Comments to Marin County Department of Agriculture's 10-Year Invasive Weed Management Plan for Marin County
Updated Oct. 28, 2013

To: Department of Agriculture
From: MOMS Advocating Sustainability (MOMAS)

Below are MOMAS' comments regarding The Department of Agriculture's 10-Year Invasive Weed Management Plan for Marin County ("Plan")

We are in agreement with the overall concept of the County's Plan, in particular, we agree it is imperative that we address non-native weeds in Marin County with a collaborative, science-based approach grounded in robust Integrated Pest Management (IPM) principles. However, we have many concerns with the proposed Plan, in particular with the recommendation to use herbicides to manage and control non-native plants. Our concern is heightened by the proposed application of herbicides by spraying, both by workers on the ground and by aerial spraying. And the non-biodegradable, highly mobile and persistent nature of the herbicides proposed. We have specific comments, questions and proposed recommendations below, which we would like to discuss.

We agree with the following elements of the Plan:

1. Long-term plan for monitoring and controlling the spread of non-native weeds effecting pastureland, rangeland and natural areas in Marin County is necessary.
2. Prevention of weed growth is the primary goal and most effective and low cost solution.
3. Collaborative and science-based approach grounded in robust IPM principles is essential for combating and managing the weeds.
4. We appreciate the Department of Agriculture's transparency and willingness to involve the public at the outset of this Plan.
5. Education and outreach for landowners, ranchers, public and industry about non-native weeds and reducing the use of herbicides is an important aspect of the Plan. We would like to see more details and collaborate in this aspect of the Plan.

We have questions and concerns about the following elements of the Plan:

1. **Plan's failure to do anything to address root cause of introduction of non-native weeds**

The Plan (Attachment A, p.8, first full paragraph) acknowledges the primary root cause for the weed problem is imported contaminated feed containing invasive weeds yet does not include specific action within the four corners of the plan to address it. Any plan that we support would need to address root causes by including

clear and specific action to prevent, rather than just respond to, the problem, such as requiring that all feed products sold in Marin County be certified weed-free. Steps to control or eliminate the weeds without having a prevention plan firmly in place first are a waste of resources, and will likely need to be repeated.

We note the apparent paradox that weed-free feed may have been treated with herbicides to obtain its weed-free certification and thus is not certified organic; which is not a viable solution. We support the County's plan to meticulously research options for obtaining weed-free feed that also meets strict organic criteria. We recommend prioritizing funding and cost-share solutions that include working with suppliers of weed-free feed, and encouraging demand for organic, (ideally) locally sourced, weed-free feed to stimulate the market for this feed supply.

2. **Plan's failure to consider natural/organic alternatives**

We have concerns with the non-biodegradable nature of the proposed herbicides and with their potential for contaminating groundwater because of their high mobility in soil. There is no evidence that the Plan's authors have considered the use of organic alternatives approved to control weeds in California. Several examples of organic herbicides include:

a. Pharm Solutions Weed Pharm, CA Registration #81936-1-AA-81935
b. Summerset Alldown Concentrate, CA Registration #84069-1-AA
c. Vinagreen, CA Registration #85208-1-ZB

The three herbicides above use acetic acid as an active ingredient, and are accepted by EPA and CA DPR to kill annual and perennial broadleaf weeds, annual grasses and perennial grasses and sedge.

There are likely additional natural herbicides. Moreover, there are alternatives to herbicides for weed control, including manual control, controlled burns, the use of weed flamers and hot water weeders.

We would be willing to research and collaborate with the County to identify and assess effective organic and non-herbicide options.

3. **Concerns with Milestone Pesticide**

Milestone's Product MSDS states that the herbicide (in particular, the Aminopyralid Triisopropanoline Salt) is not readily biodegradable, which means that it will remain in the soil, water, and ecosystem. Although the manufacturer states that acute hazards are relatively low, chronic hazards are not addressed for all components of the herbicide (notably, chronic effects are only mentioned in relation to aminopyralid, a related chemical; chronic hazards are not addressed for aminopyralid triispropanoline salt or triisopropanolamine themselves). Other effects, such as endocrine disruption, are not addressed at all. Adding to the concern regarding the lack of biodegradability is the pesticide's high potential to migrate in soil, making it a potential groundwater contaminant.

According to Dr. Michelle Perro, Advisory Board Member for MOMAS, aminopyralid, the active ingredient in Milestone, caused toxicity in animal feeding

studies. Changes in the stomach lining in dogs showed increased growth (hyperplasia and hypertrophy) of the mucosal epithelium. It also caused increased growth of lymphoid (immune) tissue. These changes are analogous to similar changes reported in the original studies of glyphosate (RoundUp) found by Pusztai in 1994 of hyperplasia and damage to the gastrointestinal lining in rats. Clinical manifestations of the toxicity from glyphosate have shown a profound change in children's digestive function and abnormal bacteria in their intestines. The disruption in gut microbiota has been shown to occur in chicken studies. No human studies have been reported to date.

Use of Milestone has effectively been banned in the Northeast because of concerns about it entering compost and impacting the food system: http://vtdigger.org/2013/06/10/herbicide-that-contaminated-green-mountain-compost-now-effectively-banned-in-vermont/

Milestone's inert ingredients are not disclosed, yet they make up 59.4% of the product. Inert ingredients, such as solvents, surfactants, and preservatives, can be as harmful or more harmful than active ingredients in a pesticide or herbicide. Round Up herbicide is an example where inert ingredients in the product were found to be toxic to human cells: http://www.scientificamerican.com/article.cfm?id=weed-whacking-herbicide-p

4. **Concerns with Transline Pesticide**

Clopyralid, the active ingredient in Transline, does not biodegrade under aerobic or anaerobic conditions, making it highly persistent. It is also highly mobile in soils. Clopyralid is a potential ground water contaminant and Pesticide Action Network (PAN) Bad Actor pesticide. Clopyralid causes birth defects in test animals. The MSDS states that chronic exposure of clopyralid to test animals causes liver and kidney effects, tumors, and lethargy. It is also toxic to birds on an acute basis.

Clopyralid is known for its ability to persist in dead plants and compost, and has accumulated to phytotoxic levels in finished compost in a few highly publicized cases. The persistence in compost is a problem because it stunts the growth of many species of plants to which compost containing its residues is applied. This means it may inhibit the growth and viability of native plants and agriculture, as found with Milestone.

Clopyralid remains unchanged through the digestive system of ruminants, so it can end up in manure. It was recently found in organic dairy manure, meaning its use may impact the integrity of organic dairy production in Marin County. http://www.sonomacountygazette.com/editions/news200709_tainted.html

The herbicide's ethylene oxide (classified by International Agency for Research on Cancer (IARC) as a "known human carcinogen") and propylene oxide (classified by IARC as "possibly carcinogenic to humans") components are also persistent, non-biodegradable chemicals. Ethylene oxide is also mutagenic, irritating, and is listed under the Rotterdam Convention on Prior Informed Consent, an international treaty aimed at providing a warning system for trade of hazardous pesticides.

Vapors from the Transline pesticide can travel long distances and, because they are heavier than surrounding air, they are likely to settle and accumulate in low-lying areas. (This makes use in ridged/valley areas particularly problematic.) Decomposition byproducts of the pesticide include chlorinated pyridine, hydrogen chloride (see safety issues under http://en.wikipedia.org/wiki/Hydrogen_chloride) and nitrogen oxides.

The MSDS for Transline states that the fumes from the herbicide may be toxic if the product is involved in a fire, increasing the health hazards associated with fire on areas treated with the herbicide.

Inert ingredients for the herbicide comprise 59.1% of the herbicide formulation, and other than Isopropyl alcohol and polyglycol, which comprise less than 1% of the total formulation, are undisclosed. Potential endocrine disruption is not addressed for any ingredient.

5. **Small amounts of herbicides can cause profound health impacts; US government approval process for pesticides is seriously flawed and cannot guide our actions; children are at greater risk**

"The dose makes the poison" is no longer accepted as scientifically accurate. Low dose effects of hormone disruptors have been linked to disease, including neurobehavioral disorders, obesity and immune dysfunction. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3339483/?report=classic Also, Children are at a much greater risk from even small amounts of pesticides. http://www.ehjournal.net/content/11/1/83

We don't accept that if State and Federal guidelines are followed, that this implies safety. EPA's approval process for pesticides is grievously flawed and does not provide proof of safety for the public, wildlife or our ecosystem. http://www.ipsnews.net/2013/03/u-s-pesticide-approval-process-grievously-flawed/

6. **Cost analysis for herbicide spraying does not reflect true costs from spraying**

The Plan estimates the "actual" costs for ground spraying and aerial spraying. However, it does not address external costs related the spraying such as:

- Health impacts/costs to schools, hospitals, business (from work absences by employee illness and parents staying home with sick children), chronic illness, etc. from exposure to Marin citizens through water, air, in plants (agriculture) and local dairy production;
- Impacts/costs borne by local wildlife;
- Costs to natural regeneration of plants/biodiversity because of degradation of soil and plant pathways/soil microbial systems, see e.g., http://www.ncbi.nlm.nih.gov/pubmed/21084388
- Possible impact on pollinators;
- Costs borne by organic farmers (see #7 below)

7. Plan unfairly burdens organic farmers

Attachment A, page 4, last paragraph of the Plan states that "Unfortunately, there are no herbicides currently approved for certified organic sites that are effective against woolly distaff thistle, purple starthistle, and other invasive weeds. Any unapproved herbicide used on a certified organic site would require the specific area treated to lose its certified organic status for three years. It would take at least two years of herbicide applications to effectively gain the upper hand on moderate to large invasive weed infestations. This means the treated area could not be certified organic again for at least five years." The Plan anticipates, we believe unrealistically, that organic farmers will be willing to take portions of their organic farms out of production for a minimum of five years while this spray program is implemented.

The Plan is an unacceptable burden on Marin's organic farmers and is in direct contradiction to the values of residents in Marin County. Will organic farmers feel pressured by the Department of Agriculture, a regulatory agency, to agree to this Plan? Marin Organic, embraced by Marin's residents, states that its goal is to create the first all organic county in the nation. http://marinorganic.org/all_organic.php The Plan is a step backwards in relation to that goal as the non-organic herbicide spraying destroys any potential new viable organic crop or pasture land for a minimum of 5 years, and if used on or near an organic farm, reduces the amount of land already dedicated to organic farming.

Even if organic farmers are not required to treat their land, drift from aerial pesticide sprays threatens organic farmers who wish to remain certified organic and don't agree to accommodate this herbicide spraying. According to the California Department of Pesticide Regulation, "There are thousands of reported complaints of off-target spray drift each year.http://www.cdpr.ca.gov/docs/dept/factshts/epadoc.htm Other concerns for organic farming, in addition to drift, include: groundwater contamination; mobility and persistence of herbicides in the ecosystem generally; persistence in animal feed and compost; interference with organic pastureland; inhibiting new plant growth, including agricultural growth (see, e.g., http://vtdigger.org/2013/06/10/herbicide-that-contaminated-green-mountain-compost-now-effectively-banned-in-vermont).

8. Plan focuses on acute hazards w/o consideration of chronic hazards

As an overall comment, we realize that the County is making efforts to select herbicides with relatively low hazard profiles. The problem is that all herbicides are designed to be lethal to plants, and both herbicides proposed in the Plan are highly persistent and thus will remain in our ecosystem (and most importantly, our water), creating chronic exposures that have not been studied. As noted above, the information about these chemicals is incomplete; no information is available on the product MSDSs regarding other potential harmful effects, such as endocrine disruption, and chemical manufacturers have no obligation and no motivation to develop this data. We can't afford to introduce these chemicals into our environment, nor is it necessary to do so because there are safer alternatives.

9. Plan does not provide adequate limits or specificity regarding proposed herbicide treatments

The Plan states that, "Herbicides would only be recommended when other non-herbicide control options were determined impractical, and only to gain the upper hand on larger invasive weed infestations. Depending on which invasive weed is being controlled, it may take one application each year for more than two years to be able to shift to mechanical methods." Attachment A, page 3, Paragraph 3. The Plan also states that Milestone and Transline are two of the herbicides primarily used to control large and/or inaccessible infestations of noxious and invasive weeds in rangelands, pastureland and open space.

There is no specificity or limits in the Plan with regard to the types of herbicides used, amount of herbicides allowed for use, how they will be applied, where the proposed treatments will take place, or what criteria would be used to determine when the treatments could be stopped and how the landscape will be maintained over the long term so that perpetual spraying is not needed. The Plan does not limit the time-frame for allowed herbicide use. The Plan does not describe exactly how many acres will be treated, does not specify what properties or land will be treated, or what organic farms will be impacted. The Plan does not state whether buffer zones will be required around waterways, sensitive habitats, organic pastureland or farmland, or schools. We do not know what it means to "gain the upper hand." This type of statement must be defined and measurable. We cannot support any plan that does not have specificity and clear limits in the event that herbicides are used as a last resort.

Recommendations:

1. No aerial spraying will be authorized

Aerial spraying is prone to accidents, creates drift, is imprecise, and is simply too risky. Aerial spraying will expose the public, wildlife, our waterways, organic farmland and pastureland to these widespread, highly persistent herbicides, with many risks to humans, animals, organic farming and plants as described in detail above. In light of risks to public health and safety and risks to wildlife, the risk from aerial spraying outweighs the risks from the non-native weeds, especially when there are non-chemical alternatives available for combating these weeds (see below) and the effects of aerial spraying would be temporary. We cannot agree to any plan that includes aerial spraying as a component of the plan.

2. A clear herbicide-free strategy should be outlined in the Plan

A strategy for combating the non-native weeds should include the following approach:

- **Prioritize prevention in the Plan:** The Plan must outline a strategy for carefully monitoring uninfested areas, particularly in spaces close to inaccessible areas. The Plan must include specific action to address and eliminate the root cause of the weed problem, as described above.
- **The Plan should expressly describe use of non-herbicide methods to treat the weeds:** The Plan should have a specific step-by-step description,

and budget, for using prescribed burns, mowing, digging/manual control, weed flamers, and hot-water weeders as the primary method for addressing the weeds. According to the information below, both weeds can be dug out or mowed before they set seed. They can also be addressed in a given year by prescribed burning. Both strategies will decrease thistle the following year; but there will be new growth because of the seed bank. Sites must be continually managed until the thistle is eradicated; prevention measures must remain in place thereafter. If the infestation is relatively new, the seed bank will be smaller, and there will be fewer years of maintenance. Funding for the Plan should prioritize this non-herbicide work; and a volunteer coordinator position should be considered (similar to the volunteer coordinator position at MMWD).

Below is information about ways to manage the weeds primarily at issue in the Plan:

Woolly distaff thistle: http://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=7113

Purple starthistle - http://wric.ucdavis.edu/information/natural%20areas/wr_C/Centaurea_calcitrapa-iberica.pdf

3. The Plan should include untreated areas

The Plan should be carefully crafted to include as many sites as possible where no herbicides whatsoever are used (i.e., where the infested sites are handled manually by digging/grubbing, mowing or burning PLUS a commitment to maintenance to ensure eradication over successive years.) The selection of these sites should prioritize exposure issues (e.g., are they near schools, organic farms, sensitive habitat, or waterways?) and consider site conditions such as accessibility and size.

The Plan should also include areas where weeds are not treated in any way, but the weeds remain in a controlled space and their spread is prevented. As an example, at the El Cerrito recycling center in Alameda County, there is a steep and rocky hillside (essentially a small mountain) covered in Pampas grass. This area is inaccessible for hand weeding. The best approach for removal in such cases is prescribed/control burn. However, burning is not possible in this location because it is too close to property.

In the El Cerrito case, volunteers remove weeds in the area at and around the bottom of this steep rock; the steep hillside remains covered in Pampas; in this way, the area of non-native species is contained.

4. Organic farms should never be treated with unapproved herbicides

It is unreasonable and economically unfeasible to burden Marin's organic farmers with removing portions of their property from organic farming to accommodate this Plan. Weeds on or around organic farms and pastureland should be removed by non-herbicide methods.

5. Find safer alternatives to two proposed herbicides

The Department of Agriculture should make every effort to avoid using the two proposed herbicides (Transline and Milestone) because of concerns identified above, and to find alternatives that are less toxic and persistent, and which disclose all ingredients, including inert ingredients (such as the organic alternatives described above). All other possible alternatives should be considered and tried before resorting to an herbicide, and only herbicides approved for organic use should be considered at any time.

6. Best management practices and restrictions around herbicide use

If herbicides are used, then best management practices must be utilized to monitor and ensure success, and clear restrictions must be placed on the use of herbicides.

- **Establish publicly available, clear success criteria and reasons for herbicide use for each site:** If herbicides are used, then for each plot of land, there must be a specified scientifically-based reason why non-herbicide methods are not available and the site must not be left untreated (see #3 above). Cost alone is not a justification or basis for resorting to the use of herbicides. Once that case is established, then clear and measurable treatment goals must be described, monitored and available on the Department of Agriculture's website for public review for each site to be treated.
- **Place limits on amounts of herbicides allowed per acre and time-frame for herbicide use:** If herbicides are used, limits must be placed on the amount of herbicides allowed per acre on an annual basis; and the length of time that herbicides are allowed for use under this approval process (no more than 2-years per site).
- **Limit areas to be sprayed:** If spraying is to take place, crews should manually remove plants beyond the primary infestation – essentially working from the outside toward the infestation. This will eliminate the outliers and reduce the area to be sprayed to only the primary infestation.
- **Buffer zones:** If herbicides are to be used, then buffer zones must be designated around homes, schools, sensitive habitats, waterways, organic farms and organic pastureland.
- **Discontinue use if goals not met:** The Department of Agriculture must discontinue herbicide use if incremental success criteria are not met.

7. Public approval process triggered if herbicides are recommended for use beyond two-year eradication period

If after a two-year period at any particular site where herbicides are used, the Department of Agriculture seeks to use additional herbicides, the Plan must provide that this triggers a new public approval process subject to Board of Supervisor's review and approval, including a public hearing, before any further herbicides may be authorized for use.

8. **Yearly independent audit**

The Plan should include an audit by an independent licensed professional with expertise in Integrated Pest Management to determine whether the limitations set

forth in the Plan are followed. In particular, the auditor should evaluate the amount of herbicides used, locations used, and whether best management practices are followed properly including whether the Department of Agriculture is on track to meet success criteria or whether herbicide use, if any, should be discontinued.