

Cannabis for Conservation



Humboldt Cannabis Reform Initiative (HCRI) Environmental Analysis

November 20, 2023

Table of Contents

Overview	1
Environmental Analysis.....	2
Section A: Purpose	2
Section C: Findings, #4	3
Section C: Findings, #5	5
Section C: Findings, #9	5
Section C: Findings, #10	7
Section 2: General Plan Amendments CC-G5 Public Participation	9
Section 2: General Plan Amendments CC-P11 Forbearance Period	10
Section 2: General Plan Amendments CC-P13 Roads	10
Section 2: General Plan Amendments CC-S1 Hydrologic Study.....	11

Overview

Cannabis for Conservation is a 501(c)(3) environmental nonprofit whose mission is to conserve persisting natural resources, restore degraded ecosystems, and educate cannabis communities with ecological knowledge and tools. We value applied science and on-farm research of conservation practices in cannabis, collaboration and relationship-building with farmers, and conservation partnerships with land owners, tribes, environmental interests, and State agencies.

We have been engaged in the cannabis-environment space since our incorporation in 2017. Our current conservation work includes the implementation of on-the-ground conservation practices, including designing and implementing water conservation and storage improvements, conducting biodiversity research on farms, conducting biological resource assessments, assisting farmers with CEQA and special-status species mitigation, and as of recently, assessing sources of sedimentation on rural roads in cannabis communities. Our work focuses on the conservation potential of farms, and intends to enhance and restore cannabis farms into functional, biodiverse agroecosystems. We have made a point to serve as an environmental resource, providing knowledge, education, and no-cost conservation programs for cultivators.

We felt it necessary to write our own analysis of the Humboldt Cannabis Reform Initiative (HCRI), now Measure A. In summary, as an “environmental” initiative, we found that the Initiative lacks in both environmental and scientific rigor, and was written with an undertone of obstructionist rhetoric against the general cannabis industry as opposed to evidence-based policy. Most of the proposed changes would result in increased regulatory duties of the County and regulatory hoop-jumping for farmers, with no measurable, quantifiable, or data-supported conservation benefits. Our analysis identifies a number of issues with the findings and General Plan Amendments, and are reasons for concern. We responded to the environmental points we saw as most poignant, that were unsupported by the data and did not serve the stated environmental function.

We see HCRI as highly contradictory to 30 x 30 and the Natural and Working Lands Climate Strategy developed through Executive Order N-82-20—the comprehensive State strategy that calls upon environmental interests and agencies to expand nature-based solutions to combat the biodiversity and climate crises. Through the Natural and Working Lands Climate Smart Strategy, conservation on working lands (e.g. farms) is explicitly identified as the primary solution to the biodiversity and climate crises. Measure A goes to great lengths to identify farms as the “problem”, which is an antiquated ideology not currently supported by broad-scale conservation strategy. No inclusion of evidence-supported conservation practices that bolster biodiversity and unite working land holders and conservation interests—two primary objectives of the Working Lands Climate Strategy—were included in the text, which is exceptionally problematic for an initiative designed to protect the environment.

We were surprised that as a primary on-the-ground conservation interest engaging directly with cultivators in Humboldt, we were not consulted nor asked to provide feedback for the Initiative’s proposed environmental standards at any point in its development. We have since found out that this was the case for many regional environmental groups, California Dept. of Fish & Wildlife, and the State Water Resources Control Board. It is unclear why, as an “environmental” initiative, it was not a priority to include environmental interests, and receive feedback, or use evidence-supported policy.

As a true environmental organization that practices applied conservation on farms, we cannot in good faith support this Initiative as sound environmental policy. As professional scientists and biologists, it is apparent that this Initiative was not written by or in collaboration with biological professionals, and we fundamentally disagree with the policies included within it.

Environmental Analysis

The following environmental analysis provides evidence and peer-reviewed literature to refute environmental statements purported within the Humboldt Cannabis Reform Initiative text.

1. Section A: Purpose (Page 1)

The purpose of this Humboldt Cannabis Reform Initiative (“Initiative”) is to protect the County’s residents and natural environment from harm caused by large-scale cannabis cultivation.

The assumption here is that “large-scale” legal cultivation is occurring in Humboldt, and that it is currently causing environmental harm. First, we do not agree that large-scale regulated cultivation is currently occurring in Humboldt, as that claim is not supported in the available numbers. Both Humboldt’s average farm size and the total amount of cultivated acreage is far below that of other California Counties permitting cultivation. For example, in Santa Barbara, the total amount of County permissible cultivation is 1,761 acres (2.75 square miles), with the total number of active permits equaling 1,581.85 acres (2.47 square miles).^{1,2} The average farm size in unincorporated Santa Barbara is 27.93 acres, with only 51 licensed or pending applicants,¹ and in Carpinteria the average farm size is 4.63 acres (201,682 square feet), with only 34 farms permitted.² Humboldt’s farm sizes and total cultivation size pale in comparison, with 98% of farms having a canopy of 1 acre or less (~43,000 square feet or less), and total County-wide cultivation of 332 acres of canopy (0.52 square miles).³ Santa Barbara County’s terrestrial area total 2,735 square miles, meaning that licensed cultivation makes up 0.1% of the county’s terrestrial area. With a County land mass of 3,568 square miles, Humboldt’s cannabis comprises 0.01% of the County’s total land mass, and only ~20% of the land devoted to cannabis in Santa Barbara County.

¹ County of Santa Barbara. 30 Aug 2023 [cited 23 Oct 2023]. In: Cultivation Cap & Eligible Businesses License Applicants List: Available from: <https://www.countyofsb.org/1176/Carpinteria>

² County of Santa Barbara. 12 Oct 2023 [cited 23 Oct 2023]. In: Cultivation Cap & Eligible Businesses License Applicants List: Available from: <https://www.countyofsb.org/1177/Unincorporated-Santa-Barbara-County>

³ Humboldt County Planning & Building Department. Humboldt Cannabis Reform Initiative Analysis & Recommendations. 7 March 2023 [cited 23 Oct 2023]. Available from: [https://assets-global.website-files.com/631973f14db5e2a6859bbd21/6513267a412c58024465cd03_Amended%20County%20Analysis%20HCRI%206_27_23%20\(1\).pdf](https://assets-global.website-files.com/631973f14db5e2a6859bbd21/6513267a412c58024465cd03_Amended%20County%20Analysis%20HCRI%206_27_23%20(1).pdf)

In the agricultural research context, “small” farms are widely documented to be any farm under 5 acres (2 hectares),^{4,5,6} but many studies include farms up to 20 acres in average size.^{6,7,8} Using these standard accepted metrics in the agroecology field, all licensed cannabis farms in Humboldt would be considered small farms, perhaps with the exception of the Arcata Land Company cultivation site, approved at 5.7 acres,³ which minorly exceeds the narrower, 5-acre limit. The word “small” therefore has been incorrectly used to define farm size throughout the HCRI text, and has been made synonymous with “small” license types. That leaves the two other license types, medium and large, to be not be categorized as “small” farms despite the fact that they fit well within that standardized definition, as supported by the broader data.

Because HCRI incorrectly conflates small license types with small farms and larger license types with large farms, it incorrectly references various environmental impacts that accompany larger license types, which is an incorrect application of the available data. HCRI uses “small” farm size as foundational evidence for its environmental findings, but the available literature does not find statistically-different environmental impacts between quarter-acre farms and five-acre farms—the current literature compares five-acre farms to fifty-, 100-, or 1000-acre farms, and none of these are cannabis farms. There is no current published research on regulated cultivation that finds statistically-different environmental impacts between license types (e.g., differences in biodiversity between 9,999 sq ft small licenses and 12,000 square foot medium licenses in the same habitat types), and yet that is the assumption that is made by the initiative’s push for farms under 10,000 square feet throughout the County. This is a major scientific error in the foundational premise of the Initiative, and one that is not supported by any published literature. In fact, the literature suggests the opposite, that nearly all farms in Humboldt are small farms.

2. Section C: Findings, #4 (Page 2)

The transition from small-scale to large-scale cannabis cultivation is adversely impacting community and the natural environment.

Again, there is no published data to support the claim that cannabis farms under 10,000 square feet are “less harmful” to the environment than farms over 10,000 square feet. “Harmful” is also a problematic term, in that it is not clear what impacts are being referred to (e.g. species richness, abundance, fragmentation, etc.). Each farm’s microhabitat, location, use of resources, farming practices, and landscape heterogeneity, among many other factors, are far more significant variables when assessing a farm’s environmental impact than the farm size itself (e.g., a small-licensed 10,000 square foot farm vs.

⁴ Lowder SK, Skoet J, and Raney T. The number, size, and distribution of farms, smallholder farms, and family farms worldwide. *World development*. 2016; 87: 16-29. (Note: this text has been cited by other peer-reviewed literature 1,701 times).

⁵ Nagayets O. Small farms: current status and key trends. *The future of small farms*. 2005 Jun 26;355:26-9. (Note: this source has been cited by other peer-reviewed literature over 420 times).

⁶ Fahrig L, Girard J, Duro D, Pasher J, Smith A, Javorek S, et al. Farmlands with smaller crop fields have higher within-field biodiversity. *Agriculture, Ecosystems & Environment*. 2015; 200: 219-234.

⁷ Esquivel KE, Carlisle L, Ke A, Olimpi EM, Baur P, Ory J, et al. The “Sweet Spot” in the Middle: Why Do Mid-Scale Farms Adopt Diversification Practices at Higher Rates? *Agroecology & Ecosystem Services*. 2021; 5: <https://doi.org/10.3389/fsufs.2021.734088>

⁸ Liebert J, Benner R, Kerr RB, Bjorkman T, De Master KT, Gennet S, et al. Farm size affects the use of agroecological practices on organic farms in the United States. *Nature Plants*. 2022; 8: 897–905.

a medium-licensed 15,000 square foot farm). Eliminating all cultivation licenses to small licenses only—the main premise of the Initiative—does not provide a conservation benefit to wildlife, land, or water in any measurable way. It is not evidence-supported, and no data has been collected, analyzed and reviewed to support this hypothesis. The Initiative actually fails to cite a single source of any peer-reviewed cannabis-environment literature, or any agroecosystem research of any kind. As a self-proclaimed environmental initiative, this is concerning, and leads us as scientists to believe this is a neighborhood initiative, disguised as an environmental initiative.

We feel it necessary to underline that any policy that intends to be an *environmental* initiative—especially one that would overhaul a current regulatory framework—should be exceptionally cautious to direct structural regulatory changes that lack measurable and quantifiable benefits to land, water, and wildlife supported by existing literature. Regulatory changes can cause community upheaval and disrupt delicate social fabrics around environmental issues; unless those changes will have direct benefits to ecosystems, it is not worth the risk to wildlife. It is well-known in the conservation realm that regulatory hoop-jumping and compliance of agriculture that provides no measurable impacts to wildlife can be catastrophic for conservation. It can severely reduce morale and farmer support of conservation, degrade private land conservation partnerships and private land access, and result in poor public opinion and even increased poaching, poisoning, and killing of wildlife.

If the proponents of HCRI had wanted to provide measurable and (evidence-supported) benefits to wildlife, land, and water, the Initiative would have focused on policy that included practices to:

- a. Increase landscape heterogeneity^{9,10}
- b. Support regenerative or biodynamic farming practices, including agroecological practices⁸
- c. Reduce land cover simplification^{11,12}
- d. Increase access to efficacious technologies¹³
- e. Cater to target or special-status species ranges in association with landscape homogeneity or heterogeneity (perhaps specific license types allowed in certain habitats with known populations of range-restricted wildlife)¹⁴

⁹ Martin AE, Collins SJ, Crowe S, Girard J, Naujokaitis-Lewis I, Smith AC, Lindsay K, Mitchell S, Fahrig L. Effects of farmland heterogeneity on biodiversity are similar to—or even larger than—the effects of farming practices. *Agriculture, Ecosystems & Environment*. 2020; 288. Available from: <https://doi.org/10.1016/j.agee.2019.106698>

¹⁰ Estrada-Carmona N, Sánchez AC, Remans R, Jones SK. Complex agricultural landscapes host more biodiversity than simple ones: A global meta-analysis. *Proceedings of the National Academy of Sciences*. 2020; 119. Available from: <https://doi.org/10.1073/pnas.2203385119>

¹¹ Noack F, Larsen A, Kamp J, and Levers C. A bird's eye view of farm size and biodiversity: The ecological legacy of the iron curtain. *American Journal of Agricultural Economics*. 2021; 104: 1460–1484. Available from: <https://doi.org/10.1111/ajae.12274>

¹² Renauld M, Hutchinson A, Loeb G, Poveda K, and Connelly H. Landscape Simplification Constrains Adult Size in a Native Ground-Nesting Bee. *PLoS ONE*. 2016; 11. Available from: <https://doi.org/10.1371/journal.pone.0150946>

¹³ Guthman, J. Raising organic: An agro-ecological assessment of grower practices in California. *Agriculture and Human Values*. 2000; 17: 257–266. Available from: <https://doi.org/10.1023/A:1007688216321>

¹⁴ Katayama N, Amano T, Naoe S, Yamakita T, Komatsu I, Takagawa S-i, et al. Landscape Heterogeneity–Biodiversity Relationship: Effect of Range Size. *PLoS ONE*. 2014; 9. Available from: <https://doi.org/10.1371/journal.pone.0093359>

- f. Restore native plants with considerations for patch size¹⁵
- g. Increase restoration of trees in disturbed areas to facilitate ecosystem services^{15,16}
- h. Reduce edge effects for biodiversity conservation in sensitive habitats¹⁶

None of these well-known and literature-supported conservation practices that are associated with small farm size and that can increase biodiversity, improve soil health, conserve water, sequester carbon, and create functional agroecosystems were included in the HCRI recommendations.

3. Section C: Findings, #5

Continued growth in the number of commercial cannabis permits and the amount of acreage under cultivation threatens the community and the environment.

Permit caps may be beneficial to both the environmental and economic aspects of Humboldt cannabis, but ascertaining what that cap should be is a statistical challenge. Caps would likely have to be region, watershed and/or habitat specific to provide the most meaningful limit, and supporting evidence would certainly have to be supplied before suggesting those limits. This would likely involve new studies or research that could lend support for suggested caps, as opposed to an arbitrary number with no environmental or economic evidence.

HCRI describes specific concerns in regards to the number of permits allowed due to water use, and states that the permit caps will be 1.05 times the amount of permits as of March 4, 2022 in each of the planning watersheds. There is no data to support this suggested amount, and as stated previous evidence-informed decision making is a pillar of quality environmental policy and regulation.^{17,18}

4. Section C: Findings, #9

Coordination between the County and state wildlife and water quality agencies has been lacking.

This is fundamentally untrue, and there is exceptional documentation to the contrary. Agencies have been very engaged with the permitting process, which involves the California Dept. of Fish & Wildlife, State Water Resources Control Board, California Dept. of Pesticide Regulation, the Dept of Environmental Health, and the Army Corps of Engineers. No crop is more highly environmentally regulated than cannabis,^{19, 23} and having participated in the regulated cannabis and environmental field since 2017, we can attest that there has also been extensive environmental stakeholder engagement in collaboration with agencies since legalization.

¹⁵ Mellink E, Riojas-López ME, Cárdenas-García M. Biodiversity conservation in an anthropized landscape: Trees, not patch size, drive bird community composition in a low-input agro-ecosystem. PLoS ONE. 2017; 12. Available from: <https://doi.org/10.1371/journal.pone.0179438>

¹⁶Chapman JI, Myers AL, Burky AJ, and McEwan RW. Edge Effects, Invasion, and the Spatial Pattern of Herb-Layer Biodiversity in an Old-Growth Deciduous Forest Fragment. Natural Areas Journal. 2015; 35: 439-451. Available from: <https://doi.org/10.3375/043.035.0307>

¹⁷ Sutherland WJ, Pullin AS, Dolman PM, and Knight TM. The need for evidence-based conservation. Trends in Ecology and Evolution. 2004; 19: 305-308.

¹⁸ Svancara LK, Brannon JR, Scott M, Groves CR, Noss RF, and Pressey RL. Policy-driven versus evidence-based conservation: a review of political targets and biological needs. BioScience. 2005; 55: 989-995.

¹⁹ Carah JK, Howard JK., Thompson SE, Short Gianotti AG., Bauer SD., Carlson SM, et al. High time for conservation: adding the environment to the debate on marijuana liberalization. BioScience 2015; 65: 822–829.

It is evident that proponents of HCRI were not educated on the current conservation policy landscape, for a number of reasons. First, the implication from the initiative is that greater regulation equals greater environmental benefit. There has been extensive stakeholder and agency coordination to reduce regulation and permitting requirements for projects that provide habitat for fish and wildlife, and restoration work in an effort to “cut the green tape”. CDFW’s current program [Cutting the Green Tape](#), which is not specific to cannabis but may involve restoration projects on cannabis farms, does a number of things that are in opposition to this initiative:

- a. It explores opportunities for programmatic permitting, which is contradictory to giving more discretionary power to County residents so that they have the “power to meaningfully engage in the County’s permit approval process” (HCRI page 3);
- b. It streamlines permitting processes to amplify impact. Many projects for streambed restoration and/or habitat restoration occur on private working lands (e.g. farms) and are funded by grant programs. It is acknowledged here that programs (County, State agency, or otherwise) that cut permitting time and reduce inefficiencies in government increase the speed at which environmental work can occur.

Second, Governor Newsom signed [Executive Order N-82-20](#),²⁰ which enacts the formation of the California Biodiversity Collaborative, a comprehensive strategy to expand nature-based solutions to combat the biodiversity and climate crises, and carry out 30 x 30.²¹ Out of this came the [Natural and Working Lands Climate Smart Strategy](#),²² California’s modern pathway to comprehensively addressing climate resilience and biodiversity loss. This strategy not only identifies working lands (e.g., farms) as a “cornerstone of CA’s nature-based solutions center”, but as a “critical and underused sector in the fight against climate change”. Cannabis farms, as working lands, are certainly included as part of the solution, and are eligible for numerous grant programs and funds throughout the State with nonprofit partners. It is unclear why, as an environmental initiative, HCRI fails to mention this broader policy, or more importantly synchronize its findings and General Plan amendments with 30 x 30 and the Natural and Working Lands Climate Smart Strategy. Instead, it suggests environmental hoop-jumping and further regulation, which is an antiquated strategy contradictory to the State’s current policies. Furthermore, the policies in HCRI would prevent many farmers from engaging in these State grant programs designed to further conservation on working lands, primarily through their definition of “expansion”, which includes “the number and size of any structures in relation to cultivation” (HCRI Section 2(A)(1) pages 7-8), which would include water storage and green energy development.

The Climate Smart Strategy creates pathways, namely through grant programs, for private land owners, farmers, ranchers, and environmental interests to collaboratively work together to tackle climate and conservation issues, primarily at no cost to the farmer. The important piece here that it pedestals farms— the conservation potential is highlighted specifically for “working lands”, as defined by the Strategy. Here, farmers are being identified as part of the solution—not part of the problem. HCRI economically and feasibly renders farms unable to operate as such, and losing cultivators would

²⁰ California Executive Order N-82-20. 7 October 2020. Available from: <https://www.library.ca.gov/wp-content/uploads/GovernmentPublications/executive-order-proclamation/40-N-82-20.pdf>

²¹ <https://resources.ca.gov/Initiatives/Expanding-Nature-Based-Solutions>

²² California Dept. of Natural Resources. California Natural and Working Lands Climate Smart Strategy. 22 April 2022. Available from: https://resources.ca.gov/-/media/CNRA-Website/Files/Initiatives/Expanding-Nature-Based-Solutions/CNRA-Report-2022---Final_Accessible.pdf

effectively reduce the conservation potential and impact of the Climate Smart Strategy in Humboldt when farms go under. These non-regulatory conservation and climate-smart opportunities would ultimately be reduced through the over-regulation of HCRI, which does not contain applied conservation practices in the first place, which would be a very unfortunate turn of events for one of the State's biodiversity hotspots, with high rates of species endemism and rarity, in the fight against climate change.

Lastly, we find it hypocritical and poor strategic foresight that an initiative that criticizes the County in its foundational findings for "lacking coordination" with state agencies would fail to coordinate with those same state agencies while writing an "environmental" initiative. When asked directly, proponents of HCRI relayed that they did not solicit input from any CDFW Departments involved in permitting or grant funding, nor State Water Resources Control Board. This is also evident in the text. We find this very problematic, as CDFW and SWRCB are highly involved with statewide conservation strategy as well as County permitting. Had there been involvement and coordination, suggestions likely would have to improve the initiative from a conservation perspective to include applied conservation practices, and to include environmental interests in the development and review process. Furthermore, we anticipate that the Cannabis Restoration Grant Program would have suggested to ensure that language in the initiative would not interfere with a farm's ability to participate in grant funding and partnering with environmental nonprofit program recipients—without making an environmental justification to the County or having to sue the County over grant-funded project improvements that may expand the "designated area" of the cultivation.

5. Section C: Findings, #10

Large-scale cannabis cultivation contributes to strains on water resources (Page 4).

The California Fish & Wildlife Journal's Cannabis Special Issue (2020)²³ contains the only example of published watershed research on cannabis farms post-Green Rush in the County. The study researched four tributaries of the Mattole River— one of the most historically impacted and high-priority conservation watersheds in the County, and included Eubank, Mill, Blue Slide, and Mckee Creeks, all of which have coho, chinook, and steelhead critical habitat. It is important to note that the research conducted for this study included data from both unpermitted and interim permitted cultivation primarily from 2018, a time when many farms were still coming into compliance, and water storage was not yet a requirement. Despite some farms still not yet in compliance, the comprehensive study found that:

"The total footprint of cannabis cultivation within the study watersheds was low (<1% of total drainage area; Table 1) and average farm size was low (0.12 ha) with farms not generally located in close proximity to designated critical habitat (mean = 389.2 ± 65.2 m) and with relatively high levels of

²³ Portugal EW and JL Hwan. Applied Science to Inform Management Efforts for Cannabis Cultivation, Humboldt, County, California. California Fish & Wildlife, Cannabis Special Issue. 2020: 13-29. Available from: https://www.researchgate.net/profile/Elijah-Portugal/publication/347953668_Applied_Science_to_Inform_Management_Efforts_for_Cannabis_Cultivation_Humboldt_County_California/links/5ff524ed299bf1408874ea4f/Applied-Science-to-Inform-Management-Efforts-for-Cannabis-Cultivation-Humboldt-County-California.pdf

regulatory compliance (33.6%). This indicates that at the regional scale, the potential impacts from cannabis cultivation in the study area may be low.”

At the time of this analysis, only about one-third of the study sites were compliant and regulated, indicating that many were not adhering to SWRCB required water conservation measures, and still, it is suggested that water-use impacts from cultivation in this area may not be significant. Of course, the conclusions on significant impacts of this study cannot be universally applied to all watersheds in the County, and it was noted in the study that individual impacts to specific watercourses and sub-watersheds were more variable than the cumulative watershed impacts. However, the study supports the notion that the 332 acres of *regulated* cannabis may not have *significant* impacts to water resources on a watershed-scale. Any agriculture or use of natural resources—cannabis or not—has impacts of some sort, but not all of those impacts are *significant* impacts, and that’s an important distinction to make. The thousands of farms that were severely impacting water resources during the Green Rush have since gone out of business, and using water data analyzed from the Green Rush period to justify policy for the current regulated market is an inappropriate and incorrect use of that data.

An important take-away from this analysis is that a more regionalized or site-specific approach may be the best course of action for analyzing cannabis impacts to surface water, as opposed to the arbitrary limits imposed by HCRI. With the new County requirement of 100% water storage for cultivation, and with most farms in the County now in adherence to SWRCB required riparian setbacks, forbearance, and water reporting, it is unlikely that there have been additional or further impacts since the Green Rush, or the 2018 study, from regulated cultivation in these specific sub-watersheds, and likely have even been improvements County-wide with increased farm compliance.

Furthermore, this study is a quality example of the type of evidence that is needed to justify permit caps for each planning watershed, or water-use limits for cannabis in general. Although not cited in the text, HCRI’s assumptions echo research findings that studied water-usage prior to regulation during the Green Rush,^{24, 25, 27} (some of which may have been published following 2016 legalization) or very early on in regulation when the impacts of the traditional market were apparent. Again, we must be cautious to not do this, as the density of farms and resource use has far decreased, and is no longer applicable to today’s market. Plus, many of those studies imply that forbearance and full-season water storage as a viable solution, which has since been adopted as a current regulation with the County.

In 2017, one year before data was collected for this study, other agricultural lands, including commercial cattle ranches and other food croplands, contributed far more to agricultural land cover than cannabis, with 621,043 acres across the County²⁶ (~970 square miles compared to 0.52 square miles of cultivated cannabis). It is obvious that non-cannabis agricultural productivity to-date has undoubtedly greater

²⁴ Bauer S, Olson J, Cockrill A, van Hattem M, Miller L, et al. (2015) Correction: Impacts of Surface Water Diversions for Marijuana Cultivation on Aquatic Habitat in Four Northwestern California Watersheds. PLOS ONE 10(9): e0137935. Available from: <https://doi.org/10.1371/journal.pone.0137935>

²⁵ Butsic V, and Brenner J. Cannabis (*Cannabis sativa* or *C. indica*) agriculture and the environment: a systematic, spatially-explicit survey and potential impacts. Environmental Research Letters. 2016; 11. Available from: <https://iopscience.iop.org/article/10.1088/1748-9326/11/4/044023/meta>

²⁶ United States Dept. of Agriculture. Census of Agriculture County Profile: Humboldt County California. 2017. Available from: https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/County_Profiles/California/cp06023.pdf

impacts to County watersheds, land, and wildlife, simply from the far greater land cover (over a quarter of the total County land mass) and use-intensification. In terms of the data, it seems counterproductive to further regulate a commodity crop that, at regulatory present, may not have cumulative impacts to County water supplies, when other agricultural land use types have far broader use, land cover, and water consumption than the 0.01% of land used for legal cultivation.

Under HCRI, cultivators would not even be required to have full-season water storage, which we find odd to not be included for an initiative concerned about water usage. But, adding water storage may pose a permitting challenge, as their definition of expansion would be triggered, which includes “the number and size of any structures in relation to cultivation” (HCRI Section 2(A)(1) pages 7-8). Using this definition, license holders above 10,000 square feet would be “expanding” their designated area. According to the text, license holders would then be subject regulations under “permit modifications” (HCRI Section 2(A)(1) page 11), which would trigger them to then lose their vested rights as a larger-licensed existing cultivation, and reduce their cultivation square footage to 10,000 or less. The point of increasing their water storage here would then become null and void with a decreased farm size. Again, this heavily relies on the assumption that 10,000 square foot farms are less biologically impactful than farms over 10,000 square feet, which we have already established as a false assumption unsupported by any available data. Furthermore, this makes it essentially impossible for farmers to acquire 100% water storage for their cultivation, for those that have not yet completely transitioned or have been relying on wells. Water storage tanks are an exceptionally expensive investment, and conversion to 100% storage is a process—one that cultivators should be supported, encouraged and helped through, as opposed to punished.

The definition of “expansion” under HCRI would directly reduce our work in assisting farms to convert to 100% water storage in the County. CFC received a \$1 million-dollar grant through CDFW’s Cannabis Restoration Grant Program to assist 17 farms in priority water regions to acquire additional water storage. Building upon the success of that initial program, we are in the midst of developing and applying for a follow-up program to assist more farms with water storage. If Measure A is voted in, our water storage development program would cease. We asked the proponents of HCRI directly how exactly our water storage work could continue under Measure A, and the response was that a justification would have to be made to the County that the “expansion” was for environmental purposes. If the County denied the request, we would then have to “simply sue the County” to prove that the water storage improvement was environmental. CFC is a small nonprofit, and we don’t have the funds to sue the County over every water storage project, nor would we find that an efficient or proper use of our funds, or our time. As opposed to supporting watershed work, HCRI would directly reduce the environmental improvements carried out by our programs.

6. Section 2: General Plan Amendments CC-G5

Ensure greater public participation and official accountability in decision-making (Page 9).

While we understand the importance of community and stakeholder engagement, we don’t agree that increased community engagement in the County licensing process will result in greater environmental benefits. If the purpose of the Initiative is truly environmental, this is a strange amendment to include. As previously stated, regulatory hoop-jumping can reduce community natural resource economics and trade, employment, and ultimately drive disdain for environmental resources. The level of coordination already involved with agencies environmental agencies coupled with the environmental requirements

standard with licensure makes this amendment unreasonable. It is highly unlikely that discretionary review of licenses by the public, most of whom lack the environmental education and understanding of current environmental-cannabis science, would provide any measurable conservation benefit or productive environmental critique, but rather they likely would supply neighborhood or personal feedback.

A more apt approach that would have included community engagement would have been to include environmental interests and agencies to assist and review in the development of this Initiative, which we don't believe occurred in any meaningful way, as evidenced by the text of the Initiative and personal communications with other environmental groups.

**7. Section 2: General Plan Amendments CC-P11
Diversionary Water Sources and Forbearance Periods (Page 13)**

The general amendment imposed by HCRI requires cultivators to forbear March 1- November 15 annually. It is unclear why these dates were selected, as the current forbearance period is April 1 – October 31, as directed by the State Water Resources Control Board. This change in dates is not supported by any reference to water-use literature, yet the assumption is that an additional 6 weeks of forbearance, two-thirds of which is part of the wet season, would make a significant difference to water resources across the County. Again, this is an assumption, and one not supported by any data.

It is unlikely that this suggested regulatory change would provide a measurable conservation benefit. In fact, this change is more likely to be *detrimental* to water resources. Early Spring is still a critical time for water collection when water is still abundant, and collection at this time can greatly reduce strain on water resources later in the dry season. Leaving one month in early Spring (March 1- April 1) where no water may be collected is arguably dangerous and ill-fitting for a region that experiences the dry season well-through late fall, and sometimes into early winter.

**8. Section 2: General Plan Amendments CC-P13
Roads (Page 13)**

This section states that all permits for new or expanded commercial cannabis cultivation activities is served by a private road without a centerline stripe, a licensed engineer's report shall be required to support a conclusion that the road meets or exceeds the Category 4 standard (or same practical effect).

Rural roads in the County are one of the major contributors to sedimentation in watersheds,^{23,27} which can impact water quality and aquatic life. The cost of improving roads, however, is a major economic barrier to compliance for many cultivators,²⁸ and one that needs to be slowly addressed over time through grant programs and supplemental funding for farmers.

There are a few considerations here. First, creating a Category 4 road—a paved road with a center line stripe—for all rural, gravel roads is not a feasible environmental solution. Broad-scale road widening would result in severe habitat loss, introduction of pavement toxicants into watersheds, increased

²⁷ Butsic V, Carah JK, Baumann M, Stephens C, and Brenner JC. The emergence of cannabis agriculture frontiers as environmental threats. *Environmental Research Letters*. 2018; 13. Available from: <https://doi.org/10.1088/1748-9326/aaeade>

²⁸ Bodwitch H, Carah J, Daane K, Getz C, Grantham T, Hickey G, et al. Growers say cannabis legalization excludes small growers, supports illicit markets, undermines local economies. *California Agriculture*. 2019; 73: 177-184.

wildlife mortality and reductions in abundance through increased traffic, and increased disturbance, including long-term disturbance from light and noise.²⁹ Secondly, it seems that the assumption is that the environmental benefits to upgrading roads to Category 4 would outweigh the ecological damage from increased traffic, wildlife mortality, disturbance, and pavement toxicants. This is a wild assumption, and one that has not been evaluated, nor would be likely supported, in our region. Paved road improvements can be a double-edged sword, and it's important to acknowledge and anticipate potential impacts. The Category 4 standard would be applied across the board for all County farms, which is problematic when site-specific details, and the discretionary review thereof, would make significantly more environmental and regulatory sense. For farmers that live off of County roads, unless the County would provide roads upgrades, permits would be denied.

Lastly, HCRI makes the assumption that because it is a cannabis farm, increased traffic use will occur on rural roads, and therefore produce greater sediment loads into watercourses. To date, there have been no studies to suggest that rural roads accessed by rural cannabis farmers produce greater quantities of sediment than rural roads accessed by rural residential homeowners. Again, this is a premise that is not evidence-supported.

As opposed to Category 4 improvements, road improvements currently required by the County and LSAAAs (e.g., culvert replacements and upgrades, rock fording and armoring, rolling dips, etc.) provide known conservation benefits to wildlife, particularly aquatic wildlife, and are already required by the County and CDFW as part of the permitting process.

There have been many instances where County road- widening and improvement projects, or larger projects that require road widening, have undergone CEQA with EIR findings contested by the public and environmental interests, and ultimately denied because of the associated environmental impacts. Those impacts were not considered for this General Plan Amendment, and yet the paving of all required roads would be a major environmental impact. While road improvements (rock armoring, rolling dips, grading, etc.) and annual maintenance are surely a necessity to reduce sedimentation and erosion, this blanket solution of converting all roads accessed by a cannabis farm to a paved Category 4 is an extreme and uneducated suggestion, and one that can't even be fulfilled by the County budget.

9. Section 2: General Plan Amendment CC-S1 Hydrologic Study Required (Page 13)

Hydrologic studies can be beneficial and useful to inform resource management and policy. While we agree that these types of studies are useful to determine whether or not a well should be used to support a cultivation site, the cost of these studies can be exceptionally high, and present another barrier to compliance, especially after many cultivators were required to drill wells when surface water diversions were not preferential. It is unreasonable to think that most farmers, especially small license holders, could afford to conduct the level of study required by HCRI, or that we have enough qualified personnel in the County to conduct the hydrologic studies for every license holder in a reasonable time period.

²⁹ Bennett VJ. Effects of road density and pattern on the conservation of species and biodiversity. *Current Landscape Ecology*. 2017; 2: 1–11. Available from: <https://doi.org/10.1007/s40823-017-0020-6>

Furthermore, hydrologic studies themselves do not produce a conservation impact. They only inform as to whether or not a well is hydrologically connected to other water sources, and data regarding water availability. Management implications from the study then provide the conservation impact. For the cost of these studies, it would be far better to simply have cultivators invest in hard water storage and water-saving technologies, and continue to participate in forbearance.

A better approach would be to either:

- a. Conduct a programmatic study on the use of groundwater wells for cannabis, paid for by the County or nonprofit grant funding that could inform regulatory suggestions on the use of groundwater wells in cannabis irrigation;
- b. Require a forbearance period for all wells;
- c. Include a requirement for full-season water storage to directly support drought resilience and aquatic life (the primary evidence-supported suggestion, and one that is already required by the County).