AQUATIC MOSQUITO CONTROL GENERAL PERMIT

Addendum to the Fact Sheet
Appendix F: Response to Comments

May 20, 2015

SUMMARY OF MAJOR PERMIT CHANGES

This is a summary of the changes made to the Aquatic Mosquito Control General Permit (permit) in response to the public comments received between March 4 and April 17, 2015. In finalizing this permit, 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 public hearings held in:

Kennewick, Washington on April 7, 2015
Moses Lake, Washington on April 8, 2015
Longview, Washington on April 9, 2015.

COMMENTS AND RESPONSES

Ecology published a draft Aquatic Mosquito Control General Permit on March 4, 2015 for public comment. The public comment period ended April 17, 2015 at 5PM. During the comment period, Ecology conducted three public workshops and hearings in Kennewick, Moses Lake, and Longview. Ecology also accepted public comments via letter and email.

Ecology considered all comments in preparing the final permit. The response to comments documents Ecology's response to each commenter and any changes to the permit that resulted from the comment. Ecology received four (4) comments during the public comment period. Each comment and response is numbered. This number allows the commenter to find Ecology's response to their comments. In Table 1, the comment number that corresponds to the comments submitted for each individual is listed. Full text of all comments received by Ecology can be found at:
http://www.ecy.wa.gov/programs/wq/pesticides/final_pesticide_permits/mosquito/index.html or by contacting Nathan Lubliner at: nathan.lubliner@ecy.wa.gov or at (360) 407-6563.

The response to comments is broken into three sections:

Section 1: List of Commenters and Comment Numbers

Table 1: Commenters

Commenter Name	Affiliation	Comment Number
Ann Belchick-Moser	Grant County Mosquito Control District	1
Jennifer Mullins	Leavenworth Mosquito Control District	2
Keith Folkerts	Washington Dept. of Fish and Wildlife	3
Stephanie Utter	Bureau of Reclamation	4

Section 2: Comments on the Permit

Comment: Inadequate data exist on the ecological effects of pesticide use for WDFW to assure Ecology that the measures proposed in the permit will protect all species, communities, and ecosystems. We recommend robust monitoring of potential ecological effects of all pesticide use and that such monitoring be conducted within an adaptive framework that can effectively inform future applications. (#3)

> **Response:** When developing National Pollutant Discharge Elimination System (NPDES) general permits, Ecology is tasked with balancing the beneficial uses of the waters of the state. At times maintaining one beneficial use may cause the temporary diminishment of another beneficial use. This permit allows the use of adulticides and larvicides to manage mosquito populations in order to protect human and animal health as well as controlling nuisance mosquito populations that can impact recreational uses of the water and surrounding properties. A result of these actions may be the temporary diminishment of other beneficial uses of the waterbody, such as aquatic life uses. The permit serves as a short-term water quality modification.
>
> In order to minimize impacts to beneficial uses of the water body Ecology has conditioned this permit to limit pesticide use in areas know to be habitat for endangered, threatened and sensitive species. Furthermore, there are conditions in the permit that restrict where and when use of larvicides and adulticides are allowed. Ecology requires an Integrated Pest Management Plan for adulticide use and specific criteria must be met prior to the use of larvicides in water. Additionally, adulticides may only enter water through incidental overspray and may not be directly applied to water.
>
> Permittees operating under coverage of this permit must follow General Condition G9 which states: *Nothing in this permit shall be construed as excusing the Permittee from compliance with any applicable Federal, State, or local statutes, ordinances, or regulations*. This includes the Endangered Species Act.

Comment: We appreciate and support putting the maps of vulnerable areas in a standalone document so that it can be updated as new information is gained. We appreciate and support your efforts to require coordination among permittees and WDFW regarding vulnerable species; we appreciate and support the stepped up notification requirements. (#3)

> **Response:** Thank you for your comment.

Comment: Due to concerns of chronic exposure to sensitive marine/estuarine invertebrates, we recommend that you not allow the use of methoprene briquettes in tidally influenced areas. (#3)

> **Response:** Research indicates that estuarine mysid shrimp may be affected by chronic exposure to methoprene; with effects ranging from lethality to a reduction in the number of young produced per female, depending on the concentration of methoprene they were exposed to (McKenney 1996). Further, EPA identified concerns about chronic impacts to estuarine invertebrates from the use of methoprene briquettes.

McKenney, C. L. and D. M. Celestial. 1996. Modified survival, growth and reproduction in an estuarine mysid (Mysidopsis bahia) exposed to a juvenile hormone analogue through a complete life cycle. Aquatic Toxicology 35: 11-20. [1]

Environmental Protection Agency. 1991. Registration Eligibility Document: Isopropyl (2E, 4E)-11-Methoxy-3, 7, 11-Trimethyl-2, 4-Dodecadienoate (referred to as methoprene). [11]
http://www.epa.gov/opp00001/reregistration/REDs/old_reds/methoprene.pdf

Change: Special Condition S4.B.4**.** Methoprene briquettes formulations are not permitted for use in marine or estuarine locations.

Comment: We agree with your approach of seeking first to control larval mosquitoes so adulticide use is minimized. Nevertheless, we have concerns about S4.B.4.a which allows preemptive larvicide use on lakes for an entire season based historical trends confirmed by a single positive dip. We would prefer to see more frequent monitoring to confirm mosquito presence to avoid unnecessarily applying pesticides. (#3)

Response: Ecology included S4.B.4.a to ensure that mosquitoes are present prior to seasonal discharge of larvicides. It is Ecology's understanding that larvicide treatments are generally not 100% effective and that adult female mosquitoes flying in the area may lay eggs in the water body. For these reasons, Ecology feels that suitable mosquito breeding habitat may continue to harbor mosquito larvae throughout the season.

The conditions within the permit provide the minimum standards to be compliant with the permit. Permittees may conduct larval dips more often than required by the permit when determining whether to use larvicides.

Comment: The Bureau of Reclamation appreciates the opportunity to review and comment on the Draft Aquatic Mosquito Control General Permit (Permit). Reclamation owns property within Washington State that endangered, threatened, or sensitive species inhabit. The Federal National Pollutant Discharge Elimination System (NPDES) permit discusses and inventories the vulnerable species locations in Washington State. Reclamation is a NPDES permit holder. Applicators discharging chemicals to lands under Reclamation's jurisdiction must abide by not only the State Permit, but also the Federal Permit requirements.

The Washington State Department of Fish and Wildlife manage Reclamation properties where vulnerable species are located. The Permit requires the development of an Integrated Pest Management Plan (IPM) for adulticide but not larvicide discharges. Federal regulations require an IPM be prepared, for control of mosquitoes, by those entities applying either adulticides or larvicides on federally owned lands, as a requirement of the Government Performance and Results Act. (#4)

Response: Thank you for your comment.

Comment: S4.B.4.a – I would like to see the threshold for larviciding lowered to 0.1 larva per dip since I believe this is the threshold used in California and favors larviciding over adulticiding thus providing better protection for public health. I believe the Districts which do not use adulticiding tend to use the lower threshold. I also believe a lower threshold will provide better control of Culex sp. which tend to occur in lower numbers but are far more likely to carry diseases especially at larger sites where larva may be harder to locate. (#2)

> **Response:** Ecology intended the dip sampling as a threshold determination to show that mosquito larva are present prior to the application of larvicides to waters of the state. Ecology did not intend for this permit condition to restrict the use of larvicides, as long as mosquito larva are present.
>
> **Change:** Language in permit Special Condition S4.B.4.a changed to:
> a. Pretreatment surveillance of mosquito breeding sites indicates that at least one larvae/pupae is present in dip sample(s). In the event that the Permittee finds larvae/pupae, and the area is treated, the Permittee may continue pre-emptive larvicide treatments without dipping for the remainder of the treatment season.

Comment: S4.B.4.b – States, "Methoprene, Bacillus sphaericus, and Bti based larvicides may be used as a pre-emergent dry-land treatment without dipping in areas that have a historical record of mosquito hatches following flooding." Spinosad has been produced in formulations specifically for the habitat described and should be considered for this section. (#1)

> **Response:** Ecology agrees that spinosad is appropriate for use as a pre-emergent dry-land application. Spinosad, while wet, is toxic to bees. For this reason Ecology will limit spinosad formulations for dry-land pre-emergent applications to non-liquid, granular formulations.
>
> **Change:** Special Condition S4.B.4.b
> b. Methoprene, Bacillus sphaericus, Bti based larvicides and granular formulations of spinosad may be used as a pre-emergent dry-land treatment without dipping in areas that have a historical record of mosquito hatches following flooding.

Comment: S4.B.6 – The draft permit requires the mosquito district to create an Integrated Mosquito Management Plan (IMMP) for areas of concern. In Grant County Mosquito Control District #1 (GCMCD) this area is the Northern Leopard Frog (NLF) habitat. We understand the need for an IMMP for that area but find it difficult to complete when no management plan for the NLF has been made available to GCMCD. Also, approval of the IMMP from landowners, WDFW, and DOE is a task that could take years.

A proven scientific way to control mosquito populations is to use a two-pronged approach of larvicides and adulticides. Severely limiting the use of mosquito adulticides goes against sound science and the mission of our district to control the mosquito population for our taxpayers. GCMCD contains approximately 15,000 acres of mosquito breeding habitat, and the NLF is hypothesized to inhabit 5,000 of these acres. Limiting the use of one entire side of our mosquito control operation for such a large proportion of our district is not responsible management.

According to the Centers of Disease Control, both nuisance and vector mosquitoes are a public health threat. Since public health is what GCMCD is mandated to protect, utilizing mosquito adulticides is a large portion of completing said task.

In terms of larvicides used in the vulnerable species habitats, to only allow Bacillus sphaericus and Bti based larvicides does not leave many options in a mosquito control district toolbox. Adding active ingredients such as methoprene and spinosad would greatly improve the amount of control we could achieve when already having to significantly limit the use of mosquito adulticides. Research with methoprene effects on amphibians has been conducted and shown no significant effects on physiology or populations. Also, the use of additional active ingredients for rotation reduces the opportunity for mosquito resistance to Bacillus sphaericus and Bti to occur in our local mosquito population. (#1)

> **Response:** Ecology defers to the experts on the Endangered Species Act (ESA), in this case, Washington Department of Fish and Wildlife (WDFW), to protect our resources. In developing this permit Ecology tries to balance the competing objectives of the ESA and public health.
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> Ecology is aware of the difficulties in formulating a plan for working in areas identified as vulnerable species habitat and obtaining letters of concurrence for that plan from WDFW and a land management agency if one exists. Conversations have been initiated with WDFW to determine what information and data they would need in order to approve the use of additional insecticides in areas identified as vulnerable species habitat. Ecology is willing to continue to work with Permittees and WDFW to assist in providing more tools for mosquito control in areas identified as vulnerable species habitat while still providing protection to species of concern in those areas.

Comment: S4.B.6 - "Areas of Restricted Larvicide and Adulticide Use Due to Presence of Vulnerable Species" specifically the NLF habitat. In 2014, GCMCD asked WDFW for population studies performed on the NLF, and it became apparent that the actual size of the NLF habitat is significantly smaller than what is listed by township, section, and range in the original NPDES permit. Updating this information would prove to be beneficial to GCMCD so we can continue to conduct responsible mosquito control in the areas where there is no indication of NLF. (#1)

> **Response:** Ecology relies on WDFW to update the information in the "Areas of Restricted Larvicide and Adulticide Use Due to Presence of Vulnerable Species" document. One revision that Ecology made to the permit was to remove this document from the permit appendix and publish it on the permit website instead. This change allows the document "Areas of Restricted Larvicide and Adulticide Use Due to Presence of Vulnerable Species" to be updated during the permit cycle. As Permittees work with WDFW to refine locations of vulnerable species habitat, Ecology will update this document based on information provided by WDFW during the permit cycle.

Comment: S.6.A.3 - 'The Permittee must notify wildlife refuges 24 hours in advance of aerial applications of adulticides and larvicides over the refuge." Ninety nine percent of all of our applications are made using aerial application methods. GCMCD operates aircraft up to 7 days a week depending on the type of application and weather conditions. The majority of our pesticide applications are made on or near wildlife refuges so this requirement would make it impossible to properly notify the refuge. Adding some language to the permit about this not being necessary if the refuge is aware of our spray schedule seems more appropriate. In previous dealings with the wildlife refuge, it is more reasonable for their biologists to contact us if they are going to be in an area of our district conducting wildlife studies. We can therefore modify our application times based on their study requirements. (#1)

> **Response:** The purpose of this section is to ensure that the wildlife refuges are informed about mosquito control treatments occurring over the refuge. Ecology understands that the 24 hour notice may be burdensome to the Permittee. The change below will be included in the permit to ensure that the wildlife refuges are informed of spraying going on over their refuges while allowing the permittee the flexibility needed to operate their mosquito control program.
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> **Change:** Special Condition S6.A.3: The Permittee must notify wildlife refuges 24 hours in advance of aerial application of adulticides or larvicides over the refuge or may make mutually agreed upon alternative arrangements, with the refuge, for notice. The alternative arrangements shall be documented and maintained by the Permittee.

Comment: S.8.D3 – Change the time limit for providing a written report for the non-compliance from five days to 30 days or provide a way for the Permittee to develop a timeline for report submittal beyond the 5 day requirement. (#1)

> **Response:** The five-day reporting requirement is set by federal regulation in 40 CFR 122.41(l)(6). However, there is a provision in the regulation to allow Ecology to waive the requirement for a written report if the immediate notification is received by Ecology within 24 hours. Ecology will include this provision in the permit for clarification.
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> **Change:** Special Condition S8.D.3. The Permittee must provide a written report to Ecology within five (5) days of the time that the Permittee becomes aware of any permit non-compliance unless Ecology requests an earlier submission. The report must contain a description of the noncompliance and its cause, the exact date(s), time(s), place(s), and duration(s) of the noncompliance, whether the noncompliance has been corrected and, if not, when the noncompliance will be corrected, and the steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.
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> Upon request of the permittee, Ecology may waive or extend the requirement for a written report on a case-by-case basis, if the immediate notification (S8.D.2) is received by Ecology within 24 hours.

Section 3. Comments on the Fact Sheet

Ecology did not receive comments on the Factsheet during the public comment period, however, Ecology did identify that a discussion on the larvicide spinosad was inadvertently omitted from the factsheet. The narrative below constitutes Ecology's revision to the factsheet to incorporate a discussion of the larvicide spinosad.

For inclusion in *Fact Sheet for the Draft Aquatic Mosquito Control NPDES General Permit* in the section on pesticides information under the heading **Larvicides** (page 16).

> Spinosad is derived from a naturally occurring soil borne bacterium and consists of two chemicals: spinosyn A and spinosyn D. The US Environmental Protection Agency (EPA)has registered the use of spinosad as a pesticide since 1997.
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> Spinosad has a low toxicity in humans and other mammals. EPA has determined that spinosad is not likely to cause cancer. Potential for chronic effects from spinosad is thought to be low due to tolerance limits set by EPA on food. Spinosad was not shown to be mutagenic. EPA classifies spinosad as a reduced risk pesticide.
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> Spinosad breaks down rapidly in the presence of sunlight with half-lives in water of less than one day. Spinosad binds rapidly to sediment and soil and has a low potential move through soils into groundwater. Spinosad is practically non-toxic to moderately toxic to fish. Slightly to to moderately toxic to aquatic invertebrates. Practically non-toxic to slightly toxic to birds tested. Spinosad is highly toxic to bees, however, once the spinosad product has dried there is little to no effect on bees. Spinosad is not toxic to plants when used as directed by the label.
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> **References**
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> Documents prepared after June 12, 2014, also identify information sources by the following 11 categories:
> 1. Peer review is overseen by an independent third party.
> 2. Review is by staff internal to Department of Ecology.
> 3. Review is by persons that are external to and selected by the Department of Ecology.
> 4. Documented open public review process that is not limited to invited organizations or individuals.
> 5. Federal and state statutes.
> 6. Court and hearings board decisions.
> 7. Federal and state administrative rules and regulations.
> 8. Policy and regulatory documents adopted by local governments.
> 9. Data from primary research, monitoring activities, or other sources, but that has not been incorporated as part of documents reviewed under other processes.
> 10. Records of best professional judgment of Department of Ecology employees or other individuals.
> 11. Sources of information that do not fit into one of the other categories listed.

Spinosad General Fact Sheet. National Pesticide Information Center. http://npic.orst.edu/factsheets/spinosadgen.html. [11]

EPA Pesticide Fact Sheet: Spinosad. Undated. http://www.epa.gov/pesticides/chem_search/reg_actions/registration/fs_PC-110003_19-Jul-99.pdf. [11]

Wynetta S. Kollman, Ph.D. ENVIRONMENTAL FATE OF SPINOSAD. Department of Pesticide Regulation Environmental Monitoring Branch. P.O. Box 4015 Sacramento, California 95812-4015 Undated. http://www.cdpr.ca.gov/docs/emon/pubs/fatememo/spinosad_fate.pdf. [11]