

Chapter 6: Humboldt Bay Municipal Water District Annex

6.1 Hazard Mitigation Plan Point of Contact

Primary Point of Contact

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6.2 Jurisdiction Profile

The Humboldt Bay Municipal Water District was formed on March 19, 1956 pursuant to the California Municipal Water District Act. It is a special district created to develop a regional water system to provide a reliable supply of drinking and industrial water to customers in the greater Humboldt Bay area of Humboldt and Trinity Counties. The source of water supply is the Ruth Lake Reservoir located in Trinity County. The reservoir was created by construction of the R.W. Mathews Dam. The District has 25 employees—6 at the Eureka office, 19 at the operations center near Essex, and 1 at the District’s Ruth Lake facilities. Operations are primarily funded by charging costs incurred to its customers for water delivered.

The HBMWD Business Manager participated in both the counties’ planning meetings for their respective Mitigation Plans. Documentation of meeting schedules, sign-in sheets and public participation can be found in their corresponding sections. The District’s governing body is its Board of Directors which has adoptive powers whom will assume the responsibility for the adoption, implementation, monitoring, and evaluating of this mitigation plan annex.

The Humboldt Bay Municipal Water District (HBMWD) is principally located and operated in Humboldt County, along with the majority of its facilities and infrastructure. However, two major components of HBMWD’s operations—the R.W. Mathews Dam and the Gosselin Hydro-electric Power House—are located in Trinity County. Only the facilities and infrastructure located in Trinity County are addressed in this annex, while the facilities and infrastructure located in Humboldt County are addressed in the Humboldt Operational Area Hazard Mitigation Plan, 2013, of which the HBMWD is also a participant.

The District has two separate and distinct pipeline systems – one delivers treated drinking water and the other untreated raw water. The District supplies treated drinking water on a wholesale basis to the following 7 municipal agencies located in Humboldt County: the cities of: Arcata, Eureka and Blue Lake; and the community services districts of: Fieldbrook-Glendale, Humboldt, Manila and McKinleyville. Via this wholesale relationship, the District serves water to a population of approximately 80,000. The District also directly serves treated drinking water to approximately 200 retail customers. The District supplies untreated, raw water on a wholesale basis to industrial customers located on the Samoa Peninsula for industrial purposes. Revenue generated from fees for service fund the District operations.

Currently, the District does not serve any industrial customers. However, we are working diligently to market this resource.

The District's service area is the greater Humboldt Bay area, including the community of McKinleyville to the north, College of the Redwoods to the south, and the City of Blue Lake to the east.

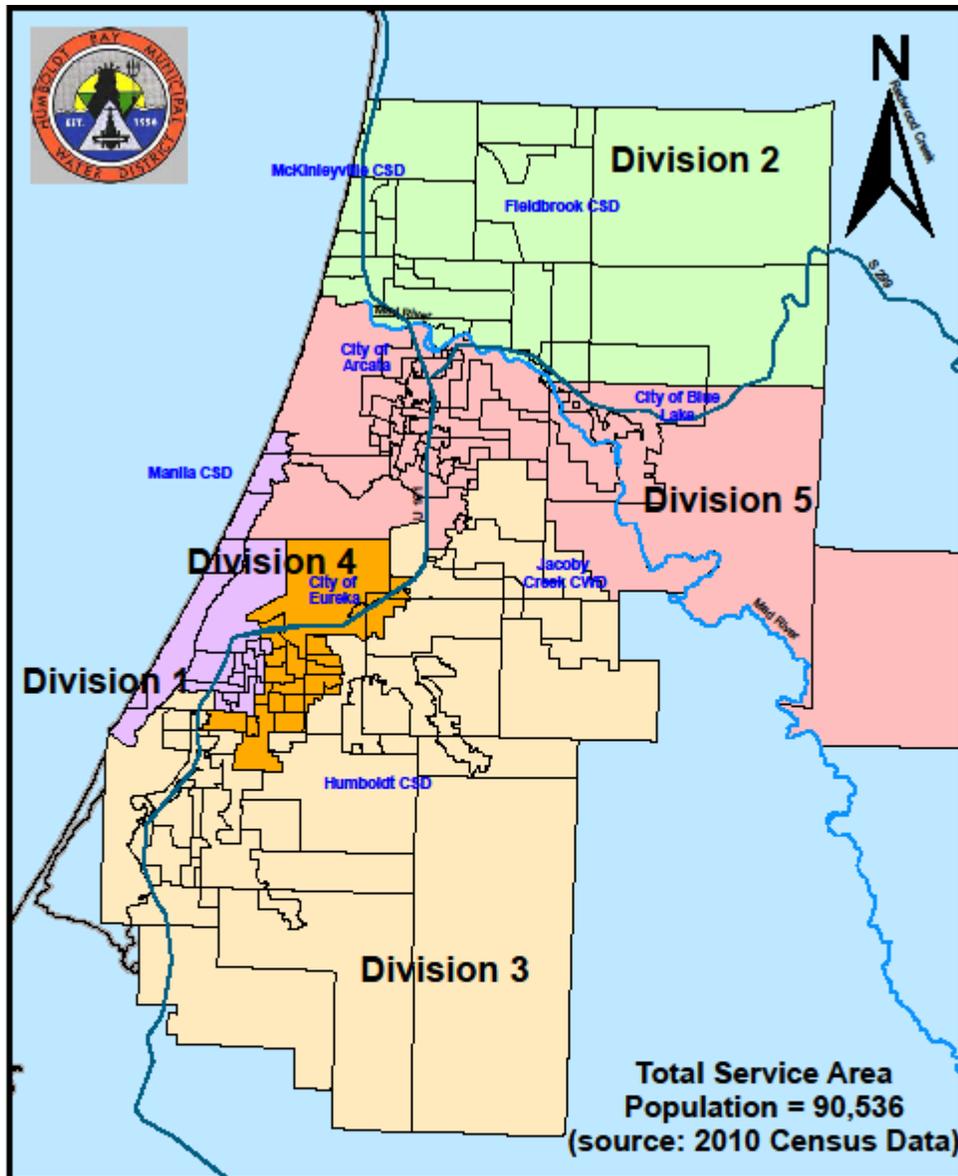
The following is a summary of key information about the jurisdiction:

Population Served— Approximately 80,000 (via seven wholesale municipal customers and 200 retail customers) in Humboldt county, according to 2010 US Census data.

- **Land Area Served**— 225,000 acres, or 350 square miles
- **Value of Area Served**— The estimated value of the total area served by the jurisdiction is \$7,111,057,968 (Tax Year 2012).
- **Land Area Owned**— Approximately 2,600 acres
- **List of Critical Infrastructure/Equipment Owned by the Jurisdiction located in Trinity County:**
 - R.W. Mathews Dam/Ruth Reservoir [\$100,000,000]
 - Gosselin Hydro-Electric Power House [\$25,000,000]
- **Total Value of Critical Infrastructure/Equipment**— The total value of critical infrastructure and equipment located in Trinity County that is owned by the jurisdiction is \$125,000,000 (scheduled value for insured items only). It would cost hundreds of millions of dollars to replace critical infrastructure.
- **List of Critical Facilities Owned by the Jurisdiction located in Trinity County:**
 - R.W. Mathews Dam (Trinity County) [\$100,000,000]
 - Ruth Headquarters Building (Trinity County) [\$210,000]
- **Total Value of Critical Facilities**—The total value of critical facilities located in Trinity County that is owned by the jurisdiction is \$100,210,000 (scheduled value for insured items only)
- **Current and Anticipated Service Trends**— Meter service growth.

The jurisdiction's division boundaries in Humboldt County are shown on Figure 6.1 (HBMWD Division Boundary Map) and the jurisdiction's property boundaries surrounding Ruth Lake in Trinity County are shown on Figure 6.2 (HBMWD Ruth Lake Property Boundaries).

Figure 6.1 HBMWD Division Boundary Map



HBMWD Divisions Map

Legend

Divisions

- Division 1
- Division 2
- Division 3
- Division 4
- Division 5



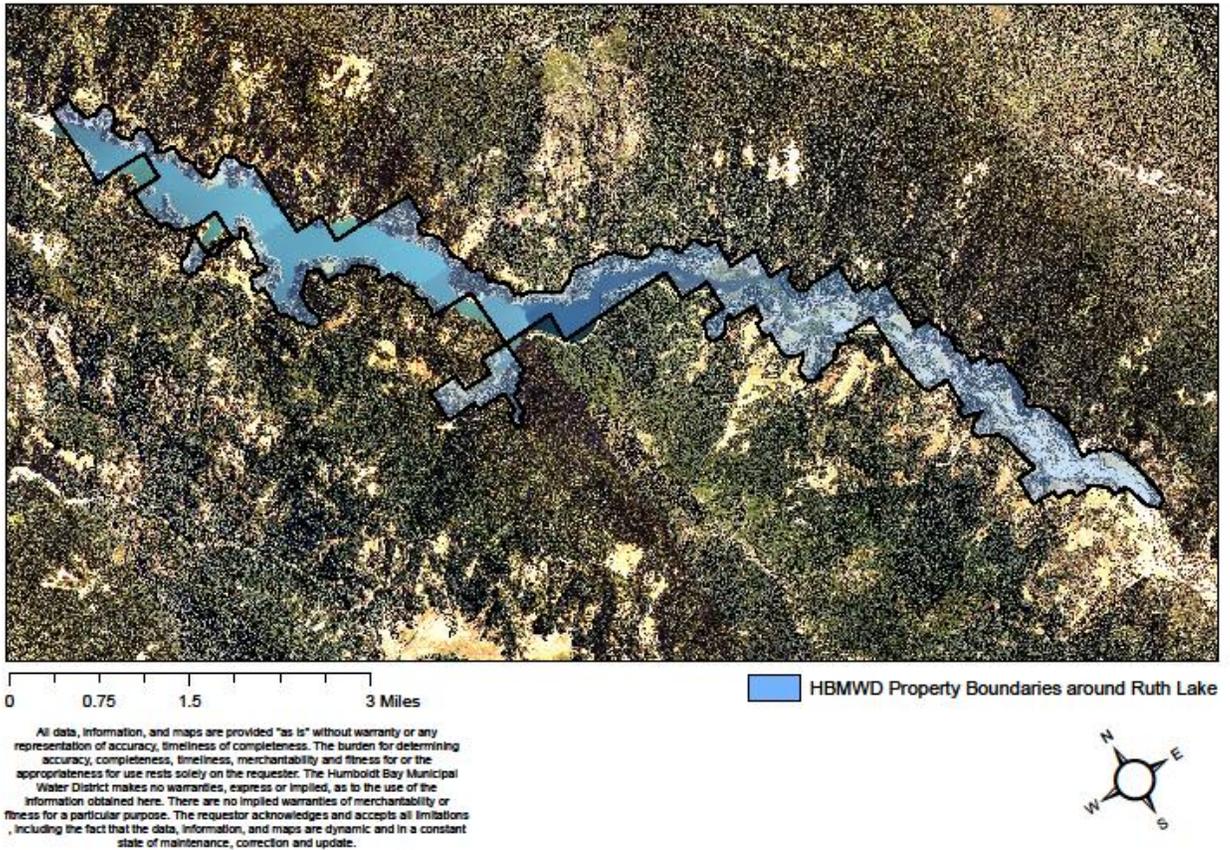
1 inch = 15,113 feet

Division areas are made up from contiguous election precincts. Any questions about specific residential locations within / without a Division Boundary should be directed to the Humboldt County Elections Department: 3033 H Street, Room 20, Eureka, 707-445-7481.

Date Approved: May 1, 2013

Figure 6.2 HBMWD Property Boundary Surrounding Ruth Lake

HBMWD Property Boundaries around Ruth Lake



6.3 Jurisdiction-Specific Natural Hazard Event History

Although hazards have occurred throughout Humboldt and Trinity Counties, Table 6-1 lists all past occurrences of natural hazards within the District's jurisdiction only. Data on past natural hazard events was gathered from the following sources:

Hazards & Vulnerability Research Institute (2013). The Spatial Hazard Events and Losses Database for the United States (SHELDUS™), Version 12.0 [Online Database]. Compilation of county-level hazard data for 18 different natural hazards (information on past hazard events). Columbia, SC: University of South Carolina. Available from <http://www.sheldus.org>.

| DISASTER DECLARATION HISTORY FROM FEMA. AVAILABLE FROM HTTPS://WWW.FEMA.GOV/DISASTERS . | | | |
|--|---------------------------------|------------|-------------------------------|
| TABLE 6-1. NATURAL HAZARD EVENTS | | | |
| Type of Event | FEMA Disaster # (if applicable) | Date | Preliminary Damage Assessment |
| Flood | DR-183 | 12/24/1964 | Significant-amount unknown |
| Drought | Emergency declaration #3023 | 1977 | Minimal (short duration) |
| Earthquake | N/A | Dec 1994 | \$7,000 |
| Winter storms, flooding, landslides, mud flows | DR-1044 | 1/9/1995 | \$22,500 |
| Severe winter storms, flooding | DR-1046 | 3/12/1995 | \$97,000 |
| Severe Weather | N/A | 12/12/1995 | \$115,000 |
| Severe winter storms, flooding | DR-1155 | 1/4/1997 | \$204,500 |
| Severe winter storms, flooding | DR-1203 | 2/9/1998 | \$59,000 |
| Flooding, severe winter storms, and landslides | M#1628 | 02/03/2006 | \$84,000 |

6.4 Hazard Risk Ranking

The hazards and their rankings contained in both mitigation plans for Humboldt and Trinity Counties reflect the impacts they have in their overall planning areas. Table 6-2 presents the ranking of the hazards of concern within the jurisdiction of the HBMWD. The Risk Rating Scores are based on the probability of occurrence and the potential impact on HBMWD's constituency, vital facilities, and the facilities' functionality after an event (this includes the impact of hazards on all of HBMWD's facilities and constituents, including those in Humboldt County). Refer to the footnotes in Table 6.2 for more detailed information addressing calculation methods.

Although Table 6.2 shows Earthquakes as the number one hazard and Dam Failure as number 3, for HBMWD assets at risk located in Trinity County alone, Dam Failure presents the greatest risk for HBMWD, followed by Earthquake, which could potentially trigger a dam failure. The extent of major impacts of a failure at Matthews Dam in Trinity County would likely include: the inundation (Flood Hazard) of Lower Mad River Road from the location of the dam to where this road intersects State Highway 36, approximately 7-8 miles downstream; with minor impacts within the remaining four miles to the Humboldt/Trinity County line. The small community of Mad River is also located near the intersection of Highway 36 and Lower Mad River Road. It would take an estimated 40-45 minutes for the initial leading wave to reach the Highway 36 intersection. Immediate notification and evacuation of people within the predicted inundation zone would be of critical importance, given this short timeframe.

For this reason, and for purposes of this annex, only Dam Failure and Earthquakes are considered of high priority and addressed in the HBMWD’s mitigation strategy section.

| TABLE 6-2. HAZARD RISK RANKING | | |
|-----------------------------------|-------------------------------|--|
| Rank | Hazard Type | Risk Rating Score (Probability x Impact) |
| 1 | Earthquake | 48 |
| 2 | Flood | 30 |
| 3 | Dam Failure | 24 |
| 4 | Severe Weather | 22 |
| 5 | Landslide | 12 |
| 6 | Wild Fire | 6 |
| 7 | Drought | 6 |
| 8 | Loss of Communications | 0 |
| 9 | Hazardous Materials | 0 |
| 10 | Widespread Infectious Disease | 0 |

The Risk Rating Scores for each Natural Hazard were generated by multiplying a value representing the Probability of Occurrence by a value representing the Impact of the Hazard.

The **Probability of Occurrence** value was determined by estimating the frequency that a hazard event is likely to occur and assigning it a value (e.g.: hazard event likely to occur within 25 years = High = value of 3; hazard event likely to occur within 100 years = Medium = value of 2; hazard event not likely to occur within 100 years = Low = value of 1). That value was multiplied by 1 to get the weighted value for the Hazard Probability.

The **Impact of the Hazard** value is a sum of three weighted values representing the Hazard’s Impact on (1) people, (2) property, and (3) District operations. The value for the Impact on People was based on the percentage of the population served by the District that would be exposed to the hazard (30% or more of population exposed = High = 3; 15 – 29% of population exposed = Medium = 2; 14% or less of population exposed = Low = 1), then that number was multiplied by 3 to get the weighted value of the Hazard Impact on People. The value for the Impact on Property was based on the percentage of the assessed property value (AV) of District facilities, equipment and infrastructure that are exposed to the hazard, compared to the total assessed value (AV) of the District’s assets (50% or more of total AV exposed to hazard = High = 3; 25 – 49% of AV exposed to hazard = Medium = 2; 24% or less of total AV exposed to hazard = Low = 1), then that number was multiplied by 2 to get the weighted value of the Hazard Impact on Property. The value of the Impact on District Operations was based on the estimated functional downtime of District facilities (how long it would take to be 100% operable) exposed to the hazard (365 days or more = High = 3; 180 – 364 days = Medium = 2; less than 180 days = Low = 1), then that number was multiplied by 1 to get the weighted value of the Hazard Impact on District Operations.

6.5 Applicable Regulations and Plans

Humboldt Bay Municipal Water District is a Special District under the California constitution. As such, it does not promulgate laws and regulations relating to hazard mitigation. Existing codes, ordinances, policies or plans concerning Dam Regulation standards are promulgated by the following agencies:

- California Department of Dam Safety
- Federal Energy Regulatory Commission

Both the California DSOD and Federal FERC promulgate and implement dam safety laws and regulations. HBMWD complies with these programs and regulations thereby reducing the risk of operating the R. W. Matthews dam.

6.6 Hazard Mitigation Action Plan and Evaluation of Recommended Initiatives

The HBMWD District goals for hazard mitigation within Trinity County are consistent with the Trinity County goals listed in Chapter 4. They are listed below. Table 6-3 lists the all initiatives that make up the jurisdiction's hazard mitigation strategies within Trinity County. Table 6-4 identifies the priority process for each initiative.

Trinity County Hazard Mitigation Goals and Objectives:

Goal 1: Significantly reduce injuries and loss of life.

Goal 1 Objectives:

- 1.1 Strengthen early notification and warning systems.*
- 1.2 Strengthen communications systems and address gaps.*
- 1.3 Ensure there are safe places for people to stay and/or necessary supplies during an event.*
- 1.4 Revise land development regulations, if needed.*
- 1.5 Advance community resilience through preparation, adoption, and implementation of state, regional, and local hazard mitigation plans and projects.*

Goal 2: Minimize damage to structures and property, as well as disruption of essential services and human activities.

Goal 2 Objectives:

- 2.1 Implement projects to protect critical and necessary assets in hazard risk areas.*
- 2.2 Establish and maintain partnerships among all levels of government, private sector, and non-profit organizations that improve and implement methods to protect life and property.*
- 2.3 Protect essential infrastructure.*

Goal 3: Protect the environment.

Goal 3 Objectives:

- 3.1 Encourage hazard mitigation measures that promote and enhance natural processes and minimize adverse impacts on the ecosystem.*
- 3.2 Implement wildfire mitigation and watershed protection strategies as identified in the Community Wildfire Protection Plan (CWPP).*

Goal 4: Promote hazard mitigation as an integrated public policy and as a standard business practice.

Goal 4 Objectives:

- 4.1 Continually build linkages among hazard mitigation, disaster preparedness and recovery programs.*
- 4.2 Use mandatory local general plan, zoning and subdivision requirements to help establish resilient and sustainable communities.*
- 4.3 Promote and enhance outreach and education efforts by all agencies with hazard*

mitigation plans and programs to encourage engagement of stakeholder groups.
 4.4 Coordinate efforts to consider climate change impacts in planning decisions.

| TABLE 6-3. HAZARD MITIGATION ACTION PLAN MATRIX | | | | | |
|---|-------------------------|--|-------------------|-------------------------------------|---------------|
| Applies to new or existing assets | Hazards Mitigated | Lead Agency | Estimated Cost | Sources of Funding | Timeline |
| HBMWD-1 Stabilize surficial slide below the left abutment of the dam | | | | | |
| New | Dam Failure | HBMWD | \$1.5 M | FEMA HMGP and local agency funds | 5 to 10 years |
| Initiative-2 Replace Log boom at R.W. Mathews Dam (Ruth Reservoir) to improve dam safety | | | | | |
| Existing (Humboldt County Update) | Dam Failure | HBMWD | \$115,000 | District Funds | 1 to 5 years |
| Initiative-3 Develop Dam Contingency Failure Plan & Implement recommended action re: notification & evacuation systems | | | | | |
| New | Dam Failure | HBMWD / Trinity County / Humboldt County | \$100,000 | FEMA HMGP and local agency funds | 5 to 10 years |
| Initiative- 4 Retrofit or replace spillway wall at R.W. Matthews Dam | | | | | |
| Existing (Humboldt County Update) | Dam Failure, Earthquake | HBMWD | \$ 2 M | FEMA HMGP or District Funds | 5 to 10 years |
| Initiative – 5 Revetment of creek at Sheriff’s Cove to access dam and log boom from water. | | | | | |
| New | Dam Failure | HBMWD | \$500,000 | FEMA HMGP and District funds | 5 to 10 years |

**TABLE 6-4.
MITIGATION STRATEGY PRIORITY SCHEDULE**

| Initiative # | Benefits | Costs | Do Benefits Equal or Exceed Costs? | Is Project Grant-Eligible? | Can Project Be Funded Under Existing Programs/ Budgets? | Priority ^a |
|--------------|----------|-------|------------------------------------|----------------------------|---|-----------------------|
| 1 | M | H | Y | Y | N | H |
| 2 | H | H | Y | Y | Y | H |
| 3 | M | M | Y | N | N | M |
| 4 | H | H | Y | Y | N | H |
| 5 | H | H | Y | Y | N | H |

a. Explanation of priorities

- High Priority: Project meets multiple plan objectives, benefits exceed cost, funding is secured under existing programs, or is grant eligible, and project can be completed in 1 to 5 years (i.e., short term project) once funded.
- Medium Priority: Project meets at least 1 plan objective, benefits exceed costs, requires special funding authorization under existing programs, grant eligibility is questionable, and project can be completed in 1 to 5 years once funded.
- Low Priority: Project will mitigate the risk of a hazard, benefits exceed costs, funding has not been secured, project is not grant eligible, and time line for completion is long term (5 to 10 years).

6.7 Resolution of Adoption