Description of Flood Project Plan (Local Rate Plan) Elements

Element	*Element Description*
DOWNTOWN RENO REACH (DR) Proposed flood protection infrastructure elements in the Downtown Reno Reach are designed, at a minimum, to pass the 100-year flood flow (20,700 cubic feet per second). No additional freeboard is included except in the case of bridge replacements (designs assume 2-foot freeboard). Where feasible, the Flood Project incorporates certain recreational and ecosystem restoration features within the footprint of the flood protection infrastructure. Elements in this reach are not included as part of the Truckee Meadows Flood Control Project authorized by Congress (Section 7002(2) of the Water Resources Reform and Development Act of 2014); and therefore are not eligible to receive federal funding from the Corps.	
DR-1	**Jones Street to Arlington Avenue Floodwall Construction:** Construct a floodwall along the north bank of the Truckee River (Riverside Drive) from Booth Street to Arlington Avenue; partially bury it with an earthen berm to minimize visual impact to existing landscape. Floodwall height should be equal to the 100-year water surface elevation (no freeboard).
DR-2	**Jones Street to Arlington Avenue Floodwall Drainage:** Per recommendations from the Final Geotechnical Report (*W91238-10-D-003, released by Corps Sacramento District on December 6, 2011*); construct a drainage trench along portions of the new floodwalls.
DR-3	**Jones Street and Keystone Avenue Intersection Improvements:** Replace existing 4-way stop sign controlled intersection with a signalized intersection at same location.
DR-4	**Booth Street Bridge Removal:** Remove existing Booth Street Bridge and construct new pedestrian/bicycle bridge at same location.
DR-5	**Pumping Station:** Install a stormwater pumping station along Riverside Drive.
DR-6	**Pedestrian Safety Closure Structures:** Install pedestrian gates along floodwall to maintain pedestrian access under normal conditions. For public safety, gates would be closed during flood events. Utilize a product such as FloodBreak Automatic Floodgates or Federal Emergency Management Agency (FEMA) approved equivalent.
DR-7	**Pedestrian Bridge Improvements (Arlington Avenue):** Raise existing pedestrian bridges (two total); one located upstream and another downstream of Arlington Avenue.
DR-8	**Floodproofing:** Implement a combination of structural and non-structural measures to reduce/eliminate flood damage to various existing downtown Reno buildings.

Element	*Element Description*
DR-9	**Arlington Avenue Bridge Protection:** Install bridge abutment and pier scour protection measures at Arlington Avenue Bridge.
DR-10	**Arlington Avenue to Lake Street Floodwall Replacement:** Replace existing old, inadequate floodwalls located on both (north and south) banks of the Truckee River from Arlington Avenue to Lake Street.
DR-11	**Sierra Street Bridge Replacement:** Remove existing bridge located at Sierra Street and, at the same location, construct a new, hydraulically efficient bridge capable of passing the 100-year flood flow (2' freeboard).
DR-12	**Virginia Street Bridge Replacement:** Remove existing bridge located at Virginia Street and at the same location, construct a new, hydraulically efficient bridge capable of passing the 100-year flood flow (2' freeboard). **PROJECT COMPLETE**
DR-13	**Center Street Bridge Replacement:** Remove existing bridge located at Center Street and at the same location, construct a new, hydraulically efficient bridge capable of passing the 100-year flood flow (2' freeboard).
DR-14	**Lake Street Bridge Replacement:** Remove existing bridge located at Lake Street and at the same location, construct a new, hydraulically efficient bridge capable of passing the 100-year flood flow (2' freeboard).
DR-15	**Wells Avenue Pedestrian Bridge Improvements:** Remove existing pedestrian bridge located at Wells Avenue and construct new pedestrian bridge just upstream of Wells Avenue.
DR-16	**Wells Avenue Bank Stabilization and Bridge Protection:** Stabilize stream banks/slopes around the Wells Avenue Bridge. Install bridge pier scour protection measures at Wells Avenue Bridge.
TRUCKEE MEADOWS REACH (TM) Proposed flood protection infrastructure elements in the Truckee Meadows Reach are designed in accordance with FEMA mapping standards. Where feasible, the Flood Project incorporates certain recreational and ecosystem restoration features within the footprint of the flood protection infrastructure. Elements in this reach (including certain recreational features) have been included as part of the Truckee Meadows Flood Control Project authorized by Congress (Section 7002(2) of the Water Resources Reform and Development Act of 2014); and therefore are eligible to receive federal funding from the Corps.	
TM-1	**Reno-Sparks Indian Colony Levee and Floodwall Construction:** Construct a levee and floodwall system (approximately 2,300 feet) at the Reno-Sparks Indian Colony property located along the south bank of the Truckee River, from US Highway 395/I-580 to Glendale Avenue. **PROJECT COMPLETE**

Element	*Element Description*
TM-2	**Grand Sierra Resort Floodwall Construction:** Construct a floodwall on the south bank of the Truckee River from Glendale Avenue to Greg Street (approximately 6' high and 3,000 feet in length). Utilize drainage blankets for seepage mitigation.
TM-3	**Glendale Avenue to Greg Street Levee Replacement:** Replace existing levee located on the north bank of the Truckee River from Glendale Avenue to Greg Street with an on-bank floodwall at same location. Utilize drainage blankets for seepage mitigation.
TM-4	**Greg Street to Rock Boulevard Levee Construction:** Construct set-back levee on the south bank of the Truckee River from Greg Street to Rock Boulevard.
TM-5	**Greg Street to Rock Boulevard Terracing:** Excavate terrace on the south bank of the Truckee River from Greg Street to Rock Boulevard in order to increase flood flow channel capacity and reconnect river to its floodplain. Establish native riparian vegetation on terrace surface. *Note: Overall extent (width) of terracing has been reduced from previous Flood Project designs in order to reduce excavation costs and minimize impacts to Pioneer Ditch.*
TM-6	**Rock Boulevard Bridge Protection:** If necessary, install bridge abutment and pier scour protection measures at Rock Boulevard Bridge. *Note: No bridge modifications are planned here as part of the Flood Project; levees/floodwalls and terracing elements should confine flood flows to existing bridge opening.*
TM-7	**Rock Boulevard to McCarran Boulevard Levee Construction (South Bank):** Construct set-back levee on the south bank of the Truckee River from Rock Boulevard to McCarran Boulevard. Property located on the "dry" side of the levee (between the levee and Mill Street) may be used as a disposal site for excess fill; this property has been reserved for future recreational use (possibly including flat fields, trails, picnic areas, and other amenities). *Note: As part of this revised design, the levee alignment has been moved closer to the river channel in order to reduce construction costs. In this section of the Flood Project, Pioneer Ditch will be enclosed via piping to facilitate use of a portion of the property as a fill disposal site/recreation area.*
TM-8	**Rock Boulevard to McCarran Boulevard Terracing:** Excavate terraces on the south bank (and a small portion of the north bank) of the Truckee River from Rock Boulevard to McCarran Boulevard in order to increase flood flow channel capacity and reconnect river to its floodplain. Establish native riparian vegetation on terrace surfaces. *Note: Overall extent (width) of terracing has been reduced from previous Flood Project designs in order to reduce excavation costs and minimize impacts to Pioneer Ditch.*

Element	*Element Description*
TM-9	**Rock Boulevard to McCarran Boulevard Levee and Floodwall Construction (North Bank):** Replace existing levee on the north bank of the Truckee River from Rock Boulevard to McCarran Boulevard with a system of levees and on-bank floodwalls to minimize impacts to adjacent properties and the railroad. Fill localized low-lying areas on the "dry" side of the levees/floodwalls.
TM-10	**Pumping Station:** Install a stormwater pumping station on the north side of the Truckee River near East McCarran Bridge.
TM-11	**East McCarran Bridge Protection:** If necessary, install bridge abutment and pier scour protection measures at East McCarran Boulevard Bridge. *Note: No bridge modifications are planned here as part of the Flood Project; levees/floodwalls and terracing elements should confine flood flows to existing bridge opening.*
TM-12	**UNR Main Station Farm Facilities Protection:** Implement a combination of structural and non-structural measures to reduce/eliminate flood damage to selected existing buildings located at the University of Nevada, Reno Agricultural Experiment Station (UNR Main Station Farm). Elevate existing pads under hay storage barns to keep hay dry (above flood waters). *Note: Existing main building (meat processing facility) is located above 100-year flood level; no additional protection measures for this building are proposed as part of the Flood Project.*
TM-13	**McCarran Boulevard to Vista Boulevard Levee and Floodwall Construction:** Replace existing levee on the north bank of the Truckee River from McCarran Boulevard to Vista Boulevard with a system of levees and on-bank floodwalls to minimize impacts to adjacent properties. Construct an on-bank floodwall in the Larkin Circle vicinity to avoid impacts to the roadway.
TM-14	**Steamboat Creek Terracing:** Excavate small terrace on along Steamboat Creek in order to increase flood flow channel capacity and maintain existing water surface elevations. Establish native riparian vegetation on terrace surface.
TM-15	**North Truckee Drain Relocation:** Relocate the existing North Truckee Drain (mostly via buried concrete box culverts) to move its confluence with the Truckee River to a location downstream of the Steamboat Creek confluence. When completed, storm water will be delivered east of Vista Boulevard, thereby reducing flooding in the Sparks Industrial area. **PROJECT PHASE 1 and 2 COMPLETE; FINAL PHASE 3 FINANCING IN PROGRESS**
TM-16	**Vista Narrows Terracing:** Excavate terraces on the south bank (and a small portion of the north bank) of the Truckee River from Steamboat Creek to the second railroad bridge over the Truckee River (downstream of the Vista Narrows) in order to increase flood flow channel capacity and reconnect river to its floodplain. Establish native riparian vegetation on terrace surfaces. *Note: Terraces would be excavated to an elevation above the existing low flow river channel to avoid environmental impacts to the river channel (e.g., channel incision).*

Element	*Element Description*
TM-17	**Hidden Valley Voluntary Home Elevation Program:** Establish and manage a program to provide financial assistance to eligible homeowners in Hidden Valley wishing to raise their homes to the 100-year flood elevation (minimum). *Note: This Flood Project element is not eligible to receive federal funding from the US Army Corps of Engineers.* **PROGRAM INITIATED**
TM-18	**Eastside Subdivision and Rosewood Lakes Voluntary Home Elevation Program:** Establish and manage a program to provide financial assistance to eligible homeowners in the Eastside Subdivision and Rosewood Lakes area wishing to raise their homes to the 100-year flood elevation (minimum). *Note: This Flood Project element is not eligible to receive federal funding from the US Army Corps of Engineers.* **PROGRAM INITIATED**
TM-19	**Mandatory Home Elevation Program:** *Only if necessary; requires additional analysis.*

LOWER TRUCKEE RIVER REACH (LT)

It is likely that construction of the Flood Project will significantly impact the environment and therefore require mitigation. Ecosystem restoration serves multiple purposes and may be used to satisfy at least a portion of required mitigation measures (e.g., related to hydraulic and habitat impacts).

Ecosystem Restoration Goals:

- Attenuate flood waters — help mitigate the effects of increased peak flows due to upstream flood control measures
- Restore the structure and function of the river ecosystem
- Establish habitat for native wildlife species (including federally-listed threatened and endangered fish species)
- Reduce existing infestations and control the spread of invasive weeds
- Improve water quality
- Enhance recreational access and amenities along the river

LT-1	**Lockwood Ecosystem Restoration and Recreational Trailhead:** Restore approximately 0.6 miles of river channel; create approximately 37 acres of native habitat. Construct a recreational trailhead and improve recreational access along the Truckee River. **PROJECT COMPLETE**
LT-2	**Rainbow Bend Mitigation:** Explore various structural/non-structural measures that may be required to mitigate potential downstream hydraulic impacts caused by construction of the Flood Project. Measures may include establishment of a non-voluntary home elevation program. *Note: Additional analysis required.*
LT-3	**Lower Mustang Ranch Ecosystem Restoration:** Restore approximately 2.5 miles of river channel; create approximately 187 acres of native habitat. **PROJECT COMPLETE**

Element	*Element Description*
LT-4	**Tracy Power Plant Ecosystem Restoration:** Restore approximately 2.5 miles of river channel; create approximately 115 acres of native habitat. **PROJECT COMPLETE**
LT-5	**102 Ranch Ecosystem Restoration:** Restore approximately 2.0 miles of river channel; create approximately 114 acres of native habitat. **PROJECT COMPLETE**
LT-6	**Wadsworth Mitigation:** Explore various structural/non-structural measures that may be required to mitigate potential downstream hydraulic impacts caused by construction of the Flood Project. Measures may include establishment of a mandatory home elevation program. *Note: Additional analysis required.*