

A REVIEW OF IMPLEMENTATION STRATEGIES IN OTHER STATES

PUGET SOUND NO DISCHARGE ZONE FOR VESSEL SEWAGE



Prepared for
Washington State Department of Ecology



Prepared by
Herrera Environmental Consultants, Inc.



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CONTENTS

Introduction	1
Methods	2
Experiences from Other Areas	3
Geographic Scope	3
Implementation Timeframe and Stakeholder Issues	5
Education and Outreach.....	8
Enforcement	8
Evaluation and Continued Success.....	9
Summary of Findings from Other Areas	10
Recommendations for Implementing an NDZ in Puget Sound	11
Geographic Boundaries	11
Implementation Timeframe and Stakeholder Issues	12
Education and Outreach.....	12
Enforcement	13
Evaluation and Continued Success.....	13
Conclusions	14
References	14

TABLES

Table 1. Listing of NDZs Reviewed.	2
Table 2. No Discharge Zones and Associated Contacts.	3

Introduction

A No Discharge Zone (NDZ) is authorized under Section 312 of the federal Clean Water Act (CWA) and overseen by the United States Environmental Protection Agency (US EPA). However, beyond US EPA's determination that the basic requirements delineated in the CWA are met, an NDZ is implemented, administered, and may be enforced at the state and local level. If the Washington State Department of Ecology (Ecology) decides to move forward in pursuing an NDZ for Puget Sound, an implementation strategy that accounts for Puget Sound's size, sensitive ecology, diverse boater population, and large volume of commercial vessel traffic, needs to be developed.

In the first years of the program in the late 1970s and 1980s, most NDZs were small embayments or fresh water bodies where there were high concentrations of recreational vessels; these were usually small boat harbors, or recreational destinations. Because these areas did not experience significant volumes of commercial vessel traffic, the feasibility of the NDZ depended largely on availability and access to pumpout facilities for recreational vessels, and local harbormasters were responsible for enforcement or oversight of the NDZ. Although the first NDZs primarily affected recreational vessels, the language contained in CWA 312 f(3) does not differentiate between commercial and recreational vessels. Therefore, in NDZs with significant commercial vessel use, provisions must be made for these vessels.

In the last decade, many new NDZs have been designated that span large geographic areas, include shipping and ferry lanes, contain commercial ports, and experience high volumes of recreational use. Due to their size and diversity of uses, these NDZs are inherently more complex to implement and manage than small NDZs that are primarily used by recreational boaters. As required by the CWA Section 312f(3), for an NDZ to be approved, the US EPA must be assured that adequate pumpout facilities or methods to prevent discharges in an NDZ are in place for all vessels, not just recreational vessels. For smaller NDZs, it is generally accepted that a ratio of 300 to 600 vessels per pumpout facility would ensure that all vessels have reasonable access to pumpout facilities. For larger NDZs though, both the number of pumpout facilities and the distance boaters would need to travel between pumpout facilities are considerations. Furthermore, the special needs of commercial vessels must be considered, since they require a separate network of facilities or sewage removal methods.

There are no specific guidelines specifying geographic requirements for pumpout facilities or sewage disposal options for commercial vessels. However, the EPA does require documentation from the state that reasonable sewage disposal options consistent with NDZ regulations are available for commercial vessels, and that the geographic distribution of recreational pumpout facilities has been duly addressed (Ann Rodney, US EPA Region 1 No Discharge Zone Coordinator, personal communication).

If an NDZ were created for Puget Sound, it would be the first NDZ in US EPA Region 10. However, since there have been 80 NDZs established in 26 different states, there are plenty of lessons to be learned from other regions. Therefore, as a first step in developing a potential implementation strategy for a Puget Sound NDZ, NDZ managers from other states were contacted to learn about their experiences. The purpose of this report is to summarize what was learned from this effort and to recommend an approach for Puget Sound.

Methods

A list of more than 10 existing NDZs bearing similar features to Puget Sound, either in geography, ecology, commercial interests (e.g., shipping, shellfish aquaculture), or recreational boating pressure was provided to Ecology for review. Ecology selected five NDZs (Table 1) for further review. These five were: Lake Ontario (NY), Boston Harbor (MA), Nantucket (MA), Camden (ME), and Rockport/Rockland/Owls Head (ME). The California NDZ for marine waters for certain commercial vessels was also reviewed.

Table 1. Listing of NDZs Reviewed.				
State	Waterbody	Designation Type (CWA Section 312) ^a	Federal Register Notice	Date
California	California Marine Waters	(f)(4)(A)	71 FR 11401	02-27-2012
Maine	Camden, Rockport, Rockland, and portions of Owls Head	(f)(3)	75 FR 4379	01-27-2010
Massachusetts	Nantucket Harbor	(f)(3)	57 FR 44379	09-25-1992
Massachusetts	Buzzards Bay	(f)(3)	65 FR 46712	07-31-2000
Massachusetts	Boston Harbor	(f)(3)	73 FR 43224	07-25-2008
Massachusetts	Cape Cod	(f)(3)	73 FR 43441	07-24-2008
Massachusetts	Upper North Shore - Gloucester, Rockport, Essex, Ipswich, Rowley, Newbury, Newburyport, Salisbury, Amesbury, West Newbury, Merrimac, Groveland, North Andover, Haverhill, Methuen, and Lawrence	(f)(3)	75 FR 43979	07-27-2010
Massachusetts	Outer Cape Cod (coastal waters of Chatham, Orleans, Eastham, Wellfleet, Truro, and Provincetown)	(f)(3)	76 FR 39395	07-06-2011
New York	Lake Ontario	(f)(3)	76 FR 78253	12-16-2011
New York	Long Island Sound	(f)(3)	76 FR 55668	9-08-2011

^a NDZ designation types include:

- 312(f)(3) protecting aquatic habitats where pumpout facilities are available;
- 312(f)(4)(A) protecting special aquatic habitats or species; and
- 312(f)(4)(B) protecting drinking water intake zones to protect human health.

As indicated in Table 2, the specific managers for these NDZs also manage other NDZs in the area; therefore, the information summarized is representative of each state's approach.

NDZ managers and people who were instrumental in the implementation of these five zones were contacted and asked questions related to five topics of interest:

1. How did they select the geographic scope of the NDZ?
2. What drove their implementation timeline?
3. What outreach strategies did they use?

4. How has enforcement been implemented?
5. How are they evaluating success of the NDZ?

Table 2. No Discharge Zones and Associated Contacts.		
Contact	Title and Affiliation	Associated NDZs
Todd Callaghan	No Discharge Area Coordinator Massachusetts Office of Coastal Zone Management	Massachusetts Coastline (multiple adjacent NDZs), Boston Harbor, Nantucket
Pamela Parker	Maine Department of Environmental Protection	Camden, Rockport, Owls Head NDZ
Jeff Myers	Director Bureau of Water Assessment and Management New York State Department of Environmental Conservation	Lake Ontario, Long Island Sound, Lake Erie
Ann Rodney	No Discharge Area Coordinator US EPA Region 1	Massachusetts and Maine NDZs
Dan Hellin	Owner Dan Hellin Consulting	Boston Harbor
Paul Amato	EPA Region 9	California coast line for certain commercial vessels
Renan Jauregui	Engineer, Division of Water Quality, CA State Water Resources Control Board	California coast line for certain commercial vessels

Unless otherwise cited, the contacts listed in Table 2 were the source of the information that is summarized in this report.

Experiences from Other Areas

Geographic Scope

Existing NDZs range in size from small, protected embayments to entire state coastlines. Some of the larger protected areas (e.g., Lake Ontario and Long Island Sound's south shore) were designated as a single NDZ. Other large protected areas (such as most of the New England coast) were created as multiple, separate NDZs, and now represent a nearly contiguous NDZ. The diversity in size of the NDZs as well as the boundaries and connections between them are reflective of the respective states' implementation strategies, public support, and feasibility. The implementation strategies of Massachusetts, Maine, and New York are summarized below, along with observations and recommendations provided by the NDZ coordinators.

In 1998, following the NDZ designation of the entire Rhode Island coastline, Massachusetts petitioned the US EPA to designate all of the Massachusetts coastline an NDZ as well. However, the petition was denied, largely because the state could not document that there was adequate access to pumpout facilities, particularly for large commercial vessels. Following this denial, Massachusetts began the process of designating small NDZs in a stepwise process. Currently, Massachusetts has 18 NDZs. While water quality concerns, such as 303(d) listings and shellfish bed closures, were frequently a motivation for NDZ designation, local public support was

the biggest driver for determining where the next NDZ would be. The state would wait for municipalities to request an NDZ designation, work with them to develop the necessary information, and then draft the petition to be submitted to the US EPA. Designating small NDZs at the urging of local communities allowed the state to be better prepared for implementing the NDZ (such as assuring that there was ready access to pumpout facilities for all boaters, and that there was community support). Specific boundaries of NDZs were often decided by local harbormasters based on the area that they thought they could oversee.

Among the Massachusetts NDZs, the Boston Harbor NDZ probably bears the most similarity to Puget Sound as a result of its moderately high commercial traffic. The selection of the boundaries of the Boston Harbor NDZ was primarily determined based on the boundaries of the adjacent NDZs. Also, the Boston Harbor NDZ falls within the jurisdiction of the Boston Police Harbor Patrol Harbormaster. Therefore, jurisdictional authority is clear within the Boston Harbor NDZ.

Massachusetts interpreted the language of CWA f(3) to mean NDZ regulations apply to all vessels regardless of purpose. Therefore, it was assumed that there was no room under the law to exempt, exclude, or delay the implementation of an NDZ for a specific type of vessel. The state of Massachusetts and the communities around Woods Hole, Oak Bluffs, Hyannis, and Nantucket were eager and prepared to institute NDZs in their respective communities. However, the ferries operating between those communities are not equipped to hold waste, and do not have pump out facilities at their docks. Instead of delaying implementation, the state set NDZ boundaries that left gaps between them where the ferries transit. This allowed the ferries to keep operating while still protecting the nearby shorelines from sewage discharges. The state hopes to designate the two ferry routes as NDZs in 2014 or 2015, when the ferries have been retrofitted to hold waste, and pumpout facilities are available. While this strategy allowed the NDZ to move forward, it created a temporary *donut hole effect* where anyone can dump their sewage in the areas not included in the NDZs.

Maine is similar to Massachusetts in that it currently has several small NDZs, and has the goal of designating its entire coastline. As pumpout facilities become more available due to clean vessel act (CVA) funding, it becomes feasible to designate new NDZs. As some of the NDZs in Maine are relatively large areas, geographic proximity to pumpout facilities, as well as the total number of pumpouts, was factored into determining whether there are enough pumpout facilities available. There are no guidelines for evaluating pumpout adequacy on the basis of geography or distance. Therefore, states are left to determine a reasonable distance that boaters might go to use a pumpout facility. In Maine, 4 miles is used as the cutoff for a reasonable distance that a boater will go to use a pumpout facility. Therefore, within Maine's NDZs there is a maximum distance of 8 miles between pumpout facilities.

New York recently designated Long Island Sound and Lake Ontario NDZs, and is waiting upon US EPA approval for an NDZ for Lake Erie. Unlike Massachusetts and Maine which used a stepwise process for designating small NDZs, New York has designated entire large water bodies in one action. Geographically, Lake Ontario, Lake Erie, and, to a lesser extent, Long Island Sound, are similar to Puget Sound because they are inland water bodies. As such, boaters and large vessel operators would typically have to navigate much farther to discharge waste in the open ocean compared to the typical travel distance to open ocean in a coastal NDZ.

Therefore vessels with limited holding capacity would likely need to use shoreside or mobile pumpout facilities. In most of the other NDZs in the country, boaters have the option of moving out to the three nautical mile boundary where they may discharge their treated waste.

New York was able to justify designation of large NDZs based on the availability of recreational pumpout facilities, since they were able to meet the US EPA guideline of having one pumpout for every 300 to 600 vessels. Since New York was petitioning to have large bodies of water designated, they calculated the ratio of vessels to pumpouts for each county along the shoreline. They also performed a rough geographical analysis that involved creating a map of pumpout facilities and a visual evaluation to determine if they were adequately dispersed. Although a new commercial pumpout facility was already being built in Long Island Sound when the petition was submitted in 2011, in general pumpout needs for commercial vessels were not specifically addressed in the recent New York NDZs (i.e., Lake Ontario, Lake Erie, and Long Island Sound). This caused some hardship and additional time in establishing the Lake Ontario and Long Island Sound NDZs, and is apparently currently causing delays for the petition to establish an NDZ for Lake Erie. Another option they could have chosen would have been to set the boundary of the NDZ at 3 nautical miles from shore, which would have allowed vessels to discharge wastes at that distance.

While California has a number of smaller NDZs that apply to all types of vessels, the NDZ reviewed for this report was a recently established NDZ that included the entire marine water coastline for certain commercial vessels. The geographic scope and types of vessels covered were determined by the State's Clean Coast Act. The California NDZ for the entire marine coast line applies only to large passenger vessels (cruise ships) and oceangoing vessels 300 gross tons or greater that have available holding tank capacity. Large vessels without holding capacity are exempt from following NDZ regulations, and are only bound by existing national, and applicable international regulations. The California coastline NDZ is the first and only NDZ which differentiates vessel type. This NDZ was petitioned through the CWA's Section 312(f)(4)(A) process which is based on protecting special aquatic habitats or species and does not require that adequate pumpout capacity be documented.

There are several advantages to creating large contiguous NDZs rather than small ones, especially if they are not contiguous. If an entire water body is protected, it eliminates confusion for boaters who will have less trouble determining if they are in an NDZ, than if they are boating in a region with many small, disjointed NDZs. Designating one large area is also more efficient than following a process of designating multiple small areas. Additionally, there is an unintended consequence of establishing many small NDZs in that unprotected areas adjacent to NDZs tend to become public dumping areas. If the approach of designating multiple, small NDZs is used in Puget Sound, it was recommended that NDZ boundaries be selected that are visible, well-known landmarks to insure boaters can easily determine whether or not they are in the NDZ.

Implementation Timeframe and Stakeholder Issues

The designation of an NDZ can occur relatively quickly once a state submits an NDZ petition to the US EPA. Under CWA 312 f(3), the regional administrator at EPA has 90 days to make an official ruling once they have received the petition. The petition is then published in the Federal

Register for at least a 30-day public comment period. If there are no substantive comments during the public comment period, a final determination is made, and if there are comments, EPA prepares a response to comments with the final determination. If the ruling is made in favor of establishing an NDZ, it may be immediately enforced.

Fulfilling the petition requirements and drafting a defensible petition can take a long time. This is especially true when addressing multiple stakeholder issues, such as those that have arisen from some of the commercial vessel groups in recent petition efforts. As described below, some states have opted to have a *phase-in period* when vessels are not required to comply for a certain time period following the institution of the NDZ, while others have opted to delay NDZ designation until compliance issues were addressed. To date, the legal basis of the phase-in period has not been challenged. However, both the Lake Ontario NDZ and the proposed Lake Erie NDZ included a one year phase in period for commercial vessels, and operators are apparently finding it difficult to comply within the 1-year timeframe.

The presence of significant commercial vessel traffic within NDZs has posed some of the biggest challenges to NDZ implementation. Most large commercial vessels cannot access the pumpout facilities provided for recreational vessels even if they had the infrastructure required to use them. Also, providing stationary pumpout options for commercial vessels is more difficult than for recreational vessels. Stationary pumpouts capable of servicing large vessels are more expensive to build than smaller recreational vessel pumpouts and there are no provisions within the CVA to provide funding for commercial facilities. Therefore, commercial vessels are impacted by both the cost in retrofitting vessels to accommodate sometimes very large volumes of waste, as well as the lack of adequate pumpout facilities. As such, insuring there is infrastructure in place to support compliance with an NDZ for commercial vessels can require more time and effort than for recreational vessels.

Massachusetts' and New York's approaches to commercial vessel compliance are summarized below. Maine, because it is relatively remote and lacks major commercial ports, has not had to address commercial vessel interests as much.

As described previously, Massachusetts' interpretation of the CWA language is that NDZs apply to all vessels, and there is no legal precedent to exempt a certain type of vessel, even for a specific period. Massachusetts' handling of ferries (described above) demonstrates how they creatively used NDZ boundaries to allow a certain type of vessel to meet NDZ restrictions. In general, Massachusetts has worked closely and cooperatively with commercial vessel groups to ensure that they have access to pumpout facilities prior to submitting an NDZ petition to the US EPA.

Establishment of the Boston Harbor NDZ demonstrates one method for addressing a class of vessels which had challenges meeting NDZ requirements. While there is a variety of commercial vessel traffic within Boston Harbor, the tugboats, which operate almost exclusively within what is now the NDZ, were going to be the most affected by the new regulations. Other commercial vessel (e.g., cargo vessels and ferries) were affected to a lesser extent due to their frequent transits to and from the open ocean, and their ability to hold waste. Many of the tugs required retrofits to be able to hold waste and there were not any pumpout facilities capable of servicing the tugboats. Because of these constraints, there was vocal opposition to the NDZ by the

tugboat operators. Massachusetts took a cooperative approach with the tug operators; the state agreed to develop the pumpout facility infrastructure while the tug owners were responsible for their vessel retrofits. Following these agreements, the state secured funding for large-scale pumpout facilities at commercial piers via a non-point source pollution reduction program. The NDZ petition for the Boston Harbor NDZ was not submitted until the commercial pumpout facilities were operational. This provided time for commercial vessel operators to have their vessels retrofitted while they were dry docked during one of their 18-month inspection cycles (Dan Hellin, Hellin Consulting, personal comment). Thus, the NDZ was not phased-in, but rather timed to allow the infrastructure to be put in place first.

Long Island Sound was the first recently designated NDZ in New York that experiences significant volumes of commercial vessel traffic; primarily ferries, tugs, and barges. Most shipping is conducted at New York Harbor, which is accessed via the Hudson River; so most commercial cargo traffic does not transit through Long Island Sound. While commercial vessels were acknowledged as an important segment of the vessel population, their ability to comply with the NDZ was not addressed in detail during petition development. At the time, there were already plans in place to construct a commercial-capable pumpout facility; therefore, New York's petition for Long Island Sound focused primarily on recreational boaters. Language in the petition to the US EPA provided for a 1-year phase-in period for commercial vessels to come into compliance; presumably to allow for the completion of the commercial pumpout that was already in progress when the petition was submitted.

New York used a similar approach of allowing commercial vessel operators a 1-year phase-in period for the Lake Ontario NDZ. Although in the case of Lake Ontario there were no pending plans for additional commercial pumpout facilities, it was presumed that commercial vessel groups, ports, and other stakeholders would work to make NDZ compliance possible during the 1-year phase-in period. Apparently, this has not occurred, and it is generally assumed that some commercial vessels are not in compliance. In this case, too, tugboat groups in particular objected to the NDZ.

The pending Lake Erie NDZ petition contains similar language as the Lake Ontario NDZ, exempting commercial vessels for a similar 1-year period. However, there is growing dissent from the tug operator community in the region, and the US EPA may be more receptive to their complaints given that commercial vessel pumpout availability and compliance appears to be an obstacle for the Lake Ontario NDZ. It is uncertain at this point if the Lake Erie NDZ will be implemented or whether New York will have to take actions to address the needs of the commercial vessels before it can be designated.

Some commercial vessels that operate within the recently established California coastline NDZ do not have adequate capacity to hold waste while in the NDZ, nor are there enough pumpout facilities to serve those vessels with minimal holding capacity. Due to the time constraints of getting the NDZ petitioned within state legislative cycles, the research on whether or not vessels operating within the NDZ have holding capacity or would need retrofitting or other means to pumpout sewage was not completed. Therefore, the state included language in the petition, which was adopted into the final rule, that allows discharges if vessels do not have holding capacity. This loophole in the regulation was meant to be temporary until California

could work with any vessels without sufficient holding capacity to either retrofit or provide pumpout mechanisms.

There are many issues to weigh in determining the best timing for establishing an NDZ. It is apparent from the experiences of other states that adequate preparation, addressing stakeholder concerns, and building support are helpful to the success of the NDZ.

Education and Outreach

The education and outreach strategies practiced by Massachusetts, Maine, and New York included signage, mailings, and social media. For example, all three states have used signage at boat launches and prominent locations in marinas to inform boaters of the NDZ designation and its boundaries. Targeted mailings via annual boat license renewals and through, for example, routine mailings from marinas including notices and maps describing the NDZ were also considered effective strategies. All of the states interviewed have, or are working toward, developing interactive mobile device applications aimed at educating boaters about NDZs and their boundaries.

All of the states included commercial vessel groups in discussions as part of the NDZ development process, and therefore additional outreach to these groups during implementation was not necessary.

Enforcement

One of the stated advantages of establishing an NDZ is that it allows law enforcement at all levels (harbormaster, city, county, state and federal) to enforce sewage discharge regulations. However, it has also been acknowledged that enforcement is inherently difficult. Also, as described below, it appears that there are inconsistencies in interpretation of enforcement authority, and none of the states interviewed had an established enforcement plan. All the states indicated that enforcement was not considered a central component of the success of the NDZ.

In Massachusetts, NDZs may be enforced by the United States Coast Guard (USCG), state environmental agencies, and local law enforcement, including harbormasters. Following an 8-year legislative process, Massachusetts passed a bill allowing a fine of up to \$2,000 per day for NDZ infractions. This fine was purposely set high to dissuade vessel operators who might find it cheaper not to comply and simply pay a fine when caught discharging. Money collected from fines is deposited into the state's general fund. It was suggested that there might be more incentive for local or federal law enforcement to cite violations if the money was earmarked for local use.

It is the assertion of the USCG in Maine that harbormasters and state law enforcement agencies are limited to enforcing boating safety laws, and do not have the authority to write citations for vessel discharge violations. Therefore, only the USCG may cite NDZ infractions in Maine, even though the NDZ petition for Camden/Rockport specifically referenced the state's authority to enforce sewage discharges in an NDZ based on 33 CFR Part 159. Under Maine's current approach, if local law enforcement witnesses an infraction, they must call the USCG but cannot board or stop the vessel. The USCG may levy fines of up to \$3,200 per violation. It was noted

that it may be possible to establish a memorandum of understanding (MOU) with the USCG that would give regulatory authority to local law enforcement, but this has not happened in Maine.

In New York, any law enforcement agency may issue fines for NDZ violations. The fines are set by the New York State Division of Water (NYSDW) and described in the NYSDW fine guideline manual. Fines for NDZ infractions amount to approximately \$250 per occurrence. Fines collected are received by the arresting jurisdiction, thus providing some incentive for local authorities to enforce the NDZ.

In California, it is the assertion that, upon NDZ designation, the state has enforcement authority along with the USCG. The State, however, does not currently have the resources to conduct investigations or enforcement, although if non-compliance is brought to their attention, they could then address it.

Even though enforcement was not a primary tool in the implementation of the NDZs discussed, the threat of enforcement dissuades boaters from discharging illegally. Discretionary enforcement (i.e., giving warnings rather than writing citations for some period) may also be used to allow for boaters and commercial vessel operators to adjust to NDZ regulations even though they are legally effective immediately following approval.

The use of dye tabs in sewage holding tanks has been suggested as a means to make detection of NDZ violations easier. Basically, whenever a boat's sewage tank is pumped out, a fresh dye tab would be inserted. If the boat were then to discharge its sewage tank, the surrounding water would be stained red and the violation would be noticed. Alternatively state officials could randomly board and place dye tabs in boater's holding tanks. When questioned about these strategies, all of the state NDZ managers indicated that the mandatory use of dye tabs would infringe on people's privacy too much, and could give boaters a negative attitude towards the program. They did however indicate that certain marinas have successfully implemented successful dye tab programs, but that it would be counterproductive to try to implement at the state level.

Evaluation and Continued Success

None of the state contacts interviewed used specific metrics for evaluating the success of the NDZ program or specific NDZs, although most felt the programs were successful. The best metrics, if any, appear to be public awareness and documentation of the sewage volumes removed. Each state's contacts were asked if there were any measureable water quality improvements that were attributable to the implementation of the NDZ. The response was nearly universal, that there was the perception that the NDZ would result in improved water quality, but the concurrent adoption of non-point source best management practices throughout the watershed would confound any correlation between the NDZ and water quality improvement.

Even though there are no specific data linking NDZ establishment to improved water quality, there is some anecdotal evidence suggesting that it can help. Beach closures and shellfish harvesting restrictions were common in Nantucket Harbor prior to the implementation of the Nantucket Harbor NDZ. Since the NDZ was implemented, the incidence of beach closures

appears to have declined. It may be possible to establish a link between NDZ designation if a scientific study is conducted that measures water quality of an area thought to be impacted by vessel sewage before and after NDZ designation. However, none of the states interviewed have conducted such a study.

Measuring public awareness and compliance rates is difficult due to inherent bias in any survey effort. However, the states interviewed where there are NDZs, have seen an increase in usage of pumpout facilities, measured by gallons pumped, following the implementation of the NDZ. Though imperfect, a good survey tool that may help reduce response bias is to send boaters anonymous survey cards with the monthly mailers from their marinas.

Since access to pumpout facilities must be maintained for the NDZ to remain legal, another part of the evaluation program should be continuing to document pumpout facility availability. In US EPA Region 1, a review of pumpout facilities within the NDZ is conducted every year (Ann Rodney, US EPA Region 1, personal comment). Therefore, it is critical for states to ensure that funding mechanisms for the operations and maintenance stay in place, so that the number of available pumpout facilities does not drop to an unacceptable number.

Ultimately, the success of a specific NDZ is incumbent on the state, local communities, and boaters. Since NDZs, at least in New York, Massachusetts, and Maine, appear to be largely self-enforced, compliance is driven by people's desire to be environmentally responsible. So, continued efforts to educate boaters about the NDZ, and how their actions maintain good water quality where they use their boats, is probably the best tool in perpetuating the benefits of implementing an NDZ.

Summary of Findings from Other Areas

As evidenced by Massachusetts, Maine, and New York, there are many ways to delineate and implement an NDZ. While none of the states provide a perfect model to follow, the collective knowledge provided by their respective NDZ managers will be valuable in developing an implementation strategy for a Puget Sound NDZ.

For Puget Sound, an important aspect of the NDZ program will be the selection of the areas included within the NDZ. The contrasting approaches taken by Massachusetts and New York (small sequential NDZs as compared with designating an entire large water body) illustrate the advantages and drawbacks of each strategy. The stepwise approach taken by Massachusetts reduced the immediate financial burden placed on vessel owners, but is a slow process, requires more work on the state's part, and promotes the establishment of dumping grounds. It may also cause confusion on the part of boat owners as to where they can or cannot dump waste. Designating large, contiguous NDZs is logistically easier and probably more resource protective, but may require additional assessment and consultation to insure commercial vessel groups can comply.

Puget Sound is a large, inland water body; as such most recreational boaters as well as some commercial vessel groups do not travel to the open ocean to discharge sewage waste. This shows the importance of ensuring that there is adequate access to pumpout facilities for every vessel that needs to pump waste while operating in Puget Sound.

The authority for enforcement of NDZs is varied across the zones surveyed, but overall none have a strong enforcement effort. Nor was it demonstrated that a strong enforcement effort was needed. Standard outreach related to educating boaters about the NDZ purpose and boundaries occurs in all NDZs and the primary metric for success is the documentation of the amount of sewage collected through the pumpouts.

Recommendations for Implementing an NDZ in Puget Sound

The Puget Sound is a unique vast natural resource of incredible value to Washington State which is undergoing great efforts to improve water quality, restore habitat and protect public health. A NDZ in the Puget Sound could be a proactive approach to limit preventable pollution sources, benefit water quality and protect public health. A NDZ spanning most or all of the waters of Puget Sound would be one of the larger NDZs in the United States, as measured by area and by shoreline length. Puget Sound also experiences a high volume of commercial vessel traffic associated with the diverse industries conducted on and around the water, as well as vast recreational users. Given these factors an implementation strategy for a Puget Sound NDZ should address as many aspects of NDZ implementation as possible.

Geographic Boundaries

There are several viable strategies for delineating the geographic boundaries of the NDZ(s) for Puget Sound. While there are nearly limitless iterations, there are three basic options: one large contiguous NDZ, several smaller non-contiguous NDZs aimed at protecting the most at risk resources, or no NDZ at all.

Limiting the area of the NDZ to protect only the most sensitive environmental resources (e.g., shellfish aquaculture areas), or where there are known water quality problems (e.g., beaches closed due to fecal bacteria contamination) offers a few advantages, but increases the complexity of NDZ implementation. The clear advantage in designating multiple small areas as NDZs is that it can offer substantial localized resource protection while limiting the impacts to users of Puget Sound; particularly commercial vessel operators who may not have adequate sewage holding capacity or easy access to pumpout facilities. However, unless the boundaries are easy to understand and delineated by well known, visible, landmarks, boaters may have a difficult time knowing when they are in a NDZ. It can also create the ‘donut hole’ effect where boaters and commercial vessel operators might dump waste just outside the boundary of the NDZ. Perhaps the largest disadvantage to several small NDZs aimed at protecting sensitive or degraded resources, is that it only protects those areas known to be sensitive or degraded now. Water quality conditions of Puget Sound are dynamic; water moves between areas and therefore an NDZ located ‘downstream’ of an unprotected area might be impacted by the adjacent area, and of course areas that don’t stand out as needing protection today, may need protection in the future. Creating additional NDZs in the future as the need for protection arises would require a significant time and financial investment that could be avoided by creating one large NDZ that spans most or all of Puget Sound now. Implementing an NDZ in only one or some areas might also raise some ‘fairness’ issues in requiring only a subset of vessel owners to comply. The rationale for selection of NDZ areas might therefore pose difficulties. As described in previous sections of this petition, there are many areas of Puget Sound that have sensitive habitat as well as many areas that have known water quality problems. This and the

fact that these many areas are scattered throughout Puget Sound make it difficult to provide a defensible rationale for protecting one area and not another. Establishing a NDZ which incorporates nearly all of the inland waters of Puget Sound would allow for simpler implementation and offer greater environmental protection than establishing several small NDZs. A large NDZ would alleviate any difficulty boaters might have in determining whether they are within or outside the NDZ. It would also eliminate concerns about inadvertently creating dumping areas outside of NDZ boundaries. It might pose difficulties for boaters who operate in the more rural areas where there are fewer available pumpouts, but to the extent that this problem exists, it will continue to improve as more pumpout facilities are put in place. Likewise large commercial vessels that cannot hold waste for a reasonable length of time, or which can't use many existing pumpout facility options could also experience some hardship. This is apparently a small portion of the commercial vessel population. Ecology is currently working to address this problem prior to the implementation of the NDZ. The ease of understanding the NDZ coupled with the more comprehensive environmental protection offered by a large contiguous NDZ likely outweigh the potential compliance difficulties of boaters. Therefore, a large NDZ which incorporates most or all of the inland waters of Puget Sound is recommended.

Implementation Timeframe and Stakeholder Issues

At this time, Ecology expects to begin the petitioning process with a draft petition to be sent both to EPA and to the public for comment. Work would continue on increasing pumpout station availability for both recreational and commercial vessels with a final petition occurring after input can be considered and infrastructure is workable for vessels. The interim period between the draft and when a final petition would be submitted will be used to conduct outreach and education campaigns so that people are made aware of the NDZ and will give vessel owners and operators time to make necessary retrofits, and allow time to find additional funding and make infrastructure improvements. The petition would also include language allowing certain types of commercial vessels without holding tanks more time to retrofit their vessels.

Education and Outreach

Education and outreach for the Puget Sound NDZ has already begun. Boater surveys conducted during the summer of 2012, and Ecology's website outlining the NDZ development have started the process of making boaters aware that a new law regarding how they must handle their vessel sewage may be imminent. However, if the petition moves forward, more outreach is needed so that by the time the new law takes effect boaters and commercial vessel operators: a) know that the new law is taking effect and what it means for them, and b) have already modified their vessels (if necessary) and routines such that they are compliant with the new regulations.

Outreach and education should focus on reaching the maximum number of boaters and raising awareness of the new regulations. There are a range of successful outreach strategies that are outlined earlier in this document. The interim time between now and when the NDZ regulations take effect can also be used to test and develop tools that help educate boaters on what they need to do to comply with the NDZ and where they can find the nearest pumpout. An idea that

has been suggested is developing a mobile app, compatible with most ‘smartphones,’ which would utilize the built in global positioning system (GPS) to inform boaters of when they are within the boundaries of the NDZ, the location of the nearest pumpout facility, and details of the pumpout facility (e.g., hours of operation, and depth at low tide). More traditional education strategies can also be effective, such as pamphlets showing the locations of pumpout facilities and signs at boat launches and community meetings.

Enforcement

Active and extensive enforcement should not be a central strategy of the successful implementation of an NDZ in Puget Sound. Yet, the NDZ does need to be enforceable for it to be effective. The threat of high fines may be the only effective tool for deterring illegal discharges in certain situations.

Based on the experiences of other states, enforcement is easiest and most effective when it can be conducted at the local, state, and federal level. Local officials in Maine are frustrated that only the USCG can cite NDZ violations there. Generally local law enforcement, particularly harbor masters and fish and wildlife police are the most likely to be aware when NDZ violations take place and are therefore best suited to enforcing the regulations. Arrangements with the USCG should be made prior to implementation of the NDZ, ensuring that it is within the jurisdiction of local law enforcement to enforce NDZ violations.

Ecology should work with state lawmakers to set a well-defined and strict fine schedule for NDZ violations. This process may be lengthy, as it was for Massachusetts, but a reasonable fine schedule will help deter repeat violations. Also, if possible, fines should go to the arresting jurisdiction or to a water quality protection account, rather than going into a state general fund, as was the case with many of the states interviewed. This encourages enforcement of the NDZ as it generates revenue for the local communities.

Evaluation and Continued Success

Boater’s attitudes, volume of sewage disposed at pumpout facilities, shellfish beds upgraded and water quality improvements are all potential metrics for evaluating the success of a NDZ. Other states have primarily relied on surveys to assess boater’s attitudes and records of the gallons pumped at pumpout facilities to gauge the success of the NDZ. The states interviewed indicated that correlating water quality improvements to the restriction of vessel discharges would be very difficult.

Ecology should conduct or sponsor survey efforts which evaluate boater’s attitudes towards the NDZ, and difficulties that they may have complying with NDZ regulations. The questions asked on this survey will be similar to those asked during the 2012 boater survey that was jointly conducted by Washington Sea Grant and Ecology (Herrera 2013). These surveys were conducted in person at boat ramps and boat shows, but surveys could also be conducted by mail as part of the boat registration renewal process, or via monthly mailers sent my marinas.

Washington State Parks tracks the number of gallons of sewage pumped at every pumpout funded by CVA grants. This includes most of the public pumpout facilities in Puget Sound and represents a majority of the pumpouts likely to be used by boaters. The Parks’ data should be

used to track pumpout facility usage. A sharp increase in usage following implementation of the NDZ would indicate that the program is having a positive effect on boater's sewage disposal habits. A decrease in usage over time, taking into account other factors such as weather and the economy, could indicate that boaters are losing interest in the program, and more outreach and education is needed.

It would be difficult to directly link a water quality improvement with establishment of an NDZ, due to the many other sources of pollution that might mask any affect as well as other water quality protection efforts. Therefore additional monitoring beyond the many ongoing water quality monitoring programs in Puget Sound is probably unnecessary.

Washington State Parks should continue to maintain and update the database of pumpout facilities to available to boaters and to continue to ensure that pumpouts are operational and in compliance. This is a requirement, as the continued approval of the NDZ is contingent on maintaining and documenting the number of pumpout facilities available to boaters. More important, boaters are dependent on current information to know where they may go for a pumpout. If this list is not accurate or up to date, boaters are likely to become frustrated and less likely to comply with regulations in the future.

Conclusions

Washington State is poised to petition for a NDZ for Puget Sound. By drawing well thought out boundaries for the NDZ; and selecting an implementation timeframe which will allow stakeholders to adjust to NDZ regulations, many of the successes of other states can be duplicated, and difficulties avoided. As is the case of all the states with successful NDZs continued stakeholder outreach and education will ensure the long term success of the NDZ.

References

Herrera. 2013. Puget Sound Recreational Boater Survey Results. Puget Sound No Discharge Zone for Vessel Sewage. Prepared for Washington State Department of Ecology by Herrera Environmental Consultants, Inc., Olympia, Washington. April 2013.