

INTERLOCAL AGREEMENT

1) PARTIES

This Interlocal Agreement ("Agreement") is entered into between the City of Reno ("Reno"), a municipal corporation and Washoe County ("County"), a political subdivision of the State of Nevada, collectively the "Parties". In consideration of the mutual promises contained in this Agreement, the Parties agree as follows:

2) RECITALS

2.1 The Parties are public agencies as defined in NRS 277.100(1)(a).

2.2 NRS 277.180 provides that any one or more public agencies may contract with any one or more other public agencies to perform any governmental service, activity or undertaking which any public agency entering into the contract is authorized to perform.

2.3 Reno is entering into an agreement with HDR for the FEMA Flood Risk Map update/revision (the "Project") in the amount of \$158,687.00. The description of the work is set forth in Exhibit A.

2.4 County has agreed to reimburse Reno the amount of \$79,343.50 for the Project.

3) RIGHTS & DUTIES

3.1 Reno

3.1.1 Reno has contracted with HDR, who will perform the service for the Project and submit invoices to Reno, on a monthly basis for the work described in Exhibit A. Reno will review and verify the invoices. Reno will then submit invoices for reimbursement to County on a monthly basis.

3.1.2 Reno will, through its designated representative, provide to County any information requested relating to any invoice submitted for payment.

3.1.3 Reno will set up a separate account for the Project, if not already existing, so that check numbers along with copies of cancelled checks for all expenditures can be

submitted, as well as an exact itemization of Project expenditures, and copies of itemized invoices.

3.2 County

3.2.1 Upon the submission of an invoice for payment, pursuant to Paragraph 3.1.1 above, the County representative shall promptly review the invoice, request any further information or documentation required, and process the invoice for payment within thirty (30) days following his approval.

3.2.2 The total amount of invoices to be paid pursuant to this Agreement by the County is the sum of \$79,343.50.

4) INDEMNIFICATION

4.1 The Parties agree that each will be responsible for any liability or loss that may be incurred as a result of any claim, demand, cost, or judgment made against that Party arising from any negligent act or negligent failure to act by any of that Party's employees, agents in connection with the performance of obligations assumed pursuant to this Agreement.

4.2 The Parties further agree, to the extent allowed by law pursuant to Chapter 41 of the Nevada Revised Statutes ("NRS"), to hold harmless, indemnify and defend each other from all losses, liabilities or expenses of any nature to the person or property of another, to which each may be subjected as a result of any claim, demand, action or cause of action arising out of the negligent acts, errors or omissions on the part of employees.

5) MISCELLANEOUS PROVISIONS

5.1 This Agreement is binding upon and inures to the benefit of the Parties and their respective heirs, estates, personal representatives, successors and assigns.

5.2 This Agreement is made in, and shall be governed, enforced and construed under the laws of the State of Nevada.

5.3 This Agreement constitutes the entire understanding and agreement of the Parties with respect to the subject matter hereof, and supersedes and replaces all

prior understandings and agreements, whether verbal or in writing, with respect to the subject matter hereof.

5.4 This Agreement may not be modified, terminated, or amended in any respect, except pursuant to an instrument in writing duly executed by the Parties.

5.5 In the event a party fails to appropriate or budget funds for the purposes as specified in this Agreement, Reno hereby consents to the termination of this Agreement. In such event, the party shall notify Reno in writing and the Agreement will terminate on the date specified in the notice. The Parties understand that this funding out provision is required under NRS 244.320 and NRS 354.626.

5.6 In the event either Party brings any legal action or other proceeding with respect to the breach, interpretation, or enforcement of this Agreement, or with respect to any dispute relating to any transaction covered by this Agreement, the losing Party or Parties in such action or proceeding shall reimburse the prevailing Party or Parties therein for all reasonable costs of litigation, including reasonable attorneys' fees.

5.7 No delay or omission by either Party in exercising any right or power hereunder shall impair any such right or power or be construed to be a waiver thereof, unless this Agreement specifies a time limit for the exercise of such right or power or unless such waiver is set forth in a written instrument duly executed by the person granting such waiver. A waiver of any person of any of the covenants, conditions, or agreements hereof to be performed by any other Party shall not be construed as a waiver of any succeeding breach of the same or any other covenants, agreement, restrictions or conditions hereof.

5.8 All notices, demands or other communications required or permitted to be given in connection with this Agreement, shall be in writing, and shall be deemed delivered when personally delivered to a Party (by personal delivery to an officer or authorized representative of a corporate Party) or, if mailed, three (3) business days after

deposit in the United States mail, postage prepaid, certified or registered mail, addressed to the Parties as follows:

To Reno: Trina Magoon P.E., Director of Utility Services
City of Reno
1 East First Street, 7th Floor
Reno, Nevada 89501

To County: Dwayne Smith, Director of Engineering
1001 E. 9th Street
Reno, NV 89512

5.9 This Agreement is effective upon the date the last signing Party signs this Agreement ("Effective Date").

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement.

WASHOE COUNTY

CITY OF RENO

Dated this ____ day of _____, 2024

Dated this ____ day of _____, 2024

By _____
_____, Chair
Board of County Commissioners

By _____
Hillary L. Schieve, Mayor

ATTEST:

ATTEST:

Washoe County Clerk

Mikki Huntsman, Reno City Clerk

APPROVED AS TO FORM:

APPROVED AS TO FORM:

District Attorney

Deputy City Attorney

EXHIBIT A

City of Reno/Washoe County Southern Reno Streams Remodeling and Remapping DRAFT: SCOPE OF SERVICES

Background

FEMA Region IX (FEMA) and the STARR team developed revised risk map products for Whites Creek, Thomas Creek, Dry Creek, Double Diamond Creek, Rosewood Wash and Bailey Canyon. The City of Reno (COR) contracted with HDR to review the hydrologic/hydraulic models and floodplain mapping for these watercourses and provide technical comments. HDR provided the key findings and issues with the models and the maps in January 2023. The comments were intended to be helpful to the FIS update process and to help the communities better understand these work products since they would form the basis for floodplain management into the future. With limited FEMA funding to address HDR's technical comments, the COR and Washoe County proposed to contract with HDR to revise the models and the maps for Whites Creek, Double Diamond Creek, Dry Creek, Thomas Creek and Bailey Canyon to correct the identified deficiencies. The COR and Washoe County will work with FEMA to incorporate the changes in the technical work products into this ongoing PMR. The COR proposes to ask FEMA to suspend mapping efforts for Rosewood Wash thus eliminating need to address comments related to Rosewood Wash.

It is assumed that some additional coordination with STARR II will be needed to obtain missing supporting data or clarification on assumptions used in their modeling effort. It is also assumed that FEMA and the STARR II team will process the revised models and mapping products to the Mapping Information Platform (MIP) and HDR will provide a technical report, revised hydrologic/hydraulic models and mapping products for FEMA's use and final formatting of the data for the MIP uploads.

There is a 2022 QL1 LiDAR data set in-process by the USGS for this area. The final data is not yet available, but if Washoe County or the City of Reno are co-sponsors of this LiDAR project, it may be possible to get interim preliminary products (classified LAS files or DEMs) in advance of final release that may help to support this work for areas with topographic changes such as the Bailey Canyon area.

TASK 1: Project Management

- a. **Project Setup:** The Contractor will conduct management activities related to the initiation of the project. These activities will include contract initiation, preliminary project review, and project document setup.
- b. **Invoicing & Progress Reports:** Schedule and budget progress will be reported through submission of monthly invoices. Invoices will be accompanied by brief progress reports.
- c. **Coordination:** HDR's Project Manager will work with COR and Washoe County to facilitate regular communication and transfer of information with the project team. Coordination with FEMA and the STARR II team is also anticipated to clarify decisions related to:
 - Non-levee embankments,
 - incorporation of the Double Diamond detention basin on Whites Creek,
 - obtain confirmation on reaches to be restudied or eliminated from the mapping effort,
 - reaches with or without-floodways, reaches to be modeled as 1D steady flow simulations,
 - terrain modifications,

- confirmation of the need for detailed studies for new or revised approximate Zone A reaches and the need for the full suite of Risk Map simulations (10, 25, 50, 100, 100+, and 500-year) for each detailed study reach and
 - which reaches will be modeled as 2D.
- d. Coordination will also be required to clarify schedule, data formatting and other submittal details, as needed. A set of technical coordination calls will be scheduled to confirm these technical approaches and to perform interim reviews of work products to confirm technical approaches before proceeding with subsequent tasks (terrain processing and incorporation of bathymetry and supplemental survey, hydrology, hydraulics, and floodplain mapping).
- e. **QA/QC:** HDR will conduct internal QA/QC tasks to deliver quality products.

Assumption:

- Project management tasks are estimated based upon anticipated project duration of approximately 6 months.
- Rosewood Wash has been excluded from the proposed hydrologic and hydraulic analysis.

Deliverables: Status Reports with monthly invoices

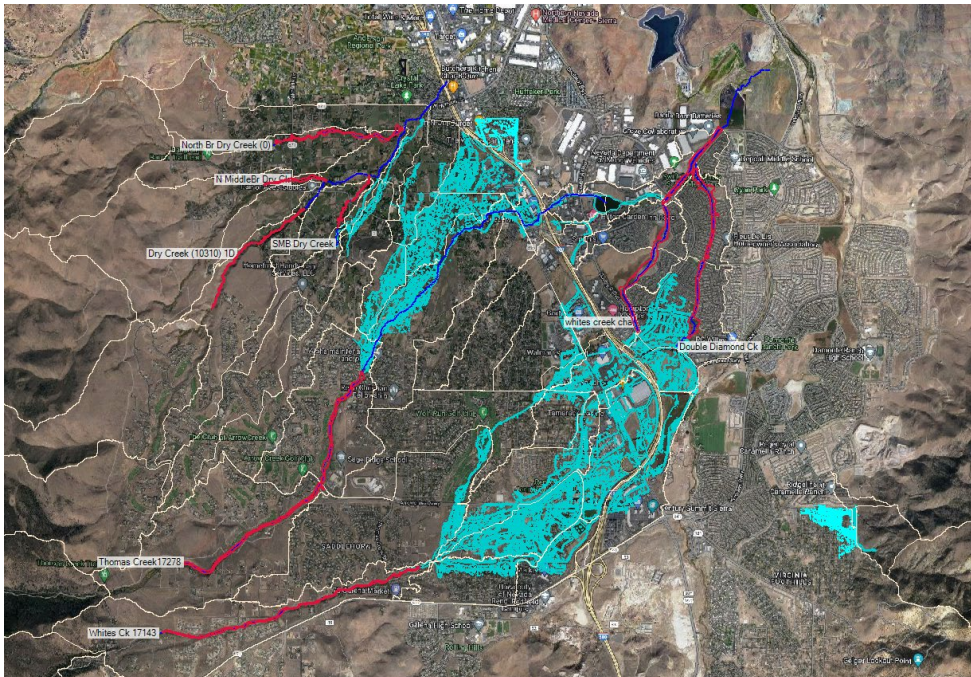


Figure1: Study Reaches

TASK 2: Data Review

- a. **Model Review:** HDR staff will perform additional review of the STARR II team hydrologic/hydraulic models, survey data and technical report to clarify and document the needed modifications.
- b. **Structure Survey data Review and Field Verification:** HDR staff will review the survey supplemental data provided by STARR II team at the structures. This may need some field verifications by HDR staff.
- c. **Additional Survey:** HDR staff will review survey data provided as supplemental data by the STARR II team to identify missing structures that would need additional survey or field verification.
- d. **Channel Survey data review:** STARR II team provided supplemental survey data that could include some channel survey. HDR will review these data and if verified, this will be merged with the 2017 LiDAR data terrain.

Task 3: Field Reconnaissance and Survey:

- a. **Field Reconnaissance:** In order to better parameterize the hydraulic model, HDR will conduct field visits to take photos, make basic structure measurements, and develop field sketches for the structures that have missing information in the supplemental data provided by the STARR II team.
- b. **Survey:** HDR will subcontract with a local surveyor (Robison Engineering) to survey the Whites Creek Irrigation Diversion structure. There will be a contingency budget for the subcontractor to survey additional structure during the project time.

Assumptions:

- An overall budget reserve has been established to cover field surveying needs, should addition survey be required for up to 2 days of additional effort. Specific field survey tasks will be identified by SUB-CONSULTANT and task requests will be submitted in writing.
- Data will be in NAD 83, State Plane Feet, Nevada West (FIPS 2703) horizontal datum and NAVD 88 vertical datum.

Deliverables:

- Certification letter from the surveyor
- ASCII and GIS shape files for surveyed data
- Photo log
- Field Sketches

Task 4: Terrain Refinement:

- a. **LiDAR Data:** 2017 QL1 and QL2 USGS LiDAR data set will be downloaded and processed at 1 foot grid resolution. HDR staff will use “ground” classified point data to interpolate a grid dataset using LP360 and ESRI’s ArcMap capabilities.
- b. **Terrain Modification and Channel Data:** Surveyed inverts at the culverts will be used to create Terrain modification patches for the necessary reaches. If available and verified from STARR II supplemental data, channel data will be merged in 2017 LiDAR data.

- c. **Merged Terrain:** A final merged terrain will be developed using the terrain modification patches, surveyed structures including the irrigation diversion structure on Whites Creek.

Assumptions:

- HDR will review available data and use aerial imagery and field verifications to correct the terrain as needed
- Data will be in NAD 83, State Plane Feet, Nevada West (FIPS 2703) horizontal datum and NAVD 88 vertical datum.
- Terrain surface will be developed in grid (.tif) format
- Terrain surface will be developed at no coarser than a 2 ft. grid cell resolution

Deliverables:

- Terrain data as .tif file
- Digital Contour data at a 2 ft. resolution

Task 5: Hydrology

The STAR II team used the State of Arizona's technical criteria which has hydrologic criteria (Green Ampt method) specific to Arizona vegetation and a methodology that is not incorporated into local drainage design criteria manuals making the use of these models for floodplain management more challenging for the COR and Washoe County. HDR proposes to use Washoe County Regional Hydrologic Criteria Manual as guidance to revise the hydrology using the SCS Curve Number method with some modifications to watershed subbasin boundaries to improve flow input locations to the hydraulic models. Hydrologic tasks are as follows:

- a. **Basin Delineation:** HDR reviewed the STAR II HEC-HMS model and concluded that additional concentration points especially in the lower basins of Whites Creek, Double Diamond Creek and Dry Creek are needed to correctly route the flow in HEC-RAS 2D Model.
- The resulting sub-basins will represent areas of relatively homogeneous soils, land use, and vegetation cover type. Because the lower portions of the overall watershed tend to be more developed than the upper portions of the watershed, those areas will be more heterogeneous in terms of land use conditions. This may result in smaller sub-basins in the lower area of the overall watershed, while the upper sub-basins will tend to be larger.
- b. **Land use development:** The USGS NLCD Layer used by the STARR II team is a remotely sensed product that makes assignments of land cover based on returns from multi-spectral sensors. The ability of the sensors to accurately define the surface cover being detected is a function of how well the interpretation software is trained and the resolution of the sensors. As a result, the product is often not very accurate and often needs to be augmented to create a defensible land use file.

HDR proposes to create a new land cover file using aerial imagery. Shapefiles consisting of homogeneous land cover and consistent cover density areas will be delineated in Arc GIS and used in hydrologic calculations.

- c. **Soil Data:** Soil survey data will be acquired in electronic format from the Web Soil Survey website (<https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>). Minor soil will be analyzed if the dominant soil coverage is less than 90% of the soil unit.
- d. **Lag Time Calculations:** STARR II team's hydrologic model development included development of standard lag time for their subbasins for the Clark Unit Hydrograph method. These results and unit hydrograph method will need to be verified for consistency with local standards and values will be computed for new subbasins. The Muskingum-Cunge method will be used for channel routing.
- e. **CN calculation:** Precipitation losses will be estimated using the SCS Curve Number method. Development of runoff curve numbers will follow methodology outlined in the US Department of Agriculture's (USDA) Technical Reference 55 (TR-55) Urban Hydrology for Small Watersheds and National Engineering Handbook, Chapter 4. Composite curve numbers will be derived for each of the (approximately 60 or more) sub-basins using hydrologic soil group data and land cover estimates.
- f. **NOAA 14 Atlas for Precipitation:** The mean rainfall depth for each individual subbasin within the watershed will be estimated using National Oceanic and Atmospheric Administration (NOAA) Atlas 14 Precipitation Frequency Estimates, Volume 6 (Nevada) Grid data and ArcGIS Zonal Statistics tool. The HEC-HMS frequency storm temporal distribution with a center-weighted 24-hour storm duration will be used as rainfall temporal distribution in the HMS model. Adjustments to spatial variability will be applied based on depth-area reduction guidance from NOAA documents.
- g. **HMS Model Development:** A rainfall-runoff model will be created using the U.S. Army Corps of Engineers Hydrologic Modeling System (HEC-HMS), Version 4.10 or later to simulate the rainfall-runoff process. The HEC-HMS model will be run for the same frequencies used by FEMA (where appropriate) 2-, 10-, 25-, 50-, 100-, 100+ and 500-year recurrence intervals with a 24-hour storm duration to calculate the peak flow reaching the studied streams.

Assumptions:

- This scope assumes that STARR II models that use the full suite of Risk Map frequencies will be applied to revised models where reaches are to be detailed study reaches. Changes to detailed/approximate study reaches could change the level of effort for hydrologic analysis.

Deliverables:

- Hydrologic Analysis Technical Report
- Revised hydrologic models
- Revised GIS files for changed sub-basin boundaries and reaches

Task 6: Hydraulics- Dry Creek

- a. **Dry Creek main:** There is an existing FEMA effective 1D steady state with a floodway for this reach of Dry Creek using HEC-2. This reach was not modified or updated by the STARR II team even though the hydrology was changed. This may result in unresolved vertical tie-ins that could need to be addressed without updating this reach. The STARR II team included another reach upstream of the existing effective FEMA model as 1D steady state model using HEC-RAS with a floodway. HDR proposes to revise this entire reach as a 1D steady state model (with a floodway) with better available terrain data and revised hydrology.

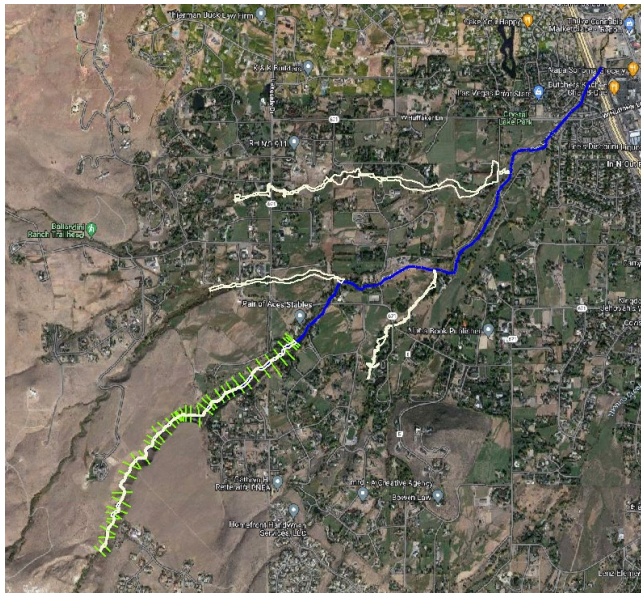


Figure 2A: Dry Creek Reaches

- b. **North and North Middle Branch Dry Creek:** STAR II Team used a 1D steady flow HEC-RAS model with floodway for these two reaches. HDR proposes to review this model and make edits as needed. These two tributaries can be combined with Dry Creek main 1D model or maintained as separate models. Final model would be a 1D steady state model with no floodway.

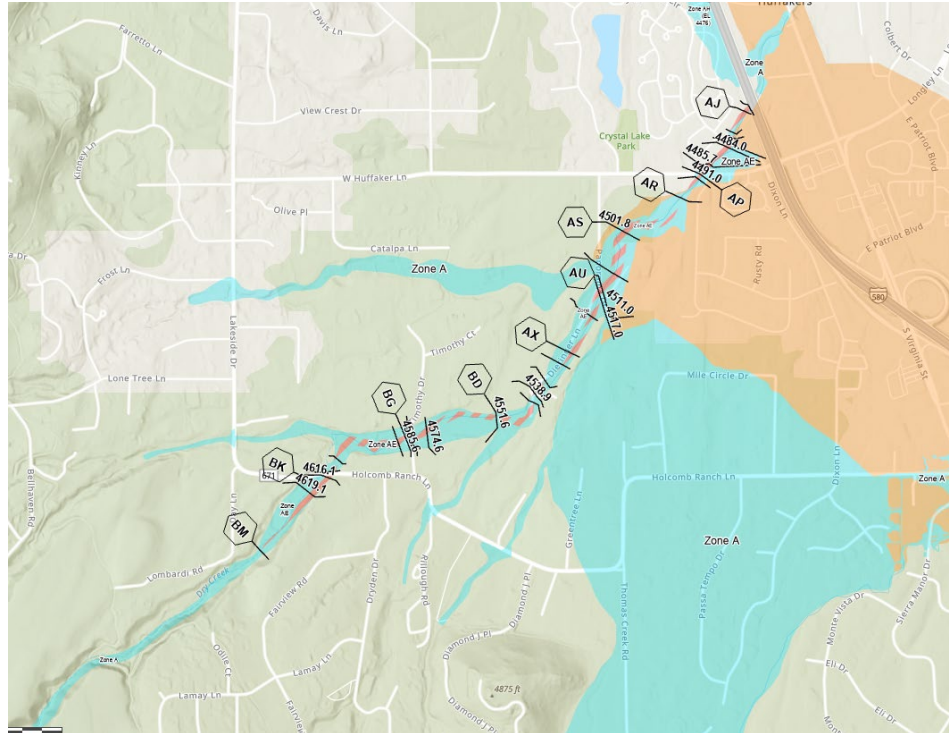
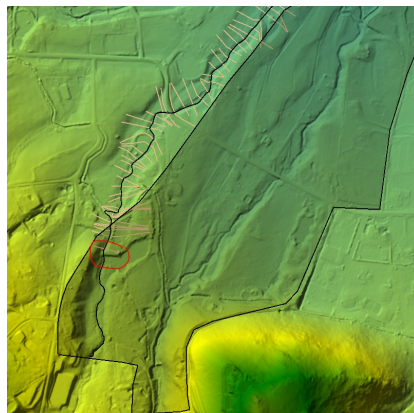


Figure 2B: Dry Creek Reaches

- c. **South Branch Dry Creek:** The 2D model provided by STARR II team will be revised by HDR for correctness. Mesh refinements, breakline edits, SA 2D connections will be reviewed and updated. Flows from revised HEC-HMS will be utilized.
- d. **South Middle Branch Dry Creek:** STARR II team modeled this reach as a 1D steady state with floodway to replace an existing approximate Zone A reach. The upstream contribution to this reach appears to be based on the assumption that fill placed by the property owner at this location (preventing this overflow) will be treated as a “non-levee embankment”. HDR Proposes to include this reach as part of main Dry Creek 1D model or to be included in the 2D model for South Branch Dry Creek.



Assumptions:

- Dry Creek Effective FEMA model will be provided
- Flow split for South Middle Branch Dry creek is based of natural conditions or non-levee embankment to be confirmed with FEMA. The entire upper channel was filled,

so this may not be a needed analysis or performed with approximate methods.

Update: In the meeting we talked about discussing this with FEMA and STARR II team.

Deliverables:

- Revised three 1D and one 2D hydraulic models.

Task 7: Hydraulics- Whites Creek and Double Diamond Creek

- Whites Creek u/s model:** STAR II team developed a 1D steady state model with a floodway upstream of the flow split location. This model will need to be reviewed in detail and edited as needed. Final model would be a 1D steady state model with no FW.
- Whites Creek 2D model:** Extending from Canyon mouth to Whites Creek channel, STARR II team developed a 2D HEC-RAS model. HDR staff will update this model with revised cell alignments, breaklines, SA 2D connection lines for 47 structures and inflows from revised HEC-HMS model at correct locations. The irrigation diversion structure will need to be correctly represented in the mesh configuration.
- Whites Creek d/s model:** HDR proposed to remodel the STARR II team 1D steady state (with floodway) model for the d/s Whites Creek channel as an extended 2D model with no floodway. Need of floodway seems unnecessary as the floodplain is confined to existing constructed channel and wetland right-of-way.
- Double Diamond Creek model:** The results from the 1D steady state model by the STARR II team showed flow bifurcations at multiple locations that were not being represented correctly in the extents of the proposed hydraulics. HDR proposes to model this reach as a 2D model combined with Whites Creek d/s model to better simulate these flow bifurcations. HDR does not feel that modeling this reach with a floodway is beneficial. This reach is fully developed, and the channel is constructed within a fixed right-of-way. The final model will be a 2D HEC-RAS model with no floodway.

Assumptions:

- Floodways will be eliminated for Whites Creek and in the Double Diamond area flow paths
- Models will consist of an upstream 1D steady flow model and a single 2D model from the Whites Creek split flow location to the downstream limit of the STARR II study.
- Supplemental survey data will be obtained as a part of this effort to more accurately define the flow split between the various branches of Whites Creek.
- City will provide the as built data for the detention basin.

Deliverables:

- Revised one 1D and one 2D hydraulic models

Task 8: Hydraulics- Thomas Creek

- a. **Thomas Creek u/s model:** This reach of Thomas Creek is within a very rural area with larger lots and the floodplain is mostly confined to the channel, making encroachment requests less likely. The STARR II floodway for this reach is also mostly coincident with the floodplain 100-year floodplain. HDR will make edits to the 1D steady state model (without floodway) provided by the STARR II team. This model ties into a 2D model in the downstream reach. The water surface elevation at this tie-in location will be investigated further to correctly tie-into the 1D and the 2D HEC-RAS models.
- b. **Thomas Creek d/s model:** HDR staff will update the 2D HEC-RAS model provided by the STARR II team with:
- Incorporate higher resolution terrain
 - incorporate approximate channel bathymetry to connect measured culvert invert surveys
 - mesh refinements to better capture terrain
 - Improve SA 2D connection lines for approximately 50 structures
 - revise the hydrologic inflow boundary conditions from revised HEC-HMS model,
 - replace the land use file and update roughness parameters to better match site conditions
 - verify the d/s limits of this model
 - move the upstream 2D boundary about 1200 to 2000 feet upstream to better capture the contractions and expansions in this reach. If the 1D upstream model is desired, it could be shortened to that same now location.
- c. Once the model is revised, the mapping results proposed by the STARR II team model will need to be resolved for areas of interconnected shallow flooding

Assumptions:

- HDR will develop a 2D HEC-RAS model with no floodway.

Deliverables:

- Revised one 1D and one 2D hydraulic model

Task 9: Hydraulics- Virginia Foothills Wash

- a. **Virginia Foothills Wash:** The existing FEMA maps show an approximate Zone A boundary for two pathways within this mostly fully developed area. The modeling shows that the northern pathway is potentially underestimated, and the southern pathway might be over-estimated. Since the current mapping is Zone A, it could be replaced with a 2D informed Zone A that more realistically identifies the flooding extents. The STARR II model for this watercourse also terminates at an existing collector channel constructed as a part of a newer subdivision located just north of the limits of study. It is unknown if this collector channel is adequate to intercept the 100-year flow and convey that flow to Steamboat Creek, but that appears to be the assumption made by STARR II but should

be confirmed before revisions are made to this mapping. If Washoe County desires the mapping update as a Zone AE rather than approximate Zone A, HDR will update the 2D model provided by the STARR II team as follows:

- Based on a revised HMS model with one additional concentration point, the model inflow locations will be corrected
- Link the revised HEC-HMS results to HEC-RAS so that there is consistency between the two data sets (the proposed STARR II hydrology does not match the HEC-RAS inputs)
- correct top of road profile for Terry Way structure (or obtain supporting data for profile from STARR II)
- additional information on the adjoining subdivision and associated collector channel will be obtained from Washoe County and reviewed for consistent hydrologic and capacity data,
- the mesh will be refined to define terrain features
- A field visit of the study area and the newly constructed channel at the model boundary will be necessary as this channel is not included in 2017 LiDAR data
- the 2D domain will be adjusted to limit the domain to the relevant area
- the downstream boundary conditions will be revised to reflect multiple downstream flow locations

Assumptions:

- Assuming keeping the 2D domain close to what STARR II team provided.

Deliverables:

- Revised hydraulic model

Task 10: Reporting

- Report and Figures:** Upon completion of the modeling and mapping, necessary reporting will be developed to satisfy the City's and County's needs and to support the request for changes to FEMA and the STARR II team. This will include a detailed report summarizing the project work including maps, figures, and tables as appropriate to describe the process.
- Response to Comments:** HDR staff will address comments from The City and the County and respond accordingly.

Deliverables:

- Report and Figures

Assumptions:

- HDR will not be responsible for adding reports or data to FEMA's Mapping Information Platform (MIP).
- HDR will not be responsible for formatting data or verifying data format for inclusion into FEMA's MIP System.

Task 11: Mapping

- a. **Floodplain Mapping:** Once the modeling is completed in HEC-RAS, the 1% and 0.2% chance water surface elevations will be post-processed in GIS and RAS Mapper to develop the digital floodplain and floodway (where applicable) boundaries, and water surface contours. Floodplain/floodways will then be edited as necessary to correct typical post-processing anomalies. Data will be in NAD 83, State Plane Feet, Nevada West (FIPS 2703) horizontal datum.
- b. **Response to Comments:** HDR staff will address comments from The City and the County and respond accordingly.

Assumptions:

- Assuming inundation boundaries will be processed for 1%, Floodway, and 0.2%. HDR will not be providing additional supporting shapefiles required for a FEMA submittal.
- HDR will not be responsible for adding data to FEMA's Mapping Information Platform (MIP).
- HDR will not be responsible for formatting data or verifying data format for inclusion into FEMA's MIP System.

Deliverables:

- Inundation boundaries as GIS shapefiles

Budget:

Below is an anticipated budget for the project.

Task #	Task Description	Cost
1	Project Management & overall QC	\$ 20,730
2	Data Review	\$15,055
3	Field Reconnaissance	\$5,275
4	Terrain Refinement (Whites and Thomas)	\$6,838
5	Hydrologic Modeling	\$33,817
6	Hydraulic Modeling- Dry Creek	\$10,614
7	Hydraulic Modeling- Whites Creek and Double Diamond Creek	\$12,243
8	Hydraulic Modeling- Thomas Creek	\$10,077
9	Hydraulic Modeling-Virginia Foothills Wash	\$3,580
10	Report and Comment Responses	\$19,674
11	Mapping	\$13,787
	Sub Consultant for Survey	\$7,000
	Total	\$ 158,687

