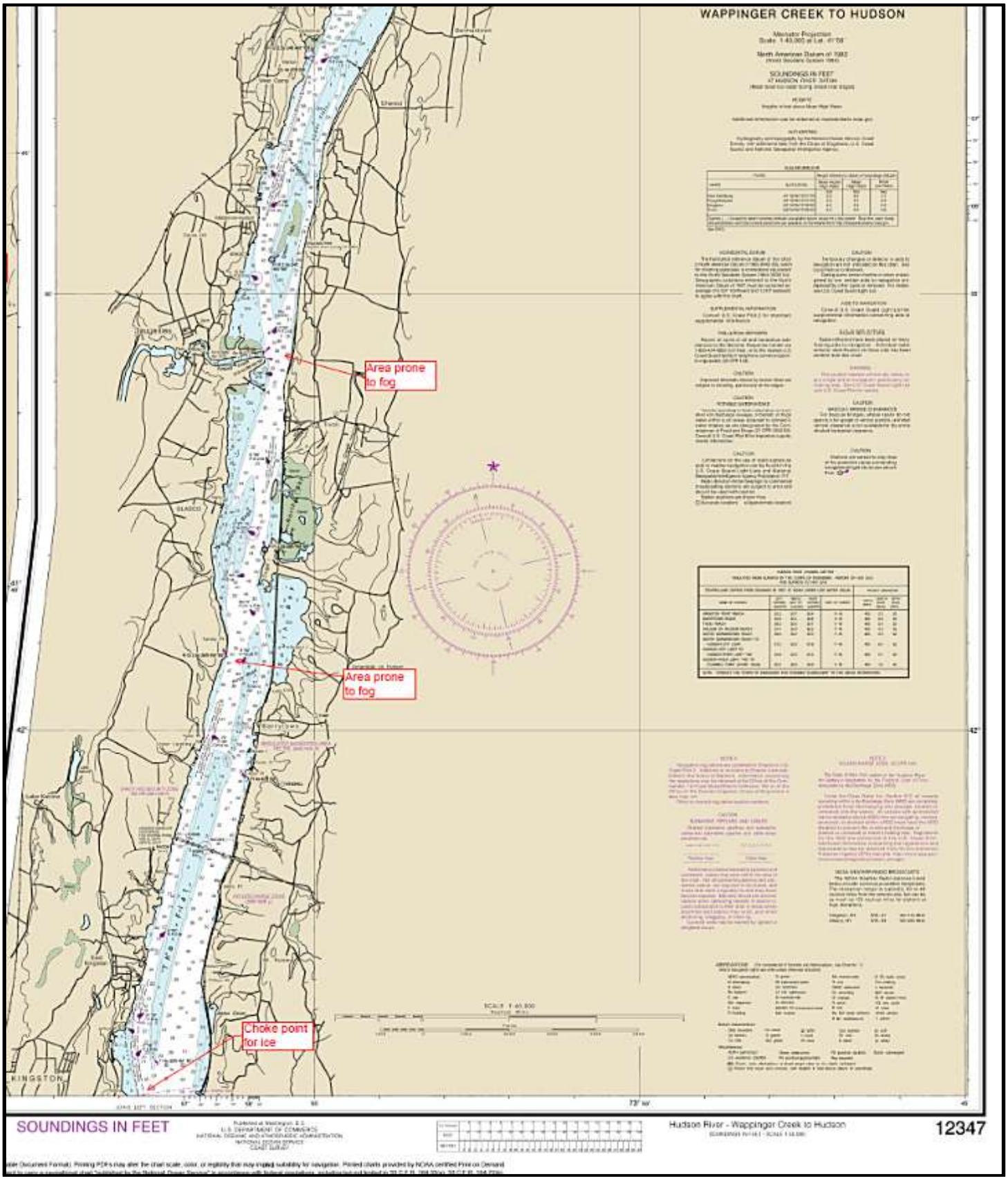
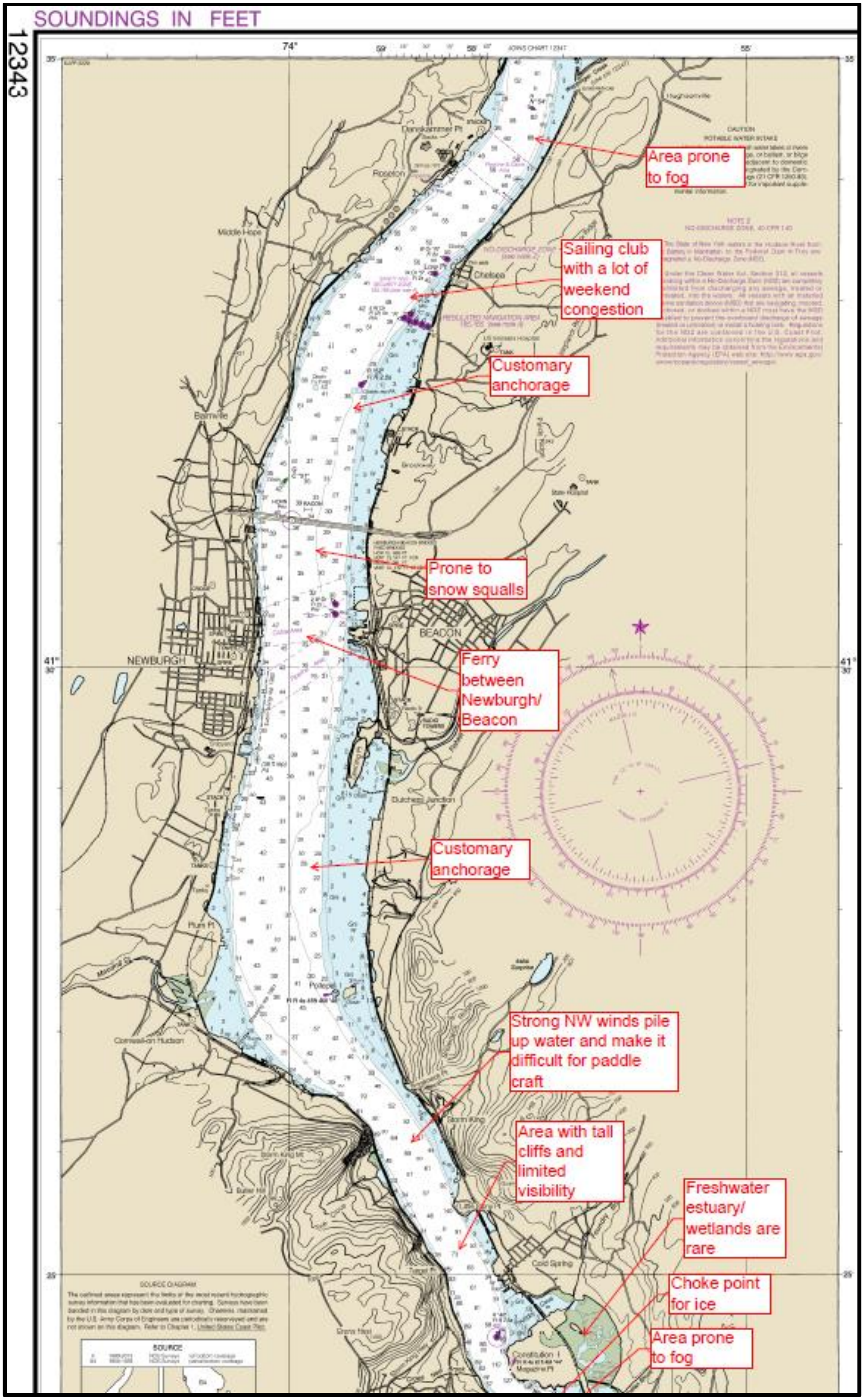
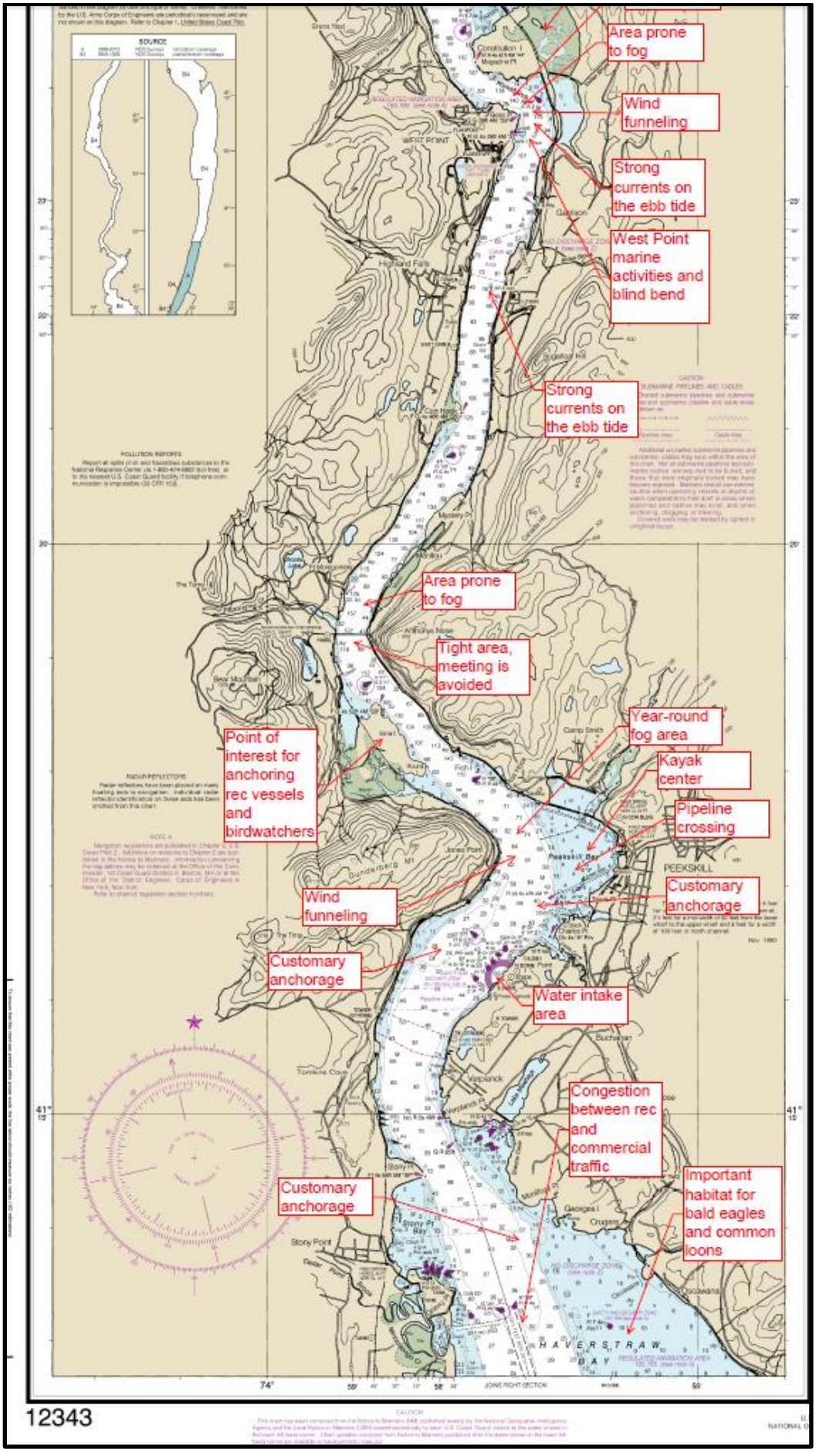

12347
Customary anchorage
Area prone to fog
Recreational traffic and sailboat regattas
Sailboat regattas
Customary anchorage
Customary anchorage
Congestion from rec traffic and commercial anchorage
Critical area for Atlantic sturgeon from May to July
Area prone to fog
KINGSTON
RHINEBECK
PORT EWEN
HYDE PARK

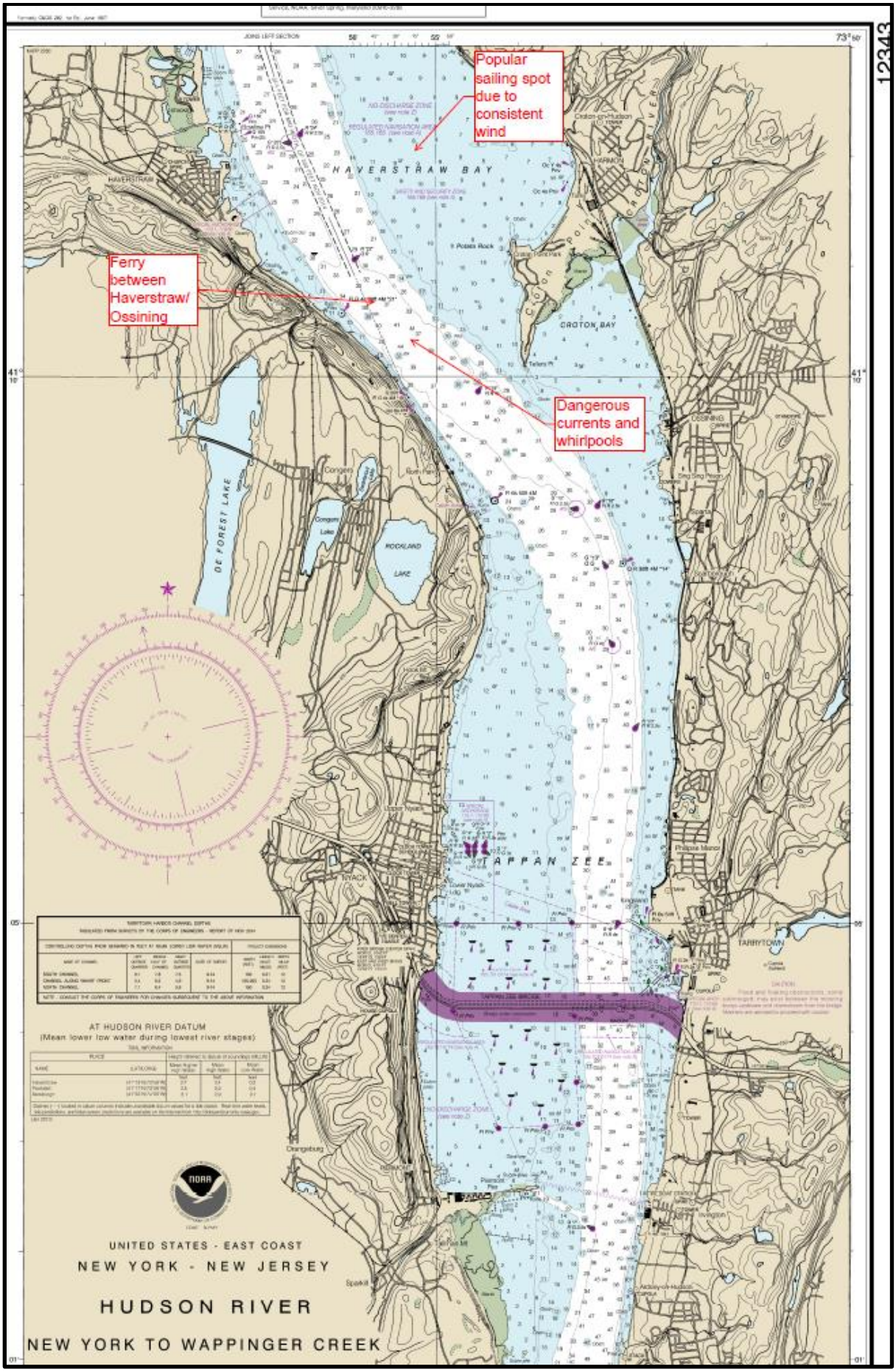

Water intake area
Area prone to fog
Customary anchorage
Mix of barge movements and recreational traffic
Customary anchorage
POUGHKEEPSIE
MILTON
MARLBORO
Wappinger Creek
12347
32nd Ed., Feb. 2017. Last Correction: 9/22/2017. Cleared through:
LNM: 3817 (9/19/2017), NM: 3917 (9/30/2017), CHS: 0817 (8/25/2017)


SOUNDINGS IN FEET
12347
Ferry between Hudson/ Athens
Tight area, meeting is avoided
Area prone to fog
Area prone to fog
Choke point for ice
Prone to snow squalls
STOTTVILLE
ATHENS
HUDSON
Catskill
Greendale
Inbocht Bay
North Germantown
Germantown
West Camp
Cheviot
UNITED STATES - EAST COAST
NEW YORK
HUDSON RIVER
WAPPINGER CREEK TO HUDSON
Mercator Projection
North American Datum of 1983
SOUNDINGS IN FEET


WAPPINGER CREEK TO HUDSON
Area prone to fog
Area prone to fog
Choke point for ice
KINGSTON
SOUNDINGS IN FEET
Hudson River - Wappinger Creek to Hudson
12347

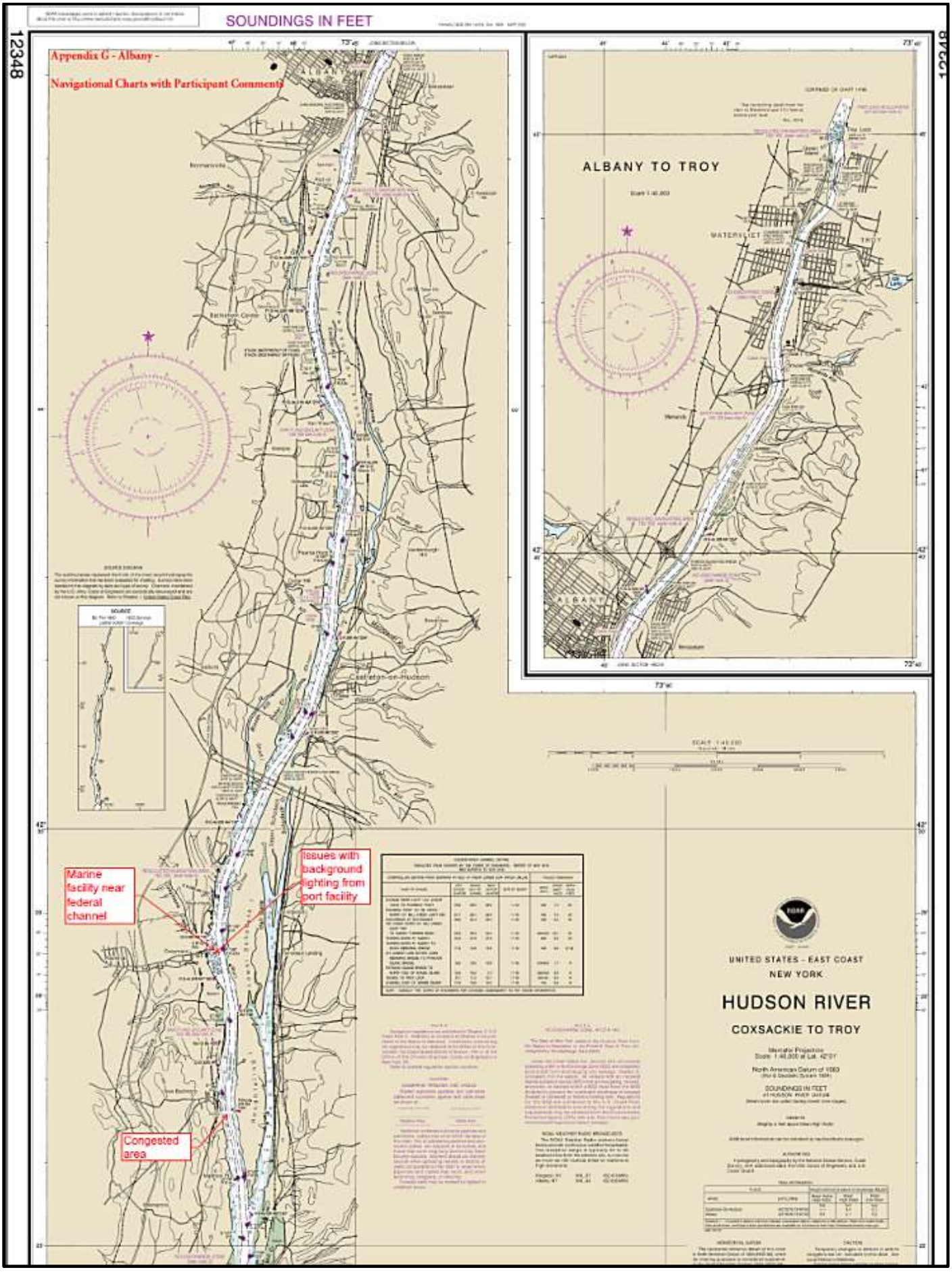

SOUNDINGS IN FEET
12343
Area prone to fog
Sailing club with a lot of weekend congestion
Customary anchorage
Prone to snow squalls
Ferry between Newburgh/ Beacon
NEWBURGH
BEACON
Customary anchorage
Strong NW winds pile up water and make it difficult for paddle craft
Area with tall cliffs and limited visibility
Freshwater estuary/ wetlands are rare
Choke point for ice
Area prone to fog

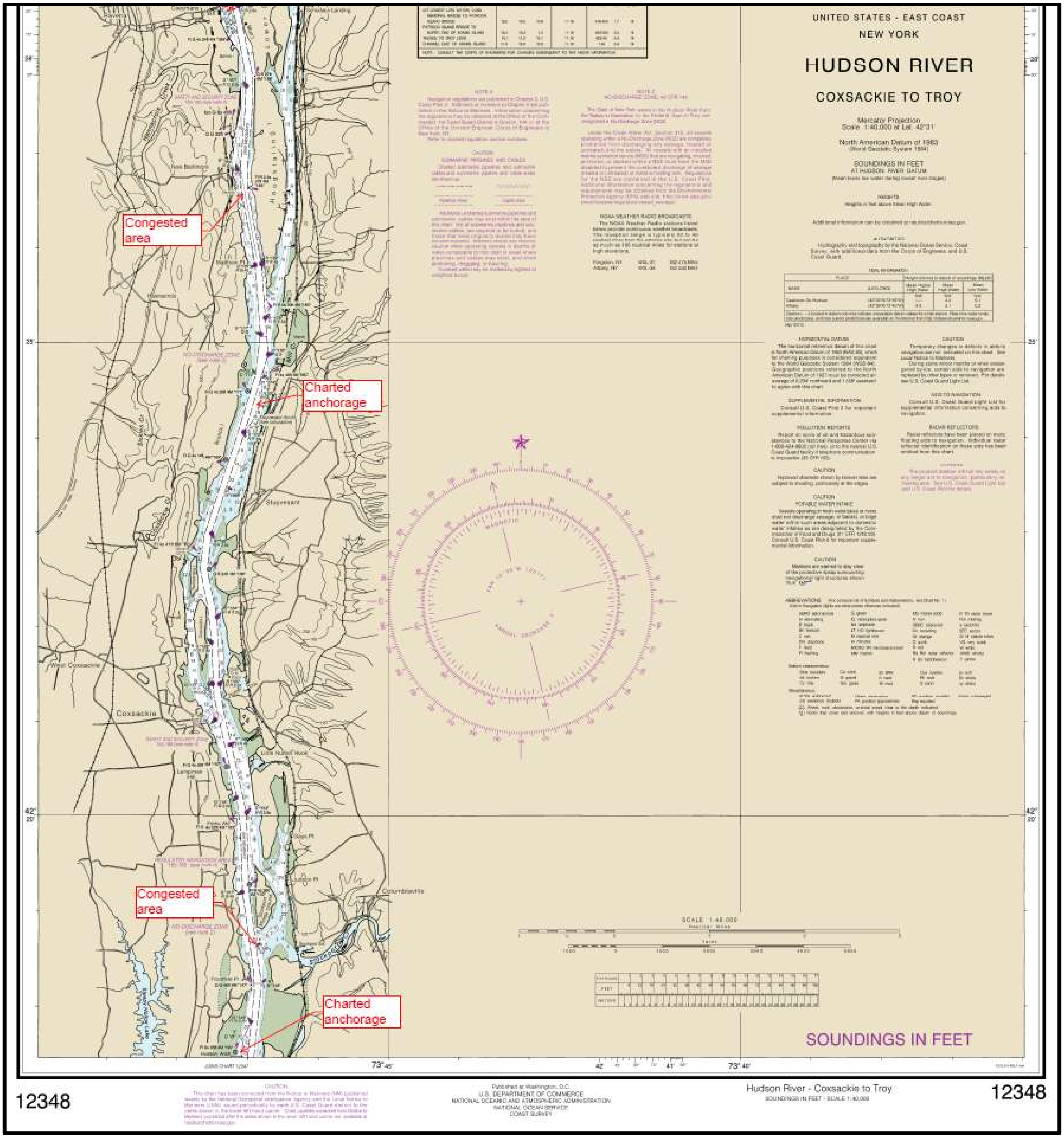

Area prone to fog
Wind funneling
Strong currents on the ebb tide
West Point marine activities and blind bend
Strong currents on the ebb tide
Area prone to fog
Tight area, meeting is avoided
Year-round fog area
Kayak center
Pipeline crossing
Point of interest for anchoring rec vessels and birdwatchers
Customary anchorage
Wind funneling
Customary anchorage
Water intake area
Congestion between rec and commercial traffic
Customary anchorage
Important habitat for bald eagles and common loons
12343

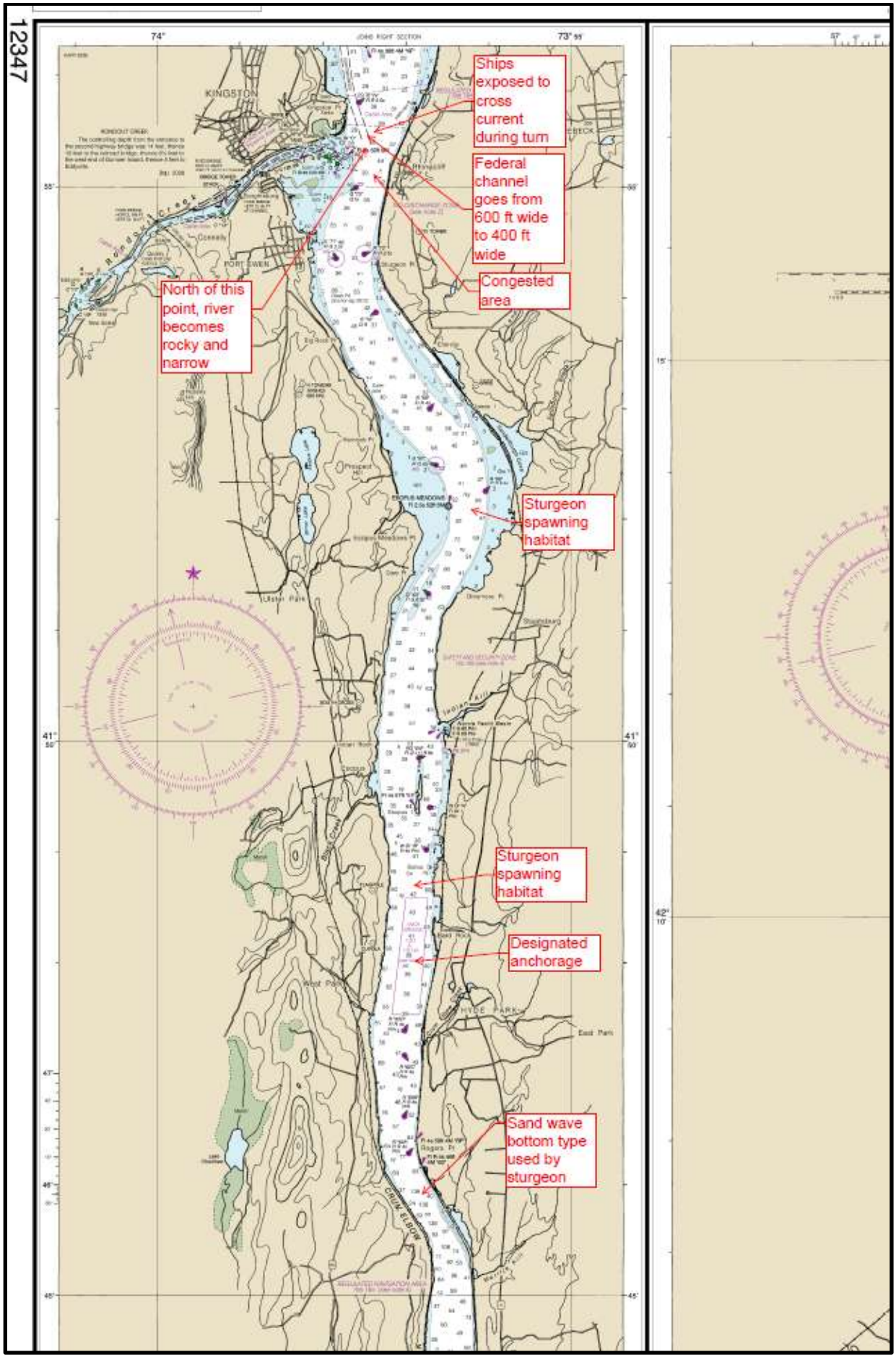

Popular sailing spot due to consistent wind
Ferry between Haverstraw/ Ossining
Dangerous currents and whirlpools
HAVERSTRAW BAY
CROTON BAY
TAPPAN ZEE
DE FOREST LAKE
ROCKLAND LAKE
AT HUDSON RIVER DATUM
(Mean lower low water during lowest river stages)
UNITED STATES - EAST COAST
NEW YORK - NEW JERSEY
HUDSON RIVER
NEW YORK TO WAPPINGER CREEK
12343

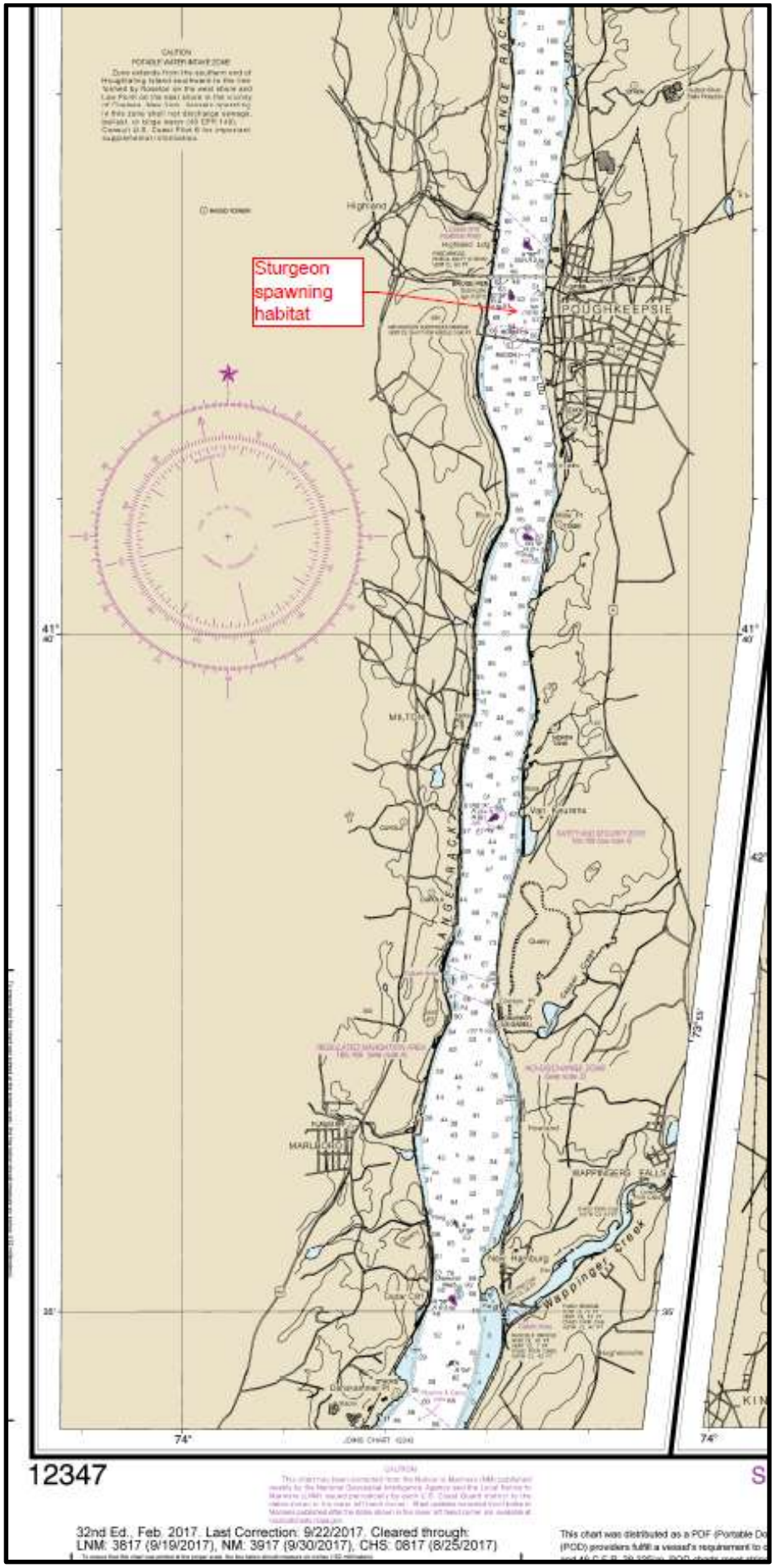
Appendix G

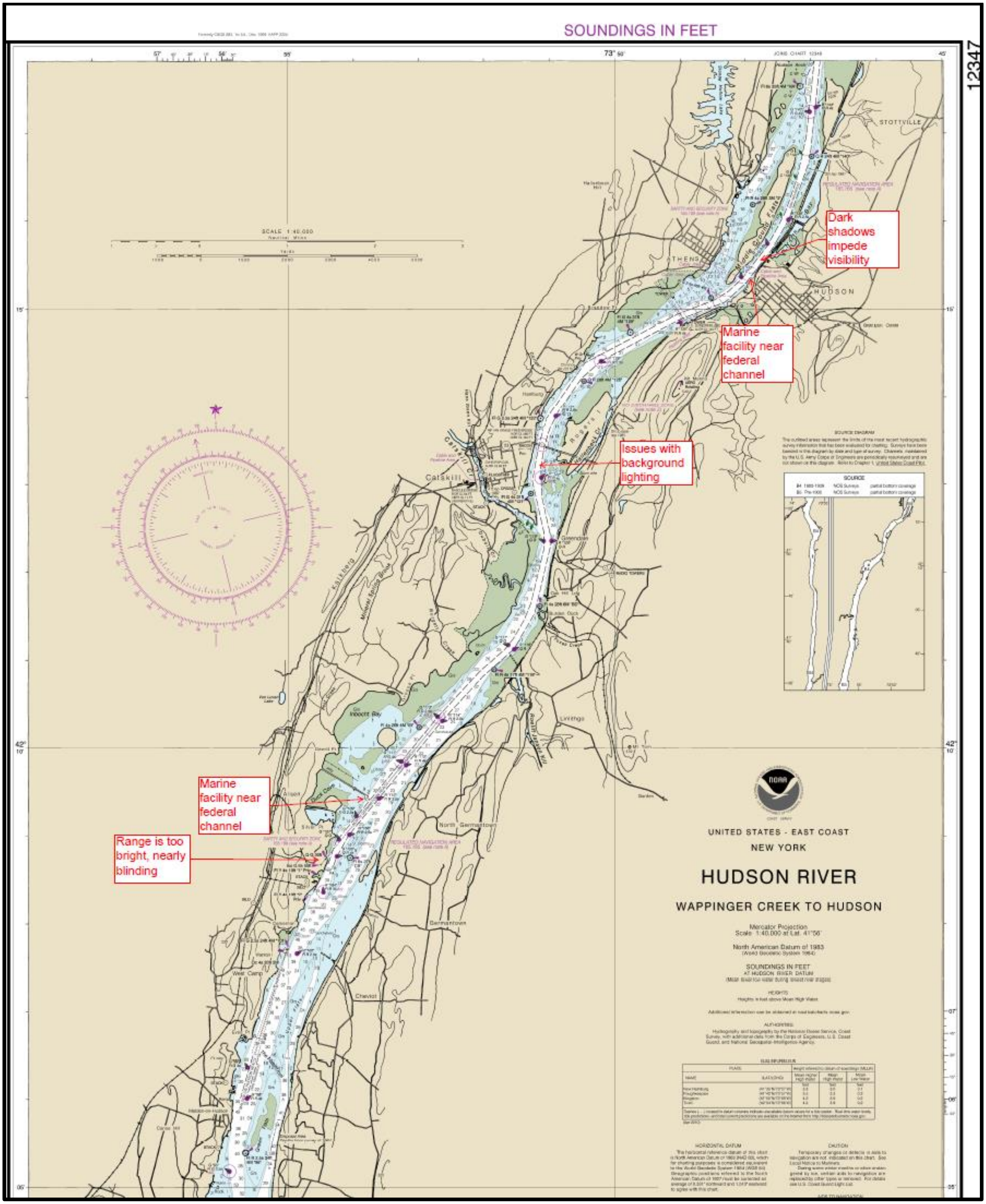
Albany - Navigation Charts with Participant Comments

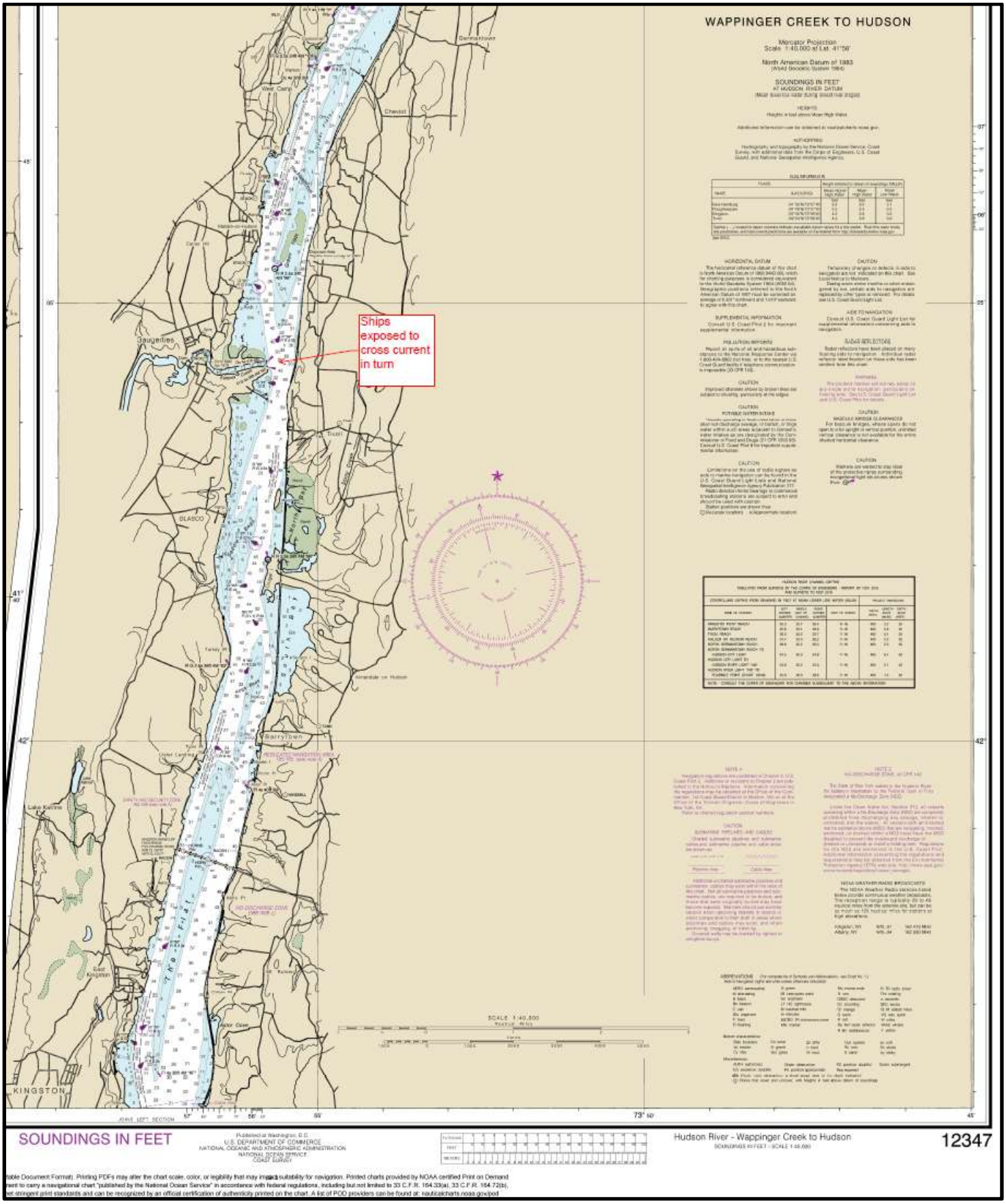

12348
SOUNDINGS IN FEET
Appendix G - Albany -
Navigational Charts with Participant Comments
ALBANY TO TROY
Marine facility near federal channel
Issues with background lighting from port facility
Congested area
UNITED STATES - EAST COAST
NEW YORK
HUDSON RIVER
COXSACKIE TO TROY

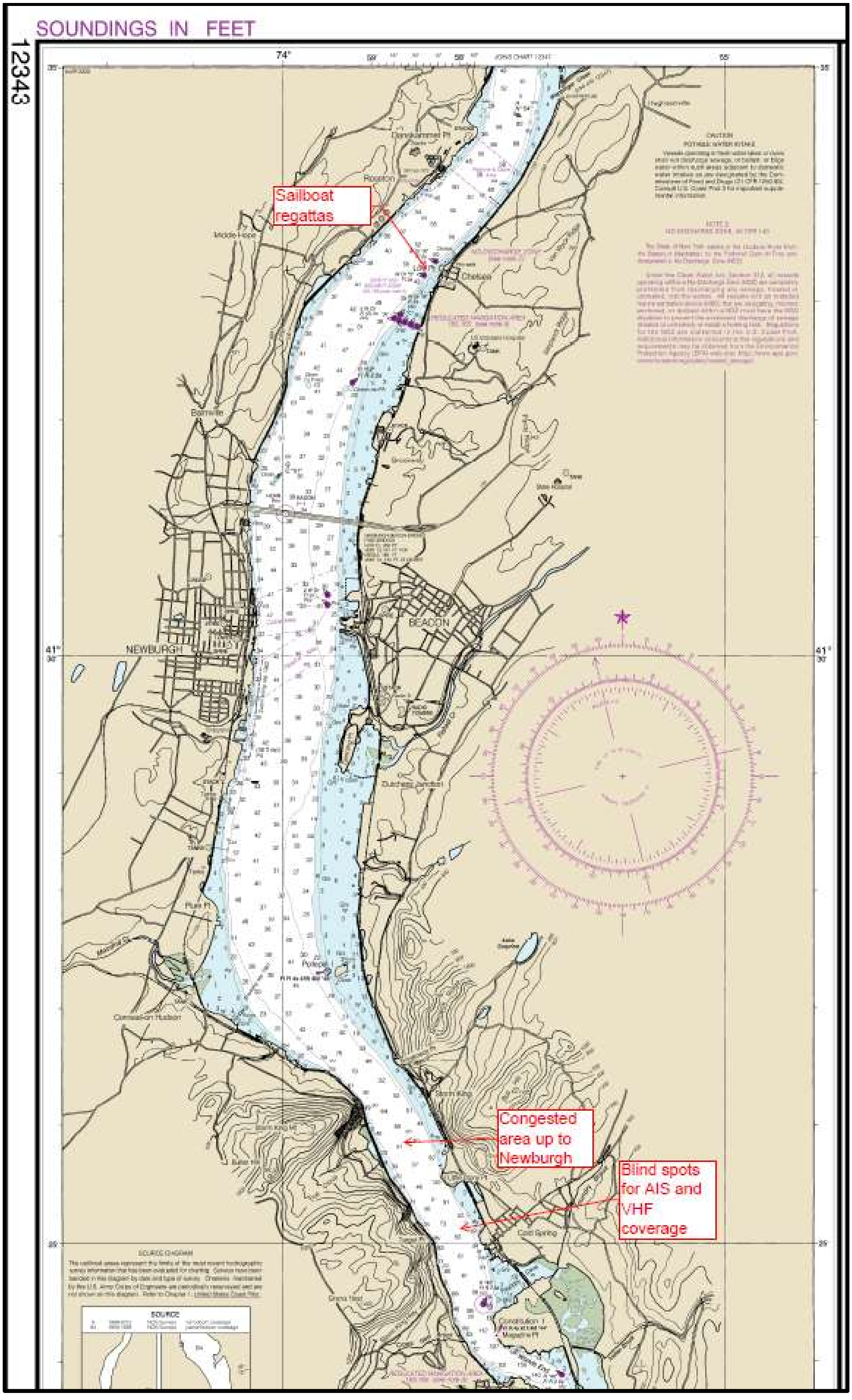

UNITED STATES - EAST COAST
NEW YORK
HUDSON RIVER
COXSACKIE TO TROY
Mercator Projection
Scale 1:40,000 at Lat. 42°31'
North American Datum of 1983
SOUNDINGS IN FEET
Congested area
Charted anchorage
Congested area
Charted anchorage
Coxsackie
West Coxsackie
Stuyvesant
Columbiaville
SOUNDINGS IN FEET
12348
Hudson River - Coxsackie to Troy
12348

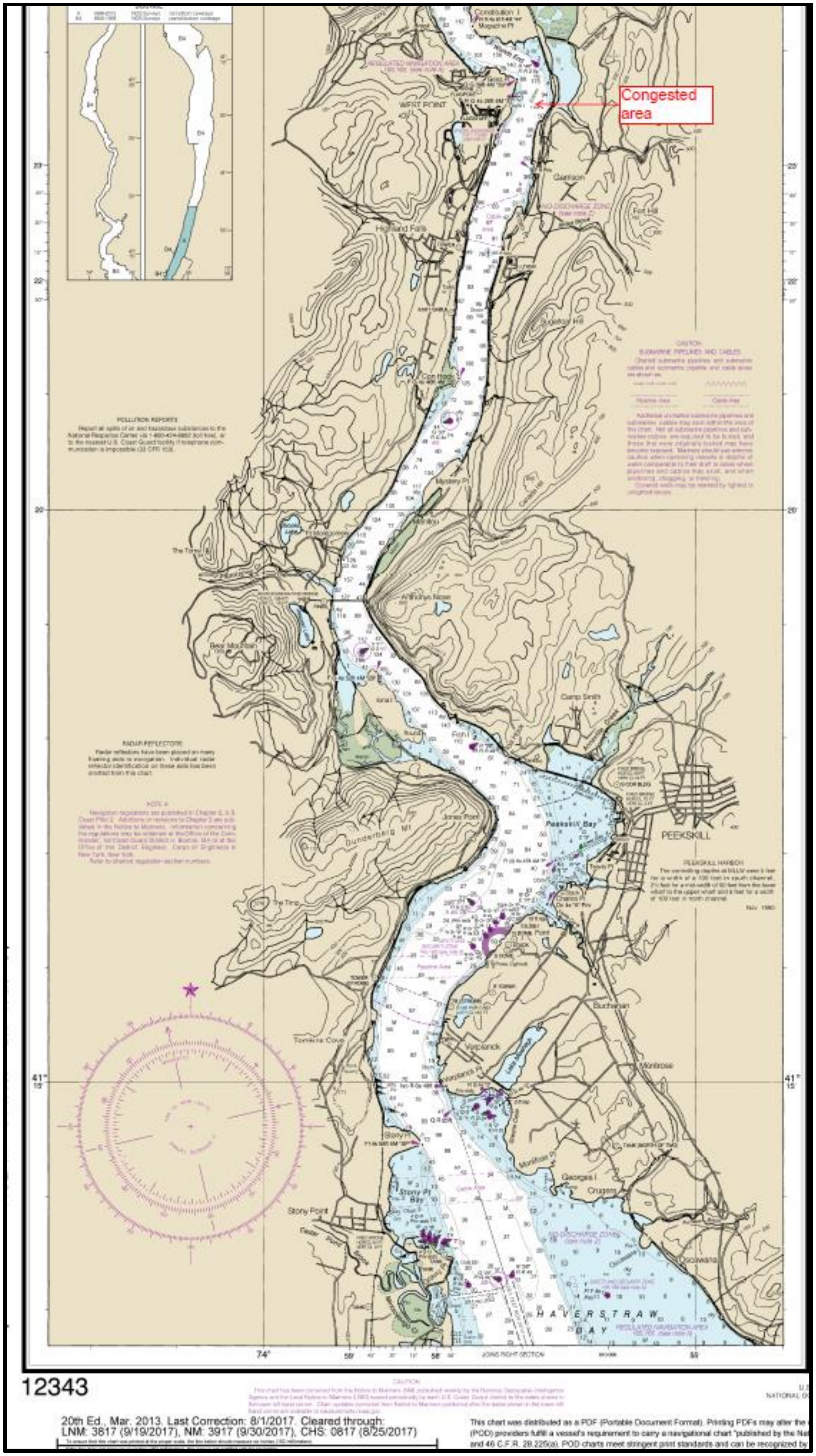

12347
Ships exposed to cross current during turn
Federal channel goes from 600 ft wide to 400 ft wide
Congested area
North of this point, river becomes rocky and narrow
Sturgeon spawning habitat
Sturgeon spawning habitat
Designated anchorage
Sand wave bottom type used by sturgeon
KINGSTON
PORT EWEN
HYDE PARK
Rondout Creek
CRUM ELBOW

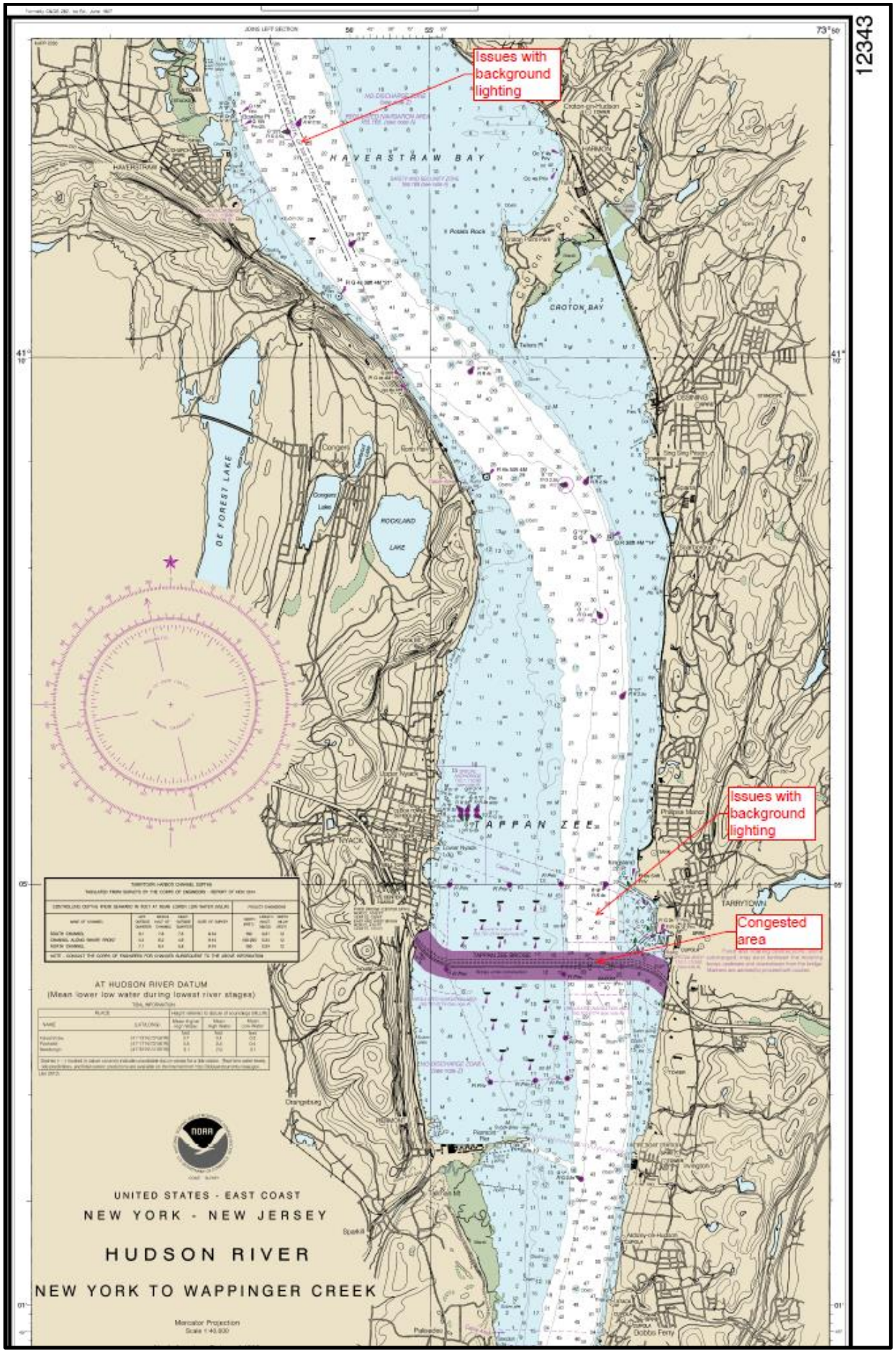

Sturgeon spawning habitat
POUGHKEEPSIE
Highland
MARLBORO
WAPPINGERS FALLS
Wappinger Creek
41°
40'
74°
12347
32nd Ed., Feb. 2017. Last Correction: 9/22/2017. Cleared through:
LNM: 3817 (9/19/2017), NM: 3917 (9/30/2017), CHS: 0817 (8/25/2017)


SOUNDINGS IN FEET
12347
STOTTVILLE
HUDSON
ATHENS
Catskill
North Germantown
Germantown
Cheviot
West Camp
Dark shadows impede visibility
Marine facility near federal channel
Issues with background lighting
Marine facility near federal channel
Range is too bright, nearly blinding
UNITED STATES - EAST COAST
NEW YORK
HUDSON RIVER
WAPPINGER CREEK TO HUDSON
Mercator Projection
Scale 1:40,000 at Lat. 41°56'
North American Datum of 1983
SOUNDINGS IN FEET
AT HUDSON RIVER DATUM


WAPPINGER CREEK TO HUDSON
Ships exposed to cross current in turn
SOUNDINGS IN FEET
Hudson River - Wappinger Creek to Hudson
12347


SOUNDINGS IN FEET
12343
Sailboat regattas
Congested area up to Newburgh
Blind spots for AIS and VHF coverage
NEWBURGH
BEACON
Middle Hope
Roseton
Chelsea
Balmville
Cornwall-on-Hudson
Pollepel
Storm King
Cold Spring
Dutchess Junction


Congested area
WEST POINT
Garrison
Highland Falls
Constitution I
Fort Hill
Sugarloaf Hill
Mystery Pt
Anthonys Nose
Bear Mountain
Camp Smith
Peekskill Bay
PEEKSKILL
Jones Point
Dunderberg Mt
Tomkins Cove
Verplanck
Buchanan
Montrose
Stony Pt
Stony Point
Georges I
Crugers
Ossining
H A V E R S T R A W
B A Y
74°
58'
55'
JOINS RIGHT SECTION
12343
20th Ed., Mar. 2013. Last Correction: 8/1/2017. Cleared through:
LNM: 3817 (9/19/2017), NM: 3917 (9/30/2017), CHS: 0817 (8/25/2017)
This chart was distributed as a PDF (Portable Document Format). Printing PDFs may alter the
(POD) providers fulfill a vessel's requirement to carry a navigational chart "published by the Na
and 46 C.F.R. 28.225(a). POD charts meet stringent print standards and can be recognized by


12343
Issues with background lighting
HAVERSTRAW BAY
CROTON BAY
OE FOREST LAKE
ROCKLAND LAKE
TAPPAN ZEE
Issues with background lighting
Congested area
AT HUDSON RIVER DATUM
(Mean lower low water during lowest river stages)
UNITED STATES - EAST COAST
NEW YORK - NEW JERSEY
HUDSON RIVER
NEW YORK TO WAPPINGER CREEK
Mercator Projection
Scale 1:40,000

Appendix H

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Appendix I

Abbreviations and Acronyms

ACP – Area Contingency Plan
AIS – Automated Identification System
ANPRM – Advance Notice to Proposed Rule Making
ATON – Aids to Navigation
BWI – Boating While Intoxicated
COTP – Captain of the Port
EPA – Environmental Protection Agency
GRP – Geographic Response Plans
GRS – geographic Response Strategies
HRSC - Hudson River Safety Committee
IMO – International Safety Management
MARAD – Marine Highway by the Maritime Administration
MTS – Marine Transportation System
MTSRU – Marine Transportation System Recovery Unit
NDG – National Dialogue Group
NEPA – National Environmental Policy Act
NMFS – National Marine Fisheries Service
NOAA – National Oceanic Atmospheric Administration
NYC – New York City
OCIMF – Oil Company International Marine Forum
OSLTF – Oil Spill Liability Trust Fund
OSRO – Oil Spill Response Organization
PAWSA – Ports and Waterways Safety Assessment
PCB - Polychlorinated Biphenyl
PDF – Personal Flotation Device
PSC – Port State Control
RNA – Regulated Navigation Areas
SIRE – Ship Inspection Report Program
SOLAS – Safety of Life at Sea
STCW – Standards of Training Certification of Watchkeeping
TMSA – Tanker Management Self-Assessment
TMSS – Towing Management Safety System
USACE – United States Army Corps of Engineers
USCG - United States Coast Guard
VHF – Very High Frequency
VTM – Vessel Traffic Management
VTS – Vessel Traffic Service