**CARSON CITY STORM DRAINAGE ADVISORY COMMITTEE**
**Minutes of the August 14, 2000 Meeting**
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A regular meeting of the Carson City Storm Drainage Advisory Committee was held at 5:30 p.m. on Monday, August 14, 2000 in the City Hall Capitol Conference Room, 201 North Carson Street, Carson City, Nevada.

**PRESENT:** Chairperson Jay Aldean
Vice Chairperson Howard Anderson
Tony Marangi
Russell Plume
Robert Saunders

**STAFF:** Larry Werner, City Engineer
Mahmood Azad, Development Services Manager
Kathleen King, Recording Secretary
(SDAC 08/14/00; Tape 1-0001)

**NOTE:** Unless indicated otherwise, each item was introduced by the Chairperson or Vice Chairperson. A tape recording of these proceedings is on file in the Clerk-Recorder's Office and is available for review and inspection during regular business hours.

**A. ROLL CALL AND DETERMINATION OF QUORUM** (1-0001) - Vice Chairperson Anderson called the meeting to order at 5:35 p.m. Roll call was taken; a quorum was present. Member Perry was absent. Chairperson Aldean arrived at 5:40 p.m.

**B. APPROVAL OF MINUTES** (1-0006) - Member Marangi moved to accept the minutes of the July 10, 2000 meeting as presented. Member Plume seconded the motion. Motion carried 4-0-3-0.

**C. MODIFICATION OF AGENDA** (1-0035) - Mr. Azad advised that he would be discussing project impact under item G. He introduced Larry Werner, the City Engineer, and provided background information on his experience.

**D. PUBLIC COMMENT** - None.

**E. DISCLOSURES** - None.

**F. PUBLIC MEETING ITEM**

**F-1. DISCUSSION AND ACTION REGARDING PRESENTATION BY LUMOS AND ASSOCIATES FOR PRELIMINARY ALTERNATIVE SELECTION FOR STORM DRAIN DETENTION AND ROUTING FOR ASH CANYON AND KINGS CANYON CREEKS** (1-0100) - Mr. Azad introduced Charles Macquarie, CEO of Lumos & Associates, and provided a brief overview of his presentation. Mr. Macquarie briefly discussed his background and experience and advised that he is the Project Manager for Lumos & Associates. Thomas Young, also of Lumos & Associates, is the Project Engineer, and Mr. Azad is the Project Manager for Carson City. Mr. Macquarie displayed a Power Point

presentation which included an organization chart, an overview of the partnership with the Carson Water Subconservancy District ("CWSD"), the basis of the design phase, the purpose and scope of the project, alternatives investigated, and the Ash and Kings Canyons flow summary at Quill Ranch.

Mr. Macquarie then presented Alternative 1 - Conveyance Only - no detention upstream. He explained that consideration was given to evaluating route options through Carson City with the existing utilities complex, constructability, maintenance, impact to the public, and project cost. He indicated two routes which have been identified as the least impact to existing utilities, the least costly of the alternatives, and are located very close to the existing flow routes. He indicated the location of the proposed detention basin and advised that it would not be present in the Alternative 1 project. He pointed out Ash Canyon Creek and Kings Canyon Creek on the map, and the proposed route to convey the Ash Canyon flows through Carson City. The flows would be intercepted on Ormsby Boulevard at the longitudinal north/south pitch and mostly on the west side of the street. Mr. Macquarie indicated that the existing channels at that point are not nearly adequate enough to convey the 100-year flow as the water is not only in the channel but flowing over a broad area. The flow would have to be collected, channeled into the proposed pipe systems and conveyed through Carson City. He summarized the flow as follows: Collect from Ash Canyon's broad, sheet-flow spread into ditches, convey to an inlet structure, through a large box down Washington Street, through Mills Park, through the high school property, across the Lompa Ranch, ending at the freeway alignment.

Mr. Macquarie indicated the flow route for Kings Canyon Creek, as follows: The sheet flow would be similarly collected from the 100-year flood plain at Kings Canyon, channeled to an inlet structure, then into a big box down King Street, jog to the south down Division Street, out Fifth Street to the freeway alignment. The sizes of the reinforced concrete boxes ("RCB") range from 6'x8' at the upstream end, and 8'x10' at the downstream end across the Lompa Ranch. The reason for the increase in size is to accommodate some additional flow as it moves through Carson City; but, more importantly, the grade flattens out considerably and, by the time it gets to the Lompa Ranch, it is at .5% or less. To convey the same amount of water, a larger box structure is needed. The reason for the two routes depicted is that the size of the box needed to combine the flows would be too large to install in the street. The proposed structure is large enough that a number of utilities will need to be relocated, the most difficult of which is the sanitary sewer because it works by gravity.

Mr. Macquarie explained that Alternative 1 would have all the existing storm drain catch basins plugged into the big boxes so as to include not only flows from Ash and Kings Canyons, but also the local drainage flows. The estimated cost for the two routes is as follows: Ash Canyon - $14 million; Kings Canyon - $17.5 million; Total cost $31.5 million.

Mr. Macquarie then presented Alternative 2 - Detention and Conveyance. He explained that the criteria used to evaluate the options for this alternative were the detention basin location and configuration, land ownership, environmental issues, dam safety requirements, the potential for a multi-use facility, conflict with existing utilities, constructability, maintenance, impact to the public, and project cost. He advised that the detention basin would be present with a fairly substantial embankment structure. The proposed route from the detention basin through Carson City to the freeway alignment would be the same as the Ash

Canyon alignment. Between the detention structure and Ormsby Boulevard would be an open ditch which would follow the current alignment of Ash Canyon Creek.

Mr. Macquarie indicated that a number of different properties were considered, including the Quill Ranch, the Joost property, and the western boundary of Longview Estates. He acknowledged that the open channels will be lined because the outflow from the detention facility will have velocities which could cause erosion. He indicated the general locations of Longview Estates, the Quill Ranch property, and the Joost property on a map. Three scenarios were considered: Containing the entire basin on City property, detaining some of the water on the Anderson Ranch, and containing the entire basin on the City's Quill Ranch property, using a portion of the Joost property to the north. Initial conversations with the Joost family indicate that they would not be opposed to making their property available provided that it can still be used for grazing.

Once the size of the detention basin was determined, the decision to utilize the Quill Ranch property was obvious as both Ash and Kings Canyon Creeks come fairly close together there. From an overall cost and earthwork perspective, it made sense to combine the detention facilities. For low flows (up to 1-2 year events), the two creeks would be perpetuated separately because downstream irrigation requirements must be maintained. They would pass straight through the detention facility, through the embankment, and follow the existing drainage facilities through town. High flows would be combined and released through a larger (48") outlet pipe which would flow out into Ash Canyon Creek. The channel would be improved to carry the higher flow. The objective was to balance the outlet pipe size with the detention volume through a 60" maximum pipe since that is the largest pipe that can be placed in a City street without causing too much disruption to other utilities. The required detention volume was backed into from there. Mr. Macquarie explained that in order to minimize the size of the outlet pipe, a pressure pipe will be used; however, the existing storm drain system cannot be tied into it. The 60" outflow pipe with the current storm drain system in place would be adequate, with a few modifications, to convey the 4-5 year storm event from the center of Carson City to the freeway alignment. In response to a question, Mr. Macquarie clarified that the 60" line would be in addition to the existing Ash Canyon outlet facility.

Mr. Azad explained that for flows originating upstream and moving through the City, nothing more than a 1-2 year event will stay in pipe. Mr. Macquarie advised that the flow coming out of the detention basin would be 290 cfs in addition to the 150-200 cfs in the existing system. He referred to the analysis done by WRC. In response to a question, Mr. Macquarie advised that Alternative 2, which has the detention basin, would only have one pipe along Ash Canyon, down Washington Street and through Mills Park. Mr. Azad explained that the pipe would capture flows from both Ash and Kings Canyons and route them past Lompa Ranch. Mr. Macquarie went on to explain that once the flows reach the freeway alignment, associated drainage facilities will capture flows from the west, take them under the freeway to the channel under Butti Way, alongside the sewer treatment plant, and off to the River. Alternative 2 stops at the freeway alignment. He advised that a water quality basin will be located near the Lompa Ranch.

Mr. Macquarie explained that the detention facility would be comprised of an excavation, an approximately 3,500 foot long embankment, ranging in height from zero at the ends to an average height of 22 feet with its highest point measuring 39'. The detention area shown on the map would be the area inundated in a

100-year event, backing up behind the embankment. The embankment and the excavation volume would balance so that no dirt would have to be hauled off the sides. "In other words, what comes out of the hole is used to build the embankment." The side of the embankment facing Carson City will have varied slopes to try to make it look as much like a low hill as possible. Discussion took place regarding fatal flaw analysis, and Mr. Macquarie advised that the dam would be designed for the probable maximum flood. Two spillways associated with the dam will be designed to pass large volumes of water without the dam failing. Mr. Macquarie acknowledged that, because the dam would be immediately upstream of residential development, it is classified as high risk. It would have to be designed with safety features to ensure it did not fail. He advised that the residents downstream of the structure would basically be protected from a 200-year flood. He explained that a 100-year flood can be compounded inside the detention facility. The conveyance facilities through Long Ranch and on to the Anderson Ranch could handle a second 100-year flood. He noted that the spillways are aligned with the Longview Estates open spaces so that if they were to discharge, the flows would go through the open areas where the existing channels are located.

Discussion took place with regard to the effects of a probable maximum flood with and without a dam structure. Mr. Macquarie explained that Alternative 2 would add protection to the northern residents and, initially, additional channel capacity would be available immediately downstream of the structure. Flows from a probable maximum flood would eventually spread out again, however, and "it would be an awful mess no matter what facilities are available." He clarified that the chances of a probable maximum flood are remote as it is the largest flood hydrologists can conceive of ever happening.

Discussion took place regarding probable maximum flood values for Vicee Canyon, and Mr. Macquarie advised that Vicee Canyon does not figure into Alternative 2. He explained that the probable maximum flood calculated for Ash and Kings Canyons is 8.5 to 9 times the predicted hundred year flow. With the same approximate analogy, 9 times the predicted hundred year flow would apply to Vicee Canyon as well. Mr. Azad acknowledged that the '97 flood was greater than a 25-year event for Vicee Canyon; however, there is still contention over whether a debris dam in Vicee Canyon produced the event. The combined hundred year flow for Ash and Kings Canyons without detention is 1,950 and the probable maximum flood is 16,400.

Mr. Macquarie summarized Alternative 2, as follows: Installation of a 60" pressure pipe through the City, with the existing facilities remaining. Once the upstream flow from Ash and Kings Canyons is removed from the existing facilities, and with some minor improvements, the capacity would be available to convey a 4-5 year event through Carson City. The cost associated with the detention facility is $4.3 million; channel improvements - $500,000; the outlet pipe facility - $4.7 million; total $9.5 million.

Mr. Macquarie noted that Alternative 2, the detention basin option, is $22 million less than Alternative 1. Alternative 1 would involve more disruption to residents and businesses during construction because of the two routes through town and the larger box. Alternative 2 will require more state and federal review and permitting because of the embankment structure. Additional geotechnical work will be required in order to confirm the feasibility of the embankment and to ensure there are no fatal flaws. Utilizing the detention facility as multi-use is also a possibility. Mr. Macquarie advised of an interest by Utilities Operations Manager Tom Hoffert to utilize the detention facility as a permanent, open water storage facility to capture

some of the available Carson City water rights for which no storage is yet available. Another possibility would be to use it as an infiltration facility, similar to the facility located in Vicee Canyon. Yet another possibility is for the Parks Department to develop a use.

Mr. Macquarie advised of two smaller projects scheduled for next year in conjunction with the CWSD. One will be upstream improvements to channelize a portion of Ash Canyon Creek at the location where it comes out of its channel and starts at the apex of its alluvial fan. An additional project is an urban stream restoration demonstration on Ash Canyon just west of Longview Way. This project will include additional preliminary geotechnical engineering in order to determine whether the embankment option is viable, and value engineering to determine if it is the right direction or if there is another option which has not yet been considered.

Discussion took place regarding the location at which Ash Canyon Creek jumped out of its bank during the 1997 flood. In response to a question, Mr. Macquarie advised that the 60" pipe would start at the intersection of Ormsby Boulevard and Washington Street. He reiterated that the existing system will convey a 1-2 year event, and once the 60" pipe is installed, it will convey a 4-5 year event. It will result in increased protection for the rest of the City because large flows from the canyons will be detained and conveyed into a separate pipe through a dedicated line, leaving the existing system to convey the water that comes from the local streets.

Mr. Azad indicated that the Committee and the storm water utility focus group will need to decide if the 100-year event is the level of protection to design for. Protecting for a 25-year event would require a smaller dam and a smaller pipe; however, a 100-year event is always a threat. In response to a question, he explained that the agendized action is for the Committee to agree with the concept presented by Mr. Macquarie. He emphasized that the design stage is very preliminary, and indicated that the presentation made by Mr. Macquarie was a prerequisite to the August 17th CWSD presentation.

Chairperson Aldean discussed the size and implications of a 40' dam, and commented that protecting for a 25-year event as opposed to a 100-year event only opens up the City to liabilities. He expressed a preference for designing the facilities for a 100-year event as a minimum because of the existing residences. He inquired as to a way to build a shorter dam and excavate more below it. Mr. Azad acknowledged the possibility, and advised that it will be part of the geotechnical investigation. He commented that the worst case scenario, where ground water is 2" below grade, had already been considered. Once the geotechnical investigation is completed, Mr. Macquarie will have another alternative. Discussion ensued with regard to the same.

Chairperson Aldean inquired as to how to sell a 40' dam. Mr. Bowling responded that both the advantages and disadvantages of the entire project will need to be addressed. Chairperson Aldean discussed various ways of contouring and grading the dam to camouflage it, and then presenting a visual concept to the public. Mr. Azad commented that the concept will need to be approached with the assumption that a 39' dam will most likely not be publicly accepted. The public will have to indicate what is acceptable and, from there, a determination will have to be made as to what can be constructed. Vice Chairperson Anderson pointed out that the visual impact of the dam will not be nearly as bad as that caused by the

freeway. He noted that with the sound wall, the freeway will be 35' in height with no landscaping. Mr. Azad indicated that an artist's rendering is included in the project scope. He emphasized that the presentation was in concept only. Chairperson Aldean suggested presenting Alternative 2 as the least cost.

Mr. Azad advised that a steering committee or a focus group is needed for driving the storm water utility. The Storm Drainage Advisory Committee would naturally be a part as well. Those citizens could provide more input into the alternatives. A preliminary list for the focus group has been developed and selection is being worked through. The focus group will consist of citizens and state and federal agency representatives. Representatives from WNCC, the U.S. Geological Survey, and a homeowners association have already indicated an interest.

Ira Andersen inquired as to where the flows will be picked up. Mr. Macquarie explained that the embankment structure would be on the western edge of Longview Estates on the City's Quill Ranch property and on the Joost property; the water would be intercepted at that point. The embankment would be low enough that both Ash and Kings Canyon Creeks would run into the general area. At that particular point, there is only about 1500' of pipe so both creeks would come in together. Low flows would still come down Kings Canyon and Ash Canyon Creeks because they would be perpetuated through the embankment structure. The detention basin would not be needed during low flows as it is engineered to allow the low flows to go through. Mr. Andersen further inquired as to whether the channel would be improved at the pick up point on Ormsby Boulevard and King Street. Mr. Macquarie explained that in the detention scenario, the low flows go through the embankment in a pipe and follow the existing Kings Canyon Creek at its present location. No improvements would be made other than putting a pipe through the embankment which would allow low flows through. On the Ash Canyon side, improvements would be proposed along the Ash Canyon channel to ensure that the outflow of the 300 cfs could go through without jumping out of the bank. It would then be picked up at Ormsby Boulevard. Chairperson Aldean commented that on the Kings Canyon side, the transfer of water should be completed from the open property on Longview Estates into the King Street system. Vice Chairperson Anderson pointed out that the existing inlet structures are poorly designed for water. Chairperson Aldean acknowledged that minor improvements to the Kings Canyon system would be needed. Discussion took place regarding Ash Canyon Creek jumping its bank.

Mr. Azad acknowledged that the next step is to present the information to the CWSD on August 17th. He clarified that the purpose of the presentation is to justify the City's request for next year's funding. Chairperson Aldean requested an indication of the schedule to disseminate the information to the public. Mr. Azad indicated that he had just received the first part of the scope for strategic planning for public involvement from Mr. Bowling. He will review the information and get back to Mr. Bowling. He anticipates having a strategy from Mr. Bowling within the next four weeks. Mr. Werner expressed the opinion that the storm drainage master plan strategy needs to be developed first. Chairperson Aldean clarified that he would like to generate some public interest. Discussion took place regarding the damage in dollars caused by floods.

Vice Chairperson Anderson discussed recent problems with meeting attendance and suggested that the meeting time be changed to 6:00 p.m. Chairperson Aldean suggested agendizing this for action at the September meeting.

**Member Plume moved that the Committee agree in concept to investigate a multitude of alternatives for dealing with storm drainage from Ash and Kings Canyons. Member Marangi seconded the motion. Motion carried 5-0-2-0.**

**F-2. DISCUSSION AND ACTION REGARDING SELECTION OF A DAY FOR FIELD TRIP ASSOCIATED WITH CURRENT STORM DRAIN IMPROVEMENTS** (1-1501) - Discussion took place regarding a tour of the various storm drainage projects being constructed in conjunction with the freeway. Vice Chairperson Anderson suggested expanding the tour to view the channel between Ash and Kings Canyons and the site of the proposed detention basin. Discussion took place regarding the relationship of the Benzinger house to the proposed improvements. Mr. Azad suggested conducting the tour at 3:00 p.m. on Monday, September 11th.

**G. INTERNAL COMMUNICATIONS AND ADMINISTRATIVE MATTERS** (1-1649) - Mr. Azad explained that project impact is part of the community disaster proofing promoted by FEMA. As a part of that, the Carson City Engineering Department is receiving approximately $130,000 to be used for seed money to develop the Storm Water Management Program. It will help in hiring consultants and investigating alternatives. One requirement of project impact is a standing committee consisting of citizens. Mr. Azad has recommended that the Storm Drainage Advisory Committee represent that standing committee, and FEMA has approved the recommendation. Additional requirements include an indication of community activity, such as talking to people outside the regular committee meeting.

Mr. Azad distributed the Board of Supervisors agenda for August 17th. He advised that the City is making a presentation on the storm water management program for Carson City. It will cover the request for contract approval for the comprehensive storm water management program. He advised the Committee members that if they are interested in attending, he will call and let them know when the Board is 10-15 minutes away from addressing the item. Vice Chairperson Anderson and Member Marangi indicated an interest in attending.

**G-1. FUTURE AGENDA ITEMS** (1-0090) - Chairperson Aldean requested that discussion and action to elect a new chairperson and vice chairperson be agendized for the September meeting. (1-1637) Discussion took place regarding changing the meeting time to 6:00 p.m. and Mr. Azad indicated that he would agendize the matter for the September meeting.

**H. ADJOURNMENT** (1-1830) - Vice Chairperson Anderson moved to adjourn the meeting at 7:08 p.m. Member Marangi seconded the motion. Motion carried 5-0-2-0.

The Minutes of the August 14, 2000 meeting of the Carson City Storm Drainage Advisory Committee are so approved this _____ day of September, 2000.

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JAY ALDEAN, Chairperson