ESA WORKPLAN UPDATE:

Nontarget Species Mitigation for Registration Review and Other FIFRA Actions

November 2022

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EXECUTIVE SUMMARY

EPA's Pesticide Program faces the decades-long challenge of meeting its Endangered Species Act (ESA) obligations for the large number of actions taken annually under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). To address this challenge, EPA has taken several crucial steps in the last year alone. In January 2022, the Agency committed to fully complying with the ESA before registering any new conventional pesticides. And in April 2022, the Agency released a workplan on how it will address this challenge, including by incorporating protections for ESA listed species earlier in its FIFRA process.

EPA is now releasing this first update to the workplan, which describes the Agency's efforts to reduce pesticide exposure to nontarget organisms, including listed species, during the FIFRA registration review process and through other FIFRA actions. Taken together, these steps will move EPA toward fulfilling its ESA obligations and making final registration review decisions by providing earlier protections for listed species, while increasing regulatory certainty for growers and pesticide registrants. The workplan update thus reflects a major milestone in EPA's journey to fully comply with the ESA in ways that are protective, implementable, and transparent.

For most pesticides, registration review is the most important opportunity for EPA to include mitigation for listed species. On 15-year intervals, EPA must assess each existing pesticide active ingredient to ensure it continues to meet the FIFRA standard of causing no unreasonable adverse effects. Because most pesticides were registered without a formal ESA review, the initial registration review is the Agency's first major opportunity to incorporate mitigation for listed species and many other nontarget wildlife. Further, registration review triggers ESA requirements as courts have repeatedly made clear.

EPA's inability to fully meet the ESA requirements has created a growing number of lawsuits against the Agency. Existing court-enforceable deadlines, combined with ongoing litigation and settlement discussions, will require EPA to complete ESA reviews for over 50 pesticides, thus filling the Agency's ESA workload well beyond 2030. Yet these cases represent less than 5% of EPA's future pesticide actions that trigger ESA obligations. Unless EPA makes substantial progress on ESA compliance, it is likely to face more litigation. The workplan update represents a major step in this process by proposing a large menu of ecological mitigation measures that EPA will begin including in registration review actions. This outcome is a win for wildlife in need of protections, and a win for growers who seek legal certainty about the status of the pesticides they rely on.

The update consists of four main sections. Section II describes EPA's overall approach to mitigating ecological risks in registration review. Moving forward, the Agency will prioritize the issuance of interim decisions (IDs) based on opportunities to reduce a pesticide's risk to human health or the environment and to efficiently complete its registration review cases (e.g., reviewing similar pesticides simultaneously). If a pesticide presents ecological risks that EPA identifies through its pesticide risk assessment, the Agency expects to include interim mitigation measures that will reduce exposure to nontarget species, including listed species. These measures can include ones designed specifically to address ecological risk and any human health protections that also reduce pesticide exposure to listed species.

In Section III, EPA proposes a menu of mitigation measures that the Agency can use across a range of pesticides to reduce pesticide exposure to nontarget species. This menu of "Interim Ecological Mitigation" includes measures to reduce spray drift, surface water runoff, and pesticide transport through erosion. For each

chemical in registration review that presents ecological risks, EPA will decide which measures from this menu to propose based on the risks and benefits of the pesticide. This approach offers not only early protections for nontarget organisms, including listed species, but also consistent mitigation that could be used across similar pesticides. Specifically, the approach helps ensure that pesticides with similar exposure pathways, uses, and ecological risks are treated comparably under FIFRA. The result should be a simpler to implement and more equitable for the agriculture sector that relies on pesticides. The appendix provides more information on Interim Ecological Mitigation, and EPA is seeking public comment on that portion of the workplan update.

Although Interim Ecological Mitigation measures are designed to address ecological risks broadly (and thus will generally appear on pesticide labels nationally), many situations will require mitigation targeting the areas a listed species occurs. In those situations, EPA will use its web-based system, Bulletins Live! Two (BLT), to post geographically specific mitigation for individual listed species. Section IV describes the BLT process, including when EPA will require pesticide labeling to include a reference for users to check BLT before using a pesticide. Through the appendix, EPA is also seeking public comment on proposed label language that references BLT.

Section V provides updates on other strategies to expedite implementation of the ESA workplan, particularly strategies to prioritize mitigation for listed species vulnerable to pesticides and to improve the efficiency and timeliness of the pesticide consultation process. Crucial steps to advance these strategies include identifying ESA mitigation for groups of similar pesticides (e.g., herbicides, rodenticides) and developing mitigation to protect all listed species in certain regions (e.g., Hawaii), thus simplifying future pesticide consultations for those species. Another important step is to propose early mitigation for certain listed species as part of several current and upcoming registration review cases (i.e., methomyl, carbaryl, rodenticides, and certain neonicotinoids). These cases represent the first time that EPA is proposing to include ESA-specific mitigation in IDs.

The appendix contains proposed labeling language for Interim Ecological Mitigation, BLT, and other initiatives described in the workplan update. EPA is seeking public comments on the appendix through www.regulations.gov docket number EPA-HQ-OPP-2022-0908.

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I. Introduction and Document Overview

In April 2022, EPA released a workplan that outlines strategies and actions for the Agency to meet its Endangered Species Act (ESA) obligations for certain actions under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). In this first update to the workplan, EPA focuses on planned and proposed steps it will take during registration review to reduce exposure to listed species as it moves toward fulfilling its ESA obligations and making final registration review decisions. Most importantly, going forward, any FIFRA interim decisions (IDs) that EPA issues will include interim mitigation measures that address risks to nontarget species identified in a FIFRA risk assessment. This update describes the types of FIFRA interim mitigation measures that EPA has identified to date and how the Agency will decide which ones to include in future IDs based on the risk and benefits of a pesticide. The update also discusses several current and upcoming initiatives to expedite pesticide consultations and the adoption of ESA protections for listed species, including early ESA mitigation for certain highly vulnerable listed species. For concision, this document assumes the reader is familiar with the ESA workplan, including key ESA and FIFRA concepts.

Historically, IDs for pesticides with identified ecological risks have often included some mitigation to reduce exposure to nontarget species from pesticides, but those measures were not developed with the specific goal of advancing EPA's ESA obligations. Further, those IDs did not describe how the FIFRA mitigation measures could reduce exposure to listed species. Rather, measures for ESA species were typically identified only in ESA biological opinions from the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS), which exist for a small number of pesticides that are currently in registration review.

EPA now seeks to narrow this gap by including mitigation for listed species during registration review, in at least two ways. First is by including FIFRA mitigation to protect nontarget species as part of any IDs it issues for conventional and biological pesticides that present ecological risks, while the Agency works toward final registration review decisions. These interim measures could include a selection of the ecological risk reduction measures described in this update, known as "Interim Ecological Mitigation," along with measures to address human health risks that also reduce exposure to nontarget species. An example of the former is a vegetative strip that absorbs pesticide runoff to reduce exposure to nontarget species. An example of the latter is a reduction in pesticide application rate to address a cancer risk to humans that also lessens exposure to nontarget species. Some of the ecological measures will be similar to those that EPA has included in past IDs, while others are new. In developing interim mitigation measures under FIFRA, EPA considers the risks and benefits of a pesticide.

A second way to narrow the gap is by including early, targeted ESA mitigation to protect certain listed species. The forthcoming proposed IDs for rodenticides and carbamates are examples of this approach. Another example is the new ESA initiatives described in Section V of this document, such as a strategy to identify and develop mitigation measures for herbicides across multiple agricultural uses. Unlike mitigation to further EPA's FIFRA obligations, mitigation to further ESA obligations is governed by the ESA standard, which does not include a risk-benefit analysis. This is so even when EPA includes that mitigation through registration review. EPA will strive, however, to propose measures that are practical, implementable, clear, and enforceable.

EPA is pursuing these steps for at least two reasons. First, EPA must adopt more efficient approaches to meeting its ESA obligations, given the current four- to fifteen-year process to complete ESA consultations for pesticides. Early mitigation supports this goal by reducing pesticide exposures to species and their habitats, while EPA works towards full ESA compliance. As the extent of effects decreases, so should the complexity

and duration of consultations. For example, if early mitigation significantly reduces or eliminates the probability of a future jeopardy or adverse modification finding, formal consultation is simplified *and* listed species receive earlier protection. Early mitigation should also inform any future ESA requirements to minimize the effects of incidental take from pesticide use. The ESA workplan describes in greater detail the need for EPA to include early mitigation, and this update covers one way that EPA is implementing that strategy

Second, courts are increasingly ruling that ESA obligations arise from certain FIFRA actions. Relevant decisions include *Washington Toxics Coalition v. Environmental Protection Agency*, 413 F.3d 1024 (9th Cir. 2005), *Center for Biological Diversity v. EPA*, 861 F.3d 174 (D.C. Cir. 2017), *National Family Farms v. EPA*, 966 F.3d 893 (9th Cir. 2020), and *NRDC v. U.S. EPA*, No. 20-70787 (9th Cir. June 17, 2022). These and other decisions underscore the importance for EPA to promote mitigation measures that reduce pesticide exposures to listed species and furthers the Agency's ESA obligations. Without those measures, EPA anticipates new litigation against the Agency and similar adverse court decisions on other pesticides. That outcome could result in the abrupt removal of the pesticide tools growers need. And it would overwhelm EPA's workload, considering that existing court-enforceable deadlines will require EPA to complete ESA reviews for 18 pesticides over the next six years—the most the Agency estimates it can handle during this period based on its current capacity and processes. Further, ongoing litigation and settlement discussions for other lawsuits cover dozens of additional pesticides and will likely fill the Agency's ESA workload well beyond 2030. The steps discussed in this update are thus needed for EPA to effectively manage its ESA-FIFRA workload and reduce legal uncertainty about the registration review status of pesticides without a final decision.

The nexus of FIFRA and ESA is exceptionally dynamic and affected by court decisions, agency resources, new science, lessons learned during implementation, and other factors. This update reflects EPA's best attempt to describe in greater detail how it will advance protection of listed species through registration review, with a focus on conventional and biological pesticides. The Agency, however, implores readers to recognize the constantly evolving nature of ESA-FIFRA issues and the possibility that unforeseen events may change how EPA implements the measures outlined in this status update. EPA intends to continue periodically sharing updates about its ESA-FIFRA progress.

This status update is structured as follows:

- Section II provides an overview of how EPA will further its ESA obligations for registration review and prioritize higher risk chemicals when it issues IDs.
- Section III describes how EPA will identify FIFRA Interim Ecological Mitigation for nontarget species and how the Agency will determine which types of measures to propose in its registration review decisions. These measures would appear directly on pesticide labels, along with any interim measures to address human health risks.
- Section IV describes how EPA will incorporate Bulletins Live! Two (BLT) references on labels for many outdoor use pesticides to expedite the Agency's ability to incorporate geographically specific mitigation for listed species.
- Section V describes several broader, programmatic initiatives that EPA is currently pursuing or considering to help meet its ESA obligations more efficiently. These include mitigation for multiple species, specific uses, specific types of pesticides, and other programmatic approaches.

EPA will continue developing the mitigation tools described in this update and will consider whether similar approaches should apply to other FIFRA actions that trigger ESA requirements, such as new active ingredient registrations, new use registrations, or registration review for antimicrobial pesticides. In particular, EPA plans

to incorporate the FIFRA Interim Ecological Mitigation measures described here for many conventional pesticide new use registrations.

II. Overall Approach to Registration Review

Moving forward, and in light of the implications of litigation noted earlier, the Agency will prioritize the issuance of IDs based on opportunities to reduce the pesticide's risk to human health or the environment and to efficiently complete its registration review cases, such as by reviewing similar pesticides simultaneously. If a pesticide presents ecological risks, EPA expects to include interim mitigation measures that will reduce exposure to nontarget species. These measures could include FIFRA Interim Ecological Mitigation that also reduce exposure to listed species (Section III), geographically specific mitigation through Bulletins Live! Two (Section IV), programmatic approaches to listed species mitigation that EPA is currently developing (Section V), or other listed species mitigation approaches that EPA has developed (*e.g.*, mitigation approaches informed by current ESA pilot projects). EPA would include these approaches in future IDs on a case-by-case basis, including after assessing a pesticide's risk to nontarget organisms. The interim mitigation measures would also include any human health protections. In some cases, those protections may also reduce exposures to listed species and expedite future ESA consultations. As with Interim Ecological Mitigation, any interim mitigation measures for human health are those that EPA has determined will address specific risks of concern identified at that point in registration review. EPA will summarize the mitigation measures that are expected to reduce exposure from the pesticide to listed species in a new ESA section within IDs for pesticides that present ecological risks.

After EPA has fully met its ESA obligations associated with the registration review of a pesticide (including by incorporating any additional mitigation the Services deem necessary), it will issue a final decision for the pesticide, including any necessary mitigation measures.

Mitigation to meet FIFRA obligations	Mitigation to meet ESA obligations
Interim Ecological Mitigation in IDs (Section III)	Geographically specific mitigation in Bulletins Live! Two (Section IV)
Interim human health mitigation in IDs	Species-specific mitigation through ESA pilot projects (Section V)
	Programmatic approaches to ESA mitigation (Section V)
	Reasonable and prudent measures (RPMs) and reasonable and prudent alternatives (RPAs) in ESA biological opinions, following formal consultation with the Services

Table 1. This document distinguishes between mitigation to advance EPA's FIFRA and ESA obligations. Further, mitigation to further FIFRA obligations is generally subject to a risk-benefit analysis. Mitigation to further ESA obligations is not subject to this analysis. All mitigation included in an ID will be interim and ones that EPA has concluded will address risks identified at that point in the registration review process.

III. FIFRA Interim Ecological Mitigation and Other Proposed Label Language

As explained in the ESA workplan, EPA recognizes that establishing mitigation to protect all listed species on a strictly chemical-by-chemical or species-by-species basis creates an unmanageable workload, results in years-long delays in protecting listed species, exacerbates the Agency's legal vulnerability, and creates significant uncertainty for growers and potential food security challenges if litigation results in the abrupt removal of pesticides used to grow crops. EPA has thus determined that proposed interim decisions (PIDs) and IDs issued under FIFRA should move the Agency forward in addressing its obligations under ESA. Thus, EPA will be placing a greater emphasis on addressing ecological risks while still balancing pesticide benefits and the potential impacts of mitigation.

As an initial step to accomplish this goal, EPA has developed a menu of FIFRA Interim Ecological Mitigation measures for conventional and biological pesticides used on agricultural crops. EPA risk managers will consider these measures and propose appropriate measures in PIDs after considering the risks and benefits of a pesticide. EPA also intends to adapt this process to FIFRA decisions not covered by this workplan update, in particular conventional pesticide new use registrations. These measures will also serve as a starting point for EPA to develop mitigation for its other strategies to address ESA, discussed in Section V.

The Interim Ecological Mitigation menu of measures for agricultural crops would cover some or all of the following:

- Surface water protection statements users would follow when precipitation occurs or is forecasted to reduce ecological risk from movement of pesticides off the field through runoff or erosion;
- Conservation buffers (small areas or strips of land in permanent vegetation designed to intercept pollutants and manage other environmental concerns) and other conservation measures to reduce ecological risk from movement of pesticides off the field through runoff or erosion;
- Droplet size, windspeed, and release height limits to reduce ecological risks from spray drift;
- Spray drift buffers from aquatic habitats (e.g., lakes, reservoirs, rivers, permanent streams, wetlands or natural ponds, estuaries, and commercial fish farm ponds) and conservation areas (e.g., public lands and parks, Wilderness Areas, National Wildlife Refuges, reserves, conservation easements).

In addition, EPA is planning to incorporate the web link to the Bulletins Live! Two system (described further in Section IV), advisory language for insect pollinators for liquid spray applications to crops, and label language on incident reporting. EPA is also considering proposing seed treatment mitigation to reduce risks to wildlife from pesticide dust-off from treated seed and ingestion of treated seed.

EPA considers the Interim Ecological Mitigation listed above, and the other label language, as a starting point for developing mitigation for a pesticide. With regard to the Interim Ecological Mitigation and insect pollinator advisory language, EPA may propose more or less stringent measures to address ecological risk as part of its chemical-specific evaluation. In other words, for each registration review case, the chemical review team will consider these Interim Ecological Mitigation measures and advisory language as a potential starting point for a PID but may propose additional or different measures to address ecological risks specific to that case. Conversely, a team may determine that for certain uses of a chemical, these measures are not needed to address ecological risks specific to that case and propose less stringent measures. For example, if interim mitigation for human health risks also significantly reduces exposures to nontarget species, or if the registrant has voluntarily committed to mitigation to significantly reduce exposure to those species, EPA may need to rely less on the Interim Ecological Mitigation measures.

Examples of label language associated with the Interim Ecological Mitigation and other proposed label language are available in the example label table in the appendix. EPA is requesting comment on these measures through a 75-day public comment period, as described further in Section III.d. below and the appendix. Additionally, EPA will propose Interim Ecological Mitigation measures and the other label language in PIDs, where appropriate, and provide for public comment. The first four of these PIDs are expected to include some or all of the Interim Ecological Mitigation measures, insect pollinator advisory language, and seed treatment label language. All four PIDs all are also expected to include BLT and ecological incident reporting language. These PIDs are for dicloran (DCNA), etofenprox, norflurazon, and the thiophanate-methyl/carbendazim (TM/MBC) case.

FIFRA compliance and ESA compliance are different. Unlike with mitigation measures specific for listed species to avoid jeopardizing the species or adversely modifying designated critical habitat (as required under the ESA for certain FIFRA actions), EPA considered the risks and benefits of pesticides when it developed the Interim Ecological Mitigation, as described in more detail below. It is crucial for readers to understand that when these measures are included in IDs, they are not designed to fully address ESA obligations for a pesticide in registration review. Rather, they are designed to reduce exposure to a variety of nontarget species, including listed species, while EPA moves toward full ESA compliance and final registration review decisions. Additional measures may also be necessary when EPA consults, as necessary, with the Service(s) on the pesticide and receives a biological opinion with ESA-specific measures.

a. Goal of EPA's FIFRA Interim Ecological Mitigation.

EPA's goal in developing Interim Ecological Mitigation measures is to consistently apply ecological mitigation options to reduce exposure to nontarget species, including listed species, based on the fate and transport characteristics of the chemical and the toxicological effects, risk, and benefits of the pesticide. Including these measures in registration review decisions accomplishes four major Agency objectives.

First, they should facilitate future ESA consultation by making early and widespread progress on incorporating mitigation measures that are similar to the measures the Services have either provided to EPA in recent biological opinions or are expected to provide in future biological opinions. Early mitigation is thus expected to shorten the current multiyear consultation process by frontloading mitigation measures that are likely to be required during consultation. It is also expected to further EPA's ESA obligations by improving the conservation status of listed species and possibly reduce the likelihood of a future jeopardy/adverse modification finding. In general, when a species is protected from threats, its vulnerability to extinction decreases, which in turn reduces the likelihood of a future jeopardy finding. The full extent of listed species protection, however, cannot be determined until formal consultation with the Services, when needed, is completed.

Second, it ensures that pesticides with similar exposure pathways, uses, and ecological risk profiles are treated comparably under FIFRA. This creates more equity across the pesticide marketplace, which is a common concern among pesticide registrants. As such, EPA expects that equitable inclusion of these interim measures will lessen the need to negotiate ecological mitigation with registrants on a case-by-case basis and could create efficiencies as EPA completes its registration review activities. Another way to view these measures is that EPA is raising the baseline for ecological mitigation measures and ensuring that the Agency views ecological risk and mitigation measures consistently across pesticides. EPA has successfully accomplished this in the past for human health mitigation measures. By establishing cross-pesticide equity for requiring personal protective equipment (PPE) by pesticide handlers, EPA established expectations for including PPE requirements on labels

that registrants now readily meet. EPA anticipates a similar outcome when standardizing Interim Ecological Mitigation measures across registered pesticides.

Applying similar ecological mitigation to pesticides with similar exposure pathways, uses, and risk profiles also ensures that, when choosing pesticide products, pesticide users have repeated and consistent incentives to use pesticides with fewer ecological risks overall. This is because, in general, the mitigation options are more stringent for pesticides with higher ecological risks than for those with lower ecological risks.

Additionally, some of the measures included in the Interim Ecological Mitigation menu are basic best management practices to reduce ecological risks that will appear across pesticide labels more consistently. Users will continue to have options to address their pest pressures, but will also need to more fully consider needed protections to reduce risks to the environment for riskier chemicals.

Third, Interim Ecological Mitigation supports EPA's broad strategies to reduce exposure to nontarget species across pesticide groups and use profiles (e.g., herbicides, insecticides, residential uses, mosquitocide uses). These efforts would likely also further the Agency's compliance with the ESA, as described in Section V.

Finally, Interim Ecological Mitigation advances the Agency's commitment to protect listed and non-listed pollinators as previously established in the ESA workplan and the EPA Administrator's June 2022 proclamation for National Pollinator Week.

b. What is FIFRA Interim Ecological Mitigation?

FIFRA Interim Ecological Mitigation is a menu of generalized ecological mitigation and advisory language that EPA can use across a broad range of pesticides. The menu contains a range of mitigation measures for each major exposure pathway that can result in ecological risk. The specific mitigation measures for each exposure pathway range from less to more restrictive. For each pesticide, EPA would propose the appropriate measures based on a balance of the pesticide's ecological risks and benefits as required under FIFRA.

EPA developed the Interim Ecological Mitigation menu based on common, national scale exposure pathways that can result in ecological risk (i.e., runoff, erosion, spray drift). EPA has initially developed measures for agricultural crop uses and expects to incorporate some or all of the measures into its PIDs, especially the four upcoming PIDs listed earlier.

Interim Ecological Mitigation is intended to reduce ecological risk to both non-listed and listed species. As discussed in the previous section, these measures are also expected to improve the conservation status of listed species and possibly reduce the likelihood of a future jeopardy/adverse modification finding.

EPA's decisions that include Interim Ecological Mitigation measures must consider the benefits of a pesticide's use. EPA designed these measures such that they will vary based on the risk and benefit profiles of the pesticide. This generally involves more restrictive measures (e.g., larger spray drift buffers) for pesticides that EPA identifies to have high ecological risk and lower benefits to users. Conversely, for pesticides with comparable ecological risks and higher benefits to users, less restrictive measure (e.g., smaller spray drift buffers) would be expected.

Because Interim Ecological Mitigation is a menu of potential mitigation measures, it does not include the following:

- Mitigation measures that are only feasible on a pesticide-by-pesticide basis (e.g., application rate reductions, reductions in number of applications).
- Mitigation measures specific to individual listed species that are being developed for pilot projects described in the ESA workplan.
- Mitigation measures being developed for listed species under other initiatives described in Section V.

Like all ecological mitigation under FIFRA, the Interim Ecological Mitigation measures would be incorporated into product labeling. Example label language appears in the appendix.

c. When is EPA using FIFRA Interim Ecological Mitigation and Other Proposed Label Language?

EPA intends to include Interim Ecological Mitigation measures when it determines they are appropriate to address the ecological risk of a pesticide under FIFRA. The measures are intended to be broad and focus on risk to nontarget species identified in the ecological risk assessment rather than to a particular listed species. Further, the measures are specific to the exposure route leading to the risks identified in an ecological risk assessment. In addition to this interim mitigation, EPA has determined that a web link to its BLT system is necessary for most pesticide labels. Additionally, EPA has determined that incident reporting guidance is necessary for all pesticide products, and insect pollinator advisory language is necessary for pesticide products with agricultural crop uses. The appendix contains example label language for these measures and more details on when EPA believes they are necessary.

EPA has already been incorporating some of these measures through registration review, while others are relatively new. EPA has regularly included mitigation measures in registration review to address spray drift such as droplet size, windspeed, release height, and buffers from aquatic habitat. To address run-off, EPA sometimes requires surface water protection statements, but has not done so in a systematic way across agricultural pesticides. Although EPA has required conservation buffers (e.g., vegetative filter strips) in several instances, including for the entire pyrethroid class, the Agency has infrequently used conservation buffers and other measures to reduce off-site pesticide transport through runoff and erosion across pesticides sprayed on agricultural crops. Additionally, EPA had rarely included spray drift buffers from wildlife conservation areas (e.g., National Wildlife Refuges) as mitigation measures in registration review. Now, the Agency intends to consistently incorporate both types of buffers as Interim Ecological Mitigation to further its FIFRA and ESA obligations, if the ecological risk and benefit profile of a pesticide warrant these measures.

EPA also plans to use similar measures for other FIFRA decisions that trigger ESA requirements, particularly new registrations of conventional active ingredients. EPA receives many new use and other FIFRA applications each year. The Agency recognizes the need to work toward fully meeting its ESA obligations for these actions.

d. How to Comment on FIFRA Interim Ecological Mitigation and Other Proposed Label Language?

On November 16, 2022, EPA published an OPP Update to announce the availability of the Interim Ecological Mitigation and other label language discussed above for public comment. EPA has also published the appendix of this Workplan Update as a separate memo on www.regulations.gov docket number EPA-HQ-OPP-2022-0908 for a 75-day comment period. EPA particularly welcomes comments on the feasibility of implementing these measures and how the Agency should adjust measures to account for the risks and benefits of a pesticide. Because EPA intends to adapt these measures to other FIFRA actions, EPA welcomes comments from

stakeholders interested in FIFRA actions not only for conventional registration review cases but also for new use actions, biopesticides, and antimicrobials.

The public also has an opportunity to see how the Interim Ecological Mitigation measures and other label language will be incorporated in PIDs going forward in four upcoming PIDs that will go out for public comment in registration review. The first four of these PIDs are expected to include some or all of the Interim Ecological Mitigation measures, insect pollinator advisory language, and seed treatment label language. All four PIDs are expected to include BLT and ecological incident reporting language. These PIDs are for dicloran (DCNA), etofenprox, norflurazon, and the thiophanate-methyl/carbendazim (TM/MBC) case.

IV. Endangered Species Protection Bulletins

a. What are Bulletins and Pesticide Use Limitation Areas?

As described above, ESA mitigation can take the form of nationwide restrictions on the general pesticide product label or geographic-specific restrictions located in Endangered Species Protection Bulletins (hereafter referred to as Bulletins), which are extensions of the general label accessed through a website. EPA is using a web-based system, Bulletins Live! Two (BLT), to provide timely protections for listed species and to minimize pesticide product label changes. When using the term "Bulletins" in this document, the Agency is referring to the additional mitigation a user located in a specific geographic location must follow. When using the term BLT, the Agency is referring to the web-based system. Where EPA identifies mitigation specific to certain geographic areas, it uses Geographic Information System (GIS) mapping information typically in combination with species location information to delineate pesticide use limitation areas (PULAs). PULAs are the spatial files in BLT that allow users to determine if their intended pesticide application falls within a location that has additional required mitigation to protect listed species or their critical habitat.

EPA uses BLT only when mitigation applies in a particular geographic region where listed species are present and, in some cases, only during certain times of the year. A physical label cannot feasibly accommodate all these lengthy mitigation instructions. Similarly, BLT simplifies compliance by offering an easy way for users to identify where and when they are subject to the mitigation. Otherwise, users would need to use existing information from a variety of sources beyond the label to evaluate whether the location of their treatment area overlaps with an area for which EPA has identified geographically specific mitigation. Then they would need to read through hundreds of pages of a label to determine which restrictions apply to their treatment area.

Pesticide applicators are required to visit the BLT online database, when directed by a product label, and follow any mitigation specified in a Bulletin for the application area. When users are directed to follow them on a pesticide label, Bulletins are enforceable mitigation measures under FIFRA. Bulletins are not intended to replace or override any additional restrictions that a state may impose. Thus, applicators need to be aware of and follow pesticide restrictions according to both state and federal requirements.

Below is the BLT language that EPA has been requiring on certain pesticide labels to implement Agency actions (including implementation of biological opinions from the Services) that require geographic specific mitigation for listed species or their critical habitat. The Agency is proposing some minor revisions to this language and is seeking stakeholder feedback on the overall clarity of the language and workability for applicator planning purposes (see Appendix). Pesticide labeling generally has allowed users to obtain the Bulletins information up to six months prior to the application date. EPA believes a six-month window allows adequate time, in most cases, for pesticide users to plan their pesticide applications. In addition to mitigation in

certain geographic areas, Bulletins may also specify mitigation during certain times of the year depending on the listed species that need protection. Thus, the BLT language states that users must use the Bulletin valid for the intended application month, if mitigation measures are specified by month.

> "*Endangered Species Protection Requirements*: *It is a Federal offense to use any pesticide in a manner that results in an unauthorized "take" (e.g., kill or otherwise harm) of an endangered species and certain threatened species, under the Endangered Species Act section 9. When using this product, you must follow the measures contained in the Endangered Species Protection Bulletin for the area in which you are applying the product. You must obtain a Bulletin no earlier than six months before using this product. To obtain Bulletins, consult http://www.epa.gov/espp, call 1-844-447-3813, or email ESPP@epa.gov. You must use the Bulletin valid for the month in which you will apply the product.*"

Although the BLT system has been in place for many years, there may be applicators who are unfamiliar with this system. Using the online tool to determine if mitigation is required for a particular treatment area may be a new step that many users will need to take prior to an application. However, the Agency anticipates that over time and with wider implementation, BLT will become a familiar tool that is integrated into a user's planning process for pesticide applications. In February 2022, EPA released an improved version of BLT[1], which allows users to more easily find the information they need for a particular pesticide product. The Agency has also developed a tutorial[2] that explains how to use the online system. In addition, the general label language referring users to BLT provides a phone number and email address for those needing technical assistance.

b. When will EPA Use Bulletins?

In general, EPA prefers to provide directions for pesticide use directly on the general label. This allows users to read the directions without taking the extra step of visiting the BLT online system and acquiring the Bulletins for the pesticide. FIFRA Interim Ecological Mitigation measures would appear directly on labels. However, EPA acknowledges that this mitigation is likely insufficient to fully meet its ESA obligations in many cases. As EPA continues to make progress on its commitments in the ESA workplan, EPA may determine that additional mitigation is necessary to protect listed species or their critical habitat for certain pesticides or pesticide uses. If this mitigation is geographically specific, EPA expects to create a Bulletin to communicate these measures. EPA recognizes that, in a variety of situations, Bulletins are the best approach, and sometimes the only feasible approach, to implement required mitigation to minimize the effects of pesticides to a listed species or critical habitat. For example, Bulletins are most appropriate for species with a very narrow range that require mitigation not applicable to other species. For many species, EPA may require a combination of general label mitigation (e.g., reducing runoff) and Bulletins that offer additional protections when a pesticide is used within an area known to include the species (species range) or to protect a specific portion of critical habitat or areas important to species recovery.

c. When will EPA Require a Reference to Bulletins on the General Label?

To help meet its ESA obligations in registration review, EPA expects that including Bulletins language is necessary for most outdoor use pesticide labels. EPA believes this language will also streamline label

[1] https://www.epa.gov/endangered-species/endangered-species-protection-bulletins
[2] https://www.epa.gov/endangered-species/bulletins-live-two-blt-tutorial

amendments when future mitigation for listed species is determined to be necessary by EPA or in conjunction with the Services to meet ESA obligations. Even if Bulletins are needed to protect only one listed species from the effects of a particular pesticide, the reference to check BLT would still be needed on the general label. This language also minimizes the need for registrants to request amendments to their labels to add a reference to BLT after completing consultation with the Services. Each round of label amendment submission, review, and approval creates additional work for both EPA, pesticide registrants, and state agencies to register amended pesticide products.

To reduce user confusion in situations when they visit the BLT website and find that EPA has not yet established geographically specific mitigation for a pesticide, EPA has added information to the BLT website that explains why a user may not see any geographically specific mitigation for the product they are applying. The updated BLT website explains that a user's search may not show any Pesticide Use Limitation Areas (PULAs) for one of two reasons: 1) EPA has not yet completed the process of identifying whether additional geographically specific mitigation is needed, or 2) there are no additional geographically specific mitigation measures required for the time and location indicated by the pesticide applicator. As EPA continues to identify early ESA mitigation for listed species, the Agency will update BLT with additional PULAs that may apply to specific pesticides in the future. Thus, a pesticide applicator will need to check BLT within six months of each application.

d. <u>How to Comment on Proposed Bulletins Language</u>?

In many cases, EPA will be proposing to include a reference to the BLT system prior to creating a Bulletin. Registrants and stakeholders may be concerned about opportunities to comment on these future Bulletins. In addition, stakeholders will have an opportunity to comment on proposed mitigation measures through a variety of actions. For example, when EPA conducts public outreach on the vulnerable species pilot (Section V.b.), there will be an opportunity to provide input on any proposed Bulletin mitigation measures. Stakeholder feedback is critical to improving EPA's understanding of how pesticides are used, the ways in which they may affect listed species, and how effects to listed species can be mitigated while preserving the beneficial uses of the pesticides to the extent possible.

An important opportunity to comment on future Bulletins is through the EPA pilot chemicals (i.e., carbaryl, methomyl, rodenticides, neonicotinoids), which focus on early mitigation for certain listed species while formal consultation with the Services is pending or ongoing. For each of these pilot chemicals, the Agency is identifying certain listed species that likely need protection and is proposing mitigation for those species. The proposed mitigation is intended to reduce (through avoidance and minimization) potential exposures and effects to the pilot species, such that EPA would be able to predict that these pesticides would not have a likelihood of jeopardy or adverse modification. Further, the mitigation may be developed by EPA, proposed by registrants, or both. The intent of these pilots is to help stakeholders better understand how proposed mitigation for these species would allow EPA to address any predicted likelihood of jeopardy or adverse modification for the pilot chemicals. Although mitigation to further ESA obligations cannot include a risk-benefit analysis, EPA has qualitatively assessed the potential impacts of the proposed mitigation to pesticide users to identify the mitigation that is less burdensome to users while still providing the necessary protections.

For each of these pilot chemicals, EPA will be taking public comment on the proposed ESA mitigation measures through individual chemical PIDs or revised PIDs. After considering comments received on the proposed mitigation, EPA will finalize the mitigation and provide it to the Services for their jeopardy and adverse modification determinations. Although this early mitigation effort starts with the set of pilot chemicals

noted here, EPA anticipates that the identified mitigation measures would likely apply to other pesticides that are used in areas where these pilot species are located.

The ESA workplan also identifies several other pilot projects to provide earlier protections for listed species. These pilots include the EPA Vulnerable Species Pilot Project to identify early mitigation for listed species that EPA has determined are particularly vulnerable to pesticide effects. See Section V for more information on these pilots and upcoming opportunities for public feedback on proposed mitigation measures.

V. Additional Strategies to Expedite Progress on ESA Workplan Initiatives

The ESA workplan described various strategies to improve EPA's capacity to meet its ESA obligations. Strategy 2 focuses on improving approaches to identifying appropriate ESA mitigation measures, especially for species facing the greatest risk from pesticides, as well as developing a process for implementing these protections (i.e., on pesticide product labeling). Strategy 3 focuses on improving the efficiency and timeliness of the pesticide consultation process in coordination with the Services. Consistent with 50 CFR 402.40(b)(1), EPA may include in any effects determination its prediction as to whether an action has a likelihood of jeopardy or adverse modification. EPA is gaining experience with making these predictions and including them in its effects determinations and biological evaluations, with the goal of proactively identifying ESA mitigation to address the potential for a future jeopardy or adverse modification finding.

Besides the actions described earlier, EPA has identified several additional approaches to further advance these strategies:

- Strategies for identifying and implementing early ESA mitigation across groups of chemicals (e.g., herbicides, rodenticides, insecticides)
- Bridging of mitigation measures from one chemical (representative) to a similar one or from one vulnerable species to other vulnerable species
- Regional-specific strategies (e.g., specific measures for use of a pesticide in Hawaii)
- Approaches for specific pesticide uses (e.g., adult mosquitocide)
- Programmatic approaches to ESA consultation
- Offsets (also known as compensatory mitigation)

The following describes EPA's current thinking on these additional approaches. EPA also expects to provide opportunities for public input on these strategies as the Agency continues developing them.

a. <u>Strategies for Identifying and Incorporating Early ESA Mitigation Measures Across Groups of Chemicals</u>.

Herbicides

EPA's first effort is focused on herbicides ("Herbicide Strategy"). EPA is identifying and developing mitigation measures for herbicides that are appropriate across multiple agricultural uses. EPA's process involves developing mitigation measures across a main taxa (e.g., plants, invertebrates) identified as being the most likely to be adversely affected from the pesticide group. The goal of the Herbicide Strategy is to develop a broad approach to address spray drift and runoff transport from treated fields to minimize exposure to listed

plants from herbicides (pesticides that target plants that are pests). This strategy would also protect potential effects to those listed species that rely on plants. The goal of the mitigation measures is to address initial predictions of the likelihood of jeopardy or adverse modification to listed plants and listed species that rely on those plants, such that the EPA would be able to predict that there would not be a likelihood of jeopardy or adverse modification. It is important to note that the Services make the final jeopardy or adverse modification determinations through the consultation process.

Because individual herbicides do not necessarily share the same fate properties and potential for effects, EPA expects to develop two or more suites of mitigation measures to apply broadly to herbicides with similar fate and effects profiles. EPA is also developing criteria that EPA's risk managers would use to determine when such mitigation measures are needed and appropriate. To identify chemical criteria, EPA plans to consider the properties of herbicides including their physical-chemical-fate properties (e.g., binding to soil, persistence) and potential effects (e.g., magnitude of exposure relative to available toxicity data). Among other things, EPA plans to evaluate the criteria and mitigations measures for representative herbicides to better ascertain the appropriateness of the criteria and the effectiveness of the mitigation measures.

EPA plans to issue a draft Herbicide Strategy for public comment by summer 2023. EPA expects to include in the draft Herbicide Strategy potential ways to implement these mitigation measures. After review of public comments received and incorporating any needed changes, EPA plans to issue a final Herbicide Strategy by spring 2024. When finalized, EPA believes this strategy could lead to protections for hundreds of listed plants and many of the listed and non-listed species that depend on the plants.

As EPA gains more experience with chemical specific predictions of the likelihood of jeopardy and adverse modification, EPA plans to similarly develop strategies for other pesticide groupings such as insecticides (which would focus on listed invertebrates) and fungicides. These strategies should simplify and expedite formal consultations, help standardize mitigation, and accelerate ESA compliance and thus reduce EPA's legal vulnerabilities.

Rodenticides

The ESA workplan described how EPA is developing early mitigation for a subset of species where EPA predicts a likelihood of a jeopardy or adverse modification finding for one or more of the registration review pilot pesticides if mitigation is not undertaken. One of these pilots is for rodenticides, which will focus on addressing effects to mammals and birds that consume rodenticide bait (primary consumers) and to birds, mammals and reptiles that consume primary consumers (secondary consumers). More specifically, EPA has developed mitigation measures for three representative species (one mammal primary consumer, one bird primary consumer, and one secondary consumer of a primary consumer), and one designated critical habitat. In developing and applying mitigation measures for these species, EPA recognized that not all rodenticides have the same effects. In addition to describing the pilot and the mitigation measures for the selected species, the PIDs will also describe EPA's plans for potentially expanding those mitigation measures to the other approximately 90 listed species potentially affected by rodenticides. When this plan is described, EPA will consider it the Rodenticide Strategy.

There are some differences between the Herbicide Strategy and the Rodenticide Strategy. One main difference is that EPA has committed to issuing final biological evaluations for all rodenticides by November 2024 and to

initiate consultation, where needed.[3] As such, the goal of the Rodenticide Strategy is to identify early mitigation measures for *all* listed species and *all* 11 rodenticides for which EPA predicts the likelihood of a future jeopardy or adverse modification finding by the Services. Doing so will inform any ESA consultation with the Services as they make these formal findings and should expedite those findings.

After considering public comment on the mitigation measures for the three pilot species described in the rodenticide PIDs, EPA expects to issue a single draft biological evaluation for all 11 rodenticides for public comment (November 2023). EPA expects the draft biological evaluation to include mitigation measures for the approximately 90 listed species potentially affected by rodenticides along with predictions of any future jeopardy or adverse modification findings after accounting for the identified mitigation measures. EPA also intends to describe how it expanded the mitigation measures from the three pilot species to other species in the draft biological evaluation as well as the criteria that risk managers would use to apply those measures in future FIFRA actions. In November 2024, EPA expects to issue its final rodenticide biological evaluation for all 11 rodenticides and to initiate consultation, as necessary. EPA also expects this consultation to be programmatic—its first complete group consultation (all rodenticides at once). Grouping these rodenticides allows EPA to apply analyses more readily across pesticides and species and reduce the number of associated documents, analyses, and review that would be required to produce 11 individual BEs along with up to 11 individual multi-year consultations with the Services. EPA estimates that grouping rodenticides will save EPA up to 70 full-time equivalents of work over 5 to 10 years. Also, without grouping these evaluations, the consultations for each rodenticide would be spread out over time (potentially 10 years or more), which could lead to inconsistencies in the evaluations, data, and any needed mitigation measures to protect listed species.

b. <u>Using EPA's Vulnerable Species Pilot to Extend Mitigation from One Chemical to a Similar One or from One Vulnerable Species to Other Vulnerable Species</u>.

The ESA workplan describes EPA's Vulnerable Species Pilot, which involves identifying mitigation for approximately 25 species with limited ranges and where pesticides have already been identified as a stressor to the species. EPA expects to develop geographically specific mitigation for these species that would be incorporated into BLT. By Summer 2023, EPA plans to conduct public outreach on the mitigation identified for the first set of species in the Vulnerable Species Pilot and explain how EPA envisions applying those measures to certain pesticide actions. By the end of calendar year 2023, EPA expects to complete this phase of the pilot.

The species included in this pilot represent an initial set of species. Based on lessons learned from incorporating mitigation for these pilot species, EPA expects in 2023 to begin developing a plan to expand the Vulnerable Species Pilot to include additional species, including by considering how similarities and differences among species may affect the mitigation. For example, EPA may consider if the mitigation developed for the pilot species applies to other species in the same area (e.g., multiple mussel species in the same river). As another example, EPA may consider adapting the mitigation for the poweshiek skipperling and Taylor's checkerspot butterfly to other vulnerable listed butterflies or incorporating mitigation for other listed mussels in the same area as the ones in the pilot. As part of the outreach on the first set of vulnerable species (by Summer 2023), EPA also plans to describe any proposed expansion of the pilot to include additional species. EPA expects to make a final determination in 2024 on whether and how it could expand the approach used in the Vulnerable Species Pilot to other selected vulnerable species. The protections identified in these pilots for species with

[3] BEs for brodifacoum, bromadiolone, warfarin, and zinc phosphide are subject to settlement agreement (Center for Biological Diversity (CBD) v. EPA, No. 11-cv-00293-JCS (N.D. Cal.): "megasuit"). As stated in Appendix A of the Workplan, EPA expects to complete BEs for the remaining rodenticides along with these four active ingredients as part of a grouped assessment for efficiency.

limited ranges and where pesticides have already been identified as a stressor to the species would supplement the other mitigation strategies discussed in this document. In other words, these tailored protections would be additional to any FIFRA Interim Ecological Mitigation described in Section III. These strategies should simplify and expedite formal consultations, help standardize mitigation for these vulnerable species, and accelerate ESA compliance and thus reduce EPA's legal vulnerabilities. Additional information on this pilot can be found at: https://www.epa.gov/endangered-species/implementing-epas-workplan-protect-endangered-and-threatened-species-pesticides.

c. Regional Strategies.

EPA is also exploring mitigation measures to address the effects of pesticides on listed species on a geographic basis. A Hawaii strategy is one that would clearly create significant efficiencies in the consultation process. The FWS has jurisdiction over approximately 1,600 species and hundreds of critical habitats. Of these species, approximately 40% are in Hawaii. As a result, when EPA conducts ESA analyses for pesticides with usage or proposed usage in Hawaii, the workload associated with these uses alone is significant. At the same time, there are important agricultural and human health pesticide needs in Hawaii, and some pesticide uses benefit listed species (e.g., by removing competitive invading species). EPA can increase efficiency by evaluating Hawaii as a whole rather than pesticide-by-pesticide or species-by-species. For example, most listed species in Hawaii are only found above 2,000 feet in elevation where very little agriculture occurs. By identifying the areas and species where no additional protections are likely needed, EPA and its federal partners can focus their efforts on mitigation for the smaller percentage of other species most in need of protection. EPA and its federal partners envision developing a broad set of mitigation for pesticide uses in Hawaii (and the criteria that EPA's risk managers would use to determine when the mitigation is needed and appropriate) along with geographically specific mitigation for some narrow range species that would apply if the pesticide use overlaps with those areas. EPA is currently working on developing a Hawaii strategy and plans to post additional information on this effort on its website soon, including opportunities for public input. Based on what EPA learns in developing a Hawaii Strategy, it may identify other regions to focus mitigation efforts.

d. Approaches for Specific Pesticide Uses.

EPA also plans to explore strategies for certain pesticide uses, particularly non-agricultural ones. During the malathion consultation, EPA and FWS worked with the American Mosquito Control Association (AMCA) to develop mitigation measures for malathion when used as a mosquito adulticide. EPA is considering expanding this mitigation measures to other mosquito adulticides. As another example, EPA is exploring a strategy to develop broad mitigation measures to minimize exposure to listed species from outdoor pesticide residential uses. EPA welcomes collaboration from various pesticide user groups—particularly non-agricultural groups whose pesticide uses might not be as familiar to EPA—that may be interested in developing strategies for their uses.

e. Programmatic Approaches to Consultation.

The ESA workplan discussed various approaches to improving the consultation process. One approach is programmatic consultations as defined in the Services' ESA regulations as "consultation addressing an agency's multiple actions on a program, region, or other basis" (50 CFR § 402.02). In fact, the example in the workplan involved considering programmatic consultation for all pesticides that share similar use patterns in a region—

exactly what EPA is embarking on with the Hawaii strategy described above. While all of the strategies described in this section would create efficiencies and earlier mitigation measures, incorporating those strategies into programmatic consultations with the appropriate Service would further solidify these approaches and streamline pesticide consultations. This approach would also increase regulatory certainty for pesticide registrants and users for the species/pesticides covered by the strategy and would minimize the problem of imposing disparate mitigation requirements across pesticides with similar use patterns.

As an example, EPA's Herbicide Strategy will be an opportunity for EPA and FWS to consider a partial programmatic consultation. By consulting with FWS on the mitigation measures designed to address the main taxa affected by herbicides (plants), existing and future consultations would be much more efficient. One way is for the mitigation to result in not likely to adversely affect (NLAA) findings for species that would otherwise have received likely to adversely affect (LAA) findings from herbicide uses. Another way is to reduce the likelihood of a potential jeopardy or adverse modification finding for species that would otherwise likely receive an LAA finding from herbicide uses. In other words, the mitigation needs for these species would already be partly or fully addressed prior to any future consultation for an agricultural herbicide. For future herbicide biological evaluations and consultations, EPA and FWS would focus on potential effects not addressed in this strategy (e.g., effects to animals on the treated field or newly listed species). As described earlier, EPA's rodenticide strategy will be another opportunity for programmatic consultation with FWS.

Finally, EPA is actively collaborating with NMFS to explore programmatic consultation opportunities. Because the number of listed species under their jurisdiction is significantly smaller than those under FWS jurisdiction, EPA and NMFS are exploring a full programmatic consultation for all conventional pesticides and all NMFS species. As EPA and NMFS develop an approach to conducting such a consultation, EPA will provide additional information on its website.

f. Offsets.

EPA continues to welcome proposals to incorporate offsets (also known as compensatory mitigation) into pesticide consultations, including for registration review actions. Any action that includes offsets will need to follow the Services' offset policies, particularly the mitigation hierarchy of first avoiding impacts, then minimizing, and finally offsetting. Through the various pilot projects and other initiatives described above, EPA expects to work with the Services to identify species that may be particularly amenable to offsets, especially if avoidance and minimization are highly infeasible or if offsets could substantially improve the conservation outcome for the species.

An offset program for a species could address EPA's ESA obligations for current and future FIFRA actions that affect the species. Offsets may also be useful in other FIFRA actions beyond registration review. In this way, an offset can function as a programmatic approach to mitigation that covers multiple pesticides and even multiple species (e.g., offsets that restore habitat for multiple species).

VI. Next Steps

EPA will continue to provide updates on its progress in meeting the commitments in the ESA workplan and its ESA obligations in registration review. EPA plans to update its ESA workplan website at least quarterly to communicate progress on existing and future ESA initiatives. As EPA embarks on new initiatives, it will update its webpages to describe the effort, provide a tentative timeframe, and describe opportunities for public

comment on the effort. As described in this document, current and near-term public comment opportunities include:

- The proposed mitigation language in the Appendix of this document;
- The PIDs for dicloran (DCNA), etofenprox, norflurazon, and the thiophanate-methyl/carbendazim (TM/MBC) that will include some of the FIFRA Interim Ecological Mitigation measures;
- The ESA registration review pilots for methomyl, carbaryl, rodenticides, and certain neonicotinoids that will include early ESA mitigation for certain species;
- EPA vulnerable species pilot; and
- EPA strategies for herbicides and rodenticides.

These and other opportunities for public feedback will help EPA determine how to implement its workplan in ways that improve process efficiencies, deliver the greatest conservation benefit, and provide regulatory flexibility to users.

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APPENDIX. Proposed Label Language for Public Comment at www.regulations.gov Docket Number EPA-HQ-OPP-2022-0908

This appendix provides additional details on proposed label language including Bulletins Live! Two (BLT) language, FIFRA Interim Ecological Mitigation, and other label statements the EPA may consider in registration review, including PIDs and other Agency actions. Through comments on this appendix and individual PIDs in the future, EPA is seeking feedback from the public on the following issues related to this label language: feasibility, user impacts, efficacy, appropriateness (supported by accompanying data), compliance or enforcement issues, and improvements to clarify language for users while still retaining the intent and efficacy of the language.

1. **Bulletins Live! Two (BLT)**

As discussed in Section IV of this Workplan Update, EPA expects to regularly propose language for pesticide labels instructing the product's users to access the Bulletins Live! Two (BLT) website to obtain geographically specific mitigation for listed species or their designated critical habitat. EPA is proposing to revise the standard language referencing BLT to improve understanding of the language. EPA seeks feedback on these proposed revisions, which appear in the table below. Additionally, EPA is requesting specific feedback on the following questions:

- Is the label language below on how to obtain Bulletins through BLT clear? Is it easy to understand what actions are required of users, and when?
- Does 6 months give stakeholders enough time to plan for planting and other needs?
- If your comments suggest the answer is no for either of these questions, please include suggestions for alternative language and any appropriate data to support your suggestions. EPA also welcomes affirmative comments on the proposed revisions.

Description	Proposed Revised Label Language for Pesticide Products	Placement on Label	Criteria for Proposing Mitigation
	End Use Products		
Endangered Species Protection Requirements To be proposed for all products, excluding those • labeled/registered solely for residential use; or • where exposure is negligible or there are no toxic effects expected across uses included on a label (e.g., cattle ear tag, fly baits)	"**ENDANGERED AND THREATENED SPECIES PROTECTION REQUIREMENTS**: It is a Federal offense to use any pesticide in a manner that results in an unauthorized "take" (e.g., kill or otherwise harm) of an endangered species and certain threatened species, under the Endangered Species Act section 9. When using this product, you must follow the measures, including any timing restrictions, contained in the Endangered Species Protection Bulletin for the area where you are applying the product. Before	Directions for Use, under the heading "ENDANGERED AND THREATENED SPECIES PROTECTION REQUIREMENTS"	See "Description" column

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Description	Proposed Revised Label Language for Pesticide Products	Placement on Label	Criteria for Proposing Mitigation
	End Use Products		
	using this product, you must obtain a Bulletin at any time within six months of the day of application. To obtain Bulletins, consult http://www.epa.gov/espp. For general questions or technical help, call 1-844-447-3813, or email ESPP@epa.gov."		

2. Interim Ecological Mitigation #1: Surface Water Protection Statements and Conservation Measure Pick List to Reduce Ecological Risks from Surface Water Runoff

EPA has identified through its review of FIFRA registration and registration review actions that there may be a need for additional mitigation measures to address ecological risks associated with pesticides that move off-field when they dissolve in surface water runoff. These additional measures would generally apply to pesticides with agricultural crop uses and an organic carbon partitioning coefficient (Koc) less than or equal to 1000 L/kg (highly to moderately mobile according to the United Nations Food and Agriculture Organization (FAO) classification scheme) in one soil tested. Soils across the US are varied, and pesticides may be more prone to leave the field in surface water runoff on some soils than others. To better address off-site ecological risks across all soils, and because more restrictive mitigation is typically needed to reduce pesticide transport from surface water runoff than erosion, EPA is proposing surface water runoff mitigation (instead of erosion mitigation) across all soils for pesticides that are highly or moderately mobile in one or more soils. Additional Koc criteria for one of these specific measures are described in more detail below.

These mitigation measures include surface water protection statements users would follow when precipitation occurs or is forecasted, as well as a pick list of conservation measures a grower must select from and use to reduce pesticide runoff from the field. Depending on the specific ecological risk, the benefits, and the use of the pesticide, EPA may propose one or more measures from a pick list of options to address risks. EPA will consider the user impacts of these mitigation measures when determining whether to propose and subsequently include them, as required under FIFRA. Overall, EPA intends to propose less stringent pick list mitigation when the benefits of a pesticide are higher for a given level of ecological risk. Conversely, EPA intends to propose more stringent pick list mitigation when the benefits of a pesticide are lower for a given level of risk.

The two surface water protection statements in the table below are intended to reduce the amount of pesticides that moves off a treated field due to a runoff-producing rain event. The first proposed surface water protection statement prohibits applications during rain events. This is a

common-sense measure that ensures the pesticide application will be effective against the target pest while reducing ecological risks associated with pesticide movement via runoff.

The second proposed surface water protection statement prohibits applications of mobile or highly mobile non-persistent pesticides within 48-hours (two days) of a runoff-producing rain event. In a modeling exercise using the rain-restriction feature of the Pesticide in Water Calculator (PWC)[4], EPA found that a 48-hour rain restriction resulted in a 10 - 40% decrease in 1-in-10 year daily average runoff-only estimated environmental concentrations (EECs) in the EPA standard farm pond with a 30-40% decrease for the most mobile or least persistent pesticides (EPA 2022). The rain restriction provides additional time for the pesticide to degrade in soil or on foliage and meaningfully reduces the amount of the pesticide that can be transported off-field in runoff. Mobile or highly mobile in this context means pesticides with a Koc of 100 L/kg or less (mobile or highly mobile according to the FAO classification scheme) that are expected to readily move off the treated field via dissolved runoff. Non-persistent in this context means pesticides that degrade in the soil or on foliage with half-lives (amount of time needed to degrade a chemical by 50%) of less than two days. EPA expects that prohibiting applications within 48 hours of a rain event would be less effective for persistent and immobile pesticides.

The runoff reduction measure pick list in the table below includes a number of measures that reduce runoff and pesticide loads in runoff, including vegetative filter strips (minimum of 30-foot width), cover crops, field borders, and riparian buffer strips/zones (forest or herbaceous), no/reduced tillage, contour buffer strips, and vegetative barriers. These measures are expected to decrease runoff and pesticide loads in runoff by reducing channelized flow to water bodies, increasing pesticide degradation, increasing infiltration of pesticide-contaminated water into the soil, and increasing binding of pesticides to soil and vegetation. The pick list measures also include contour farming and terrace farming/field terracing, which decrease runoff flow velocity and thereby enhance infiltration of pesticide-contaminated water into the soil. Grassed waterways and grassed/vegetative ditch banks are included as options because they reduce pesticide runoff by re-routing the flow of runoff through a vegetated area, thus increasing infiltration of the pesticide-contaminated water into the soil. Sediment/water retention ponds and constructed wetlands are also included as options, because they retain runoff in a vegetated water body, increasing pesticide degradation and binding. Mulching with natural materials is included as an option because it reduces pesticide runoff by promoting binding to vegetated materials and microbial degradation. Finally, strip-cropping and alley cropping increase infiltration of pesticide-contaminated water into the soil by systematically arranging vegetation and crops such that vegetation that slows surface water runoff is alternated with crops that may not slow runoff.

The pick list measures were included based on their potential to reduce dissolved runoff. There are numerous factors that contribute to the efficacy of any one of these measures, and, for many, efficacy may vary considerably depending on those factors. As an example, the efficacy of vegetative filter strips varies depending on the type of vegetation grown in the vegetative filter strip, the density of the vegetation, the width of the vegetative filter strip, whether channelized flow paths are able to form over the width of the vegetative filter strip (Caron, Lafrance, and

[4] https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/models-pesticide-risk-assessment#PWC

Auclair 2012; Krutz et al. 2005; Mickelson, Baker, and Ahmed 2003; Poletika et al. 2009), the flow-rate, and the field to VFS ratio, (Arora, Mickelson, and Baker 2003; Boyd et al. 2003) among other factors.

Because EPA wants to ensure a consistent level of efficacy for the pick list measures when they are implemented, EPA has developed proposed descriptions for each of them. Pesticide labeling would require one or more of these measures be in place, as defined in the labeling, prior to using the pesticide product. The pick list measure descriptions proposed to be used as labeling are located in Section 4 of this appendix. They are based on descriptions developed for previous pesticide proposals or decisions and incorporate some of the feedback received during prior public comment periods. These descriptions are subject to change based on EPA's further evaluation of comments from previous proposals, as well as public comments received on this appendix. EPA intends to post these descriptions on its website, and product labels would reference the website.

EPA seeks feedback on the example label language in the table below. Additionally, EPA is requesting specific feedback on the following questions:

- Regarding the surface water protection statements, are there additional criteria for proposing mitigation that EPA should consider?
- Are the descriptions of the pick list mitigation measures in Section 4 clear? If not, please suggest alternative language.
- Are there other measures that are effective in controlling dissolved runoff that should be included in the pick list? Please include supporting data with any suggestions.

Description	Proposed Label Language for Pesticide Products	Placement on Label	Considerations for Proposing Mitigation
	End Use Products		
Surface Water Protection Statements To be considered for products delivered via liquid spray applications to crops that do not require production in flooded fields or streams.	"**SURFACE WATER PROTECTION STATEMENT** • Do not apply during rain. • Do not apply when a storm event likely to produce runoff from the treated area is forecasted (by NOAA/National Weather Service, or other similar forecasting service) to occur within 48 hours following application."	Directions for Use –Under the Restriction or Use Restriction Section	Pesticides applied to agricultural crops with Koc ≤ 1000 in one soil tested that are applied by liquid spray or granules and that have ecological risk due to dissolved runoff. Only include "storm event" bullet when Koc ≤ 100 in one soil tested, AND either aerobic metabolism or foliar degradation half-life is < 2 days Notes:

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			• A pesticide with a Koc ≤ 100 is highly mobile in soil, primarily moving across and through soils in water. • An aerobic metabolism half-life is the time it takes for half of the applied pesticide to degrade in soil. • A foliar degradation half-life is the time required for half the concentration of the pesticide to be reduced, degrade, metabolize, or otherwise dissipate after application to foliage.
Dissolved Runoff Mitigation To be considered for products delivered via liquid spray or granular applications to agricultural crops that do not require production in flooded fields or streams.	"**RUNOFF MITIGATION** Users of this product must access **[website address]** and follow the instructions in the descriptions for one of the following mitigation measures: • Vegetative filter strip (30 ft minimum width) • Field border • Field terracing/ contour buffer strips • Contour farming • Cover cropping • No/reduce tillage • Grassed waterways • Riparian buffer zone/ riparian herbaceous zone • Vegetative/grassed ditch banks • Runoff retention pond/ water and sediment control basin/ sediment catchment basin/ constructed wetland • Strip cropping • Vegetative barriers • Mulching with natural materials • Alley cropping"	Directions for Use – Under the Restriction or Use Restriction Section	Pesticides with Koc ≤ 1000 in one soil tested that are applied by liquid spray or granules and that have ecological risk due to dissolved runoff. Note: • A pesticide with a Koc < 1000 readily moves across and through soils in water.

References for Section 2

Arora, Kapil, Steven K Mickelson, and James L Baker. 2003. "Effectiveness of Vegetated Buffer Strips in Reducing Pesticide Transport in Simulated Runoff." *Transactions of the ASAE* 46 (3): 635.

Boyd, Paul M, James L Baker, Steven K Mickelson, and Syed I Ahmed. 2003. "Pesticide Transport with Surface Runoff and Subsurface Drainage through a Vegetative Filter Strip." *Transactions of the ASAE* 46 (3): 675.

Caron, Emmanuelle, Pierre Lafrance, and Jean-Christian Auclair. 2012. "Temporal Evolution of Atrazine and Metolachlor Concentrations Exported in Runoff and Subsurface Water with Vegetated Filter Strips." *Agronomy for Sustainable Development* 32 (4): 935–43.

Krutz, LJ, SA Senseman, RM Zablotowicz, and MA Matocha. 2005. "Reducing Herbicide Runoff from Agricultural Fields with Vegetative Filter Strips: A Review." *Weed Science* 53 (3): 353–67.

Mickelson, SK, JL Baker, and Syed I Ahmed. 2003. "Vegetative Filter Strips for Reducing Atrazine and Sediment Runoff Transport." *Journal of Soil and Water Conservation* 58 (6): 359–67.

Poletika, NN, PN Coody, GA Fox, GJ Sabbagh, SC Dolder, and J White. 2009. "Chlorpyrifos and Atrazine Removal from Runoff by Vegetated Filter Strips: Experiments and Predictive Modeling." *Journal of Environmental Quality* 38 (3): 1042–52.

US EPA. 2022. "Preliminary Analysis of the Effectiveness of a 48-Hour Rain Restriction to Reduce Pesticide Runoff."

3. Interim Ecological Mitigation #2: Surface Water Protection Statement and Conservation Measure Pick List to Reduce Ecological Risks from Soil Erosion

EPA also intends to more regularly propose mitigation measures to address ecological risks associated with transport of pesticides off the field through soil erosion. These measures would apply to pesticides with agricultural crop uses and an Koc over 1000 L/kg, which is considered slightly mobile, hardly mobile, or immobile (according to the FAO classification scheme) in all soils tested.

These mitigation measures include a surface water protection statement users would follow when precipitation occurs, as well as a pick list of conservation measures a grower must select from and use to reduce pesticide runoff from the field. Depending on the specific ecological risk, the benefits of the pesticide, and the use, EPA may propose one or more measures from a pick list of options to address risks. EPA will consider the user impacts of these mitigation measures when determining whether to propose and subsequently require them, as required under FIFRA. Overall, EPA intends to propose less stringent pick list mitigation when the benefits of a pesticide are higher for a given level of ecological risk. Conversely, EPA intends to propose more stringent pick list mitigation when the benefits of a pesticide are lower for a given level of risk

The surface water protection statement in the table below is intended to reduce the amount of pesticide that moves off a treated field via erosion during a rain event. Applying pesticides when it is not raining is a common-sense measure that ensures the pesticide application will be effective against the target pest while reducing ecological risks from erosion.

The baseline pick list for soil erosion is the same as for surface water runoff, with the exception that the minimum vegetative filter strip width for erosion is 20 feet instead of the 30-foot minimum for runoff. This narrower vegetative filter strip may be adequate to address erosion

(off-site movement of pesticide bound to sediment) because sediment is more easily retained in a vegetative filter strip than surface water runoff (Dosskey, Michael G, MJ Helmers, and Dean E Eisenhauer. 2008). The actual proposed strip width may be greater than 20 feet for some pesticides, as 20 feet is the minimum to effectively address erosion. Vegetative filter strips, cover crops, field borders, and riparian buffer strips/zones (forest or herbaceous), no/reduced tillage, contour buffer strips, vegetative barriers are expected to decrease off-field movement of pesticides through erosion by reducing channelized flow to a water body, increasing sedimentation, increasing binding of pesticides to soil and vegetation, and increasing pesticide degradation. Contour farming and terrace farming/field terracing decrease erosion by decreasing runoff flow velocity, which increases sedimentation. Grassed waterways and grassed/vegetative ditch banks reduce off-field movement of pesticides through erosion by re-routing the flow of runoff through a vegetated area, which increases sedimentation. Sediment/water retention ponds and constructed wetlands capture agricultural effluent and allow for sedimentation, binding, and degradation in a constructed environment. Mulching with natural materials reduces pesticide transport via erosion by reducing off-site movement of soil, promoting binding to vegetated materials, and by promoting microbial degradation. Finally, strip-cropping and alley cropping increase sedimentation by systematically arranging vegetation and crops such that vegetation promoting sedimentation is alternated with crops that are less likely to reduce erosion.

The above pick list measures are included based on their potential to reduce erosion. As with surface water runoff, there are numerous factors that contribute to the efficacy of any one of these measures. The data EPA reviewed demonstrate that the efficacy of a particular practice can vary considerably.

Because EPA wants to ensure a consistent level of efficacy for the pick list measures when they are implemented, EPA has developed proposed descriptions for each of them. Pesticide labeling would require one or more of these measures be in place, as defined in the labeling, prior to using the pesticide product. The proposed descriptions appear in Section 4 of this appendix. They are based on descriptions developed for previous pesticide proposals or decisions and incorporate some of the feedback EPA received during prior public comment periods. These descriptions are subject to change based on EPA's further evaluation of public comments from previous proposals and on this appendix. EPA intends to post these descriptions on its website, and product labels would reference the website.

EPA seeks feedback on the example label language in the table below. Additionally, EPA is requesting specific feedback on the following questions:

- Are the descriptions of the pick list mitigation measures in Section 4 clear?
- Are there other measures that are effective in controlling erosion that should be considered?
- Although artificial mulches are commonly used in agriculture, EPA is limiting mulches to natural materials. Should EPA also consider artificial mulches as a pick list measure? If so, to what extent do artificial mulches reduce erosion? Please provide references for supporting data.

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Description	Proposed Label Language for Pesticide Products	Placement on Label	Considerations for Proposing Mitigation
	End Use Products		
Surface Water Protection Statements To be considered for products delivered via liquid spray applications to crops that do not require production in flooded fields or streams.	"**SURFACE WATER PROTECTION STATEMENT** • Do not apply during rain."	Directions for Use –Under the Restriction or Use Restriction Section	Pesticides applied to agricultural crops with Koc > 1000 in all soils that are applied by liquid spray or granules and that have ecological risk due to soil erosion (movement of the pesticide when it sorbs to soil). Note: A pesticide with Koc's > 1000 is strongly adsorbed onto soil and organic matter.
Erosion Mitigation for Soil-sorbed Pesticides To be considered for products delivered via liquid spray applications to crops that do not require production in flooded fields or streams.	"**EROSION MITIGATION** Users of this product must access the **[website address]** and follow the instructions in the descriptions for one of the following mitigation measures: • Vegetative filter strip (20 ft minimum width) • Field border • Field terracing/ contour buffer strips • Contour farming • Cover cropping • No/reduce tillage (residue management) • Grassed waterways • Riparian buffer zone/ riparian herbaceous zone • Vegetative/grassed ditch banks • Runoff retention pond/ water and sediment control basin/ sediment catchment basin/ constructed wetland • Strip cropping • Vegetative barriers • Mulching with natural materials • Alley Cropping"	Directions for Use – Under the Restriction or Use Restriction Section	Pesticides applied to agricultural crops with Koc > 1000 in all soils that are applied by liquid spray or granules and that have ecological risk due to soil erosion (movement of the pesticide when it sorbs to soil). Note: A pesticide with Koc's > 1000 is strongly adsorbed onto soil and organic matter.

Reference for Section 3

Dosskey, Michael G, MJ Helmers, and Dean E Eisenhauer. 2008. "A Design Aid for Determining Width of Filter Strips." *Journal of Soil and Water Conservation* 63 (4): 232–41.

4. Interim Ecological Mitigation #1 and #2: Runoff and Erosion Mitigation Pick List Descriptions

This section describes the runoff and erosion mitigation pick list measures referenced earlier. These descriptions identify the minimum requirements (indicated in **bold** text) for each measure. The descriptions do not provide the prescriptive design elements for these measures. To better understand the descriptions, it may be useful for individuals to first understand the basics of sheet flow or concentrated flow. Sheet flow is when water flows in a thin layer. The greater the distance that water must flow (and based on field topography), the more that sheet flow will become concentrated flow, which can lead to significant sediment erosion.

Because implementation of specific mitigation measures varies by crop and location, pesticide users adopting one or more of these measures would be encouraged to consult with local specialists experienced in planning, building, and maintaining these mitigation measures. Additionally, some measures may have specific state and/or local laws and regulations that must be followed.

The descriptions of the mitigation measures included in this appendix are adapted from the National Pollutant Discharge Elimination System (NPDES) Permit Writers' Manual for CAFOs and literature listed under "Description References" below. For further discussion and consideration of the application of these mitigation measures, see EPA's webpage on non-point source pollution reduction in agriculture and National Management Measures to Control Nonpoint Pollution from Agriculture (Chapter 4).

Vegetative Filter strips (on-field)

Filter strips are managed on-field areas of grass or other permanent herbaceous vegetation that intercept and disrupt flow of runoff, trap sediment, and reduce pesticide concentrations in water. Generally, a filter strip can vary in width (typically 20 to 120 feet wide). However, minimal distances for effective vegetative filter strips are 20 feet for sediment runoff and 30 feet for water runoff. Filter strips are usually planted with native grasses and perennial herbaceous plants. Nutrients, pesticides, and soils in the runoff water are filtered through the grass, potentially adsorbed by the soil, and potentially taken up by the plants. The effectiveness of filter strips to reduce pesticide loading into an adjacent surface water body depends on many factors, such as topography, field conditions, hydrologic soil group, antecedent moisture conditions, rainfall intensity, properties of the pesticide, application methods, width of the filter strip, and types of vegetation within. Therefore, risk reductions obtained from the use of filter strips may vary. Its use can support or connect other buffer practices within and between fields.

Establish and maintain vegetative filter strips such that the area immediately upslope must eliminate or substantially reduce concentrated flow and promote surface sheet flow runoff. The design and maintenance must consider a 10-year lifespan for the vegetative filter strip. Where there is water moving across a field that is likely to move soil, structural elements must be added within the field to prevent erosion and promote sheet flow across the filter strip.

This may be most easily achieved by aligning rows as closely as possible so that they are perpendicular to the slope. Use of water bars or berms to break up the concentrated flow and divert concentration flow back into the field is another useful tool to promote sheet flow. Reduced tillage practices, especially near the field border strip, will result in less sediment loading and the best performance of a vegetative filter strip.

Permanent filter strip vegetative plantings must be harvested or mowed as appropriate (producers enrolled in conservation programs need to follow specific mowing and maintenance restrictions) to encourage dense growth and maintain upright growth.

The maintenance program must keep vegetation tall in spring and early summer to help slow runoff flow, maximize disruption of concentrated flow, and reduce the chance of structural damage. Regular maintenance must also include inspection after major storms, removal of excess trapped sediment, and repair of eroding areas.

Grassed Waterways (on-field and off-field)

Grassed waterways are natural or constructed vegetated channels designed to direct surface water, flowing at non-erosive velocities, to an outlet that is not likely to erode (e.g., another vegetated channel, an earth ditch). Grassed waterways are used to prevent significant erosion. In concentrated flow areas, grassed waterways can act as an important component of erosion control by slowing the flow of water and filtering sediment.

Other benefits of grassed waterways include the safe disposal of runoff water, improved water quality, improved wildlife habitat, reduced damage associated with sediment, and an improvement in overall landscape aesthetics. Grassed waterways are usually planted with perennial grasses, preferably native species where possible. Some common grass species used in waterways are Timothy, tall fescue, perennial ryegrass and Kentucky bluegrass.

The user must establish a maintenance program to maintain waterway capacity, vegetative cover, and outlet stability. Do not damage vegetation by machinery, herbicides, or erosion. Grassed waterways must be inspected regularly, especially following heavy rains. Any damage or disruptions must be repaired immediately by filling, compacting, and reseeding. Sediment deposits must be removed to maintain capacity of grassed waterway. Maintain a healthy, dense, and functional grass strip. Runoff outflow must be directed to a system such as another grassed waterway, an earthen ditch, a grade-stabilization structure, a filter strip, water or sediment basin, or other suitable outlet with adequate capacity to handle the runoff and prevent significant erosion.

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Field Border (off-field)

A field border is defined as a strip of permanent vegetation established at the edge or around the perimeter of a field. A field border can reduce runoff-based erosion and protect soil and water quality by slowing the flow of water, dispersing concentrated flow, and increasing the chance for soil infiltration.

Use of a field border can support or connect other buffer practices within and between fields.

Establishment and maintenance of the field border and land immediately upslope of the border must aim to eliminate or significantly reduce concentrated water flow and promote surface sheet flow runoff.

To prevent significant erosion within a field border, **concentrated flow must be broken up or redirected**. This may be achieved by aligning the field border and planting rows as closely as possible in a direction that is perpendicular to the slope. Use of water bars or berms to divert concentrated flow back into the field is another useful tool to break up the concentrated flow and promote sheet flow into the border.

A field border must have a minimum width 30 feet for the purpose of reducing pesticides in runoff and be composed of a permanent dense vegetative stand. This stand must be composed of stiff upright grasses. Non-woody flowering plants may also be included in a well-managed border.

Reduced tillage practices, especially near the field border strip, will result in less sediment loading and the best performance of the field border in reducing runoff.

Inspect field borders after major storms and repair eroding areas.

Cover Crop (on-field)

A cover crop is a close-growing crop that temporarily protects the ground from wind and water erosion. Common cover crops include cereal rye, oats, clover, crown vetch, and winter wheat or combinations of those crops. Cover crops are most often used when low residue-producing crops are grown on erodible land. Cover crops increase soil stability, reduce runoff, and reduce erodibility of field soils.

The cover crop must be planted and remain on the field up to the field preparation for planting the crop.

Crop insurance allows for cover crop flexibilities and producers should be mindful of those flexibilities and guidelines.

Planting directly into a standing terminated, mowed, or rolled cover crop will provide the greatest benefit for reducing runoff. Cover crops may be used in conjunction with reduced

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tillage practices to further reduce surface runoff from production fields.

Contour Buffer Strips (on-field)

Contour buffer strips are strips of permanent herbaceous vegetation, primarily of perennials such as grass, alternated with wider cultivated strips that are farmed on the contour. Contour buffer strips help to manage runoff and trap sediment. Because the vegetated buffer strip is established on the contour, runoff flows evenly across the entire surface of the strip, reducing water and sediment erosion. The vegetation slows runoff, helping the water to soak into the soil and reducing erosion. Sediment, nutrients, and other pollutants are filtered from the runoff as it flows through the strip, thereby improving surface water quality.

The specific recommendations for establishing buffers vary from site to site.

Contour buffer strip widths must be a minimum of 15 feet. Wider distances may be appropriate based on variables such as slope, soil type, field conditions, climate, and erosion potential. Contour buffer strips are unsuitable in fields where irregular, rolling topography makes following a contour impractical.

To ensure maximum performance, **the integrity of the buffer must be maintained for the entire width and length, including:**

- The contour buffer must be harvested or mowed, reseeded, and fertilized as necessary to maintain plant density and vigorous plant growth.
- Vegetation must be kept tall in spring and early summer to help slow runoff flow, maximize disruption of concentrated flow, and reduce the chance of structural damage.
- Regular maintenance must also include inspection after major storms, removal of trapped sediment, and repair of eroding areas.

Contour Farming (on-field)

Contour farming is the use of ridges and furrows formed by tillage, planting, and other farming operations following the contour to change the direction of runoff from directly downslope to across the slope. The disruption of downslope flow slows the runoff velocity and allows for more time for runoff to infiltrate the field soils, thereby reducing runoff.

The effectiveness of contour farming to reduce soil erosion and increase infiltration of runoff is dependent on several factors including the amount of rainfall, the grade and height of row ridges, the steepness and length of the slope, the crop residue and surface roughness, and the soil hydrologic group.

Contour farming is an option on slopes between 2% and 10%, with a minimum ridge height of 1 inch, in areas with 10-year rain events less than 6.5 inches/24 hours, **and with a**

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length of slope between 100 and 400 feet.

In areas with heavier rainfall events, and/or fields with steeper or longer slopes, the function of the ridges to hold back the runoff is lessened and may result in structural failure along the contour. In those cases, the efficacy of this practice is potentially compromised.

Establish and maintain the direction of rows as close to the angle of the contour as possible.

Coupling the practice with reduced tillage practices will result in the best performance of contour farming.

Contour Strip Cropping (on-field)

In contour strip cropping, a field is managed with planned rotations of row crops, forages, small grains, or fallow in a systematic arrangement of equal width strips following the contour across a field. Crops are typically arranged so that a strip of grass or forage crop (low erosional risk because of their fibrous root system) is alternated with a strip of row crop (high erosional risk; e.g., corn). The crops are planted across the slope of the land, as in contour buffer strips. This practice differs from contour buffer strips in that it allows for crops to be planted across 100% of the field area.

Plant row crops on less than half the field and, at a minimum, 50% of the slope must be planted with low erosional risk plants (e.g., grass plants because of their fibrous root system).

The low erosional risk crops reduce erosion, slow runoff water, and trap sediment entering through runoff from upslope areas. This practice combines the benefits of contouring and crop rotation.

Contour strip cropping is not as effective if the row crop strips are too wide and **are an option on slopes of ≤10%. Establish and maintain the rows as close to the contour as possible.**

Coupling the practice with reduced tillage practices will result in the best performance of contour strip cropping.

Terrace Farming (on-field)

Terraces are described as a stair-stepping technique of creating flat or nearly flat crop areas along a gradient. They can be constructed as earth embankments or a combination of ridge and channel systems. A terrace is an earthen embankment that is built across a slope to intercept and store water runoff. Some terraces are built level from end to end to contain water used to grow crops and recharge groundwater. Others, known as gradient terraces, are built with some slope or grade from one end to the other and can slow water runoff. Both help to reduce soil erosion by slowing the velocity of runoff and increasing the time for water

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infiltration. On the field, terraces can be used as a part of an overall system based on the topography of the land. Additionally, an earthen ridge or terrace can be constructed across the slope upgrade from a field area to prevent runoff from entering the area or to direct runoff from one area of production to a common runoff collection area. Reduced tillage practices will result in less sediment loading and the best performance of a terraced farming system.

The ends of terraces, including turnrows, must be structured and maintained to prevent concentrated flow from damaging the function of the terrace. If runoff outflows are necessary, the runoff must be directed to a system such as a grassed waterway, a grade-stabilization structure, a filter strip, water or sediment basin, or other suitable outlet with adequate capacity to handle the runoff and prevent gully formation.

Strip Cropping

In strip cropping, a field is managed with planned rotations of row crops, forages, small grains, or fallow in a systematic arrangement of equal width strips. Crops are typically arranged so that a strip of grass or forage crop (low erosional risk because of their fibrous root system) is alternated with a strip of row crop (high erosional risk; e.g., corn). This practice differs from contour strip cropping in that rows do not need to be planted along a contour, which allows strip cropping to be used on land without a contour.

Alternate strips of row crops considered high erosion risk with strips. A minimum of 50% of the field must be planted with low erosional risk crops or sediment trapping cover.

The low erosional risk crops reduce erosion, slow runoff water, and trap sediment entering through runoff.

Strip cropping is not as effective if the row crop strips are too wide and **must only be implemented on slopes ≤10% slope**.

Coupling the practice with reduced tillage practices will result in the best performance of strip cropping.

No Tillage/Reduced Tillage (on-field)

This category of practices includes conservation tillage practices such as no-till, strip-till, ridge-till, and mulch-till.

Each of these involves year-round management of the amount, orientation and distribution of crop and other plant residue on the soil surface, while limiting the soil-disturbing activities used to grow and harvest crops in systems where the field surface is tilled, raked, or left undisturbed prior to planting. **For each tillage practice below, more than 30% of the surface must remain covered with plant residue.**

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- No-till/strip till: In these systems, the soil is left undisturbed from harvest to planting. Planting or drilling is accomplished using disc openers, coulter(s), and row cleaners. Weeds are controlled primarily with crop protection products.
- Strip till: In these systems, the soil is left undisturbed from harvest to planting except for strips up to one-third of the row width. (The strips could involve only residue disturbance or could include soil disturbance.) Planting or drilling is accomplished using disc openers, coulter(s), row cleaners, in-row chisels, or rototillers; cultivation can be used for emergency weed control. Other common terms used to describe strip-till, include row-till, and slot-till.
- Ridge-till: Ridge-till is a system in which seeds are planted into a seedbed prepared by scraping off the top of the ridge. The scraped-off ridge usually provides an excellent environment for planting. Ridges are formed during cultivation of the previous year's crop. Ridge-till operations consist of planting in the spring and at least one cultivation to recreate the ridges for the next year. Rows remain in the same place each year and any crop residue on the ridges at planting is pushed between the rows.
- Mulch-till: This system uses full-width tillage involving one or more tillage trips, which disturbs the entire soil surface but leaves a uniform layer on crop residue on the soil surface and is done before or during planting. Tillage tools such as chisels, field cultivators, discs, sweeps, or blades are used. Weeds are controlled with crop protection products or cultivation or both.

Vegetative Barriers (on-field)

Vegetative barriers are narrow, permanent strips of stiff-stemmed, erect, tall and dense vegetation established in parallel rows on the contour of fields to reduce soil erosion and sediment transport. These buffers function similar to contour buffer strips and may be especially effective in dispersing concentrated flow, thus increasing sediment trapping and water infiltration. Because the vegetative barrier, typically comprised of grasses, is established on the contour, runoff is restricted, reducing sheet flow and erosion from concentrated flow. The grass slows runoff, helping the water soak into the soil and reducing erosion. The specific recommendations for establishing the vegetative barrier vary from site to site.

Barrier widths are determined by variables such as slope, soil type, field conditions, climate, and erosion potential but **must be a minimum of 3 feet wide**. To ensure maximum performance, the pesticide user **must maintain the integrity of the barrier for the entire width and length, including:**

- The barrier must be harvested, mowed, reseeded, and fertilized as necessary to maintain plant density and vigorous plant growth.
- The maintenance schedule must keep vegetation tall in spring and early summer to help slow runoff flow, maximize disruption of concentrated flow, and reduce the chance of structural damage.
- Regular maintenance must also include inspection after major storms, removal of trapped sediment, and repair of eroding areas.

Vegetated Ditch Banks

A vegetated ditch bank is a sloped channel, planted with vegetation (grass or otherwise) that transports surface water at such a rate that it does not erode soil to an outlet that is not likely to erode.

- The bottom width of the (trapezoidal) vegetated ditch bank must be less than 100 ft.
- The side slope of the vegetated ditch bank must be flatter than a ratio of 2:1 horizontal: vertical.
- The depth/capacity of the vegetated ditch bank must accommodate peak runoff volume expected from a 10-year frequency, 24-hour duration storm.
- Vegetation must be selected such that the vegetation will achieve an adequate density, height, and vigor, and is stable to peak runoff volume expected from the 10-year frequency, 24-hour duration storm.

Maintenance must include ensuring a healthy grassed or vegetative surface within the vegetated ditch bank, inspections after major storms and repair to damaged areas, as well as removal and redistribution of excess sediment back to the field.

Riparian buffers (herbaceous and forest buffers)

These buffers are similar in that they reduce erosion and, at minimum, maintain water quality. **Vegetation for both buffers must be tolerant to intermittent flooding and saturated soil and be managed until established in the transitional zone between a field and an aquatic habitat. Herbaceous buffers must consist of non-woody vegetation and must have a minimal width of 2.5 times the width of the stream or 35 feet if adjacent to a larger water body. Forest buffers must be planted to trees and shrubs and must have a minimal width of 35 feet from the waterbody.**

Management of Surface and Subsurface Water on the Field

There are several conservation practices that involve management of surface and subsurface water on the field. However, for any of these practices to be an acceptable runoff mitigation strategy, **a sediment basin must be used in conjunction with practices managing surface and subsurface runoff (described below). Growers who wish to use any of these practices must follow all state and local laws and regulations and adhere to any requirements associated with conservation programs in which they are participating.**

Sediment basins: Sediment basins are used to capture runoff (with sediment) leaving the field, such that sediment has adequate time to settle out of the water column. Sediment basins are constructed by creating an embankment, excavating a dugout, or both such that the basin has an outlet. Basins are not stand-alone practices and should be used in conjunction with other runoff/erosion practices like:

- Subsurface drainage: This is a practice where an underground pipe is installed to collect and move excess water from a field.

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- Tailwater recovery systems: These systems are intended to collect, move, and temporarily store runoff water so that it can be reused later.
- Drainage water management: This conservation practice involves managing the flow of surface and subsurface drainage systems by changing the elevation of outflow.

Water and sediment control basins: This practice is effective for managing runoff, trapping sediment, and reducing gully erosion. Basins are described as an earthen embankment or basin, or a combination ridge and channel, constructed across the slope of a minor drainage area in a field. Control basins must also have an outlet so that water can be released in a manner that does not lead to damage.

Ponds are similar in function to sediment basins, as they can allow time for the sediment to settle from sediment-laden runoff drained from a field. They are also similar in design to sediment basins but have a dam as an outlet.

Constructed wetlands: Water-tolerant vegetation is used to create a manmade wetland that can provide for the biological treatment of water to improve water quality.

Maintenance of basins and ponds must include the following: ensuring a healthy vegetative surface to maintain the structural integrity of the basin/pond; inspections after major storms, repair to damaged areas, and removal of any obstructions that interfere with flow around inlets; and removal and redistribution of excess sediment back to the field.

Mulching with Natural Materials

This practice is used to reduce runoff and erosion. Natural mulches should be applied such that mulch provides **a minimum of 70 percent ground cover**. The **minimum depth of mulch must be 2 inches** such that the mulch will remain during heavy rain or winds. Vegetation-based mulches must have a carbon:nitrogen ratio greater than 20:1. If mulch needs to be held in place, appropriate measures must be used (e.g., tacking, crimping) so that the mulch remains on the field. **The mulch must be periodically inspected to ensure that the mulch is intact and repair/reinstall mulch as needed**.

Alley Cropping

Alley cropping is effective at reducing surface water runoff and erosion. This practice involves trees or shrubs being planted in single or multiple rows where other commodities (i.e., agronomic or horticultural crops or forages) are planted in the alleys of the trees or shrubs. **Trees or shrubs must be planted on or near the contour. The vegetation in the alleys must be established in conjunction with the trees/shrubs** to be effective against water erosion. For wind erosion, tree/shrubs must be planted perpendicular to erosive wind patterns. Additionally, the species of trees/shrubs planted must have deep root systems that assist in water infiltration and rapid growth rates. When possible, growers must adopt no-till/reduced tillage practices. **During the period of establishment, tree/shrubs must be maintained/replaced as needed.**

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Description References

Arora, K., J.L. Baker, S.K. Mickelson, and D.P. Tierney. 1993. Evaluating herbicide removal by buffer strips under natural rainfall. Paper No. 93-2593. American Society of Agricultural Engineers, St. Joseph, MI 49085

Arora, K., S.K. Mickelson, and J.L. Baker. 1995. Evaluating vegetative buffer strips for herbicide retention. Paper No. 95-2699. American Society of Agricultural Engineers, St. Joseph, MI.

Asmussen, L.E., A.W. White Jr., E.W. Hauser, and J.M. Sheridan. 1977. Reduction of 2,4-D load in surface runoff down a grassed waterway. Journal of Environmental Quality, 6(2):159-162.

Blanco-Canqui, H., and S.J. Ruis. 2020. Cover crop impacts on soil physical properties: A review. Soil Science Society of America Journal, 84:1527-1576. https://doi.org/10.1002/saj2.20129

Boyd, P.M., L.W. Wulf, J.L. Baker, and S.K. Mickelson, 1999. Pesticide transport over and through the soil profile of a vegetative filter strip. American Society of Agricultural Engineers. ASAE Paper no. 992077.

Cole, J.T., J.H. Baird, N.T. Basta, R.L. Huhnke, D.E. Storm, G.V. Johnson, M.E. Payton, M.D. Smolen, D.L. Martin, and J.C. Cole. 1997. Influence of buffers on pesticide and nutrient runoff from bermudagrass turf. Journal of Environmental Quality, 26:1589- 1598.

Dosskey, Michael G., M.J. Helmers, and D.E. Eisenhauer. 2008. A design aid for determining width of filter strips. Biological Systems Engineering: Papers and Publications, 40. https://digitalcommons.unl.edu/biosysengfacpub/40

Fawcett, R.S., B.R. Christensen, and D.P. Tierney. 1994. The impact of conservation tillage on pesticide runoff into surface water: a review and analysis. Journal of Soil and Water Conservation, 49(2):126-135.

Fawcett, R.S., D.P. Tierney, C.J. Peter, J.L. Baker, S.K. Mickelson, J.L. Hatfield, D.W. Hoffman, and T.G. Franti. 1995. Protecting aquatic ecosystems with vegetative filter strips and conservation tillage. Proceedings of the National Agricultural Ecosystem Management Conference. New Orleans, LA, December 13-15, 1995. Conservation Technology Information Center, West Lafayette, IN.

Groh, T.A. 2021. Concentrated Flow Paths: An Introduction. Available at: https://extension.psu.edu/concentrated-flow-paths-an-introduction

Haruna, S.I., N.V. Nkongolo, S.H. Anderson, F. Eivazi and S. Zaibon. 2018. In situ infiltration as influenced by cover crop and tillage management. Journal of Soil and Water Conservation, 73 (2) 164-172. https://doi.org/10.2489/jswc.73.2.164

Hoffman, D.W. 1995. Use of contour grass and wheat filter strips to reduce runoff losses of herbicides. Proc. Austin Water Quality Meeting, Texas A & M Univ., Temple, TX.

Magette, W.L., R.B. Brinsfield, R.E. Palmer, and J.D. Wood. 1989. Nutrient and sediment removal by vegetated filter strips. Transactions of the ASAE, 32(2):663-667.

Meyer, L.D., S.M. Dabney, and W.C. Harmon. 1995. Sediment-trapping effectiveness of stiff-grass hedge.Transactions of the ASAE, 38(3):809-815.

Mickelson, S.K. and J.L. Baker. 1993. Buffer strips for controlling herbicide runoff losses. 932084. American Society of Agricultural Engineers, St. Joseph, MI.

Misra, A., J.L. Baker, S.K. Mickelson, and H. Shang. 1994. Effectiveness of vegetative buffer strips in reducing herbicide transport with surface runoff under simulated rainfall. Paper

ED_013922_00000824-00038

No. 942146. American Society of Agricultural Engineers, St. Joseph, MI.
Misra, A.K. 1994. Effectiveness of vegetative buffer strips in reducing herbicide transport with surface runoff under simulated rainfall. Ph.D. Dissertation, Iowa State Univ., Ames, IA.
Patty, L., B. Real, and J.J. Gril. 1997. The use of grassed buffer strips to remove pesticides, nitrate and soluble phosphorous compounds from runoff water. Pesticide Science, 49:243-251.
Rankins, A., Jr., D.R. Shaw, M. Boyette, and S.M. Seifert. 1998. Minimizing herbicide and sediment losses in runoff with vegetative filter strip. Abstracts Weed Science Society of America, 38:59.
Reichenberger, S., M. Bach, A. Skitschak, and H. Frede. 2007. Mitigation strategies to reduce pesticide inputs into ground- and surface water and their effectiveness: A Review. Science of the Total Environment, 384:1-35.
Tingle, C.H., D.R. Shaw, M. Boyette, and G.P. Murphy. 1998. Metolachlor and metribuzin losses in runoff as affected by width of vegetative filter strips. Weed Science, 46:475- 479.
Webster, E.P. and D.R. Shaw. 1996. Impact of vegetative filter strips on herbicide loss in runoff from soybean (*Glycine max*). Weed Science, 44:662-671.

5. Interim Ecological Mitigation #3: Reducing Ecological Risks from Spray Drift

For many years, EPA has proposed and subsequently required application restrictions to reduce spray drift. These have commonly included windspeed restrictions, minimum droplet size restrictions, and release height restrictions. In instances where ecological risks of aerial applications have been high and these risks outweighed the benefits, EPA has proposed and subsequently required aerial application prohibitions. The table below includes example language for these measures that is regularly included in EPA decisions. EPA expects to continue to propose this language in its applicable regulatory actions.

In addition to these measures, EPA intends to propose spray drift buffers more regularly, as the benefits warrant, to further reduce ecological risks associated with spray drift. These include spray drift buffers to aquatic habitats when there is risk to non-target aquatic species due to spray drift, as well as spray drift buffers to wildlife conservation areas when there is risk to non-target terrestrial species due to spray drift. EPA is also proposing a few exemptions to these spray drift buffers. The first exemption is when a10-foot windbreak is used. For this exemption to apply, the windbreak must have single to multiple rows of trees and shrubs planted linearly between the field and the protected area in a manner that fully partitions the two areas. When established in this manner, a 10-foot windbreak would substantially reduce pesticide deposition reaches the protected habitat.

The second exemption is for pesticide applications made for conservation purposes in or around aquatic habitats. While EPA wants to assure that pesticide exposures do not adversely impact non-target species in aquatic habitats, there are many instances where pesticides are useful to protecting species in and around aquatic habitats. This exemption benefits species by allowing those applications.

The third exemption is for pesticide applications made by conservation area personnel in the conservation area. Similar to the second exemption, EPA understands that public and private conservation area landowners may need to use pesticides to further conservation goals and are not likely to use pesticides in ways that are detrimental to non-target wildlife in the conservation area.

The fourth exemption is for landowners of applicators who have completed an ESA section 7 consultation with the FWS and/or NMFS and is using a pesticide product consistent with that consultation. In this instance, pesticide applications consistent with the consultation should adequately protect non-target wildlife from pesticide exposures.

The efficacy of spray drift mitigation, including spray drift buffers, is well-established quantitatively. Based on the combinations of application restrictions and spray drift buffer requirements described in the table below, EPA expects pesticide deposition resulting from spray drift to be reduced by 50% to 90% for aerial applications, 90% to 99% for ground boom applications, and 60% to 90% for airblast applications.

EPA seeks feedback on the example label language for this mitigation detailed in the table below. Additionally, EPA is requesting specific feedback on the following questions:

- EPA is exploring using wind-directional buffers more broadly as they are less impactful to users by reducing the instances where spray drift buffers are needed to minimize ecological risk. A wind-directional buffer means that a user need only apply a drift buffer in the direction the wind is blowing, rather than all sides of a fields. Should EPA shift to requiring wind-directional buffers to reduce spray drift associated with aerial, ground boom, and/or airblast applications? Why or why not? Please be specific and support your position with data where available. Further, are there circumstances where it is more desirable to have wind-directional buffers than others? Historically, to address ecological risk (and human health risk) under FIFRA, EPA has required spray drift buffers that apply to all sides of a field that are adjacent to a water body and/or conservation area, regardless of the wind direction. More recently, however, wind-directional buffers have been proposed as mitigation measures to address listed species exposure (*e.g.*, methomyl PID) and have been included in FWS and NMFS biological opinions for malathion. The spray drift buffers in the table below apply to all sides of a field that are adjacent to aquatic habitats and/or conservation areas; however, pending public comment on wind-directional drift buffers, EPA may propose wind-directional buffers. Example language for a wind-directional buffer would be the following:
    - "Do not apply within [X] feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, permanent streams, wetlands or natural ponds, estuaries, and commercial fish farm ponds) *when the wind is blowing toward the aquatic habitat*."
    - "Do not apply within [X] feet of any conservation areas (e.g., public lands and parks, Wilderness Areas, National Wildlife Refuges, reserves, conservation easements) *when the wind is blowing toward the conservation area*."

- Exemptions for the 10-ft windbreak, applications for conservation purposes, and applications covered by a completed ESA consultation would still apply to wind-directional buffers.

- Should EPA consider reduced distances for spray drift buffers when other drift reduction technology is used (e.g., drift reducing agents/adjuvants)? If so, to what extent do other drift reduction technologies reduce spray drift such that buffer distances can be reduced? Please provide references for supporting data.
- With regard to spray drift buffers for conservation areas, is the list of examples of conservation areas representative of areas to be protected? Do you have suggestions for alternative or additional descriptions?

Description	Proposed Label Language for Pesticide Products	Placement on Label	Considerations for Proposing Mitigation
	End Use Products		
Application Method Prohibition (*e.g.*, aerial) *Note:* EPA has regularly proposed and subsequently required this language on labels when it has determined that the risks of aerial applications outweigh the benefits.	• "Do not apply through aerial application" or • "Do not apply spray via aerial application"	Restrictions Section Under Directions for Use	Pesticides applied to agricultural crops resulting in high ecological risks from aerial spray drift where there are low benefits to the use of the pesticide via aerial application.
Spray Drift Management Application Restrictions To be considered for products that are applied as liquid with aerial equipment. *Note:* EPA has regularly required this language on labels consistently over the past several years.	**"MANDATORY SPRAY DRIFT MANAGEMENT** **Aerial Applications**: • Do not apply during temperature inversions. • Do not release spray at a height greater than 10 ft above the ground or vegetative canopy, unless a greater application height is necessary for pilot safety. • Applicators must select nozzle and pressure that deliver medium or coarser droplets in accordance with American Society of Agricultural & Biological Engineers Standard 641 (ASABE S641).	Directions for Use, in a box titled "Mandatory Spray Drift Management" under the heading "Aerial Applications" Placement for these statements should be in general directions for use, before any use-specific directions for use.	Pesticides applied to agricultural crops via liquid spray using aerial equipment with ecological risk due to spray drift.

Description	Proposed Label Language for Pesticide Products	Placement on Label	Considerations for Proposing Mitigation
	End Use Products		
	[For 15 mph windspeed restriction] • If the windspeed is 10 miles per hour or less, applicators must use ½ swath displacement upwind at the downwind edge of the field. When the windspeed is between 11-15 miles per hour, applicators must use ¾ swath displacement upwind at the downwind edge of the field. [For 10 mph windspeed restriction] • Do not apply when windspeeds exceed 10 miles per hour at the application site. • The boom length must not exceed **[EPA to choose 65% or 75% based on risks and benefits]** of the wingspan for airplanes or **[EPA to choose 75% or 90% based risks and benefits]** of the rotor blade diameter for helicopters. OR • Do not apply when wind speeds exceed 15 mph at the application site. If the windspeed is greater than 10 mph, the boom length must be 65% or less of the wingspan for fixed wing aircraft and 75% or less of the rotor diameter for helicopters. Otherwise, the boom length must be 75% or less of the wingspan for fixed-wing aircraft and 90% or less of the rotor diameter for helicopters."		
Spray Drift Management Application Restrictions To be considered for products that are applied as liquid with airblast equipment	**"MANDATORY SPRAY DRIFT MANAGEMENT** **<u>Airblast Applications:</u>** • Sprays must be directed into the canopy. • Do not apply when wind speeds exceed **[10 or 15]** miles per hour at the application site.	Directions for Use, in a box titled "Mandatory Spray Drift Management" under the heading "Airblast Applications"	Pesticides applied to agricultural crops via liquid spray using airblast equipment with ecological risk due to spray drift.

Description	Proposed Label Language for Pesticide Products	Placement on Label	Considerations for Proposing Mitigation
	End Use Products		
Note: EPA has regularly required this language on labels consistently over the past several years.	• User must turn off outward pointing nozzles at row ends and when spraying outer row. • Do not apply during temperature inversions."		
Spray Drift Management Application Restrictions To be considered for products that are applied as liquid with ground boom equipment *Note:* OPP EPA has regularly required this language on labels consistently over the past several years.	**"MANDATORY SPRAY DRIFT MANAGEMENT** **<u>Ground Boom Applications:</u>** • Do not release spray at a height greater than **[typically 2-3 ft]** feet above the ground or crop canopy. • Applicators must select nozzle and pressure that deliver medium or courser droplets in accordance with American Society of Agricultural & Biological Engineers Standard 572 (ASABE S572). • Do not apply when wind speeds exceed **[10 or 15]** mph at the application site. • Do not apply during temperature inversions."	Directions for Use, in a box titled "Mandatory Spray Drift Management" under the heading "Ground Boom Applications"	Pesticides applied to agricultural crops via liquid spray using ground boom equipment with ecological risk due to spray drift.
Spray Drift Buffer to Aquatic Habitats To be considered for products that are applied as liquid with aerial (except Ultra Low Volume/ULV applications for mosquitocides), groundboom, or airblast equipment	Aerial (non-ULV): • "Do not apply within **[typically 50-150]** feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, permanent streams, wetlands or natural ponds, estuaries, and commercial fish farm ponds). Ground: • "Do not apply within **[typically 15-50]** feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, permanent streams, wetlands or natural ponds, estuaries, and commercial fish farm ponds). When using a hooded spray boom, do not apply	Directions for use – Under the Restriction or Use Restriction Section	Pesticides applied to agricultural crops via liquid spray with aquatic risk due to spray drift.

Description	Proposed Label Language for Pesticide Products	Placement on Label	Considerations for Proposing Mitigation
	End Use Products		
	within **[10-30]** feet of these protected areas." Airblast: • "Do not apply within **[typically 15-25]** feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, permanent streams, wetlands or natural ponds, estuaries, and commercial fish farm ponds)." All Application Methods Above: • "Applications are exempted from this spray drift buffer requirement when: 1) A 10-ft high windbreak is established between the field and the aquatic habitat. For this exemption to apply, the windbreak must have single to multiple rows of trees and shrubs planted linearly between the field and the aquatic habitat in a manner that fully partitions the two areas; 2) The application is conducted for conservation purposes (e.g., to control invasive species) by federal, state, or local personnel or persons under their direct supervision; or 3) The landowner or applicator has completed an ESA section 7 consultation with U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service on the use of the product."		
Spray Drift Buffer to Wildlife Conservation Areas For products that are applied as liquid with	Aerial (non-ULV): • "Do not apply within **[typically 50-150]** feet of any conservation areas (e.g., public lands and parks, Wilderness Areas, National	Directions for use – Under the Restriction or Use Restriction Section	Pesticides applied to agricultural crops via liquid spray with terrestrial risk due to spray drift.

Description	Proposed Label Language for Pesticide Products	Placement on Label	Considerations for Proposing Mitigation
	End Use Products		
aerial (except Ultra Low Volume/ULV applications for mosquitocides), groundboom, or airblast equipment	Wildlife Refuges, reserves, conservation easements)." Ground: • "Do not apply within **[typically 15-50]** feet of any conservation areas (e.g., public lands and parks, Wilderness Areas, National Wildlife Refuges, reserves, conservation easements) unless using a hooded spray boom. When using a hooded spray boom, do not apply within **[typically 10-30]** feet of these protected areas." Airblast: • "Do not apply within **[typically 25-50]** feet of any conservation areas (e.g., public lands and parks, Wilderness Areas, National Wildlife Refuges, reserves, conservation easements)." All Application Methods Above: • "Applications are exempted from this spray drift buffer requirement when: 1) A 10-ft high windbreak is established between the field conservation area. For this exemption to apply, the windbreak must have single to multiple rows of trees and shrubs planted linearly between the field and the aquatic habitat in a manner that fully partitions the two areas; 2) The application is conducted by conservation area personnel or persons under their direct supervision; or 3) The landowner or applicator has completed a consultation with U.S. Fish and Wildlife Service and/or the National		

Description	Proposed Label Language for Pesticide Products	Placement on Label	Considerations for Proposing Mitigation
	End Use Products		
	Marine Fisheries Service on the use of the product."		

6. Pesticide-Treated Seed: Proposed Label Language and Considerations for Future Ecological Mitigation

The table below contains example instructions for seed treatment products currently being included in PIDs for pesticides registered for use in treating seed. Consistent with EPA's September 28, 2022 response to the treated seed petition filed by Center for Food Safety, these instructions will continue to be updated as EPA reviews currently registered pesticides. EPA also intends to issue an advanced notice of proposed rulemaking (ANPRM) to explore the option of a FIFRA section 3(a) rule to allow for enforcement of the misuse of pesticide-treated seeds.

As part of EPA's review of labels in registration review and to inform the ANPRM, EPA is considering a number of additional or changed instructions as options for reducing potential exposures to terrestrial vertebrates and invertebrates associated with treated seed uses. Examples of several options being considered are described in the following bullets. EPA requests comment on these options and any other ideas for reducing exposures to terrestrial vertebrates and invertebrates.

- Reducing pesticide dust-off: EPA is considering measures to reduce the potential for exposures to insect pollinators from treated seed dust-off. Reducing dust-off from treated seeds reduces the amount of the pesticide that abrades off the seed and that can contact insect pollinators.
    - For example, the Agency is considering whether to include instructions relating to requiring use of dust-reducing techniques and ways of measuring the efficacy of those techniques. One dust-reducing technique under consideration is applying a seed coating during treatment of the seed. If EPA proposes the use of this technique, a corresponding threshold for dust reduction and a means to measure the efficacy of the seed coating in dust-off reduction would be needed. An example of a measurement tool is the Heubach test, which measures the abrasion potential. Another dust-reducing technique under consideration is the use of fluency agents. Fluency agents increase flowability of treated seeds out of the hopper for more efficient planting, creates easier clean up, and reduces dust-off. EPA seeks comments on techniques and measurements that might be referenced in instructions to reduce dust-off. Labeling instructions do not currently address dust-off and thus instructions of this kind would be new.
- Burying spilled pesticide-treated seed: EPA is considering additional measures to reduce exposures to terrestrial vertebrates from ingestion of treated seed. Such measures could involve ensuring limited access to pesticide-treated seed that has been spilled during loading and planting by requiring a minimum depth for burying treated seeds spilled during loading and planting (such as in row ends). Current labels generally refer to covering or collecting spilled seeds.

- A 2-foot depth for burying treated seeds appears to be a practical measure for growers to avoid disturbance during plowing that may also address risk to birds and mammals from eating treated seed. In some cases, a 2-foot burial depth has already been required (e.g., at 7 CFR § 301.89-12). EPA is interested in information on common practices for burial of spilled treated seed and the estimated impacts or concerns if including a set depth (e.g., 2-foot depth).

- Disposing of excess seed after planting: Other measures being considered to reduce exposures to terrestrial vertebrates from ingestion of treated seed, and to reduce potential groundwater or surface water concerns, include additional instructions relating to disposal of excess treated seed that would not be stored and used for future plantings. Such measures could include labeling instructions for the grower to contact the registrant for information on appropriate disposal and amended registration terms and conditions to require registrants to create disposal plans and educational materials for growers. A registrant disposal plan could include disposal options and bar or condition certain methods of disposal such as combustion or composting. Current instructions, as described in the table below, refer generally to burying excess seed away from water bodies.

Description	Proposed Label Language for Pesticide Products	Placement on Label
	End Use Products	
Seed Treatment Dye Statement	**"REQUIRED DYE STATEMENT** Seed treated with this product must be visually identifiable from untreated seed by the use of an approved colorant or dye to prevent accidental use of treated seed as food for humans or feed for animals. Refer to 21 CFR, Part 2.25. Any colorant or dye added to treated seed must be cleared for use in accordance with 40 CFR, Part 153.155(c)."	Directions for Use
Seed Treatment For products allowed for on-farm seed treatment (not for distribution or sale of the seed)	"**Use of On-Farm Treated Seed (when treated seeds are not for sale or distribution)** • Store treated seed away from food and feedstuffs. • Do not allow children, pets, or livestock to have access to treated seeds. • Plant treated seed into the soil at no less than [INSERT RECOMMENDED OR REQUIRED MINIMUM DEPTH]. Ensure that all planted seeds are thoroughly incorporated by the planter during planting. Additional incorporation may be required to thoroughly cover exposed seeds. • Treated seeds exposed on the soil surface may be hazardous to wildlife. Cover or collect treated seeds spilled during loading and planting (such as in row ends). • Dispose of all excess treated seed by burying seed away from bodies of water. • Do not contaminate bodies of water when disposing of equipment wash water."	Directions for Use

	[**Note to registrant**: All other requirements regarding the use of the treated seed, which include, but are not limited to, instructions relating to endangered species protection, environmental hazard statements, maximum use rates, soil incorporation depth, plant back intervals, personal protective equipment, and storage and disposal statements, remain and must be listed.]	
Seed Treatment Seed Bag/Container Labeling For products allowed for commercial seed treatment and on-farm seed treatment (to appear on seed bag tags when treated seeds are to be sold or distributed)	**"Commercial Seed Treatment and On-Farm Seed Treatment (when treated seeds are to be sold or distributed) – Seed Bag Labeling Requirements"** **"The Federal Seed Act requires that bags containing treated seeds shall be labeled with the following statements:** • **This seed has been treated with (insert name of active ingredient of pesticide).** • **Do not use for food, feed, or oil purposes."** **"The U.S. Environmental Protection Agency requires that bags containing treated seeds shall be labeled with the following statements. Any seed treated with [PRODUCT NAME] that is sold or distributed without these statements is an unregistered pesticide, in violation of FIFRA section 12.** This seed has been treated with [INSERT PRODUCT NAME(s) (EPA REG. NO(s))] containing [INSERT NAME(S) OF ACTIVE INGREDIENT(S)]. • The contents of this bag are for planting purposes only. Do not use for food, feed, or oil purposes. • Store treated seed away from food and feedstuffs. • Do not allow children, pets, or livestock to have access to treated seeds. • Plant treated seed into the soil at no less than [INSERT RECOMMENDED OR REQUIRED MINIMUM DEPTH]. Ensure that all planted seeds are thoroughly incorporated by the planter during planting. Additional incorporation may be required to thoroughly cover exposed seeds. • Treated seeds exposed on the soil surface may be hazardous to wildlife. Cover or collect treated seeds spilled during loading and planting (such as in row ends). • Dispose of all excess treated seed by burying seed away from bodies of water. • Do not contaminate bodies of water when disposing of equipment wash water. • Dispose of seed packaging or containers in accordance with local requirements." [**Note to registrant**: All other requirements regarding the use of the treated seed, which include, but are not limited to, instructions relating to endangered species protection, environmental hazard statements,	Directions for Use

	maximum use rates, soil incorporation depth, plant back intervals, personal protective equipment, and storage and disposal statements, remain and must be listed on the seed bag tag.]	

7. Promoting Pollinator Stewardship: Proposed Advisory Language

EPA is proposing to include revised advisory language for insect pollinators in its FIFRA actions. This advisory language distills the most important information growers need to know to voluntarily reduce risk to insect pollinators. The language is intended to raise awareness of potential hazard to bees and other insect pollinators. Although this language is advisory, the goal is to promote use best management practices that applicators may consider to reduce exposures to bees, particularly managed pollinators. This language is consistent with EPA's pollinator protection strategic plan.

Because the proposed pollinator language is advisory, EPA will not use it to refine its risk assessments for insect pollinators. EPA may consider mandatory mitigation to address on-field insect pollinator risk as part of proposed FIFRA actions and/or through its ESA mitigation strategies.

The pollinator hazard statement below would apply when there is acute risk to insect pollinators from agricultural crop uses of the pesticide. The language in the statement is derived from language in EPA's Label Review Manual and appears on many labels already. Additionally, the Agency is proposing a statement outlining best management practices for pollinator protection. EPA intends to propose this statement when the ecological risk assessment identifies acute or chronic risk to insect pollinators from agricultural crop uses of the pesticide. EPA seeks feedback on the example label language in the table below.

Description	Proposed Label Language for Pesticide Products	Placement on Label	Considerations for Proposing Language
	End Use Products		
Pollinator Hazard Statement For all products applied to agricultural crops.	**[EPA to choose either statement depending on whether the pesticide displays residual toxicity:** **Extended residual toxicity not displayed:]** "This product is **[highly/moderately]** toxic to bees and other pollinating insects exposed to direct treatment on blooming crops or weeds." **[Extended residual toxicity displayed:]**	Environmental Hazards under the Heading "Pollinator Hazard Statement"	Pesticides applied to agricultural crops when there is acute risk to insect pollinators.

	"This product is **[highly/moderately]** toxic to bees and other pollinating insects exposed to direct treatment or to residues in/on blooming crops or weeds."		
Best Management Practices for Pollinator Protection For all products delivered via liquid spray applications to agricultural crops.	**"Best Management Practices for Pollinator Protection** Following best management practices (BMPs) can help reduce risk to pollinators. To protect wild and managed pollinators, the following BMPs should be implemented: • Develop and maintain clear communication with local beekeepers to help protect honey bees. To the extent possible, advise beekeepers within a 1-mile radius 48-hrs in advance of the application, and confirm hive locations before spraying. • Avoid applications when bees are actively foraging. • Apply pesticides in the evening and at night when fewer pollinators are foraging. • Use Pollinator Protection Plans when they are available. These plans are developed by stakeholders within their respective states/tribes to promote communication between growers, landowners, farmers, beekeepers, pesticide users, and other pest management professionals to reduce exposure of bees and other pollinators to pesticides. • Report suspected pollinator pesticide poisonings via EPA's Pesticide Incident Reporting website: https://www.epa.gov/pesticide-incidents. For additional resources on pollinator BMPs and Pollinator Protection Plans, visit https://www.epa.gov/pollinator-protection/tools-and-strategies-pollinator-protection."	Directions for Use – Under the Best Management Practices header after Resistance Management section	Pesticides applied to agricultural crops via liquid spray when there is acute or chronic risk to insect pollinators.

8. Ecological Incident Reporting Label Language

EPA expects to regularly propose language for pesticide labels that would provide product users with consistent guidance on how to report ecological incidents, including bee kills. EPA has proposed and subsequently required ecological incident reporting language on some labels in the past, and ecological incident reporting has been included as a reasonable and prudent measure in biological opinions issued by the Services that EPA is required to implement. EPA seeks feedback on the example label language in the table below. Additionally, EPA is requesting specific feedback on the following question:

- Are users or other people having any issues reporting bee or other ecological incidents to EPA?

Description	Proposed Label Language for Pesticide Products	Placement on Label	Criteria for Proposing Mitigation
	End Use Products		
Ecological Incidents Statement To be proposed for all products with outdoor uses	"**REPORTING ECOLOGICAL INCIDENTS**: For guidance on reporting ecological incidents, including bee kills, see EPA's Pesticide Incident Reporting website: https://www.epa.gov/pesticide-incidents"	Directions for Use, under the heading "Reporting Ecological Incidents"	All products with outdoor uses