

***Zostera Japonica* Management on Commercial Clam Beds in
Willapa Bay General Permit**

Addendum to the Fact Sheet: Response to Comments

April 5, 2017

SUMMARY OF MAJOR PERMIT CHANGES

In finalizing this permit modification, the Washington State Department of Ecology (Ecology) considered all of the public comments received during the public comment period, including comments received during oral testimony at the webinar and public hearing held in Lacey, Washington on January 24, 2017 and the public hearing held in South Bend, Washington on January 26, 2017.

This is a summary of the modifications made to the *Zostera Japonica* Management on Commercial Clam Beds in Willapa Bay NPDES General Permit (permit) in response to the public comments received between December 7, 2016 and March 7, 2017.

COMMENTS AND RESPONSES

Ecology published a draft modification to the *Zostera Japonica* Management on Commercial Clam Beds in Willapa Bay NPDES General Permit on December 7, 2016 for public comment. The public comment period ended March 7, 2017 at 5PM. During the comment period, Ecology conducted one webinar, public workshop, and hearing in Lacey, Washington and one public workshop and hearing in South Bend, Washington. Ecology also accepted public comments via comment form on the permit website, letter, and email.

Ecology considered all comments in preparing the modified final permit. The Addendum to the Fact Sheet: Response to Comments documents Ecology's response to each commenter and any changes to the permit that resulted from the comment. Ecology received comments from fifty three (53) commenters during the public comment period. Each comment is numbered. The comment number that corresponds to each commenter is given in Table 1. These numbers allow the commenter to find Ecology's response to their comments. Comments may be summarized; full text of all comments received by Ecology can be found at:

http://www.ecy.wa.gov/programs/wq/pesticides/final_pesticide_permits/noxious/noxious_index.html.

In addition to the changes identified in the response to comments below, Ecology made minor changes to the permit format for clarity and corrected typographical errors.

This response to comment document is broken into two sections:

[Section 1](#) Table of Commenters

[Section 2](#) Comments on the Permit

SECTION 1: TABLE OF COMMENTERS AND COMMENT NUMBERS

Table 1: Commenters

Commenter Name	Affiliation	Comment Number(s)
Bob Burkle	WDFW	1, 2, 3, 4, 5, 6, 41
Tim Quinn	WDFW	3, 4, 5, 6, 7
S. Thomas	Interested Party	8, 9
Larry Warnberg	Interested Party	10, 11
Fritzi Cohen	Interested Party	10, 11, 12, 13, 14
Amy L. van Saun	Center For Food Safety	10, 11, 14, 15, 16
Ross Barkhurst	Interested Party	10, 11, 13, 17, 18, 19, 20, 21, 22, 33, 42, 43
Kim Patten	WSU Long Beach Research and Extension Unit	23, 24
Margaret Barret	Pacific Coast Shellfish Growers Association	23, 25
James Kaldy	Interested Party	26, 27, 28
Malcolm & Ardell McPhail	CranMac Farm Inc	23
Tim Morris	Coast Seafoods Company	23
Vicki & Steve Wilson	Arcadia Point Seafood	23
Dale Beasley	Columbia River Crab Fishermans Association	23
Elaine Packard	Washington State Chapter Sierra Club	14, 19, 28, 29, 30
Joy A. Weber	Tax Payer	23
Kurt Snyder	Residential	10
Paul McGovern	Interested Party	11, 19

Bob Taylor	Washington Waterfowl Association	10
Laura Hendricks	Coalition to Protect Puget Sound Habitat	6, 9, 10, 11, 17, 18, 19, 20, 21, 28, 29, 31, 32
Tim Hamilton	Twin Harbors Fish and Wildlife Advocacy	9, 10, 11, 17, 21, 33, 34
Mike Nesbit	WWA	11
R. Cooper	Self/Washington Waterfowl Association Member	11
Capt. Ross Barkhurst	Delta Navigation and Logistics LLC.	10, 11, 19
Sylvia Haven	Interested Party	37
Aaron Fulwider	Bethel School District	19, 35, 36
Jessica Barkhurst	Interested Party	19
C. Barkhurst	Interested Party	10, 11, 21
Marilyn Sheldon	Northern Oyster Company	23, 25, 38
Eric Hall	Taylor Shellfish Company	23, 39
Cinde Donoghue	Washington Department of Natural Resources	40, 44
Frank Wolfe	Pacific County Commissioner	25, 39
Megan Martin	Pacific and Grays Harbor Conservation District	23
Lisa Ayers	Pacific County Commissioner	23, 25
Michael Goldberg	Interested Party	11, 35, 37
Bob Jacobs	Interested Party	8, 11
Kathy J. Gunderson	Interested Party	35
Amanda Dickinson	Interested Party	8
Michael Nordin	Interested Party	23
Trina Bayard	Audubon Washington	6, 10, 16, 17, 45
Karen Weis	Interested Party	8

Ed Darcher	Pacific County Vegetation Management	23
Michael Maghakian	Interested Party	35
Gary Logsdon	Interested Party	8
Evan Colby	WA Waterfowl Association	8
AA. Y	WA Waterfowl Association	19
Gary Gibbs	WA Waterfowl Association	10, 11, 26
Bob Taylor	Interested Party	10, 19
Dirk Farrar	Interested Party	8, 19
Arthur Whisler	Interested Party	14, 26, 29, 46
Jesse DeNike	Willapa-Grays Harbor Oyster Growers Association	23, 47
Richard Kinnaman	WA Waterfowl Association	8
Thomas Odell	Interested Party	8

SECTION 2: COMMENTS ON THE PERMIT

Comment #1: We see no net loss of effective eelgrass habitat from that already allowed historically from this activity if the conditions in the Permit Modification work as intended.

Response: Thank you for your comment. Ecology agrees that this permit does not increase the acreage in Willapa Bay where eelgrass management has historically been allowed.

Comment #2: If treatment could be delayed, at least to the end of April when most if not all of the chum should have migrated, or even until later in May, when the peak of salmonid migration has passed, it would be beneficial to juvenile salmonids. It would also be useful to coordinate treatments to avoid releases of hatchery fish, which tend to overwhelm the system for the short time they are in the estuary (hatchery salmon are generally raised to a size capable of entering the ocean almost immediately). As a side benefit, by then more newly settled Dungeness crab would have molted past the 7th instar stage and taken up a more mobile and less cover dependent lifestyle. If efficacy of treatment can be preserved, and if water quality parameters allow, we would much rather treatment be delayed until June or even July if possible, although again we understand if it can't.

Response: The request to change the application timing window for this permit is out of scope for the permit modification process. The Code of Federal Regulations 40 CFR 122.62 states that: When a permit is modified, only the conditions subject to modification are reopened. Ecology will consider this request when conducting a full review of the permit during the scheduled review and reissuance process scheduled for 2019.

Imazamox is a systemic herbicide that is practically non-toxic to animals, so no direct toxic effects are expected to juvenile salmonids. As a systemic herbicide, imazamox is rapidly taken up by the plant foliage and transported through the xylem and phloem tissues resulting in growth inhibition within 24 hours, but plant death and decomposition will take place over several weeks. Treatments occurring at the beginning of the work window, in the second half of April, wouldn't be likely to result in a loss of plant structure until sometime in the first half of May.

It is our understanding, based upon the Environmental Impact Statement (EIS) and Risk Assessment for Imazamox, that the greatest efficacy is achieved during the spring and early summer when plants are actively growing but prior to the formation of dense *Z. japonica* beds. Active growth encourages the uptake of imazamox into the plant. As *Z. japonica* begins to form dense beds in mid-summer it will retain more water on the bed, which then requires a higher application rate of imazamox to achieve the same efficacy.

For more information please see the *Screening-Level Ecological Risk Assessment of the Proposed Use of the Herbicide Imazamox to Control Invasive Japanese Eelgrass (Zostera japonica) in Willapa Bay, Washington State* section 3.2.5.3 (<http://www.ecy.wa.gov/programs/wq/pesticides/enviroReview/riskAssess/riskassessmentimazamox110712.pdf>).

Comment #3: While our Regional weed control specialists agree that a 10 meter buffer should be adequate to protect non-target vegetation, our Habitat Program Science Division is concerned about the specifics leading to the buffer management and monitoring recommendations in the Permit Modification. Previous comments were provided on August 12, 2016, recommending additional studies of the proposed buffer width over a broader range of environmental conditions, yet it seems that no additional studies were conducted.

Response: We invited Washington Department of Fish and Wildlife (WDFW), Washington Department of Natural Resources (DNR) and NOAA Marine Fisheries Service (NMFS) to review the buffer width study data on June 8, 2016. At that meeting it was made clear that the requirements of the buffer validation study were not up for review and modification at that time.

The treatment window for this permit is from April 15th through June 30th. As indicated in the above comment WDFW provided recommendations on August 12, 2016. Without this permit modification, beginning on May 2, 2017, discharge of imazamox would be prohibited. Therefore, there has not been a treatment window in which additional studies could have been conducted prior to the draft modification of this permit going out for public comment.

The buffer validation study was open for review and comment from January 2, 2014 through February 15, 2014. Ecology will consider WDFW recommendations for additional studies when conducting a full review of the permit during the scheduled review and reissuance process scheduled for 2019.

Comment #4: The permit modification requires monitoring of the extent of dead native eelgrass within (or beyond) the required buffer, and provides an acreage-based formula to calculate the number of measurements required, but does not provide justification for the number of measurements of dead native eelgrass recommended. It also does not provide any specifications as to how these locations are to be selected other than they should be roughly equidistant along the parcel edge. This seems to offer an opportunity to miss potentially large amounts of dead native eelgrass not adjacent to these few equidistant sample sites. Moreover, while the Permit does state that no imazamox is to enter any drainage that contains native eelgrass and is moving water off the treatment site, it does not state that such drainages are to be monitored.

Response: Changes to the monitoring requirements for this permit are out of scope for the permit modification process. The Code of Federal Regulations 40 CFR 122.62 states that: When a permit is modified, only the conditions subject to modification are reopened. The approved monitoring included in this permit, as well as the Buffer Validation Study were developed with input and collaboration from WDFW staff. This permit, including the monitoring requirements, was open for review and comment from January 2, 2014 through February 15, 2014. Ecology will consider WDFW recommendations for modifications to the monitoring requirements when conducting a full review of the permit during the scheduled review and reissuance process scheduled for 2019.

Comment #5: The Permit Modification also does not include language about how or if these measurements are to be used for adaptive management of the permit conditions. As noted by WDFW in previous comments, the existing buffer studies that led to the establishment of the 10 meter buffer are for a fairly limited set of topographic and abiotic conditions, and it seems like it might be important to adjust either the buffer or other aspects or conditions of the Permit if monitoring reveals detrimental effects to native eelgrass beyond the width of the buffer. In addition, the Permit Modification doesn't explicitly state how frequently the monitoring should occur, i.e., with every treatment or some other frequency.

Response: The Fact Sheet for this permit contains an Antidegradation Analysis and Antidegradation Plan that addresses how monitoring and study data will be used to update this permit.

In regards to the frequency of monitoring the permit Special Condition S5.A states: *The Permittee must conduct routine monitoring on all commercial clam beds treated with imazamox.* This means that monitoring is required to occur with every treatment.

Additionally please see the response to comment #3 and #4.

Comment #6: The Permit seems to focus on self-monitoring by the applicant or contractor only, with no indication that any neutral party studies are planned to either independently monitor treatment or compile data to help determine the effectiveness of the buffer in protecting native eelgrass.

Response: It is standard practice for NPDES permits to rely upon the Permittee and their contractors to conduct required studies, monitoring, and reporting.

Permit compliance is enforceable by Ecology and third parties.

Comment #7: The permit contains no language about avoiding *Z. marina* within the parcel not including the buffer.

Response: Permit Special Condition S4.A.2.i states: The Permittee shall not directly apply imazamox into any drainage that contains *Z. marina* and is moving water off the treatment site.

Native eelgrass (*Z. marina*) mixed in with the non-native eelgrass (*Z. japonica*) that is being managed under this permit, is likely to be impacted by imazamox treatment.

Please see the EIS sections 2.6.2 and 2.6.3 for a discussion on how WDFW's Priority Habitat and Species designation and Hydraulic Project Approval (HPA) permitting interacts with this activity.

Comment #8: The commenter is against the removal of *Zostera japonica* and the use of pesticides in Willapa Bay.

Response: Thank you for your comment. This permit regulates the use of imazamox to manage the state listed class C noxious weed *Zostera japonica* in Willapa Bay only. The legislature has directed Ecology to develop permits for noxious weed management (RCW 90.48.445). Ecology attempts to strike a balance between beneficial uses of a water body when developing aquatic pesticide permits. Ecology determined that this activity was likely to have a significant adverse impact on the environment, which required the development of a non-project EIS. The EIS developed informs Ecology about potential mitigation, for inclusion in the permit, and potential environmental impacts. Ecology worked with natural resource agency scientists as well as academic scientists when developing the permit. Based on the EIS, and Buffer Validation Study, Ecology included mitigations within the permit to reduce potential ecological impacts to Willapa Bay.

Comment #9: The commenter believes that data produced by Dr. Kim Patten should not be relied upon due to conflict of interest.

Response: Thank you for your comment. The primary study and data relied upon for this permit modification was from Grue and Conquest 2015. The follow-up studies and data from Novak 2016 and Patten 2016 were used to lend support to the Grue and Conquest 2015 study. Ecology is not aware of an instance where purposely misleading data or falsified data

has been submitted regarding this permit. Additionally, we rely upon the best available science at the time that the Ecology action is taken.

Comment #10: The application rate of herbicide used in the buffer validation study was less than the maximum rate allowed by the permit. Ecology should require that a new study be conducted at the maximum allowable discharge rate.

Response: We agree that the application rate of imazamox in the Buffer Validation Study was below the maximum allowed by the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) product label and that which was permitted by the permit. This permit relied upon the FIFRA product label to limit the application rate of imazamox. Ecology agrees that the rate of imazamox discharge authorized in this permit should reflect the rate used in the Buffer Validation Study. The results of the Buffer Validation Study are not directly applicable to applications of imazamox at rates that are greater than those used in the study (1.4 oz/acre of imazamox). Ecology will make the changes indicated below.

Change: Permit Special Condition S4 will be changed to read: The Permittee must comply with all requirements on the FIFRA product label. Permit requirements do not reduce the requirements on the FIFRA label. Notwithstanding the application rates on the FIFRA label, the application rates of the active ingredient imazamox must not exceed 1.4 ounces per acre.

Special Condition S4.A.2.b will be added to the permit and will state:

The Permittee shall: Not apply the active ingredient imazamox at a at an application rate greater than 1.4 ounces per acre.

Comment #11: Commenter is against the modification of this permit.

Response: Thank you for your comment. Please see response to comment #8.

Comment #12: The commenter is concerned that the funding source for the Confluence Environmental study and the Kim Patten study biased the results.

Response: Thank you for your comment. Please see the response to comments #6 and #9.

Comment#13: The Grue report lists an inaccurate number for both active ingredient applied per acre, and for the label limit.

Response: Ecology found and subsequently identified the inaccurate rate reported in the Buffer Validation Study at the two workshops conducted during the comment period for the draft modification of this permit. Additionally, an errata for the Fact Sheet Addendum was posted to the permit website that clarified the rate used in the study. Concurrent with posting the errata for the Fact Sheet Addendum, we extended the comment period for an additional thirty (30) days and notified interested parties of the extension.

Ecology has no control over the development of FIFRA product labels. Ecology only permits the active ingredient and not the product, specifically for the reason that labels may change during the life of the permit. It is Ecology's understanding that the referenced maximum rate allowed by the label was accurate at the time of writing of Dr. Grue's report.

Comment #14: Ecology should address the comments and concerns provided by WDFW and WA DNR and adopt recommendations provided before modifying the permit.

Response: Thank you for your comment. Please see response to comment #4.

Comment #15: Ecology cannot modify an NPDES permit without cause. 40 C.F.R. § 122.62; WAC 173-226-230; 33 U.S.C. § 1342(b)(1)(C). The flawed studies have not provided any justification for a modification of the permit at this time, and Ecology has not identified any of the enumerated causes for modification listed in 40 C.F.R. § 122.62(a) or (b) that justify its proposal to modify the imazamox permit as proposed.

Response: The results of the Buffer Validation Study provided to Ecology constitute new information as referenced by 40 CFR 122.62(a)(2). Additionally, the portion of permit Special Condition S1.A that is being modified indicates that Ecology planned to open and modify the permit to incorporate the results of the buffer validation study.

Comment #16: Rather than support the modification proposed, the new information indicates that the permit requires more protections for native seagrasses and increased monitoring and reporting. Despite the problems with the buffer validation studies, they still found an over 20% reduction of eelgrass on lower elevation plots, and 2 of 3 test areas showed impacts to native eelgrass beyond the 10m buffer zone.

Response: The threshold for what constitutes an adequate buffer distance in the Buffer Validation Study (Factsheet Appendix B) is less than a 20% reduction in *Z. marina* **stem density**. The study data submitted by Grue and Conquest showed a stem density reduction of 0.8% on the lower elevation transects and a stem density increase of 4.3% on the upper elevation transects. The study did not demonstrate that the threshold of a 20% or greater reduction in stem density was met, in order to call the buffer distance of 10 meters inadequate. The stem density metric was included in the Buffer Validation Study to measure lethality to *Z. marina*.

The commenter's statement that the study found an over 20% reduction in eelgrass on the lower elevation is inaccurate. The study data indicated that the leaf percent cover metric for *Z. marina* was reduced by 22.6% on the lower elevation. The leaf percent cover metric was included to determine if sub-lethal impacts were occurring due to imazamox treatment. The leaf percent cover metric was not set as a threshold to determine whether the buffer distance of 10 m is adequate. Follow-up studies conducted by Novak 2016 and Patten 2016 indicated that a loss of leaf percent cover did not directly represent plant lethality as measured by a reduction in stem density.

Comment #17: Commenter has concerns with the buffer validation study design regarding who conducted the studies, site location, rate of pesticide application, sediment testing, plants monitored, and transect locations.

Response: The buffer validation study was open for review and comment from January 2, 2014 through February 15, 2014. Please also see the response to comments # 6, # 10, and #13.

Comment #18: Commenter has concerns about the recovery of *Z. Marina* stem counts, and cumulative impacts from potential multiyear treatments.

Response: To limit impacts to non-target *Z. marina* populations off of the commercial clam bed property from single year treatments or multi-year treatments, Ecology imposed a 10-meter buffer along property boundaries that are part of the treatment site. Consecutive year after year treatment of commercial clam beds do not seem to be common. Eight (8) of the sixty five (65) parcels, reported as treated, occurred on parcels treated the previous year which accounts for about 12% of the treatments. Many of the parcels are larger than the commercial clam bed area treated in a given year, so having a parcel listed as treated in two consecutive years does not necessarily indicate that the same surface area within that parcel was treated in both years. Ecology is not aware of any studies or data that address whether there are potential impacts to *Z. marina* from multi-year treatments.

Please see section 2.9 of the EIS for a discussion of cumulative impacts.

Comment #19: Commenter has concerns about impacts of *Zostera japonica* management on one or more of the following; herring, marbled murulets, waterfowl, and salmon.

Response: The EIS developed for this permit addresses the potential impacts to wildlife as a result of this action. Imazamox has an EPA toxicity category of practically non-toxic to animals. Based upon the EPA toxicity category, imazamox is not expected to be directly toxic to any of the animals listed. Imazamox only reaches the EPA level of concern for aquatic plants. Please see the EIS for a discussion of potential impacts to the animals listed as a result of the actions covered by this permit. The EIS developed for this permit is available at: <https://fortress.wa.gov/ecy/publications/SummaryPages/1410050.html>.

Comment #20: Commenter has concerns that the study violated permit conditions prohibiting direct discharge to drainages containing *Z. marina* and requirements to report damage to *Zostera* spp. outside the buffer.

Response: The Grue and Conquest study does indicate that impacts to *Z. marina* were observed in a drainage, however, this does not necessarily indicate that imazamox was discharged directly into the drainage. The herbicide is applied as a diluted liquid solution to the *Z. japonica* within the clam bed, and as such may run off of the plants into drainages on the bed that contain *Z. marina*. The permit states in Special Condition S4.A.2.i that: *The Permittee shall not directly apply imazamox into any drainage that contains Z. marina and is moving water off the treatment site.* Imazamox product discharged to dewatered *Z. japonica*, that subsequently runs off into a drainage containing *Z. marina*, is not a violation of this permit. A direct discharge of imazamox into a drainage containing *Z. marina* that is moving

water off of the treatment site would be considered a permit violation. Permit compliance and monitoring is enforceable by Ecology and third parties.

This permit does not contain a condition that requires Permittees to report damage to *Zostera* spp. outside of the 10 m property line buffer. Permit monitoring requirements are given in Special Condition S5.

Comment #21: Commenter has concerns with Ecology's response to, and assessment of comments received from natural resource agencies reviewing the buffer validation study results.

Response: We feel that the comments provided by DNR, WDFW and NMFS on the Buffer Validation Study were portrayed accurately in the Fact Sheet Addendum and at the workshops. In addition, the comment letters from the three agencies were posted on the permit webpage and were available throughout the comment period for review.

Comment #22: Commenter feels that the notification requirements in the permit are inadequate.

Response: Thank you for your comment. Changes to the notification requirements of this permit are out of scope for this permit modification process. The Code of Federal Regulations, 40 CFR 122.62 states that: When a permit is modified, only the conditions subject to modification are reopened. Ecology will consider proposed changes to notification requirements when conducting a full review of the permit during the scheduled review and reissuance process scheduled for 2019.

Comment #23: Commenter is in favor of the proposed permit modifications.

Response:

Thank you for your comment. This permit regulates the use of imazamox to manage the state listed class C noxious weed *Zostera japonica* in Willapa Bay only. The legislature has directed Ecology to develop permits for noxious weed management (RCW 90.48.445). Ecology attempts to strike a balance between beneficial uses of a water body when developing aquatic pesticide permits. Ecology determined that this activity was likely to have a significant adverse impact on the environment, which required the development of a non-project EIS. The EIS developed informs Ecology about potential mitigation, for inclusion in the permit, and potential environmental impacts. Ecology worked with natural resource agency scientists as well as academic scientists when developing the permit. Based on the EIS, and Buffer Validation Study, Ecology included mitigations within the permit to reduce potential ecological impacts to Willapa Bay.

Comment #24: Commenter disagrees with WA DNR recommendation to monitor for *Ruppia maritima*. *Ruppia maritima* doesn't like full salinity, and is really only found in brackish ditches, and up rivers where the salinity drops off into the low teens and single digits. It is not found on commercial clam beds on the working tideflats of Willapa Bay. It is unreasonable to request monitoring of a species that only very rarely occurs under the treatment conditions of this permit.

Response: Thank you for your comment. Please see response to comment #4.

Comment #25: The commenter is concerned that the economic and environmental health of Willapa Bay and Pacific County will be negatively impacted if the permit is not modified to allow continued discharge of imazamox to control non-native eelgrass.

Response: Thank you for your comment. Please see the response to comment #23.

Comment #26: The commenter is concerned that the small sample size was not rigorous enough and doesn't provide for a conclusive study demonstrating that a 10 m buffer has no impact on *Z. marina*. A power analysis should have been conducted to demonstrate whether the study design could detect a 20% change.

Response: The buffer validation study was open for review and comment from January 2, 2014 through February 15, 2014. Ecology will consider recommendations for additional studies when conducting a full review of the permit during the scheduled review and reissuance process scheduled for 2019. Please see the response to comment #14.

A power analysis was conducted by Dr. Grue for the sites used in the Buffer Validation Study. The power analysis was available for review during the public review and comment period that ran from January 2, 2014 through February 15, 2014. The *Evaluation of Sampling Design for Monitoring Impacts of the Control of Exotic Eelgrass on Native Eelgrass in Willapa Bay, Washington* can be found here:
<https://fortress.wa.gov/ecy/publications/SummaryPages/1310054.html>

Comment #27: The safety of the herbicide imazamox has not been validated in the marine ecosystem.

Response: Imazamox, registered under the Clearcast FIFRA label, allows use in marine and estuarine waters. The Environmental Protection Agency (EPA) considers imazamox to be a reduced risk herbicide, and imazamox received an exemption for tolerance designation. To evaluate the use of imazamox to manage *Z. japonica* in the marine/estuarine environment, Washington State University contracted with ENVIRON International Corporation of Seattle to develop a risk assessment for imazamox. The risk assessment, *Screening-Level Ecological Risk Assessment of the Proposed Use of the Herbicide Imazamox to Control Invasive Japanese Eelgrass (Zostera japonica) in Willapa Bay, Washington State*, is available at: <http://www.ecy.wa.gov/programs/wq/pesticides/eelgrassdocs/riskassessmentimazamox110712.pdf>. As SEPA lead agency Ecology made the determination that the issuance of this permit could have significant adverse environmental impact and determined that an Environmental Impact Statement (EIS) was required. The EIS is available for review at: <https://fortress.wa.gov/ecy/publications/SummaryPages/1410050.html>. The risk assessment and the *Z. japonica* EIS provide an evaluation of imazamox and its use in a marine/estuarine environment.

Comment #28: A 20% impact to *Z. marina* is a high threshold for a species that is an essential fish habitat and a protected species under Washington law.

Response: The threshold of a 20% reduction in stem density is based upon WDFW eelgrass habitat survey guidelines. Implementing a threshold of a 20% reduction in stem density is a criteria that allows standard survey methods a chance of detecting a change at a level of effort that is not prohibitively expensive.

There are not regulations in place that require commercial clam growers to protect or mitigate for non-target vegetation within commercial clam beds in Willapa Bay. Further, Ecology feels that this permit will provide the appropriate herbicide application restrictions to protect off-site vegetation. Please see the EIS, sections 2.6.2 and 2.6.3, for a discussion on how WDFW's Priority Habitat and Species designation and Hydraulic Project Approval (HPA) permitting interacts with this activity.

Comment #29: Commenter is concerned that Ecology seeks to limit public comment to only its proposed permit modification, while failing to justify reasonable cause for modifying the permit as proposed.

Response: The Code of Federal Regulations, 40 CFR 122.62 states that: *When a permit is modified, only the conditions subject to modification are reopened.* Please see response to comment # 15.

Comment #30: Commenter is concerned that a lack of a cumulative impacts analysis or review of the "net loss" is severely lacking for this permit or permit modification.

Response: Cumulative impacts are addressed in section 2.9 of the EIS. Please see response to comment #18.

Comment #31: Growers applied to spray 3,300 acres for 2015 and 2,000 acres for 2016, yet the "self-reporting" stated they only sprayed a few hundred acres.

Response: Permittees are not required to treat acreage identified in their pre-treatment plan. Permittees may make decisions on whether to treat a clam bed identified in the pre-treatment plan based upon the action threshold identified in their Discharge Management Plan being met and their business needs. Please see response to comment #6.

Comment #32: According to the permit conditions, no net loss can occur.

Response: This permit does not contain a condition that states no net loss can occur.

Comment #33: The commenter recommends that an independent review be commissioned of all the testing and monitoring reports and public presentation materials associated with the Draft prior to any modification of the current permit.

Response: Thank you for your comment. The public comment period ran from December 7, 2016 through March 7, 2017. This comment period was the opportunity for anyone interested to independently review the Draft Permit Modification and all of the associated supporting

documentation. Additionally, we invited Washington Department of Fish and Wildlife (WDFW), Washington Department of Natural Resources (DNR) and NOAA Marine Fisheries Service (NMFS) to review the buffer width study data. The comments received from WDFW, DNR and NMFS after their review of the buffer validation study data were provided as part of the public comment period.

Comment #34: The monitoring and testing of test plots and spraying are tainted by irregularities and deviation from standards required in Guidelines Establishing Test Procedures for the Analysis of Pollutants contained in 40 CFR Part 136 (or as applicable in 40 CFR subchapters N [Parts 400– 471] or O [Parts 501-503])

Response: We are not aware of a nonconformance with the Guidelines Establishing Test Procedures for the Analysis of Pollutants contained in 40 CFR Part 136, regarding the Buffer Validation Study. A specific example of nonconformance was not provided in the comment received. Permit compliance is enforceable by Ecology and third parties.

Comment #35: Commenter wants Ecology to consider non-chemical management methods of *Z. japonica*.

Response: Please see section 2.7 of the EIS for a discussion of alternative management methods.

Comment #36: Commenter is concerned that the use of herbicide to manage *Z. japonica* will occur in Grays Harbor and at the mouth of the Columbia River.

Response: This permit only allows for the discharge of imazamox to occur on commercial clam beds (excluding geoduck culture) in Willapa Bay, WA for the management of *Z. japonica*. Please refer to permit Special Condition S1.A and S1.B.

Comment #37: The use of chemicals and herbicides in Willapa Bay would severely affect the growing of aquaculture products that could be marketed as organic. Organic standards for aquaculture are being considered by the National Organics Standards Board.

Response: National Organic Standards for aquaculture have not been adopted to date. Ecology actions are based upon the regulations in place at the time of the agency action. If organic standards are in place for aquaculture during future review and reissuance of this permit we will consider those at that time.

Comment #38: The use of this very targeted chemical has allowed growers to reclaim not only multiple acres of valuable clam ground, but just as importantly, it has allowed us to reclaim multiple acres of valuable habitat on our farms.

Response: Thank you for your comment.

Comment #39: The commenter is concerned about the invasiveness of *Z. japonica* and the impact it has on clam farms.

Response: Thank you for your comment. This permit regulates the use of imazamox to manage the state listed class C noxious weed *Zostera japonica* in Willapa Bay only. The legislature has directed Ecology to develop permits for noxious weed management (RCW 90.48.445). Ecology attempts to strike a balance between beneficial uses of a water body when developing aquatic pesticide permits. Ecology determined that this activity was likely to have a significant adverse impact on the environment, which required the development of a non-project EIS. The EIS developed informs Ecology about potential mitigation, for inclusion in the permit, and potential environmental impacts. Ecology worked with natural resource agency scientists as well as academic scientists when developing the permit. Based on the EIS, and Buffer Validation Study, Ecology included mitigations within the permit to reduce potential ecological impacts to Willapa Bay.

Please see section 3.1 of the EIS for a discussion on *Z. japonica* and how it interacts with the environment in Willapa Bay. The EIS is located here:

<https://fortress.wa.gov/ecy/publications/documents/1410050.pdf>.

Comment #40: Because we had concerns about the monitoring ourselves and because we feel like there's not conclusive information about the buffer and the orientation of buffers, if people who comment want to recommend further studies that might happen on public land by DNR, that would be taken as a recommendation for what work we would be assigned to do.

So, if there are things that people want to address and have them in writing, that would be useful for the scientists at DNR to point to when we are designing our field work. So, I just encourage you to include any recommendations that you want DNR to be looking at, either other people's private land who want to make sure that they're not having impacts from any of the spraying that's happening on private lands, or indications on public lands.

Response: Thank you for your comment.

Comment #41: While no impacts outside the buffer were seen along the upper elevation or side borders of the plots, it was clear that the proposal in the General Permit Modification to allow spraying of Imazamox within 10 meters of native eelgrass located along the lower elevation borders of commercial clam beds in Willapa Bay will likely result in loss of native eelgrass. Based upon this result, and to ensure that a margin of safety is built in to the Permit Modification that results in no-net-loss of valuable native eelgrass, we recommend that the 10 meter buffers along the upper elevation and side borders of the plots be retained, but also that the buffer width be increased to 30 meters along the lower elevation border.

Response: Though the goal is no net loss of native eelgrass off of the treatment site, the permit and buffer validation study are not designed ensure zero impacts off of the treatment site. The study was designed to look at measureable impacts to native eelgrass at the 10 m buffer distance. Based upon WDFW Hydraulic Project Approval Permit monitoring guidance and the validation of the study design (see response to comment # 26), Ecology determined that measurement of a 20% reduction in native eelgrass stem density allows standard survey methods a chance of detecting a change at a level of effort that is not prohibitively expensive. Additionally, WDFW uses detection of a 20% or greater reduction of native eelgrass as the

recommendation in their requirements for monitoring through Hydraulic Project Approval (HPA) permits (http://wdfw.wa.gov/conservation/research/projects/hydraulic_program_compliance/eelgrass/index.html). WDFW further state in its guidance that: *In Washington, monitoring is required to ensure no net loss of eelgrass on projects permitted under the Hydraulic Code. However, spatial and temporal variation in eelgrass density can make detecting loss of eelgrass difficult.*

The threshold for what constitutes an adequate buffer distance in the Buffer Validation Study (Factsheet Appendix B) is less than a 20% reduction in *Z. marina* stem density. The study data submitted by Grue and Conquest showed a stem density reduction of 0.8% on the lower elevation transects and a stem density increase of 4.3% on the upper elevation transects. The study did not demonstrate that the threshold of a 20% or greater reduction in stem density was met, in order to call the buffer distance of 10 meters inadequate.

The results of the Buffer Validation Study do not indicate that the 10m buffer is inadequate and Dr. Grue indicates that reductions in *Z. marina* stem density are unlikely beyond the 10 m buffer (Grue and Conquest 2015). The information in the Grue and Conquest 2015 report, that I believe WDFW is referencing as demonstrating impacts beyond the 10 m buffer, is the section on Additional Measurements of Off-site Impact to Native Eelgrass. In this section they document using GPS to “mark the boundary of visual effects (loss and browning of shoots) along the perimeter of each imazamox---treated plot”. We understand that this work was based upon a visual survey of browning of leaves and shoots and did not involve quantification of the visible impacts. As discussed in the Grue and Conquest study, reductions to leaf percent cover were seen, as browning or absent leaves. Subsequent studies by Novak 2016 and Patten 2016 indicated that the reduction in leaf percent cover did not result in a significant loss of stem density of *Z. marina*. The visual boundary of impact to *Z. marina* (Grue and Conquest 2015) may indicate browning of leaves, which does not necessarily result in a reduction in stem density (Novak 2016 and Patten 2016).

The data provided in the Buffer Validation Study (Grue and Conquest 2015) as well as subsequent studies (Novak 2016, Patten 2016) do not indicate that changing the buffer distance on the seaward side of the application site to 30 m is warranted. Ecology will reconsider this request when conducting a full review of the permit during the scheduled review and reissuance process scheduled for 2019.

Additionally, please see response to comment #28.

Comment #42: Permittees must read the label on the jug and follow it. If the jug is a year old, it can be wrong. Did permittees apply more than 4 oz per acre after the FIFRA label changed?

Response: EPA states on their page for Pesticide Labeling Questions & Answers that, “EPA directs users to follow the use directions found on the label of the container and in any EPA-approved supplemental labeling of the pesticide they are applying that accompanies the pesticide. Labels acquired from web sites may not be the most current label or may conflict with the label on the container. Because the label on the container is the label that must be

followed along with any EPA-approved supplemental labeling which must accompany the user at the time of application, users should not download entire section 3 labels for use (<https://www.epa.gov/pesticide-labels/pesticide-labeling-questions-answers#websites>).”

2.26 oz. of active ingredient per acre is the highest use rate reported to Ecology.

Comment #43: Does DOE have a process for revoking coverage or halting work under permit coverage? Why was it not used?

Response: Please see permit General Conditions G4, and G6. Revoking Permittee coverage under this permit was not warranted based upon available information.

Comment #44: DNR suggests the following additions be considered to protect *Zostera marina*.

1. Define a minimum action threshold of *Z. japonica* to limit application of imazamox to unvegetated areas and reduce the risk of non-target impacts.
2. Prevent discharge of imazamox to any drainage or swale directing water off of the treatment site.
3. Specify a maximum active ingredient concentration allowable under the permit.

Response: Please see the response to comment #10 regarding limiting the rate of imazamox applied under coverage of this permit.

The request to require a minimum action threshold and prohibit discharge of imazamox to all drainages or swales directing water off of the treatment site for this permit is out of scope for the permit modification process. The Code of Federal Regulations 40 CFR 122.62 states that: When a permit is modified, only the conditions subject to modification are reopened. Ecology will consider this request when conducting a full review of the permit during the scheduled review and reissuance process scheduled for 2019.

Comment #45: Given the NPDES Permit specification S4.A.2.i regarding drainages, we recommend that Ecology provide more specific guidance to applicants; either language describing the physical features used to define a drainage or a map delineating these areas if detailed topographic and vegetation data is available. We also recommend that information about the location of drainage swales and best practices planned for chemical application near drainages be required in the Permit application materials under the Discharge Management Plan Section C, *Zostera japonica* Management Options.

Response: The permit contains the following definition of a drainage: *Drainage:* A depression or channel in the inter-tidal surface topography that moves water down slope as the water recedes off of the tide flat as the tide ebbs.

The request to modify language and requirements for drainages is out of scope for the permit modification process. The Code of Federal Regulations 40 CFR 122.62 states that: When a permit is modified, only the conditions subject to modification are reopened. Ecology will

consider this request when conducting a full review of the permit during the scheduled review and reissuance process scheduled for 2019.

Please also see response to comment #20.

Comment #46: The permit modification should include continued monitoring of all treatment areas. At a minimum, monitoring should be conducted as prescribed in the initial permit. Additional monitoring should be implemented to determine the effects of treatments to other vegetation species (besides *Zostera* spp).

Response: No changes to the monitoring requirements, as required in permit Special Condition S5, were proposed. The request to add additional monitoring requirements is out of scope for the permit modification process. The Code of Federal Regulations 40 CFR 122.62 states that: When a permit is modified, only the conditions subject to modification are reopened. Ecology will consider this request when conducting a full review of the permit during the scheduled review and reissuance process scheduled for 2019.

Comment #47: Because the Buffer Validation Study report documents stem density reductions far below the 20% threshold, the BVS “study is complete” as a matter of law and supports issuance of the permit modification to allow the continued use of imazamox. Additional monitoring and research conducted in 2015 and 2016 support issuance of the permit modification.

Response: Thank you for your comment.