The Nature Conservancy
Protecting nature. Preserving life.™

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October 16, 2015

Rajinder Sahota
Branch Chief, Climate Change Program Evaluation
California Air Resources Board
1001 I Street
Sacramento, CA 95814

Re: Comments in response to the Target Scoping Plan Workshop, October 1, 2015

Dear Ms. Sahota:

The Nature Conservancy appreciates the opportunity to submit comments on the 2030 Target Scoping Plan and in response to the October 1, 2015 workshop. The Conservancy strongly supports the Governor's Executive Order B-30-15, establishing interim greenhouse gas reduction goals for 2030 so the State can meet the longer term goals established for 2050. Moreover, we support the inclusion of natural and working lands as one of the five pillars of the State's long-term climate strategy. The State will not be able to meet its long term goals without the inclusion of this sector.

The Conservancy has submitted several comment letters over the past year identifying the kinds of actions that the State should support in the natural and working lands sector to reduce greenhouse gas emissions and sequester additional carbon. These comments are attached, and we resubmit them as recommendations for the 2030 Target Scoping Plan.

Overall, the ideas presented at the October 15th workshop lay a strong foundation for the kinds of actions that the state should undertake to continue reducing greenhouse gas emissions beyond 2020. In addition to the recommendations identified in the attachments, we emphasize the foundational need to develop a common statewide greenhouse gas accounting framework for natural and working lands so that GHG reduction goals from this sector can be established and monitored to meet the state's long term climate goals. This framework is often referred to as a "jurisdictional accounting" framework, and there is significant precedent for the

approach in tropical forest jurisdictions as part of the United Nations Framework Convention on Climate Change.[1]

Such a framework is needed in California to advance a common understanding of what constitutes a GHG reduction in the natural and working lands sector, thereby reducing different and sometimes conflicting assumptions about what constitutes a greenhouse gas reduction. It will also help minimize uncertainty about which sector to attribute a reduction (e.g., whether a reduction should be counted in the energy sector or natural and working lands). Furthermore, this type of framework can create better synergy and bridge accounting gaps across different landscape scales, from the activity (or project scale) to the regional and statewide scales.

Attributes of this framework should include the following:

1) **A statewide carbon inventory:**
   A landscape carbon inventory is essential for establishing a GHG baseline (or reference scenario) for natural and working lands and monitoring emissions and reductions from land-based activities that either increase or decrease carbon over time. The California Air Resources Board's recent carbon inventory analysis and any recent updates could serve as the basis of this inventory.[2]

2) **A statewide GHG baseline scenario:**
   Similar to the reference scenarios (or GHG baseline scenarios) that the state is developing for other sectors, GHG baseline scenario(s) should be developed for natural and working lands. Without a GHG baseline for the landscape, it will be very challenging for the state to estimate and monitor GHG reductions over time. Baseline scenarios are projections into the future of "business as usual" or what is likely to happen in the absence of human interventions to minimize emissions and sequester carbon. Other jurisdictions have developed GHG baselines for the landscape by using historical carbon inventory data over different points in time to establish trends for net changes in landscape carbon, which can inform how a GHG baseline can be forecasted into the future. Establishing a trend or reference scenario for the baseline (versus just one inventory year) is also important to be able capture net sequestration over time and the relative permanence of carbon sequestered in the landscape.

[1] "Guidelines for REDD+ Reference Levels: Principles and Recommendations" Prepared for the Government of Norway, by Arild Anglesen, Doug Boucher, Sandra Brown, Valerie Merckx, Charlotte Streck, and Daniel Zarin. Available at www.REDD-OAR.org.

[2] *See* http://www.arb.ca.gov/cc/inventory/pubs/battles%20final%20report%2030jan14.pdf

3) **Statewide GHG reduction scenarios that are spatial:**

Once a carbon inventory and GHG baseline are established for natural and working lands, it is possible to develop estimates of GHG reduction potential based on alternative scenarios (relative to the baseline) across regions in the state. This type of analysis should be spatial, where opportunities for interventions (or activities) to sequester more carbon or minimize emissions across regions of the state can be identified. Anticipated climate change impacts can also be included in the scenarios. This carbon data can be aggregated and compared to the GHG baseline to develop ranges of GHG reduction potential that can be achieved through a variety of activities and incentives. They could be used to inform the 2030 Scoping Plan target. This type of assessment should be considered alongside other statewide plans, such as the State Water Action Plan and Safeguarding California, to provide the opportunity to optimize multiple benefits and make strategic investments.

4) **A monitoring, reporting and verification system that bridges different landscape scales (i.e., landowner to region and state):**

Building from the statewide baseline and scenarios mentioned above, a statewide monitoring, reporting and verification framework should also be established to track progress in the natural and working lands sector. The statewide carbon inventory, as it is updated over time, can be used as the basis to track changes in carbon across the landscape and monitored against the GHG baseline and reduction scenarios mentioned earlier. A complementary monitoring and reporting framework can also be developed for the interventions or activities that are implemented at the smaller scale to reduce emissions/sequester carbon through programs or policies. This complementary framework can act as a bridge between monitoring at the project/activity scale and the monitoring at the statewide and regional scales.

We appreciate your consideration and are happy to provide input in this important process. Our natural and working lands are a critical part of the climate solution and California's leadership provides a strong platform to demonstrate how this can be implemented to provide multiple benefits. If you have any questions, please contact Michelle Passero at mpassero@tnc.org.

Attachment A

The Nature Conservancy
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September 1, 2015

Ms. Shelby Livingston
Chief, Climate Change Program Planning and Management Branch
California Air Resources Board
Sacramento, CA 95814

Re: Comments from The Nature Conservancy on the Second Three Year Investment Plan

Dear Ms. Livingston:

The Nature Conservancy appreciates the opportunity to submit comments to the California Air Resources Board and the Administration regarding the use of the Greenhouse Gas Reduction Fund for investments in natural and working lands. These comments are a supplement to our recommendations submitted in a separate letter from the Natural and Working Lands Coalition, a partnership between The Nature Conservancy, California ReLeaf, Defenders of Wildlife, Audubon, the Pacific Forest Trust, California Climate and Agricultural Network and Trust for Public Land. Overall, we are pleased with the *Concept Paper for the Cap-and-Trade Auction Proceeds Second Investment Plan* (Concept Paper) and appreciate the acknowledgment that natural and working lands are a key strategy for achieving the State's reduction goals.

Natural resource protection-GHG reduction nexus and California:

The conservation and management of California's natural and working lands (forests, rangelands, wetlands, agricultural lands and urban forests) have a direct impact on climate change and present significant GHG reduction opportunities for state investment. Acting like a sponge, forests and vegetation remove vast amounts of carbon dioxide from the atmosphere and store it as carbon in leaves, branches, tree trunks, roots and soil. Paradoxically, forests, land use change and water distribution are also major sources of global GHG emissions, largely due to human activity. On a global level, deforestation, forest degradation and land use change contribute roughly 15% of overall GHG emissions.[i] In California, a recent published analysis indicates that California's lands in more recent years has been a net source of GHG emissions, totaling over 25 million metric tons of carbon dioxide equivalent annually.[ii]

When forests and other landscapes are disturbed through events like conversion to other uses, poor management and fire, much of the stored carbon is released into the atmosphere as carbon dioxide. As a consequence, the degradation and loss of our forests and other land types to other uses result in direct GHG emissions and often impairs the ongoing carbon sequestration benefits that these landscapes provide, not to mention other public and environmental benefits. Therefore, a key strategy and opportunity for the State is to manage and conserve California's lands so they act as a significant net sink instead of a net source. As recognized in the Governor's Executive Order B-30-15, California will not be able to meet its long-term GHG reduction goals without including GHG reductions from natural and working lands. Furthermore, the conservation of these lands is also critical for building a climate resilient California.

While our recommendations below focus on natural resource protection opportunities for the Investment Plan, we reiterate our support for a plan that includes a suite of environmentally-sound investment opportunities. The investment plan should be a visionary document that is not limited by near-term uncertainties and one that adheres to the guidance identified in the Governor's Executive Order and guiding legislation (i.e., AB 32, SB 535 and AB 1532). We commend CARB on their investment guidance to date ***and urge CARB to develop a second investment plan that will catalyze GHG reductions that: promote climate resilience, are supported by sound science, have consistent accounting methods, and account for other critical public and environmental benefits.***

Investment recommendations:

As mentioned earlier in this document, the following recommendations complement and are in addition to the recommendations submitted in a separate letter by the Natural and Working Lands Coalition.

1) ***GGRF investments should incorporate climate resilience as a critical co-benefit***

   California is already experiencing impacts from climate change and will continue to do so for centuries. Investments should, therefore, give priority to GHG reduction projects that also enhance climate resilience. We recommend adding a new subsection, "I" to Section 3 of the Concept Paper adding an overarching theme of Climate Resilience. Furthermore, we recommend that ARB review proposed expenditures to consider the potential affects from climate change over time to ensure durable reductions. Such consideration is consistent with the direction to state agencies in Executive Order B-30-15 (http://gov.ca.gov/docs/4.1.15_Executive_Order.pdf).

2) The State should invest in a local government program for cities and counties to develop and implement integrated GHG plans and strategies that integrate GHG reductions from natural and working lands with reductions in other sectors.

The Conservancy supports and commends ARB for its focus on integrated GHG reduction strategies in the Concept Paper. Integrated strategies have the capacity to optimize reductions and multiple benefits. Such an approach should be applied to disadvantaged communities and more broadly to all communities across the state.

By investing in integrated local government (or jurisdictional) plans and actions to reduce GHG emissions, the state can enhance the effectiveness of GHG investments by catalyzing reductions in multiple sectors that also have overlapping relationships. For instance the conservation of natural and working lands results in direct GHG reductions through avoided emissions and carbon sequestration. These activities can also help reduce GHG emissions in other sectors (indirect reductions), such as transportation and energy efficiency. Likewise, the conservation of non-urban lands can help constrain urban growth patterns, thereby protecting the carbon sequestration function of the land and also constraining urban emissions related to transportation. In addition, urban forestry and parks can, among other things, reduce energy related emissions by providing shading that reduces the need for air conditioning and encourages the use of active transportation over autos.

While a number of local governments, such as counties and cities, are developing plans and strategies to reduce GHG emissions, many have yet to include natural and working lands as part of their strategy. To optimize these GHG reductions and public benefits across sectors, local governments, like counties and cities, should integrate natural and working lands in their GHG reduction plans. The State should therefore invest in these integrated plans using a "design-build" approach, whereby a portion of the funds could support the integration of natural and working lands in a GHG reduction plan (the design) with significant funds also dedicated to implementation (build) to achieve the reductions identified in the plan. This type of investment advances the "systems approach" identified in the Concept Paper and enhances synergies. It also complements sustainable communities strategies by engaging local governments in a multi-sector GHG strategy.

To ensure that GHG reductions are achieved using these funds, a local government program could require a percent of the "project" funds be deposited into escrow for implementation of activities that will result in GHG reductions. Alternatively, the State could fund these projects in installments, whereby the final installment of funds are not provided until implementation of GHG reduction activities are occurring.

3) The State should invest in demonstration efforts that seek to reduce GHG emissions from catastrophic wildfire through a holistic GHG accounting framework at a regional scale

Wildfires have been a natural process shaping Sierra Nevada forests for millennia, and are necessary for maintaining forest health.[iii] However, contemporary fires are re-occurring over much longer intervals than they were historically,[iv] and contemporary forest conditions do not resemble historical conditions in most locations[v] due to a number of factors, including fire exclusion, logging, grazing by domestic livestock, and other management actions.[vi] Climate change is likely to exacerbate the risk and extent of high severity patches caused by wildfire.[vii] High and mixed-severity fire will always be a part of these forests but the risk of high-severity fire needs to be proactively managed, through ecologically based thinning or controlled burns, not only to protect life and property but also to restore the characteristic resilience to wildfire inherent to these forests.[viii] Furthermore, without pro-active management to reduce this uncharacteristic fire risk, the long-term stability of the stored carbon, and GHG reduction capacity of that forest, is uncertain.[ix]

While proactive management can help reduce the risk and severity of fire, *it is difficult to equate this risk reduction with quantifiable GHG reductions.* Much of the debate about forest thinning, fire risk, and its relationship to GHG reductions focuses on GHG baseline assumptions of catastrophic fire and the single activity of thinning/treatment (i.e., but for this forest thinning and associated emissions, the carbon emissions would be even greater). This narrow accounting scope presents some challenges. In many instances, the thinning or controlled burns that are undertaken to reduce fire risk result in net GHG emissions,[x] particularly in the short term, and determining the probability of a catastrophic fire at a particular site or "project scale" complicates the assessment. Some scientific analysis suggests that it *may* be possible to achieve long-term GHG reductions with thinning at a landscape scale in certain circumstances,[xi] but such actions would need to be sustained over time to be effective (Campbell et al. 2011, Earles et al. 2014).[xii]

Given the uncertainties of quantifying GHG reductions associated with thinning and defining baseline assumptions for catastrophic fire at a project scale, the Conservancy recommends that the State invest GGRF funds in demonstration efforts at a larger landscape scale that incorporate the broad suite of actions that impact GHG emissions, including (but not limited to) wildfire and actions to reduce wildfire risk. Specifically, these demonstration efforts should:

1) Be regional in scale (e.g., a jurisdiction, county, group of counties or other region);
2) Establish GHG baseline scenarios that are objective and incorporate historic trends and the suite of human and natural impacts to carbon (i.e., not just fire);
3) Reduce fire risk for the long-term through sustained ecological thinning, managed wildfire, improved land use and other activities;
4) Seek to reduce GHG emissions in the region through a suite of actions, including, but not limited to restoration, conservation, thinning, controlled burning and other changes in land use and management; and
5) Set long-term GHG reduction goals that incorporate objectives to protect and enhance other public benefits, including climate resilience, water quality, habitat for fish and wildlife, biodiversity, recreation and timber production.

By approaching the fire risk reduction and GHG reduction issue through this broader frame, the State may be able to reduce the uncertainty and debate often associated with the catastrophic fire/thinning/GHG reduction conundrum. It may also broaden the policy discussion and set of solutions identified for how to manage and protect the Sierra for its suite of climate and other public benefits.

4) The State should invest in avoided conversion of rangelands as a key GHG reduction strategy for this land type

In California, rangelands include grasslands, oak woodlands, chaparral, and some forested areas, wetlands, and deserts that may be used for grazing.[xiii] Estimates of the extent of the state's rangelands range from 31 to 57 million acres[xiv] depending on the data sources used, the vegetation types considered to be rangeland, and whether land that is not actively grazed is considered to be rangeland. In open grasslands, roughly 90 percent of the carbon in the ecosystem is contained in the soil.[xv] In other types of rangelands, shrubs and trees account for substantial additional carbon storage.

The amount of carbon held in California's rangeland soils varies widely: A 2010 review of rangeland soil carbon data from several locations around the state found an average of 134 tCO2e per acre in the top 50 centimeters (~20 inches) of soil in grassland ecosystems, with a range of 42 to 446 tCO2e. Grasslands that support shrubs and trees tended to have higher levels of soil carbon than open grasslands, and also hold additional carbon in woody biomass.[xvi] In addition to providing forage for livestock, working rangelands also provide a number of other benefits, including water capture and filtration, recreation, and habitat for over half the state's sensitive and listed species, notably including pollinators.[xvii]

When rangelands are converted to urban or agricultural uses, the disturbance results in emissions of carbon dioxide. Studies of conversions to cropland have found that 30 to 60 percent of the carbon stored in the soil is lost to the atmosphere.[xviii] Analysis conducted by the Conservancy, indicates that annual conversion of rangelands to croplands is approximately 9,200 acres annually resulting in annual emissions of roughly 492,000 tons of carbon dioxide.[xix] For an interactive map of converted rangelands, visit: http://tnc.maps.arcgis.com/apps/Viewer/index.html?appid=4f5b658dea924b5c8bd9340142a4f033

A useful tool to reduce conversion of rangelands and associated GHG emissions is conservation easements, as this voluntary legal agreement removes development rights and can conserve the land (and associated benefits) in perpetuity. A number of institutions across the State could administer funds from the GGRF for conservation easements, including the Wildlife Conservation Board and the Department of Conservation through the Sustainable Agricultural Lands Program, among others.

5) ***The State should invest in a Delta-wide GHG baseline and farm scale demonstration projects to reduce GHG reductions through changes in management and restoration.***

Wetland restoration efforts and changes in management in the Sacramento-San Joaquin Delta can provide significant opportunities to reduce methane and carbon dioxide emissions while also sequestering additional carbon dioxide from the atmosphere. Recent estimates suggest that management practices in the Delta and resulting subsidence contributes anywhere from 1% to 3% of the State's GHG emissions.[xx] Changes in management and restoration in key areas of the Delta will not only reduce these emissions, but also result in substantial carbon sequestration gains. Such efforts can also help maintain the local economy, reduce land subsidence and risk of floods, buffer the Delta from sea level rise, protect water quality and provide wildlife habitat – effectively addressing both mitigation and climate resilience concurrently.[xxi]

Priority investments to achieve climate benefits in the Delta should include the funding of several farm-scale demonstration projects and a Delta-wide GHG baseline that will provide a foundation to leverage participation from other farmers in GHG reduction activities and a basic GHG accounting framework to monitor reductions over time. Investment of auction proceeds for these purposes would also leverage additional funds from other sources that will broaden the scope of the impact.

6) ***The Conservancy supports the proposed needs assessment in the Concept Paper to identify the range of opportunities for reducing emissions and sequestering carbon from natural and working lands***

To enhance strategic investments in GHG reductions across natural and working lands and optimize climate resilience and other public benefits, the State should undertake a needs assessment. This assessment should include the development of a statewide GHG baseline scenario for natural and working lands, as well as spatial assessment across state to identify opportunities for avoiding emissions and increasing carbon sequestration. This would enable the State to identify the greatest need or opportunities for GHG reductions in a systematic and cohesive manner. The spatial assessment would also provide the basis for layering other data that could inform strategic investments that not only reduce emissions, but also enhance climate resilience, water and air quality, habitat and recreation, among other benefits.

Conclusion:

We commend CARB and other state agencies for its ongoing leadership to address climate change and recognition of the vital role natural and working lands must play in any climate change solution. There is significant opportunity for innovation in this sector that will not only reduce emissions and promote climate resilience in a manner that enhances the quality of life for the California community (for more information, please see http://bit.ly/17BEMAD). We appreciate your consideration and look forward to working with you to support this effort. If you have any questions, please contact Michelle Passero, MPassero@tnc.org.

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[ii] Patrick Gonzalez, John J. Battles, Brandon M. Collins, Timothy Robards , David S. Saah. 2015. Aboveground live carbon stock changes of California wildland ecosystems, 2001–2010. Forest Ecology and Management 348: 68-77.

[iii] Taylor, A. H., and C. N. Skinner. 2003. Spatial patterns and controls on historical fire regimes and forest structure in the Klamath Mountains. Ecological Applications 13:704–719; North, M., B. M. Collins, and S. Stephens. 2012. Using Fire to Increase the Scale, Benefits, and Future Maintenance of Fuels Treatments. Journal of Forestry 110:392–401.

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[xi] Hurteau, M. D., G. W. Koch, and B. A. Hungate. 2008. Carbon protection and fire risk reduction: toward a full accounting of forest carbon offsets. Frontiers in Ecology and the Environment 6:493–498; Finkral, A. J., and A. M. Evans. 2008. The effects of a thinning treatment on carbon stocks in a northern Arizona ponderosa pine forest. Forest Ecology and Management 255:2743–2750; Goslee, K., T. Pearson, S. Grimland, S. Petrova, and S. Brown. 2010a. Final fuels management report on WESTCARB management pilot activities in Shasta County, California. California Energy Commission, PIER; Goslee, K., T. Pearson, S. Grimland, S. Petrova, J. Walls, and S. Brown. 2010b. Final report on WESTCARB fuels management pilot activities in Lake County, Oregon. West Coast Regional Carbon Sequestration Partnership; Ager, A. A., M. A. Finney, A. McMahan, and J. Cathcart. 2010. Measuring the effect of fuel treatments on forest carbon using landscape risk analysis. Natural Hazards and Earth System Science 10:2515–2526; North, M. P., and M. D. Hurteau. 2011. High-severity wildfire effects on carbon stocks and emissions in fuels treated and untreated forest. Forest Ecology and Management 261:1115–1120; Carlson, C. H., S. Z. Dobrowski, and H. D. Safford. 2012. Variation in tree mortality and regeneration affect forest carbon recovery following fuel treatments and wildfire in the Lake Tahoe Basin, California, USA. Carbon balance and management 7:1–17; Winford, E. M., and J. C. Gaither. 2012. Carbon outcomes from fuels treatment and bioenergy production in a Sierra Nevada forest. Forest Ecology and Management 282:1–9; Vaillant, N. M., A. L. Reiner, and E. K. Noonan-Wright. 2013. Prescribed fire effects on field-derived and simulated forest carbon stocks over time. Forest Ecology and Management 310:711–719.

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[xiv] See, e.g., DeLonge 2014, page 6, citing 2007 USDA ERS Major Land Uses Survey (estimate includes 27.4 million acres of grassland and shrubland, 1 million acres of cropland used as pasture, and 14 million acres of woodland systems with a grass understory used for grazing, for a= total of 42.4 million acres); Kuminoff, N.V., A.D. Sokolow, and D.A. Sumner. 2001. Appendix A of Farmland Conversion: Perceptions and Realities. University of California Agricultural Issues Center Issues Brief Number 16, May 2001. Available at: http://aic.ucdavis.edu/publications/pub/briefs/brief16a.pdf (estimate includes 15 million acres of private grazing land and 16 million acres of federal grazing allotments); Brown, S., A. Dushku, T. Pearson, D. Shoch, J. Winsten, S. Sweet, and J. Kadyszewski. 2004. Carbon Supply from Changes in Management of Forest, Range, and Agricultural Lands of California. Winrock International, for the California Energy Commission, PIER Energy-Related Environmental Research. 500-04-068F. Available at: http://www.energy.ca.gov/reports/CEC-500-2004-068/CEC-500-2004-068F.PDF (estimates 56 million acres of rangeland based on vegetation type); and California Department of Forestry and Fire Protection. 2010. California Forests and Rangelands: 2010 Assessment. Available at: http://frap.fire.ca.gov/assessment/2010/assessment2010.php. (estimate is 11.4 million acres of grassland and wetland rangelands, 7.7 million acres of forest and woodlands that can support grazing, 14.5 million acres of shrub cover, and 23.2 million acres of desert, for a total of 56.9 million acres of rangeland).

[xv] Schuman G., J. Herrick, and H. Janzen. 2001. The dynamics of soil carbon in rangelands. pp.267-290. In: R.F. Follett, J.M. Kimble, and R. Lal [eds.]. The Potential of U.S. Grazing Lands to USA.

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[xviii] See, e.g., Gershenson, A., and J. Eldon. 2013. Climate Action through Conservation: A Sonoma County Model Climate Strategy for Land Conservation: Consequences of Conversion of Grasslands to Vineyards for Soil Carbon Storage. Report by Eco-Shift Consulting for The Nature Conservancy; Guo, L.B., and R.M. Gifford. 2002. Soil carbon stocks and land use change: a meta analysis. Global Change Biology 8:345-360; Wang, S., Wilkes, A., Zhang, Z., Chang, X., Lang, R., Wang, Y., & Niu, H. 2011. Management and land use change effects on soil carbon in northern China's grasslands: a synthesis. Agriculture, Ecosystems & Environment, 142(3), 329-340; VandenBygaart, A. J., E. G. Gregorich, and D. A. Angers. 2003. "Influence of agricultural management on soil organic carbon: A compendium and assessment of Canadian studies." Canadian Journal of Soil Science 83.4: 363-380.

[xix] Using average soil C stock numbers and 40% loss due to conversion, the total estimated emissions is roughly 492,000 tons/Co2/yr. This is a gross number. The sequestration rate, if it it goes back to grassland is a much slower rate than the loss.

[xx] Merrill, et. al., Greenhouse Gas Reduction and Environmental Benefits in the Sacramento-San Joaquin Delta: Advancing Carbon Capture Wetland Farms and Exploring Potential for low Carbon Agriculture., December 2010.

[xxi] Miller, Robin and Miranda Fram, Roger Fujii, and Gail Wheeler. "Subsidence reversal in a re-established wetland in the Sacramento San Joaquin Delta, California, USA." San Francisco Estuary & Watershed Science. 2008. <http://ca.water.usgs.gov/projects/LICD/MillerRobin2008SubsidenceReversalinRe-establishedwetlands.pdf>. Philip Williams and Associates, Ltd. and Science Applications International Corporation. "Greenhouse Gas Mitigation Typology Issues Paper: Tidal Wetlands Restoration." Prepared for Climate Action Reserve (formerly California Climate Action Reserve). 2009. <http://www.climateactionreserve.org/how/future-protocol-development/>.

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September 1, 2015

Shelby Livingston
Climate Investments Branch Chief
California Air Resources Board
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Re: Natural and Working Lands Coalition Comments on Draft Concept Paper for the Second Investment Plan

Dear Ms. Livingston,

On behalf of the Natural and Working Lands Coalition (NWLC), we are pleased to provide our comments on the draft ***Concept Paper for the Cap-and-Trade Auction Proceeds Second Investment Plan*** ("Concept Paper"). The NWLC seeks to ensure that natural and working landscapes are part of California's climate solution. Our groups include Audubon California, California Climate and Agriculture Network, California ReLeaf, Defenders of Wildlife, The Nature Conservancy, Pacific Forest Trust, and the Trust for Public Land.

California's natural and working lands are one of the largest and most cost-effective solutions to curbing greenhouse gas emissions (GHGs) and supporting millions of jobs. These landscapes are the state's only asset that actually removes greenhouse gases from the atmosphere, locking up carbon in trees, soils, and vegetation.

Improved management and conservation of our forests, wetlands, farms, rangelands, local parks, green alleys and urban forests pay huge dividends in other ways, including cleaner water, cleaner air, healthier and more productive farmland, and expanded green spaces for urban and underserved communities. These landscapes define California, covering over 70 million acres – nearly three-quarters of the state's landmass. They are a vital part of reaching our climate goals.

The Concept Paper includes a valuable set of themes and a framework that sets the stage for powerful action in these sectors. By recognizing that investments in our natural and working lands now can continue to yield benefits long into the future, the Investment Plan can lay the groundwork for truly transformative programs.

Below are our Coalition's general principles for the Second Cap-and-Trade Auction Proceeds Investment Plan, followed by some specific recommendations.

General Principles:

I. *Dedicate a greater proportion of auction proceeds to natural and working lands sectors.*

In his Executive Order B-30-15, Governor Brown included natural and working lands as one of the five 'pillars' for meeting the state's GHG reduction goals, stating that we should "[manage] farm and rangelands, forests and wetlands so they can store carbon".

Consistent with the Governor's goals, the Concept Paper repeatedly calls out the GHG reduction value of actions to protect and enhance our natural and working landscapes, including through land easements and improved management practices. Given the huge potential of these sectors to reduce emissions and sequester carbon, the proportion of auction proceeds dedicated to these actions should be much greater.

As stated above, these sectors are unique in that they can actively remove GHGs from the atmosphere in addition to reducing emissions. For example, conifer forests generally hold between 290 to 735 tons of GHG per acre, which increases by an average of 2.4% each year as trees grow. Enhancing soil health on farms and rangelands can cut GHGs by 1.2 tons per acre per year.[1] One hundred mature trees in an urban forest can reduce GHG emissions by five tons per year. The full sequestration potential of these sectors should be properly valued as part of the state's cap-and-trade investment decisions.

II. *Advance a systems approach to GHG investments in natural and working lands.*

The Concept Paper lays an excellent framework that takes a "systems approach" to maximize GHG reductions as well as co-benefits. We congratulate CARB on this valuable framing, and hope that it is pursued effectively as investments are made. This principle is particularly relevant in the natural and working lands sectors. Agencies should give additional consideration to projects that demonstrate a strategic, systems-oriented approach to achieving emission reductions. Projects that take a systems approach have the potential to achieve transformative change as well as multiple co-benefits and resilience.

[1] De Gryze, S., R. Catala-Luque, R.E. Howitt, and J. Six. 2009. Assessment of Greenhouse Gas Mitigation in California Agricultural Soils. PIER Final Project Report, January 2009. CEC–500–2008–039.

Particularly in the natural and working lands sectors, the actions taken should recognize the interplay between the various components of biological/ecological systems. It is important to recognize that components of natural systems interact with each other in complex ways, and that the overall landscape is healthier and more resilient when the landscape is viewed as an integrated system. Forests, mountain meadows, and streams are distinct types of habitat, and regulated under different authorities, but they are interdependent. On farms and ranches, holistic management planning approaches, including organic agriculture systems, are more effective at mitigating climate change than single climate-friendly agricultural practices. In the wetland and watershed sector, horizontal wetland levees, or expanded marshlands in front of manmade levees, have demonstrated a significant ability to nurture a healthy ecosystem that supports and provides resiliency to diverse wildlife as sea level rises.

Finally, as noted in the state's *Safeguarding California Plan* and the Governor's Executive Order B-30-15 investments in natural lands provide our greatest opportunity to help prepare for climate changes. Incorporating the expertise of wildlife agencies and building on existing plans to protect, connect, and restore important habitat areas will allow GGRF investments to help safeguard our threatened fish and wildlife populations. Fostering healthy soils and implementing water-saving practices will build resiliency to drought and floods, providing a buffer for farms, ranches, and the communities that depend upon them. Wetland levee systems provide communities with flood protection from sea level rise and storm surge while also storing and filtering reliable water supplies. And investments in urban forestry and related green infrastructure will contribute to building climate-resilient communities by capturing stormwater and reducing median temperatures through energy conservation and heat island mitigation.

III. *Invest in plans and strategies that take an integrated approach to GHG reductions and public benefits.*

We appreciate that the Concept Paper highlights the opportunities of investing in "integrated" strategies to reduce GHG emissions. From a natural and working lands perspective, integration across sectors can optimize not only GHG reductions, but many other critical public and environmental benefits, which can advance cost-effective and strategic investments.

As the Concept Proposal notes, "Investing in multiple project types to cut greenhouse gases in one geographic area would allow the State to emphasize the synergistic effects that exist between many of the strategies." By investing in integrated local government (or jurisdictional) plans and actions to reduce GHG emissions, the state can enhance the effectiveness of GHG investments by catalyzing reductions in multiple sectors. The conservation of natural and working lands results in direct GHG reductions through avoided emissions and carbon sequestration. These activities can also help reduce GHG emissions in other sectors (indirect reductions), such as transportation and energy efficiency. For instance, the conservation of non-urban lands can help

constrain urban growth patterns, thereby protecting the carbon sequestration function of the land and also constraining urban emissions related to transportation. Likewise, urban forestry and parks, green alleys and school yards, and other green infrastructure projects can, among other things, lower energy-related emissions by providing shading that reduces the need for air conditioning and encourages the use of active transportation over autos.

While a number of local governments, such as counties and cities, are developing plans and strategies to reduce GHG emissions, many have yet to include natural and working lands as part of their strategy. To optimize these GHG reductions and public benefits across sectors, local governments, like counties and cities, should integrate natural and working lands and green infrastructure in their GHG reduction plans. The State should therefore invest in these integrated plans using a "design-build" approach, whereby a portion of the funds could support the integration of natural and working lands in a GHG reduction plan (the design) with significant funds also dedicated to implementation (build) to achieve the reductions identified in the plan.

IV. *Increase coordination among agencies in investment decisions.*

To achieve the integrated systems approaches outlined above, agencies will need to increasingly coordinate their actions and in some cases collaborate on program delivery. The development of grant guidelines and the review of submitted proposals should include a process that allows for input and collective decision-making from multiple relevant agencies. An example of this includes the Environmental Farming Act Science Advisory Panel at the Department of Food and Agriculture (CDFA), which includes citizen appointees from CDFA, the Natural Resources Agency and Cal-EPA. The Advisory Panel provides recommendations on grant guidelines for the State Water Efficiency and Enhancement Program (SWEEP).

Investments in rural watersheds would benefit from close coordination of grant programs at Cal Fire and the Department of Fish and Wildlife to maximize benefits to wildlife adaptation and watershed health. Further coordinating with grant programs focused on downstream rangelands, agricultural lands, and urban areas would promote habitat connectivity and watershed function.

To guide this process, agencies should individually and collectively identify priority areas for investment that also produce priority co-benefits. Investments should be large enough and made with enough focus and coordination to make a material difference for net GHG reductions.

V. *Systematically assess GHG reduction opportunities across the state, including both reductions and sequestration opportunities.*

Due to the complexity and variability of natural systems, many of the potential emissions reductions in the natural and working lands sectors are difficult to fully quantify. More work

should be done to assess the current and potential carbon sequestration benefits of our natural and working lands. In addition, the potential emissions benefits of landscape protection due to avoided conversion to more intensive uses should be clarified.

In order to better guide the investment of cap-and-trade auction proceeds, the State of California should perform a systematic spatial analysis to support the success of GHG reduction actions in the natural and working lands sectors, using a standardized approach. This analysis should be used to identify the greatest opportunities to reduce GHGs and sequester carbon. This information could be used as a data layer alongside other statewide plans to advance the maximum GHG reductions while achieving multiple benefits.

VI. *Prioritize investments that also advance climate resilience and larger complementary policy goals, as well as co-benefits.*

As the state deals with deepening drought, warmer temperatures, rampant forest fires, continued loss of habitat and biodiversity, and the threat of sea-level rise along approximately 1,100 miles of California coastline, state investments in infrastructure and GHG reductions should, where possible, go to strategies that maximize co-benefits. Cap-and-trade auction proceeds investments must first and foremost achieve GHG reductions and/or carbon sequestration benefits. But the investment planning process should also include processes to ensure that other complementary policy goals benefit from these investments. Relevant complementary policy goals include, but are not limited to, adaptation and climate resilience, management of organic wastes, economic and environmental justice, air and water quality and public health.

This could be implemented by assessing investments and grant applications for their consistency with state policy plans such as the Safeguarding California Plan, State Water Action Plan, Forest Carbon Plan, State Wildlife Action Plan and Sustainable Communities Strategies. Agencies could review, score, and select projects based on criteria developed from consultation with these complementary policy plans.

Additionally, agencies could score projects based on their potential to produce a variety of environmental, social, and economic co-benefits. Projects that produce numerous co-benefits in addition to GHG reductions should be given preference.

As mentioned above, certain resource management strategies can advance Governor Brown's E.O. B-30-15 by reducing emissions and adaptation simultaneously: natural and working lands provide significant climate change adaptation benefits to humans and wildlife in addition to their great ability to sequester greenhouse gases. Restoration and conservation of natural systems like forests, grasslands, agricultural lands and wetlands can create stronger natural systems that also provide protection from natural climate impacts. For example, wetlands can provide protection

from flooding, while also providing valuable wildlife habitat and cleaner water. Additionally, protecting and restoring natural and working lands supports better watershed function, buffering California during periods of drought or extreme precipitation worsened by climate change.

VII. *Ensure that rural communities benefit from GGRF investments and recognize that these investments also benefit urban areas.*

The Concept Paper notes the importance of investments that benefit rural communities and economies. These areas are often stewards of the state's natural and working lands, with rural economies and livelihoods heavily reliant upon our farms, ranches, forests, and wetlands. Investments in these communities can simultaneously enhance their ability to steward the state's natural resources and provide resiliency in the face of climate impacts.

It must also be recognized that investments in the more rural areas of the state can provide GHG and public benefits not only to the immediate area, but also downstream benefits to urban communities in the form of clean drinking water, clean air and flood protection. For example, looking at the forest and watershed in a holistic way, and planning for healthy, carbon-rich, and resilient landscapes along the watershed continuum will help store carbon in a more secure manner that also help safeguard water supplies while providing habitat corridors, recreational opportunities, and connectivity between different ecosystems.

Investments should ensure geographic equity by recognizing the value of these downstream benefits, as well as the economic and societal co-benefits for vulnerable rural communities. Where appropriate, projects should include outreach and technical assistance to ensure that hard-to-reach communities are able to benefit from – and provide maximal GHG reductions through – rural area investments.

VIII. *Ensure investments are designed to secure enduring benefits.*

A unique characteristic of the natural and working lands sectors is that the benefits build over time: early investments in forest lands conservation, for example, can annually sequester additional carbon over a multi-decadal time period. However, programs must be designed to achieve lasting management changes so that these landscapes remain healthy and capable of producing long-term benefits.

In the agricultural context, for example, investments should be designed to achieve transformative changes towards systems that combine multiple climate-friendly agricultural practices into a management planning framework. Incentives for implementing a single climate-friendly practice can have a short temporal impact, but programs that encourage the use of multiple complementary practices in tandem with one another can produce more lasting change.

Similarly, urban forest projects involve much more than the initial planting of trees. Preliminary planning is vital to ensure optimum site placement for maximum healthy growth for carbon sequestration and co-benefits such as improved air quality and cooling. As these projects are currently directed to public property, contractual agreements with local governments and agencies setting out urban forest management and maintenance requirements are key to the long-term viability of urban trees. Given the current state of public works and parks department staffing levels and budgets, additional incentives are recommended to guarantee urban forest sustainability and the long-term stewardship needed to protect these valuable natural resources.

Where feasible, we suggest coupling investments with long-term agreements that ensure that the benefits of the investments are maintained.

Specific Recommendations:

I. Expand use of conservation easements as a tool to sequester additional carbon and reduce emissions from the landscape.

Conservation easements provide a significant opportunity to produce enduring greenhouse gas reductions from the landscape. This voluntary legal instrument and incentive for landowners limits land conversion to other uses and guides management practices. These legal limitations "run with the land" and have the effect of reducing GHG emissions due to land conversion. They can also advance additional carbon sequestration by guiding management practices on the landscape. While a small amount of funds in the first three year investment period have been dedicated to conservation easements through the Forest Legacy Program and the Sustainable Agricultural Lands Conservation program, funding for conservation easements should be significantly expanded across all relevant landscape types.

A. ***The Wildlife Conservation Board should be among the eligible entities to receive funds from the GGRF to advance the use of forest conservation easements.***

The Wildlife Conservation Board (WCB) operates throughout the state and works closely with the Department of Fish and Wildlife to incorporate climate adaptation terms into conservation easements. The WCB has been the entity responsible for administering the overwhelming amount of funding for conservation easements in the past, and has a long track record of working with landowners and conservation partners. The Board includes a Legislative Advisory Committee, and has the capacity to manage the conservation easement purchases and other real estate transactions that will be an important part of achieving our natural and working land climate goals.

B. ***In addition to conservation easements that preclude development, expand use of Working Forest Conservation Easements to achieve permanent improvements to management in priority watersheds.***

The Concept Paper recognizes the need to take a comprehensive approach to climate mitigation at significant scale across ownership boundaries to sequester more carbon, restore better watershed function, and improve the stability and resilience of our forests. Because of the long-term nature of efforts to restore well-functioning forests, investments must be coupled with a mechanism to maintain the desired improved condition.

On private land, working forest conservation easements that require habitat elements and management that achieve the GHG reduction goals, as well as climate resilience, will be the most cost effective way to ensure the desired future condition and corresponding public benefit. As mentioned earlier, because easements are monitored in perpetuity by a qualified land trust, they ensure public benefit from investments without creating an ongoing cost burden for the state. Working forest easements in actively managed mixed conifer forests that include terms to significantly increase carbon stocks, improve habitat quality, and enhance climate resilience cost around $800-1,000 per acre and result in carbon sequestration at about $6-8/ton when considered over the next 50 years.

II. *Invest in California desert ecosystems to sequester more carbon and reduce GHG emissions*

The Investment Plan should include desert ecosystems as part of the natural and working lands sector. California's diverse desert vegetation has the potential to actively sequester carbon and store it for long periods of time in desert soil. In a report prepared by the Center for Conservation Biology at the University of California, Riverside, carbon dioxide is fixed and stored in desert soil at a rate of approximately 0.25 - 2.5 tons/acre per year depending upon the particular ecosystem[2]. And just like other natural ecosystems, these areas can be high emitters of stored greenhouse gases if the land is disturbed. Disturbance of fragile desert soil results in fragmentation and erosion, exposing stored carbon to the atmosphere.

As a large, relatively untouched region covering approximately 28% of the state, there is high potential for significant greenhouse gas reduction benefits if these lands are protected, restored, and conserved. Unfortunately, we are now seeing a significant increase in disturbance of desert soil as cities and businesses look to it as an area open to development. Additionally, off-highway

[2] *Carbon Balance in California Deserts: Impacts of widespread Solar Power Generation*, Center for Conservation Biology, University of California, Riverside. 2013. p.11, http://www.energy.ca.gov/2014publications/CEC-500-2014-063/CEC-500-2014-063.pdf

vehicle (OHV) use in undesignated areas has caused significant damage to environmentally sensitive areas.

State investments should include conservation easements on intact desert lands with high value for carbon and sensitive wildlife, as well as the enforcement of OHV closures and off-limits areas. Opportunities for restoration and carbon sequestration include plant and soil recovery in developed areas as well as around the Salton Sea.

III. ***Expand scope of urban resource investments to include local parks, riverways, green alleys and schoolyards, and related green infrastructure.***

We applaud the Air Resources Board for recognizing the need for continued investment in California's urban forests, and support the strong connection that CARB has highlighted between urban forestry and environmental justice. As noted in the concept proposal, "the potential benefits of forests located in urban areas-including carbon sequestration, air filtration, community cooling, improved active transportation and recreation conditions, improved storm-water runoff, and water retention-are under-realized." Current investments through CAL FIRE's Urban and Community Forestry Program are supporting these myriad project benefits, and should continue.

Many of these potential benefits should also be realized through climate-smart green infrastructure projects in urban areas that connect, cool, absorb, and protect. Examples of climate-smart green infrastructure include green alleys, school yards, parks, riverways and greenways. Multi-benefit green infrastructure investments are an essential strategy to reduce GHG emissions that are currently missing in the expenditure plan. A climate-smart green infrastructure approach increases mobility options in communities to ensure transportation mode shifts, captures and cleans our water, reduces energy usage connected with urban heat island effect, and sequesters GHGs through natural infrastructure. These strategies produce important health co-benefits for our communities as well, by cleaning the air, promoting active transportation, reducing heat-related illnesses, providing outdoor recreation opportunities, increasing community connection, and increasing climate resilience. Creating cross-cutting investment opportunities for climate-smart green infrastructure will complement current investments in urban and rural forestry, wetlands, and other natural resources. It will also catalyze much needed integration at a local level, incentivizing local jurisdictions to coordinate across agencies for investment decisions and planning. These multiple-benefit investments will increase the overall impact of funding, help advance knowledge within the field of low-carbon community development, and promote replication.

Conclusion:

Thank you for the opportunity to comment. The Natural and Working Lands Coalition looks forward to participating in this process as the next Investment Plan takes shape. Please let us know if you have any questions about our recommendations.

Sincerely,

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