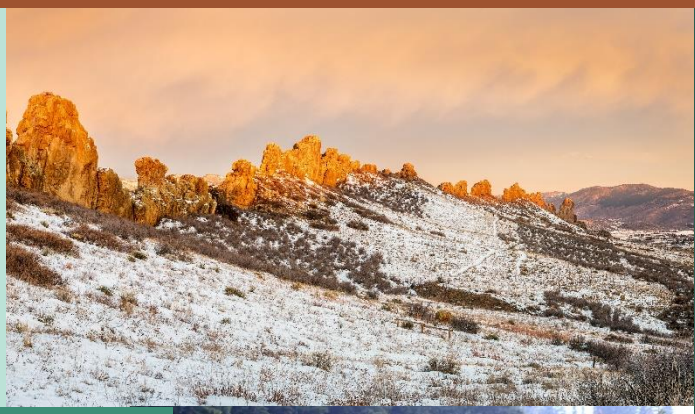
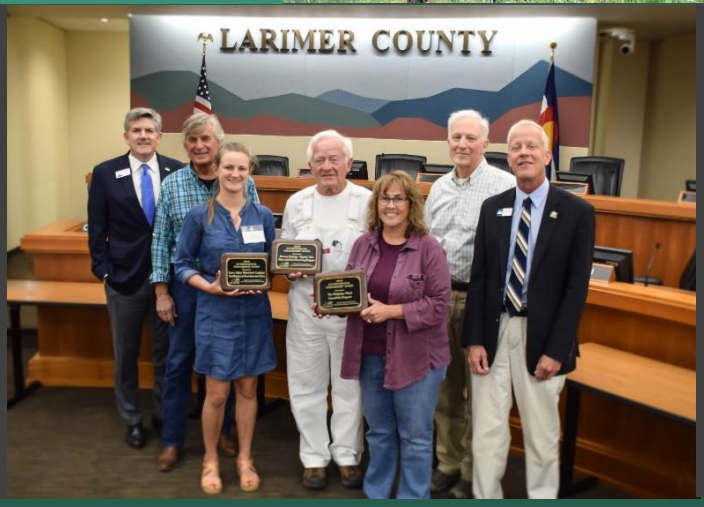
LARIMER COUNTY



ENVIRONMENTAL AND SCIENCE ADVISORY BOARD

2018 Annual Report



https://www.larimer.org/boards/environmental-and-science-advisory-board

LARIMER COUNTY | ENVIRONMENTAL AND SCIENCE ADVISORY BOARD

P.O. Box 1190, Fort Collins, Colorado 80522-1190, 970.498.5700, Larimer.org

January 2019

Board of County Commissioners:

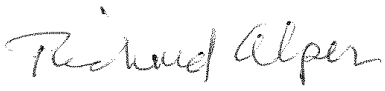
This annual report outlines the Environmental and Science Advisory Board's activities in 2018 and sets out our general goals and direction for 2019.

Important topics of discussion included the Regional Wasteshed Coalition's solid waste planning and coordination, including the Advisory Board's participation on the Solid Waste Stakeholder Committee. The ESAB also worked on the Phase-II Comprehensive Plan through attending community events and providing comments on the initial chapters of the Plan. Lastly, an important task included reviewing sections of the Final Environmental Impact Statement for NISP.

Additional information about the Advisory Board, including minutes for the meetings, is available on the County's website at: https://www.larimer.org/boards/environmental-and-science-advisory-board.

We would like to acknowledge County staff for their continued help and commitment to sound environmental management. In 2018, representatives from the Departments of Public Works, Natural Resources, and Planning attended ESAB meetings to assist and inform members of the Advisory Board.

We hope that the feedback we provided was useful for the County. Please feel free to contact any of our members if you would like to discuss specific issues in greater detail.



Richard Alper, Chair for 2017-2018

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2018 ANNUAL REPORT OF THE LARIMER COUNTY ENVIRONMENTAL AND SCIENCE ADVISORY BOARD

January 2019

I. INTRODUCTION

The Larimer County Commissioners established the Environmental Advisory Board in 1993. The Board consists of up to 12 at-large members, appointed by the County Commissioners. The name of the board was changed to the Environmental and Science Advisory Board (ESAB) in 2013.

The role of the Advisory Board is to advise the Board of County Commissioners and appropriate departments on environmental and science-related issues that affect Larimer County. Items considered by the ESAB come from the Commissioners, staff, citizens and our own members.

The Advisory Board meets regularly on the second Tuesday of each month and on an as-needed basis for special work sessions. The first agenda item of each meeting is devoted to hearing citizen's comments about environmental issues. The list of invited guest speakers that attended the ESAB meetings is presented in Section V of this report.

Important topics and actions considered by the Advisory Board are noted in Section II. Section III outlines the status of issues related to written correspondence. The actual recommendations provided by the Board are included in the Appendix.

The Advisory Board uses an issue index to keep track of the various issues that the board addresses. The index is updated on a monthly basis.

Steve Johnson remained the County Commissioner liaison to the Environmental and Science Advisory Board for the majority of 2018, with Commissioner Dougherty taking over October-December 2018. Shelley Bayard de Volo, from the Engineering Department, remained as the staff facilitator throughout 2018.

II. DISCUSSION TOPICS IN 2018

MONTH	TOPICS (Issue number)
January	• Neighboring County Citizen Boards and Nexus with other Larimer County advisory boards (11.00) • Colorado Climate Action Plan (19.02) *UPDATES* • Wasteshed – answers to questions from last meeting
February	• Forest Health and Climate Change – The influence of climate change on tree regeneration following fires across the Rocky Mountains. Camille Stevens Ruman, Associate Professor, CSU Dept of Forestry and Rangelands (5.00, 19.02) *UPDATES* • Fort Collins ClimateWise program • Wasteshed – Last stakeholder meeting • Environmental Stewardship Awards • Quarterly meeting with Commissioner Johnson
March	• Platte River Power Authority "Zero Net Carbon Study: Assumptions, Analysis and Results" Brad Decker and Joe Wilson, Platte River Power Authority (19.02) *UPDATES* • Intra-County Advisory Board Coordination • Wasteshed – PAC meeting 2/16 • Loveland Big Thompson River Corridor Master Plan • Appoint Environmental Stewardship Awards Committee • ESAB members upcoming appointments

April	• Emerald Ash Borer Dave Lentz, Natural Resources, Larimer County and John Kaltenbac, Colorado Dept. of Agriculture (18.04) • Discuss and finalize Environmental Stewardship Awards nominations, draft recommendations for BCC (8.01) *UPDATES* • March 22 Loveland Big Thompson Master Plan Presentation • After-action review of Phase 1: Mtn Resilance Plan • Phase 2 Comprehensive Plan: Eastern Plains – stakeholder group representative • Fracking in Fort Collins • ClimateWise and Larimer County green practices • Inter-county coordination report
May	• CANCELLED
June	• After-action review of Phase 1: Mountain Resilience Plan (1.01) • Larimer County Comprehensive Plan – Phase II Eastern Plains (1.01) Matt Lafferty, Principal Planner, Larimer County *UPDATES* • Intra-county coordination process – status • Wasteshed update • Environmental Stewardship Awards update • Board member updates – vacancies/applicants • Quarterly meeting with Commissioner Johnson • Recognize outgoing members
July	• IGA or 1041 permitting for NISP Rob Helmick, Senior Planner, Larimer County • Wasteshed, Solid Waste Planning Stephen Gillette, Dept of Solid Waste, Larimer County *UPDATES* • Issue Coordinator Position Description • Google Drive Tutorial

August	• Phase-2 Comprehensive Plan - Foundations Chapter (1.01) • NISP Final EIS – Review process (6.02a) *UPDATES* • Interacting with County staff – suggested rules of engagement • Strategic Plan Citizen Summit – summary • Wasteshed update
September	• Phase-2 Comprehensive Plan: Foundations Chapter Comments (1.01) • NISP Final EIS – Comments *UPDATES* • Announcement of CSU panel discussion on Glade Reservoir
October	• Phase-2 Comprehensive Plan - Visioning Chapter Comments (1.01) Matt Lafferty, Principal Planner, Larimer County • Energy at Colorado State University, and Larimer County's Green Practices program (12.02) Stacey Baumgarn – Campus Energy Coordinator, Colorado State University *UPDATES* • Wasteshed update • NISP Final EIS comments • County Environmental Responsibility Policy
November	• Coalition for the Poudre River Watershed (6.05) Jennifer Kovecses, Executive Director, Coalition for the Poudre River Watershed • Big Thompson Watershed Coalition (6.05) Shayna Jones, Executive Director, Big Thompson Watershed Coalition *UPDATES* • Wasteshed Update • Comprehensive Plan – Community Choices Events • Comprehensive Plan - Boards and Commissions Summit • Intra-County Board Collaboration Meeting Larimer Water Projects - Working Group update

December	• Forest Health (5.0) - Boyd Lebeda, Colorado State Forest Service • Forest Health (5.0) - Justin Whitesell, Larimer County Emergency Services *UPDATES* • ESAB issue index review • Consideration of ESAB 2019 work plan elements • Election of officers for 2019

III. STATUS OF ESAB RECOMMENDATIONS IN 2018

The table below outlines the formal recommendations made by the Advisory Board and provides a brief statement about the status of those recommendations. As an advisory board, the ESAB's written recommendations are submitted to the Board of County Commissioners or a requesting County department. The actual correspondence is shown in the Appendix.

Issue	Principal ESAB Actions and Recommendations	Status
Final Environmental Impact Statement for the Northern Integrated Supply Project (NISP)	The Advisory Board reviewed the Final EIS, paying specific attention to sections where the ESAB had previously commented to see if there were 1) new and/or significant changes; 2) inadequate data and/or analysis; 3) inadequate presentation of material; and 4) under-developed mitigation plan. The Advisory Board submitted to the Commissioners a memo outlining their findings with a table of individual Board member's comments attached.	The Commissioners did not formally comment, nor submit the ESAB's comments to the US Army Corps of Engineers. The Commissioners cited their need to remain an unbiased entity in light of their future need to consider Northern Water's application to the County for 1041 permitting in 2019.
Phase-II of a New Comprehensive Plan – Eastern Plains	The Advisory Board reviewed the draft Foundations Chapter provided for editorial and content comments. Comments were divided into (1) wordsmithing/edits, (2) substantive recommendations which consisted of identifying areas with confusing language, omissions of appropriate references and statements or data that were poorly presented. The Advisory Board submitted their memo outlining their findings with a table of individual Board member's comments attached to M. Lafferty, Principal Planner and J. Call of Logan-Simpson, the consultant preparing the Plan.	The ESAB's comments were received and will be incorporated into the draft Plan.

Issue	Principal ESAB Actions and Recommendations	Status
Environmental Responsibility Policy and the 2019-2023 Strategic Plan	Upon reviewing the current County Environmental Responsibility Policy (BCC P#8B), the ESAB identified the need for (1) an update to the Policy, and (2) the inclusion of an objective to address the Policy within the County's 2019-2023 Strategic Plan. The ESAB worked with Commissioner Dougherty, who drafted language (Objective 5) to be added to Goal 3 of the Plan. In a memo, the ESAB expressed their agreement with the objective's language, and also provided results from a survey of peer community's environmental responsibility policies.	At their work session, The Board of County Commissioners agreed with the Goal 3, Objective 5 language. They recommended the objective be included in the County's 2019-2023 Strategic Plan.

IV. ENVIRONMENTAL STEWARDSHIP AWARDS

Each year, the Larimer County Environmental & Science Advisory Board and the Larimer County Commissioners recognize environmental efforts of county residents, businesses, organizations and/or agencies by awarding the Environmental Stewardship Awards. Environmental Stewardship Awards were first issued by Larimer County in 1995.

The board looks for individual or group activities that are innovative and proactive, and that demonstrate exceptional effort and concern for the stewardship of the environment. Projects can be either completed one-time efforts or ongoing activities. Both types are judged on their degree of difficulty and the results they achieve. The Environmental and Science Advisory Board solicits nominations, reviews them and makes recommendations for the awards to the Larimer County Commissioners.

In 2018, more effort was made to increase exposure of the awards through advertisement on social media (Facebook, Twitter), as well as news print media. Despite this effort, there were only three very well-deserved nominations, all of which happened to be from Estes Park. The Board reviewed these nominations and agreed that all of the projects were worthy of consideration and all provided good examples of the important activities local citizens are engaged in to protect and improve our environment. The recommended projects produced positive environmental results locally and provided good examples of what others can do. Therefore, all were recommended to the BCC for consideration of the award and were ultimately presented with Stewardship Awards at a public ceremony by the BCC. The 2018 awardees were:

1. Estes Valley Watershed Coalition

   The EVWC is a non-profit organization comprised of Estes Valley citizens who volunteer their time to plan and implement watershed restoration projects. The Coalition also serves to educate the local community on the importance of the watershed to water quality, flood risk, and fish and wildlife. They work with the community by involving stakeholders and students from the local schools in all of their projects.

   In 2017 the Coalition completed 14 mitigation and watershed improvement projects, costing more than $4 million, primarily funded through Federal and State grants with local matching funds. Restoration projects took place in Fish Creek, Fall River, and the Upper Big Thompson River, and included over 3 miles of stream improvements. The result of their work has improved public safety and contributed to more resilient watersheds within the Estes Valley. Wildlife have benefitted as well, and even during the construction phase, beavers, waterfowl and fish moved into the newly constructed pools within restored streams. Using their watershed Master Plan as their guide, the Coalition continues to work on stream improvement projects in the Estes Valley.

2. Bestway Painting and Timothy Stolz

   Timothy Stolz, owner of Bestway Painting in Estes Park, administers a program where he

collects unused paint and stain for recycling. The past year was the program's first year, and it was highly successful - collecting more than 70,000 lbs. of paint! Bestway Paint collects and stores the paint throughout the year, and then provides the labor to load PaintCare trucks when they come to the Estes Valley for pick-ups. Tim's program was particularly important while Hwy 34 was closed, which

made it very difficult for contractors and citizens to properly dispose of their paint and stain at the County landfill.

Tim works with community youth who volunteer their time with the program, and he participates in the Estes Park Earth Day Celebration by sponsoring the event's first-place prize of $100.00 for the top poster presentation. Tim's work has contributed much to improve water quality in the Estes Valley by keeping unwanted paints and stains out of the local waterways.

3. Ridgeline Hotel

The Ridgeline Hotel in Estes Park integrates environmental stewardship through its GreenPath program. This includes using LED bulbs for all their lighting, offering a recycling program for glass, aluminum, batteries and more. They have installed bulk soap and shampoo dispensers in their showers, which eliminates the plastic waste associated with the small bottles typically provided. They also educate their guests on the importance of water conservation through providing them a shower timer that challenges them to a 5-min shower. Guests can contribute to reducing the Hotel's environmental impacts through participating in an "Opt-Out of Housekeeping" option in exchange for a free drink.

The Hotel's Ridgeline's Latitude 105 restaurant, and adjacent Estes Park Conference Center, eliminates its food waste using a Food Waste Digester. Since February of this year, they have digested 1.3 tons of food waste! That is all food waste that would have otherwise gone to the County landfill. At the conference center, the hotel hosts zero waste events through using reusable or compostable service ware.

The Ridgeline Hotel educates its guests and its employees about what they can do to make positive changes toward environmental stewardship, and to think in terms of "the landfill should be the last option" when it comes to waste.

V. INVITED SPEAKERS AND GUESTS FOR MONTHLY MEETINGS

MONTH	PERSON	SPEAKER'S TOPIC
January	No Guests	
February	Camille Stevens-Rumann, Assistant Professor, Colorado State University	Forest Health and Climate Change – The influence of climate change on tree regeneration following fires across the Rocky Mountains
March	Brad Decker, Platte River Power Authority	Platte River Power Authority "*Zero Net Carbon Study: Assumptions, Analysis and Results*"
April	Dave Lentz, Larimer County Forester, and John Kaltenbach, Colorado Dept. of Agriculture	Emerald Ash Borer and Parasitic Wasps Biological Controls
May	Cancelled	
June	Matt Lafferty, Principal Planner, Larimer County, Jeremy Call, Logan Simpson	Phase 2 Comprehensive Plan: Eastern Plains
July	Stephen Gillette, Larimer County Dept of Solid Waste	Wasteshed, Solid Waste Planning
August	No Guests	
September	No Guests	
October	Matt Lafferty, Principal Planner, Larimer County	Phase-2 Comprehensive Plan - Visioning Chapter Comments
	Stacey Baumgarn, CSU Campus Energy Coordinator	Energy at Colorado State University, and Larimer County's Green Practices program
November	Jennifer Kovecses, Executive Director, Coalition for the Poudre River Watershed	Coalition for the Poudre River Watershed
	Shayna Jones, Executive Director, Big Thompson Watershed Coalition	Big Thompson Watershed Coalition
December	Boyd Lebeda, Colorado State Forest Service Justin Whitesell, Larimer County Emergency Services	Forest Health

VI. ENVIRONMENTAL AND SCIENCE ADVISORY BOARD MEMBERS

Board Member	Status
Jane Abels	Retired June 2018
Richard Alper	Active
Corey Broeckling	Retired June 2018
Daniel Beveridge	Active
Richard Conant	Active
Jim Gerek	Re-Appointed July 2018
Michael Lee Jones	Active
Allyson Little	Appointed July 2018
Kirk Longstein	Appointed July 2018
Kimberly Karish	Retired June 2018
Evelyn King	Active
David Lehman	Re-Appointed July 2018
George Rinker	Appointed July 2018
Matt Tobler	Retired December 2018
Joseph Wilson	Retired June 2018
Katrina Winborn-Miller	Appointed July 2018

Note: This list includes all Advisory Board members who served during the year. At any given time, the Board consists of a maximum of twelve members.

VII. YEAR 2019 WORKPLAN

The workplan provides information about the general direction the Environmental and Science Advisory Board considers taking in 2019. Because conditions or priorities in the County can change, a considerable degree of flexibility needs to be maintained.

Overall: The ESAB strives to inform, and be informed, about county government-related policies, decisions, issues and actions that have environmental implications. To that end the ESAB will:

1. Serve as an informational resource that provides science-based recommendations to the County Commissioners and departments, points out areas of uncertainty and suggests appropriate ways to address them;

2. Identify environmental and science-based issues and opportunities for the consideration of the County Commissioners so that the BCC can be proactive in their responsibilities towards the environment. To that end, the ESAB will solicit from its membership ideas with respect to current environmental issues, and develop a consensus of the most relevant topics to be forwarded to the BCC;

3. Develop and maintain an attitude of trust and respect among the ESAB, the Commissioners, County departments and other boards and commissions;

4. Foster a cooperative working relationship with local & state organizations that are connected with topics on the ESAB Issue Index.

5. Provide updates on current environmental topics in order to enhance the common knowledge base among the members.

Response to Referrals or Requests:

1. Respond in a timely manner to issues raised by the Board of County Commissioners, County departments and ESAB members.

2. Facilitate the response to citizen comments received by the Advisory Board with the Board of County Commissioners and appropriate County departments.

Current Environmental Topics:

1. Consider the regional implications of important environmental issues and consider ways to address those issues across local jurisdictional boundaries. Examples of current issues include planning for ozone air quality compliance, enhancement of forest and watershed health, and mitigating impacts of hydraulic fracturing in oil/gas development.

2. Monitor important water issues including watershed planning and proposed water projects.

The Halligan Reservoir and Milton-Seaman Reservoir expansion projects are examples of current water issues.

3. Monitor solid waste management issues such as landfill operations, recycling and hazardous waste disposal. As the County landfill approaches its capacity, a regional Wasteshed Coalition has recommended facilities and policies to be created for the next 10-50 years. This is an important task because of the lead time necessary for implementing changes to the solid waste management system and its long-term impacts on the region.

4. Monitor the status of conventional, renewable and alternative energy development, and as requested, consult with staff and the County Commissioners regarding potential environmental implications. Wind energy, solar energy, and oil and gas development are current topics of interest.

5. Consider important natural or ecological impacts associated with large-scale events such as wildfire, floods, droughts, climate change and biological events (i.e., emerald ash borer, pine beetle). Incorporate resiliency, mitigation, and recovery into planning and emergency management of such large-scale events.

6. Participate in creating and revising major County policies and plans, including Phase II of the County's Comprehensive Plan Update for 2019. Also, assist with updating the County's Environmental Responsibility Policy as part of the 2019-2023 Strategic Plan.

<u>Stewardship Awards:</u>

1. Coordinate the annual Environmental Stewardship Awards in partnership with the County Commissioners.

<u>Communications and Process:</u>

1. Maintain open communications with the County Commissioner liaison assigned to the Environmental and Science Advisory Board in order to facilitate communication about environmental concerns or issues seen by either the Commissioners or the Advisory Board.

2. Use the Commissioners' Work Sessions and Administrative Matters meetings, as appropriate, for communicating on important environmental and science issues as they arise.

3. Continue the practice of assigning interested ESAB members monitoring tasks on select environmental issues, and then providing periodic updates to the full Advisory Board.

APPENDIX: WRITTEN CORRESPONDENCE

These documents were prepared by the Environmental and Science Advisory Board as part of their activities in 2018.

- September 11th, 2018. US Army Corps of Engineer's Final Environmental Impact Statement for the Northern Integrated Supply Project (NISP). Memo and spreadsheet of detailed comments provided by email to the BCC

- September 13th, 2018. Foundations chapter of the Phase-2 Comprehensive Plan. Memo and spreadsheet of detailed comments provided by email to Matt Lafferty, Principal Planner.

- December 6th, 2018. Memo to the Board of County Commissioners detailing the Board's consideration of the County's Environmental Responsibility Policy and the 2019-2023 Strategic Plan.

Shelley Bayard de Volo <bayardsh@co.larimer.co.us>

ESAB Comments on the NISP FEIS

Shelley Bayard de Volo <sbayard@larimer.org> Fri, Sep 14, 2018 at 2:24 PM
To: Steve Johnson <swjohnson@larimer.org>
Cc: "Richard S. Alper" <rsalperesq@aol.com>, Jim Gerek <jmgerek@frontiernet.net>, Michael Jones <michaelleejones@comcast.net>

Hello Steve,

In response to your request that the ESAB review the Final Environmental Impact Statement for NISP, please find the attached memo with comments table.

The Memo provides a summary of the important outcomes of the Board's review and their original comments in table format. If you would like the original spreadsheet, please let me know.

The Board will be interested to hear whether you decide to share these comments with the BoCC, and also if the BoCC decides to share them with the Corps of Engineers.

The ESAB welcomes your feedback on whether these comments are helpful and how they may be improved in the future.

Please let me know if you have questions - Thanks! Shelley

--

Shelley Bayard de Volo
Environmental Coordination Specialist
Environmental and Science Advisory Board Liaison

Engineering Department
200 W Oak St, Fort Collins, 80521 | 3rd Floor
W: (970) 498-5738 |
sbayard@larimer.org | www.larimer.org/engineering

ESAB Memo on NISP FEIS Comments 20180914 final.pdf
464K

LARIMER COUNTY | ENVIRONMENTAL AND SCIENCE ADVISORY BOARD

P.O. Box 1190, Fort Collins, Colorado 80522-1190, 970.498.5738, Larimer.org

MEMORANDUM

TO: Commissioner Steve Johnson, BoCC Chair

FROM: Richard Alper, ESAB Chair and

Michael Lee Jones, NISP Comment Coordinator

DATE: September 11th, 2018

RE: Comments on the Final Environmental Impact Statement (FEIS) for the Northern Integrated Supply Project (NISP)

Six ESAB members reviewed the sections of the FEIS that were previously commented on by the ESAB in 2015. These sections are in Volume 2, Chapter 4 and are labeled “Impacts to Surface Water”, ”Impacts to Surface Water Quality”, and ”Impacts to Aquatic Biological Resources”. The same sections in Chapter 5, Cumulative Impacts, of Volume 3 were also reviewed. It should be noted that ESAB members have not reviewed the entire FEIS or the 24 technical reports attached to it. On September 5th, the NISP comment committee - Michael Jones, Jim Gerek, Rich Alper and Shelley Bayard de Volo - reviewed each comment in preparation for the next ESAB meeting. At its regular meeting on September 11th, the ESAB discussed this Memo together with the comments described below and adopted this summary.

A total of 51 comments on the FEIS were submitted and organized into four themes (See attached spreadsheet of comments). The major comment themes are 1) new and /or significant (4 comments), 2) inadequate data and/or analysis (31 comments) that includes insufficient statement of context or applicable water quality standards, 3) inadequate presentation of material (10 comments), and 4) under-developed mitigation plan (2 comments). The remaining four comments were miscellaneous, including "sufficiently addressed" or "observation acknowledged”. Except as noted, each comment is assigned to one theme and labeled as such in the “Theme” column in the accompanying spreadsheet.

Following are individual examples of each of the four themes of our comments:

1. **New and/or significant**–Comment #1 Surface Water. The text states that diversions at the Poudre Valley Canal headgate will not be allowed to fluctuate more than 500 cfs in a 24-hour period. Compared to the USGS mean flow rate of 1,811 cfs at the Canyon Gage for June in the years 1881-2003, such a fluctuation amounts to nearly one-third of the river's entire flow at its

peak for the year. A 24-hour period is much too brief for a change of this magnitude and the time period for fluctuation in flow should be extended. Additionally, the fluctuation maximum should be modified to reflect a percentage of the current instantaneous flow rate rather than a set value of 500 cfs, as it is certainly not advisable when the mean monthly flow rate is near or equal to 500 cfs. (Note: Additional new or significant comments may be found at Water Quality Comment #9, Surface Water Comment #8, and Aquatic Resources Comment #5).

2. **Inadequate data or analysis**–Regarding temperature WQBEL's (Water Quality-Based Effluent Limitations), there are eight wastewater treatment facilities studied as to temperature, per Section 4.3.1.1.6, page 4-77. However, according to the text, available temperature data is only available for two of the eight facilities, Drake and Mulberry. Therefore, evaluation of temperature data for low flows is limited and not adequate or representative for a significant issue, i.e., analysis of temperature data at low flows. This comment exemplifies the commonly found problem of data that is insufficient for the given analysis. More or better data is needed, or a clear statement should be made indicating the data gap and associated uncertainty.

3. **Inadequate presentation of material**–Regarding monthly daily maximum and minimum flow data: Chapter 4, pg. 4-10 notes that the daily disaggregation data was provided to other resource specialists for use as inputs for their models and that other analytical tools were used for assessing potential NISP effects such as aquatic biological effects or stream morphology. So, while the surface water flow data is presented as monthly and daily median results, other NISP effects may have been assessed using detailed daily data. This comment points out a frequently found shortcoming in the incomplete, ineffective, or confusing presentation of important information that hinders understanding. A more complete description of impacts, models, analytic tools and changes needs to be made that places them in a relative context so that the reader may comprehend the importance, or lack thereof, of such impacts and changes.

4. **Under-developed mitigation plan**–Regarding *E. coli* concentrations downstream from the Fossil Creek Outlet in Segment 12: Modeling results predict concentrations consistently above the water quality standard. Volume 4, Appendix B, Section 3.4 Water Quality, point WQ-04 recommends: "establish/enhance streamflow and water quality network", but addresses no specific mitigation action specific to *E. coli*. Mitigation factors should be stated in a clear and specific manner.

The general impression from the ESAB is that a) the language and data figures/tables in the FEIS underestimate the probable adverse impacts and consequences of the NISP upon the Poudre River and b) the simple description of models, data figures/tables, and simulations, without interpreting the meaning and impacts, is not sufficient to provide understanding given that the FEIS is intended for public review. At your request the NISP comment committee is available to discuss this summary.

The ESAB recognizes that the BoCC, as a cooperating agency in the NISP EIS process, has been on record since 2015 as publicly endorsing the NISP project. The ESAB requests feedback as to whether this Memo is found to be useful and what, if any, actions might be taken as a result of this Memo. The ESAB appreciates the opportunity to provide to you their comments on this important document.

1. Impacts to Water Quality				
#	Name of editor	Chapter heading, Topic heading, Page #, Paragraph #, Starting Line #	Substantive Comments/Recommendations	Theme
1	Alper	v 2 chap 4 sec 4.3 ,4-66	substantial revision to surface water quality analysis due to inputs from EPA and CDPHE re water temperature modeling, wet dry average years and chronic wq concerns	ackn - N/A
2	Alper	v 2 chap 4 sec 4.3 .1.1.4 pg 4-71	monthly mass balance results for poudre cannot be used to compare for compliance with water quality standards stated in table 4-23 pages 4-69 and 70. that would require data for daily river model which does not exist. should there not be daily river flow data available after 14 years of study which could be applied against water quality standards stated in Table 4-23?	Inadequate data/analysis
3	Alper	v2 chap 4; sec 4.3.1.1.5 4-73 graph 1 5th sentence	same point as above. acute conditions evaluated qualitatively due to lack of daily or sub daily water quality data needed to evaluate acute conditions against water quality standards.	Inadequate data/analysis
4	Alper	same as just above; but see paragraph 3 ; 3rd sentence	recognizing that qualitative analysis of surface water quality has "inherent uncertainty, less detailed and only descriptive compared to quantitative estimates of changes in water quality. this should have been developed.	Inadequate data/analysis
5	Alper	v2 chap 4 sec 4.3.1.1.6 pag 4-80 para. 3; 4th sent.	topic: evaluating effect of annual low flow values of project on water quality based effluent limitations: using design capacity of treatment facility may minimize the concentration of constituent pollutants in the low flow; they should use average daily flow or monthly rolling averages; They have selected monthly median values as basis for evaluating WQBEL on low flow. Having selected monthly median values for flows they then say there is no good method to convert that to 85th percentile instream concentrations as required by CDPHE Reg 31. The patch is to use three months of low flows. Why then have they selected monthly median values instead applying the percentile concentrations required by CDPHE? It is unclear which three months of low flow are selected or why three months were selected instead of 4 or 5 months.	Inadequate data/analysis
6	Alper	same as just above; page 4-80 last para; 2nd and 4th sentences	regarding temperature WQBEL's, there are 8 wastewater treatment facilities studied as to temp per 4.3..1.1.6 page 4-77. however available temp data is only available for two of the 8, drake and mulberry. therefore evaluation of temp data for low flows is limited not adequate or representative on a significant issue; ie analysis of temp data at low flows.	Inadequate data/analysis
7	Alper	4-179, 4.3.6.1.1; para 1 4th sentence	potential arsenic exceedances in glade reservoir, partially used for drinking water? should be specific treatment measures to comply with water quality standard	Addressed under mitigation or monitoring
8	Alper	4-179-4-180; 4.3.6.1.2 para.1; 1st and 3rd sentence re Upper Galeton	is this in weld county, so not our concern? due to thermal stratification a eutrophic reservoir during summer vulnerable to high chlorophyll a for a drinking water reservoir	N/A outside county and downstream
9	Alper	4-182; 4.3.6.2.2 Poudre River Temp; 5th bullet bottom of page	increased diversion at poudre valley canal may result in lower flow rates and increased temperature downstream partially mitigated by NISP exchange of diversions from Larimer-Weld ditch to the PV Canal	New and significant
10	Alper	4-183; 4.3.6.2.2 Alt 2M: para 1 , 4th and 5th sent.	Alt 2m: Net average cooling effect across all 6 focus location over 5 simulated years and over same period, net reduction in total simulated acute and chronic exceedances. Simulation relied upon not explained or cross referenced in this summary.	Addressed in Hydros 2018i
11	Alper	4-188; 4.3.6.2.4; para 1 last sent.	I believe this says that due to conveyance refinement under Alt 2M there is a reduced chance of exceedances of effluent limitations at the three treatment plants mentioned . It is not clear what "increase low flow values " means.	Inadequate presentation
12	Alper	pg 4-189: Sec: 4.3.6.3 last sentence; and pg 4-190; sec. 4.3.6.3.2, first sent.	both at the kersey gage on the south platte and throughout the south platte, there is a projected decreased in monthly and median flow of 2-17%. It is asserted that this decrease in flow will not result in a substantial change in the temp of the water entering the south platte from the poudre river. There is no percentage standard offered to describe what amount of decreased flow would result in what level of increased water temp in the Poudre River.	Inadequate data/analysis

1. Impacts to Water Quality				
#	Name of editor	Chapter heading, Topic heading, Page #, Paragraph #, Starting Line #	Substantive Comments/Recommendations	Theme
13	Alper	pg 4-190; Sec. 4.3.6.3.1; 5th sent and last sent...	anticipate elevated e coli concentrations and sulfate exceedance due to decreased flow., booth in the south platte.No treatment option for these exceedances is addressed.	Inadequate analysis
14	Alper	pg 4-191; sec. 4.3.6.7; 2nd sent. citing Table 4-25 page 4-93 and table 4-38; pg 4-192 Table 4-38	table 4-38 relies upon a set of adjectives (example minor beneficial, minor adverse) explained in table 4-25 which concern water quality impacts..However neither Table 4-25 nor Table 4-38 provides numeric standards or quantitative specificity to provide clarity to the generic set of adjectives used. Whatever "moderate adverse" means specifically, Alternative 2M in the Poudre River may have moderate adverse consequences for water quality constituents. Without a specific numeric descriptor, it is difficult to devise a treatment strategy based on this level of characterization.	Inadequate data/analysis Inadequate presentation
15	Alper	4-193; sec 4.3.8 unavoidable adverse impacts 1st and 2nd sentence	subject to mitigation efforts described in section 4.3.9 and App B, 4.3.8 provides a succinct summary of major adverse impacts on the Poudre River: lower flows resulting in adverse impacts on stream temp, Dissolved Oxygen concentration and WQ constituent concentrations.	Ackn observation
16	Alper	pg 4-191; sec. 4.3.6.7; 2nd sent. citing Table 4-25 page 4-93 and table 4-38; pg 4-192 Table 4-38	The lack of quantification of water temperature does not allow the County to meaningfully analyze NISP's impacts to aquatic resources in the Poudre River corridor. The change in water temperature is perceived to be small. However, even a small change in water temperature can result in a significant impact. The impact could be to the aquatic resources or to water treatment facilities in meeting discharge requirement, or both.	Inadequate data/analysis
17	Alper	pg 4-89 , sec 4.3.1.3.1 water quality modelling-Glade; para 2 4th sent.	Metals are not simulated but inferences can be drawn from concentrations. It is a serious omission to not have collected data on cadmium, lead, mercury and, iron during the extended research period, particularly since mercury and selenium are known to be sources of concern in the Poudre, the water source for Glade. .	inadequate data/analysis; selenium not a metal.
18	Alper	pg 4-94, Sec. 4.3.2.1 and Figure 4-26; para 1 ; 4th and 5th sent.	curtailment of diversions is called conveyance refinement. as a result of curtailment of diversions at the Poudre Valley Canal, alt 2M would have the lowest PV Canal diversions among the Alternatives.	Ackn observation
19	Alper	pg 4-95; sec. 4.3.2.2.1 para 1. 3rd sent.	there are water quality constituents of concern that have not been explicitly simulated in the Glade WQ model. These constituents "of concern" are "qualitatively described based on inferences from the model." While there are limits to the number of WQ constituents which can be modeled at one time, the text does not explain why a constituent of concern was not modeled in a subsequent 'run" of the model. It is not sufficient to "qualitatively describe" a constituent of concern. Such constituents of concern should be specified in the text and should be "explicitly simulated."	Inadequate data/analysis
20	Alper	pg 4-95; sec. 4.3.2.2.1 Figure 4-27.	Simulated residence times of diverted water held in Glade Reservoir under Alt 2M are approximately 7 years.The text should discuss whether this is a short, medium or long residence time for a 170,000 AF reservoir based on the water quality and health effects of this estimated residence time.	Inadequate data/analysis
21	Alper	pg 4-99, 4.3.2.2.1 para 2, 3rd sent;	"hypoxia only impacts a large portion of the hypolimnion when storage volumes are low." The text should discuss the likely incidence of low storage volumes particularly in the initial years of storage and whether the effects of hypoxia are likely to reduce DO below 6.0 mg/l thus causing harm to aquatic life. The text is silent on these issues.	Inadequate data/analysis

1. Impacts to Water Quality				
#	Name of editor	Chapter heading, Topic heading, Page #, Paragraph #, Starting Line #	Substantive Comments/Recommendations	Theme
22	Alper	pg 4-99 Sec 4.3.2.2.1; para. 1, last sent.	the text indicates that surface DO may decrease below 6.0 mg/l before "fall mixing" in October or November, at which point due to falling temperatures, surface DO is replenished. It also indicates that in the summer and early fall when surface DO concentrations fall below the same 6.0 mg/l that is "the "aquatic life standard" and this may occur an average of six days per year..The text should then discuss which forms of surface aquatic life are mostly likely to be harmed , the likelihood of high temperatures and/or low flows increasing the average number of days of "below aquatic life standard" DO and what if any minimizing or mitigation measures shall be taken to protect aquatic life from deficient DO.	Inadequate data/analysis
23	Alper	pg 4-99 Sec 4.3.2.2.1; para. 1 on Nitrogen: sent 6 and 7.	The text states there are higher concentrations of TN at bottom than on surface due to timing and extent of hypoxia related to seasonal differences. The text does not provide a chart showing TN relative to interim numeric values at the bottom the way it does for the surface. There is no discussion of the specific timing and extent of hypoxia at the reservoir bottom or its effects on aquatic life or whether any mitigation/minimization measures ought to be implemented..	inadequate data//analysis
24	Alper	pg 4-100 sec. 4,3,2,2,1, para 1 on Phosphorus, sent 2 and 3.	same comment concerning Phosphorus as immediately above concerning Nitrogen at the bottom of the reservoir. As above figure 4-31 illustrates complying surface levels of Phosphorus without a corresponding chart showing compliance for sub-surface levels..	Inadequate data/analysis
25	Alper	pg 4-100 to 101; 4.3.2.2.1 para 1 on chlorophyll a Sent. 7 and 8; Figure 4-32 and Table 4-26	Figure 4-32 only indicates testing for chlorophyll a at the surface. same comments as comments 25 and 26 above. text indicates there is considerable uncertainty of results concerning 26 year simulation as to interim numeric values for chlorophyll a. The text does not explain why there would be considerable uncertainty based on a 26 year simulation, or what efforts were made to modify the model or adopt another model which would model "additional algal groups and additional temperature ranges" in order to reduce the level of uncertainty.	Inadequate data/analysis
26	Beveridge	v 2 chap 4 sec 4.3 .1.1.4 pg 4-71	Echoing comments as stated for the above two points **(lines 4 & 5 - Alper)**. Modification of the water quality model and/or acquisition of water quality data to provide a quantitative analysis would best support alternative comparison and therefore decision making.	Inadequate data/analysis
27	Beveridge	v2, ch4, sec 4.3.1.2.2, pg 4-84	Simulation model runs to determine stream temperatures (and indirectly periphyton establishment) seem limited, encompassing a 14 year time frame from 1981-1995 and involving only 5 runs. To better understand alternative impacts of stream temperature, adding more simulations based on inputs from more recent years could improve the analysis. [Additional reference - sec 4.3.2.4, pg 4-111]	Inadequate data/analysis
28	Beveridge	v2, ch4, sec 4.3.2.3.2, pg 4-108	E. coli concentrations downstream from the Fossil Creek Outlet in Segment 12; Modeling results predict concentrations consistently above the water quality standard. Mitigation factors should be addressed in a clear manner. V 4, app B, sec 3.4 Water Quality, point WQ-04 recommends: "establish/enhance streamflow and water quality network" but addressed no specific mitigation action specific to E. coli (although mitigation efforts are provided for temperature exceedance and mercury bioaccumulation in sec 4.3.2.12, pg 4-135)	Underdeveloped mitigation plan
29	Beveridge	v2, ch4, sec 4.3.6.2.2, pg 4-182 [*Poudre River Temperature]*	As adverse effects tend to be greater in dry years across all alternatives, was any cross-referencing or comparison done to generally recognized climate models that may indicate greater frequency of dry years in the future?	Inadequate data/analysis

1. Impacts to Water Quality				
#	Name of editor	Chapter heading, Topic heading, Page #, Paragraph #, Starting Line #	Substantive Comments/Recommendations	Theme
30	Jones: no comments			
31	Lehman	Vol 2, Chap 4, section 4.3.1.1.4, pg 4-71, first paragraph	"Mass balance" is sometimes hyphenated, sometimes not hyphenated. It is not clear if the 2 ways are being used interchangeably or have different meanings. "Mass-balance" is not defined in the Glossary. "Mass" seems to be used as a catch all word, encompassing 'total metals,' 'total nutrients,' E coli, and constituents.	Inadequate presentation
32	Lehman	Vol 2, Chap 4, section 4.3.1.1.4, pg 4-71, second paragraph	"The monthly 'mass-balance' model is based on median concentrations;" median concentrations OF what FACTORS? Later, the statement refers to 'standards assessment' and then delineates that 'total metals,' 'total nutrients,' will be characterized by median concentrations. E coli will be characterized as a 'geometric mean' without clarifying the units of measurement, presumably cfu/100mL, but not stated. And other constituents will be characterized using 85th %ile. But then they say "The monthly 'mass balance' model cannot be used for standards assessment, . . ." My concern is that 'fuzzy' description reflects 'fuzzy' thinking. My hope is that the model actually incorporates appropriate factors and accurately projects different outcomes from the various alternatives. Probably, none of this offers any help in assessing the analysis or recommendations of the EIS.	Inadequate presentation of term - needs definition
33	Lehman	Vol 2, Chap 4, section 4.3.1.1.7, pg 4-82, first and second paragraphs	These ¶ seem to have two goals: 1) explaining the need to pick a velocity threshold to divide days into "accrual days" and "non-accrual or scouring" days, dividing a numeric velocity value into a dichotomous variable; and 2) explaining that the derived numbers of "accrual days" for the various alternative approaches cannot be compared proportionately, but only qualitatively as one being greater, equal to, or lesser than another. These are appropriate goals.	Inadequate data/analysis
34	Lehman	Vol 2, Chap 4, section 4.3.1.1.7, pg 4-82, first and second paragraphs	Labeling a threshold "scouring velocity" as "critical" seems to claim that the "assumed" threshold value is a breakpoint in how much accrual or scouring of periphyton will occur. It implies more evidentiary support than can be justified. If "Periphyton growth is (as) 'extremely' variable and difficult to predict as stated in the 1st sentence of the 2nd ¶, then claiming the effects of velocity can be 'estimated' in the 1st sentence of the 1st ¶ is disingenuous. "Extremely" is best used in journalistic hyperbole. Its use in an Army Corps of Engineers EIS seems to communicate a lack of numeracy. "Assumed" implies that a value was picked almost at random. More likely, professional assessment of the literature led to the selection of 0.3 m/sec as the most appropriate threshold value to use in this model.	Inadequate data/analysis
35	Lehman	Vol 2, Chap 4, section 4.3.1.1.7, pg 4-82, first and second paragraphs	"periphyton biomass is assumed to be rapidly scoured from the riverbed," is problematic phrasing. The authors describe in detail how difficult it is to measure periphyton growth and then to make predictions about periphyton growth. But then they want to use "rapidly" as a semi-quantitative assessment of the rate of scouring. If their model needs to have a rate of scouring to be able to make predictions, then it would seem more appropriate to use best professional judgment to select a rate appropriate for the median/mean of the sample of velocities (> 0.3 m/sec) being used in the model.	Inadequate data/analysis
36	Lehman	Vol 2, Chap 4, section 4.3.1.1.7, pg 4-82, first and second paragraphs	"Even simply measuring periphyton" is problematic phrasing. Are the authors measuring periphyton species, periphyton communities, which are the 2 nouns used in the prior sentence? Maybe, they are reminding the reader that measuring the mass of a sample of periphyton biomass consistently is difficult (The standard deviation of a series of measurements of the same sample would add significant information.) and that measuring "growth" is more complex because it requires making 2 measurements of mass separated in time. Or maybe, the authors just left the subject noun "growth" out of the sentence. The point of these ¶s is that measurement of aspects of periphyton is rarely "simple."	Inadequate data/analysis
37	Lehman	Vol 2, Chap 4, section 4.3.1.2.1, pg 4-83, first paragraph	The report transitioned from talking about a "portion of Segment 10A" to talking about Segment 10A. If the Corps has chosen to use a sub-Segment for the whole EIS analysis, it would seem appropriate to give that reach a new name and then to refer to it consistently.	Inadequate presentation

1. Impacts to Water Quality				
#	Name of editor	Chapter heading, Topic heading, Page #, Paragraph #, Starting Line #	Substantive Comments/Recommendations	Theme
38	Lehman	Vol 2, Chap 4, section 4.3.2.6.3, pg 4-125	The report mentions sizable % increases in chronic ammonia levels (218%) and acute ammonia levels (up to 266%) without commenting on the significance of these variances.	Inadequate data/analysis
39	Lehman	Vol 2, Chap 4, section 4.3.2.6.6, pg 4-126	The report mentions sizable % increases in acute ammonia levels (up to 227%) without commenting on the significance of this variance.	Inadequate data/analysis
40	Lehman	Vol 2, Chap 4, section 4.3.2.10, pg 4-133, fifth paragraph	“Assuming a conversion factor of 700 to calculate TDS from electrical conductivity . . .” is sloppy for its use of “Assuming” and for not including UNITS. Most likely, such a conversion factor would be based on some empirical data to support using 700 as an approximation in this context. Thanks to NASA losing a multi-million $ rocket due to a conversion from English to metric units, my nephew, the nuclear engineer, reported having the compulsive inclusion of UNITS for any calculation drummed into his "brain." How many layers of Corps engineers seem to have missed class that "day/week/semester?"	Inadequate presentation

2. Impacts to Surface Water				
#	Name of editor	Chapter heading, Topic heading, Page #, Paragraph #, Starting Line #	Substantive Comments/Recommendations	Theme
1	Jones	Vol 2, Ch 4, Sec 4.2.3.3.1, pg. 4-35, last paragraph	The text states that diversions at the Poudre Valley Canal headgate will not be allowed to fluctuate more than 500 cfs in a 24-hour period. Compared to the mean flow rate of 1,811 cfs at the Canyon Gage for June in the years 1881-2003, such a fluctuation amounts to nearly one-third of the river's entire flow at its peak for the year. A 24-hour period is much too brief for a change of this magnitude and the time period should be extended to 72 hours. Additionally, the fluctuation maximum should be modified to reflect a percent of the historical mean monthly flow rather than a set value of 500 cfs as it is certainly not advisable when the mean monthly flow rate is near or equal to 500 cfs.	New and significant Needs longer interval
2	Winborn-Miller	Vol 4, Appendix A, Section A.2, page A-57, Comment 1401-3	Comment 1401-3 Re: monthly, daily max and min flow data: Response to comment is that "time series figured illustrating modeled changes to minimum, maximum, average, and median daily flows…were included in Appendix A of…"the Water Resources reports. Appendix A of the 2018 Water Resources Report but this was not made electronically available (by CD, on request, only). Data in the FEIS Chapter 4 included mostly monthly results, with some tables and charts presenting median daily flows. Did not see an explanation of why the final EIS presents only the monthly and median daily results, and how this is as relevant or more relevant to the daily maximum and minimum data; without seeing Appendix A, this question remains unanswered. In the Summary section for Surface Water, the use of daily median flows in the charts seems to make sense, given what is being communicated re: flow rates.	Information difficult to obtain
3	Winborn-Miller	Vol 4, Appendix A, Section A.2, page A-57, Comment 1401-3 Also, Vol. 2, Section 4.2.1.1.2 on page 4-10, last paragraph	Comment 1401-3 Re: monthly, daily max and min flow data: The 2018 Water Resources Report and Chapter 4 of the FEIS notes that a monthly time-step was used in the surface water flow modeling due to "analytical needs for surface water and other flow-related resources." I did not see further explanation of the "analytical needs" for this, so I don't feel that I understand why the monthly time step had to be used in the modeling. Both documents go on to say that an additional Excel spreadsheet tool was used to at the end of each modeling sequence to disaggregate final modeled monthly streamflows to estimates of daily flows. "The final output from the daily disaggregation tool for the Poudre River is a time series of daily flows at a series of specified structures, representing keypoints along the river with a diversion or inflow using 26 years of data from [Irrigation Years] 1980-2005." (page 4-10) Based on these statements, I would guess that the ability to disaggregate monthly streamflows is limited to daily median data, not daily maximum and mimimum flows. This is my guess because the point is not clarified in the documents. If correct, then this provides the answer to the comment in the paragraph above as to why the FEIS presents only median results when discussing daily flows.	Inadequate presentation
4	Winborn-Miller	Vol 4, Appendix A, Section A.2, page A-57, Comment 1401-3 Also, Vol. 2, Section 4.2.1.1.2 on page 4-10, last paragraph	Comment 1401-3 Re: monthly, daily max and min flow data: Chapter 4 of the FEIS, on page 4-10, notes that the daily disaggregation data was provided to other resource specialists for use as inputs for their models and other analytical tools use for assessing potential NISP effects such as aquatics or stream morphology. So, while the surface water flow data is presented as monthly and daily median results, it seems that other NISP effects may have been able to make assessments using detailed daily data.	Inadequate presentation

2. Impacts to Surface Water				
#	Name of editor	Chapter heading, Topic heading, Page #, Paragraph #, Starting Line #	Substantive Comments/Recommendations	Theme
5	Jones	Vol 2, Ch 4, Sec 4.2.3.3.1, pg. 4-33, first paragraph	The text states that the maximum modeled diversion for Alternative 2M would be equal to 1,057 cfs in June. Compared to the mean flow rate of 1,811 cfs at the Canyon Gage for June in the years 1881-2003, the modeled diversion equates to 58% of the river's flow rate at its peak period. With the river's flow rate nearly reduced by half, high-flow functions must also be severely reduced for this month. The effects analysis does not acknowledge this dramatic change and its potential effects on stream morphology or fish habitat.	Inadequate presentation Inadequate data/analysis
6	Winborn-Miller	Vol 4, Appendix A, Section A.2, page A-58, Comment 1401-4	Comment 1401-4 Re: daily flow data should be shown on a logarithmic scale Response to comment references the 2014 and 2018 Water Resources Technical Reports, which are also referenced in Chapter 4, Section 4.2 (Surface Water). From Section 6.2, pdf page 190, page 6-2 of the April 2018 Water Resources Technical Report: "For each type of figure, a consistent y-axis scale was used for the nine primary DDMs on the Poudre River mainstem in order to better illustrate the relative changes in flow from upstream-to-downstream and to not skew perspective on the magnitude of streamflows at each location." Did not see mention in the response to comment, the Water Resources Report, or the FEIS to further explain why they chose to not show data on a logarithmic scale, other than this statement which does not directly address the point. In Chapter 4 of the FEIS, median daily flow data graphs (comparing the 4 action alternatives to current conditions hydrology) are presented in Figures 4-15 through 4-19, but these are also not on a logarithmic scale. The report specifically comments that "the y-axis scales in the figures have been adjusted to fit the data so that more detail is visible at lower flows." So it seems some accomodation was made for the reviewers to better see the graphed data. The Summary section, on pages S-14 and S-15, provides an alternate way to view data that has a large span of the y-axis, through the use of a bar graph.	Sufficient explanation
7	Winborn-Miller	Vol 4, Appendix A, Section A.2, page A-58, Comment 1401-5	Comment 1401-5 Re: CTP hydrology model certainty Response to comment was that the uncertainty with modeling was addressed in the 2014 and 2018 Water Resources Report, with no further summary of the issue provided in the comment response. Chapter 4 of the FEIS addresses model uncertainty in Section 4.2.1.4, on page 4-23, by relating qualitative uncertainties in the model which mirror and/or reference the qualitative uncertainties presented in the 2018 Water Resources Report. No quantitative uncertainties were presented or even discussed; it seems likely that the ability to calculate or present quantitative uncertainty is extremely limited or not possible at all for the model used (MODSIM). However, it seems that a statement could be made regarding the author's professional assessment of model certainty given all the assumptions made and known qualitative uncertainties. As it stands, the FEIS notes qualitative uncertainties, but provides no assurances as to the usefulness, reliability, or accuracy of the modeled results and how they impact the decisions to be made for the action alternatives.	Inadequate presentation Inadequate dataaAnalysis
8	Jones	Vol 3, Ch 5, Sec 5.2.5.2, pp. 5-28 & 5-29	The very important issue of the cumulative impacts to stream flow by the NISP, Halligan, and Seaman projects is given scant attention. There is no discussion of the related Figure 5-11 that illustrates additional decreases in the river's flow rate during peak runoff. The modeled decrease from a current peak of 1,500 cfs to 900 cfs is significant and should be brought to the attention of the reader.	Significant Inadequate data/analysis

2. Impacts to Surface Water				
#	Name of editor	Chapter heading, Topic heading, Page #, Paragraph #, Starting Line #	Substantive Comments/Recommendations	Theme
9	Winborn-Miller	Vol 2, Ch 4, Sec 4.2.7, page 4-61, top paragraph (lines 4-6 counting from top of page)	Quote from the FEIS document, regarding this section on surface water, which is focusing on the modeling work and calculations of changes to water flows: "No degree of impact intensity was assigned to the model results for surface water, as the other flow-related resources were evaluated using this information as the basis for those effects analyses." This seems to indicate that the entire section is simply a support section, providing a tool with which to assess other impacts from the action alternatives. It shifts emphasis, somewhat, from the conclusions of this section to a need to make sure that the modeling uncertainties are understood and acceptable, and that numerical methods in dealing with the data, particularly working with monthly data to create daily data, are correctly applied.	ackn - N/A
10	Jones	Vol 3, Ch 5, Sec 5.4.5.1.2, pp. 5-142 & 5-143	Table 5-35 indicates that the number of annual occurrences of flushing flows for the cumulative effects of NISP, Halligan, and Seaman projects will be reduced by as much as half in some Larimer County locations relative to the future conditions baseline. Additionally, the table indicates that the occurrence interval could double in some locations from about two years to more than five years between flushing flows. The table indicates that the median duration in days of each flushing flow spell will be reduced by more than half when comparing the cumulative effects to the future conditions baseline. These impacts will surely adversely affect many essential river functions. Other than sediment transport, described in Section 5.4.5.1.3, these impacts need to be discussed here or sections elsewhere correctly referenced.	Inadequate presentation Inadequate data/analysis

3. Impacts to Aquatic Resources				
#	Name of editor	Chapter heading, Topic heading, Page #, Paragraph #, Starting Line #	Substantive Comments/Recommendations	Theme
1	Little: no comments			
2	Longstein: no comments			
3	Rinker	Vol 4, App. A, pg. A-57, Comment Response 1401-2	This document still lacks a true "No Action" alternative. It would be useful to have some idea of the consequences of NOT providing for the growth projections assumed throughout this document, given the very real possibility that climate change may render all such projections moot, so that doing nothing at all might be a reasonable choice if the penalty for guessing wrong is not too severe.	Ackn obs
4	Rinker	Vol 4, App. A, pp. A-59 & A-60, Comment Responses 1401-6 & 1401-7	These responses expand and explain details of the habitat and streamflow modeling used. These models appear to be comprehensive enough, and if they are indeed valid as applied, I'd say the responses are adequate. But I'm not qualified to judge the models.	Ackn obs
5	Rinker	Vol 2, Chap 4, Section 4.12.3.3, pp.4-421,422,423	Glade Reservoir could provide potential means of mitigating some seasonal effects that are currently degrading our already damaged river as it flows through the city of Fort Collins and beyond. Fifteen separate problems and corresponding actions are listed that Northern Water could (aka "would") do to benefit the public. Some of these would require significant capital expenditures by Northern Water, and some would require real-time executive decisions down the road about whether to send scarce water resources to paying customers or to a bunch of tree huggers. I would very much like to see Northern Water legally obliged to build all facilities and make all other expenditures described here as preconditions for operating the reservoir, and for continuing perpetual executive authority for all water diversions impacting the health of the river to be vested in some citizen-minded organization that has no direct stake in selling the water instead.	Significant Underdeveloped mitigation plan

Shelley Bayard de Volo <bayardsh@co.larimer.co.us>

ESAB Comments on the Phase 2 Foundation Chapter

Shelley Bayard de Volo <sbayard@larimer.org> Fri, Sep 14, 2018 at 11:10 AM
To: Matthew Lafferty <mlafferty@larimer.org>, Miriam McGilvray <MMcGilvray@logansimpson.com>
Cc: "Richard S. Alper" <rsalperesq@aol.com>, Richard Conant <rtconant@gmail.com>, Jim Gerek <jmgerek@frontiernet.net>

Hi all,
Attached are the ESAB's Memo summarizing their review and the spreadsheet of their original comments.

Please let me know if you have any questions - Thanks! Shelley

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Shelley Bayard de Volo
Environmental Coordination Specialist
Environmental and Science Advisory Board Liaison

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2 attachments

ESAB Comments on Phase-2 Foundations Memo 20180913.pdf
131K

Phase-2 Eastern Plains Plan Comments Foundations 20180914.xlsx
72K

LARIMER COUNTY | ENVIRONMENTAL AND SCIENCE ADVISORY BOARD

P.O. Box 1190, Fort Collins, Colorado 80522-1190, 970.498.5738, Larimer.org

MEMORANDUM

TO: Matt Lafferty

FROM: Richard Alper, ESAB Chair

DATE: September 13th, 2018

RE: ESAB Comments on the Foundation chapter of the Phase 2 Comprehensive Plan

The Environmental and Science Advisory Board is pleased to submit the following comments to the Planning Department of Larimer County with respect to the draft Foundations Chapter of Phase II titled "Front Range" of the draft Comprehensive Plan for the County ("Foundations Chapter").

Four members of the ESAB reviewed and submitted a total of 24 comments on the Foundations Chapter. These comments were reviewed and edited by Rich Conant, Shelley Bayard de Volo and Rich Alper on September 5. This memo and the individual comments (spreadsheet attached with this memo) were discussed and approved by the ESAB at its September 11 meeting for transmittal to the Planning Department.

The comments were divided in to two general categories. These are "wordsmithing/edits" (16 comments) and "substantive recommendations" (8 comments). The 20 "wordsmithing/edit" comments are included in their entirety in the spreadsheet, without further discussion. References to pages and sections of the draft are provided for each comment for your convenience.

We identified three types of substantive comments: (1) some of the snapshots and text are confusing, (2) some information and links to other plans or studies are omitted, and (3) the ESAB disagrees with some of the points raised by the County. Examples of these three types are given below:

1) Confusing comments: First, the headings titled "Foundation Snapshots" within each section seem to suggest a course of action (e.g., Community Snapshot item #3) or more simply state a condition or issue (e.g., Community Snapshot items #1 and 2). We believe the document would be more cohesive and lay a stronger foundation for other chapters if the voice/purpose of these headings was consistent. (Comment 7). On a related note, adding some additional structure within the document, as was done with the 1997 Master Plan, would enable easier reference to sections within the document.
2) The ESAB noted some omissions, such as examples and reference to other documents. (Comment 6; pg. 35)

3) Finally, the ESAB disagreed with certain statements in the document, such as the conclusions drawn by a perceived mismatch between degrees awarded by CSU and the structure of the workforce within the County. (Comment 2; page 12, Table 3)

All 8 of the more substantive comments are included on the spreadsheet, including specific page references to where the comments apply.

Thank you for the opportunity to submit these comments. We trust that a rigorous review of the draft document will help lead to a more robust final document. At your request, ESAB members would be available to discuss these comments. We look forward to working with you on the next two chapters of the Comp Plan Phase II.

Chapter 1: Foundations					
#	Name of editor	Chapter heading, Topic heading, Page #, Paragraph #, Starting Line #	Word-smithing and edits.	Substantive Comments/Recommendations	Status
1	Rich Conant	pg 11		This section seems to imply two courses of action to better match the workforce with employment opportunities: (1) catalyze some kind of change at CSU and (2) facilitation collaboration between the county and (unnamed) training organizations. Regarding the latter, this seems like a good idea that would benefit from further thinking and details. Regarding the former, CSU is one of a many educational institutions in the county and the one whose graduates spread most widely upon graduation. As a research I institution, CSU is least likely to be compelled to change couse to mee the needs of local employers (particularly in some of the position types mentioned, e.g., sales). Suggesting ways that the county might work with CSU (and other institutions) might be fruitful. But singling out CSU here seems unlikely to generate a positive response. There are other universities, the role of Universities isn't exculsively to train workforce for the region. Full disclosure: one board member a professor at CSU.	there are other universities, their role isn't exculsively to train workforce for the region
2	Lehman	pg 12 Topic: Economy Snapshot; Item #3: ..Changing needs of the Work Force; Page 12, Table 3		The data in the 2 columns of Table 3 are not parallel; Listing the Number of degrees awarded for each of the majors in Column 1 could improve this Table. Doing a more in-depth analysis might lend insight between job training needs and regional higher education programs and opportunities for better balance. Though the data in this table come from the cited report, that report did not use these data in this way.	
3	Kirk Longstein	Page 22-23		We recommend addressing Larimer County's capacity for alternative transportation and mass transit infrastructure	
4	Kirk Longstein	Page 28		We recommend providing reference to Larimer County Property Assessed Clean Energy (C-PACE) and efforts through the Larimer County Conservation Corps addressing low income energy efficiency	
5	Lehman	pg 34 Topic: Watershed . . . Snapshot; Item #5: Competition for water between agriculture . . .page 34 ¶ 1-4,		It would seem appropriate somewhere to discuss urban water conservation successes/efforts and ongoing education efforts to decrease urban/suburban water use. At a minimum County and local governments should be using the minimum amounts necessary for irrigation of bluegrass-covered landscapes. Running sprinklers on government-managed greenspace at high noon is both a poor conservation effort and generates resentment against government. The Foundations chapter should support best practices.	
6	Kirk Longstein	page 35		We recommend providing reference to the NISP fish and wildlife enhancement mitigation plan as an example.	
7	Kirk Longstein	overall comments		Cohesive: the document seemed to bounce around between problem statements and solutions. For example, community snapshot item #3 suggests a course of action whereas 1 and 2 don't. Also, it may be helpful to provide references to areas within the document that relate to each other. Voice: Sometimes the document reads as if conclusions have already been made. Is that the intent?	
8	King	Entire Chapter		The chapter is sometimes convoluted, duplicative, and lengthy sentence statements. There is obvious need for change/elimination of some of the identified statements; providing suggestions to substantially improve the chapter would be easier if it were organized in a more logical, understandable fashion.	
9	Rich Conant	pg 4	Is the amount of open space "ample"? Who's judgement and what criteria? For now or into the future? PErhaps substitute "extensive" or "substantial"?		
10	Rich Conant	pg 9	this section is not written very clearly. I'm not familiar with the issues here, but still don't really understand them after reading this section. For example, the headline text for this section seems to obliquely state the important issues. Consider re-drafting to make the text more direct.		
11	Rich Conant	pg 11	what is meant by "increasingly regional"?		
12	Rich Conant	pg 11	Table 3 doesn't really demonstrate a mismatch between what students study and jobs in the County . There is not a 1:1 mapping of these job classes and CSU majors, but that's not a demonstration that students aren't prepared for these jobs. (they may not be, but this table doesn't demonstrate that)		
13	Lehman	pg 12 Topic: Economy Snapshot; Item #3: ..Changing needs of the Work Force; Page 12, Table 3	Page # problem: Table on Page 12, but it follows Page 13, and also precedes Page 13 Screen reader support enabled.		

Chapter 1: Foundations					
#	Name of editor	Chapter heading, Topic heading, Page #, Paragraph #, Starting Line #	Word-smithing and edits.	Substantive Comments/Recommendations	Status
14	Rich Conant	pg 12	The introduction emphasises the interrelationship between the environment and health, so I was surprised not to see much information in the health section on the environment.		
15	Rich Conant	pg 20	as written, the phrase "and reducing..." is an awkward add-on here.		
16	Lehman	pg 20 Topic: Housing Snapshot; Item #3: Heading starting with "The availability and cost of water . . ; Page 20,	The sentence is unclear because of the parallel objects of the preposition TO: It seems to say that "The availability and cost of water services is the largest barrier to . . . reducing farming and rural character." Please clarify this sentence. It may help to make 2 sentences. I suspect you are trying to say that "new housing development on lots less than 35 acres reduces farming and rural character."		
17	Lehman	pg 25-26 Topic: Infrastructure Snapshot; Item #2: Current Growth Management Areas . . .Title of Map 5 on page 25 and corresponding text on page 26, 1st ¶, line 6	"Over 10" is unnecessarily vague. The County should have a count of the number of "different water and sewer providers."		
18	Rich Conant	pg 27	"the growing disadvantages... being championed" - this sentence suggests disadvantages are being favored. Also, tense (is/are) is wrong.		
19	Rich Conant	pg 27	I suspect that over time, cellular coverage will replace fiber-based internet. Rural residents will face the same access challenges for 5G.		
20	Lehman	pg 27-28 Topic: Infrastructure Snapshot; Item #3: Rapid Technological Change . . .page 27 carrying over to page 28: last 3 lines on pg 27 & 1st 3 lines on page 28	These examples are further supported by the fact that the Internet of Things (IoT) is impacting consumer demand at an accelerated rate, with a continuously compounding increase of 97 times the demand per year. What units of "demand" are being used? Compounding at 97 times per year for any time period greater than 1 year seems like a calculation error.		
21	RIch Conant	pg 28	Regarding #4, it is not clear what is unique about the energy issue for larimar county or what merits inclusion in this document. This seems to largely state concerns that LC residents have about energy development rather than issues that LC can have an impact on.		
22	Kirk Longstein	Page 29	the narrative states the problem: communities need to reevaluate flood plan risks. I recommend rephrasing to include the County services that build capacity for community planning		
23	Rich Conant	pg 33	$130,000,000 million? or $1.3M?		

Chapter 1: Foundations					
#	Name of editor	Chapter heading, Topic heading, Page #, Paragraph #, Starting Line #	Word-smithing and edits.	Substantive Comments/Recommendations	Status
24	Lehman	pg 33 Topic: Watershed . . . Snapshot; Item #4: Protection of important farmlands . . .page 33 ¶ 1, line 6	". . . County's farms was nearly $130,000,000 million." Likely, this should be either $130,000,000 OR $130 million.		

Shelley Bayard de Volo <bayardsh@co.larimer.co.us>

ESAB approved memo on Environmental Responsibility Policy

Shelley Bayard de Volo <sbayard@larimer.org> Mon, Dec 10, 2018 at 10:21 AM
To: Lesli Ellis <ellislk@larimer.org>, Todd Blomstrom <tblomstrom@larimer.org>, Linda Hoffmann <hoffmalc@co.larimer.co.us>, Sean Dougherty <sdougherty@larimer.org>
Cc: "Richard S. Alper" <rsalperesq@aol.com>, Jim Gerek <jmgerek@frontiernet.net>, John Kefalas <JKefalas@larimer.org>

Hello all,

The ESAB met last Thursday night for their regular December meeting and approved the attached memo.

The memo highlight's the Board's agreement with the BoCC on the inclusion within the 2019-2023 Strategic Plan Goals/objective of updating the County's Environmental Responsibility Policy.

Please let me know if you have any questions regarding the memo or the ESAB's activities.

Thanks! Shelley

--

Shelley Bayard de Volo
Environmental Coordination Specialist
Environmental and Science Advisory Board Liaison

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Esab_appoved_Memo_to_BCC_EnvPrincipals_2019-2023_Strategic_Plan_.pdf
155K

LARIMER COUNTY | ENVIRONMENTAL AND SCIENCE ADVISORY BOARD

P.O. Box 1190, Fort Collins, Colorado 80522-1190, 970.498.5700, Larimer.org

MEMORANDUM

TO: Commissioner Steve Johnson, Chair
Commissioner Tom Donnelly
Commissioner Sean Dougherty

FROM: Richard Alper, ESAB Chair

THROUGH: Linda Hoffmann, County Manager
Tod Blomstrom, Public Works Director
Lesli Ellis, Director for Community Development
Shelley Bayard de Volo, Environmental and Science Advisory Board Liaison

DATE: December 7th, 2018

RE: Comments on Goal #3, Objective #5, environmental aspects of Proposed 2019-2023 Larimer County Strategic Plan

Many thanks to Sean Dougherty, Linda Hoffmann and Todd Blomstrom for providing an opportunity to the County's Environmental and Science Advisory Board (ESAB) to comment on certain environmental aspects of the Proposed 2019-2023 Larimer County Strategic Plan (LCSP).

At its November 29 work session, the Board of County Commissioners (the BCC) agreed with the following language to be included under Goal #3, Objective #5 of the LCSP.

> By the end of 2020, update and raise staff awareness of the County's policy on Environmental Responsibility to ensure that it 1) reflects current scientific findings and methods and 2) balances the protection of natural resources, with long-term economic considerations and community needs.

The ESAB welcomes the inclusion of this language in the LCSP.

The ESAB recommends attaching the Environmental Responsibility Policy (the "Policy", Attachment A hereto) to Goal # 3, Objective #5 in the LCSP to start the process of raising staff awareness and updating the Policy first adopted in 2002.

Principles of environmental responsibility have become a standard for high-performing governments across the State of Colorado (See Attachment B). Highlighting this Policy through the new LCSP has the following benefits for Larimer County Government and its residents:

- Improve the County's competitive advantage for attracting new business.
- Improve the County's competitive advantage when applying for grants.
- Reduce operational waste, reduce cost and demonstrate highest and best use of taxpayer dollars.
- Enhance the County's quality of life for its residents.

We understand that once the Goals and Objectives of the LCSP are adopted by the BCC, teams of County staff will be organized to develop implementing actions and timetables, that are tied to each Goal and Objective ("Implementation Phase"). We agree that these specific actions should follow the S.M.A.R.T. (Specific, Measurable, Achievable, Relevant, Time-oriented) strategy and that the update of the Policy will benefit from this strategy.

The ESAB is available to provide review and comment on the Implementation Phase of the LCSP to ensure a balanced approach to addressing the Environmental Responsibility Policy. During its Implementation Phase, the ESAB will be ready, willing and able to provide capacity to assist County staff to update the Policy and to contribute to the development of training tools for staff to implement the Policy.

Thank you for the opportunity to comment and assist.

CC: John Kefalas, Larimer County Commissioner-Elect

JKefalas@larimer.org

Attachment A - Environmental Responsibility Policy

Attachment B - Front Range Counties' Sustainability Policies

Attachment A

Environmental Responsibility Policy

BCC P#8B

SUBJECT: BCC P#8B

ENVIRONMENTAL RESPONSIBILITY

REVISION DATE: July 16th, 2002

REVIEW: Every 4th Year - November

CANCELLATION: BCC P#8A, April 10th, 1996

CONTACT: County Manager

ATTACHMENTS: None

REFERENCE: None

REVISION LOCATOR:

1. Section I
2. Section II, D, H, I

PURPOSE: To ensure that environmental quality is considered and examined as a basic component in County decision making and that Larimer County activities and decisions have as little negative impact on the environment as possible.

POLICY:

I. The quality of our natural environment is an integral part of our quality of life. The elected officials and professional staff of Larimer County take their environmental stewardship responsibility seriously, and will make every effort practicable to minimize the environmental impact of our activities. Larimer County will make every effort to protect the environmental integrity of the County's natural resources by developing policy to address these 12 environmental issues:

- Property Rights
- Wildlife Habitats and Migration Corridors
- Threatened and endangered species.
- Unique vegetation and critical plant communities
- Wetlands/riparian/waterways
- Aquatic/water quality

- Hydrology/Groundwater
- Unique Geological features
- Agriculture
- Viewsheds
- Air Quality
- Cultural and Traditional use features

II. OBJECTIVES: As part of this stewardship goal, Larimer County holds the following objectives for our actions, programs and services:

A. PROTECTION OF THE BIOSPHERE: Strive to eliminate the release of any pollutant at levels that may cause environmental damage to the air, water or earth or its inhabitants.

B. SUSTAINABLE USE OF NATURAL RESOURCES: Make sustainable use of renewable natural resources, and optimize the application of conservation techniques to lessen the impact of utilizing non-renewable natural resources.

C. REDUCTION AND DISPOSAL OF WASTE: Minimize the creation of waste, including hazardous waste, and wherever feasible, reuse or recycle materials.

D. WISE USE OF ENERGY: Use environmentally safe and sustainable energy sources whenever feasible. Reduce energy use through conservation, increases in efficiency, and implementation of alternative work options, such as telecommuting and transportation demand management programs.

E. RISK REDUCTION: Minimize environmental, health and safety risks to employees and communities by using safe technologies and operating procedures and by being constantly and thoroughly prepared for emergencies.

F. PROVIDING SAFE PRODUCTS AND SERVICES: Provide products or services that minimize adverse environmental impacts and that ensure the safety of citizens.

G. ASSESSMENT: Assess and audit progress in implementing these principles and complying with applicable laws and regulations.

H. BALANCE: Consider environmental quality as equally important as economic growth to the health of the community, and property rights and strive for a balance of the three. Economic considerations alone will not dictate feasibility of achieving County objectives.

I. ENVIRONMENTAL RESTORATION: In the event of an incident or accident, which causes or has potential to cause significant adverse impacts to the environment, on our own initiative, we will consider that full compliance with the law to be the minimally acceptable standard. We will exercise whatever control is reasonable and necessary to address harm to public health and the environment and on our own initiative, we will take further steps based on our proper sense of responsibility.

(Adapted from the ***Valdez Principles***, Coalition for Environmentally Responsible Economics.)

Adopted this _____ day of _____

_____

Glenn Gibson, Chair
Larimer County Board of County Commissioners

Distribution:
All County Departments and Elected Officials
Signed Original/BCC
Signed Copy/Records Management

FL/vl

Attachment B

Front Range Counties' Sustainability Policies

- Pueblo County Sustainability Plan
  - http://county.pueblo.org/sites/default/files/sustainability_plan_0.pdf

- Adams County Sustainability Plan
  - http://www.adcogov.org/sites/default/files/8043.pdf

- Boulder County Sustainability Plan
  - https://assets.bouldercounty.org/wp-content/uploads/2018/08/2018-sustainability-plan-introduction.pdf

- Jefferson County Environmental Purchasing Policy
  - http://www.jeffersoncountywi.gov/County%20Board/Policies/EPP%20Policy%20(Environmentally%20Preferable%20Purchasing%20Policy).pdf

- Douglas County Environmental Quality Policy
  - https://www.douglas.co.us/documents/cmp-section-9.pdf