South Boulder Creek Flood Mitigation Project
AD-HOC INFORMATIONAL AND ADVISORY MEETING
April 16, 2018, 1:30pm – 4:30pm
Meadows Branch Library Meeting Room, 4800 Baseline Road, Boulder, CO

Meeting Summary - DRAFT

This is a summary of the discussion that occurred at the meeting, prepared by Peak Facilitation Group. It is not intended to provide a comprehensive summary of the South Boulder Creek flood mitigation project. For more information about the project, please see the project website: www.southbouldercreek.com.

Attendance: Karl Anuta, Kurt Bauer, Ben Binder, Don D'Amico, Rod Eisenbraun, Kathie Joyner, Gretchen King, Marki LeCompte, Gordon McCurry, Pete Palmer, Mary Powell, Harlin Savage, Molly Scarbrough, Laura Tyler, Ruth Wright

Facilitation: Heather Bergman and Dan Myers

Observer: Curt Brown (Mr. Brown is a member of the Open Space Board of Trustees (OSBT). He attended the meeting as an observer, not a participant.)

ACTION ITEMS

Kurt Bauer	• Add the number of inhabitants in a project area as an evaluation criterion. • Consider the following proposed additions to the evaluation criteria: lives saved, the degree of support and approval from private landowners, and the degree of effort to build consensus with the public. • Bring a topographical map of CU South as part of the analysis of detention capacity to next meeting.
Rod Eisenbraun	• Provide information to the group at next meeting concerning the projected total amount of inundation of OSMP land and how this calculation would change with excavated or regraded areas factored in.
Peak Facilitation	• Make necessary corrections to the March 28 meeting summary. • Work with staff to determine a format for April 23 open house.
Molly Scarbrough	• Decide on the format for April 23 open house, taking today's discussion into account. • Send out Doodle for next meeting of Ad-Hoc Group (mid-May).

NOTES ON PREVIOUS MEETING SUMMARY

- Two suggested corrections to a single sentence from the March 28 summary were discussed for inclusion in the final summary of that meeting. The suggestions are below.
    - The original sentence "Two members of this group met with two members of City Council and the City Manager to discuss transparency concerns related to this project in general, and the scope of the contract for RJH Consultants, more particularly" should now read "Two members of this group met with two members of City Council, the City Manager, and one member of the OSBT to discuss transparency concerns related to this project in general, and the scope of the contract for RJH Consultants, more particularly."
    - The original sentence "The City Manager indicated that the City would support up to three meetings, and that the meetings should include Ruth Wright, two other members selected by her, and representatives of the Frasier Meadows Retirement Community and

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surrounding neighborhood, as well as Save South Boulder" should now read "The City Manager indicated that the City would support up to three meetings and that the meetings should include Ruth Wright, two other members selected by her, representatives of the Frasier Meadows Retirement Community, and Save South Boulder. The South Boulder Creek Action Group was not initially invited." Some group members said that Save South Boulder had asked that South Boulder Creek Action Group be invited to those initial meetings, but that it had not been communicated properly. The group agreed that it was best to focus on the present and the future rather than the past.

- Peak Facilitation will attach hydrological figures from documents in the Master Plan to the March 28 meeting summary. The figures show rainfall extent and intensity of the design storm that would be used for each of the project concepts to being considered for regional detention on the south side of US Highway 36. The City used these figures to create revised maps of the South Boulder Creek floodplain, the corresponding risk assessment, and the 2015 Master Plan.

UPDATE ON FLOOD MITIGATION PROJECT PROCESS AND SCHEDULE

Molly Scarbrough, Senior Project Manager for City of Boulder Public Works, provided an update on the Flood Mitigation Project's process and the current draft schedule. Highlights are summarized below.

- The first public open house will be on Monday, April 23, from 5:30-7:30 PM at the Millennium Hotel Ballroom.
- A second open house is planned for early summer, followed by presentations to relevant boards and Boulder City Council (Council). These presentations include addressing the Water Resources Advisory Board (WRAB), Open Space Board of Trustees (OSBT), and Council. Following these meetings about the flood mitigation concept, the project team will meet with Council to discuss annexation and community engagement to solicit feedback on both of those subjects. City staff will meet with the Planning Board about the annexation process before presenting to Council. After engaging with the community about annexation, the Planning Board will give its recommendation to Council on the annexation issue.

Group Discussion

The group briefly discussed the update on the project process and schedule. Highlights are summarized below.

- Some group members expressed concern about the City's decision to consult the Planning Board on annexation but not flood mitigation. It was clarified that the Planning Board does not have purview over flood mitigation design, so it does not typically make engineering recommendations to Council. WRAB's purview is to make recommendations on flood mitigation projects, the Planning Board has jurisdiction over annexation questions, and OSBT considers recommendations for projects on their property. City staff welcomes ideas on how best to keep the Planning Board informed on the engineering specifications of the project.
- OSBT and WRAB consultations have been slated during the concept evaluation stage of the project in the project timeline. City staff confirmed that these advisory boards would make recommendations that will help council identify a preferred project concept to move forward into the next steps of design.
- Some participants expressed a desire to include private property owners as stakeholders in the flood mitigation process, in addition to Colorado Department of Transportation (CDOT), the University of Colorado (CU), and OSMP.
- It was noted that a lack of questions on the project process and scheduling should not be taken as a signal of agreement with that timeline.

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FEEDBACK ON INFORMATION PROVIDED AT THE MARCH 28 MEETING

Gordon McCurry presented on behalf of some of the group members who had met between meetings to discuss their concerns about the project. Key concepts from Dr. McCurry's presentation are summarized below. Dr. McCurry's slides are attached to this summary for reference.

Analysis of baseline modeling data identified at the last meeting

- There are several technical concerns about the baseline modeling data used to inform project configurations. It is not clear that the Federal Emergency Management Agency (FEMA) 100-year storm is the appropriate storm to use for modeling. Additionally, the location of the design storm's center does not result in the largest flows in the West Valley, but it does result in the largest possible flows in South Boulder Creek proper.
- A comparison of the FEMA 100-year flood event design storm with a theoretical storm centered on Eldorado Canyon Road (which would shift the storm downstream to the mouth of Eldorado Canyon), and a theoretical lower-basin storm (which would fall completely within city boundaries) illustrates differing storm impacts based on the geographic center of the storm. McCurry stated that these differing impacts are not captured in the baseline models currently being used to inform project configurations.
- The C2 basin (which includes Viele Channel and other historically high-flood channels) captured most of the flows from the western tributaries on the comparison map shown in the presentation. A table from the South Boulder Creek Climatology and Hydrology Report ("CH Report") showed sub-basin flows and indicated that flows from the lower basin storm are five times greater than the other two storm locations, at 1,658 cubic feet per second (CFS). These discharge measurements were captured at the inflow points into the lower basin. The CH Report states that the flood hazard associated with localized storms should be defined and factored into any floodplain management and mitigation strategies.
- The FEMA 100-year flood event design storm does not incorporate the effects of the 2013 storm on the West Valley stemming from the Viele Channel, Anderson Ditch, Doudy Draw, etc.
- A slide of maps from the 2013 Wright Water Engineers report on the South Boulder Creek flood shows rainfall for the most intense 6- and 12-hour periods of the 2013 storm in terms of how likely those events were/are to occur. For the 6-hour storm event, the highest intensity rainfall covered the whole city. This pattern is close to the rainfall shown in the lower basin model. The 12-hour storm shifted south toward the West Valley.
- The impact of the South Boulder Creek main stem flooding compared with West Valley flooding is a concern. The 2013 flood led to the West Valley making the highest density of FEMA damage claims in the city, far more than were made for the main South Boulder Creek channel. The concentration of FEMA damage claims is presented in maps on the City's website. The 2015 CH2M HILL South Boulder Creek Flood Mitigation Report showed maps of the water sources that contributed to the flooding. These sources include tributaries and groundwater flooding, in addition to South Boulder Creek itself. It is thought that in 2013, floodwater originated partly from South Boulder Creek and the remainder originated from tributaries. Accordingly, it is recommended that the project focus on the West Valley and not the mainstem of South Boulder Creek in order to minimize future flooding damages.
- Another concern is that the FEMA 100-year design storm under-predicts the 100-year flows at the Eldorado Springs South Boulder Creek gage by 10-20%.
- The flow model being used by the project team did a poor job of matching the events (1938, 1969, and 1998 storms) that helped to calibrate the 100-year flood in terms of flow volume and

peak flows (the flow model under-predicted volumes by 50-60%). Additionally, a long duration storm was not included in mitigation design but can be as important as the short-duration storm used for modeling. For instance, 2013 was a long-duration and low-intensity storm for which time was a critical variable.

- The model used by the project team is very sensitive to antecedent soil moisture content in determining the extent of flooding. The moisture content of the soil was a critical factor in the 2013 disaster: the soil could not absorb more moisture after it had been thoroughly saturated and led to the greatest flooding.
- The risk of potential overtopping of the dam at US Highway 36 was presented in the 2015 CH2M HILL flood mitigation report but has not yet been articulated clearly by the project team. Water would overtop the dam in the event of a 100-year storm and would have severe effects on the West Valley. This may be a reason to design around a storm larger than a 100-year event. Public awareness of the risks described above is critical. Using a 500-year storm event would provide a sense of safety to many community members.
- The Ad-Hoc Working Group needs to know the likelihood of CDOT approval for alignment along the US Highway 36 right-of-way before they can proceed in a meaningful fashion.

Concerns about detention concepts

- The location of project concepts should not be restricted by the original design constraints, which were tied to the minimization of impact on CU and OMSP property.
- The design and location of the spillway and outlet tunnels are critical to the project's success, but these have not been sufficiently developed yet. Likewise, the detention of tributary inflows is critical to preventing flooding in the West Valley, but these inflows have not been addressed yet.
- There are unresolved issues concerning intercepting and siphoning Viele Channel and the groundwater cutoff wall below the dam.
- It is still unclear how the detention volume behind the dam will be determined, how large of a safety factor will be included, and what the effect of this detention volume will be on reducing at least some of the need for detention in Phases Two and Three of the project. In the 2015 CH2M Hill Report, the detention volume was barely referenced, and there is no explanation of how the detention volume was calculated.
- Including a safety factor in the detention volume would address uncertainties and reduce the cost associated with future downstream mitigation efforts (Phases Two and Three).
- The three project configurations are partially based on faulty assumptions about the importance of groundwater. Even if groundwater issues are common to all three alternatives, the configurations should not be used if they have fatal flaws related to groundwater.
- The City should consider investing in distributed detention capacity further upstream on the CU South property.

Concerns about project transparency

- The public engagement timeline should be revised to allow for substantive input. Holding an open house on April 23 does not allow enough time to incorporate input from the Ad Hoc Committee.
- Subsequent meetings on this project need to include the discussion of answers to previous concerns so that the public can meaningfully engage on this issue.
- The project schedule (particularly regarding technical project elements like groundwater monitoring) needs to be provided to the public.

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- The revised scope of work for RJH Consultants (RJH) needs to be made available for public review.
- The public should be provided with high-level cost estimates for each project option so that it may properly evaluate them, even if these estimates are imprecise.

Group Discussion

The group provided feedback on McCurry's presentation and the information provided by staff and consultants at the previous meeting. Action items are indicated in italics.

- The consultants and some members of the group noted that it is impossible to know exactly what a 100-year flood would look like and where it would occur. The design storm was developed to identify the storm that would result in the highest flows along the mainstem of South Boulder Creek, including flows from contributing tributaries that result in overtopping of US 36.
- Some said that a safety factor needs to be built into the detention capacity. Some group members expressed a desire to formally recommend to Council and project staff that the RJH contract is revised to include exploration of design storms other than the FEMA 100-year flood event. Relatedly, some group members wanted to discuss the options for turning this group's discussions into defined recommendations and action items. However, others noted that the project team is studying scenarios in addition to the 100-year flood event (such as the 500-year flood event).
- Some group members pointed out that the two peak periods of rainfall on Wednesday during the 2013 storm did not cause the flood. Further rainfall on Thursday evening created the floods that hit the West Valley. The two peak periods were only a portion of the total storm. Several participants suggested that the project team use the whole storm as a model rather than just the two peak periods. A group member also suggested that the 2013 storm be considered for the project design.
- While recognizing that it would be difficult to switch design storms at this stage of the project, some group members suggested that a different storm intensity and location be used for Phases Two and Three of the project. This could simulate higher peak flows for those phases. The alternative storm centers that Dr. McCurry described in his presentation would be farther north than the area under consideration in this design phase, but future phases would not be similarly constrained.
- The consultants emphasized that the FEMA 100- and 500-year storm models are accepted by the hydrological and engineering communities as the "standard of care." Even if a model is based on accepted flood projections, it cannot remove all risk when designing a project. While the standard models cannot be changed after every flood event (just as it would be difficult to change the building code after every new building went up).
- Some in the group, including the City's consultant, believe that moving the design storm's center north or west from the project site will not change the project because most of the design storm was developed to produce the greatest flows that would overtop US 36.
- Several other group members stated that the design storm did not account for the maximum possible amount of water that could hit the dam at US Highway 36. The consultants responded that the design storm was developed to identify the highest flows that would overtop US 36.
- A group member pointed out that the FEMA flood insurance program was created in 1968. The agreement that formed the basis of that program was that federal government would pay for flood insurance in return for local governments adopting mapping recommendations on how best to keep the floodplain open. It was decided that the 100-year flood event was a good

starting point for this program's modeling, but that has not worked very well in practice. Flood damage is increasing in part because cities were allowed to overdevelop and dangerously increase the amount of impermeable land. This group member stated that the needed detention capacity of the floodplain had been reduced, and the spillway has not been changed as much as it should have been. The 2015 CH2M HILL flood mitigation report for the City only used the 100-year flood event in its analyses, but it is important to use the 500-year flood for a complete picture of potential flooding and to help build in a safety factor.

- The consultants noted that they have considered groundwater flows and feel that geotechnical issues are common to all the alternatives under consideration and can be addressed during the preliminary and final design phases of the project. The group discussed the potential detention volume in the proposed project Variant Two area. Some expressed concerns that the detention capacity might not be large enough to detain more than a 100-year flood, which might mean that the project team should look elsewhere. The consultants stated that the project team had run models dozens of times to confirm the ability of Variant Two to detain the 500-year flood.
- There were differing perspectives on the elevation of the land in the relevant area. A group member stated that independent calculations showed that the surface pond would be 13 feet higher than ground level, so the water would fall into the berm area if the levee were to be removed. However, the project team indicated that the ground rises gently as it makes its way south and that the berm extends further south than was shown in the image of this project concept from earlier in the concept design stage. Some group members believed that this meant that the elevation of the berm area would not be a problem. *The project team will bring topographical maps as part of its analysis of the detention capacity question to the next meeting.*
- The group requested that RJH not use any maps of configurations in its presentation at the open house that the Ad-Hoc Group had not seen. City staff stated that they could send the Ad-Hoc Group any updated project configuration diagrams before the meeting.
- The group discussed the type of flow restriction that would be used in project concept Variant 2. Some opposed permanently restricting the South Boulder Creek's flow, and instead advocated for a floodgate that could be opened and closed as needed, which would allow South Boulder Creek to flow from the south to the north side of US 36 in a controlled fashion. The consultants noted that the creek is to the east and is not on the bottom of the valley so, during heavy floods, water flows out of the creek channel and travels to the northwest. RJH noted that a project concept could be selected without knowing exactly what flow control mechanism will be used at the bridge because Variant Two will need some sort of flow control if adopted.
- City staff asked the group if there was a request for a project configuration option that was substantially different from the three currently on the table. RJH noted that although three configurations are being studied, Option D may not be built but was studied because it showed a baseline for comparison. Variant One was developed to address issues in Master Plan Option D, as was Variant Two. RJH looked at other options that had various shortcomings. RJH believes that if everyone's interests cannot be captured in these three concepts, there is no silver bullet plan that will dramatically change this. It was also noted that there are in fact 15 project variations: the combination of the three project concepts with the various storm specifications (100-year, 500-year, long-duration storm and with and without the CU levee).
- Some group members believe that the major goal of the project should be to protect people in the West Valley. There are many homes and businesses in the West Valley, and early floodplain plans have never mentioned this area. The plan should not be constrained by Option D and the HDR consultants' plans.

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- The group noted that some flood gages show that there were two parallel floods that converged after they crossed Highway 93. This means that South Boulder Creek going into Frasier Meadows came across Highway 93 and contributed to both parallel floods. It was also noted that no major flooding hit the trailer park at stream level nor did it hit downtown Eldorado Springs. This means that the water that formed the flood came from Doudy Draw, divided itself, and rejoined near the berm (CU levee). There was concern about the map showing continuous flooding because some group members said that this was not what happened in 2013. In response, it was noted that the map in question comes from the CH2M Hill 2015 flood mitigation report. Some group members stated that much of the water was not from upstream where the design storm was modeled and that Doudy Draw contributed half of the South Boulder Creek flow during the 2013 flood and contributed to the overtopping of US 36. The group concluded that tributaries are an important component to flooding and led to high damages in 2013.

Clarifying Questions
Participants asked clarifying questions about Dr. McCurry's presentation and the response by staff and consultants. Questions are indicated in italics, followed by the corresponding answers in plain text.

Are there any envisioned changes to the current scope of the project (e.g., design storms or configuration options) based on feedback from the group so far?
The project team is open to discussing all those aspects.

Which storm designs are being worked on, and what is the usefulness of the design storm?
The group should not focus too much on the 2013 storm, because that was just one storm, and the odds of another storm like it happening in the future are lower than the odds of a different, similarly destructive storm event taking place. Flow is the product of three factors: ground absorption, rainfall intensity, and storm area. For this floodplain, the degree of infiltration and rainfall intensity will not change particularly quickly. The storm area is the critical variable here. The most probable case in which the West Valley will be impacted by a flood is the case of a storm event that impacts the largest area of the floodplain.

There are concerns about the design storm currently being used by the project team. How much time and money would it cost to change the design storm?
RJH estimated that this would add at least six months to the study, with all the accompanying costs of extending the project by that long.

If we are discussing moving the center of the design storm, should we increase the size of design storm rather than just moving it? This may be a more accurate representation of a large storm event.
It may be possible to change the size, location or magnitude of the design storm. However, City consultants believe that it would not result in greater flows for detention at US 36 than the design storm currently being used and are already evaluating the 500-year event.

Would designing a bigger detention pond in Phase One (i.e., the regional detention at US 36 portion of the overall South Boulder Creek flood mitigation that this group discussed) lead to a decrease in the needed detention capacity for the two later, downstream phases?
Likely not as the Master Plan considered the construction of Phase One when developing downstream improvements and that staff's presentation will address this point.

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When will modeling results for downstream impacts be ready?
The results will be ready in time for the second public meeting, the date for which has yet to be determined.

Should the modeling results be factored into the design of the Phase One project?
The results will be presented to help people make informed decisions on what their recommendations for evaluation criteria will be.

What would an increase in the total area of impermeable surfaces in Boulder mean for future storms?
Boulder is mostly built out, but that possibility will still be considered for future phases. The rest of the watershed will not gain much more paved area (with the possible exception of the CU South land). One of the draft evaluation criteria captures how adaptable these concepts are in the face of climate change. It is important to know how these concepts could change if they need to for future generations.

Runoff is affected by antecedent moisture conditions. In 2013, most runoff came after the ground was saturated by lots of rain. Does this model account for the possibility of three or four days of rain?
Yes, the project team is considering a low-intensity, high-duration storm event like that.

Can this group recommend that any design include a safety factor that exceeds a 500-year flood event?
The consultant responded that a 500-year option with a foot of freeboard (the buffer between the top of the water level and the top of the dam) is being considered. The project team wants to provide a multitude of options to the City.

Is it true that the City adopted its guiding principles in part to require that the project account for a 500-year flood event?
The City is required to look at the different storm events. City staff will provide recommendations to Council. Any other community member is also welcome to provide recommendations to Council. That is the purpose of the next open house.

Molly Scarbrough made a presentation to the OSBT on February 14 showing a configuration variant called "instream detention." This variant was designed to back water up onto the CU berm. Is it true that this approach would not require excavation?
That presentation showed an earlier version of Variant 2. It might require some regrading, but not excavation.

Does the project team have a revised scope of work for the group to examine?
Not yet.

If there is a flow restriction at the US Highway 36, it will back water up to CU South and Highway 93. This proposal does not account for the University's desire to build out that land. Is the project team designing configurations assuming that CU builds that land out, or are designs proceeding irrespective of CU's plans for that land?
The development and evaluation of project configurations are proceeding irrespective of CU's plans. In an option with a restriction at US 36, the berm would be removed, and the area to the west of the berm would be reserved for inflows. In CU South's guiding principles document, the portion of the property that falls within the floodplain is designated with an open space land use, and it states that no enclosed structures should be built there.

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Would Phase Two of the South Boulder Creek flood mitigation be needed if the CU South property becomes designated open space?
Future phases deal with flows north of US Highway 36 (i.e., north of this project). This phase of the project is to prevent the overtopping of US Highway 36, which would continue to occur if regional detention is not built on the property. Phases Two and Three deal with flows that come in from west and north of US Highway 36.

Were project configurations developed irrespective of property ownership, or was planning restricted to the areas where these three concepts would take place?
The City's project staff were initially concerned that they were receiving conflicting input on whether and how to move forward from the OSBT, so staff checked in with OSBT to confirm that they need not unduly constrain themselves in identifying project design concepts.

Some group members have wanted berms upstream to detain water that flows into another pond temporarily. There is a concern that there is too much focus on US Highway 36. If the detention facility fails there, water will overtop US Highway 36. Upstream detention might be safer. Has the project team looked at this?
The challenge with using the gravel pit on CU South is that it is very difficult to allow water to go down the creek in small precipitation events and then get the water to divert flows in large storm events magically. Water that is diverted onto CU South in a big storm event would then need to drain back out within 72 hours. The suggested approach of putting berms in the gravel pit to store water would require a channel that goes into and out of that reservoir that feeds back into the creek, while also including some mechanism for keeping water in the creek. This is very environmentally challenging. Moving water around in this way would have much more impact on OSMP property and critical habitat than some of the alternatives.

Has the project team considered taking out a small portion of the levee to connect the two floodplains?
No, because getting water back out of that pond would be impractical.

ENVIRONMENTAL ISSUES
Mary Powell of Corvus Environmental led a brief discussion of the most prevalent environmental issues and challenges facing the project. Highlights of the discussion are presented below.

- The issue with all proposed alternatives will be acceptance of the project by federal permitting bodies. For example, the US Army Corps of Engineers closely examines proposed alternatives for the degree to which they conform to the "least environmentally damaging practicable alternative" (LEDPA) principle.
- One of the primary challenges with the suggested approach of putting berms in the gravel pits will be working along US Highway 36 in a way that reduces the impacts on Preble's meadow jumping mouse habitat stemming from excavating channels on OSMP property. This is feasible from an engineering perspective, but not from an environmental regulation perspective.
- There are conflicting issues with every design in terms of balancing engineering and environmental concerns.
- The group discussed the potential for restoring wetlands and habitat that existed in the current gravel pit area before mining began. A member of the group asked the project team if configuration proposals would be viewed more favorably by permitting bodies if they include restoration work. The project team responded that regulators would look first at the direct impacts of the project, then at mitigation. They will prioritize LEDPA for the initial project work

over restoration. The regulating bodies (namely US Army Corps of Engineers and US Fish and Wildlife Service) have wetlands protection regulations or ordinances, so they look at project proposals in stages. The first time they review a project, they focus on avoiding impact altogether, so long as there are proposed alternatives that avoid impacts as much as possible. If there must be some impact, the next step is minimization. If the impact is minimized but still exists, then the focus shifts to mitigation. The process always follows that order.

- Restoration of the gravel pit area is not necessarily connected to the engineering side of the project, but it is important to the community so that it will be considered. However, if removing the CU levee is part of the engineering of the project, it will include habitat restoration where the levee will be removed. The project team also noted that if wetlands are impacted in any way by the project, they must be restored under the law. There is a certain level of restoration required as part of the flood mitigation project, but the City is also looking at the potential future annexation of CU South. Mitigation and restoration opportunities can also be addressed during the annexation process. Council will consider future annexation of CU South following completion of preliminary engineering and prior to final design of the flood mitigation project. This could be helpful from a wetlands and habitat restoration perspective because then the community can have a complete picture of what restoration would be planned from both the flood mitigation project and future annexation agreement.
- A group member raised the question of whether a project that saves many lives with limited funding but includes adverse environmental impacts would be considered differently by the US Army Corps of Engineers. There was also a question about whether the cost is included in the "least practicability" test. The consultants responded that if there an alternative that has fewer impacts and is more expensive, you must use that alternative so long as it is even remotely possible that it can be funded. An alternative that has significant environmental impacts would have to be significantly costly for the US Army Corps of Engineers to reconsider permitting it. It is rare for cost to change the permitting outcome. One might have to spend millions of dollars to protect a very small amount of habitat.

REVIEW OF DRAFT EVALUATION CRITERIA

Kurt Bauer, Engineering Project Manager for the City of Boulder, presented a matrix that included the draft evaluation criteria to distinguish project concept variations All three concepts were shown accounting for 100-year flood events, 500-year flood events, and with or without the CU levee. The project team has looked at a high-intensity, low-volume storm and modeling indicated that stormwater volumes from this scenario are accommodated in the 100-year event concept variations. There are three goals that the project team wants to accomplish in developing this matrix: making criteria that are as measurable as possible, eliminating double-counting of similar criteria and issues, and trying to make the criteria useful for distinguishing between the three concepts. The proposed draft evaluation criteria are:

1. Ensure that concepts meet the baseline criteria (see Guiding Principles).
2. Provide downstream flood benefits in the event of a 100-year storm event. This could be measured in numbers based on dwelling units and structures.
3. Remove as many structures as possible from the 500-year floodplain. The effects of this could also be analyzed by examining the extent that a structure designed for a 100-year flood event is built and can partially contain a 500-year flood event.
4. Provide an estimated range of the cost of construction for each concept.

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5. Detail the length of time needed to construct these concepts, including permitting and design time, using a "worst/better/best" rating system.
6. Assess cost to operate and maintain each concept's structures in the long-term (e.g., floodgates cost more to operate in the long-term than gravitational flood control).
7. Determine the number of acres of OSMP land that could be inundated for up to 72 hours.
8. Determine direct impacts on open water and wetlands.
9. Assess direct impacts to federally recognized threatened and endangered (T&E) species (namely ladies' tresses orchids and Preble's meadow jumping mouse).
10. Specify height, length, and permanent footprint of the dam (this could be a way to measure aesthetics, which seemed too subjective in and of itself).
11. Improve connectivity of riparian habitat.
12. Consider how adaptable will each concept be in the future.

The matrix presents these criteria with boxes to score for each storm/levee concept variation. City staff proposed to present a simplified version of this matrix in a questionnaire that combined the 12 criteria into seven at the upcoming open house. Staff will ask people to indicate how important each criterion is to them and to circle the one criterion that is most important to them. One way staff is considering displaying the results of this input is to assign numbers to the importance of each criterion, and the scores will be averaged to quantify the level of importance that the public places on each criterion.

Clarifying Questions
Participants asked several clarifying questions about the evaluation criteria matrix. Questions are indicated in italics, followed by the corresponding answers in plain text.

Will this matrix be presented to open house attendees as independent of any discussion of alternative concepts?
City staff will present this information along with the different design concepts beforehand, and then there will be boards posted for public review and input afterward.

Is any input that this group has provided so far a part of this? The three original concept designs are the only ones shown in the matrix.
City staff want to update the general public up to the point where this group is now so that the City can get public feedback. Input from this group and other community members will be considered.

Why are human lives not a criterion for project evaluation?
Staff said that the concern for lives was captured in the building unit measures, but this could be reframed to address the number of people that would be affected.

How does the building unit measure account for the number of inhabitants in the area?
Staff will add the number of inhabitants as a criterion.

Is the assumption that everyone counts the same regardless of the floor of the building on which they live?
Yes, because a structure could fail as well during a flood, endangering those who live on higher floors.

What is the total amount of inundation on OSMP land? Should any potential regraded or excavated area be included in that calculation?
RJH will attempt to find answers to these questions. Any direct excavation on other properties will be captured in the wetland impact and T&E criteria.

Note: This is a summary of what occurred at the meeting, not a comprehensive account of everything that was said. Not all members of the group agree with everything that was said at the meeting or that is included in this meeting summary.

Is most of the OSMP land here Preble's meadow jumping mouse habitat? If not, is it otherwise protected?
Most of this OSMP land is covered under one of five protected statuses (T&E, tallgrass prairie, wetlands, etc.). That could be captured through a criterion for impact to special/protected resources under those five statuses. Additionally, improved riparian habitat connectivity could be a proxy for this. No restoration from annexation can be predicted yet, but if the levee were removed there would be more opportunity for restoration. It is hard to determine from the flood mitigation project alone where wetlands will be restored. It was also suggested that the wording "opportunity for restoration" on riparian connectivity be added.

PROPOSED FORMAT FOR APRIL 23 OPEN HOUSE
Marki LeCompte and Harlin Savage of Save South Boulder gave a brief presentation on recommended changes to the format of the community open house on April 23. Their proposals are summarized below.

- The following items should be added to the evaluation criteria: lives saved, the degree of support and approval from private landowners, and the degree of effort to build consensus with the public. Historically, transparency has been a problem with flood mitigation efforts, so these criteria are important.
- A statement should be made to Council suggesting that a new model for community engagement processes is needed to incorporate more people and improve on prior efforts.
- The project team should be encouraged to answer challenging questions from the community and to provide a presentation based on a transparent list of topics. Following the presentation, there should be a moderated townhall-style question/answer session. This approach has the advantage of allowing every interested party to hear the same things at the same time from the project team. The drawback is that this will mean longer meetings.
- A public summary of the open house should be posted not just on the website, but also in the *Daily Camera*. This is important because of the project's tight timeline and the need for the general public (including seniors who have more trouble accessing the internet) to be able to get up-to-speed on the project quickly.

Group Discussion
The group discussed LeCompte and Savage's proposals and the community engagement process; highlights are presented below.

- Some group members expressed concern that questions about flood mitigation and annexation would be conflated. Others clarified that these were being treated separately but understood the need to separate the two issues in community engagement efforts.
- The group indicated that a balanced set of group representatives would present at the meeting so that there was no partisan bias in terms of the presence or absence of various community representatives at the meeting.
- City staff stated that their goal for the meeting should be to share the same information with the public that has already been shared with this group. The aim would be to get general feedback on concepts and to share the draft evaluation criteria. There would be a presentation, and then an open house with stations with informational boards. Staff and consultants would be available to address questions. Small tables with materials would be set out for people to discuss these issues with neighbors, fill out questionnaires, and draw their ideas on concept maps. The City clarified that the open house would focus on flood control. There will be many conversations on CU South annexation in the future.
- Several group members expressed reservations about the small table format. There was a sense that these types of meetings have been frustrating in the past because not everyone can be

heard by all interested parties and major decision makers. It was agreed that the materials that were planned to be used at the tables could still be distributed even if the small group discussions are removed from the agenda. The group expressed support for a format that would combine the longer townhall-style meeting with the open house format.

- The group requested that the April 23 meeting provide technical studies and timelines for groundwater modeling, etc., and that a detailed presentation of project cost be provided. City staff are not ready to present costs at the April 23 meeting. The April 23 meeting will proceed on the date planned because it has already been publicized.
- Group members noted that Frasier Meadows has several meetings on Monday night, so some residents may not be able to attend. Additionally, group members suggested that City staff submit the summary to the *Daily Camera* so that residents know what is happening at these meetings.

NEXT STEPS

- City staff and Peak Facilitation will talk about a plan for the April 23 meeting and show it to group members in advance of the meeting.
- The next meeting of this group has not yet been scheduled. Staff will work with the group to find a date after mid-May to give the consultants time to complete the relevant analyses. At least one representative from each of the community groups involved in this process needs to be present at the next meeting, so this should be a priority for scheduling the next meeting.

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