Annex J Nevada Irrigation District

J.1 Introduction

This Annex details the hazard mitigation planning elements specific to the Nevada Irrigation District (NID), a participating jurisdiction to the Placer County Local Hazard Mitigation Plan (LHMP) Update. This Annex is not intended to be a standalone document, but appends to and supplements the information contained in the base plan document. As such, all sections of the base plan, including the planning process and other procedural requirements apply to and were met by the District. This Annex provides additional information specific to the Nevada Irrigation District, with a focus on providing additional details on the risk assessment and mitigation strategy for this special district.

J.2 Planning Process

As described above, the District followed the planning process detailed in Section 3 of the base plan. In addition to providing representation on the Placer County Hazard Mitigation Planning Committee (HMPC), the District formulated their own internal planning team to support the broader planning process requirements. Internal planning participants, their positions, and how they participated in the planning process are shown in Table J-1. Additional details on plan participation and District representatives are included in Appendix A.

Table J-1 District Planning Team

Name	Position/Title	How Participated
Armon Chip Close	Water Operations Manager	Attended meetings. Provided hazard identification table. Provided updated hazard data. Provided new mitigation actions and updated old mitigation actions. Provided capability data. Provided review and update to previous Annex.
Tim Crough	Assistant General Manager	Provided new mitigation actions and updated old mitigation actions.
Gary King	Engineering Manager	Provided new mitigation actions and updated old mitigation actions

Coordination with other community planning efforts is paramount to the successful implementation of this plan. This Section provides information on how the District integrated the previously-approved 2010 Plan into existing planning mechanisms and programs. Specifically, the District incorporated into or implemented the 2010 LHMP through other plans and programs shown in Table J-2.

Table J-2 2010 LHMP Incorporation

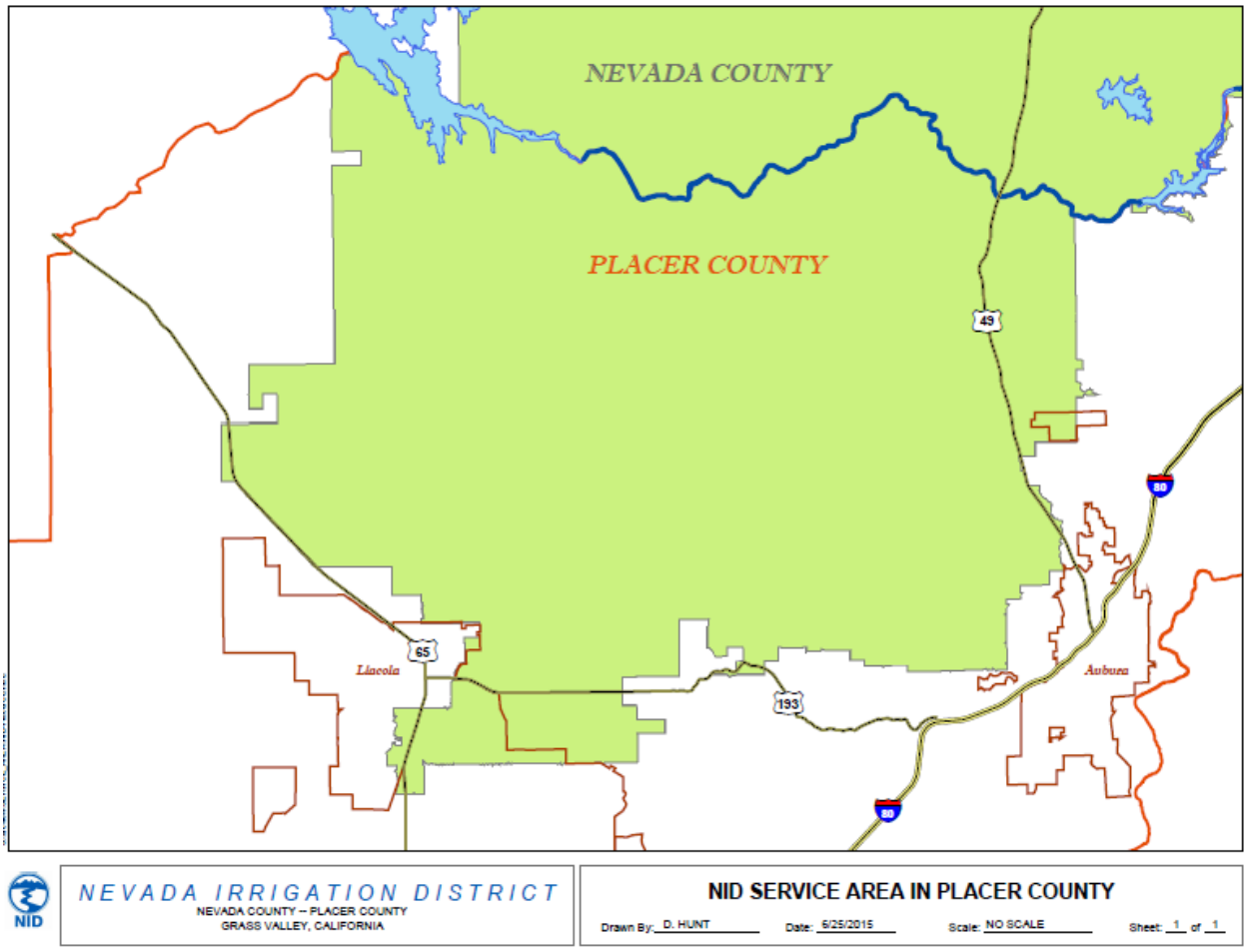
Jurisdiction	Planning Mechanism 2010 LHMP Was Incorporated/Implemented In. Details?
NID	Capital Improvements Program

The LHMP is utilized as both a planning and hazard awareness document. As such, the LHMP and NID's Capital Improvement Plan rely upon each other to accomplish projects that have the potential to mitigate hazards before they occur.

J.3 District Profile

The Nevada Irrigation District service area is illustrated in Figure J-1.

Figure J-1 Nevada Irrigation District's Service Area



Source: Nevada Irrigation District

J.3.1. District Information and Background

Formed in 1921, the Nevada Irrigation District is a diversified water resource agency that supplies over 30,000 homes, farms, and businesses in Nevada, Placer and Yuba Counties in the foothills of Northern California's Sierra Nevada Mountains. NID provides service in an expansive geographic area covering 287,000 acres that makes the District one of the largest in the State of California.

The District is organized primarily to supply water for irrigation, municipal, domestic, industrial, and hydroelectric purposes. NID collects water from the mountain snowpack on 70,000 acres of high mountain watershed and stores it in an extensive system of reservoirs. Water flows to customers in the foothills through over 400 miles of canals and another 300 miles of pipeline. Along the path, it is used to generate clean hydroelectric energy and to provide public recreational opportunities at NIDs multiple reservoirs and campgrounds.

The highest elevation on NID mountain watershed is the peak of 8,373-foot English Mountain which rises east of Bowman Reservoir. The District's highest reservoir is French Lake at 6,835 feet. The District's lowest elevation water service is located about 100 miles to the southwest, at 150 feet above sea level, south of Lincoln in Placer County.

NID has precipitation records for Bowman Reservoir (elev. 5,650 ft.) dating back to 1929. The 69.2-inch annual average precipitation at Bowman compares to an annual average of 56 inches at 2,700 feet near Nevada City and 52 inches at 2,400 feet in Grass Valley.

Irrigation Water

NID has supplied an average 150,000 acre-feet of water per year. About 90 percent of this total is used for local agriculture. NID serves approximately 5,400 raw water customers. Most purchase their water on a seasonal basis — the six-month irrigation season normally runs from on or about April 15 through October 14. Some irrigation customers purchase both summer and winter water for year-around service.

Irrigation water is used to irrigate pasture, golf courses, gardens, nurseries, orchards, and vineyards for both commercial and home production. Grapes, apples, peaches, nuts, berries, corn, rice, wheat, and oats are among the many crops grown with NID water.

Many customers realize other benefits from NID Irrigation water including filling ponds and reservoirs for stock watering, fire suppression, and recreation. Availability of irrigation water is an important factor in the preservation of open space, and greenbelt areas. There are an estimated 97,000 irrigable acres in the Nevada Irrigation District, about a third of which are presently in irrigation.

Treated Drinking Water

Through the years, NID service has changed along with the communities it supplies. The District continues to supply irrigation water, as it has since the 1920s, but today's demand is for piped and treated drinking water.

NID's treated water service areas are located in and around Grass Valley and Nevada City, , Alta Sierra, Lake of the Pines, Penn Valley, Lake Wildwood, Smartville, and North Auburn areas.

Generally, treated water is available in the more populated areas, as it can be very expensive to extend treated water main lines into rural areas where there are few customers to share the costs. In recent years, the District has been successful in working with local property owners to form local water quality improvement districts.

The transition to treated drinking water began in the late 1960s and early 1970s when NID constructed its first water treatment plants. Today, the District operates a network of seven modern water treatment plants in Nevada, Placer, and Yuba counties.

NID presently produces about 3 billion gallons — approximately 9,000 acre-feet — of treated drinking water per year. The district's treatment plants are operated by state-licensed and certified technicians. Water treatment processes include chlorination, coagulation, flocculation, sedimentation, and filtration.

The District operates a state-certified water laboratory where water samples from throughout the district are tested regularly.

NID treated water meets and exceeds standards set by the California Department of Health Services. As required by state law, NID produces an annual water quality report, the Consumer Confidence Report, which is distributed each spring to each treated water customer.

NID's flushing program is conducted annually in the winter months and is designed to keep treated water pipelines clean and ensure a fresh, high quality water supply.

J.4 Hazard Identification and Summary

The District's planning team identified the hazards that affect the District and summarized their frequency of occurrence, spatial extent, potential magnitude, and significance specific to the District (see Table J-3).

Table J-3 Nevada Irrigation District's Hazard Identification Table

Hazard	Geographic Extent	Probability of Future Occurrences	Magnitude/ Severity	Significance
Agricultural Hazards	Significant	Highly Likely	Limited	Low
Avalanche	Limited	Likely	Limited	Medium
Dam Failure	Significant	Occasional	Critical	High
Drought and Water Shortage	Extensive	Occasional	Critical	High
Earthquake	Extensive	Occasional	Critical	Medium
Flood: 100/500 year	Limited	Occasional	Critical	High
Flood: Localized Stormwater Flooding	Limited	Highly Likely	Limited	Medium
Landslides and Debris Flows	Limited	Occasional	Limited	Medium
Levee Failure	Limited	Unlikely	Limited	Medium
Seiche (Lake Tsunami)	Limited	Unlikely	Limited	Low
Severe Weather: Extreme Heat	Extensive	Highly Likely	Limited	Low
Severe Weather: Freeze and Snow	Extensive	Highly Likely	Critical	Medium
Severe Weather: Fog and Freezing Fog	Extensive	Occasional	Limited	Low
Severe Weather: Heavy Rains and Storms (Thunderstorms/Hail, Lightning/Wind/Tornadoes)	Extensive	Highly Likely	Critical	High
Soil Bank Erosion	Limited	Occasional	Limited	Low
Subsidence	Limited	Occasional	Limited	Low
Wildfire	Extensive	Highly Likely	Critical	High
Hazardous Materials Transport	Significant	Occasional	Critical	High

Geographic Extent
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Probability of Future Occurrences
Highly Likely: Near 100% chance of occurrence in next year, or happens every year.
Likely: Between 10 and 100% chance of occurrence in next year, or has a recurrence interval of 10 years or less.
Occasional: Between 1 and 10% chance of occurrence in the next year, or has a recurrence interval of 11 to 100 years.
Unlikely: Less than 1% chance of occurrence in next 100 years, or has a recurrence interval of greater than every 100 years.

Magnitude/Severity
Catastrophic—More than 50 percent of property severely damaged; shutdown of facilities for more than 30 days; and/or multiple deaths
Critical—25-50 percent of property severely damaged; shutdown of facilities for at least two weeks; and/or injuries and/or illnesses result in permanent disability
Limited—10-25 percent of property severely damaged; shutdown of facilities for more than a week; and/or injuries/illnesses treatable do not result in permanent disability
Negligible—Less than 10 percent of property severely damaged, shutdown of facilities and services for less than 24 hours; and/or injuries/illnesses treatable with first aid

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

J.5 Vulnerability Assessment

The intent of this section is to assess the District's vulnerability separate from that of the planning area as a whole, which has already been assessed in Section 4.3 Vulnerability Assessment in the main plan. This

vulnerability assessment analyzes the population, property, and other assets at risk to hazards ranked of medium or high significance that may vary from other parts of the planning area. For more information about how hazards affect the County as a whole, see Chapter 4 Risk Assessment in the main plan.

J.5.1. Assets at Risk

This section considers the District's assets at risk, specifically critical facilities and infrastructure, natural resources, and growth and development trends. Table J-4 lists particular critical facilities and other community assets identified by the District's planning team as important to protect in the event of a disaster. The current value of these structures is just under $333 million.

Table J-4 Nevada Irrigation District's Critical Facilities, Infrastructure, and District Assets

Name of Asset	Facility Type	Replacement Value	Hazard Info
Rollins Power House	Critical Facilities	$13,475,728	Earthquake, Flood, Fire
Combie South Power House	Critical Facilities	$4,095,002	Earthquake, Flood, Fire
Rollins Reservoir	Critical Facilities	$67,520,547	Earthquake, Flood
Combie Reservoir	Critical Facilities	$5,627,736	Earthquake, Flood
North Auburn Water Treatment Plant	Critical Facilities	$11,357,311	Earthquake, Flood, Fire
Water Canal System	Critical Facilities	$58,364,373	Earthquake, Flood
Orr Creek Reservoir	Critical Facilities	$10,539	Earthquake, Flood
Pickett Reservoir	Critical Facilities	$3,274	Earthquake, Flood
Buildings and Warehouses	Critical Facilities	$93,000	Earthquake, Flood, Fire
Administration buildings	Critical Facilities	$1.2 million	Earthquake, Flood, Fire
Pipelines and tanks	Critical Facilities	$30 million	Earthquake, Flood, Fire
Other assets	Critical Facilities	$130 million	Earthquake, Flood, Fire

Source: Nevada Irrigation District

Natural Resources

Several state or federally listed species may be found within the District boundary. These are identified, along with other species of concern found in the District, in Table J-5 and Table J-6.

Table J-5 Plant Species of Concern in the Nevada Irrigation District

Name	Status	Habitat	Potential Occurrence
Dwarf downingia *Downingia pusilla*	CNPS 2.2	Vernal Pools in valley foothill grasslands	Unlikely to occur. No appropriate habitat in the project area. Nearest known occurrence 2.2 air miles northwest of downtown Lincoln, 1.2 road miles south of Wise Road/Hwy. 65 intersection.

Name	Status	Habitat	Potential Occurrence
Legenere *Legenere limosa*	CNPS 1B.1	Vernal pools and swales, seasonal marshes, artificial ponds, floodplains of intermittent streams, and other seasonally inundated habitats.	May occur in floodplains of intermittent streams in the project area. Known from only two occurrences in the project vicinity. One located north of Pleasant Grove Creek, south of Placer Boulevard, east of Highway 65. The second is at the Orchard Creek Conservation Bank approximately 3 miles southwest of Lincoln (Jones & Stokes 2002).
big-scale balsamroot *Balsamorhiza macrolepis var. macrolepis*	CNPS 1B.2	Chaparral, cismontane woodland and valley and foothill grassland, and vernally moist meadows on sandstone, serpentine, or basalt outcrops. From 300 to 4,600 feet in elevation.	Added to table August 2009, no analysis for the project area completed.
Stebbins's morning-glory *Calystegia stebbinsii*	FE, CE, CNPS 1B.1	Chaparral (openings), cismontane woodland, serpentinite or gabbroic. 600–2,400 ft.	Unlikely to occur. No appropriate habitat present in the project area. This plant is known from fewer than 15 occurrences in specific, isolated areas of Nevada and El Dorado counties (CDFG 2004).
Dubious pea *Lathyrus sulphureus var. argillaceus*	CNPS 3	Cismontane woodland, chaparral, lower and upper montane coniferous forest. Usually full sun to part shade, woodland openings. 500–1,000 ft.	May occur in woodland habitats on the project site.
Ahart's Dwarf Rush *Juncus leiospermus var. ahartii*	CNPS 1B.2	Vernal pool margins and mesic valley and foothill grassland areas at elevations of 30–100 meters.	May occur in non-native grassland habitats in the project area. Reported in Placer County only from one occurrence at the Lincoln Airport.
Red Bluff Dwarf Rush *Juncus leiospermus var. leiospermus*	CNPS 1B.1	Meadows and seeps, vernal pools, and vernally mesic areas in chaparral, cismontane woodland, and valley and foothill grassland from 115 to 3,350 feet.	May occur in woodland and non-native grasslands habitats. Known from north of Roseville in 1982, but was relocated in 1997 (CNDDB 2002).
Butte County fritillary *Fritillaria eastwoodiae*	CNPS 3	Chaparral, cismontane woodland, lower montane coniferous forest (openings), wet and dry slopes red clay or sandy loam. 100–5,000 ft.	May occur in woodland habitats on the project site.
Brandegee's clarkia *Clarkia biloba ssp. brandegeae*	CNPS 1B.2	Chaparral, cismontane woodland, often roadcuts. 900–3,000 ft.	May occur in woodland habitats on the project site. The nearest occurrences are in the Lake Combie Quad along the Bear River (CDFG 2004).

Name	Status	Habitat	Potential Occurrence
Boggs Lake Hedge-hyssop *Gratiola heterosepala*	CE, CNPS 1B.1	Foothill Riparian	May occur in riparian habitat present in the project area. Known from only three occurrences in the project vicinity. Two of these occurrences are located between Rocklin and Roseville; the third is located just north of Lincoln (Placer County 2003).
Pincushion navarretia *Navarretia myersii ssp. myersii*	CNPS 1B.1	Vernal pools, valley and foothill (non-native) grasslands in clay soils. 66–1,083 feet	Northern limits of City of Lincoln. Exact location unknown (needs more fieldwork).
Status Codes:			
Federal FE = Federally listed as Endangered FT = Federally listed as Threatened FC = Federal Candidate species	State CE = California listed as Endangered CT = California listed as Threatened CR = California listed as Rare CSC = California Species of Concern CFP = California Fully Protected		California Native Plant Society 1B = rare, threatened or endangered in California and elsewhere. 2 = rare in California but more common elsewhere. 3 = need more information 4 = plants of limited distribution; a watch list. _.1 = Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat) _.2 = Fairly endangered in California (20-80% occurrences threatened) _.3 = Not very endangered in California (<20% of occurrences threatened or no current threats known)

Status and habitat information from California Natural Diversity Database (CDFG 2004), California Native Plant Society Electronic Inventory(CNPS 2003), and USFWS Official Species Lists.

[1]Based on table presented in the Lincoln Area Water Treatment Plant Planning and Site Study (NID 2005). Updated by Robertson-Bryan, Inc. for internal use only by NID (August 2009)

Table J-6 Wildlife Species of Concern in the Nevada Irrigation District

Name	Status	Habitat	Potential Occurrence
Invertebrates			
Vernal pool fairy shrimp *Branchinecta lynchi*	FT	Found in vernal pools (seasonal wetlands)	Unlikely to occur. No appropriate habitat present.
Vernal pool tadpole shrimp *Lepidurus packardi*	FE –	Vernal pools containing clear to highly turbid water.	Unlikely to occur. No appropriate habitat present.
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT –	Associated with various species of elderberry shrubs (Sambucus spp.); generally occurs along waterways and in floodplains.	May occur if elderberry shrubs are present in the project area. Nearest known occurrences in the vicinity of the Lincoln airport and Lincoln Rodeo Grounds.
Fish			

Name	Status	Habitat	Potential Occurrence
Delta smelt *Hypomesus transpacificus*	FT CT	Found only in the Sacramento-San Joaquin Estuary and they reside primarily in the interface between salt and freshwater. Decline in population due in large part to reductions in delta water outflow.	Unlikely to occur. Project is located outside of species' known distribution.
Longfin smelt *Spirinchus thaleichthys*	– CT, CSC	In the Sacramento-San Joaquin estuary adults and juveniles can be found in water ranging from nearly pure sea water to completely fresh water. Adult and juvenile longfin smelt occupy mostly the middle or bottom of the water column in the salt or brackish water portions of the estuary, although larval smelt are concentrated in near-surface brackish waters. Spawning takes place in fresh water, over sandy-gravel substrates, rocks, and aquatic plants.	Unlikely to occur. Project is located outside of species' known distribution.
Central Valley steelhead *Oncorhynchus mykiss irideus*	FT –	Found in tributaries to the San Francisco Bay, including the south Bay. Pass through the San Francisco Estuary during migration to streams for spawning, and during outmigration to the ocean. Spawn in small streams and tributaries with cold, clean water flowing over graveled bottoms and deep pools.	Rainbow trout/steelhead adults and fry have been seen in Coon Creek, Auburn Ravine, Dry Creek, Secret Ravine, and Miners Ravine (CALFED Bay-Delta Program 2000).
Central Valley spring-run chinook salmon *Oncorhynchus tshawytscha*	FT CT	Found in tributaries to the San Francisco Bay. Pass through the San Francisco Estuary during migration to streams for spawning, and during outmigration to the ocean. Spawn in well oxygenated water in swift, shallow riffles, or at edges of fast runs with loose gravel.	Unlikely to occur. Project is located outside of species' known distribution.
Sacramento winter-run chinook salmon *Oncorhynchus tshawytscha*	FE CE	Found in tributaries to the San Francisco Bay. Pass through the San Francisco Estuary during migration to streams for spawning, and during outmigration to the ocean. Spawn in well oxygenated water in swift, shallow riffles, or at edges of fast runs with loose gravel.	Unlikely to occur. Project is located outside of species' known distribution.
Central Valley fall/late fall-run chinook salmon *Oncorhychus tshawytscha*	– CSC	Found in tributaries to the San Francisco Bay, including the south Bay. Pass through the San Francisco Estuary during migration to streams for spawning, and during outmigration to the ocean. Spawn in well oxygenated water in swift, shallow riffles, or at edges of fast runs with loose gravel.	The Bear River supports an occasional run of adult fall-run chinook salmon in years when flows are sufficient to provide passage (Yoshiyama et al. 1996).

Name	Status	Habitat	Potential Occurrence
Green sturgeon *Acipenser medirostris*	FT CSC	In the Sacramento River, adult sturgeon are in the river, presumably spawning, when temperatures range between 8 14°C. Preferred spawning substrate likely is large cobble, but can range from clean sand to bedrock.	Unlikely to occur. Project is located outside of species' known distribution.
Amphibians			
California tiger salamander *Ambystoma californiense*	FT CSC	Breeds in freshwater ponds or vernal pools, in association with upland areas with small mammal burrows	Unlikely to occur. Project is located outside of species' known distribution.
Western spadefoot toad *Spea hammondii*	– CSC	Requires vernal pools and seasonal wetlands below 4,500 feet that lack predators for breeding. Also occurs in grassland habitat and occasionally in valley-foothill oak woodlands and orchards.	Unlikely to occur. Project is located outside of species' known distribution.
California red-legged frog *Rana aurora draytonii*	FT CSC	Breeds in quiet streams and permanent, deep, cool ponds with overhanging and emergent vegetation below 5,200 feet elevation. Known to occur adjacent to breeding habitats in riparian areas, heavily vegetated streamside shorelines, and non-native grasslands. Sierran streams historically supported populations of red-legged frog; however, these populations have been eliminated.	Unlikely to occur. Project supports minimal suitable habitat and species in not known from the project vicinity. Project area is not designated by USFWS as critical habitat or a core recovery unit. However, the project area is in the historical range of the species. Nearest known occurrence is in El Dorado National Forest, near Michigan Bluff (CNDDB 2004).
Foothill yellow-legged frog *Rana boylii*	– CSC	Inhabits valley and foothill oak woodland, riparian forest, ponderosa pine, mixed conifer, coastal scrub, mixed chaparral, and wet meadows. Breeds in rocky streams with cool, clear water from 0 to 4,500 feet.	Appropriate habitat present in intermittent drainages within the proposed project site. Nearest known occurrences are located in Missouri Creek Canyon in Tahoe National Forest and Greenhorn Creek, where two adults were detected in 1999 (CDFG 2004).
Reptiles			
Western pond turtle *Actinemys marmorata*	– CSC	Occurs up to 6,000 feet in perennial wetlands and slow moving creeks and ponds with overhanging vegetation. Requires suitable basking sites such as logs and rocks above the waterline.	Appropriate habitat present in Orr Creek Reservoir and stock ponds located within the project area. Nearest known occurrences are located 4 mi. WNW of Newcastle and on Wolf Creek in Nevada County (CDFG 2004).
California horned lizard *Phrynosoma coronatum frontale*	– CSC	Occurs in riparian woodlands and annual grasslands, exposed sandy-gravelly substrate with scattered shrubs, and clearings from 0 to 6,500 feet.	Appropriate habitat present in the non-native grasslands in the project area. Nearest known occurrences are 2.5 miles west of Highway 49 and 20 Junction in Nevada City and on Alta Vista Road in Grass Valley (CDFG 2004).

Name	Status	Habitat	Potential Occurrence
Giant garter snake *Thamnophis gigas*	FT CT	Primarily associated with marshes and sloughs, less with slow-moving creeks, and absent from larger rivers. Nocturnal retreat is holes, especially mammal burrows, crevices, and surface objects. During the day the giant garter snake often basks on emergent vegetation such as cattails and tules.	Unlikely to occur. Project is located outside of species' known distribution.
Birds			
White-tailed (black shouldered) kite *Elanus leucurus*	– CFP	Inhabits herbaceous and open stages of most habitats mostly in cismontane California. Forages in undisturbed, open grasslands, meadows, farmlands and emergent wetlands.	Appropriate nesting and foraging habitat present within the project area.
Northern harrier (nesting) *Circus cyaneus*	– CSC	Frequents meadows, grasslands, open rangelands, desert sinks, fresh and saltwater emergent wetlands. Mostly found in flat, or hummocky, open areas of tall, dense grasses, moist or dry shrubs, and edges for nesting, cover, and feeding.	May forage in non-native grasslands and nest in the project area.
Swainson's hawk *Buteo swainsoni*	BCC CT	Breeds in stands with few trees in juniper-sage flats, riparian areas, and in oak savannah in the Central Valley. Forages in adjacent grasslands, suitable grain or alfalfa fields, or livestock pastures.	Unlikely to occur. Project is located outside of species' known distribution.
Ferruginous hawk (wintering) *Buteo regalis*	BCC –	Winter visitor along the coast from Sonoma County to San Diego County, eastward to the Sierra Nevada foothills and southeastern deserts, the Inyo-White Mountains, the plains east of the Cascade Range, and Siskiyou County. Prefers open terrain, plains, and foothills. Does not nest in California.	Winter Visitor. May forage in non-native grasslands in the project area.
Bald eagle *Haliaeetus leucocephalus*	FD (Delisted 7/9/07) CE, CFP (nesting and wintering)	Local winter migrant to various California lakes. Most of the breeding population is restricted to northern counties. Regular winter migrants to the region.	Foraging habitat present in Combie Reservoir.

Name	Status	Habitat	Potential Occurrence
American peregrine falcon *Falco peregrinus anatum*	Former FE (Delisted on 8/20/99), BCC CE, CFP (nesting)	Breeds in woodlands, forests, coastal habitats, and riparian areas near wetlands, lakes, rivers, or other water on high cliffs, banks, dunes, or mounds	Unlikely to occur. No appropriate habitat present in the project area.
California black rail *Laterallus jamaicensis*	BCC CFP, CT	Forages and nests in tidal emergent wetlands dominated by pickleweed or in brackish marshes supporting bulrushes and pickleweed; Usually found in immediate vicinity of tidal sloughs.	Unlikely to occur due to lack of suitable habitat. Previously unknown populations were recently discovered in the foothills of Nevada County (Tecklin 1990). Known to occur in isolated marshes along Garden Bar Road, McCourney Road, and in and near Spenceville Wildlife Area (CDFG 2004).
Mountain plover *Charadrius montanus*	BCC CSC	Short grasslands and plowed fields with little vegetation, and open sagebrush areas of the Central Valley from Sutter and Yuba counties southward.	Unlikely to occur. Project is located outside of species' known distribution.
Long-billed curlew *Numenius americanus*	BCC	F ound in wet meadow habitat in northeastern California in Siskiyou, Modoc, and Lassen counties. Winter visitor along the California coast and in the Central and Imperial valleys.	Winter Visitor. May forage in wet meadows in the project area.
Yellow-billed cuckoo *Coccyzus americanus*	FC, BCC CE	Inhabits extensive deciduous riparian thickets or forests with dense, low-level or understory foliage, and which abut on slow-moving watercourses, backwaters, or seeps. Willow almost always a dominant component of the vegetation.	Unlikely to occur. Project is located outside of species' known distribution.
Western burrowing owl *Athene cunicularia*	BCC CSC (Burrow sites.)	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably the California ground squirrel.	Unlikely to occur. Project is located outside of species' known distribution.
Vaux's swift *Chaetura vauxi*	– CSC (nesting)	Prefers redwood and Douglas fir habitats with nest sites in large, hollow trees and snags, especially tall, burned-out stubs. Forages over moist terrain and habitats, preferring rivers and lakes.	Unlikely to occur. Project is located outside of species' known distribution.
Black swift *Cypseloides niger*	BCC CSC (nesting)	Breeds locally in Sierra Nevada and Cascades. Nests in moist crevices or caves, or on cliffs near waterfalls in deep canyons. Forages widely over many habitats; seems to avoid arid regions.	Unlikely to occur. Project is located outside of species' known distribution.

Name	Status	Habitat	Potential Occurrence
Lewis' woodpecker *Melanerpes lewis*	BCC (nesting)	Winter resident in open oak savannas, broken deciduous, and coniferous habitats with brushy understory. Uses logged and burned areas. Winters in the Central Valley, Modoc Plateau, and the Transverse and other ranges in Southern California. Breeds locally along eastern slopes of the Coast Ranges, and in Sierra Nevada, Warner Mts., Klamath Mts., and in the Cascade Range.	Winter Visitor. May forage in the project area.
Little willow flycatcher *Empidonax traillii brewsteri*	– CE (nesting)	Wet meadow and montane riparian habitats from 2,000 to 8,000 feet. Breeding seldom occurs below 5,000 feet. Most often occurs in broad, open river valleys or large mountain meadows with lush growth of shrubby willows	Unlikely to occur. Project is located outside of species' known distribution.
Bank swallow *Riparia riparia*	– CT (nesting)	Migrant found primarily in riparian and other lowland habitats in California west of the deserts. Requires vertical banks and cliffs with fine-textured or sandy soils near streams, rivers, ponds, lakes, and the ocean for nesting. Feeds primarily over riparian areas during breeding season and over grassland and cropland during migration.	Unlikely to occur. Project is located outside of species' known distribution.
Yellow warbler (nesting) *Dendroica petechia brewsteri*	– CSC	Uncommon nester over most of California, except the Central Valley, Mojave Desert, and high elevations of the Sierra. Winters along the lower Colorado River and in parts of Imperial and Riverside counties. Nests in riparian habitats dominated by willows, cottonwoods, sycamores, or alders or in mature chaparral. May also use oaks, conifers, and urban areas nears streams.	May occur in woodland and riparian habitats in the project area
Yellow-breasted chat (nesting) *Icteria virens*	– CSC	Uncommon migrant in California. Nests in a few locations such as Sweetwater and Weber Creeks, El Dorado County; Pit River, Shasta County; Russian River, Sonoma County; Little Lake Valley, Mendocino County; and upper Putah Creek, Yolo County. Nests in dense riparian habitats dominated by willows, alders, Oregon ash, tall weeds, blackberry, and grape.	May occur in woodland and riparian habitat in the project area. Documented nesting at Little Wolf Creek, Bear River, Dry Creek, Indian Springs Creek, Deer Creek, and the Middle and South Yuba River (Nevada Co. Planning Dept. 2002).
Modesto song sparrow *Melospiza melodia mailliardi*	– CSC	Found in a variety of habitats including: riparian willow thickets, valley oak riparian with an understory of blackberry, ruderal areas along levees and irrigation canals, and cattail and tule marshes.	May occur in riparian habitats in the project area. Known to occur in western Placer County and adjacent Sierra foothill counties (Grinnell and Miller 1944; Gardali 2002).

Name	Status	Habitat	Potential Occurrence
Grasshopper sparrow *Ammodramus savannarum*	– CSC	Occurs in dry, dense grasslands, especially those with a variety of grasses and tall forbs and scattered shrubs for singing perches	May occur irregularly in non-native grasslands in the project area. One singing male was found in an annual grassland east of Lincoln; it was only present for a few days (April 1999). A fall migrant was found along Brewer Road (September 1999). (Easterla pers. comm.; Webb 2003.)
Tricolored blackbird *Agelaius tricolor*	BCC CSC (nesting colony)	Breeds near freshwater, preferably in emergent wetland with tall dense cattails or tules, but also in thickets of willow, blackberry, wild rose, and tall herbs. Feeds in grassland and cropland habitats. Found throughout the Central Valley and on the coast.	May forage in non-native grasslands and next in some raw water storage facilities.
Lawrence's goldfinch *Carduelis lawrencei*	BCC	Occurs in valley foothill hardwood and valley foothill hardwood-conifer. Breeds in open oak or other arid woodland and chaparral, near water.	May occur in woodland habitats in the project area.
Loggerhead shrike *Lanius ludovicianus*	– CSC (nesting)	Open habitats with sparse shrubs and trees (or other suitable perch sites) and bare ground and/or low, sparse herbaceous cover; oak woodlands for nesting. Found in lowlands and foothills throughout California	May forage in non-native grasslands and nest in woodland habitats in the project area.
Mammals			
Spotted bat *Euderma maculatum*	– CSC	Habitats range from arid deserts and grasslands through mixed conifer forests up to 10,600 feet in southern California. Prefers sites with adequate roosting habitat, such as cliffs. Often limited by the availability of cliff habitat. Feeds over water and along marshes.	May roost or forage in the project area in all habitat types, but project area outside of species' historic range.
Greater western mastiff bat *Eumops perotis californicus*	– CSC	Occurs in many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, chaparral, desert scrub, and urban areas in southeastern San Joaquin Valley and Coastal Ranges from Monterey County south. Typically roosts in caves, crevices or other rock formations. Requires open areas for foraging.	Unlikely to occur. Project area is outside of species' known distribution.
Townsend's big-eared bat *Corynorhinus townsendii*	– CSC	Occurs from low desert to mid-elevation montane habitat. Occurs in rural settings, inland deserts, coastal redwoods, oak woodland of the inner Coast Range and Sierra, and low to mid-elevation mixed forest.	May roost or forage in the project area in all habitat types, but project area outside of species' historic range.
Status Codes			

Name	Status	Habitat	Potential Occurrence
Federal FE = Federally listed as Endangered FT = Federally listed as Threatened = Federal Species of Concern FC = Federal Candidate species FPT = Federally Proposed Threatened BCC = Birds of Conservation Concern		State CE = California listed as Endangered CT = California listed as Threatened CR = California listed as Rare CSC = California Species of Concern CFP = California Fully Protected	

Status and habitat information is taken from California Natural Diversity Database (CDFG 2004), Zeiner et al. (1990), and USFWS Official Species List

[1] Based on table presented in the Lincoln Area Water Treatment Plant Planning and Site Study (NID 2005). Updated by Robertson-Bryan, Inc. for internal use only by NID (August 2009).

Growth and Development Trends

Past growth for the District is the same as the incorporated communities falling within the service area of the District.

Development Since 2010 Plan

Population growth and development trends within NID boundaries are covered in Section 4.3.1 of the main plan and in the individual annexes of the incorporated communities falling within the service area of the District. The District relies on the city and county planning departments to establish future growth areas. The Districts reviews each growth or building project to assess water supply availability and determine the amount of water needed during drought.

J.5.2. Estimating Potential Losses

This section provides the vulnerability assessment, including any quantifiable loss estimates, for those hazards identified above in Table J-3 as high or medium significance hazards. Impacts of past events and vulnerability of the District to specific hazards are further discussed below (see Section 4.1 Hazard Identification for more detailed information about these hazards and their impacts on the Placer County planning area). Methodologies for calculating loss estimates are the same as those described in Section 4.3 of the base plan. In general, the most vulnerable structures are those located within the floodplain, in the wildland urban interface, unreinforced masonry buildings, and buildings built prior to the introduction of modern building codes.

An estimate of the vulnerability of the District to each identified hazard, in addition to the estimate of risk of future occurrence, is provided in each of the hazard-specific sections that follow. Vulnerability is measured in general, qualitative terms and is a summary of the potential impact based on past occurrences, spatial extent, and damage and casualty potential. It is categorized into the following classifications:

- **Extremely Low**—The occurrence and potential cost of damage to life and property is very minimal to nonexistent.
- **Low**—Minimal potential impact. The occurrence and potential cost of damage to life and property is minimal.

- **Medium**—Moderate potential impact. This ranking carries a moderate threat level to the general population and/or built environment. Here the potential damage is more isolated and less costly than a more widespread disaster.
- **High**—Widespread potential impact. This ranking carries a high threat to the general population and/or built environment. The potential for damage is widespread. Hazards in this category may have occurred in the past.
- **Extremely High**—Very widespread with catastrophic impact.

Avalanche

Likelihood of Future Occurrence–Likely
Vulnerability–Medium

NID has critical water supply facilities in the high alpine watershed that supply a majority of the District's annual water needs. These facilities are located in remote, steep terrain that is subject to avalanche during heavy winters. The primary danger with an avalanche is the potential for blockage of canals and damage to the many elevated flumes relied upon for conveyance. Heavy snow in the early 1990's blocked water flow in the South Yuba Canal and created constraints on the Districts water delivery system. Emergency pumps were brought in to pump water from Scotts Flat as a backup while the snow was cleared. The District is currently working on a permanent pumping facility as an emergency backup supply should future heavy snows or avalanches damage District facilities.

Dam Failure

Likelihood of Future Occurrence–Occasional
Vulnerability–High

A dam failure can range from a small uncontrolled release to a catastrophic failure, caused by prolonged rainfall and flooding. The primary danger associated with dam failure is the high velocity flooding of those properties downstream of the dam. Dam failure flooding varies by area depending on which dam fails and the nature and extent of the dam failure and associated flooding.

The district's highest dam is the rock fill-earth core dam at Rollins Reservoir, built in 1965 and standing 242 feet tall. The Jackson Meadows dam (1965) is second highest at 195 feet, Scotts Flat dam (1965) is 175 feet, and the Bowman South Arch dam (1925) is 171 feet high.

French Dam, constructed in 1858-59, is the district's oldest dam still in use. Other dams that originated in the 1800s include the Bowman Rockfill dam (1872), and Faucherie, Sawmill and Jackson, all constructed prior to 1880. In the lower division, Van Giesen Dam at Combie Reservoir is the oldest, built in 1928.

Vulnerability to dam failures is generally confined to the areas subject to inundation downstream of the facility. Based on analysis provided in the Placer County General Plan Background Report, only five dams within Placer County have the potential to affect more than 100 persons: Folsom Dikes No. 5 & 6; Lake Tahoe Dam; Camp Far West Dam; Lake Combie Dam; and Rollins Reservoir Dam. Of these five, a failure of Rollins Reservoir or Combie Dams could potentially impact areas within the NID. Failure of Dutch Flat Forebay could also potentially impact services provided by NID, albeit in a limited capacity.

Drought and Water Shortage

Likelihood of Future Occurrence–Occasional
Vulnerability–High

The impact of a drought on the District is primarily one of water supply. Most water provided by the NID comes from snowmelt from their high mountain watershed. A multiple year drought can severely compromise the water supply within the district.

The District is currently experiencing its fourth year of drought with below average precipitation and minimal snowpack since 2012. In 2014 the District recorded a snowpack reading of 5% of average, the lowest snowpack reading since it began collecting this data in 1921. Governor Brown has declared a state of emergency and the State Water Resources Control Board has restricted water use and curtailed many of the Districts water rights. The limited water supply along with the States mandated actions have necessitated the enactment of the Districts Drought Contingency Plan. Some of the action items from the plan include: limiting and or suspending additional Ag water sales, mandatory treated water reductions, and the establishment of a water waste reporting program. The District has proactively managed its water resources in preparation for additional dry years. In addition to conservative water management, the District also purchased supplemental waters from neighboring agencies to help bolster water supply.

After 2 years of below-average rainfall and very low snow-melt run off, Governor Schwarzenegger in June of 2008 declared a state of emergency for drought conditions statewide. The final California Department of Water Resources showed snowpack water content at only 67 percent of normal. .

The 1991-1992, drought also severely impacted the District and other areas of Placer County and surrounding California foothills.

A severe drought that affected the District and all of California is the drought of 1977-1978. This drought was severe enough to trigger implementation of the District's Drought Contingency Plan at the most restrictive level – that of mandatory rationing and reduction in service to irrigation customers up to 50%.

With the unknowns of drought and globally changing climate conditions, NID, more than ever, is promoting water conservation and expansion of storage.

Earthquake

Likelihood of Future Occurrence–Occasional
Vulnerability–Medium

Earthquake vulnerability for the District lies in the water delivery infrastructure and not in its buildings. Earthquakes can cause a separation of underground water supply mains causing flooding and ultimately leading to water supply interruptions.

Earthquakes also have the potential to cause failures of the canal berm/leave system and cause flooding and supply water interruptions.

Additionally, the District is responsible for multiple water storage dams that are susceptible to damage and potentially major flooding during a large earthquake event. The Districts Dam facilities are under the jurisdiction of the CA Department of Dam Safety and the Federal Energy Regulatory Commission which require adherence to a strict set of safety guidelines and Dam safety protocol.

Flood: 100-/500-year

Likelihood of Future Occurrence–Occasional
Vulnerability–High

Flooding and soil erosion due to heavy rains and snow runoff have been a historical problem throughout Placer County. Abundant snowfall in the mountains combined with rain and steep terrain can mean rapid runoff and flooding. Water flow can be high in peak runoff periods with historical downstream flooding. The primary impacts from flooding within the district include damage to roads, utilities, bridges; and flooding of homes, businesses and critical facilities. Flooding has also caused canals to overtop and erosion of the canal levees.

The most recent flood event to impact the District is the late December floods of 2005. Excessive rain for a prolonged period caused severe flooding in the Sierra foothills, in and around Placer County. Impacts included damage to the District's canal system as well as damage to roads and properties throughout District boundaries.

Heavy prolong precipitation in late 1996 caused flood damage across much of the District's service area. President Clinton proclaimed the area a disaster area while Governor Wilson followed suit. Many of the Districts main diversion dams and canals were washed out. Over 50 applications for flood damage assistance for the repair of NID facilities were submitted to FEMA and Cal OES.

Flood: Localized Stormwater Flooding

Likelihood of Future Occurrence–Highly Likely
Vulnerability–Medium

The Nevada Irrigation District (District) supplies both drinking and irrigation water to portions of Placer County. The conveyance of water is accomplished through over 300 miles of pipe and over 450 miles of open canal. Both the water pipelines and canal facilities are subject to damages from localized flooding.

The Districts treated water system is susceptible to localized flooding damages from concentrated storm water runoff causing erosion of soil and exposing the water main. The exposed water main is then weekend and vulnerable to breakage due to the loss of securing soils. Treated water pipelines also have the potential to cause localized flooding during water main breaks.

The Districts canal system is susceptible to storm water flooding from heavy precipitation events that create heavy runoff that enters District canals and overburdens the system. These high runoff flows can cause overtopping of the canal and erosion of the canal berm potentially causing property damage.

Past flooding incidents, although minor in scope, have occurred on nearly every District canal.

The District performs ongoing canal rehabilitation to fortify facilities to bolster against storm water infiltration. In addition, the District is in the design stages for the replacement of the Combie Ophir 1 canal, a major artery to Placer County. This facility has developed leaks and has potential for breakage and flooding.

Landslides and Debris Flows

Likelihood of Future Occurrence–Occasional
Vulnerability–Medium

Heavy rain events during the winter months tend to destabilize the soils on many of the steep hillsides that NID's Canals flow through. These destabilizations can cause minor landslides or debris flows that slide into or block NID canals. In addition to the blockage, the flows within the canal only exasperate the problem as the water backs up and overflows the berms thereby creating an even more destructive mud/ debris flow.

NID experienced a major land slide that caused the Combie Phase 1 canal to wash down the mountain side and into the Bear River. In addition to the loss of water supply to much of Placer County, the mud and debris that flowed into the Bear River system necessitated a major environmental cleanup

Levee Failure

Likelihood of Future Occurrence– Unlikely
Vulnerability–Medium

A majority of the 400 miles of NID canals are manmade and were designed with small levees to direct the flow of water. These canals levees are vulnerable to failure for a multitude of reasons including but not limited to, overtopping flows, rodent and varmint intrusion, vegetation weakening Ect.

When a levee is breached, the flows contained within the canal escape and flood the surrounding private properties including private residences.

The last levee/canal berm failure occurred in 2012 and caused damage to multiple private properties.

Severe Weather: Freeze and Snow

Likelihood of Future Occurrence–Highly Likely
Vulnerability–Medium

NID is subject to multiple hazards during severe frees events. First, NIDs high sierra facilities are vulnerable to freezing so severe that the waters within the supply canals become solid ice. When this occurs, water deliveries to the system become impossible. NID has experienced multiple events where crews were sent out day and night to break ice to keep water flowing to critical water treatment facilities.

Second, freezing in the lower reaches of NID's service area where customers are not acclimated or prepared for cold temperatures causes freezing of water distribution systems and burst pipes. . Once the pipes thaw,

water free flows through the broken pipes and creates water demands that NID treatment systems have a tough time keeping up with.

Severe Weather: Heavy Rains and Storms (Thunderstorms/Hail, Lightning/Wind/Tornadoes)

Likelihood of Future Occurrence–Highly Likely
Vulnerability–High

Heavy rain, thunderstorm activity, and hail usually occur on an annual basis in the NID service area. Often during these events, the raw water distribution system can be impacted. Heavy runoff from storm activity can cause excessive water in District canals resulting in an overtopping of the canal. An overtopping will washout the canal berm resulting in localized flood damage and interruption of the water supply. On an annual basis the District receives 20 to 40 claims stemming from these overtopping events.

Wildfire

Likelihood of Future Occurrence–Highly Likely
Vulnerability–High

All communities within the northwestern portion of Placer County served by the NID are listed on the National Fire Plan's "Communities at Risk" list as set forth in Section 4.3.2 of the main plan.

Over one hundred years of aggressive fire suppression under the national fire suppression policy has rendered wildlands severely overgrown. Much of the private land in the District's area is in the wildland urban interface with increasing residential development.

As more people move into the area and impacts from recreational demands increase, there will be more human-caused wildfire starts each year. And, the increased number of widely scattered homes within the District adds greatly to the danger, complexity, and cost of fighting these fires.

Forest overgrowth due to the efficiency of modern firefighting techniques, and to society's current election to limit forest thinning and harvesting, is a serious problem. If wildfire does not impact the forest first, native insects will eventually kill millions of trees. Explosions in insect populations usually start during a drought, when the lack of water combined with too many trees per acre render the trees too weak to fight off the insect attacks. Without a change in management practices on public lands, there is little hope of avoiding a kill off of trees similar to the kill off experienced by other national forests.

The Washoe Fire in August 2007 had impacts to the NID. This fire occurred in the wildland urban interface area of the Tahoe Park and Tahoe Woods subdivisions, along the west shore of Lake Tahoe. Although no lives were lost, the fire destroyed 5 residential structures and encompassed 19 acres. Power and gas utilities incurred damages. There were also losses to timber assets, loss of watershed protection, and loss of the aesthetic value of a scenic corridor. This event caused major disruptions to the west shore and Tahoe City traffic and business on a busy summer weekend. Highway 89 in West Lake was closed for a period of time.

The most notable recent wildfire to impact the District was the 49 fire in 2009. The wind driven fire occurred in the urban sections of North Auburn and burned through the Districts North Auburn Water Treatment Plant. 62 homes were destroyed and infrastructure damaged. Power remained out for multiple days making the production of potable water to the area difficult.

Hazardous Materials Transport

Likelihood of Future Occurrence–Occasional
Vulnerability–High

NID storage and conveyance facilities are located along the heavily traveled Interstate 80 corridor. This is the main artery for transportation in and out of the northern ca. and includes a major railway. A multitude of hazardous chemicals are transported through this area on a daily basis. A spill along the interstate or railway has the potential to cause contamination to the Districts main water supply.

J.6 Capability Assessment

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capabilities assessment is divided into four sections: regulatory mitigation capabilities; administrative and technical mitigation capabilities; fiscal mitigation capabilities; and mitigation education, outreach, and partnerships.

J.6.1. Regulatory Mitigation Capabilities

Table J-7 lists regulatory mitigation capabilities, including planning and land management tools, typically used by local jurisdictions to implement hazard mitigation activities and indicates those that are in place in the District.

Table J-7 Nevada Irrigation District's Regulatory Mitigation Capabilities

Plans	Y/N Year	Does the plan/program address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan	Y	Last update 2011. The plan covers the expected expansion of District facilities over the next 30 years. The hazards covered include the expected flow ranges thus allowing for upsizing of pipes and canals to prevent storm water flooding.
Capital Improvements Plan	Y	Ongoing annually. Projects are initiated based on Master Planning, facility inspection, and available capacity.
Economic Development Plan		N/A
Local Emergency Operations Plan	Y	The District has multiple Emergency Plans that are updated annually. These plans cover emergencies ranging from treated water supply to a major dam failures.
Continuity of Operations Plan		
Transportation Plan		N/A

Stormwater Management Plan/Program	Y	Storm water management is covered by District policy. The policy states all future facilities will be designed in a manner that doesn't allow storms water to infiltrate District canals.
Engineering Studies for Streams	Y	Only for stream health.
Community Wildfire Protection Plan	N	Covered in our Emergency Response Plans.
Other special plans (e.g., brownfields redevelopment, disaster recovery, coastal zone management, climate change adaptation)		The District also maintains a drought contingency plan to assist water management during periods of drought or water supply shortages
Building Code, Permitting, and Inspections	**Y/N**	**Are codes adequately enforced?**
Building Code Enforced by the County	N/A	Version/Year: N/A
Building Code Effectiveness Grading Schedule (BCEGS) Score	N/A	Score:
Fire department ISO rating:	N/A	Rating:
Site plan review requirements	N/A	
Land Use Planning and Ordinances	**Y/N**	**Is the ordinance an effective measure for reducing hazard impacts?** **Is the ordinance adequately administered and enforced?**
Zoning ordinance	N/A	
Subdivision ordinance	N/A	
Floodplain ordinance	N/A	
Natural hazard specific ordinance (stormwater, steep slope, wildfire)	N/A	
Flood insurance rate maps	N/A	
Elevation Certificates	N/A	
Acquisition of land for open space and public recreation uses	N/A	
Erosion or sediment control program	N/A	
Other	N/A	
How can these capabilities be expanded and improved to reduce risk?		

As indicated above, the District has several programs, plans, policies, and codes and ordinances that guide hazard mitigation. Some of these are described in more detail below.

NID Urban and Ag Water Management Plan, 2010

NID's Urban Water Management Plan addresses many issues related to the sound and sustainable use of water. These include information relating to water sources, reliability planning, water use provisions, water demand management measures, and water shortage contingency plan.

Drought Contingency Plan, 1992

The District's Drought Contingency Plan supplements urban and agricultural plans and identifies drought caused water shortages and water demand reduction goals within the District during a drought. The plan contains a 5-step contingency process depending on the severity of the drought. These steps range from encouraging voluntary conservation to mandatory reductions in service.

J.6.2. Administrative/Technical Mitigation Capabilities

NID is governed by a five-member Board of Directors, elected to four-year terms by District voters. The board is the District's policy-making body and policy is carried out by approximately 185 full- and part-time employees. Members of the board are elected from within and represent five geographical divisions within the District. As a state agency, NID operates under rules and regulations adopted under authority conferred by the California Water Code. NID is headquartered at an 18-acre site located on West Main Street in Grass Valley. The District also operates a maintenance yard on Gold Hill Road near Lincoln and a Hydroelectric Department office off Interstate 80 near Colfax. Table J-8 identifies the personnel responsible for activities related to mitigation and loss prevention in the District.

Table J-8 Nevada Irrigation District's Administrative and Technical Mitigation Capabilities

Administration	**Y/N**	**Describe capability Is coordination effective?**
Planning Commission	Y	Planning is included through the Districts Engineering Department
Mitigation Planning Committee	Y	Planning is included through the Districts Engineering Department
Maintenance programs to reduce risk (e.g., tree trimming, clearing drainage systems)	Yes	The District has a fully staffed maintenance division with 64 dedicated positions to keep facilities in proper order.
Mutual aid agreements	Yes	The District has mutual aid agreements with many neighboring agencies including, PG&E, PCWA, City of Grass Valley, City of Nevada City, and Placer County.
Other		
Staff	**Y/N FT/PT**	**Is staffing adequate to enforce regulations? Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective?**
Chief Building Official	N/A	
Floodplain Administrator	N/A	
Emergency Manager	Yes	The District has a risk manager that will act as an emergency manager during an emergency. Table top emergency exercises are practiced with multiple agencies every 5 years.
Community Planner		
Civil Engineer	Yes	The District has an in house engineering department with a staff of 5 licensed engineers trained in all aspects of District functions.

GIS Coordinator	Yes	The District has a drafting division that maintains the Districts GIS system. The group has coordinated with outside agencies during emergencies to provide mapping information.
Other		
Technical	**Y/N**	**Describe capability Has capability been used to assess/mitigate risk in the past?**
Warning systems/services (Reverse 911, outdoor warning signals)	Yes	The District has electronic warning systems for its dams, water treatment plants and its canals. Facilities are manned or monitored on a 24 hour a day 7 day a week basis. The District also utilizes an answering service as backup.
Hazard data and information	Yes	The District maintains a current SDS data base
Grant writing	Yes	The District has an in house grant writer
Hazus analysis		
Other		
How can these capabilities be expanded and improved to reduce risk?		

J.6.3. Fiscal Mitigation Capabilities

Table J-9 identifies financial tools or resources that the District could potentially use to help fund mitigation activities.

Table J-9 Nevada Irrigation District's Fiscal Mitigation Capabilities

Funding Resource	Access/ Eligibility (Y/N)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Capital improvements project funding	Yes	Funding source is included in water rates
Authority to levy taxes for specific purposes	Yes	The District receives a small portion of local government taxes through an agreement with the Counties
Fees for water, sewer, gas, or electric services	Yes	Fees include funding of
Impact fees for new development	No	
Storm water utility fee	No	
Incur debt through general obligation bonds and/or special tax bonds	Yes	Bonds and special taxs have both been utilized to fund projects within the District
Incur debt through private activities	No	
Community Development Block Grant	No	
Other federal funding programs	Yes	The District has been the recipient of Depart. of Water Resources grant funding
State funding programs	Yes	State Revolving Loan Funding

Funding Resource	Access/ Eligibility (Y/N)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Other		
How can these capabilities be expanded and improved to reduce risk?		

J.6.4. Mitigation Outreach and Partnerships

Table J-10 identifies education and outreach programs and methods already in place that could be/or are used to implement mitigation activities and communicate hazard-related information. More information can be found below the table.

Table J-10 Nevada Irrigation District's Mitigation Education, Outreach, and Partnerships

Program/Organization	Yes/No	Describe program/organization and how relates to disaster resilience and mitigation. Could the program/organization help implement future mitigation activities?
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Yes	The District works with Multiple NGO's that focus on watershed protection such as: SYRCL, Bear Yuba Land Trust and others that could help spread the word during emergency
Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Yes	The District has a dedicated Water Efficiency Staff to help spread the water conservation message
Natural disaster or safety related school programs	N/A	
StormReady certification	N/A	The District has a storm water action plan in place that is implemented during forecasted heavy storms
Firewise Communities certification	N/A	
Public-private partnership initiatives addressing disaster-related issues	N/A	
Other		
How can these capabilities be expanded and improved to reduce risk?		

Cosumnes, American, Bear, and Yuba (CABY) Integrated Regional Water Management Plan is identified by the District as examples of successful partnering with other agencies.

J.6.5. Other Mitigation Efforts

The District is involved in a variety of mitigation activities including several projects, which include:

- NID Regional Water Supply Project
- Cole Siphon Replacement Project
- Rock Creek Bypass Encasement Project
- Lincoln Canal Encasement Project
- North Auburn Highway 49 Transmission Project
- North Auburn Treatment Plant Capacity Expansion
- Woodrose Way Pipeline Replacement Project
- Combie Phase 1 Replacement Project

In addition, acutely hazardous chlorine gas has been removed at all the Districts Water Treatment Plants. The District has switched to bleach to lessen the hazard level to the neighboring residences.

Development of interties between NID & PCWA to allow for multi-agency coordination and backup water supply. PCWA and the District have two interties and are working on developing two more. Additionally, the District is working with PG&E on the development of a supply water intertie that would benefit all agencies.

J.7 Mitigation Strategy

J.7.1. Mitigation Goals and Objectives

The District adopts the hazard mitigation goals and objectives developed by the HMPC and described in Chapter 5 Mitigation Strategy.

J.7.2. Mitigation Actions

The planning team for the District identified and prioritized the following mitigation action based on the risk assessment. Background information and information on how each action will be implemented and administered, such as ideas for implementation, responsible office, partners, potential funding, estimated cost, and schedule are included.

Action 1. Combie Phase 1 Replacement

Hazard Addressed: Water Supply Reliability, Flood Control, Earthquake Vulnerability

Issue/Background Statement: A majority of the water that supplies Placer County properties within the Nevada Irrigation District flow the Combie Phase 1 Canal. The Canal has reached its life expectancy and is experiencing leakage and structural issues. The concrete flume sections are separating and the general condition of the concrete is failing. The District is the beginning stages of design for the replacement of the open canal with a pipe. This project includes the replacement of the elevated siphon crossing the Bear River. This facility has had experienced failures in the recent past that caused flood damage and extended water outages for the northern portions of Placer County.

Other Alternatives: No other financially feasible option exists.

Existing Planning Mechanisms through which Action Will be Implemented: The District has been planning and preparing for the replacement of this facility for multiple years. CEQA is done and preliminary design is currently underway.

Responsible Office: Nevada Irrigation District/PCWA/PG&E

Priority (H, M, L): High

Cost Estimate: Approximately $18 million.

Benefits (Losses Avoided): Associated property damage and loss of water supply to the entire Placer County region.

Potential Funding: Unknown

Schedule: Next three to five years

Action 2. Centennial Water Storage and Power Supply Project

Hazards Addressed: Water Supply Reliability, Flood Control Protection, Power Outages

Issue/Background: The Nevada Irrigation District is embarking on a regional water storage and supply reliability project known as Centennial Reservoir and Power Supply Project. The proposed project includes a water storage reservoir between Rollins and Combie Lakes. The project is necessary to bolster water supply for the surrounding regions to help combat prolong drought, future demand needs. The project will also provide local green power generation and environmental benefits.

Other Alternatives: Conservation, and water use restrictions

Existing Planning Mechanism(s) through which Action Will Be Implemented: The District has just begun studying this proposed project. Currently feasibility and environmental studies are under way.

Responsible Office/Partners: Nevada Irrigation District

Project Priority: High priority as the District plans for water supply for the future.

Cost Estimate: 200 Million Dollars

Benefits (Losses Avoided): Regional water supply reliability including protection from long term drought and climate change, clean renewable power generation, and environmental benefits are a small sample of some of the highlights this project will bring forward.

Potential Funding: Still being researched, District Funding, Grants

Timeline: 8-10 years

Action 3. Water Service Auburn Valley CSD

Hazards Addressed: Water Supply Reliability

Issue/Background: The Auburn Valley CSD is a small subdivision on the north end of Placer County. The water supplied to the subdivision is accomplished through a number of ground water wells. Current drought conditions have exposed some well yield issues that have affected the available water supply to the area.

The District has the potential to supply the subdivision with treated surface water from either its North Auburn or Lake of the Pines water systems. Both connection points would take a substantial amount of infrastructure in pipelines to connect. Regardless, should the Auburn Valley CSD's wells go dry, an alternative water supply will be needed in short order.

Other Alternatives: Auburn Valley could drill more wells or purchase surface water from NID and treat onsite

Existing Planning Mechanism(s) through which Action Will Be Implemented: Auburn Valley is not within NID's service boundary; however efforts to include them are already underway. Once inside, the District would have the opportunity to provide water, be it treated or raw. The project would be handled by the Nevada Irrigation Districts Engineering Department.

Responsible Office/Partners: Nevada Irrigation District / Auburn Valley CSD

Project Priority: Currently medium priority as the District works to include the area within its boundaries.

Cost Estimate: $1.2 Million to connect to the Districts treated water system.

Benefits (Losses Avoided): Reliable water supply to a vulnerable system. This would alleviate a potential public health and safety issue should the CSD run out of water.

Potential Funding: Grants, Private Funding

Timeline: 3 to 5 years

Action 4. NID Headquarters Office Generator

Hazards Addressed: Long term power outages and emergency operations

Issue/Background: The headquarters office of the District located at 1036 West Main St, Grass Valley, is the main communications hub for day to day operations and acts as the Districts EOC durring Emergency events. Emergency backup power is needed to keep all District operations running during an extended power outage.

Other Alternatives: Rental of a power generator, however this would not be timely enough during an emergency event.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Project will oversight will be provided by the District's Engineering and Electrical Departments.

Responsible Office/Partners: Nevada Irrigation District

Project Priority: High priority

Cost Estimate: $250,000

Benefits (Losses Avoided): Backup generator power will allow the District to continue functioning in the event of an extended power outage. This will allow for the continued operation of the Districts emergency command center during a power outage.

Potential Funding: District Funding, Grants,

Timeline: 2 to 5 years

Action 5. Orr Creek Diversion

Hazards Addressed: Water Supply Reliability, Flood Control

Issue/Background: The Districts Orr Creek Diversion Structure was built in the early 1900's and has gone through a number of modifications and additions. The older portion of the structure is leaking and is in need of replacement. The proposed project would strengthen the diversion dam to guard against failure, repair leakage under the dam, and provide a discharge valve to allow for flow control below the dam. This facility is the lifeline to hundreds of acres of irrigated lands in Placer County.

Other Alternatives: Leave the facility as is or move the diversion to a different location.

Existing Planning Mechanism(s) through which Action Will Be Implemented: The District has included the Orr Creek Diversion in its capital improvement plan. The project will move toward analysis and design when funds become available.

Responsible Office/Partners: Nevada Irrigation District Engineering Department

Project Priority: Medium priority. Project will progress as funding becomes available

Cost Estimate:

Benefits (Losses Avoided): The retrofit of the facility would provide the structural integrity to minimize potential dam failure. The project will provide water supply reliability to the many customers whom receive water from this diversion structure. The installation of a outlet valve will allow the District to better control the waters that flow past the facility particularly during heavy precipitation events.

Potential Funding: District Funding, Grants

Timeline: 3 to 5 years

Action 6. Reservoir Cleaning

Hazards Addressed: Water Supply Reliability, Flood Control

Issue/Background: Small reservoirs located within the canal system are filling with sediment from continued years of use. Adequate reservoir storage is very beneficial during storms and heavy rain. As the reservoir accumulates sediment, water storage is reduced and the ability to regulate water efficiency is diminished. Reduced reservoir storage can result in upstream canal overtopping and property damage. Nevada Irrigation District has initiated a small reservoir cleaning program to alleviate this problem.

Other Alternatives:

Existing Planning Mechanism(s) through which Action Will Be Implemented: The Nevada Irrigation Districts Engineering and Maintenance Departments provide oversite on these projects

Responsible Office/Partners: Nevada Irrigation District

Project Priority: Medium

Cost Estimate: Approximately $20,000 per reservoir

Benefits (Losses Avoided): Water Quality, Water storage and prevention of property damage

Potential Funding: District Funding, Grants,

Timeline: 3 to 5 years

Action 7. Canal Culvert Replacement Program

Hazards Addressed: Water Supply Reliability, Flood Control

Issue/Background: Canal Crossings are facilitated with numerous culverts throughout the Placer County area. These culverts are often undersized, aged, and failing. During heavy rain events these culverts backup water causing flooding and overtopping of the canal upstream of the culvert. Overtopping often results in erosion of the canal berm and presents possible property damage. Nevada Irrigation District is currently engaged in a culvert replacement project aimed at resolving these issues.

Other Alternatives:

Existing Planning Mechanism(s) through which Action Will Be Implemented: The Nevada Irrigation Districts Engineering and Encroachment Departments provide oversite on these projects

Responsible Office/Partners: Nevada Irrigation District and associated property owners

Project Priority: Medium

Cost Estimate: Costs vary for each culvert replacement; however, the estimated cost to replace the average large culvert is about $12,000.

Benefits (Losses Avoided): Life, Safety, and the reduction of property loss

Potential Funding: District Funding, Grants,

Timeline: 3 to 5 years