Selected Plan for the 54th and Pecos Area Outfall Systems Plan

November 7, 2017

The *Selected Plan* for 54th and Pecos Area agreed upon by Adams County (*Adams*) and the Urban Drainage and Flood Control District (*UDFCD*) (hereinafter *Adams* and *UDFCD* shall jointly be referred to as "*Sponsors*") to be shown by *CH2M* in the final *54th and Pecos Outfall Systems Plan* report (hereinafter called "*Final Report*") is described in general and specific terms below.

SELECTED PLAN AND DIRECTLY RELATED ISSUES

Unless specifically directed otherwise below, this *Selected Plan* to be shown in the *Final Report* essentially follows the recommendations made by *CH2M* in the *54th and Pecos Outfall Systems Plan Alternatives Analysis Report* dated August 2017 (hereinafter called "*Alternatives*") based on the following principal elements, goals and objectives:

- Minimize stormwater and flood-related damages to drainageways, public infrastructure and private property. Do this with value engineering and practicalities of implementation in mind.
- Institute an approach that balances the development in the watershed with stormwater management implementation that complements drainageway and stream stability solutions, that as a system, provide multiple benefits that include:
    - Water quality protection and enhancement;
    - Water quantity resources protection;
    - Preservation of natural character of the waterways and their terrestrial and aquatic habitat resource;
    - Wherever possible, provide public use and access and/or trails within the corridors of identified waterways in order to provide maintenance access that will also provide for active and passive recreation of the public.
- Consider the needs for new and upgraded roadway crossings when such improvements are practicable, affordable and add significant value in relation to the cost.

CH2M shall address all items that are specified in the *Final Report* as described in the agreement between *UDFCD* and *CH2M* for this project, which includes developing, describing and showing a conceptual design based on the Recommended Plan in the *Alternatives*, with the following exceptions:

1. Proceed with conceptual design of Top Alternative 2 combined with Bottom Alternative 4 modified to divert flow that could otherwise be routed north along Washington Street instead along 62nd Avenue towards Franklin Street. This plan combination is defined in more detail in the meeting minutes from October 16, 2017 as Top Alternative 2, Middle Alternative 0 and Bottom Alternative 5.

2. Convert from kinematic to dynamic wave routing in SWMM for all piped elements in the conceptual design of the *Selected Plan*.

3. Provide narrative describing the potential to utilize the future drainage easement currently under negotiation from the low point in Washington Street to Downing Street through the property to the southeast of 62nd Avenue and Washington Street.

4. Provide narrative describing the improvements along Washington Street and the need for a further detailed study of basins in the area along with a more accurate method of data collection, such as a professional land survey, prior to implementation.

5. Provide narrative with regard to Copeland Lake being a private lake with no discernible outlet and therefore could not be utilized for a recommended selected alternative.

6. Review the improvements necessary in 66th Avenue, west of Broadway and consider a storm sewer system if it is found that an open channel will not function well, or a combination of both. Instead of rectangular channel geometry, please assume trapezoidal.

7. Provide narrative regarding the options available on Top Alternative 2, such as the hybrid of Top Alternatives 1 and 2 at 62nd Avenue.

8. Provide narrative and detail for the outfall at 64th Avenue and York Street.

Also show and describe all recommended facilities, costs and actions on a reach-by-reach of the drainageway. In general, the *Final Report* shall provide, show, and recommend the following:

1. Under a section in the *Final Report* titled "General Recommendations," recommend:

   a) That the controlling jurisdictions take steps to stabilize all major waterways when their watershed urbanizes, rehabilitate existing degraded reaches of the waterways and their tributaries, and aggressively control erosion and sediment transport during construction activities.

   b) That Sponsors and any other jurisdiction having land use control powers in this watershed require new land development and significant redevelopment and publicly funded projects to provide to the maximum extent practicable runoff volume control practices (i.e., minimize directly connected impervious areas and employ infiltrating BMPs) whenever site conditions permit.

   c) That the controlling jurisdictions take steps to require that all BMPs for all new development, redevelopment, and publicly funded projects provide to the maximum extent practicable a Water Quality Capture Volume (*WQCV*) as recommended in the Urban Storm Drainage Criteria Manual – Volume 3, after accounting for volume reductions achieved using volume control practices as recommended under Item 1.b above.

   d) That all jurisdiction having land use control powers in this watershed continue to implement their floodplain management regulations, including regulation of the 100-year floodway and floodplain.

      Recommend that these jurisdictions adopt a policy, if not already done so, of preserving the defined floodplains as open spaces to the maximum extent possible and that at least 1-foot freeboard be provided for the lowest floor above the 100-year flood elevation shown on the

latest flood hazard area delineation or FIRM maps for all human occupied structures built adjacent to, or within, the defined 100-year floodplains.

e) That all jurisdiction having land use control powers in this watershed continue to participate in FEMA's flood insurance Community Rating System and public education programs.

2. List on the plan view and profile sheet of the conceptual design, where appropriate, the recommended wetland mitigations that will be needed to implement recommended improvements, if any.
3. Show on appropriate plan and profile sheets facilities to arrest the vertical degradation of the low-flow channel of natural and man-made waterways and to help rehabilitate, as much as possible their stable function and habitat.
4. Recommend rehabilitating eroded and degraded banks where needed and desired to arrest the horizontal erosion along natural waterways using bio-engineered methods that combine buried soil riprap and revegetation with native species of riparian and dryland vegetation.
5. Show on plan view and profile sheet the needed buttressing of critical utilities and other structures that may be endangered by stream erosion.
6. Using the input from stakeholders and the public, work with *Sponsors* and affected other local jurisdictions to prioritize the recommended facilities and actions that are listed in the *Final Report* and clearly articulate them in that document.
7. Describe the recommended type and schedule of maintenance activities for all improved facilities recommended in the *Final Report*.
8. Consider the various functions of all natural waterways in the study watersheds and their floodplain, including flood conveyance, riparian habitat, open space, aesthetics, recreation, urban development, water quality, utility crossing, transportation and other features.
9. Acknowledge in the *Final Report*, that land-use changes to the contributing watersheds affect the flood hazard nature (i.e., runoff rates, volumes and depths), the transport of sediment, and the water quality of the receiving natural waterways. The *Final Report*, under "General Recommendations" shall suggest that Sponsors and any other jurisdiction having land use control powers in these watersheds monitor land-use changes and whenever the land-use changes result in imperviousness ratios that exceed the projections identified in the *Final Report*, these jurisdiction take steps to further limit increases in stormwater runoff through the use of additional on-site detention, infiltrating BMPs and *WQCV* BMPs, thereby reducing the runoff rates, volumes and future damage potentials to the *Final Report* levels.

EXECUTIVE SUMMARY

Include an Executive Summary in the *Final Report* written in plain, non-technical language, which is directed primarily at the general public and elected officials. This summary should, at the minimum, contain the following as well as other items listed in *UDFCD's* checklist for preparation of the final major drainageway plan conceptual design report:

1. A brief summary of the planning process including numbers of progress and public meetings.
2. A brief description of the decisions made by project sponsors during this project.

3. A brief summary of all design criteria specifically developed for this plan.
4. A brief summary of the following sections of the *Final Report*: Purpose and Scope, Study Area Description, Alternative Evaluation, Recommended Plan, and Conceptual Design.
5. A map showing the area and all recommended improvements.
6. Tabular and narrative summaries of costs showing costs for capital improvements, engineering/administrative/contingencies, and land values, all sorted by drainageway, reach, tributary, and by jurisdiction. The reach length (miles), tributary catchment area (square miles), and their totals should also be included in the table.

Incorporate the following notes on each drawing:

"*This drawing is for master planning purposes and represents preliminary and conceptual engineering. Alternatives to this outfall system will be considered by local agencies and the Urban Drainage and Flood Control District provided the alternative offers an equivalent intent of the plan, including hydraulic capacity, water quality, stream stability and natural waterway features. The alternative must comply with all requirements of the local jurisdiction and the Urban Drainage and Flood Control District. In addition, there may be State and Federal requirements that will need to be considered and met. This drawing does not provide a final design and shall not be used for construction purposes."*

"Local Cities, Towns, Counties, and City and Counties manage and regulate all land use change, development and redevelopment activities within and adjacent to the 100-year floodplains in order to prevent, to a maximum extent possible, future flood damages to buildings and structures from the 100-year flood and to minimize damages from larger floods. The recommendations of this plan provide a set of options subscribed to by Cities, Towns, Counties, and City and Counties in carrying out their floodplain management and regulatory responsibilities and obligations."

"Many activities that occur in or affect ditches, drainages, creeks, ponds or wetlands require a Section 404 Permit Authorization from the US Army Corps of Engineers. During preliminary design, and prior to final design or starting work, contact the Corps' Denver Regulatory Office at 303-979-4120 for appropriate permit authority to avoid compromising and delaying the completion of the project."

ADDITIONAL DIRECTION

1. Unit costs should be updated to reflect the most current costs available using the UD-MP Cost worksheet.
2. Include an Acknowledgements section listing all participants and stakeholders in this study. Include in the list their name, organization and function in the planning process.
3. Show all maintenance access routes along all reaches. To the extent feasible, the alignment of these routes shall be coordinated with existing and planned recreational trails identified using input provided by Sponsors, special districts and other local stakeholders.

4. Summarize cost estimates of improvements by jurisdiction where those improvements are located, by the reach in which the improvements are located and overall project totals.
5. Report estimated costs for maintenance of all facilities, including detention ponds, storm sewer outfall points, grade control structures, etc. reported in the *Final Report.*
6. Prepare a GIS shapefile of all proposed improvements using the UDFCD SWIFT tool.