



**FEMA**



**CARSON WATER SUBCONSERVANCY DISTRICT**

**COOPERATING TECHNICAL PARTNERS  
RISK MAP PROJECT MAPPING ACTIVITY STATEMENT**

**Mapping Activity Statement No. 5**

The Risk MAP Project described in this Mapping Activity Statement (MAS) dated August 11, 2014, shall be completed in accordance with the Cooperating Technical Partners (CTP) Partnership Agreement dated June 6, 2005 between Carson Water Subconservancy District (herein referred to as “CWSD”) and the Federal Emergency Management Agency (FEMA).

**Contents**

SECTION 1—OBJECTIVE AND SCOPE ..... 2

Project Management ..... 2

Risk Identification and Mitigation ..... 3

Community Engagement and Project Outreach..... 5

Develop Non-Regulatory Products ..... 6

Develop Topographic Data ..... 6

Prepare Base Map ..... 7

Develop Hydrologic Data ..... 8

Develop Hydraulic Data ..... 9

Perform Floodplain Mapping..... 10

Develop FIRM Database ..... 11

Restudy and Remapping Projects ..... 11

SECTION 2—Technical and Administrative Support Data Submittal ..... 13

SECTION 4—FUNDING/LEVERAGE ( CWSD/Community) ..... 13

SECTION 5—STANDARDS..... 14

SECTION 6— SCHEDULE..... 15

SECTION 7—CERTIFICATIONS ..... 15

SECTION 8—TECHNICAL ASSISTANCE AND RESOURCES..... 16

SECTION 9—CONTRACTORS ..... 16

SECTION 10—REPORTING ..... 16

SECTION 11—PROJECT COORDINATION ..... 17

SECTION 12—POINTS OF CONTACT..... 17

## ***SECTION 1—OBJECTIVE AND SCOPE***

The objective of the various Risk MAP Projects documented in this MAS application is to develop and/or support flood hazard data and program related activities for Carson River Watershed by completing technical risk analysis and mapping activities. These activities may result in an updated Flood Insurance Rate Map (FIRM) and Flood Insurance Study (FIS) report for one or more communities within the project area.

In 2012, CWSD and the various counties located in the Carson River Watershed completed a Risk MAP Discovery Report. The Discovery Report identified projects that would enhance or protect the various communities in the watershed from flood related events. The objective of the Risk MAP Project documented in this MAS #5 is to address selected projects identified in the Discovery Report. The projects selected in this application were based on input provided at the April 29, 2014, Risk MAP Charter Meeting. Included in the MAS # 5 application is a request to do two flood risk identification and mitigation evaluation, a public outreach flood awareness program, develop inundation flood maps for the upper and middle Carson River, and conduct two restudy and remapping projects. Each of these projects will be described in more detail below.

The following is a list of projects included in this MAS:

- Douglas County Smelter Creek Identification and Mitigation Project
- Churchill County Water Shunt Identification and Mitigation Project
- Public Outreach Flood Awareness Program
- Inundation Flood Maps Upper Carson River Watershed Non-Regulatory Product
- Douglas County Alpine View Estates Restudy and Remapping Project
- Carson City Restudy and Remapping - Eagle Valley Golf Course A & B

### ***Project Management***

Responsible Mapping Partner: CWSD

Scope: Project Management is the active process of planning, organizing, and managing resources toward the successful accomplishment of pre-defined project goals and objectives. The CWSD will coordinate with the FEMA Regional Office with respect to Project Management activities and technical mapping activities.

Progress reports will be submitted on a quarterly basis in accordance with the financial reporting submittals. CWSD shall refer to 44 CFR 13.4 to obtain minimum requirements for status reporting. The Project Officer, as needed, may request additional information on status.

CWSD may meet with FEMA and/or its contractor on a quarterly basis, or more frequently if needed, to review the progress of the project in addition to the quarterly financial and status submittals. Unless requested by FEMA's Regional Office or CWSD for a meeting, the updates will be conducted over the phone.

Standards: All Project Management work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables:

- Monthly Earned Value data reporting through the MIP with variance explanations to support management of technical mapping activities within specified timeframe, for both Regulatory and Non-Regulatory Products;
- CWSD will submit quarterly financial and status summaries.

## ***Risk Identification and Mitigation***

Douglas County Smelter Creek Identification and Mitigation Project:

Responsible Partners: CWSD

Scope:

Smelter Creek is an ephemeral stream flowing out of the Pinenuts Range through the Ruhstroth development in Douglas County, Nevada. From previous work conducted for Smelter Creek, two sites were identified where a small embankment could be constructed to provide detention storage and peak attenuation. Constructing such a structure would result in a significant number of residential structures being removed from the Zone A (undefined BFE) and Zone AE SFHAs. The proposed project will consist of technical review of the hydrology of the watershed (the effective hydrology is from the 1976 NRCS study) using HEC-HMS. Each proposed pond location would be modeled using HEC-HMS to get an appropriate size for the outlet works, and then the outflow hydrographs would be used to study the impact of each of the two potential locations on the downstream hydraulics. New aerial topography would be obtained for the area. A HEC-RAS model would be constructed using data from the new topography to study the impact of the proposed ponds.

By updating the 1976 study and remapping Smelter Creek, this project will provide up-to-date, accurate data for Douglas County to determine current flood risk as well as detention basin size, location, and conduct a preliminary cost to benefit ratio analysis.

Standards: All floodplain mapping work shall be performed in accordance with the standards specified in Section 5 – Standards.

Deliverables: CWSD will provide the Smelter Creek topographic and hydrologic data in accordance with FEMA’s Risk MAP Guidelines & Standards. CWSD shall make the following products available to FEMA by uploading the digital data to the MIP in accordance with the schedule outlined in Section 6 – Schedule.

Churchill County Water Identification and Mitigation Project:

Responsible Partners: CWSD

### Scope:

The City of Fallon, Nevada is located downstream from Lahontan Reservoir. When Lahontan Reservoir is at or near capacity and a significant hydrologic event occurs in the watershed that drains to the reservoir, required releases from Lahontan Reservoir can produce flooding. Such events have happened and require substantial investment of resource to mitigate flooding in Fallon. Therefore, there is a need to determine alternatives to reduce the likelihood of flooding of Fallon, Nevada. Churchill County is considering a study to determine the potential diversion of floodwater from the Carson River to Sheckler Reservoir and the degree of mitigation such an alternative would provide. The project would include obtaining topographic data (U.S.G.S. 10-meter DEMs), using that data to create a set of base topographic maps, selecting one or more potential flood routes, and application of one or more hydraulic models to estimate the size of a potential drainage structure

Flood Mitigation Action – The City of Fallon and most of Churchill County are located downstream of the Bureau of Reclamation (BOR) Lahontan Dam. The Lahontan Dam and Reservoir are part of the Newlands Project, the largest storage facility on the Carson River. Although Lahontan Reservoir can store more than 300,000 acre-feet, it is designed to store water for irrigation purposes; therefore, it provides little flood protection for residents located downstream from the dam. The purpose of this technical assistance is to determine whether a potential flood mitigation action plan to route flood flows from the outfall of Lahontan dam to uninhabitable lands would effectively mitigate downstream flooding in Fallon.

Historically, the lower Carson River experienced periodic flooding. In 1915, the BOR constructed the Lahontan Dam on the lower Carson River. Although the project was designed for irrigation water storage and delivery and was not intended to provide flood protection, the presence of the reservoir resulted in attenuated flood flows downstream from the structure. This attenuation of flood flows resulted in residential and other structures being built near the river. Flooding in this area typically occurs when a large runoff event occurs upstream from the reservoir when the reservoir is at or near capacity in preparation for the up-coming irrigation season. A discussion on the possibility of diverting flood waters below Lahontan Dam toward the Sheckler Reservoir, uninhabitable county land, and U.S. Navy properties was included in the Discovery Report.

This analysis would evaluate if diverting floodwaters below Lahontan Reservoir from the Carson River to the Sheckler Reservoir area would provide effective flood mitigation. The goal of the project is to provide potential relief from flooding to residences and businesses, and to protect critical infrastructure within Churchill County and the City of Fallon. Project tasks include obtaining topographic data (U.S.G.S. 10-meter DEM data), using that data to create a set of base topographic maps, selecting one or more potential routes, and then determining the size of the required drainage way.

Standards: All Project Management work shall be performed in accordance with the standards specified in Section 5 – Standards.

Deliverables: A project report to document methods and materials used in the analysis, the size and location of one or more alternative drainage structures to convey floodwaters from the Carson River to Sheckler Reservoir, mapping to support the project, and an engineer's estimate of probable cost to provide basis for additional planning and benefit-cost analysis.

## ***Community Engagement and Project Outreach***

Development a flood awareness outreach and communication plan for community engagement:

Responsible Mapping Partner: CWSD

### Scope:

CWSD will work with floodplain administrators in the Carson River Watershed to develop the Project Outreach and Communications Plan. The implementation of this outreach is consistent with our Carson River Watershed Regional Floodplain Management Plan (2008) suggested action (SA-30). It is expected that community engagement will increase:

- Understanding of natural hazard risk within a community, and
- Knowledge regarding the importance of avoiding those risks through floodplain protection, and
- Provide community residents with information to protect their home, property, and persons before, during, and after a flood, and
- Local support of efforts to reduce natural hazard risk within a community or watershed area.

The process will include holding workshops with the various communities to inform residents throughout the watershed focusing on their role in reducing the impact of natural disasters and how communities can protect themselves in case of a major flood. These workshops will be paired with presentations to county planning staffs and elected officials throughout the watershed.

The project will promote flood awareness for calendar years 2015 and 2016 for flood events in the Carson River watershed, continuing the public outreach and preparedness awareness started in 2014.

Standards: All communication with state & local governments will be done in accordance with 44 CFR Part 66.

Deliverables: CWSD shall deliver the following to the FEMA Regional Project Officer in accordance with the schedule outlined in Section 6 – Schedule, and included within the TSDN:

- A Project Communication Plan detailing outreach and coordination activities;
- Meeting invitation, agenda, presentation slides (as requested), and meeting notes for FEMA review; and
- Project update status reports for project communities.
- The flood awareness program will consist of a media campaign, content and links to various local flood preparedness websites, work with the Governor and county staff members on a proclamation, and participation in the Flood Preparedness Week and community events.

## ***Develop Non-Regulatory Products***

Development of Inundation Flood Maps for the Upper and Middle Carson River Watershed:

Responsible Mapping Partner: CWSD

Scope:

The National Weather Service (NWS) is enhancing the communication of flood risk and impacts through the use of Advanced Hydrologic Prediction Service (AHPS) flood inundation maps. The Flood Inundation Maps provides water depth information for different flows events and demonstrate the extent of flooding expected spatially over a given area. The user friendly map graphics will provide users an accurate depiction of flood hazards in their local community. The inundation maps will also provide county floodplain managers with information needed to minimize flood damage before it happens and enable them to strategically place emergency equipment during large flood events.

In 2015, an unsteady floodplain model for the Carson River from Alpine County to Lahontan Reservoir will be completed. The information developed from this model will be formatted to develop flood inundation maps for the Carson River from Alpine County down to the Dayton area. These inundation maps will then be downloaded on to NWS web site.

Standards: The guidelines for the creation of these AHPS Flood Inundation Map libraries are contained in the following link: [NOAA AHPS Guidelines Final 2011 v3](#).

Deliverables: Upload the data on to the AHPS Flood Inundation Map Library.

## ***Develop Topographic Data***

Responsible Mapping Partner: CWSD

Scope: Topographic/elevation data may be new or existing. New is defined as data that will be flown and processed for the areas specified in this MAS study areas according to the referenced specifications. Existing topographic/elevation data (previously flown and/or processed) may be used to produce flood studies and related products. However, if new data is not to be collected, the FEMA Region should be consulted before leveraging the best available existing topographic to ensure acceptability for the intended level of flood hazard study.

The CTP shall obtain additional topographic data for the floodplain areas to be studied including overbank areas. These data will be used for hydrologic analysis, hydraulic analysis, and floodplain boundary delineation. The CTP shall gather availability, currency, and accuracy information for existing topographic data covering the affected communities in this MAS. The CTP shall use topographic data for work in this MAS only if it is better quality than that of the original study or effective studies. The Mapping Partner will ensure that the FEMA Geospatial Data Coordination Policy and Implementation Guide is followed and the data obtained or to be produced are documented properly as per those policies and guidelines.

The CTP also shall update the topographic maps and/or DEMs for the subject flooding sources using the data collected under this Topographic Data Development process and via field surveys. In addition, the

CTP shall address all concerns or questions regarding the topographic data development that are raised during the independent QC review, or during the National Quality Validation Process (formerly defined in Procedure Memorandum 42).

Standards: All Topographic Data Development work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: The CTP shall make the following products available to FEMA by uploading the digital data to the MIP in accordance with the schedule outlined in Section 6 – Schedule:

- Report summarizing methodology and results;
- Mass points and breaklines data;
- Gridded digital elevation model data;
- TIN data;
- Checkpoint analyses to assess the accuracy of data, including Root Mean Square Error calculations to support vertical accuracy;
- A narrative describing the scope of work, direction from FEMA, issues, information for next mapping partner, etc.;
- Metadata file complying with the NFIP Metadata Profiles Specifications; and
- Support documentation and Certification of Work.

### ***Prepare Basemap***

Responsible Mapping Partner: CWSD

Scope: Basemap Preparation activities consist of obtaining and formatting the digital basemap (raster or vector) for the project. Activities also include the review of the basemap and obtaining the necessary documentation/verification that basemap data source(s) may be used and distributed by FEMA. This task is equivalent to the Acquire Base Map task in the MIP. The CTP shall prepare and provide the digital base map, including:

- Obtain digital files (raster or vector) of the base map. In coordination with the partner who performed Project Discovery, ensure that the FEMA Geospatial Data Coordination Policy and Implementation Guide are followed;
- Secure necessary permissions from the basemap source to allow FEMA's use and distribution of hardcopy and digital map products using the digital base map, free of charge;
- Review and supplement the content of the acquired base map to comply with FEMA standards;

- For the base map components that have a mandatory data structure, convert the base map data to the format required in FEMA standards; and
- Certify that the digital data meets the minimum standards and specifications that FEMA requires for FIRM production.

Standards: All Basemap Preparation work shall be performed in accordance with the standards specified in Section 5 – Standards. The Data Capture Standard must be met for this deliverable to be acceptable.

Deliverables: The CTP shall make the following products available to FEMA by uploading the digital data to the MIP in accordance with the schedule outlined in Section 6 –Schedule.

- Digital basemap files that comply with FEMA Standards;
- Documentation that FEMA can use the digital base map;
- Documentation of the Horizontal and Vertical Datums; and
- Additional basemap acquisition correspondence.

### ***Develop Hydrologic Data***

Responsible Mapping Partner: CWSD

Scope: The CTP shall perform hydrologic analyses for the flooding source(s) identified in Table 1.7. The CTP shall calculate peak flood discharges for the 10%, 4%, 2%, 1%, “1% plus” and 0.2% annual chance events using the computer program listed in Table 1.7. These flood discharges will be the basis for subsequent Hydraulic Analyses performed under this MAS. In addition, the CTP shall address all concerns or questions regarding the hydrologic analyses that are raised during the independent QA/QC review performed.

Standards: All Hydrologic Analyses work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: The CTP shall make the following products available to FEMA by uploading the digital data to the MIP in accordance with the schedule outlined in Section 6 - Schedule.

- Digital copies of all hydrologic modeling (input and output) files for the 10%, 4%, 2%, 1%, “1% plus” and 0.2% annual chance events;
- Metadata file;
- Digital Summary of Discharges Tables presenting discharge data for the flooding sources for which hydrologic analyses were performed (for flooding sources studied by detailed methods);
- Digital versions of draft text for inclusion in the FIS report;

- Digital versions of all backup data used in the analysis including work maps; and
- Summary of the hydrologic analysis for each study area in Table 1.7 Summary of Hydrologic Analysis.

## ***Develop Hydraulic Data***

Responsible Mapping Partner: CWSD

Scope: The CTP shall perform hydraulic analyses as described in Table 1.8. The modeling will include the 10%, 4%, 2%, 1%, “1% plus” and 0.2% annual chance events based on peak discharges computed under Hydrologic Analyses. The hydraulic methods used for this analysis will include base level and enhanced level hydraulic modeling. The base level will use an automated hydraulic model, and use the best available elevation data. It will not include field surveys, floodways, or mapped BFEs. The enhanced level may include field surveys, floodways, and the 10%, 4%, 2%, 1% and 0.2% annual chance events, using methods described in Table 1.8.

The CTP shall use the cross-section and field data collected during Field Survey and the topographic data collected during the Topographic Data Collection, when appropriate, to perform the hydraulic analyses. The hydraulic analyses will be used to establish flood elevations and regulatory floodways for the subject flooding sources.

The CTP shall use the FEMA CHECK-2 or CHECK-RAS checking program to verify the reasonableness of the hydraulic analyses. To facilitate the independent QA/QC review, the CTP shall provide explanations for unresolved messages from the CHECK-2 or CHECK-RAS program, as appropriate. In addition, the CTP shall address all concerns or questions regarding the hydraulic analyses that are raised during the independent QA/QC review.

Any flooding sources associated with a levee that are mapped as providing protection on effective FIRMs, but will not meet certification requirements for the new FIRMs, will require revised hydraulic analysis. This revised analysis should be done in accordance with FEMA standards and guidance as appropriate.

Standards: All Hydraulic Data work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: The CTP shall make the following products available to FEMA by uploading the digital data to the MIP review in accordance with the schedule outlined in Section 6 - Schedule.

- Digital profiles of the 10%, 4%, 2%, 1%, “1% plus” and 0.2% annual chance events, representing existing conditions using the FEMA RASPLOTT program or similar software (for flooding sources studied by detailed methods);
- Metadata file;
- Digital Floodway Data Tables for each flooding source studied by detailed methods that is compatible with the FIRM database;
- Digital hydraulic modeling (input and output) files;

- Digital tables with range of Manning’s “n” values;
- Explanations for unresolved messages from the CHECK-2 or CHECK-RAS program, as appropriate;
- Digital versions of all backup data used in the analyses; and
- Digital versions of draft text for inclusion in the FIS report.

## ***Perform Floodplain Mapping***

**Responsible Mapping Partner:** CWSD

The CTP shall delineate the 1% and 0.2% annual chance floodplain boundaries and the regulatory floodway boundaries (if required) and any other applicable elements for the flooding sources for which hydrologic, enhanced hydraulic, and/or coastal analyses were performed. The CTP shall incorporate all new or revised hydrologic, hydraulic, and/or coastal modeling and shall use the topographic data acquired under Develop Topographic Data to delineate the floodplain and regulatory floodway boundaries on a digital work map.

The CTP shall incorporate the results of all effective Letters of Map Change (LOMCs) for all affected communities on the FIRM and provide to the appropriate PTS the required submittals for incorporation into the National Flood Hazard Layer (NFHL). Also, the CTP shall address all concerns or questions regarding Floodplain Mapping that are raised during the independent QA/QC review.

The CTP shall capture flood hazard engineering and/or mapping data quality issues encountered during this activity in the CNMS data model for the area of interest. These issues will be entered as “Requests” or “Needs” in the CNMS data model based on the nature of the deficiency encountered. Detailed information on performing this task can be found in the relevant standards specified in Section 5 - Standards.

**Standards:** All floodplain mapping work shall be performed in accordance with the standards specified in Section 5 – Standards. The CTP will perform self-certification audits for the Floodplain Boundary Standards for all flood hazard areas.

**Deliverables:** Upon completion of floodplain mapping for all flooding sources in this project, the CTP shall make the following products available to FEMA by uploading the digital data to the MIP in accordance with the schedule outlined in Section 6 – Schedule.

- A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the compliant digital data;
- Support documentation and Certification of Work,
- Draft FIRM database prepared in accordance with FEMA standards;
- An explanation for the use of existing topography for the studied reaches, if appropriate;

- Written summary of the analysis methodologies; and
- Digital versions of draft FIS report, Floodway Data Tables and updated profiles including all profiles and tables converted to the appropriate datum, as well as any other necessary items for the finalization of the preliminary FIS.

### ***Develop FIRM Database***

Responsible Mapping Partner: CWSD

Scope: The CTP shall prepare the database in accordance FEMA standards and guidance, including all relevant Technical Reference documents, for upload to the MIP. The CTP is responsible for confirming and/or obtaining any revised or updated guidance from the Region. The CTP shall coordinate with appropriate Mapping Partners, as necessary, to resolve any problems that are identified during development of the FIRM Database.

Standards: All FIRM Database work shall be performed in accordance with the standards specified in Section 5 - Standards. In addition, the appropriate QR activity shall be performed.

Deliverables: The CTP shall make the following products available to FEMA by uploading the digital data to the MIP:

- FIRM database files, prepared in accordance with FEMA standards and in the required format(s); and
- A metadata file complying with the FEMA NFIP Metadata Profile Specifications.

### ***Restudy and Remapping Projects***

Douglas County Alpine View Estates Restudy and Remapping Project

Responsible Partners: CWSD

Scope:

A portion of Alpine View Estates has been mapped within a 100-year Zone A FEMA Floodplain designation based on the original 1980 FEMA FIRM. It is Douglas County’s belief, based on other map revisions occurring elsewhere in Carson Valley (Carson River, Sunrise, Buckbrush, Johnson Lane and Airport Washes), that the original 1980 hydrology analyses overestimated the flood events. This project would use the most current hydrology data and hydrologic methods to calculate the flows in the Alpine View Estates area and develop new floodplain maps.

This project will include:

- Develop Topographic Data
- Acquire Base Map

- Develop Hydrologic Data
- Develop Hydraulic Data
- Perform Floodplain Mapping
- Develop FIRM Database

Standards: All the items identified above shall be performed in accordance with the standards specified in Section 5 – Standards

Deliverables: CWSD contractor shall make the restudy products available to FEMA by uploading the digital data to the MIP. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the G&S compliant digital data. Additionally, the Technical Support Data Notebook (TSDN) format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule.

#### Carson City Restudy and Remapping - Eagle Valley Golf Course A & B:

Carson City is requesting a restudy and remapping of flood hazards along Eagle Valley Golf Course drainage ways A & B. These two drainages cover approximately 5 square miles and are located north of Highway 50 and east of College Parkway. Hydrologic analyses and mapping of flood hazards from these tributaries were completed in the mid 1980's with topographic data gathered in the mid 1970's. Over the years there have been many changes in these tributaries. In 1986, a flood control dam was built in the Golf Course Creek B drainage. In the 1980s several diversion channels and piping were installed in the Golf Course Creek A drainage. With a recent freeway project and approved CLOMR, the 1% annual chance flood flows were revised but they did not include the flood control dam or channel work. There are about 80 structures located in the current SFHA. This restudy and remap project would update the data to reflect the changes wrought by the freeway project and approved CLOMR. FEMA restudies cannot be based on a CLOMR so the restudy will reflect actual (as-built) conditions.

This project will include:

- Develop Topographic Data
- Acquire Base Map
- Develop Hydrologic Data
- Develop Hydraulic Data
- Perform Floodplain Mapping
- Develop FIRM Database

Standards: All the items identified above shall be performed in accordance with the standards specified in Section 5 – Standards

Deliverables: CWSD contractor shall make the restudy products available to FEMA by uploading the digital data to the MIP. A metadata file complying with the NFIP Metadata

Profiles Specifications, must accompany the G&S compliant digital data. Additionally, the Technical Support Data Notebook (TSDN) format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule.

### ***SECTION 2—Technical and Administrative Support Data Submittal***

For the Restudy and Remapping Projects, CWSD will be responsible for activities included in this MAS to comply with the data submittal requirements summarized below.

All supporting documentation for the activities in the Restudy and Remapping for this MAS shall be submitted according to Appendix M, and will include a flood elevation determination docket (FEDD) folder. Where Technical Support Data Notebook (TSDN) format is used, such shall be submitted in accordance with Section 2 – Technical and Administrative Support Data Submittal. Table 2.1 Mapping Activities and Applicable TSDN Sections indicates the sections of the TSDN that apply to each mapping activity. Submittals must be made to the appropriate Production and Technical Services contractor (PTS) for a review of required materials. As needed, the CWSD will work with the PTS to ensure that all required documents are included in the TSDN and will respond to requests from the PTS for additional information.

If any issues arise that could affect the completion of an activity within the proposed scope or budget, CWSD shall complete a Special Problem Report (SPR) as soon as possible after the issue is identified and submitted to FEMA. The SPR is to describe the issue and propose possible resolutions.

### ***SECTION 3—PERIOD OF PERFORMANCE***

The mapping activities outlined in this MAS will be completed as specified in the Agreement Articles of the Cooperative Agreement within a 2 year period of performance. The Mapping Activities may be terminated at the option of FEMA or the CWSD in accordance with the provisions of the Partnership Agreement dated June 6, 2005. If these mapping activities are terminated, all products produced to date must be returned and updated into the MIP and the remaining funds from uncompleted activities, provided by FEMA for this MAS, will be returned to FEMA.

### ***SECTION 4—FUNDING/LEVERAGE ( CWSD/Community)***

FEMA is providing funding, in the amount of \$375,000, to CWSD for the completion of this Risk MAP Project. CWSD shall provide any additional resources required to complete the assigned activities for this Risk MAP Project. The leverage listed below includes in-kind services and a portion of the funding CWSD provided to Churchill County to collect LiDAR data for the Newlands area.

**Table 4.1 – Contribution and Leverage**

<b>Project Task</b>	<b>FEMA Contribution</b>	<b>Partner Contribution</b>	<b>% Partner Leverage</b> (of total project cost)	<b>Total Project Cost</b>
Eagle Valley & Alpine Creeks Restudy & Remapping	\$179,600	\$15,300	7.9	\$194,900
Churchill County Flood Identification and Mitigation Project	\$37,800	\$36,200	48.9	\$74,000
Douglas County Smelter Creek Identification and Mitigation Project	\$79,600	\$11,100	12.2	\$90,700
Inundation Maps	\$35,500	\$1,000	2.7	\$36,500
Community Engagement and Project Outreach	\$28,500	\$3,800	11.7	\$32,400
Grant Administration	\$14,000	\$5,000	26.3	\$19,000
<b>TOTAL FUNDING AMOUNTS</b>	<b>\$375,000</b>	<b>\$72,400</b>	<b>16.2%</b>	<b>\$447,400</b>

Final leverage dollars or units shall be entered as applicable within the Manage Data Development task in the MIP workflow. Leverage data shall be an estimate of available leverage data at the time the MAS is prepared.

***SECTION 5—STANDARDS***

CWSD and contractor hired under MAS # 5 will be responsible for complying with all related Procedure Memorandums and Operating Guidance published by FEMA as of the date of this agreement. Relevant standards can be found in the G&S and PMs available online at <http://www.fema.gov/cooperating-technical-partners-ctp-program/guidelines-specifications-flood-hazard-mapping-partners>, Federal Regulation 44 CFR and the appropriate year CTP Funding Opportunity Announcement and Agreement Articles. CWSD will also coordinate with Regional 9 office to determine if any additional standards that should be met. CWSD will also review and consider the best practices provided in FEMA’s Operating Guidance documents at <http://www.fema.gov/guidance-cooperating-technical-partners-program/operating-guidance-documents>. All work products will comply with FEMA G&S and PMs.

**SECTION 6— SCHEDULE**

The activities documented in this MAS shall be completed in accordance with Table 6.1 Project Activities Schedule, which should drive the schedule within the MIP. If changes to this schedule are required, the responsible Mapping Partner shall coordinate with FEMA and the PMT in a timely manner.

**Table 6.1 – Project Activities Schedule**

ACTIVITIES	RESPONSIBLE PARTNER(S)	Estimated START DATE	Estimated END DATE	Estimated COST
Project Management	CWSD	10-1-2014	9-30-2016	\$14,000
Eagle Valley & Alpine Creeks Restudy & Remapping	CWSD/Contractor	11-1-2014	9-30-2016	\$179,600
Churchill County Flood Identification and Mitigation Project	CWSD/Contractor	12-1-2014	3-31-2016	\$37,800
Douglas County Smelter Creek Identification and Mitigation Project	CWSD/Contractor	11-1-2014	9-30-2016	\$79,600
Inundation Maps	CWSD/Contractor	1-1-2016	7-1-2016	\$35,500
Community Engagement and Project Outreach	CWSD/Contractor	4-1-2015	9-30-2016	\$28,500
<b>TOTAL COST \$375,000</b>				

FEMA or its designee shall create the Risk MAP Project in the MIP and baseline the project activities with schedule and cost information within 30 days of the funds being awarded.

**SECTION 7—CERTIFICATIONS**

**Perform Field Surveys and Develop Topographic Data**

A Registered Professional Engineer or Licensed Land Surveyor shall provide an accuracy statement for field surveys and/or topographic data used and shall certify these data meet the accuracy statement provided. Data accuracy should be stated used the Federal Geographic Data Committee National Standards for Spatial Data Accuracy, but the American Society for Photogrammetry and Remote Sensing accuracy reporting standards are acceptable.

**Acquire Base Map**

- A community official or responsible party shall provide written certification that the digital data meet FEMA minimum standards and specifications.
- CWSD shall provide documentation that the digital base map can be used by FEMA and freely made available to the public. .
- Certifications must be made at the time the intermediate data is submitted. For example, if hydrologic data is submitted, certification will be required at the time it is submitted.

**Develop Hydrologic Data, Develop Hydraulic Data, Perform Coastal Analysis, and Perform Floodplain Mapping**

- A Registered Professional Engineer shall certify hydrologic and hydraulic and coastal analyses and data in accordance with 44 CFR 65.6(f).

- Any levee systems to be accredited will be certified by the levee owner or other appropriate entity in accordance with 44 CFR 65.10.

## ***SECTION 8—TECHNICAL ASSISTANCE AND RESOURCES***

CWSD and/or contractor may obtain copies of FEMA-issued LOMCs, archived engineering backup data, and data collected as part of the mapping needs assessment and/or CNMS process from FEMA and/or the Regional Project Officer.

General technical and programmatic information can be downloaded from the FEMA website at [http://www.fema.gov/plan/prevent/fhm/fm\\_soft.shtm](http://www.fema.gov/plan/prevent/fhm/fm_soft.shtm). Specific technical and programmatic support may be provided through FEMA and/or its contractor; such assistance should be requested through the FEMA Project Officer specified in Section 12 – Points of Contact.

CWSD and/or contractor may consult with the FEMA Regional Project Officer to request support in the areas of selection of data sources, digital data accuracy standards, assessment of vertical data accuracy, data collection methods or subcontractors, and GIS-based engineering and modeling training.

Most recent version of the Risk MAP Timeline can be obtained by contacting the FEMA Regional Project Officer.

Assistance with the MIP may be requested at [miphelp@riskmapcds.com](mailto:miphelp@riskmapcds.com)

## ***SECTION 9—CONTRACTORS***

CWSD intends to hire one or more contractors to perform the various projects mentioned above. The hiring of the contractor(s) will be done under the State hiring process for professional services. CWSD shall ensure that the procurement for all contractors used for this Risk MAP Project complies with the requirements of 44 CFR 13.36.

## ***SECTION 10—REPORTING***

Financial Reporting: Because funding has been provided to CWSD by FEMA, financial reporting requirements for CWSD will be in accordance with Cooperative Agreement Articles. CWSD shall also refer to 44 CFR 13.41. CWSD shall provide financial reports to the FEMA Regional Project Officer and Assistance Officer in accordance with the terms of the signed Cooperative Agreement for this MAS.

Progress Reporting: Progress reports will be submitted on a quarterly basis in accordance with the financial reporting submittals. CWSD shall refer to 44 CFR 13.4 to obtain minimum requirements for status reporting. The Project Officer, as needed, may request additional information on status.

CWSD may meet with FEMA and/or its contractor on a quarterly basis, or more frequently if needed, to review the progress of the project in addition to the quarterly financial and status submittals. These meetings will alternate between FEMA's Regional Office, the CWSD office, and conference calls, as necessary.

Earned Value Data Entry: Once the FEMA Regional Office has issued the FY 2014 grant, the baseline for the projects will be established in the MIP using the cost and schedule information for each task as agreed upon by the FEMA Regional Office and CWSD. The Cost Performance Index (CPI) and the Schedule Performance Index (SPI) in the MIP must be used to monitor partner performance and to determine future funding eligibility. Recipients must adhere to the performance requirements by maintaining a 0.92 score for both CPI and SPI.

CWSD is required to report on the earned value of projects that are in the MIP on a monthly basis and must give explanations for variances outside of the tolerance defined above. FEMA Regional Offices must implement a Corrective Action Plan (CAP) when CWSD is outside of the tolerance. A CAP must define the reason for the variance and the intended resolution. FEMA Regional Offices must coordinate with FEMA Headquarters when CAPs are developed.

As Program Management tasks are not conducted in the MIP, cost and schedule performance measures must be defined and documented in the MAS or scope of work statement. These measures must be used to monitor partner performance and to determine future funding eligibility. This exception only applies to tasks not able to be conducted or tracked in the MIP.

## ***SECTION 11—PROJECT COORDINATION***

Throughout the project, all members of the Project Team will coordinate, as necessary, to ensure the products meet the technical and format specifications required and contain accurate, up-to-date information. Coordination activities shall include:

- Meetings, teleconferences, and video conferences with FEMA and other Project Team members will be held quarterly or more frequently when necessary;
- Telephone conversations with FEMA and other Project Team members on an ad hoc basis, as required;
- Updates to the MIP and other FEMA status information systems in accordance with requirements in Volumes 1 and 3 of G&S; and
- E-mail, facsimile transmissions, and letters, as required.

## ***SECTION 12—POINTS OF CONTACT***

The points of contact for this Flood Map Project are Eric Simmons, the FEMA Regional Project Officer; and Edwin James, CWSD General Manager. When necessary, any additional FEMA assistance should be requested through the FEMA Regional Project Officer. The POCs for Douglas and Churchill Counties as well as Carson City are:

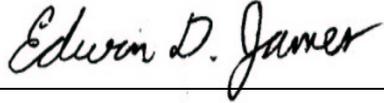
Douglas County – Erik Nilssen, County Engineer

Carson City – Robert Fellows, Chief Stormwater Engineer

Churchill County – Ron Juliff, Emergency Manager

Each party has caused this MAS to be executed by its duly authorized representative.

Edwin James  
General Manager  
Carson Water Subconservancy District



---

August 23, 2014

Date

Eric Simmons  
Regional Project Officer  
Federal Emergency Management Agency, Region IX



---

August 23, 2014

Date