



# TOWN OF FAIRFAX

## STAFF REPORT

### November 6, 2013

**TO:** Mayor and Town Council

**FROM:** Michele Gardner, Town Clerk

**SUBJECT:** Authorization to become a signatory to MOMAS Draft Comments regarding the Marin County Department of Agriculture's 10-Year Invasive Weed Management Plan

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#### **RECOMMENDATION**

Become a signatory to MOMAS draft Comments

#### **DISCUSSION**

Councilmember Bragman prepared the attached memo, urging Fairfax to become a signatory to the Comments drafted by Moms Advocating Sustainability (MOMAS) in response to the County's 10-Year Invasive Weed Management Plan. The Proposed 10-Year Plan and MOMAS draft Comments are also attached.

#### **FISCAL IMPACT**

None

Memorandum to Fairfax Town Council Re: County of Marin Ten Year Invasive Weed Plan

The County of Marin, through the Department of Agriculture in conjunction with the University of California Cooperative Extension, has submitted a draft plan to address invasive weeds in public lands in our county. A draft summary of that plan is attached hereto. Of concern to the Fairfax community is the inclusion in the plan of the application, including possible aerial spraying, of toxic pesticides.

The use of toxic pesticides is based upon the assumption that application of those substances is the most "cost effective" means of eradicating the target species. The draft analysis does not include a discussion of human health impacts in the cost benefit analysis nor has it addressed the related issues of pesticide spray drift, contamination of organic agricultural sites, and impacts on wildlife including sensitive fish and amphibian species.

Moms Advocating Sustainability (MOMAS) has submitted draft comments about the plan which provide an excellent review of the concerns and challenges presented by the plan. A copy of MOMAS draft comments are attached hereto.

The Town of Fairfax has a longstanding policy which discourages the use of toxic pesticides within our boundaries. Chapter 8.52 of the Fairfax Town Code specifically prohibits the use of them on public lands and requires "neighbor notification" if private usage greater than spot application of nine square feet or more is proposed. (8.52.090).

While no legislation has yet been proposed, our council has also considered addressing invasive non-native weeds within our own boundaries consistent with our Town's longstanding ordinance. Further, we were early to weigh in against the Marin Municipal Water District's proposed use of toxic pesticides to control unwanted weeds in the watershed.

By way of this item, it is proposed that the council sign on to MOMAS comments so that the health and safety of our community, and our community's values, are considered as the County of Marin's process goes forward. In the alternative, authority to draft a letter expressing our Council's concerns about the plan is requested.

Respectfully submitted,

Larry Bragman



**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 triisopropanoline 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](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](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](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](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.

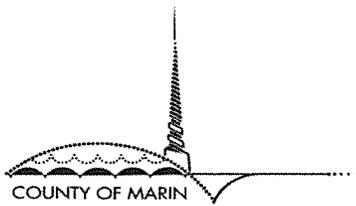
## 7. Public approval process triggered if herbicides are recommended for use beyond two-year eradication period

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.



Department of Agriculture, Weights and Measures



Farm Advisor/UC Cooperative Extension

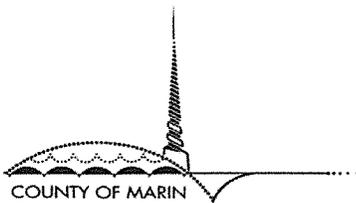
**Attachment A**  
**Proposed 10-Year Weed Management Workplan**  
**(FY 2013-14 through FY 2022/23)**  
**November 5, 2013**

**DRAFT TIMELINE AND SUMMARY OF PROCESS**

<b>Tasks to Accomplish</b>	<b>Estimated Timeframe</b>
Education and outreach to garner broad support	July 2013 and ongoing
Receive feedback/comments	Ongoing
Rancher meetings held	August 26 <sup>th</sup> and September 19 <sup>th</sup> 2013
Develop Landowner Advisory Committee	August-September 2013
Weed plan available for review by stakeholders	October 2013
Identify funding sources	August 2013 and ongoing
Request approval by Board of Supervisor's	November 2013
Identify Landowner Advisory Group responsibilities	September-January 2013
<b><u>If Funding is Approved by the Board of Supervisors:</u></b>	
Develop implementation plan	November-January 2013
Hire staff person to help implement program	November-January 2013
Develop rancher application/selection process	November-February 2013
Field surveys	Ongoing
Select contractors	February-March 2014
Begin implementing weed management strategies	March 2014 and ongoing as permitted
Evaluate work performed	Ongoing

**SUMMARY OF DRAFT COST SHARE PROGRAM AND LONG-TERM GOAL**

- Landowner Advisory Group would provide recommendations to Agricultural Commissioner and UC Farm Advisor on how to implement plan, allocate funding, develop a landowner selection process, etc.
- Provide each landowner a fixed dollar amount per parcel (based on acreage) for invasive weed management. The landowner would decide how to use those funds based on their specific circumstances, including their organic or conventional status.
- The Farm Advisor/UC Cooperative Extension would provide recommendations to landowners based on current best weed management practices
- The history of land management on the property would be a determining factor in receiving partial or full funding.
- Long-term goal would be to cost share sustainable weed control strategies (not herbicide use)
- Cost share funds would not be provided to landowner until verification of work is done
- There would be a robust accounting and tracking process to ensure the effective use of funds



Department of Agriculture, Weights and Measures



Farm Advisor/UC Cooperative Extension

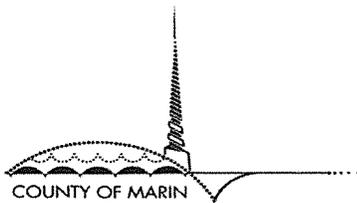
To provide effective, long-term noxious and invasive weed management, landowners must vigilantly and proactively manage and protect their land on an ongoing basis. The cost and time to manage noxious and invasive weeds is often prohibitive for many landowners, especially when established infestations get out of hand. Weed seeds remain viable in the soil for a few years up to several decades. A single plant of woolly distaff thistle can have 18,000 seeds! Attempting to control weeds for a year or two is impractical, costly, and shortsighted, though in some cases it can temporarily slow the spread of invasive weed species. Additionally, there is an increase in herbicide use, which is in conflict with the countywide goals of Sustainable Communities and Environmental Preservation. Early detection and rapid response are paramount to effectively managing invasive weeds long-term.

The Department of Agriculture/Weights and Measures (Department) and Farm Advisor/UC Cooperative Extension would work jointly on this project. The Department would hire an extra-hire employee to assist with the implementation of this plan and the Farm Advisor/UC Cooperative Extension would continue to connect and integrate the program with weed management expertise from the UC Berkeley and Davis campuses and elsewhere. Both departments would play an integral role in advocating for this weed management plan and helping to ensure its success. This plan would target woolly distaff thistle, purple starthistle, and many other invasive weeds. The implementation of the plan would likely start in areas with existing heavy invasive weed infestations, including outlier populations that have a high likelihood of eradication with limited resource requirements.

There is an expectation that all public and private landowners would play an active role in this plan. Ranchers and private landowners must work cooperatively together since invasive weeds know no property boundaries or watersheds. The success of this plan would be dependent on all of these landowners working together toward a common goal, and the Department and the Farm Advisor/UC Cooperative Extension helping to facilitate effective communication as needed. Landowners would be expected to continue to manage invasive weed populations on their land after significant infestations have been knocked down and are under control. The ultimate goal is long-term effective management of invasive weeds through sustainable methods that returns the land to productive agricultural use and diverse functioning native grasslands and prairies.

### **EDUCATION AND OUTREACH**

A vital aspect of this plan to help ensure its success is a robust and well-organized education and outreach plan to industry, the general public, private landowners, and other agencies. Our Department and the Farm Advisor/UC Cooperative Extension would closely communicate with ranchers and landowners on the expectations of this plan. Their input would be sought and carefully reviewed to ensure the most effective use of resources occurs. All landowners should be able to accurately identify invasive weeds of concern (or have someone that can), and understand how these injurious weeds can be moved from one location to another, potentially resulting in the



Department of Agriculture, Weights and Measures



Farm Advisor/UC Cooperative Extension

establishment of a new population of invasive weeds. Landowners and others would be trained in invasive weed identification as needed.

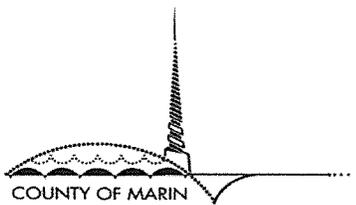
The Department and the Farm Advisor/UC Cooperative Extension would develop a collaborative education and outreach plan, which would include the organizations and agencies listed in the 10-Year Invasive Weed Management Plan. Participating organizations and agencies would be able to work closely with landowners to share their knowledge and skills of good land stewardship practices and integrated pest management (IPM) weed strategies.

Studies are currently being conducted on weed management strategies by UC Davis and UC Berkeley to develop effective methods of controlling woolly distaff thistle, purple starthistle, and barbed goat grass. Other injurious noxious weeds of concern include gorse, French broom, scotch broom, Spanish broom, and others.

#### **ENVIRONMENTAL, HUMAN HEALTH AND SAFETY CONSIDERATIONS**

A primary objective of managing and eradicating noxious and invasive weeds is to help landowners implement long-term control strategies using IPM strategies recommended by UC Davis and UC Berkeley, which are consistent with the County's IPM policies and ordinance. In many cases the use of non-organic herbicides in the short term would be required to reduce existing larger invasive weed infestations. The long-term impact to the treated site would be very positive because once an invasive weed population is reduced to a manageable size, other sustainable IPM options can be used, most of which are approved for certified organic operations. Sustainable weed management control methods (non-herbicide) would be the recommended option whenever possible. 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. Each site is unique and must be treated as such, and weed control methods must be evaluated annually. The long-term goal would be to only cost share sustainable weed control strategies (not herbicide use).

Milestone (Aminopyralid) and Transline (Clopyralid) are two of the herbicides commonly used in rangelands, pastureland, and open space to control large and/or inaccessible infestations of noxious and invasive weeds. Both of these materials fall within the existing framework of the County's IPM program. The recommended rates for Milestone and Transline based on label requirements and UC Davis studies conducted in 2012 and 2013 are three (3) to seven (7) ounces per acre for Milestone, and approximately eleven (11) to twenty-one (21) ounces per acre for Transline. Both of these herbicides have "Caution" labels, which is the lowest toxicity rating. See Attachment B – Milestone Material Safety Data Sheet (MSDS) and Attachment C – Transline Material Safety Data Sheet (MSDS). It is imperative to note that the data listed on the MSDS sheets is based on the concentrated herbicide not the diluted amount that is used for the actual treatment.



Department of Agriculture, Weights and Measures



Farm Advisor/UC Cooperative Extension

The common dilution rate used for Milestone and Transline is 7.5 to 10 gallons per acre, which is an extremely low volume.

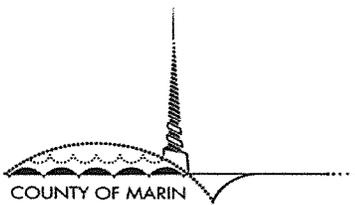
When herbicides must be used, it is in everyone's best interest to use the least toxic material that is safe, effective, and affordable. When possible, if spraying is to take place, invasive weeds should be manually removed beyond the primary infestation – essentially working from the outside toward the infestation. This would eliminate the outliers and reduce the area to be sprayed to just the primary infestation. Also, there may be areas where invasive weeds are not controlled by any method, but are kept in a contained area so their spread is prevented.

### **CERTIFIED ORGANIC SITES**

The number of certified organic ranches and farms in Marin County is currently about 75 and will likely continue to expand over the next several years. Approximately 30% of all agricultural operations in Marin County are certified organic. The Department, through its Marin Organic Certified Agriculture, is one of three counties in the state that is USDA National Organic Program (NOP) Accredited Certified Agency, certifies approximately 55 crop and livestock operations as certified organic. Approximately  $\frac{3}{4}$  of our dairies are certified organic, which translates into about 33,000 acres of certified organic land. The Department and Farm Advisor/UC Cooperative Extension are both ardent supporters and promoters of organic farming and gardening.

Certified organic sites are not immune from invasive weeds and face greater challenges controlling weeds than their conventional counterparts. There are several certified organic sites with moderate to large invasive weed infestations, and they continue to encroach onto priceless pastureland, rangeland, and open space. It is because of this combination of production systems and the effectiveness of IPM principles for weed control that this plan is predicated on, and working within, an IPM framework.

The Department and Farm Advisor/UC Cooperative Extension expect certified organic operations to select the best method of weed control based on their circumstances. There is no expectation that certified organic growers would use prohibited products on their site, although there are always exceptions. If there is an area that is heavily infested with invasive weeds, and is currently unusable and of a size that does not lend itself to non-organic control methods, a certified organic rancher may be willing to treat with a prohibited substance knowing they will gain productive land back in the future. 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. As noted above, the non-organic



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herbicides generally used for weed control are low toxicity; both to animals and the environment. The long-term impact would be very positive because once an invasive weed population is reduced to a manageable size, other sustainable IPM options supported by Marin County's policies and procedures could be used which are likely approved for certified organic operations. A cost share program to offset the cost of temporary fencing could be explored for certified organic operations willing to take a portion of a site out of organic production in order to use a prohibited herbicide.

The Farm Advisor is working with the UC Cooperative Extension Weed Advisor and UC Davis Weed Management Specialists to develop and extend the full complement of weed control measures including biological, cultural, mechanical, and chemical. This team, working in cooperation with the Marin ranching community, has a research proposal pending consideration to support the research needed to confirm the efficacy of specific cultural, mechanical, and organic chemical controls.

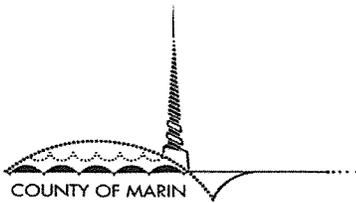
#### **WEED MAPPING, INVENTORY, AND MONITORING OF TARGET SPECIES**

The Department and the Farm Advisor/UC Cooperative Extension would work closely with the various agencies, organizations, and landowners to identify where woolly distaff thistle, purple starthistle, and other noxious and invasive weeds are located in Marin County. Existing invasive weed inventories can be used, and some organizations such as MALT have been performing updated weed surveys and mapping in 2013.

There would be an expectation that ranchers and private landowners would actively participate and help track/report invasive weed populations on their lands. The Department and Farm Advisor/UC Cooperative Extension would ensure that resources would be available to landowners and agencies such as how to properly map, inventory, and monitor sites, and effectively train personnel.

#### **COST SHARE PROGRAM**

The cost to manage and potentially eradicate invasive weeds can be extremely expensive and take a substantial ongoing commitment from ranchers and private landowners for numerous years. The Department would plan to support landowners in their weed management efforts and help with funding through a cost share program. The recommendation is to provide each landowner a fixed dollar amount per parcel (based on acreage) for invasive weed management. The landowner would decide how to use those funds based on their specific circumstances, including their organic or conventional status. The Farm Advisor/UC Cooperative Extension would provide recommendations to landowners based on current best weed management practices. The history of land management performed on the site would be a determining factor in the level of funding a landowner would receive through a cost share program. Landowners that have not been adequately addressing their invasive weed issues would receive less funding through this cost share program, and must be held accountable to ensure invasive weeds are managed on their site(s) into the future.



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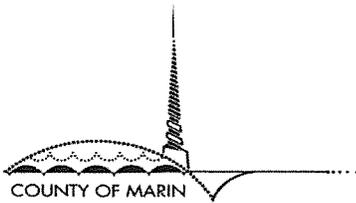
The Landowner Advisory Group would be tasked with helping to provide a framework to determine the actual cost share amounts. Many landowners are actively and successfully managing weeds on their land while others are doing nothing and have significantly contributed to the invasive weed problem. There must be recognition given to those landowners already spending thousands of dollars of their own funds annually to protect their lands from invasive weeds.

The estimated cost to control thistles with herbicides using ground equipment (i.e., woolly distaff thistle, purple starthistle, yellow starthistle, etc.) is \$250 per acre, which includes labor (\$200 per acre) and materials (\$50 per acre). The estimated cost to control other invasive and noxious weeds with ground equipment (i.e., gorse, Scotch broom, French broom, Spanish broom, etc.) is \$300 per acre, which includes labor (\$250 per acre) and materials (\$50 per acre). On average it takes approximately one hour to treat one acre with a herbicide using ground equipment. The estimated cost per day to control thistles aerially with herbicides (i.e., woolly distaff thistle, purple starthistle, yellow starthistle, etc.) is \$2,500. The \$2,500 is charged based on the type of treatments performed such as on hillsides, open fields, and/or if spot spraying is performed. It costs approximately \$18-25 per acre to do the various types of aerial treatments, which includes all labor and materials. Aerial applications are generally used on steep hillsides, inaccessible areas, and on large infestations where it is impractical to treat using ground equipment.

The Department recommends landowners use contractors specializing in weed control in rangeland, pastureland, and open space settings (i.e., mowing, weed whipping, over seeding with native grasses, herbicide treatments, etc.). When herbicide applications are necessary (because other sustainable options have been ruled out) the landowner would be responsible for contracting with a properly licensed and registered pest control business. Pest Control Businesses using ground equipment (i.e., mowers, spray equipment, etc.) would be responsible for a wide variety of tasks, such as tracking and recording weed species on each site and acres controlled for each species; using best management practices (BMP's) for cleaning equipment, boots, and clothing to ensure invasive weed seeds are not moved off site; conducting follow-up site visits to determine weed control efficacy; and providing the Department a summary of the work performed on the site.

All Pest Control Businesses applying herbicides (ground or aerial) would be responsible for providing a GIS map (or equivalent) of the proposed treatment area at least one week prior to the application date, and providing GPS map(s) showing total acres treated within one week after the treatment date for each application made on each site.

The Department would be responsible for conducting follow-up site visits to determine the effectiveness of weed control methods; taking before and after photos as needed; and confirming weed species are being properly tracked and recorded (i.e., documenting acres treated for each species). The Department and Farm Advisor/UC Cooperative Extension would work with the



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landowner to ensure weed species found on each site are properly tracked, documented, and monitored on an annual basis as needed by the landowner.

Pesticide applications in Marin County are strictly enforced. Pesticide applicators (ground and aerial) are required to follow all necessary pesticide use enforcement requirements. The Department would verify herbicide treatments were properly performed and reported through onsite inspections and verification of records, confirm contractor and landowner requirements were properly completed, and provide approved cost share funds to landowners. The landowner would be reimbursed by the Department only after a thorough site and document review has taken place and proper weed control methods have been verified (i.e., site visit, map/invoice review, discussions with the landowner and contractor, etc.).

Landowner's would be asked to track weed management costs (labor and materials) for work they do on their land, excluding work performed by contractors. The Department would track all costs associated with work performed by contractors. This information would provide critical weed management data to gain a better understanding of how cost share funds were spent, where they were spent, what kinds of weed control methods were used, which invasive weed species were targeted, and the success rate of various weed control strategies.

Additionally, various organizations such as Marin Agricultural Land Trust (MALT) and Marin Resource Conservation District (RCD) are currently providing land management expertise to the landowners whose properties they help to manage.

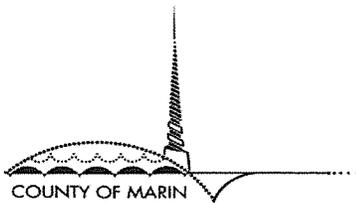
### **ADDITIONAL RESOURCES**

The Department and Farm Advisor/UC Cooperative Extension recommends working closely with partner organizations and would actively seek additional financial/resource support from some of these partners to help make this plan a success. Potential funding/support could come from Natural Resource Conservation District Environmental Quality Incentive Programs (EQIP), Marin Agricultural Land Trust (MALT), Marin Resource Conservation District (RCD), Marin County Farm Bureau, Point Reyes National Seashore (PRNS), and County of Marin. Any funds received could be leveraged against possible state and/or federal funding, such as for the Marin/Sonoma Weed Management Area (WMA).

Other options to help manage weeds may include using the California Conservation Corps, Eagle Scouts, Boy Scouts, or other volunteers, which can be very effective in removing invasive weeds on specific sites.

### **ABATEMENT OF NOXIOUS WEEDS**

The Department has the authority to enforce abatement summary proceedings against private landowners that refuse to manage and eradicate existing invasive and noxious weeds on their land. Abatement authority is found in Sections 6.60.010 and 6.60.020 of the Marin County Municipal



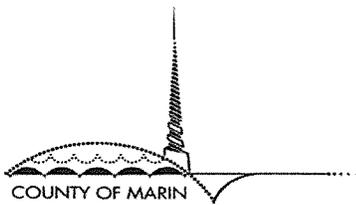
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Code and Sections 5401-5405 of the California Food and Agriculture Code. Holding all ranchers and other landowners equally accountable for properly managing their land for invasive weeds on an ongoing basis is imperative to this success of this plan. The Department's abatement authority would be tactfully mentioned as needed as part of the education and outreach plan. Landowners would need to take an active role in managing and eradicating invasive weeds on their land and working collaboratively with any organizations and neighbors involved.

A primary reason Marin County and most other counties have problems with invasive and noxious weeds is because various landowners in the county have purchased and continue to purchase unknowingly contaminated noncertified feed (i.e., hay, grain, etc.) products. These products often contain viable seeds of one or more noxious and invasive weeds, which hold the potential to start a new infestation. The Department is considering a proposal to revise Title 6, Chapter 6.60 of the Marin County Code to require all feed products to be certified weed-free; if certified weed-free products are not available other options could be approved. Before this proposal could be seriously considered, the Department and Farm Advisor/UC Cooperative Extension would need to perform a thorough assessment. As we currently understand it, certified weed-free products are only available on an extremely limited basis so this proposal may not be a viable option. Weed-free feed is not organic and the way it becomes weed-free is through herbicide treatments. Weed-free products could be a creative and sustainable long-term way to help ensure these products are not inadvertently carrying invasive and noxious weed seeds into Marin County, but the process must be meticulously reviewed to be sure it falls within the County's existing IPM policies. We will continue to recommend ranchers survey their properties for new weed infestations and to control them immediately.



**SUMMARY OF POTENTIAL FUNDING AND COSTS**

10-Year Plan	Funding and program costs to manage woolly distaff thistle, purple starthistle, and other invasive weeds	Potential Available Funding
<u>Year 1</u> FY 2013-14	<ul style="list-style-type: none"> <li>• Survey a minimum of 500 acres for woolly distaff thistle, purple starthistle, and other invasive weeds</li> <li>• Perform a minimum of 60 outreach and education events to landowners, other members of the public, and various organizations about the plan, which may include the latest science based methods available to control noxious and invasive weeds, and the use of IPM principles which are consistent with the County's IPM ordinance</li> <li>• Control a minimum of 300 acres of woolly distaff thistle, purple starthistle, and other invasive weeds per recommendations by UC Davis and UC Berkeley</li> <li>• Hold one public workshop to receive feedback about the plan</li> <li>• Hold a minimum of two Landowner Advisory Group meetings</li> <li>• Annually follow-up with stakeholders to provide updates on the status of the plan</li> </ul>	*\$75,000
<u>Years 2-10</u> FY 2014-15 through FY 2022-23	<ul style="list-style-type: none"> <li>• Annually evaluate effectiveness of control measures</li> <li>• Continue surveying for woolly distaff thistle, purple starthistle, and other invasive weeds</li> <li>• Recommend using UC IPM strategies whenever possible which are consistent with Marin County's IPM ordinance</li> <li>• Manage and control a minimum of 500 acres of woolly distaff thistle, purple star thistle, and other invasive weeds</li> <li>• Annually reevaluate Weed Management Strategic Plan to ensure deliverables are being met and/or exceeded</li> </ul>	**Unknown at this time
<u>Year 10</u> FY 2022-23	<ul style="list-style-type: none"> <li>• Determine whether or not to recommend extending Invasive Weed Management Plan an additional 10 years</li> </ul>	TBD

\* In FY 2013-14 an estimated \$45,000 would be used toward a landowner cost share program, and approximately \$30,000 would be used to support a staff position with the Department

\*\* For FY's 2014-15 through FY 2022-23 available funding will be determined on an annual basis. These funds would be used toward a landowner cost share program; and to cover the cost of a staff position within the Department