

EARTHQUAKE, FLOOD, TSUNAMI; IS HUMBOLDT COUNTY READY?

SUMMARY

It is a virtual certainty that Humboldt County will experience a significant natural disaster in the future. Humboldt County has been the scene of significant floods, earthquakes and tsunamis in the ancient past as well as in recent memory. In 1964, a devastating flood left the area isolated from the rest of the state causing major catastrophic damage and loss of life. Humboldt County is also particularly susceptible to earthquakes. Located on the southern end of the Cascadia subduction zone which stretches from Cape Mendocino north to Canada, Humboldt County experiences large earthquakes that can cause significant damage. Large earthquakes, such as a magnitude (M) 9, occur on average every 200 to 800 years. It has been 300 years since the last M 9 event occurred along the North Coast of California although lesser magnitude earthquakes have occurred more frequently also causing major damage. With earthquakes come the collateral threats of tsunamis.

The Humboldt County Civil Grand Jury (HCCGJ) found the overall condition of the Sheriff's Office of Emergency Services (OES) in need of upgrades to better plan for the emergencies to come. The HCCGJ was pleased to find that the personnel involved in planning for emergencies are well-trained and highly qualified. In May of 2016, personnel from various departments within the County attended Federal Emergency Management Agency (FEMA) training in Maryland specifically designed for a significant event in our County. The OES facilities that presently exist are outdated and not sufficient to meet the needs of training for a future disaster. The most recent training in Humboldt County had to take place in Fortuna because it had an available location large enough to accommodate the staffing requirements.

The current Office of Emergency Services is located in the basement of the County Courthouse/Sheriff's facility. Built in the 1950's, it was designed with a cold war mindset and is not Americans with Disabilities Act (ADA) compliant. It is a small "bomb shelter"

type facility that has a capacity for significantly fewer people than needed. It was never intended for use as an emergency center. Modern technology is a key component of a successful Emergency Operations Center (EOC). Because the building was built in the 1950s, such things as Wi-Fi access and cell phone access were not imagined back then. It is also not equipped with a satellite phone, equipment that would be invaluable if communication lines are lost. The generator backup system at the courthouse building is not sufficient to power all areas that might be needed in an emergency, supplying power to only part of the building. Although the current basement location is said to be out of the tsunami hazard zone, its subterranean location, so near to the harbor, seems suspect. In order to prepare for the real threat of a natural disaster, the Sheriff's Office of Emergency Services should move the Emergency Operations Center into a larger, more functional facility that can accommodate the projected needs of a major disaster.

The HCCGJ found that dispatching and communicating the emergency needs in Humboldt County are split between various agencies that serve the County. There are five different dispatch centers in the County, all providing similar services. Several of the dispatch centers do not use compatible software or follow the same procedures. It is difficult to hire and retain qualified emergency response dispatchers, and all agencies report a heavy reliance on overtime to staff the needed positions. Dispatchers are not cross-trained between agencies and are not able to fill those gaps in scheduling between agencies. Other counties of similar size to Humboldt have consolidated their dispatch centers to provide greater service at a cost savings. Shasta County currently has a consolidated dispatch center (SHASCOM).

The HCCGJ found no formal study done on the possible consolidation of dispatch services. A feasibility study to investigate the formation of a Joint Powers Authority (JPA), consolidating the Emergency Response Dispatch Centers for Humboldt County, would be worthwhile. Using research consultants with no connections to any County stakeholder agencies could guarantee a non-prejudicial and impartial evaluation. It would be valuable to combine recommendations for a much-needed, larger OES during this feasibility study.

GLOSSARY

CAD: Computer aided dispatch

EOC: Emergency Operations Center

OES: Office of Emergency Services

Richter Scale: A scale, ranging 1 to 10, for indicating the intensity of an earthquake

RMS: Radio management system

Stakeholders: Parties with a direct interest in a given matter

Tectonic: Of or relating to the structure of the earth's crust and the large-scale processes that take place within it

Tsunami: A series of waves or surges that is most often caused by earthquake fault movement beneath the seafloor

BACKGROUND

Disasters Happen: There is a reason that our County is filled with so much natural beauty. The area's coastal mountains are a direct result of the movement of tectonic plates relating to the Cascadia subduction zone. If it were not for the uplifting of the land, the coastal area would have long ago succumbed to the relentless pounding of the sea.

The Cascadia subduction zone is a 700-mile long fault stretching from Cape Mendocino to Vancouver Island in Canada. The zone includes three tectonic plates. The Gorda and Juan De Fuca plates dive beneath the North American plate creating the Coastal Ranges, the Trinity Alps, the Modoc Plateau, and the Cascade Volcanoes.

Anyone born before 1950 and living on the North Coast can attest to the insecurities that come with being in an isolated rural population center like Humboldt County during inevitable weather or geologic events. Some will recall the December 1954 earthquake that destroyed the Eureka City Hall and Humboldt County Courthouse. Both buildings required demolition. In 1955, December floods destroyed the community of Klamath, wiping out areas like Weott and removing bridge after bridge to the north, east, and south necessitating the activation of the National Guard. During the winter of 1964, floods ravaged the North Coast and Humboldt County was literally cut off from the rest of the

world, except by air or by ferries crossing rivers carrying the necessities to sustain our communities.

The tsunami resulting from an earthquake in the spring of 1964 did enormous damage to Crescent City in Del Norte County. Since then, tsunami scares have been frequent along the United States western coastline. The 1906 earthquake destroyed San Francisco, and it did major damage here, especially in Ferndale. In 1992, Ferndale again was heavily damaged by another earthquake.



1964 Flood, Klamath River Bridge

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3 Ferndale 1906



2 Ferndale 1992

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4 **The state of emergency dispatch centers throughout the County:** The Sheriff's Office
5 operates a dispatch center located in the County Courthouse. Arcata, Eureka, and Fortuna
6 City Police departments have their own dispatch operations. Humboldt State University
7 (HSU), California Highway Patrol and Cal Fire also have dispatch centers. Having this
8 many centers might give one a sense of confidence, but the reality is that these dispatch
9 centers are struggling to maintain adequate staff and operate inexpensively. This is partly
10 due to overtime paid to spread the inadequate staff over 24-hour operations and operate
11 incompatible communication systems. During the 2015-2016 HCCGJ facility tours, the
12 complaints are universal: costs are high, employee retention is a challenge, and a
13 resulting turnover rate means difficulties in training new recruits.

14

15 In the Arcata Police Department, valuable office space is being carved up to create
16 restroom facilities specifically designed to accommodate the sometimes lone dispatcher
17 who cannot be relieved by backup staff. The existing restrooms were a significant
18 distance from any dispatch workstation. Cost of this remodeling is nearly \$155,000.

19

20 Emergency and dispatch centralization for the Cities of Rio Dell and Ferndale exist today
21 as those cities rely on Fortuna as their emergency dispatch center. Rural communities like
22 Orick, Willow Creek, Blue Lake, Trinidad, Garberville and others already rely on the
23 County Sheriff's dispatch center in Eureka for emergency response.

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1 METHODOLOGY

2 The Humboldt County Civil Grand Jury:

- 3 • Visited dispatch centers at the Arcata Police Department, the Eureka Police
- 4 Department, the Fortuna Police Department and the Humboldt County Sheriff's
- 5 Office
- 6 • Toured the Humboldt Office of Emergency Services
- 7 • Conducted interviews with various Law Enforcement officials
- 8 • Researched local history
- 9 • Researched various academic sources for information relating to the practices of
- 10 similar-sized counties

11



12

13 The 101 Freeway south of Eureka collapsed November 1980 in a 7.2 magnitude quake

14

15 DISCUSSION

16 **Earthquakes:** To say we live on “shaky ground” is putting it mildly. Thinking Humboldt
17 County is fully-prepared for the next unknown seismic or weather related-event would be
18 hopeful at best. The likelihood of a catastrophic earthquake occurring is virtually 100%.
19 All areas of Northern California have experienced earthquakes in the past and will again
20 in the future. The Cascadia subduction zone is believed by experts to be capable of
21 producing a magnitude 9 earthquake. The last quake of that magnitude occurred in the
22 area on January 26th, 1700. There is evidence that within the past 7000 years there have

1 been at least 13 great Cascadia quakes occurring irregularly, 200-800 years apart. Smaller
2 quakes, however, do significant damage to our infrastructure.



3 **Tsunamis:** Tsunamis are a direct result of ocean-floor
4 quakes. They can also be caused by significant
5 landslides. There have been 38 tsunamis in Northern
6 California since 1933. Five of them caused significant
7 damage. The most damage was caused by the 1964
8 Alaska earthquake. The tsunami generated from the
9 earthquake flooded 29 blocks of Crescent City's
10 waterfront, damaged harbors and port facilities as far
11 south as Santa Cruz, and was responsible for 12 deaths
12 in California. Humboldt County is especially vulnerable
13 to tsunami damage. Currently, the Tsunami Hazard

14 Zone runs along most of the populated areas of Humboldt County (see Appendix 1).

15

16 **Floods:** In December 1964, the North Coast experienced a "Thousand Year Flood" that
17 devastated and isolated residents almost exactly nine years after similar flooding in 1955.
18 Produced by the perfect storm of massive snowfall and warm rains, the flooding of vast
19 areas of the County took only hours. A considerable period of steady rains in November
20 led to saturated grounds. Rivers could hold no more. Even though such massive flooding
21 is rare, lesser, but still serious events are to be expected. Twenty-nine people lost their
22 lives in this flood. Cities and towns were cut off from normal highway and rail traffic for
23 weeks, and millions of dollars of infrastructure were destroyed.

24

25 **The State of the Humboldt County Office of Emergency Services:** The simple fact is,
26 government agencies cannot protect us from an earthquake, tsunami, flood or other
27 catastrophic natural event. How Humboldt County prepares for these disasters could have
28 a significant impact on our survival and recovery. Preparedness for the County of
29 Humboldt falls to the Sheriff's Office that staffs a division known as the Office of
30 Emergency Services. There are two full-time personnel assigned to that division. The
31 current Humboldt County Courthouse, which replaced the one destroyed in the

1 earthquake of 1954, houses the Office of Emergency Services (OES). Given the climate
2 of the 'Cold War' in the 1950s, the current OES facility was designed and built as a bomb
3 shelter and was not originally intended to be an OES. It does not conform to ADA
4 requirements. While equipped with generally modern equipment, the County OES does
5 not currently have a satellite phone to use in case all other telephone communications are
6 lost. There is a volunteer amateur radio station in the facility that can provide emergency
7 communication in the event all other methods have been affected. Emergency generators
8 for the Jail/Courthouse complex do not power all areas of the building. Without power
9 available throughout the building, this negatively impacts use of space during an
10 emergency.

11
12 The OES is located below street level on the 4th Street side of the current courthouse,
13 considered out of the tsunami zone. Given the facility's close proximity to Humboldt Bay,
14 common logic implies otherwise. This present location is so small that in order to train
15 staff for a genuine emergency, the staff must currently train at a fire facility in Fortuna. In
16 an actual emergency, the facility where training is conducted is the facility that should be
17 used.

18
19 Nationally, emergency services managers have standardized their approach to natural and
20 man-made emergencies under a system known as the Incident Command System (ICS).
21 ICS is used to facilitate the successful handling of emergency responses and can expand
22 or contract given the nature of the emergency. In the event of a large natural disaster in
23 our area, the personnel needed for a unified command among all emergency services can
24 exceed 100 people. An organizational chart detailing the ICS shows the need for a more
25 appropriate location that could hold that number of persons (see Appendix 2).

26
27 The Humboldt County Office of Emergency Services is the primary local coordination
28 agency for emergencies and disasters affecting residents, public infrastructure, and
29 government operations in the County. When the County's needs exceed the coordinated
30 capacity of local response agencies, the California Governor's Office of Emergency
31 Services (Cal OES) is available to provide additional resources. When local and state

1 resources are insufficient during a catastrophic disaster, the assistance of FEMA may be
2 requested to supplement available state resources, primarily during post-incident
3 recovery.

4
5 Considerations for staging of personnel, adequate facilities for food and sanitation must
6 be considered when activating an Emergency Command Center. The HCCGJ found the
7 current courthouse location woefully lacking in both space and functionality. Assuming a
8 tsunami did not reach the lower parts of the courthouse, and assuming an earthquake did
9 not close off the entrance to or the ceiling did not collapse above the OES facilities, it
10 would still be equipped with non-ADA compliant equipment, sketchy backup power, and
11 a small emergency kitchen where the stove is inoperable. Finally, the facility will not
12 hold the number of people needed to operate effectively in an emergency. The HCCGJ
13 found no evidence that the issues of Emergency Operations Center functionality at a time
14 of disaster had been investigated by the Board of Supervisors.

15
16 During May 2016, over seventy County officials and emergency professionals attended
17 FEMA's Emergency Management Training Institute's four-day course tailored to
18 Humboldt County on responding to a Cascadia earthquake and tsunami. A Cascadia
19 disaster will overwhelm police, fire and medical capabilities. Additionally, it will disrupt
20 roads, utilities and communications, making assessment of damage, information flow and
21 access extremely difficult. At no cost to the County, attendees had a unique training
22 experience to identify issues and to learn best response techniques to apply during a
23 chaotic situation and facilitate out of the area assistance. This team-building exercise was
24 invaluable, but does Humboldt County have adequate infrastructure to put into practice
25 lessons from this recent training? The HCCGJ sees this training as a positive step,
26 however, it seems insufficient in addressing a fragmented dispatch system and
27 inadequately equipped OES.

28
29 **The case for a consolidated dispatch center:** The dispatching of police and fire services
30 is an integral part of emergency management. This service is accomplished at various
31 dispatch centers in the County. The term "dispatch center" refers to the communication

1 centers that serve as either primary or secondary public safety answering points for their
2 communities. Simply put, they answer the 911 emergency phone number and respond by
3 dispatching fire, police and medical services to the scene of the emergency. In Humboldt
4 County, with a rural population of approximately 135,000 residents, there are five
5 different dispatch centers with using different computer software systems that are not
6 compatible. The primary and largest police services department in Humboldt County is
7 the Humboldt County Sheriff's Office. The Sheriff's Office is the primary police
8 response to the unincorporated areas of the County that include the communities of
9 Garberville, McKinleyville, Willow Creek and Hoopa. The Sheriff also provides police
10 services to the cities of Blue Lake and Trinidad. The dispatch center for the Sheriff's
11 Office is located in the main courthouse building in Eureka.

12

13 The Humboldt County Civil Grand Jury toured Eureka, Fortuna and Arcata dispatch
14 centers. Finding and retaining qualified staff was a common problem noted at each
15 center. The job of an Emergency Dispatcher is demanding and stressful. Many of the
16 centers had only one dispatcher working per shift, where two is ideal. Staff schedules
17 usually included overtime requirements of personnel to augment the lack of staffing. This
18 overtime requirement was found to be a common problem voiced by administrators and
19 staff throughout the various agencies. There is no cross-training among dispatchers in the
20 County. A dispatcher in Eureka would not be able to fill in for a dispatcher off work in
21 the Sheriff's Office, for example.

22

23 While municipalities in the County may see their dispatch centers as a means to address
24 the unique concerns of their communities, the duplication of effort by maintaining
25 multiple dispatch centers within such a sparsely-populated County seems counter-
26 intuitive to economic cost and the designed purpose of overall public safety. Previous
27 discussions regarding possible consolidation of emergency dispatch centers have
28 primarily been informal. No extensive survey or reviews of consolidation options have
29 taken place in recent history. The HCCGJ has seen no evidence that a formal feasibility
30 study of the consolidation of Emergency Response Dispatch Centers for Humboldt
31 County has ever been fully explored.

1 **Different Consolidation Methods:** The idea of a consolidation of dispatch services is
2 not new. Consolidated dispatch centers have been successfully operating for nearly fifty
3 years in the United States. The HCCGJ studied four different methods for consolidation:
4

- 5 • Full Consolidation
 - 6 • Co-located Consolidation
 - 7 • Shared Services
 - 8 • Partial Consolidation
- 9

10 **Full Consolidation:** In a full consolidation model, all of the existing dispatch centers are
11 moved to one location under a single management structure. This center is governed by a
12 Joint Powers Authority (JPA) with representation by each participating agency. The new
13 JPA operates under a single management platform for both hardware and software
14 systems. A single computer-aided dispatch (CAD) operating platform is essential for a
15 successful dispatch operation. While full consolidation is often the most costly in terms
16 of initial investment, it has the potential for the greatest overall long-term cost savings
17 and the greatest operational efficiency. Some of the advantages of the consolidated center
18 are that it would employ a common infrastructure of electrical, heating, ventilation, air
19 conditioning and emergency power systems. Employees would be cross-trained and
20 combined in one center making employee scheduling more efficient. There would be a
21 marked increase in interagency information sharing as well as a more flexible
22 management arrangement may amplify the commonalities in public safety dispatching.
23 Economically, full consolidation would eliminate duplication of effort. The full
24 consolidation of services would give the various agencies involved the opportunity to
25 pool financial resources to fund system upgrades.
26

27 **Co-Located Consolidation:** In this model, multiple dispatch centers are moved to a
28 common physical location but maintain separate operations within the facility. The
29 different operations share some of the infrastructure costs but they remain separate in
30 their dispatch responsibilities. This dispatch model is often used when the needs of the
31 participating communities are diverse. The most challenging issue involves personnel.

1 The scenario requires parallel staffing needs for the separate agencies with multiple pay
2 scales, work schedules, leave policies and supervisors. This can be inefficient.

3

4 **Shared Services:** In this model, critical systems are maintained in a single location, and
5 all dispatch centers access them via an Internet Protocol (IP) network. The participating
6 agencies may use a common computer-aided dispatch and radio management system. A
7 key advantage to this approach is the ability to share operating costs and to reduce
8 purchase and maintenance costs. This does not reduce the duplication of staffing
9 requirements and management.

10

11 **Partial Consolidation:** The needs and capabilities of each agency are reviewed and
12 analyzed for the individual needs of their districts. When consolidation makes the most
13 sense, dispatch centers are combined. Certain dispatch centers may continue to run
14 independently when it is found impractical to consolidate. A partial consolidation is a
15 hybrid approach that makes recommendations based on political, operational, and fiscal
16 realities.

17

18 **Current Examples of Consolidated Dispatch Centers in Neighboring Counties:** The
19 Shasta Area Safety Communications Agency (SHASCOM), in Redding, CA, was created
20 in 1990 through a JPA, shared among between the County of Shasta and the incorporated
21 Cities of Redding and Anderson. The facility was built in 1995, and serves as the
22 centralized dispatch center for the Shasta County Sheriff's Office, the Redding Police
23 Department, the Redding Fire Department, and a number of emergency medical service
24 companies (ambulance). According to a report by the 2005-2006 Shasta County Civil
25 Grand Jury, the City of Anderson withdrew from SHASCOM in 1996 to resume its own
26 dispatch center, citing "expense per call, slow 9-1-1 response time, and lack of voice
27 recognition between Anderson Police officers and dispatchers," as reasons for the exit.
28 Said report indicates, however, that good cooperation remained in 2005-2006 between
29 SHASCOM and the Anderson City Police Department, to the extent that dispatchers were
30 sometimes shared.

31

1 The SHASCOM website now shows that dispatch services for the Anderson City Police
2 Department is currently provided by SHASCOM. The website states that a total of 45
3 personnel are budgeted (dispatchers, supervisors and administration).

4
5 The Shasta County Civil Grand Jury report indicated that the fiscal year 2005/2006
6 budget for SHASCOM was \$3.3 million. The current population of Shasta County is
7 approximately 180,000 vs. Humboldt County's 135,000.

8
9 Placer County also has a consolidated dispatch center through the Sheriff's
10 Communications Division located in Auburn, CA. The Placer County dispatch center
11 handles calls relating to the Sheriff, Fire, Paramedics, Animal Control and County roads.
12 A feasibility study by Ohio's Cleveland State University shows the Placer County
13 dispatch center to have a staff of 30. As with the majority of the 12 dispatch centers
14 studied, Placer County relies on the State 9-1-1 fee imposed on phone bills, for funding.
15 The approximate population of Placer County is 372,000 residents.

16
17 The HCCGJ was informed that representatives from several local agencies toured the
18 consolidated dispatch center in Shasta County on an informal basis to determine if such a
19 center would serve the needs of Humboldt County. The HCCGJ believes it is time that a
20 more formal study be done using outside consultants who can determine the fiscal and
21 logistical feasibility of such a consolidation. Such a study would be of great benefit to
22 help Humboldt County officials make a more informed decision on the development of
23 better and a more effective emergency safety net. The safety of the residents of Humboldt
24 County is paramount.

25 26 **FINDINGS**

27 **F1.** The operations center for the Office of Emergency Services is housed within a Cold
28 War bomb shelter that was never intended for use as an emergency operations
29 center.

30 **F2.** Training for future disasters is conducted at separate facilities due to the inadequate
31 space available within the Courthouse facilities.

- 1 **F3.** The Emergency Operations Center has no satellite phone for use in the event of a
2 communications breakdown.
- 3 **F4.** There is inconsistent availability of reserve generator power to some parts of the
4 Courthouse, which affects the Emergency Operations Center and other areas that
5 might be used as additional space in the event of an emergency.
- 6 **F5.** The security of the basement Emergency Operations Center in the event of a
7 tsunami is questionable due to its location partially below 4th Street in Eureka.
- 8 **F6.** Due to retention difficulties and training issues, staffing of Emergency Dispatch
9 Centers throughout the County is a chronic problem.
- 10 **F7.** Due to short staffing, overtime costs are a significant issue for the various entities
11 providing emergency dispatch.
- 12 **F8.** Due to the individual approaches of various entities, equipment and
13 communications are not always compatible. In an area-wide emergency, it is
14 unclear if some parts of this emergency network would continue to function or to
15 communicate with other centers.
- 16 **F9.** Previous discussions regarding possible consolidation of emergency dispatch
17 centers have been primarily informal. No extensive survey or reviews of
18 consolidation options have taken place in recent history.
- 19 **F10.** The HCCGJ has found no evidence that the issues of Emergency Operations Center
20 functionality at a time of disaster have been investigated by the Board of
21 Supervisors.
- 22 **F11.** The HCCGJ has seen no evidence that a formal feasibility study of the
23 consolidation of Emergency Response Dispatch Centers for Humboldt County has
24 ever been explored.

25

26 **RECOMMENDATIONS**

- 27 **R1.** The Humboldt County Civil Grand Jury recommends the Humboldt County
28 Sheriff's Office of Emergency Services relocate the Emergency Operations Center
29 into a larger, more functional facility that can accommodate the projected needs of a
30 major disaster. **(F1, F2, F4, F5, F10)**

1 **R2.** The Humboldt County Civil Grand Jury recommends that the Sheriff's Office of
2 Emergency Services be equipped with at least one satellite phone. **(F3, F8)**

3 **R3.** The Humboldt County Civil Grand Jury recommends a formal feasibility study of
4 the formation of a Joint Powers Authority to consolidate the Emergency Response
5 Dispatch Centers for Humboldt County be conducted using research consultants
6 who are not a part of any County stakeholder agency. **(F6, F7, F9, F11)**

7

8 **REQUEST FOR RESPONSES**

9 Pursuant to Penal Code section 933.05, the Humboldt County Civil Grand Jury requests
10 responses as follows:

11 Humboldt County Sheriff's Office **(R1, R2, R3)**

12 Arcata Police Department **(R3)**

13 Eureka Police Department **(R3)**

14 Fortuna Police Department **(R3)**

15 Humboldt County Board of Supervisors **(R1, R3)**

16 Local Agency Formation Commission (LAFCo) **(R3)**

17

18 **Invited Responses:**

19 California Governor's Office of Emergency Services (Cal OES) **(R1)**

20 Federal Emergency Management Agency (FEMA) **(R1)**

21 Humboldt County Fire Chiefs Association **(R1, R3)**

22 California Highway Patrol **(R3)**

23 Humboldt State University Police **(R3)**

24 Lori Dengler **(R1, R3)**

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| Reports issued by the Grand Jury do not identify individuals interviewed. Penal Code section 929 requires that 27 reports of the Grand Jury not contain the name of any person or facts leading to the identity of any person who 28 provides information to the Grand Jury. |
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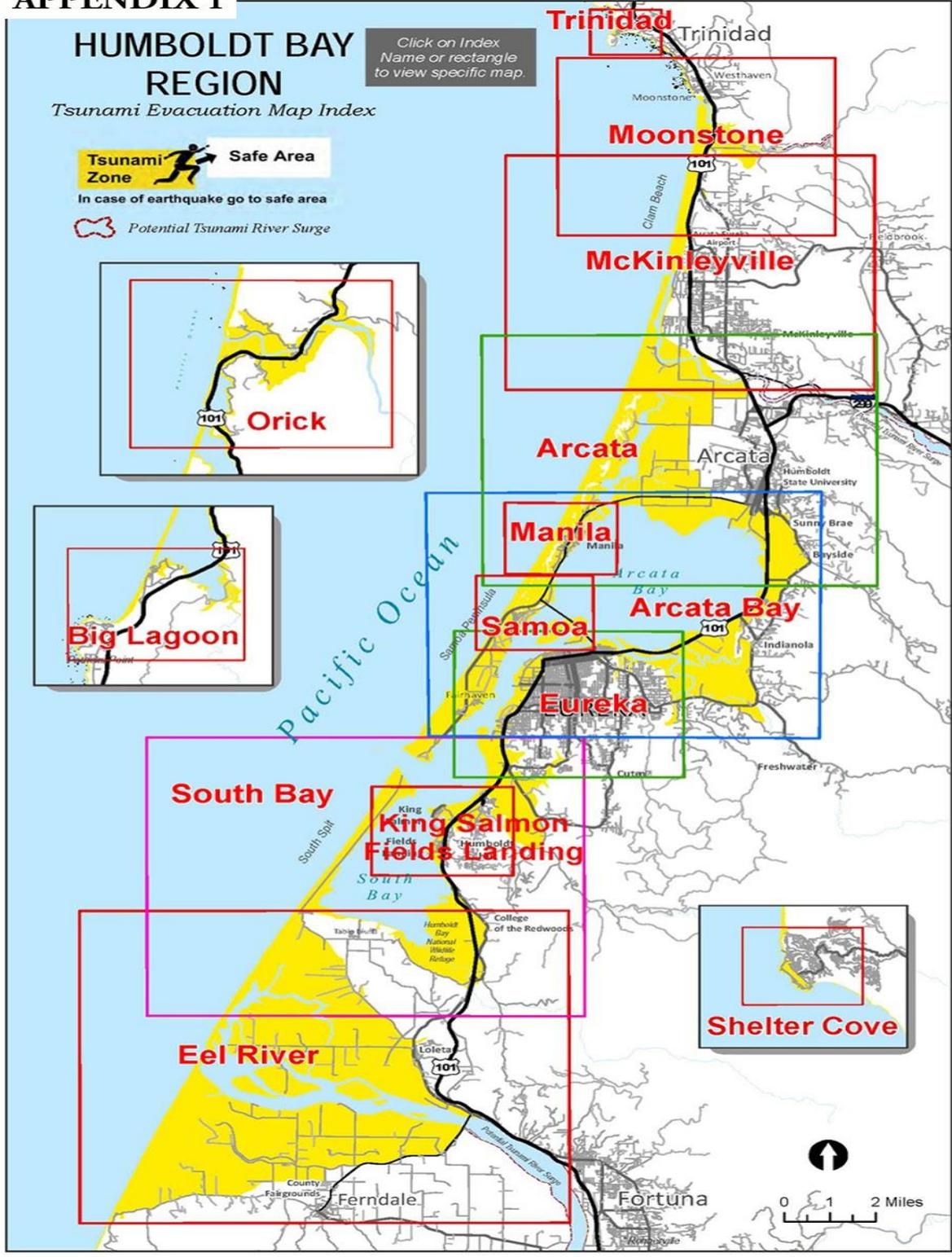
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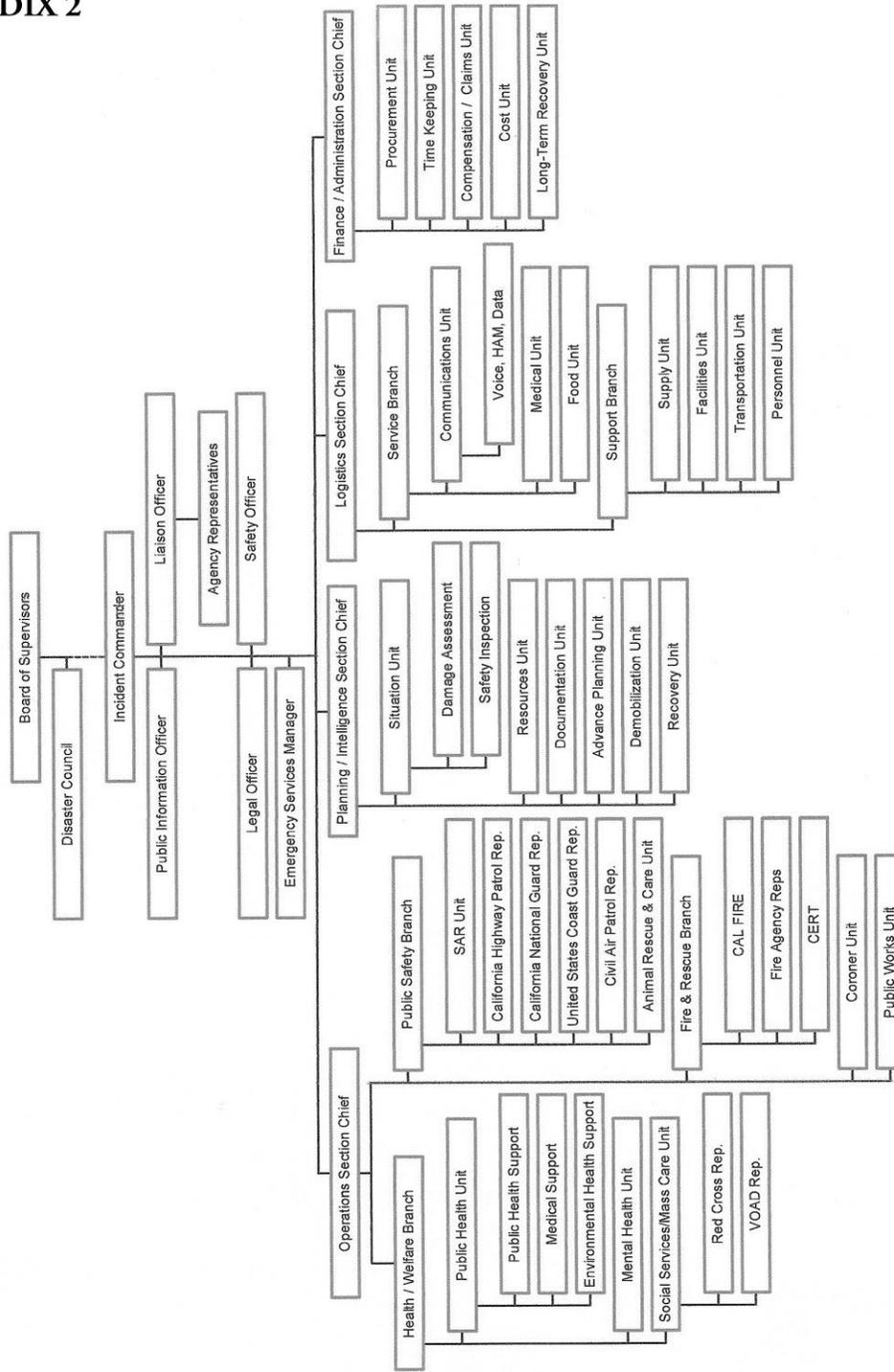
1/APPENDICES

APPENDIX 1



APPENDIX 2

Humboldt County Emergency Operations Center



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