RATIONALE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) GENERAL PERMIT #7
PESTICIDE GENERAL PERMIT (PGP) FOR POINT SOURCE DISCHARGES
TO WATERS OF THE UNITED STATES FROM THE APPLICATION OF PESTICIDES

This general permit authorizes discharges of pesticide residues to waters of the United States. Iowa's General NPDES Permit #7 (GP7) original Permit was issued March 30, 2011 with many of the same requirements as the permit issued by the U.S. Environmental Protection Agency (EPA) on June 2, 2010. The original permit rationale highlighted the changes the Department made to EPA's permit. With this renewal, the Department is proposing further changes. This rationale describes the proposed changes from the current permit and offers justification for those changes.

Proposed changes to Iowa's Current Pesticides General Permit (GP7)

Part 1.1.1 Activities Covered – We are proposing to remove permit coverage for ground applications to forest canopies for two reasons. First, ground applications should be able to avoid water bodies. DNR's Forestry section claims it is not necessary to spray in or over water bodies for ground applications to forests. Second, the most common pesticide application to trees in Iowa is for control of the emerald ash borer. Iowa's Department of Agriculture and Land Stewardship also regulates pesticides, and they have set strict limits on the amount of Imidachloprid can be applied per land area for emerald ash borer control. This Department is also responsible for tracking the applications to make sure it is not over-applied. We do not want to appear to authorize a pesticide application that is more strictly controlled by another agency. We are also not proposing to change the coverage for aerial pesticide applications to forest canopies. Coverage is still needed for aerial applications because it may be impossible to see waterbodies beneath dense forest canopies.

Part 1.1.2.4 Endangered and Threatened Species and Critical Habitat Protection - Iowa's draft GP7 will continue to not cover pesticide residue discharges to waters that are critical habitat for the threatened and endangered species. We are proposing to replace the language that is specific to Topeka Shiner with the term "federally listed species". We had restricted this section just for critical habitat for the Topeka Shiner since it was the only species with published habitat locations. We are making this change so as not to restrict any critical habitat that may be published in the future.

Part 1.1.2.6 Any discharge that results from use of a pesticide contrary to its labeling
Additional language was added to clarify that any discharge that results from pesticide use contrary to its labeling is prohibited from coverage under this permit. The change was made to improve clarity.

Part 1.1.2.7 Discharges to Waters Designated as Class C - Iowa has historically required applicators to obtain prior approval from IDNR's Water Supply Section for use of specific pesticides to Class C waters (drinking water sources). We are proposing to continue that practice. The only changes we are proposing to this section are to better clarify the previous language.

Removal of Notice of Intent and all Associated Requirements (affects multiple sections of the permit)
We have opted to remove Notice of Intent requirements in the reissued permit. Requiring an NOI is a large burden of little value for the permitting authorities and permittees alike. Historically, Iowa has had very few enforcement actions for pesticide applications to water (about one per year) and there have been plenty of regulations to enforce these situations adequately (even before GP7). Therefore, pesticide applications historically have produced little risk to Iowa surface waters. Furthermore, the State of Iowa requires many pesticide applicators to be certified, which requires a test that includes proper pesticide use, equipment calibration, etc.

The party most affected by the NOI requirements is Iowa DNR. Our Fisheries, Forestry and Parks Departments make up all but one NOI in Iowa. The other NOI is from a large pesticide applicator that already had Integrated Pest Management approaches. Thus, all our NOI operators are very experienced at pesticide applications to water and NPDES staff review of their processes is redundant. The paperwork required of an NOI operator is also very time-consuming and of little value to NPDES staff. Most of the pesticide application in Iowa originates from terrestrial application resulting in nonpoint source discharges which are exempted from Clean Water Act

permitting. Therefore, any data we obtain on pesticide applications through GP7 represents a tiny portion of the total pesticide discharges in the State.

Part 2.2.2 Evaluation of Pest Management Tools
This language is similar to the current permit requirement for NOI operators. By removing the NOI requirements from the permit, the idea of evaluating the need for pesticides would be lost too. We are instead proposing to keep the requirement to look at other options rather than applying pesticides and proposing to make it a requirement for all applicators.

Antidegradation

The State adopted Iowa Antidegradation Implementation Procedure, dated February 17, 2010 states that "A regulated activity shall not be considered to result in degradation, if the activity will result in only temporary and limited degradation of water quality as defined in the glossary and as further described in Sections 1.2 and 2.4."

> **Section 2.4 of Iowa Antidegradation Implementation Procedure - Temporary and Limited Degradation**:
> Degradation that is not permanent. The effects can be regarded as temporary and limited following a review of all of the following factors, if applicable:
> a) length of time during which water quality will be lowered
> b) percent change in ambient conditions
> c) pollutants affected
> d) likelihood for long term water quality benefits to the water body
> e) degree to which achieving the applicable Water Quality Standards during the proposed activity will be at risk
> f) potential for any residual long term effects on existing uses

As required by the Iowa Antidegradation Implementation Procedure, we will review each of the six factors shown above for determining whether the effects from pesticide residue discharges covered under GP7 are temporary and limited.

A. Length of time during which water quality will be lowered
The Iowa Department of Transportation (IDOT) applies pesticides to an extensive network of road ditches throughout the entire state and is likely one of the largest appliers of pesticides in Iowa. IDOT has provided IDNR with a summary of the extensive library research they have conducted on the residence times of the pesticides they use. The pesticide half-lives in water ranged from 2 days to 30 days. An online literature review of common aquatic registered pesticides (such as Glyphosate, Imazapyr, Methoprene, Permethrin, Resmethrin, Sumithrin, Naled, and Diflubenzuron) by IDNR shows similar half-lives in water. While pesticide degradation rates in aquatic systems vary with environmental conditions, such as the amount of organic matter present, temperature or pH, the reported half-lives in the literature mirror the several days to one month timeframe found by IDOT. The majority of aquatic registered pesticides researched had half-lives in water of several days. Because pesticide residue should only be present in the water for short periods of time, any degradation would be temporary.

Unlike many types of regular applications of chemicals, such as a biocide applied once per week to a cooling tower or continuous feeding of sodium bisulfite for dechlorination, pesticides are not applied in a constant manner. Instead, they are usually one-time only applications or rare in nature, such as larvacide applied two to three times during the summer when conditions warrant, or spot treatment to road ditch thistles that appear in the spring.

B. Percent change in ambient conditions
Pesticide residue from the types of applications covered by GP7 should not change the visual aspects of the water, as aquatic registered pesticides are highly soluble in water. However, there may be a temporary change in biological or chemical oxygen demand as the pesticide decays and the targeted pest species dies off, such as when aquatic weeds are sprayed. The percent change is unknown and will be different for every application.

C. Pollutants affected
The pollutant discharges covered under this permit include all biological pesticides (such as bacteria applied to target mosquito larva) and all chemical pesticide residues that result from any of the four covered use patterns described in Part 1.1.1 of GP7. The pesticides covered under this permit are also regulated by the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), which gives EPA the authority to register pesticides for use as long as the pesticide meets specific criteria. Part of the registration process involves a lengthy evaluation by EPA of all available published data in order to determine whether the pesticide will have any unreasonable effects on humans, the environment, or non-target species. If the pesticide is deemed to have an unreasonable effect, the pesticide is not registered or not registered for a particular use that poses high risk. The pollutants (pesticide residues) covered under GP7 have undergone more regulatory review than would be common under the average NPDES permit, and therefore, should pose only a limited amount of degradation to any waterbody.

D. Likelihood for long-term water quality benefits to the water body
Pesticides are typically applied to waterbodies for two reasons: protection of public health or improvement of the waterbody. Many of the pesticide applications covered under this permit will be used to remove nuisance plants or animals, exotic species, aquatic weeds that "choke" out waters or fish diseases. Thus, while the pesticide residue may cause a temporary and limited degradation of the waterbody, the long-term benefit to the waterbody is potentially quite large. In fact, IDNR often uses pesticides to remove evasive plant and animal species as part of their process to restore lakes.

E. Degree to which achieving the applicable Water Quality Standards during the proposed activity will be at risk
IDNR has numeric water quality standards (WQS) for approximately two dozen pesticides. Of those pesticides, most are no longer registered or are registered for agricultural uses. The five pesticides currently registered for aquatic uses with Iowa WQS are: Diquat, 2,4-D, Endothall, Glyphosate, and Dalapan. Of these five pesticides, Iowa's numeric standards only apply to Class C (drinking water sources) streams for Diquat, Endothall, Glyphosate, and Dalapan. Any application of a pesticide to a Class C stream will be required to go through a review and approval process with IDNR prior to use. This additional application process should ensure that no WQS for Class C streams are put at risk. The WQS for 2,4-D (0.1 mg/L) applies only to waterbodies classified as HH (human health). These HH waters are the largest rivers in the state of Iowa with high flow volumes that aid in quick dilution. If the applicator follows the FIFRA regulations, label instructions, and GP7, the risk of causing an HH stream to violate the 2,4-D WQS should be minimal.

The only narrative WQS at risk during pesticide applications involves the potential to cause acutely toxic conditions for non-target species (567 IAC Ch. 61.3(2)). However, if the applicator follows GP7 and all FIFRA requirements the risk should be very low. In fact, Iowa has experienced very few incidents (approximately one per year) of aquatic life die-off during pesticide applications. The recent cases of aquatic toxicity have involved the application of pesticides above the rate allowed or spills. Therefore, we believe there should be almost no risk of acute toxicity to non-target animals when the applicator is in compliance with GP7 and FIFRA.

F. Potential for any residual long term effects on existing uses
As described previously, pesticides registered for aquatic use have rather short half-lives in water. All will eventually degrade completely. If applied in compliance with the requirements of GP7 and FIFRA, pesticide residues will not have any long-term effects on existing uses. More likely, the application of pesticides will have a beneficial effect on existing uses, while the remaining residue will degrade over a short period of time.

In conclusion, the effects of the pesticide residue will be temporary and limited in nature. The water quality necessary for existing uses will be maintained and protected. Therefore, the limited degradation caused by pesticide residues will not be permanent and no Tier 2 antidegradation review is necessary.