

**FACT SHEET FOR THE  
DRAFT AQUATIC INVASIVE SPECIES MANAGEMENT  
NPDES GENERAL PERMIT**

**DEPARTMENT OF ECOLOGY**

**MAY 18, 2016**

## EXECUTIVE SUMMARY

This fact sheet is a companion document to the National Pollutant Discharge Elimination System (NPDES) *General Permit*<sup>1</sup> for management of Aquatic Invasive Species. It explains the nature of the proposed *discharge*, the Washington State Department of Ecology's (Ecology) decisions on limiting *pollutants* in the receiving water, and the regulatory and technical basis for these decisions.

Ecology has tentatively determined to issue a permit to allow the use of *algaecides*, *herbicides*, *insecticides*, *molluscicides*, *piscicides* and any other chemical or appropriate product to *surface waters of the state of Washington* for the purposes of managing *nonnative invasive* aquatic animals and nonnative invasive marine *algae*. The permit *allows* short-term toxicity to aquatic *organisms* to perform essential activities that protect beneficial uses of the *waters of the state* from the impacts of these species.

Since the *Headwaters, Inc. v. Talent Irrigation District* ninth circuit court decision, Ecology has maintained that in order to discharge chemicals to waters of the state, coverage under an NPDES permit is required. Ecology has issued general and *individual* NPDES permits for discharges of aquatic pesticides since 2002. The Sixth Circuit Court recently ruled in *National Cotton Council et al. v. EPA* that the discharge of *pesticides* and their residues to waters of the state requires NPDES coverage.

Ecology may change the proposed terms, limits, and conditions contained in the draft permit, based upon written public comments it receives and testimony provided at public hearings. The draft permit does not authorize a violation of surface water quality standards, or any other applicable state or federal regulations. Ecology may require any person seeking coverage under this permit to obtain coverage under an *individual permit* instead.

Ecology will consider any person who applies control chemicals to surface water who is not covered under this general permit, another applicable general permit, an applicable individual permit, or a state *experimental use permit* to be operating without a discharge permit and subject to potential enforcement action. Exceptions include those discharges identified in Aquatic Invasive Species Management Permit Condition S.1. B.

Ecology proposes to issue this new general permit for aquatic invasive organisms so that the applicators of chemicals and other control products to manage these species will comply with the Federal Clean Water Act and with RCW 90.48.080. The *Permittee* must monitor (depending on the type of chemical application), notify the public, post signs at treatment sites, and provide annual reports to Ecology.

---

<sup>1</sup> The text of the fact sheet contains italicized and bolded words or phrases. These words or phrases are the first usage in this document and are defined in the Glossary, Appendix A.

## TABLE OF CONTENTS

EXECUTIVE SUMMARY .....	2
INTRODUCTION .....	5
AQUATIC PESTICIDE LEGAL HISTORY .....	7
The Federal Clean Water Act (CWA) .....	7
Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), 7 U.S.C. §§136 et. seq. (1979).....	7
Headwaters, Inc. v. Talent Irrigation District, 243 F.3d 526 (9th Cir. 2001) .....	8
League of Wilderness Defenders et al. v. Forsgren, 309 F.3d 1181 (9th Cir. 2002).....	9
Fairhurst v. Hagener, 422 F.3d 1146 (9th Cir. 2005).....	9
Northwest Aquatic Ecosystems v. Ecology, PCHB 05-101 (Feb. 15, 2006).....	10
EPA Final Rule .....	10
National Cotton Council, et al. v. EPA, 553 F.3d 927 (6th Cir. 2009).....	11
LEGAL BASIS FOR MANAGING INVASIVE SPECIES.....	11
Legal Basis for Managing Invasive Species in the United States.....	11
Legal Basis for Managing Invasive Species in Washington State.....	12
AQUATIC INVASIVE SPECIES BIOLOGICAL BACKGROUND .....	12
Why Manage Aquatic Invasive Species?.....	13
Specific Examples of Impacts from Invasive Organisms Covered under this NPDES Permit .....	14
CHEMICALS FOR AQUATIC INVASIVE SPECIES MANAGEMENT .....	18
REGULATORY INFORMATION .....	19
Regulatory Pollution Reduction Requirements .....	19
Technology-Based Water Quality Protection Requirements .....	19
Water Quality-Based Requirements .....	21
Sediment Quality .....	25
Ground Water Quality Standards.....	25
SEPA Compliance .....	25
Endangered and Sensitive Species.....	25
SPECIAL CONDITIONS.....	26
S1. PERMIT COVERAGE.....	26
Activities Covered under This Permit.....	26
Activities That May Not Need Coverage Under This Permit.....	27
Geographic Area Covered.....	27
S2. APPLICATION FOR COVERAGE.....	27
Who May Apply for Coverage .....	27
How to Obtain Coverage .....	28
S3. DISCHARGE LIMITS .....	28
Impaired Water bodies.....	29
S4. RESTRICTIONS OF THE APPLICATION OF PRODUCTS .....	29
Authorized Discharges.....	29
Chemicals and Products Allowed For Use under this Permit.....	29
Experimental Use Permits.....	31

Specific Restrictions on the Application of Pesticides .....	31
S5. PLANNING REQUIREMENTS .....	32
S6. POSTING AND NOTIFICATION REQUIREMENTS.....	32
S7. MONITORING REQUIREMENTS.....	33
S8. ROTENONE MONITORING .....	33
S9. REPORTING AND RECORDKEEPING REQUIREMENTS .....	34
GENERAL CONDITIONS .....	35
PERMIT ISSUANCE PROCEDURES .....	35
Bibliography .....	36
References.....	36
Court Cases .....	37
Federal Publications.....	37
Revised Code Washington (RCW).....	38
Washington Administrative Code (WAC).....	38
Additional Information Sources about Aquatic Invasive Species .....	39
APPENDIX A: GLOSSARY .....	40
APPENDIX B: PUBLIC INVOLVEMENT INFORMATION.....	44
APPENDIX C: RESPONSE TO COMMENTS .....	46

## INTRODUCTION

Since 2001, and based on the *Headwaters v. Talent Irrigation District* ruling, the Washington State Department of Ecology (Ecology) has maintained that discharges of pesticides to waters of the state require coverage under a National Pollutant Discharge Elimination System (NPDES) permit.

This fact sheet is a companion document to the draft Aquatic Invasive Species Management NPDES Permit and provides the legal and technical basis for permit issuance (WAC 173-226-110). Ecology proposes to issue a general permit to allow the use of chemicals (e.g. algaecides, herbicides, insecticides, molluscicides, piscicides and other chemicals or appropriate products) to manage nonnative aquatic invasive animals and nonnative invasive marine algae (herein after referred to as aquatic invasive species).

Ecology determined it was appropriate to issue a general permit for these species because:

- Aquatic invasive species management has a statewide scope.
- The activities for invasive species management are similar at different sites.
- It will facilitate early action and ***rapid response*** to new invaders and invasions.

Ecology may still require individual permits where a proposed activity requires additional guidance, or when an individual Permittee requests an individual permit and Ecology agrees to develop and issue one.

This permit helps Ecology:

- Ensure that applicators use chemicals that have the lowest risk to human health and the environment, but are still effective against the targeted species.
- Mitigate and condition the use of the chemicals.
- Track pesticide rates and use locations.
- Ensure that public notifications and postings occur when waters are treated.
- Monitor the effectiveness of the management activities.
- Allow a rapid response to early infestations

This fact sheet explains the nature of the proposed discharges, Ecology's decisions on limiting the pollutants in the receiving water, and the regulatory and technical basis for these decisions. WAC 173-226-130 specifies public notice of the draft permit, public hearings, comment periods, and public notice of issuance before Ecology can issue the general permit. This fact sheet, application for coverage, and draft permit are available for review (see Appendix B - Public Involvement- for more detail on public notice procedures).

After the public comment period closes, Ecology will summarize and respond to substantive comments. These comments may cause Ecology to revise some of the permit language and requirements. The summary and response to comments will become part of the file for this permit and parties submitting comments will receive a copy of Ecology's response.

Ecology will **not** revise the original fact sheet after it publishes the public notice. Appendix C (Response to Comments) will summarize comments and the resultant changes to the permit.

# AQUATIC PESTICIDE LEGAL HISTORY

## ***The Federal Clean Water Act (CWA)***

The Federal Clean Water Act (CWA), 33 U.S.C. §§1251 et seq. (1972, with major amendments enacted in 1977 and 1987), established water quality goals for navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the NPDES system of permits, which the EPA administers. The EPA has delegated responsibility for administering the NPDES permit program to the State of Washington. EPA delegated authority to Ecology based on chapter 90.48 RCW that defines Ecology's authority and obligations in administering the NPDES permit program. Ecology does not have the authority to issue NPDES permits to federal facilities or to facilities on Tribal Lands.

## ***Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), 7 U.S.C. §§136 et. seq. (1979)***

The following excerpt is from the EPA 2010 NPDES Pesticides General Permit Fact Sheet, Sec. I.3. History of Pesticide Application Regulation:

EPA regulates the sale, distribution, and use of pesticides in the U.S. under the statutory framework of the *Federal Insecticide, Fungicide, and Rodenticide Act* of 1979, to ensure that when used in conformance with the label, pesticides will not pose unreasonable risks to human health and the environment. All new pesticides must undergo a registration procedure under FIFRA during which EPA assesses a variety of potential human health and environmental effects associated with use of the product. Under FIFRA, EPA is required to consider the effects of pesticides on the environment by determining, among other things, whether a pesticide will perform its intended function without unreasonable adverse effects on the environment, and whether when used in accordance with widespread and commonly recognized practice [the pesticide] will not generally cause unreasonable adverse effects on the environment. 7 U.S.C. 136a(c)(5). In performing this analysis, EPA examines the ingredients of a pesticide, the intended type of application site and directions for use, and supporting scientific studies for human health and environmental effects and exposures. The applicant for registration of the pesticide must provide specific data from tests done according to EPA guidelines.

When EPA approves a pesticide for a particular use, the Agency imposes restrictions through labeling requirements governing such use. The restrictions are intended to ensure that the pesticide serves an intended purpose and avoids unreasonable adverse effects. It is illegal under Section 12(a)(2)(G) of FIFRA to use a registered pesticide in a manner inconsistent with its labeling. States have primary authority under FIFRA to enforce “use” violations, but both the States and EPA have ample authority to prosecute pesticide misuse when it occurs. EPA 2011 NPDES Permit Fact Sheet, Sec. I.3, pg. 5.

After a pesticide has been registered, changes in science, public policy, and pesticide use practices will occur over time. FIFRA, as amended by the Food Quality Protection Act of 1996, mandates a registration review program, under which [EPA] periodically reevaluates pesticides

to make sure that as the ability to assess risk evolves and as policies and practices change, all registered pesticides continue to meet the statutory standard of no unreasonable adverse effects to human health or the environment. [EPA] is implementing the registration review program pursuant to Section 3(g) of FIFRA and will review each registered pesticide every 15 years to determine whether it continues to meet the FIFRA standard for registration. Information on this program is provided at <http://www2.epa.gov/pesticide-reevaluation>. EPA 2011 NPDES Permit Fact Sheet, Sec. III.3, pg. 95.

FIFRA, as administered by the EPA and the Washington State Department of Agriculture (WSDA), requires that all persons that apply pesticides classified as restricted use be certified according to the provisions of the act, or that they work under the direct supervision of a certified **applicator**. Commercial and public applicators must demonstrate a practical knowledge of the principles and practices of pest control and safe use of pesticides, which they accomplish by means of a “core” examination. In addition, applicators using or supervising the use of any restricted use pesticides purposefully applied to standing or running water (excluding applicators engaged in public health related activities) must pass an additional exam to demonstrate competency as described in the code of federal regulations as follows:

“Applicators shall demonstrate practical knowledge of the secondary effects which can be caused by improper application rates, incorrect formulations, and faulty application of restricted pesticides used in this category. They shall demonstrate practical knowledge of various water use situations and the potential of downstream effects. Further, they must have practical knowledge concerning potential pesticide effects on plants, fish, birds, beneficial insects, and other organisms which may be present in aquatic environments. These applicators shall demonstrate practical knowledge of the principals of limited area application (40 CFR 171.4).”

Any person wishing to apply pesticides to waters of the state must obtain an aquatic pesticide applicator license from the Washington State Department of Agriculture, or operate under the supervision of a licensed applicator. See <http://agr.wa.gov/pestfert/licensing/> for information on Washington State licensing requirements and testing.

### ***Headwaters, Inc. v. Talent Irrigation District, 243 F.3d 526 (9th Cir. 2001)***

In May 1996, as part of routine vegetation management, the Talent Irrigation District (TID) in southern Oregon applied the pesticide acrolein to a system of irrigation canals. Acrolein-treated water discharged into a fish-bearing creek causing a fish kill. Subsequently, Headwaters, Inc. and Oregon Natural Resources Council Action filed a Clean Water Act citizen suit against the TID for applying a pesticide into a system of irrigation canals without an NPDES permit.

The Ninth Circuit in *Headwaters* held that the applicator should have obtained coverage under an NPDES permit prior to application of aquatic pesticides to an irrigation canal, because the residual acrolein remaining in the waters was a pollutant, and because the pollutant had leaked into waters not intended to be treated. The Ninth Circuit also held that application of the

pesticide in compliance with the FIFRA labeling requirements did not exempt TID from having to obtain an NPDES permit.

Based on the TID court decision, Ecology determined that all pesticide applications to state surface waters required coverage under NPDES permits. Ecology issued its first NPDES general permits for pesticide applications to Washington's surface waters in 2002. Prior to 2001, Ecology regulated the application of aquatic pesticides to most surface waters by issuing administrative orders (called Short-Term Modifications of Water Quality Standards) to Washington-state licensed applicators. Since the Talent decision, there have been further court challenges about the applicability of NPDES permits to aquatic pesticide application as discussed below in this section of the Fact Sheet.

### ***League of Wilderness Defenders et al. v. Forsgren, 309 F.3d 1181 (9th Cir. 2002)***

In the 1970's the Douglas fir tussock moth defoliated approximately 700,000 acres of Douglas fir in Idaho, Oregon, and Washington. In response to this outbreak, the United States Forest Service (USFS) developed a system to predict tussock moth outbreaks and control them via aerial spraying of insecticides. Based on its warning system, the USFS predicted an outbreak in 2000-2002 and designed a spraying program.

In 2002, the League of Wilderness Defenders et al. filed suit against the USFS for failing to obtain a NPDES permit under the Clean Water Act for the application of insecticides directly above surface waters. The USFS argued that spray application of insecticides by an airplane was nonpoint pollution and that the discharges fell under federal exemptions (40 CFR 122.3) for silviculture activities.

The Ninth Circuit held that aerial spraying (from an aircraft fitted with tanks) directly to, and over, surface water is a point source of pollution and requires an NPDES permit.

### ***Fairhust v. Hager, 422 F.3d 1146 (9th Cir. 2005)***

The Montana Department of Fish, Wildlife, and Parks (Department) began a ten-year program to reintroduce threatened native westslope cutthroat trout into Cherry Creek. The Department used antimycin A, a piscicide, to remove nonnative trout from Cherry Creek over several years, after which they planned to reintroduce native trout.

The Department was sued under the citizen suit provision of the CWA for failing to obtain an NPDES permit before applying antimycin-A to surface waters. On appeal, the Ninth Circuit concluded that:

“A chemical pesticide applied intentionally, in accordance with a FIFRA label, and with no residue or unintended effect is not ‘waste,’ and thus not a ‘pollutant’ for the purposes of the Clean Water Act. Because [the Department’s] application of antimycin-A to Cherry Creek was intentional, FIFRA compliant, and without residue or unintended effect, the discharged chemical

was not a pollutant and [the Department] was not required to obtain a NPDES permit.” Fairhurst, 422 F.3d at 1152.

Neither the Court nor the EPA offered any guidance regarding which pesticide applications would result in no residue or unintended effect.

### ***Northwest Aquatic Ecosystems v. Ecology, PCHB 05-101 (Feb. 15, 2006)***

In February 2006, the Pollution Control Hearings Board (PCHB) issued a final order in PCHB05-101. This case focused on a number of issues, one of which was whether an NPDES permit is required for the use of federally registered pesticides. The PCHB ruled on summary judgment that the Fairhurst decision did not provide a blanket exemption from permit coverage for the application of aquatic pesticides. A pesticide application must meet the conditions identified by the Fairhurst court before Ecology can consider it outside the category of a pollutant under the CWA. The pesticide must:

1. Be applied for a beneficial purpose,
2. Be applied in compliance with FIFRA,
3. Produce no pesticide residue, and
4. Produce no unintended effects.

At hearing, Northwest Aquatic Ecosystems failed to provide any evidence specifically addressing how the use of the aquatic herbicides diquat and endothall on the proposed sites would meet the four conditions identified in Fairhurst. In the absence of such evidence, Fairhurst provided no basis for the PCHB to conclude that an NPDES permit is not required for the proposed pesticide applications.

### ***EPA Final Rule***

In November 2006, EPA issued a final rule under the CWA entitled Application of Pesticides to Waters of the United States in Accordance with FIFRA. This rule replaced a draft interpretive statement EPA issued in 2003 concerning the use of pesticides in or around waters of the United States. The rule stated that any pesticide meant for use in or near water, applied in accordance with the FIFRA label, is not a pollutant under the CWA. Therefore, such applications are not subject to NPDES permitting.

After EPA issued the rule, Ecology met with stakeholders to seek input on how it should regulate the use of aquatic pesticides. Ecology also provided the public with a three-week comment period. Stakeholders affiliated with each of the seven affected permits (Mosquito, Noxious Weeds, Aquatic Plant and Algae, Irrigation, Oyster Growers, Fish Management, and Invasive Moth) commented. The consensus of these stakeholders was that Ecology should continue to issue joint NPDES/state waste permits to regulate aquatic pesticide applications.

Because of stakeholder consensus and the need for a permit to implement short-term modifications, Ecology decided that Washington would continue to use NPDES permits as the legal vehicle to regulate the use of aquatic pesticides in and around Washington state waters.

Ecology believes that these permits provide the best protection of water quality, human health, and the environment.

### ***National Cotton Council, et al. v. EPA, 553 F.3d 927 (6th Cir. 2009)***

EPA's final rule (described above) was challenged in 11 of the 12 federal circuit courts that are able to hear regulatory arguments. The federal courts combined the petitions into one case at the Sixth Circuit.

The Sixth Circuit vacated the EPA rule, finding that EPA had exempted discharges from the requirement to have a permit that the CWA clearly included within the permit requirement. First, it agreed with the Ninth Circuit's Fairhurst decision that if a chemical pesticide is intentionally applied to water for a beneficial purpose, and leaves no waste or residue after performing its intended purpose, the discharge would not require an NPDES permit. Second, the court found excess pesticides and residues that make their way into waters during and after any pesticide application constitute wastes under the CWA and must have NPDES permit coverage before discharge occurs.

The Sixth Circuit granted EPA a stay on the effective date of this ruling for 24 months to allow the agency to develop an NPDES permit for aquatic pesticide discharges. EPA issued its general permit on October 31, 2011, for the discharge of pesticides to manage aquatic plants and algae, aquatic animals, mosquitoes and flying insects, and forest canopy pests. In Washington, EPA's general permit covers aquatic pesticide activities conducted on federal facilities, on federal lands when federal entities conduct or authorize the treatment, and on tribal facilities and lands. The state regulates aquatic pesticide application to all other lands/waters.

## **LEGAL BASIS FOR MANAGING INVASIVE SPECIES**

### ***Legal Basis for Managing Invasive Species in the United States***

Agricultural protection from invasive weeds and animal pests has always been a national priority; only later did the federal government recognize invasive species also as threats to natural areas. In 1899, Congress passed the Rivers and Harbor Act authorizing the United States Army Corps of Engineers (USCOE) to crush, divert, or remove the nonnative invasive weed water hyacinth (*Eichhornia crassipes*) from access areas of the St. Johns River in Florida. In 1958, Congress amended Section 104 of the Rivers and Harbor Act to authorize the USCOE to manage a comprehensive program for control of invasive aquatic plants in United States waters. After zebra mussels invaded the Great Lakes, Congress passed the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990. One of its purposes was to “*prevent and control infestations of the coastal inland waters of the United States by the zebra mussel and other nonindigenous aquatic nuisance species.*”

In 1999, President Clinton signed Executive Order 13112 that established a national Invasive Species Council and tasked them with developing a national invasive species plan (plan). The Invasive Species Council was asked to *provide national leadership regarding invasive species, and... encourage planning and action at local, tribal, State, regional, and ecosystem-based*

levels... in cooperation with stakeholders and existing organizations addressing invasive species. Council membership includes the Secretaries and Administrators of 13 federal department and agencies. It is co-chaired by the Secretaries of Commerce, Agriculture, and the Interior.

See <http://www.invasivespecies.gov/> to learn more about the national Invasive Species Council and its accomplishments.

### ***Legal Basis for Managing Invasive Species in Washington State***

Washington recognized the threat of nonnative invasive species when the legislature established laws in 1881 to protect crops from invasive weeds such as Canada thistle. Washington also established laws to protect agriculture from threats from invasive and native animal pests (pest districts authorized in 1919). The legislature has updated and refined these laws over the years to accommodate new information and changing needs. Although Washingtonians understood the impacts of invasive species on agriculture years ago, it took longer to recognize that invasive species also threaten natural areas. In 1987, the legislature revised chapter 17.10 RCW – the *Noxious Weed Law* - to incorporate noxious weed control in all natural areas including lakes, rivers, and streams. Laws to protect Washington from invasive aquatic animals are more recent and include chapter 77.12 RCW – *Prohibited Animal Species-Infested State Waters* and chapter 77.135 RCW – *INVASIVE SPECIES*.

In 2006, Washington’s legislature took a further step in acknowledging the threat that invasive species pose to the state by creating the Invasive Species Council. By doing so, the legislature recognized:

*That the land, water, and other resources of Washington are being severely impacted by the invasion of an increasing number of harmful invasive plant and animal species and these impacts are resulting in damage to Washington's environment and causing economic hardships”* (RCW 79A.25.300).

Washington’s legal system has also recognized that aquatic invasive animals are harmful and (in one case) the PCHB deemed that an “escaped” nonnative animal was a biological pollutant. In May 1997, the PCHB issued a First Order on Summary Judgment finding that escaped farmed Atlantic salmon (nonnative to the Pacific Ocean) are pollutants under the CWA (PCHB -96-257).

The proposed Aquatic Invasive Species Management NPDES permit for Washington State will help Permittees limit the spread and reduce the impacts of aquatic invasive species by allowing for their management with chemical control technologies. The permit also allows rapid response for early invasions. Applicants may obtain permit coverage for aquatic invasive plants and freshwater algae management projects under the Aquatic Noxious Weed Control permit or the Aquatic Plant and Algae Management permit whichever is appropriate for the project.

## **AQUATIC INVASIVE SPECIES BIOLOGICAL BACKGROUND**

The Aquatic Invasive Species Management NPDES Permit allows for management of nonnative invasive organisms (species not indigenous to Washington). Some species already present in

Washington's marine and freshwaters include, but are not limited to, the European green crab, three species of invasive tunicates (sea squirts), several crayfish species, New Zealand mud snails, bullfrogs, and the amur goby. Potential invaders include, but are not limited to, animals such as zebra and quagga mussels, Asian carp, the spiny water flea, and the marine alga *Caulerpa taxifolia*. The fact sheet provides specific species information in subsequent sections of the fact sheet.

Regulators may also consider nonnative genotypes of a native species as not indigenous to an area, although there may be native genotypes of the same species present. *Phragmites australis* (common reed) is an example of a plant species that is indigenous to Washington, but non-indigenous genotypes of *Phragmites australis* are also present. These foreign genotypes may displace the native genotype and other native wetland species.

Ecology has developed the Aquatic Invasive Species Management Permit, in part, to allow for rapid response when potentially devastating organisms such as quagga or zebra mussels are first detected in Washington waters. The permit will also allow treatment of species like invasive tunicates that are already present and where manual or mechanical methods are not the entire solution to managing the invasion.

### ***Why Manage Aquatic Invasive Species?***

The introduction of invasive species can cause overwhelming impacts to ecosystems. While effects of individual organisms may vary by species, invasive species often have few predators, diseases, or competitors when introduced outside of their native range. This can allow their populations to explode at the expense of native organisms and existing ecosystems. These nonnative monoculture populations reduce species biodiversity and may lead to species extinction or wipe out a species in an ecosystem.

The economic and environmental impacts of invasive species can be especially devastating. In a 2004 journal article, Cornell University scientists Pimentel et al. estimated that the costs associated with ecological damage and control of invasive species in the United States were **\$120 billion per year** and increasing. Invasive species are one of the leading threats to the world's biodiversity. Pimentel et al. (2004) referencing Wilcove et al. 1998, also estimated that invasive species impact nearly half of the plants and animals currently listed as ***Threatened or Endangered*** under the United States Federal Endangered Species Act.

Molnar et al. (*Assessing the Global Threat of Invasive Species to Marine Biodiversity*) concluded that "marine invasive species are a major threat to biodiversity, and have had profound ecological and economic impacts." They also found that marine invasive species had "high levels of invasion in the temperate regions of Europe, North America, and Australia."

Regionally, research by David Lodge (University of Notre Dame) and David Finnoff (University of Wyoming) on the impacts of invasive aquatic species on the Great Lakes regions through introduction by ocean going ships, estimated a median loss of \$138 million per year in U.S. waters across multiple ecosystem services (Rothlisberger et. al. 2012). Damaged sectors of the

economy include sport fishing; wildlife viewing, raw water use by municipalities, power plants, industry, and commercial fishing.

Washington depends on its abundant surface water resources for recreation, navigation, transportation, commercial and sport fishing and aquaculture, water supply (drinking water and agriculture), flood control, firefighting, power generation, fish and wildlife habitat, and aesthetics and has much to lose with the introduction of new aquatic invaders.

## **Specific Examples of Impacts from Invasive Organisms Covered under this NPDES Permit**

### **Example 1. Marine Invaders - Tunicates**

Tunicates, more commonly known as sea squirts, are small, sessile (when mature), marine filter-feeding animals. Some species form colonies that resemble sponges, while others are solitary animals (although capable of growing in large dense groups of individuals). Puget Sound has three species of invasive tunicates. Club tunicates (*Styela clava*) are solitary animals that can attach to artificial substrates such as boat hulls and docks. Club tunicates can grow in densities of up to 1,500 animals per square yard and crowd out beneficial marine species such as shellfish. Colonial tunicates (*Didemnum* spp.) exhibit a wide variety of morphological variants that range from long, ropey or beard-like colonies that commonly hang from hard substrates such as docks, lines, and ship hulls; to low, undulating mats with short superficial appendages that encrust and drape rocky seabeds (pebbles, cobbles, boulders, and rock outcrops) (<http://woodshole.er.usgs.gov/project-pages/stellwagen/didemnum/>). *Ciona savignyi* or transparent sea squirt is a solitary animal that prefers deep water. Scientists are less sure how invasive or problematic this species may be, although *Ciona savignyi* colonized large areas of the sea floor of Hood Canal at one time. Invasive tunicate species affect aquaculture by growing on mussel rafts and lines, overgrowing shellfish areas, and competing with native animals for food.

Aquaculture stands to lose when animals, such as invasive tunicates invade Washington's marine and estuarine waters. In a letter to the Washington Department of Health, the Pacific Coast Shellfish Growers Association stated: *Washington State is the largest producer of farmed shellfish in the country. In 2002... there was approximately 86 million pounds of farmed oysters, Manila clams, geoducks and mussels worth \$76 million dollars harvested in the state.*

In a 2006 newsletter, the now superseded Puget Sound Action Team reported:

*An invasive form of nonnative club tunicate poses a serious threat to marine habitat and the shellfish industry... In January, the Action Team coordinated an 11th-hour funding request that will enable the Washington Department of Fish and Wildlife to take immediate steps to eradicate known populations of tunicates. While Washington's shellfish industry does not view tunicates as having much impact to their operations now, that could change in the future if tunicates become more widespread.*

Examples of harm to the shellfish industry and the fishery from invasive tunicates exist on the east coast of North America. In 2003, scientists discovered that the colonial tunicate *Didemnum* (the same species found in Puget Sound) had colonized a 6.5-square-mile area of the Georges

Banks. Georges Bank is historically New England's primary fishing ground and is highly productive for sea scallops. One year later, scientists estimated that tunicates had infested a 40-square mile area of the seabed of the Georges Bank. In large parts of the affected area, the sea squirts covered 50 percent or more of the seabed.

On Prince Edward Island in eastern Canada, clubbed tunicates have already caused substantial problems at commercial shellfish sites. First discovered on the island in 1998, the dense masses of tunicates have proliferated, growing on lines and other aquaculture gear, smothering and killing the mollusks. More than one million pounds of tunicates are removed from the island each year, yet they continue to come back

([http://wdfw.wa.gov/fish/ans/identify/html/index.php?species=styela\\_clava](http://wdfw.wa.gov/fish/ans/identify/html/index.php?species=styela_clava)).

In addition to causing problems with commercial fishing and aquaculture, tunicates can foul the hulls of recreational and commercial vessels, displace native marine species, and encrust marine sanctuaries. In Puget Sound, the Washington Department of Fish and Wildlife (WDFW) surveyed marinas and removed invasive tunicates from infested boats and docks in the summers of 2006 and 2007 using manual removal methods and often relying on volunteer divers.

Because of the extent of the tunicate infestation in Puget Sound, WDFW is considering using chemicals for these invasive organisms. In 2008, WDFW started trials under an experimental use permit from the Washington Department of Agriculture (WSDA) using acetic acid (vinegar) to kill tunicates hanging from floating docks at Maury Island's Dockton Park. In one trial, they directly sprayed the tunicates, in another; they wrapped the float with thick sheets of plastic and pumped in the weak acid. WDFW reported that chemical treatment was not 100 percent effective, but the results were still promising. However, under an experimental use permit, WDFW may only treat one-acre total per year. The Aquatic Invasive Species Management Permit will allow WDFW to expand its treatment acreage that may help facilitate effective treatment of these invasive organisms.

***Example 2. Marine Invader – “Killer Algae” Caulerpa taxifolia***

Currently, Ecology has not issued any NPDES permits that cover management of marine algae, although treatment of freshwater algae may occur under the Aquatic Plant and Algae Management NPDES permit. Issuing the aquatic invasive species management permit will rectify this situation. *Caulerpa taxifolia*, known as the alga that took over the Mediterranean, is a beautiful, bright green, popular salt-water aquarium specimen. Native to the Caribbean, aquarists developed this variety specifically for the aquarium trade. This alga apparently escaped from an aquarium or somebody deliberately introduced it to the Mediterranean Sea off Monaco about 1984. By 1997, it had spread from an initial small patch to more than 11,000 acres of the northern Mediterranean coast. By 2001, scientists estimated that it had infested 30,000 acres of seafloor. It has caused ecological and economic devastation by overgrowing and eliminating native seaweeds, seagrasses, reefs, and other communities. The invasion of *Caulerpa taxifolia* has harmed tourism and pleasure boating, devastated recreational diving, and had a costly impact on commercial fishing, both by altering the distribution of fish as well as creating a considerable

impediment to net fisheries. This same species (a clone genetically identical to the problem clone in the Mediterranean) has invaded the coasts of California and Australia.

California authorities discovered this “killer algae” in 2000 in a coastal lagoon off Carlsbad in San Diego County. They subsequently discovered a second infestation in Huntington Harbor (about 80 miles away). California took immediate steps to eradicate these infestations. They conducted extensive diver surveys, covered each algal patch with a tarp, and introduced a pesticide (chlorine) under the tarp. This management method proved very effective. After six years (mostly of follow-up surveillance to ensure no new patches occurred) and more than seven million dollars, California declared *Caulerpa taxifolia* eradicated from both sites in July 2007.

To help prevent any new infestations, California passed a law prohibiting the sale, possession, or transport of *Caulerpa taxifolia* and eight other species in the genus *Caulerpa* that have the potential to become invasive. The federal government also listed the invasive Mediterranean strain of *Caulerpa taxifolia* on the federal noxious weed list.

Although scientists consider *Caulerpa taxifolia* to be a tropical species, the National Oceanic and Atmospheric Administration warned, *This seaweed has been observed to survive many months in 50° F water. Given this tolerance to cold and the remarkable adaptability that this species has displayed, it would be wise for even more northern regions to be aware of the damage that introduction of this species could cause to their native ecosystems.* It is because of the behavior of *Caulerpa taxifolia* and the potential of other known and unknown invasive algae species to invade Washington’s marine and estuarine waters that Ecology and its advisory groups included nonnative marine algae in the Aquatic Invasive Species management permit.

### ***Example 3. Freshwater Invaders - Zebra and Quagga Mussels***

Zebra and quagga mussels in the *Dreissena* genus are small freshwater shellfish named for the striped light and dark areas of their shells. Both species entered the United States from Eurasia, perhaps initially through ballast water discharges into the Great Lakes. Zebra mussels, first observed in 1988 in the Great Lakes, rapidly spread throughout Midwestern and Eastern waters. In 2007, quagga mussels showed up in Lake Mead, Nevada and subsequently more were found in Lake Havasu and Lake Mohave, California and in seven California reservoirs. In January 2008, local authorities discovered zebra mussels in central California and in Pueblo, Colorado (USGS). In September 2008, Utah reported zebra mussel infestations in its waters. These western introductions were likely due to mussel hitchhikers on boats or trailers. WDFW has intercepted and cleaned a number of boats with zebra or quagga mussels being transported through Washington. It is likely just a matter of time until these invasive mussels show up in Washington waters, particularly with established mussel infestations now on the West Coast.

Zebra and quagga mussels attach to hard substrates such as water intake pipes, boat hulls, and even native mussels. They clog pipes, foul boat hulls (and provide an opportunity for boaters to introduce them to new waters), and kill native bivalves. Their sharp-edged shells litter beaches in the millions, cutting the feet of sunbathers and swimmers. Like tunicates, zebra and quagga mussels are filter feeders that primarily remove algae from the water. They grow in great

densities; facilities in the Great Lakes report densities of up to 700,000 individuals per square meter (<http://www.100thmeridian.org/zebras.asp>). These quantities of filtering animals remove most of the algae, making the water very clear, but also remove the food for other organisms. Larry Dalton, a longtime Utah biologist and Utah's aquatic nuisance species coordinator said, "quagga mussels are the largest single threat to the region's fisheries that he has seen in the last 30 years".

In the United States, congressional researchers estimated that during the 1993-1999 timeframe alone, these mussels cost just the power industry \$3.1 billion, with an impact on industries, businesses, and communities of over \$5 billion. In 2008, a coalition of water authority officials from Nevada, California, and Arizona asked Congress to direct more than \$20 million into projects to research and kill quagga mussels that threaten the region's waterways. In a 2008 letter, California Senator Feinstein (Feinstein 2008) urged the U.S. Department of the Interior to launch a robust federal response to address the growing problem of quagga mussel infestation in Western waterways.

Quagga and zebra mussel introductions on the West Coast are of great concern to the Pacific Northwest. With boat traffic between water bodies, it is inevitable that these mussels will make their way to Washington waters in spite of prevention efforts. At risk are dams on the Columbia and Snake Rivers, thousands of miles of irrigation canals, lakes, fish ladders, municipal water intakes, sewage outfalls, *threatened and endangered* salmon, native freshwater bivalves, and even human health. Studies report that invasive mussels encourage the growth of cyanobacteria, which can produce toxins that affect pets, humans, livestock, fish, and wildlife. Zebra mussels will selectively feed on phytoplankton by rejecting less palatable cyanobacterial species. The Final Working Draft of the Columbia River Basin Interagency Invasive Species Response Plan notes: *The economic impact of the zebra and quagga mussels to the hydropower system on the Columbia and Snake Rivers is of particular concern. If introduced into the Columbia River Basin, the mussels could affect all submerged components and conduits of this system, including fish passage facilities, navigation locks, raw water distribution systems for turbine cooling, fire suppression and irrigation, trash racks, diffuser gratings and drains.*

The Washington State Aquatic Nuisance Species Committee Report to the 2008 Legislature states: *The 2007 discovery of quagga mussels in Lake Mead and the rapid spread throughout the Colorado River Basin presents a serious threat to the ecology and economy of Washington State. Quagga mussels develop more rapidly in these warm water lakes than they do in the Great Lakes, and they are able to reproduce nearly year round. These two species have cost the Great Lakes region billions of dollars in damage and control efforts. The ecological damage they have done by altering the ecosystem and crowding out native species cannot be quantified, but is on a catastrophic scale.*

This NPDES permit for aquatic invasive species management will help allow Washington to take immediate action against zebra or quagga mussels should authorities discover them in Washington waters.

# CHEMICALS FOR AQUATIC INVASIVE SPECIES MANAGEMENT

Under the Aquatic Invasive Species Management permit, Ecology will allow the use of chemicals or control products in Washington's surface waters for the purpose of eradicating or controlling aquatic invasive species. Except for fish, mosquitoes, and ballast water treatments, EPA labels few products specifically for the management of invasive aquatic animals, particularly chemicals that treat surface water rather than infrastructure. Because of this, *in addition to permit coverage*, Permittees may also need to pursue an experimental use permit; a special local needs label; or an emergency exemption label for many of the products listed in the permit. Permittees will need to coordinate any additional labeling requirements with WSDA and EPA.

Ecology allows the use of many of the chemicals and products listed in this permit in other aquatic NPDES permits. Other chemicals and products are new to Washington State NPDES permitting and may not have aquatic labels. For example, EPA does not label chlorine for use in the marine environment, but California obtained a modified label to use chlorine for *Caulerpa taxifolia* eradication. California initially used a five percent chlorine solution under tarps to treat the alga, but later modified the procedure to use a solid form of chlorine.

WDFW used a similar technique to treat the marine tunicate *Didemnum* in the Edmonds marine sanctuary using acetic acid instead of chlorine. Because of the shortage of labeled products, invasive species managers have become creative in their use of chemicals and other products in their effort to thwart the spread of and to manage established population of these species.

Ecology proposes to include the chemicals or products listed below in the draft Aquatic Invasive Species Management Permit. Ecology provides an overview, mitigations, and references for each chemical or product in a non-project Aquatic Invasive Species Environmental Impact Statement (EIS), the State Environmental Policy Act (SEPA) document for this permit. The chemicals include:

- Sodium chloride for marine and freshwater application
- Potassium chloride for marine and freshwater application
- Chlorine compounds including chlorine dioxide, sodium chlorite, sodium hypochlorite, and calcium hypochlorite for marine and freshwater application
- Acetic acid for marine and freshwater application
- Calcium hydroxide/oxide (lime) and carbon dioxide for marine and freshwater application
- Rotenone for freshwater application
- Potassium permanganate (KMnO<sub>4</sub>) for marine and freshwater application
- Endothall (e.g., Hydrothol 191™): mono(N,N-dimethylalkylamine) salt of 7-oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid for freshwater application
- Sodium carbonate peroxyhydrate for freshwater application
- Methoprene for marine and freshwater application
- Chelated copper compounds for freshwater application
- *Pseudomonas fluorescens* strain CLO145

- Heating/cooling (temperature alteration) for marine and freshwater application

## REGULATORY INFORMATION

### ***Regulatory Pollution Reduction Requirements***

Federal and state regulations require that effluent limits in an NPDES permit must be either technology-or-water-quality-based.

- Technology-based limitations are based upon the methods available to treat specific pollutants. Technology-based limits are set by EPA and published as a regulation or Ecology develops the limit on a case-by-case basis (40 CFR 125.3, and chapter 173-220 WAC).
- Water quality-based limits are calculated so that the effluent will comply with the Surface Water Quality Standards (chapter 173-201A WAC), Ground Water Standards (chapter 173-200 WAC), Sediment Quality Standards (chapter 173-204 WAC) or the National Toxics Rule (40 CFR 131.36).
- Ecology must apply the more stringent of these limits to each parameter of concern. These limits are described below.

### ***Technology-Based Water Quality Protection Requirements***

Sections 301, 302, 306, and 307 of the CWA establish discharge standards, prohibitions, and limits based on pollution control technologies. These technology-based limits are "best practical control technology" (BPT), "best available technology economically achievable" (BAT), and "best conventional pollutant control technology economically achievable" (BCT). Permit writers may also determine compliance with BPT/BAT/BCT using their "best professional judgment" (BPJ).

Washington has similar technology-based limits that are described as "***all known, available, and reasonable methods of control, prevention, and treatment***" (AKART) methods. State law refers to AKART under RCW 90.48.010, RCW 90.48.520, 90.52.040, and RCW 90.54.020. The federal technology-based limits and AKART are similar but not equivalent. Ecology may establish AKART:

- For an industrial category or for an individual permit on a case-by-case basis.
- That is more stringent than federal regulations.
- That includes Best Management Practices (BMP's) such as prevention and control methods (i.e. waste minimization, waste/source reduction, or reduction in total contaminant releases to the environment).

Ecology and EPA concur that, historically, most discharge permits have determined AKART as equivalent to BPJ determinations.

Historically, EPA has regulated the pesticide application industry under FIFRA. EPA developed label use requirements to regulate the use of pesticides. EPA also requires the pesticide manufacturer to register each pesticide, provide evidence that the pesticide will work as promised, and minimize unacceptable environmental harm.

The Pesticide Management Division of WSDA ensures that applicators use pesticides legally and safely in Washington. WSDA registers pesticides (in addition to EPA registration); licenses pesticide applicators, dealers and consultants; investigates complaints; maintains a registry of pesticide sensitive individuals; and administers a waste pesticide collection program. These duties are performed under the authority of the Washington Pesticide Control Act (15.58 RCW), the Washington Pesticide Application Act (17.21 RCW), the General Pesticide Rules (WAC 16-228), the Worker Protection Standard (WAC 16-233) and a number of pesticide and/or county specific regulations (<http://agr.wa.gov/PestFert/Pesticides/default.htm>).

The standards for environmental protection are different between the CWA and FIFRA. Because of the *National Cotton Council, et al. v. EPA* court decision, in 2011, EPA regulates the application of aquatic pesticides under a general NPDES permit. EPA has developed a permit for non-delegated states (four states), federal lands, and Indian lands. EPA expects all delegated states to develop their own NPDES permits for aquatic pesticide application to comply with the federal court decision. The US Supreme Court turned down an appeal request to this decision, so in 2011 all aquatic pesticide applications must occur under NPDES permits.

It is Ecology's intent that this general permit will authorize aquatic invasive species management in a manner that complies with all federal and state requirements. Since 2002, Ecology has regulated aquatic pesticide application under general and individual NPDES permits. The Aquatic Invasive Species general permit is a general aquatic pesticide permit and authorizes aquatic invasive species control activities in a manner that complies with federal and state requirements.

All wastewater discharge permits issued by Ecology must incorporate requirements to implement reasonable prevention, treatment, and control of pollutants. This permit proposes treatment limitations that limit *treatment areas* within a given water body. Permittees may only use some chemicals in a contained situation such as under a tarpaulin or behind a barrier. Compliance with the FIFRA label further limits the overuse of products and helps protect non-targeted organisms.

Ecology acknowledges that applicators could treat the pollutants addressed in this permit only with great difficulty due to the diffuse nature and low concentrations that exist after the pesticides have become waste. The *Headwaters, Inc. v. Talent* ruling established that aquatic pesticides become waste in the water after the pesticide has performed its intended action and the target organisms are controlled or if excess pesticide is present during treatment. Applicators may need to treat waters where chemical residues threaten to cause unacceptable environmental harm in some situations, but not routinely. The permit requires applicators to neutralize some of the chemicals after they have performed their intended action.

### ***Integrated Pest Management (IPM)***

State agencies in Washington with pest control responsibilities must implement the principles of IPM. In the Washington Pesticide Control Act, RCW 17.15, the legislature established that

prevention of pollution is reasonable only in the context of an IPM plan. IPM plans require the investigation of all control options, but do not require non-chemical pest controls as the preferred option. Most invasive species control strategies include a combination of control methods.

The Aquatic Invasive Species Management Permit requires that the Permittee develop or *adopt* an Ecology-approved adaptive management plan that incorporates IPM principles for any aquatic invasive organism treated under the permit. Permittees must submit a copy of their plan to Ecology no later than 18 months after starting initial treatment of that organism or category of organisms. The preferred alternative in the draft Environmental Impact Statement (EIS) is an integrated pest management approach that incorporates principles of adaptive management. The EIS provides guidance on developing such plans.

### ***Experimental Use Permits***

Entities operating under WSDA-issued experimental use permits (WSEUP) do not need coverage under this permit. WSDA requires WSEUP for all research experiments involving pesticides that are not federally registered or for uses not allowed on the federally registered pesticide label. WSDA experimental use permits limit the amount of an experimental use pesticide that a Permittee can distribute or use for testing purposes. WSDA grants experimental use permits for gathering data in support of registration under FIFRA Section (3) or Section 24(c). In most situations, only a state WSEUP is required for the use of an experimental pesticide.

When a proponent conducts a small-scale test on more than one surface acre of water per pest, it must obtain a federal experimental use permit in addition to a state permit. Any person may apply to the EPA for a federal experimental use permit for pesticides. Federal EUPs are usually valid for only one year. Applicants holding a federal experimental use permit must also apply for and obtain a state experimental use permit before initiating any shipment or use of the pesticide in Washington. Ecology requires coverage under the Aquatic Invasive Species Management Permit for applicants operating under a federal experimental use permit.

## ***Water Quality-Based Requirements***

### ***Surface Water Quality-Based Effluent Limits***

The Washington State Surface Water Quality Standards (chapter 173-201A WAC) were designed to protect existing water quality and preserve the beneficial uses of Washington's surface waters. Waste discharge permits must include conditions that ensure the discharge will meet established surface water quality standards (WAC 173-201A-510). Water quality-based effluent limits may be based on an individual waste load allocation or on a waste load allocation developed during a basin wide total maximum daily loading study (TMDL).

Ecology conditions NPDES and waste discharge permits in such a manner that authorized discharges meet water quality standards. The characteristic beneficial uses of surface waters include, but are not limited to, the following: domestic, industrial and agricultural water supply; stock watering; the spawning, rearing, migration and harvesting of fish; the spawning, rearing

and harvesting of shellfish; wildlife habitat; recreation (primary contact, sport fishing, boating, and aesthetic enjoyment of nature); commerce; aesthetics and navigation.

### ***Numeric Criteria for the Protection of Aquatic Life and Recreation***

Numeric water quality criteria are published in the Water Quality Standards for Surface Waters (chapter 173-201A WAC). They specify the levels of pollutants allowed in receiving water to protect aquatic life and recreation in and on the water. Ecology uses numeric criteria along with chemical and physical data for the wastewater and receiving water to derive effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limits, the discharge must meet the water quality-based limits.

### ***Numeric Criteria for the Protection of Aquatic Life and Recreation***

The EPA has published 91 numeric water quality criteria for the protection of human health that are applicable to dischargers in Washington State (40 CFR 131.36). EPA designed these criteria to protect humans from exposure to pollutants linked to cancer and other diseases, based on consuming fish and shellfish and drinking contaminated surface waters. The Water Quality Standards also include radionuclide criteria to protect humans from the effects of radioactive substances.

### ***Narrative Criteria***

Narrative water quality criteria (e.g. WAC 173-201A-240(1); 2006) limit the toxic, radioactive, or other deleterious material concentrations that may be discharged to levels below those which have the potential to:

- Adversely affect designated water uses.
- Cause acute or chronic toxicity to biota.
- Impair aesthetic values
- Adversely affect human health

Narrative criteria are statements that describe the desired water quality goal, such as waters being “free from” pollutants such as oil and scum, color and odor, and other substances that can harm people and fish. These criteria are used for pollutants for which numeric criteria are difficult to specify, such as those that offend the senses (e.g., color and odor). Narrative criteria protect the specific designated uses of all freshwaters (WAC 173-201-A-200, 2006) and of all marine waters (WAC 173-201A-210; 2006) in the State of Washington.

### ***Antidegradation***

The purpose of Washington’s Antidegradation Policy (WAC 173-201A-300-330; 2006) is to:

- Restore and maintain the highest possible quality of the surface waters of Washington.
- Describe situations under which water quality may be lowered from its current condition.
- Apply to human activities that are likely to have an impact on the water quality of surface water.
- Ensure that all human activities likely to contribute to a lowering of water quality, at a minimum, apply all known, available, and reasonable methods of prevention, control, and treatment (AKART).

- Apply three Tiers of protection (described below) for surface waters of the state.

Tier I ensures existing and designated uses are maintained and protected and applies to all waters and all sources of pollution. Tier II ensures that dischargers do not degrade waters of a higher quality than the criteria assigned unless such lowering of water quality is necessary and in the overriding public interest. Tier II applies only to a specific list of polluting activities. Tier III prevents the degradation of waters formally listed as “outstanding resource waters” and applies to all sources of pollution.

WAC 173-201A-320(6) describes how Ecology implements Tier I and II antidegradation in general permits. All Permittees covered under the general permit must comply with the provisions of Tier I. Ecology determined that the permit does not cover discharges to Tier III waters.

The water quality standards at WAC 173-201A-320(6) describe how Ecology should conduct an antidegradation Tier II analysis when it issues NPDES general permits. This section of the rule requires Ecology to:

- Use the information collected, for implementation of the permit, to revise the permit or program requirements.
- Review and refine management and control programs in cycles not to exceed five years or the period of permit reissuance.
- Include a plan that describes how Ecology will obtain and use information to ensure full compliance with water quality standards. Ecology must develop and document the plan in advance of permit or program approval.

Although the antidegradation requirements for general permits state the individual actions covered under a general permit do not need to go through independent Tier II reviews, Ecology considers it important that the public have the opportunity to weigh in on whether individual actions are in the overriding public interest. The antidegradation rule establishes a refutable presumption that they do, but only through a public notice of intent to provide coverage and expected compliance with antidegradation does the general public have an opportunity to question individual actions. Thus, facilities must publish requests for coverage in a local paper. Currently public notices must include:

- A statement that the applicant is seeking coverage under the Aquatic Invasive Species Management General Permit.
- The name, address, and phone number of the applicant.
- The identity of the water body proposed for treatment.
- A list of products planned for use.
- The statement: “Any person desiring to present their views to the Department of Ecology regarding this application shall do so in writing within 30 days of the last date of publication of this notice. Comments must be submitted to the Department of Ecology. Any person interested in the Department’s action on the application may notify the Department of interest within 30 days of the last date of publication of this notice.”

This fact sheet describes how the permit and control program meets the antidegradation requirement.

### ***Evaluation of Surface Water Quality-Based Effluent Limits for Numerical Criteria***

Ecology made a reasonable potential determination on the application of chemicals approved for use in the draft permit based upon its knowledge of invasive species control methods, available EPA and Ecology risk assessment documents, published research, and information in non-peer reviewed publications about chemical properties. It based this decision using available information and prepared an Environmental Impact Statement as a companion document to the Aquatic Invasive Species Management Permit. Ecology has determined that if dischargers properly apply and handle control chemicals in accordance with the terms and conditions of the general permit, the aquatic invasive species control activities will:

- Comply with state water quality standards.
- Maintain and protect the existing and designated uses of the surface waters of the State.
- Protect human health.

New information regarding previously unknown environmental and human health risks may cause Ecology to reopen the general permit.

### ***Short-Term Water Quality Modification Provisions***

The short-term water quality modification provisions of the draft permit allows the discharges authorized by the general permit to cause a temporary diminishment of some designated beneficial uses while it alters the water body to remove aquatic invasive species.

The activities authorized by this general permit do not have a reasonable potential to cause a violation of state Water Quality Standards (chapter 173-201A WAC) so long as Ecology allows the activities under the short-term water quality modification provision. The water quality modification provides for an exception to meeting certain provisions of the state water quality standards, such as meeting all beneficial uses all the time. Activities covered under this permit are allocated a temporary zone of impact on beneficial uses, but the impact must be transient (hours or days), and must allow for full restoration of water quality and protection of beneficial uses upon project completion. The conditions of this permit constitute the requirements of a short-term water quality modification.

A short-term exceedance only applies to short lived (hours or days) impairments, but short-term exceedances may occur periodically throughout the five-year permit term. Short-term exceedances may also extend over the five-year life span of the permit (long-term exceedance) provided the Permittee satisfies the requirements of WAC 173-201A-410. The permit, fact sheet, SEPA documents, NOI and state agency aquatic invasive species response documents represent fulfillment of the plan requirement and development through a public process as required by WAC 173-201A-410 for long term exceedances.

Washington's Water Quality Standards now include 91 numeric health-based criteria that Ecology must consider when writing NPDES permits. The EPA established these criteria in 1992 in its National Toxics Rule (40 CFR 131.36). Ecology has determined that the Permittee's discharge does not contain chemicals of concern based on existing data or knowledge.

### ***Sediment Quality***

The aquatic sediment standards (chapter 173-204 WAC) protect aquatic biota and human health. Under these standards, Ecology may require a Permittee to evaluate the potential for the discharge to cause a violation of sediment standards (WAC 173-204-400). You can obtain additional information about sediments at the Aquatic Lands Cleanup Unit website <http://www.ecy.wa.gov/programs/tcp/smu/sediment.html>

Ecology has determined through a review of the discharger characteristics and effluent characteristics that this discharge has no reasonable potential to violate the Sediment Management Standards.

### ***Ground Water Quality Standards***

The Ground Water Quality Standards, (chapter 173-200 WAC), protect beneficial uses of ground water. Permits issued by Ecology must not allow violations of those standards. This permit does not allow the use of any pesticides expected to contaminate groundwater. In the event there is a concern, Ecology can issue orders requiring groundwater and well monitoring for different pesticides under this permit.

### ***SEPA Compliance***

Ecology has developed a non-project EIS to fulfill the SEPA requirements for this permit. Based on this EIS and associated chemical risk assessments, the conditions of this draft permit should satisfy water quality-related SEPA concerns. The draft permit limits and conditions the use of chemicals to mitigate environmental impacts of concern noted in the EIS.

Ecology is proposing a procedural change in how it handles the project level SEPA determination for each permit coverage. A non-project SEPA review of the proposed action has been conducted for activities covered by this draft permit. The non-project SEPA review assesses all of the pesticides allowed for use under the permit and applies to all fresh waters of the state. Ecology will rely upon the non-project SEPA determination to issue permit coverage rather than issuing a SEPA determination for each separate coverage. In a change from the 2011 Permit, applicants no longer fill out a separate SEPA checklist. Instead, the Adaptive Management Plan (Permit Special Condition S.5) provides site-specific project information to supplement Ecology's programmatic SEIS.

### ***Endangered and Sensitive Species***

EPA has implemented the Endangered Species Protection Program to identify all pesticides that may cause adverse impacts on threatened/endangered species and to implement measures that will mitigate identified adverse impacts. When an adverse impact is identified, the Endangered

Species Protection Program requires use restrictions to protect these species at the county level. EPA will specify these use restrictions on the product label or by distributing a county specific Endangered Species Protection Bulletin. However, EPA has not labeled many of the chemicals allowed for use in the Permit for aquatic sites. Therefore, the draft permit requires the Permittee to check with WDFW biologists to determine critical habitat areas before using many of chemicals listed in the permit to manage invasive species. General Condition G6 of the permit requires the Permittee to comply with all applicable federal regulations.

At Ecology's request, WDFW biologists have developed work windows for aquatic pesticide permits to include all salmon species, bull trout, and any other sensitive species associated with aquatic habitats (e.g. waterfowl, amphibians, etc.). Ecology has imposed timing restrictions on chemicals expected to have lethal, sub-lethal, or habitat alteration impacts to these species. Ecology further limits the use of some chemicals such as copper until the state and federal fish agencies approve of the treatment. Ecology is trying to balance the impacts of the invasive organisms on the environment with the impacts of the chemical treatment.

Based upon annual reporting of pesticide use and other available information, Ecology may further restrict pesticide use to protect endangered, threatened, candidate and sensitive species such as pacific salmonids.

## **SPECIAL CONDITIONS**

### **S1. PERMIT COVERAGE**

#### ***Activities Covered under This Permit***

Washington's Water Quality statutes and regulations do not allow the discharge of pollutants to waters of the state without permit coverage (RCW 90.48.080, 90.48.160, 90.48.260, 173-226, 173-201A WAC). Algaecides, herbicides, insecticides, molluscicides, piscicides and any other chemical or product appropriate for aquatic invasive species management are pollutants, and therefore require a discharge permit before application to Washington State surface waters.

This permit regulates the use of chemicals or control products for the management of aquatic invasive species animals and nonnative invasive marine algae in surface waters in Washington State. Ecology limits chemical application to marine and freshwater animals or marine algae:

- Identified in WAC 220-12-090.
- Listed on Washington's Aquatic Nuisance Species Committee (ANS) watch list.
- Listed on the Washington Invasive Species Council's (WISC) management priority list.
- Listed by the United State Fish and Wildlife Service as Injurious Wildlife under the Lacey Act (18 U.S.C. 42; 50 CFR 16).

The permit also regulates the use of chemicals for *potentially invasive* aquatic species not listed on the above lists as determined by Ecology in consultation with WDFW, or WDNR, or WSDA, or WISC, or the ANS Committee, or applicable federal agencies.

### ***Activities That May Not Need Coverage Under This Permit***

Ecology has determined not to issue coverage for ***retention and detention ponds*** if:

- Ecology regulates its discharge under another permit (such as industrial or municipal stormwater permits) and the permit allows chemical treatment for aquatic pests, or
- There is no discharge to surface waters within two weeks of treatment.

Ecology has determined not to issue coverage for ***constructed water bodies*** or ***upland farm ponds*** if:

- The water bodies are five acres or less in surface area, and
- There is no discharge to surface waters within two weeks of treatment.

Ecology has determined not to issue coverage for seasonally dry ***wetlands*** if:

- The wetland is dry at the time of treatment and for two weeks following treatment, and
- The chemical will not be biologically available when the area is inundated with water.

Ecology believes that the two-week holding time sufficiently allows the dissipation of the product prior to possible discharge to surface waters and that if these conditions are met, the treatment poses no potential to violate the Water Quality Standards for Surface Waters of the State of Washington (chapter 173-201A WAC).

### ***Geographic Area Covered***

The draft permit applies to the application of chemicals/products for aquatic invasive species control to surface waters anywhere in the state of Washington where Ecology has authority. Surface waters include lakes, rivers, ponds, streams, inland waters, salt waters, wetlands, and all other surface waters and watercourses within the jurisdiction of the state of Washington (RCW 90.48.020, WAC 173-201A-020 and WAC 173-226-030). Aquatic invasive species have the potential to occur in or near virtually any freshwater, marine, estuarine, wetland, or semi-aquatic site in Washington State. These sites include but are not limited to riparian areas, wetlands, marshes, rivers, year round and seasonal streams, lakes, ponds, wet pastures, brackish areas, estuaries, and marine waters up to 12 miles offshore.

## **S2. APPLICATION FOR COVERAGE**

### ***Who May Apply for Coverage***

A definition of “Permittee” is not provided in chapter 90.48 RCW, chapters 173-216, 173-220, or 173-226 WAC, nor is one provided in 40 CFR 122 (EPA NPDES Permit Program) or (State NPDES Permit Programs). Based upon the usage of Permittee in federal and Washington State law, Ecology takes the term “Permittee” to mean “the person or entity that discharges or controls the discharge of pollutants to waters of the state (surface or ground) and holds permit coverage allowing that specific discharge.” For the Aquatic Invasive Species Management Permit, Ecology has established that the Permittee is any state government agency conducting invasive species management in surface waters of the state. Examples of state government agencies that may become Permittees under this permit include, but are not limited to WDFW, DNR, and WSDA. Ecology does not issue NPDES coverage to federal agencies.

Ecology developed this permit so that other government entities, non-government entities, or private individuals may cooperate in aquatic invasive species control under the coverage issued to a Washington state agency. The Permittee, if they choose to do so, has the option to contract with other entities or private individuals for management activities. In this respect, this permit will operate similarly to the Aquatic Noxious Weed permit (the Permittee is WSDA). Under the Aquatic Noxious Weed permit, WSDA contracts with individuals and other entities for on-the-ground management of the targeted organism(s). The contracted entities, per individual agreements, can carry out notification, monitoring, reporting, documentation, planning, and other administrative tasks, but it is the responsibility of the Permittee to prepare and submit reports to Ecology. Because it holds permit coverage, the Permittee is liable for any violations of permit conditions and responsibility for permit fees (90.48.465 RCW, chapter 173.224 WAC) associated with coverage under the permit.

### ***How to Obtain Coverage***

Applicants must submit a complete application for permit coverage a minimum of 38 days before applying pesticides that result in discharge to waters of the state. The applicant must submit a complete application including a Notice of Intent (NOI). An official who has signature authority (173-226-200 WAC) for the entity applying for permit coverage must sign the NOI. Ecology must receive the complete application for permit coverage on or before the publication date of the first public notice the permit applicant posted in a newspaper of general circulation (173-226-130 WAC). Ecology considers a newspaper of general circulation as the major newspaper publication for a region.

The public has the opportunity to comment on the permit application and the proposed coverage during the 30 days after publication of the second public notice (public comment period). Ecology will consider comments about the applicability of the Permit to the proposed activity received during this period. If Ecology receives no substantive comments, it may issue permit coverage on the 38th day following the first publication of the public notice.

### ***Length of Coverage***

Ecology plans to issue the permit for a period of five years, starting on the effective date of the permit (WAC 173-226-330). Coverage will last from the date of coverage to the date of permit expiration, which will be up to 5 years, unless the Permittee terminates coverage by submitting a notice of termination.

## **S3. DISCHARGE LIMITS**

### ***Short-Term Water Quality Modification of Water Quality Standards***

In 2006, Ecology updated the Water Quality Standards for Surface Waters of the State of Washington (chapter 173-201A WAC). The standards allow a temporary exceedance of water quality criteria for up to five years (the term of a general permit) provided the Permittee has followed certain guidelines. A short-term exceedance only applies to short lived (hours or days) impairments, but short-term exceedances may occur periodically throughout the five-year permit term. Short-term exceedances may also extend over the five-year life span of the permit (long-term exceedance) provided the Permittee satisfies the requirements of WAC 173-201A-410 (See

also pg 24 - Short-Term Water Quality Modification Provisions). The permit, fact sheet, SEPA documents, NOI and state agency aquatic invasive species response documents represent fulfillment of the plan requirement and development through a public process as required by WAC 173-201A-410 for long term exceedances. Permittees who do not meet these requirements must ensure the short-term exceedance of water quality criteria is limited to only hours or days.

### ***Impaired Water bodies***

Ecology periodically reviews water quality data to determine if water bodies meet criteria. Section 303(d) of the CWA requires that waters not meeting criteria undergo an evaluation of the cause and amount of the contaminant. Ecology publishes Total Maximum Daily Load (TMDL) reports which may establish limits on the amounts of pollutants contributors may discharge. Applications to water bodies listed on the 303(d) list have additional limits and conditions imposed upon them. Parameters of concern identified in the permit include phosphorus, dissolved oxygen, copper, temperature, and pH.

Ecology has removed the condition allowing discharge of copper to a waterbody listed as impaired for copper on the 303(d) list of impaired waters as long as the sediment copper concentration is below 110 mg/L. A discharge of copper to a water body listed as impaired for copper cannot be allowed (issuance of permit is prohibited) if the discharge will cause or contribute to a violation of water quality standards (Clean Water Act 122.4(i)).

Chemicals that cause a rapid die-off of animals may trigger release of phosphorus and other nutrients that in turn may trigger cyanobacteria blooms. This may lead to low oxygen conditions developing in the water body. Other chemicals may alter the pH and that may adversely affect aquatic life. The permit identifies and requires mitigation measures that can help prevent further impairment of 303(d)-listed waters.

## **S4. RESTRICTIONS OF THE APPLICATION OF PRODUCTS**

### ***Authorized Discharges***

This permit allows the use of chemicals or products identified in the permit; most are regulated under FIFRA, but others are not. Ecology authorizes these discharges in accordance WAC 173-201A-410 and chapter 90.48 RCW. The Aquatic Invasive Species Management Permit does not cover activities that Ecology regulates under other NPDES permits, such as routine fish management using rotenone.

The Permittee must comply with both the pesticide label requirements and the general permit conditions. **Coverage under this general permit does not supersede or preempt federal or state label requirements or any other applicable laws and regulations.** General permit Condition G6 informs the Permittee of this fact.

### ***Chemicals and Products Allowed For Use under this Permit***

This permit authorizes and conditions the use of pesticides, chemicals, and products that may be suitable for the management of aquatic invasive animals and marine algae. There are few aquatic pesticides specifically registered for management of these species in surface waters. When EPA

has not labeled a chemical for the use and a Permittee plans to use it as a pesticide, it must seek a special local need or emergency exemption label through WSDA and EPA prior to applying the pesticide to surface waters.

Ecology initially developed a list of chemicals with potential to manage aquatic invasive organisms by conducting its own research and by asking members of its advisory committees, members of the Washington Aquatic Nuisance Species Committee, and people working in the field of invasive species management to suggest potential pesticides, chemicals, or other suitable products. WDFW assigned an employee to research appropriate chemicals and provided this information to Ecology. Ecology also considered any chemicals and products used elsewhere in the world to manage aquatic invasive species.

Once Ecology compiled this list, it eliminated chemicals/products considered too toxic or not likely to be of use by consulting with toxicologists and advisory committee members. While chemicals to manage animals tend to be more toxic than herbicides, Ecology weighed temporary toxicity with long-term effects of the invasive species on the environment. In many cases, short-term environmental impacts from chemical use are less damaging than the long-term ongoing impacts of invasive species. Ecology also requires specific restrictions for the use of chemicals (see Tables 1 and 2 in the draft permit) to limit and mitigate chemical treatment effects.

Ecology has undertaken an independent state risk assessments for most, but not all, of the chemicals used in the Aquatic Plant and Algae Management Permit and the Noxious Weed Control Permit. RCW 90.48.447 requires Ecology to maintain the currency of the information on herbicides and evaluate new herbicides as they become commercially available for the Aquatic Plant Management Program. “The purpose of this act is to allow the use of commercially available herbicides that have been approved by the environmental protection agency and the department of agriculture and subject to rigorous evaluation by the department of ecology through an environmental impact statement for the aquatic plant management program.” However, this law is silent on requiring rigorous evaluation by Ecology for other chemical applications (e.g., mosquito management, aquatic invasive species management, etc.)

Ecology does not have independent risk assessments on all of the chemicals used in other aquatic NPDES permits (e.g., products used for mosquito control, invasive moth control, and for management of aquatic plants in irrigation ditches). Some of the products used in these permits are more toxic than the active ingredients allowed for use under the Aquatic Plant and Algae Management permit or the Noxious Weed Control permit.

Due to the urgent need for a permit for aquatic invasive species management, particularly if zebra or quagga mussels enter state waters, and a lack of state resources available to develop state risk assessments, Ecology decided to issue this permit without having independent state risk assessments for **every** chemical in the permit. However, many of the chemicals included in the Aquatic Invasive Species Management Permit have already been independently evaluated through state risk assessments (see <http://www.ecy.wa.gov/programs/wq/pesticides/seis/>

[risk\\_assess.html](#)). EPA registers others as pesticides for non-aquatic uses. All EPA-registered pesticides have undergone some level of toxicity testing and a federal risk assessment process.

*Federal law requires that before selling or distributing a pesticide in the United States, a person or company must obtain registration, or license, from EPA. Before registering a new pesticide or new use for a registered pesticide, EPA must first ensure that the pesticide, when used according to label directions, can be used with a reasonable certainty of no harm to human health and without posing unreasonable risks to the environment. To make such determinations, EPA requires more than 100 different scientific studies and tests from applicants. Where pesticides may be used on food or feed crops, EPA also sets tolerances (maximum pesticide residue levels) for the amount of the pesticide that can legally remain in or on foods.*

*EPA ensures that each registered pesticide continues to meet the highest standards of safety to protect human health and the environment. The Agency has several programs to ensure the review of registered pesticides, including re-registration, tolerance reassessment, registration review, and special review (<http://www.epa.gov/pesticides/regulating/index.htm>).*

In this permit, Ecology approves active ingredients rather than brand name products; this does not limit Permittees to brand-name products.

Ecology is proposing to remove the active ingredient antimycin A from the list of chemicals authorized for use under permit coverage. Antimycin A, at the time of writing, does not have an EPA approved pesticide label for any use pattern.

### ***Experimental Use Permits***

EPA regulates federal EUP's under section 5(f) of FIFRA and WSDA regulates both state and federal EUP's under RCW 15.58.405(3). Entities operating under a state EUP do not need coverage under the Aquatic Invasive Species Management Permit because state EUP's are limited in acreage. However, entities operating under a federal EUP must obtain permit coverage. Federal EUP's typically allow treatment of up to several hundred acres.

### ***Specific Restrictions on the Application of Pesticides***

Unless it is an **emergency**, Ecology requires the Permittee to minimize treatments that restrict public water use during high use holidays (e.g. Memorial Day, July 4, and Labor Day) and on weekends (173-201A-410 WAC). Water use restrictions occurring during those times will disproportionately impact public use of the waters. While situations may occur when this is the only appropriate time to treat, Ecology strongly encourages the Permittee not to treat during these high use times when chemical application may have greater effect on recreational water use.

Tables 1 and 2 identify restrictions on chemicals/products that Ecology imposes (over and above any federal labeling restrictions). Ecology developed these restrictions in consultation with internal and external advisory committees that included toxicology and fish and wildlife experts and from information acquired during the EIS development process.

At Ecology's request, WDFW developed timing windows to protect salmon, steelhead, bull trout, and other sensitive species and habitats (including amphibians and nesting waterfowl) from the effects of aquatic pesticide application. (These timing windows also apply to aquatic pesticide treatments covered under the Aquatic Plant and Algae Management Permit). There are times when chemical applications have little to no impact on sensitive species and WDFW work windows identify these periods for specific water bodies. Not all chemicals are subject to work windows if Ecology does not identify an impact. However, some chemicals are lethal (rotenone) or may cause sub-lethal impacts (copper). In these cases, Tables 1 and 2 clearly identify the chemicals and the applicable timing windows. Even when the chemical is not subject to timing windows, Ecology requires that the Permittee check with WDFW biologists to determine critical habitat areas before treatment.

Ecology imposed recreational and/or swimming restrictions/advisories on some chemicals to protect human health. Any restrictions imposed by Ecology are in addition to any FIFRA label requirements. A restriction is more stringent than an advisory. An advisory recommends that people not recreate in the treated area, but they may choose whether to comply. A restriction means no swimming for a set time after chemical application. A restriction or advisory requires public notification via sign posting (see S.6. Posting and Notification Requirements).

Treatment limitations help mitigate adverse impacts from chemical treatments and Ecology based these limits on the best scientific information available and its best professional judgment.

## **S5. PLANNING REQUIREMENTS**

Ecology believes that IPM plans meet AKART. Ecology based the requirement for adaptive management plans that incorporate integrated pest management principles on:

- Integrated Pest Management Law (chapter 17.15 RCW)
- Water Quality Standards (173-201A-110 WAC)
- The draft Environmental Impact Statement for Aquatic Invasive Species
- Similar planning requirements in the Noxious Weed NPDES permit
- Proposed federal IPM requirements in aquatic pesticide NPDES permits. In the federal NPDES permit for aquatic pesticide application, EPA considers IPM to meet technology-based standards.

## **S6. POSTING AND NOTIFICATION REQUIREMENTS**

Ecology based the posting and notification requirements in the Aquatic Invasive Species Management Permit on similar requirements for posting and notification in the Aquatic Plant and Algae Management NPDES permit and the Noxious Weed Control NPDES permit. Other aquatic pesticide permits issued by Ecology require various levels of public notification. Ecology also considered input from advisory committees, end users, and the public's right to know. Ecology added additional notification over and above notification requirements in other pesticide permits by requiring the Permittee(s) to post treatment information on its website.

## **S7. MONITORING REQUIREMENTS**

Sampling and analytical methods used to meet the monitoring requirements specified in this permit must conform to the latest revision of the 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]) unless otherwise specified in this permit. Ecology may only specify alternative methods for parameters without limits and for those parameters without an EPA approved test method in 40 CFR Part 136.

All samples must be analyzed by a laboratory registered or accredited under the provisions of Accreditation of Environmental Laboratories, Chapter 173-50 WAC. RCW 90.48.260 gives Ecology the authority to establish inspection, monitoring, entry, and reporting requirements. WAC 173-220-210 gives Ecology the authority to require monitoring of the treated waters to determine the effects of discharges on surface waters of the state. Permittees with coverage under the Permit must monitor the amount of pesticides they use and report this information to Ecology in an annual report (S9.).

### ***Monitoring Plans***

The Aquatic Invasive Species Management Permit requires the Permittee to monitor a subset of treated locations each year. At a minimum, the Permittee must monitor treatment effectiveness on the targeted organism. This provides Ecology and the Permittee chemical efficacy information for the targeted species. The Permittee's annual monitoring plan must propose specific monitoring locations and parameters to Ecology. In consultation with the Permittee, Ecology reviews and approves the annual monitoring plan. Permittees submit the results of the previous year's monitoring to Ecology by February 1 of each year.

### ***Monitoring for Specific Chemicals***

Ecology requires monitoring for specific parameters when using sodium chloride, potassium chloride, chlorine, acetic acid, calcium hydroxide/oxide, rotenone, copper, or heat/freezing (Tables 3-8). Ecology based these monitoring requirements on similar monitoring requirements in other NPDES pesticide permits or required monitoring for parameters that may be altered by the treatment (e.g., pH).

## **S8. ROTENONE MONITORING**

Ecology based these monitoring requirements on similar monitoring requirements in the NPDES Fisheries Resource Management General Permit

([http://www.ecy.wa.gov/programs/wq/pesticides/final\\_pesticide\\_permits/fish/fish\\_index.html](http://www.ecy.wa.gov/programs/wq/pesticides/final_pesticide_permits/fish/fish_index.html)).

For a discussion of rotenone monitoring requirements please see the Draft Fisheries Resource Management NPDES and State Waste Discharge General Permit Fact Sheet

([http://www.ecy.wa.gov/programs/wq/pesticides/final\\_pesticide\\_permits/fish/docs/DraftFisheriesManagementFactsheet.pdf](http://www.ecy.wa.gov/programs/wq/pesticides/final_pesticide_permits/fish/docs/DraftFisheriesManagementFactsheet.pdf)).

The use of 60% trout survival in the trout live-box assay and the analytical method allowance for a rotenone limit of 3.75 µg/L or less reflect the LC50 (lethal concentration where 50% of the organisms exposed suffer mortality) for rainbow trout (Bills & Marking 1986).

## **S9. REPORTING AND RECORDKEEPING REQUIREMENTS**

Section S9 of the permit contains specific conditions based on Ecology's authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-226-090).

### ***Annual treatment reports***

Permittees meet part of their reporting requirements through annual treatment reporting. The annual report summarizes the amount of each chemical used during the course of each treatment season. It allows Ecology to track how much pesticide is used in Washington for a specific use. Permittees must submit their annual treatment report by February 1 of each year.

### ***Annual monitoring reports***

The annual monitoring report (due February 1) summarizes the results of any monitoring identified in the annual monitoring plan (submitted to Ecology on February 1 of each year). Requiring an annual monitoring plan allows the Permittee and Ecology to discuss previous year's results and tailor monitoring to specific monitoring needs.

### ***Records Retention***

Applicators must keep all records and documents required for five years. If there is any unresolved litigation regarding the discharge of pollutants by the Permittee, the period of record retention must be extended during the course of the litigation (WAC 173-226-090).

### ***Reporting Permit Violations***

WAC 173-226-080 (1)(d) states that a discharge of any pollutant more frequently or at a level in excess of that authorized is a permit violation. Ecology requires that if a Permittee violated the permit conditions, it must take steps to stop and minimize any violations and report those violations to Ecology. For pesticide applications authorized in the Permit, applicators must report violations to the Aquatic Pesticide Permit Manager and the Regional Spills (ERTS Hotline) within 24 hours. This allows Ecology to determine if more action is necessary to mitigate the permit violation.

WAC 173-226-070 allows Ecology to place permit conditions to prevent or control pollutant discharges from plant site run off, spillage or leaks, sludge or waste disposal, or materials handling or storage and allows Ecology to require the use of Best Management Practices (BMPs). BMPs means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of the waters of the state. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. The Permittee must be prepared to mitigate for any potential spills and, in the event of a spill, perform the necessary cleanup, and notify the appropriate Ecology regional office (see RCW 90.48.080, and WAC 173-226-070).

## **GENERAL CONDITIONS**

Ecology bases the General Conditions on state and federal law and regulations.

### ***PERMIT ISSUANCE PROCEDURES***

#### ***Permit Modifications***

Ecology may modify this permit to impose new or modified numerical limitations, if necessary to meet Water Quality Standards for Surface Waters, Sediment Quality Standards, or Water Quality Standards for Ground Waters. Ecology would base any modifications on new information obtained from sources such as inspections, effluent monitoring, or Ecology-approved engineering reports. Ecology may also modify this permit because of new or amended state or federal regulations.

#### ***Recommendation for Permit Issuance***

The general permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics, protect human health, aquatic life, and the beneficial uses of waters of the State of Washington. Ecology proposes to issue this general permit for five (5) years.

## Bibliography

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.

## References

Bills, T., and L. Marking. 1986. Rotenone – freshwater LC50 – rainbow trout and bluegills. FWS, National Fish Research Laboratory Project TOX 83-626.01B. Unpublished report. MRID 40063301 (FWS 1989). [11]

Feinstein, Diane. 2008. Letter to the U.S> Department of the Interior. <http://www.feinstein.senate.gov/public/index.cfm/press-releases?ID=556C16C3-B255-6BC0-AFA3-2AB6AA92E63E>. [11]

Meacham, Pam and Pleus, Allan. 2008. Washington State Aquatic Nuisance Species Committee Report to the 2007 Legislature. <http://wdfw.wa.gov/publications/00808/wdfw00808.pdf> [1]

Molnar, J., R. Gamboa, C. Revenga, and M. Spalding. 2008. Assessing the global threat of invasive species to marine biodiversity. *Front Ecol Environ* 6(9): 485-492. [1]

Pimentel, D., S. McNair, J. Janecka, J. Wightman, C. Simmonds, C. O'Connell, E. Wong, L. Russel, J. Zern, T. Aquino and T. Tsomondo. 2001. Economic and environmental threats of alien plant, animal, and microbe invasions. *Agriculture, Ecosystems & Environment* 84(1): 1-20. [1]

Rothlisberger, J. D., Finnoff, D. C., Cooke, R. M., Lodge, D. M. 2012. Ship-borne Nonindigenous Species Diminish Great Lakes Ecosystem Services. *Ecosystems* 15: 462–476. [1]

The Final Working Draft of the Columbia River Basin Interagency Invasive Species Response Plan: Zebra Mussels and Other *Dreissenid* Species. Columbia River Basin Team, 100<sup>th</sup> Meridian

Initiative, February 6, 2008.

<http://www.100thmeridian.org/ActionTeams/Columbia/CRB%20Dreissenid%20Rapid%20Response%20Plan%202-6-08.pdf> [11]

## **Court Cases**

Headwaters et al., v. Talent Irrigation District. U.S. Ct. of Appeals for the Ninth Cir. Ct. Case No. 99-35373, D.C. No.CV-98-06004-ALA. March 12, 2001.

Cases not available online at [www.ca9.uscourts.gov](http://www.ca9.uscourts.gov) before 2005. [6]

Fairhurst v. Hager, Director, Montana Department of Fish, Wildlife & Parks. U.S. Ct. of Appeals for the Ninth Cir. Ct. Case No. 04-35366, D.C. No.CV-03-00067-SEH OPINION. September 8, 2005. <http://www.ca9.uscourts.gov/datastore/opinions/2005/09/07/0435366.pdf>. [6]

League of Wilderness Defenders et al., v. Harv Forsgren, Regional Forester, Pacific Northwest Region United States Forest Service. U.S. Ct. of Appeals for the Ninth Cir. Ct. Case No. 01-35729, D.C. No.CV-00-01383-RE OPINION. November 4, 2002.

Cases not available online at [www.ca9.uscourts.gov](http://www.ca9.uscourts.gov) before 2005. [6]

The National Cotton Council of America et al., v. United States Environmental Protection Agency. U. S. Ct. of Appeals for the Sixth Cir. Ct. Case Nos. 06-4630;07-3180/3181/3182/3183/3184/3185/3186/3187/3191/3236. January 7, 2009. <http://www.ca6.uscourts.gov/opinions.pdf/09a0004p-06.pdf>. [6]

Northwest Aquatic Ecosystems v. Ecology, PCHB 05-101 (Feb. 15, 2006) [6]

Marine Environmental Consortium, et al. v. Global Aqua-USA L.L.C. & Ecology, PCHB 96-257 (Nov. 30, 1998) [6]

## **Federal Publications**

40 CFR 122: EPA Administered Permit Programs: the National Pollutant Discharge Elimination System. [7]

40 CFR 122.3: Exclusions. [7]

40 CFR 122.41: Conditions applicable to all permits. [7]

40 CFR 125.3: Technology-based treatment requirements in permits. [7]

40 CFR 131.36: Toxics criteria for those states not complying with Clean Water Act section 303(c)(2)(B). [7]

40 CFR 136: Guidelines Establishing Test Procedures for the Analysis of Pollutants. [7]

40 CFR 171.4: Standards for certification of commercial applicators. [7]

40 CFR 172: Experimental Use Permits. [7]

40 CFR 403.3: Definitions. [7]

Environmental Protection Agency. 2011. Final National Pollutant Discharge Elimination System (NPDES) Pesticide General Permit (PGP) for Point Source Discharges to Waters of the United States from the Application of Pesticides Fact Sheet. [4,11]

Federal Insecticide, Fungicide and Rodenticide Act (FIFRA):  
<http://www.epa.gov/agriculture/lfra.html>. [7]

Federal Water Pollution Control Act. 33 USC 1251 et seq.: <http://www2.epa.gov/laws-regulations/summary-clean-water-act>. [7]

Food Quality Protection Act: <http://www.epa.gov/laws-regulations/summary-food-quality-protection-act>. [7]

National Toxics Rule: <http://water.epa.gov/lawsregs/rulesregs/ntr/>. [7]

### ***Revised Code Washington (RCW)***

Chapter 15.58 RCW: Washington Pesticide Control Act [7]

Chapter 17.10 RCW: Noxious Weeds — Control Boards [7]

Chapter 17.15 RCW: Integrated Pest Management [7]

Chapter 17.21 RCW: Washington Pesticide Application Act [7]

Chapter 34.05 RCW: Administrative Procedure Act [7]

Chapter 43.21C RCW: State Environmental Policy [7]

Chapter 77.12 RCW: Powers and Duties [7]

Chapter 77.135 RCW: Invasive Species [7]

Chapter 79A.25 RCW: Recreation and Conservation Funding Board [7]

Chapter 90.48 RCW: Water Pollution Control [7]

Chapter 90.52 RCW: Pollution Disclosure Act of 1971 [7]

Chapter 90.54 RCW: Water Resources Act of 1971 [7]

Chapter 90.58 RCW: Shoreline Management Act of 1971 [7]

### ***Washington Administrative Code (WAC)***

Chapter 16-228 WAC: General Pesticide Rules [5]

Chapter 16-233 WAC: Worker Protection Standards [5]

Chapter 173-50 WAC: Accreditation of Environmental Laboratories [5]

Chapter 173-200 WAC: Water Quality Standards for Groundwaters of the State of Washington [5]

Chapter 173-201A WAC: Water Quality Standards for Surface Waters of the State of Washington [5]

Chapter 173-204 WAC: Sediment Management Standards [5]

Chapter 173-216 WAC: State Waste Discharge Program [5]

Chapter 173-220 WAC: National Pollutant Discharge Elimination System Permit Program [5]

Chapter 173-224 WAC: Permit Fee Schedule [5]

Chapter 173-226 WAC: Waste Discharge General Permit Program [5]

Chapter 197-11 WAC: SEPA Rules [5]

Chapter 220-12 WAC: Food Fish and Shellfish [5]

### ***Additional Information Sources about Aquatic Invasive Species***

- Washington Invasive Species Council: <http://www.invasivespecies.wa.gov/>.
- Washington Department of Fish and Wildlife: <http://wdfw.wa.gov/fish/ans/index.htm>.
- United States Department of Agriculture's National Invasive Species Information Center: <http://www.invasivespeciesinfo.gov/index.shtml>.
- USGS – NAS – Nonindigenous Aquatic Species Information Resource: <http://nas.er.usgs.gov/>.
- Aquatic Nuisance Species Task Force: <http://anstaskforce.gov/default.php>.
- Tunicate information: [http://wdfw.wa.gov/fish/ans/identify/html/index.php?species=didemnum\\_lahillei](http://wdfw.wa.gov/fish/ans/identify/html/index.php?species=didemnum_lahillei).
- *Caulerpa* information: [http://www.fws.gov/lodi/aquatic\\_invasive\\_species/caulerpa.htm](http://www.fws.gov/lodi/aquatic_invasive_species/caulerpa.htm).
- Zebra and Quagga Mussel Information Resource Page: <http://nas.er.usgs.gov/taxgroup/mollusks/zebramussel/>.

## APPENDIX A: GLOSSARY

**All definitions listed below are for use in the context of this permit only.**

*303(d)*: Section 303(d) of the federal CWA requires states to develop a list of polluted water bodies every two years. For each of those water bodies, the law requires states to develop Total Maximum Daily Loads (TMDLs). A TMDL is the amount of pollutant loading that can occur in a given water body (river, marine water, wetland, stream, or lake) and still meet water quality standards.

*Adopt*: Permittees may choose to use an existing adaptive management plan for organisms treated under this permit as long as Ecology has approved and accepted the plan. For example, if WDFW has an Ecology-approved adaptive management plan for tunicate treatment, WDNR may decide to follow this plan rather than developing a new plan. The adopted plan must include the treatment proposed by WDNR.

*Algae*: Primitive, chiefly aquatic, one-celled or multi-cellular plant-like organisms that lack true stems, roots, and leaves but usually contain chlorophyll.

*Algaecide*: A chemical compound that kills or reduces the growth of algae

*Allows*: Permitted in compliance with the terms and conditions of this permit.

*All Known and Reasonable Technologies (AKART)*: All known, available, and reasonable methods of pollution control and prevention as described in 90.48.010, 90.48.520, 90.52.040, and 90.54.020 RCW and 173-201A-020, 173-204-120, 173-204-400, 173-216-020, 173-216-050, 173-216-110, 173-220-130 WAC .

*Constructed water bodies*: A human-made water body in an area that is not part of a previously existing watercourse, such as ponds, streams, wetlands, etc.

*Discharge*: The addition of any pollutant to a water of the state.

*Emergency*: A situation where an immediate response (i.e. same day response) is needed to prevent reproduction or the rapid spread of an invasive species (e.g. zebra or quagga mussels). Incidents where rapid and early intervention is crucial to a successful management effort constitute an emergency. Examples include, but are not limited to, needing to treat species immediately to preclude or limit spawning or reproduction (e.g. tunicates). Timing is critical in these situations.

*Experimental Use Permit*: Federal and state permits that allow the use of unregistered pesticides in the context of research and development for registration of the pesticide under FIFRA Section 3, or in the context of research and development for registration of a new use of a currently registered pesticide under FIFRA Section 3 (see 40 CFR 172, 15.58.405 RCW, and WAC 16-

228-1460).

*Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA):* Federal Insecticide, Fungicide, and Rodenticide Act. This federal law provides the basis for regulation, sale, distribution, and use of pesticides in the United States. FIFRA authorizes EPA to review and register pesticides for specified uses. EPA has the authority to suspend or cancel the registration of a pesticide if subsequent information shows that continued use would pose unreasonable risks.

*General Permit:* A permit which covers multiple discharges of a point source category within a designated geographical area, in lieu of individual permits being issued to each discharger.

*Herbicide:* A chemical designed to control or kill plants.

*Individual permit:* A discharge permit specific to a single point source or facility.

*Insecticide:* A chemical used to prevent, repel, control, or kill insects.

*Integrated Pest Management:* An ecologically based strategy for pest control that incorporates monitoring, biological, physical, and chemical controls in order to manage pests with the least possible hazard to humans, environment, and property. IPM considers all available control actions, including no action. Pesticide use is only one control action.

*Molluscicides:* Chemicals used to kill mollusks (such as snails).

*NOI:* Notice of Intent (to apply for coverage). This is a term used to describe the completed application form.

*Nonnative invasive:* An organism outside of its natural or historical range of distribution that tends to spread and dominate new areas. Organisms considered to be nonnative were not present in Washington prior to European settlement. Many nonnative organisms are not invasive or problematic.

*Organisms:* Any life form considered as an entity; an animal, plant, fungus, protistan, or moneran.

*Permittee:* Any state government entity that applies for and gains coverage under this permit and has control of, or causes a discharge under coverage of this permit.

*Pesticide:* Any substance or mixture of substances intended to prevent, destroy, control, repel, or mitigate any insect, rodent, snail, slug, fungus, weed, and any other form of plant or animal life or virus, except virus on or in a living person or other animal which is normally considered to be a pest or which the director (of Agriculture) may declare to be a pest (RCW 17.21.020).

*Piscicides:* Chemicals used to kill fish.

*Pollutant:* Means any substance discharged that would alter the chemical, physical, thermal, biological, or radiological integrity of the waters of the state or would be likely to create and nuisance or renders such waters harmful, detrimental, or injurious to the public health, safety, or welfare, or to any legitimate beneficial use, or to any animal life, either terrestrial or aquatic. Pollutants include, but are not limited to the following: dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, pH, temperature, total suspended solids, turbidity, color, biological oxygen demand, total dissolved solids, toxicity, odor, and industrial, municipal, and agricultural waste.

*Potentially invasive:* A nonnative organism that has a possibility of spreading and dominating new areas, displacing native species.

*Rapid response:* Incidents where rapid and early intervention is crucial to a successful management effort. Examples include, but are not limited to, needing to treat species immediately to preclude or limit spawning or reproduction (tunicates). Timing is critical in these situations.

*Retention and detention ponds:* A retention pond is designed to hold a specific amount of water indefinitely. A detention pond holds a set amount of water that slowly drains to another location. Detention ponds are often only full of water after rain whereas a retention pond should always have water in it.

*Surface waters of the state of Washington:* Freshwaters (lakes, rivers, ponds, streams, inland waters), brackish waters, marine waters, estuarine waters, and all other above ground waters and watercourses within the jurisdiction of the state of Washington.

*Threatened and endangered aquatic species:*

*Threatened:* An animal species likely to become endangered within the foreseeable future throughout all or a significant portion of its range. <http://www.fws.gov/angered/>, <http://www.noaa.gov/fisheries.html>

*Endangered:* An animal species in danger of extinction throughout all or a significant portion of its range. <http://www.fws.gov/angered/>, <http://www.noaa.gov/fisheries.html>

*Treatment area:* The area where the chemical is applied and the concentration of the chemical is adequate to cause the intended effect on targeted organisms.

*Upland farm pond:* Private farm ponds created from upland sites that did not incorporate natural water bodies (WAC 173-201A-260(3)(f)).

*Waters of the State:* All surface and ground waters in Washington State as defined by chapter

90.48.020 RCW, 173-201A-020 WAC, and 173-226-030 WAC including any future amendments of state law. Also includes drainages to waters of the state.

*Wetland:* Any area inundated with water sometime during the growing season and identified as a wetland by a local, state, or federal agency.

*In the absence of other definitions set forth herein, the definition as set forth in 40 CFR Part 403.3 or in chapter 90.48 RCW shall be used for circumstances concerning discharges.*

## APPENDIX B: PUBLIC INVOLVEMENT INFORMATION

**In order to be considered, all comments about the proposed permit must be received by 5 p.m. on July 1, 2016**

Ecology has tentatively determined to re-issue the Aquatic Invasive Species Management General Permit for aquatic invasive species control activities as identified in Special Condition S1., Permit Coverage.

Ecology will publish a Public Notice of Draft (PNOD) on May 18, 2016 in the Washington State Register. The PNOD informs the public that the draft permit and fact sheet are available for review and comment.

The notice will also be emailed to those identified as interested parties.

Copies of the draft general permit, fact sheet, and supporting documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the Ecology offices listed below, may be obtained from Ecology's website, or by contacting Ecology by mail, phone, fax, or email.

Permit website: <http://www.ecy.wa.gov/programs/wq/pesticides/invasive.html>

Ecology Headquarters Building Address:  
300 Desmond Drive  
Lacey, WA 98503

### Contact Ecology

Department of Ecology  
Water Quality Program  
Attn: Invasive Species Permit Manager  
P.O. Box 47600  
Olympia, WA 98504-7600

Nathan Lubliner  
Email: [nathan.lubliner@ecy.wa.gov](mailto:nathan.lubliner@ecy.wa.gov)  
Phone: 360-407-6563  
Fax: 360-407-6426

### Submitting Written and Oral Comments

Ecology will accept written comments on the draft Aquatic Invasive Species General Permit, fact sheet, and notice of intent (application). Ecology will also accept oral comments at the public hearing on June 21, 2016 at the Lacey, Ecology headquarters building at 1:00 p.m. Comments should reference specific text when possible. Comments may address the following:

- Technical issues,
- Accuracy and completeness of information,
- Adequacy of environmental protection and permit conditions, or

- Any other concern that would result from the issuance of this permit.

**Ecology prefers comments be submitted using the comment form on the permit webpage:**

<http://www.ecy.wa.gov/programs/wq/pesticides/invasive.html>

Written comments must be postmarked, received via comment form or received via email no later than 5:00 p.m., July 1, 2016.

Submit written, hard copy comments to:

Nathan Lubliner  
Department of Ecology  
P.O. Box 47600  
Olympia, WA 98504-7600

You may also provide oral comments by testifying at the public hearing.

**Public Hearing and Workshop**

A public hearing and workshop on the draft general permit will be held at the location below. The hearing provides an opportunity for people to give formal oral testimony and comments on the draft permit. The workshop held immediately prior to the public hearing will explain the special conditions of the Aquatic Invasive Species General Permit.

**Workshop and Hearing**

June 21, 2016  
1:00 pm  
Washington State Department of Ecology  
300 Desmond Drive  
Lacey, WA 98503-1274

The workshop and hearing may also be attended as a webinar where individuals may view the presentation and provide testimony via computer or mobile device. To register for the webinar go to: <https://wadis.webex.com/wadis/j.php?RGID=m0821d2506aaee820d329e86c1e3e3da3>. Once the host approves your request, you will receive a confirmation email with instructions for joining the meeting.

**Issuing the Final Permit**

The final permit will be issued after Ecology receives and considers all public comments. Ecology expects to reissue the general permit in the summer of 2016. It will be effective one month after the issuance date.

For further information, contact the Permit Writer, Nathan Lubliner, at Ecology, by phone at 360-407-6563, by email at [nathan.lubliner@ecy.wa.gov](mailto:nathan.lubliner@ecy.wa.gov), or by writing to Ecology at the Olympia address listed above.

## **APPENDIX C: RESPONSE TO COMMENTS**

Look for the Response to Comments document on the Aquatic Invasive Species Management Permit web page: <http://www.ecy.wa.gov/programs/wq/pesticides/invasive.html>.