City of Ferndale

SAFETY ELEMENT

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City of Ferndale
Safety Element

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1.0 Introduction

The purpose of the Safety Element is to provide a policy basis for measures Ferndale can take to reduce the potential risk of death, injuries, property damage, and economic and social dislocation resulting from fires, floods, earthquakes, landslides, and other natural and man-made hazards. The Element summarizes potential hazards including: seismically induced surface rupture, ground shaking, and ground failure; slope instability leading to landslides; subsidence, liquefaction and other seismic hazards; flooding; and wildland and urban fires. The Safety Element also addresses evacuation routes, peak load water supply requirements, and minimum road widths and clearances around structures as those items relate to fire and geologic hazards. The Safety Element is one of the seven mandated general plan elements listed in California Government Code §65302.

This element is important because the Town of Ferndale is susceptible to natural hazards, such as earthquakes, floods and fires, and man-made hazards such as the handling and transport of hazardous materials. The City and its residents must understand the risks associated with these hazards and devise a plan for an acceptable level of community safety. Although risks and threats cannot be eliminated, damage levels can be reduced through community preparedness, individual and community action to reduce or eliminate long-term risks (mitigation efforts), and sound development practices.

Given that the community is fairly isolated, Ferndale’s challenge is to improve safety through a variety of systematic, ongoing, and well planned actions. These actions to reduce risk are based on sound analysis of hazardous conditions and include economically realistic interventions and incentives.

Ferndale’s police and public works departments are first responders in the event of many natural and/or man-made disasters. Coordination with other agencies, such as the Ferndale Volunteer Fire Department, Humboldt County Office of Emergency Services, and even local service organizations, is critical. The ability of the City of Ferndale to prepare for, and respond to disaster events in a coordinated manner is essential to community health and safety.

Coordinating with other agencies for responding to fires, seismic events, hazardous materials releases and floods in and around Ferndale are critical. For example wildfires can ignite in adjacent forested and rangeland areas and threaten Ferndale structures, making CALFIRE and Ferndale Volunteer Fire Department coordination critical. Also flooding on the Eel River can affect Ferndale residents, making coordinated notification and evacuation efforts with County, State and Federal agencies critical as well. The regional interdependence of medical, transportation, communications, emergency response, and other systems necessitates these types of coordination as well as constant preparedness.

The Safety Element defines and maps the different types of potential public safety hazards, including known faults, steep slopes, areas subject to erosion, flood zones, high fire hazard areas, and locations of known hazardous materials. The Safety Element contributes to developing land use standards and policies to guide local decisions related to zoning, subdivisions, and entitlement permits. These will relate type and intensity of use to the level of risk from fire, geologic, and other hazards, to the effect of development upon that risk, and to the availability of
services and facilities to combat them. The Element contains general hazard and risk reduction strategies and policies.

During Element preparation, the city will collaborate with agencies, districts, and organizations including but not limited to: Ferndale Volunteer Fire Department, Humboldt County Office of Emergency Services, CALFIRE, FEMA, and California Geological Survey. The Element will be reviewed for consistency with other relevant plans such as the County Hazard Mitigation Plan and Master Fire Protection Plan.

Lastly, but most importantly, the community must be prepared if the City is to reduce the risks to safety. Neighborhood and business groups need to be trained on how to prepare for and respond to all types of disaster. If the citizens of Ferndale are prepared, the risk to life and property will be significantly reduced. A major focus of the City’s mitigation efforts articulated in this element must be the preparation and training of the community to help itself.

**Relationship to the Rest of the General Plan**

All general plan elements goals and policies must be internally consistent and are interdependent and related to each other. No single element of the plan should be used in isolation without consideration of all other component elements as an integrated general plan. The Safety Element goals and policies were reviewed for consistency with other general plan elements including but not limited to the Land Use and Unique Resources Element and the Transportation and Public Facilities Element.
2.0 Definitions

This section provides definitions of terms used throughout the Element.

Acceptable Risk: The level of risk that the majority of citizens will accept without asking for governmental action to provide protection.

Building: A building is defined as a structure that is walled and roofed, principally aboveground, and permanently fixed to a site. The term includes manufactured homes on permanent foundations on which the wheels and axles carry no weight.

Critical Facility: A Critical Facility is infrastructure or a facility that is critical to the health and welfare of the population. These become especially important after any hazard/natural disaster event occurs. Critical Facilities include:

- Medical and Shelter Facilities and Vulnerable Populations—Facilities likely to be used as a sheltering or community assembly location, and structures likely to contain occupants who may not be sufficiently mobile to avoid death or injury during and after a hazard/natural disaster event including but not limited to: Hospitals, schools, skilled nursing facilities, board and care homes, pharmacies, clinics, fairgrounds, community centers, ambulance services, and veterinary hospitals.
- Emergency Response—Facilities and emergency operations centers that are needed for response and recovery activities before, during, and after a hazard/natural disaster event including but not limited to: Police stations, fire stations, local, state and federal vehicle and equipment storage facilities, and emergency response staging sites.
- Utility Services—Public and private utility facilities and essential services that are vital to maintaining or restoring normal services to impacted areas before, during, and after a hazard/natural disaster event including but not limited to: All primary and secondary transportation infrastructure, municipal water pumps and wells, water treatment plants, water storage, sewage treatment facilities, lift stations, water and sewer mainlines, substations, electric power generating and transmission infrastructure, retail and wholesale fuel transmission infrastructure and transport and storage facilities, telecommunications, repeater stations, radio stations and towers, aviation control towers, standby power-generating equipment, and grocery stores.

Dam: Any artificial barrier or controlling mechanism that can or does impound 10 acre-feet or more of water.

Dam Failure: Dam failure refers to a partial or complete breach in a dam (or levee) that impacts its integrity. Dam failures occur for a number of reasons, such as flash flooding, inadequate spillway size, mechanical failure of valves or other equipment, freezing and thawing cycles, earthquakes, and intentional destruction.

Debris Flow: Rapidly moving mass of water-saturated debris (suspended earth materials).

Design Earthquake Ground Motion: The earthquake ground motion that buildings and structures are specifically designed to resist in the adopted California Building Code Section 1613.
**Erosion**: The gradual wearing away of rock or soil by the action of water, wind, or ice.

**Expansive Soils/Bedrock**: Soils or bedrock that contains minerals that expand when they absorb water and shrink when they dry out. This change in volume can exert enough force to damage buildings and other structures.

**Fault**: A fracture in the earth’s crust resulting from the displacement of one side with respect to the other.

**Faulting**: Fracturing of bedrock caused by displacement resulting from the action of tectonic forces.

**Fault, Active**: A fault that has had surface displacement within Holocene time (about the last 11,000 years).

**Fault, Potentially Active**: A fault which shows evidence of surface displacement during Quaternary time (the last 2 million years).

**Fault Trace**: The line formed by the intersection between a fault plane and the ground surface; it is graphically portrayed as a line plotted on geological maps.

**Fault Zone**: An area of faulting or an area of related faults that may have some width which commonly are braided, but may which may be branching.

**Federal Emergency Management Agency (FEMA)**: FEMA is an independent agency (now part of the Department of Homeland Security) created in 1978 to provide a single point of accountability for all federal activities related to disaster mitigation and emergency preparedness, response, and recovery.

**Fire Behavior**: Fire behavior refers to the physical characteristics of a fire and is a function of the interaction between the fuel characteristics (such as type of vegetation and structures that could burn), topography, and weather. Variables that affect fire behavior include the rate of spread, intensity, fuel consumption, and fire type (such as underbrush versus crown fire).

**Fire Frequency**: Fire frequency is the broad measure of the rate of fire occurrence in a particular area. An estimate of the areas most likely to burn is based on past fire history or fire rotation in the area, fuel conditions, weather, ignition sources (such as human or lightning), fire suppression response, and other factors.

**Flood or Flooding**: Flooding is a general and temporary condition of rising and overflowing water resulting in partial or complete inundation of normally dry land areas. Floods result from (1) the overflow of inland or tidal waters, (2) the unusual and rapid accumulation of runoff of surface water from any source, and (3) mudflows or the sudden collapse of shoreline land.
**Flood Insurance Rate Map (FIRM):** FIRMs are the official maps on which the Federal Emergency Management Agency (FEMA) has delineated the Special Flood Hazard Area (SFHA).

**Floodplain:** Any land area susceptible to being inundated by flood waters from any source. A flood insurance rate map identifies most, but not necessarily all, of a community’s floodplain as the Special Flood Hazard Area (SFHA).

**Floodway:** Floodways are areas within a floodplain that are reserved for the purpose of conveying flood discharge without increasing the base flood elevation more that one-foot. Generally speaking, no development is allowed in floodways, as any structures located there would block the flow of floodwaters.

**General Plan:** California state law requires that every county and city prepare and adopt a comprehensive long-range plan to serve as a guide for community development. The plan must consist of an integrated and internally consistent set of goals, policies, and implementation measures. In addition, the plan must focus on issues of the greatest concern to the community and be written in a clear and concise manner. City actions, such as those relating to land-use allocation, annexations, zoning, subdivision and design review, redevelopment, and capital improvements, must be consistent with such a plan.

**Geographic Information System (GIS):** GIS is a computer software application that relates data regarding physical and other features on the earth to a database for mapping and analysis.

**Goal:** A goal is a general guideline that explains what is to be achieved. Goals are usually broad-based, long-term, policy-type statements and represent global visions. Goals help define the benefits that a plan is trying to achieve. The success of the HMP, once implemented, should be measured by the degree to which its goals have been met (that is, by the actual benefits in terms of actual hazard mitigation).

**Ground Failure:** Ground destabilization, by mudslide, landslide, rockslide, soil liquefaction, earth subsidence, cracking, surface faulting, differential settlement and lateral spreading.

**Ground Settlement:** The sinking of an area of land is caused by the withdrawal of water from the ground or the gradual settlement of unconsolidated alluvial deposits or artificial fill.

**Ground Shaking:** Surface ground movement caused by an earthquake. The intensity of ground shaking is affected by the tectonic structure framework and near-surface geology in the location of the earthquake. Ground shaking can be measured by a seismometer. Measurements include seismic acceleration, which can be further broken down into vertical measurements (up-down shaking) and two horizontal measurements (east-west and north-south shaking).

**Hazard:** A hazard is a source of potential danger or adverse condition that could harm people and/or cause property damage. Natural hazards include floods, winds, and earthquakes. Man-made hazards include acts of terrorism and hazardous material spills.
**Hazard Mitigation Grant Program (HMGP):** Authorized under Section 202 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, the HMGP is administered by FEMA and provides grants to states, tribes, and local governments to implement hazard mitigation actions after a major disaster declaration. The purpose of the program is to reduce the loss of life and property due to disasters and to enable mitigation activities to be implemented as a community recovers from a disaster.

**Hazard Mitigation Plan:** A hazard mitigation plan is a collaborative document that identifies hazards that could affect a community, assesses vulnerability to hazards, and represents consensus decisions reached on how to minimize or eliminate the effects of hazards.

**Hazardous Material:** A hazardous material is a substance or combination of substances that (1) can cause or contribute to an increase in mortality or serious irreversible or incapacitating reversible illnesses, or (2) pose a present or potential hazard to human life, property, or the environment. Hazardous materials could cause these effects because of their quantity, concentration, or physical, chemical, or infectious characteristics.

**Hydraulics:** Hydraulics is the branch of science or engineering that addresses fluids (especially water) in motion in rivers or canals, works and machinery for conducting or raising water, the use of water as a prime mover, and other fluid-related areas.

**Hydrology:** Hydrology is the analysis of waters of the earth. For example, a flood discharge estimate is developed by conducting a hydrologic study.

**Intensity:** For the purposes of this plan, intensity refers to the measure of the effects of a hazard.

**Landslide:** Landslides can be described as the sliding movement of masses of loosened rock and soil down a hillside or slope. Fundamentally, slope failures occur when the strength of the soils forming the slope exceeds the pressure, such as weight or saturation, acting upon them.

**Landslide Deposit:** Earthen materials deposited through the landsliding process.

**Liquefaction:** Liquefaction is the complete failure of soils, occurring when soils lose shear strength and flow horizontally. It is most likely to occur in fine grain sands and silts, which behave like viscous fluids when liquefaction occurs. This situation is extremely hazardous to development on the soils that liquefy, and generally results in extreme property damage and threats to life and safety.

**Magnitude:** Magnitude is the measure of the strength of an earthquake, and is typically measured by the Richter scale. As an estimate of energy, each whole number step in the magnitude scale corresponds to the release of about 31 times more energy than the amount associated with the preceding whole number value.

**Mitigation:** A preventative action that can be taken in advance of an event that will reduce or eliminate the risk to life or property.
National Flood Insurance Program (NFIP): In 1968, Congress created the NFIP in response to the rising cost of taxpayer-funded disaster relief for flood victims and the increasing amount of damage caused by floods. The Mitigation Division is the FEMA section that manages the NFIP and oversees the floodplain management and mapping components of the program. Nearly 20,000 communities across the United States and its territories participate in NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage. In exchange, NFIP makes federally backed flood insurance available to homeowners, renters, and business owners in these communities. FEMA contracted the U.S. Army Corps of Engineers to map the floodplains, floodways, and floodway fringes.

Peakload Water Supply: The supply of water available to meet both domestic water and fire fighting needs during the particular season and time of day when domestic water demand on a water system is at its peak.

Planning Area: The geographical area covered in a General Plan element. For this element, the Planning Area extends approximately one half mile to the east and west of the city boundary, north to the Salt River, and includes the immediate steep slope areas to the south of town.

Preparedness: Preparedness refers to actions that strengthen the capability of government, citizens, and communities to respond to disasters.

Recovery: Recovery refers to actions taken by an individual or community after a catastrophic event to restore order and community lifelines.

Risk: Risk is the estimated impact that a hazard would have on people, services, facilities, and structures in a community. Risk measures the likelihood of a hazard occurring and resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as a high, moderate, or low likelihood of sustaining damage above a particular threshold due to occurrence of a specific type of hazard. Risk also can be expressed in terms of potential monetary losses associated with the intensity of the hazard.

Risk Assessment: Risk assessment is the process of measuring potential loss of life, personal injury, economic injury, and property damage resulting from hazards. This process assesses the vulnerability of people, buildings, and infrastructure to hazards and focuses on (1) hazard identification; (2) impacts of hazards on physical, social, and economic assets; (3) vulnerability identification; and (4) estimates of the cost of damage or costs that could be avoided through mitigation.

Sedimentation: The process by which soil particles are suspended in water and redeposited further downstream.

Seiche: An earthquake-induced wave from oscillation in an enclosed body of water.

Seismic Induced Landslides: Slope failure caused by an earthquake.
**Stafford Act:** The Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 100-107, was signed into law on November 23, 1988. This law amended the Disaster Relief Act of 1974, Public Law 93-288. The Stafford Act is the statutory authority for most federal disaster response activities, especially as they pertain to FEMA and its programs.

**State Responsibility Area:** Section 4102 of the Public Resources Code (PRC) defines "state responsibility areas" as those areas of the state for which the State has the financial responsibility of preventing and suppressing fires. The SRA roughly corresponds to areas outside incorporated cities with vegetated lands that have watershed value.

**Stream Bank Erosion:** Stream bank erosion is common along rivers, streams and drains where banks have been eroded, sloughed or undercut. However, it is important to remember that a stream is a dynamic and constantly changing system. It is natural for a stream to want to meander, so not all eroding banks are “bad” and in need of repair. Generally, stream bank erosion becomes a problem where development has limited the meandering nature of streams, where streams have been channelized, or where stream bank structures (like bridges, culverts, etc.) are located in places where they can actually cause damage to downstream areas. Stabilizing these areas can help protect watercourses from continued sedimentation, damage to adjacent land uses, control unwanted meander, and improvement of habitat for fish and wildlife.

**Subsidence:** The gradual, local settling or sinking of the earth’s surface with little or no horizontal motion (subsidence is usually the result of gas, oil, or water extraction, hydrocompaction, or peat oxidation, and not the result of a landslide or slope failure).

**Wildland Fire:** A fire occurring in a suburban or rural area which contains uncultivated lands, timber, range, watershed, brush or grasslands. This includes areas where there is a mingling of developed and undeveloped lands.
3.0 Setting and Context

Much of Ferndale is situated on an alluvial plain created by Francis Creek as it leaves the steep terrain to the south and flows northerly across the Salt River and Eel River flood plains, Figure 1. This places the City just above the flood plain of the Eel River with prime agricultural lands to the west, north and east and steep forest lands to the south. Ferndale’s location makes the city susceptible to geologic, flood and fire hazards, and risks associated with transportation and storage of hazardous materials. The combination of sound planning practices, continued public education, and community preparedness will minimize risks to the community and protect the health, safety, and welfare of Ferndale residents and visitors.

The Disaster Mitigation Act (DMA; Public Law 106-390) is federal legislation enacted to promote proactive pre-disaster planning as a condition of receiving financial assistance under the Robert T. Stafford Act. The DMA emphasizes planning for disasters before they occur. It established a Pre-Disaster Mitigation Program and new requirements for the national post-disaster Hazard Mitigation Grant Program. The DMA encourages state and local authorities to work together on pre-disaster planning. The enhanced planning network helps local government’s articulate accurate needs for mitigation, resulting in faster allocation of funding and more cost-effective risk-reduction projects. A planning partnership made up of the County of Humboldt, local cities, and special purpose districts worked together to create the Humboldt Operational Area Hazard Mitigation Plan (HMP), fulfilling the DMA requirements for all participating partners, including the City of Ferndale.

This element further addresses safety issues for the Ferndale Planning Area, which extends approximately one half mile to the east and west of the city boundary, north to the Salt River, and includes the immediate steep slope areas to the south of town (City of Ferndale 1975). The following presents an overview of geologic, flood, fire, and other potential hazards in the Ferndale Planning Area.

Geologic & Seismic Hazards

The western portions of Humboldt County, and adjoining offshore areas, are regions of moderate to high seismicity. Cape Mendocino (southwest of Ferndale) experiences the highest concentration of earthquake events in the continental United States (Humboldt County 2012). The area near Cape Mendocino is a complex region where three crustal plates, the Pacific Plate, the Gorda Plate, and North American Plate intersect to form the Mendocino Triple Junction. Seismic hazards in the Planning Area include earthquake ground shaking, surface fault rupture, liquefaction, and tsunami potential. Geologic hazards in the Planning Area not specifically related to earthquakes include landslides and soil stability.

Historically, earthquakes have caused extensive damage to structures in Ferndale. The 1906 San Francisco Earthquake damaged more than 40 structures in Ferndale’s downtown and toppled 98 percent of the town’s chimneys (Dengler 2008). On January 22, 1923, a 7.2 earthquake, centered off Cape Mendocino, caused damage to Ferndale structures. On April 25 and 26, 1992, a series of three earthquakes (a 7.2-magnitude main shock and two strong aftershocks measuring magnitude 6.5 and 6.7) struck about 35 miles south of Eureka, causing the brick facade of Valley Grocery to collapse and damage to an estimated 80 percent of the other downtown buildings.
Damages in Ferndale were estimated at $10.4 million (NOAA). On January 9, 2010 a magnitude 6.5 earthquake occurred about 25 miles offshore of Ferndale, it was the largest local earthquake since the 1992 Cape Mendocino Earthquakes.

Flooding & Drainage Hazards

Flood related hazards in the Planning Area include river and creek flooding and drainage system overflows. Francis Creek runs through the heart of the city and presents a periodic flooding problem in the business district and in the residential area along Main Street to the north. Flood prone areas have been mapped by the Federal Emergency Management Agency (FEMA). The maps provide the basis for regulating flood plains in conformance with the National Flood Insurance Program. The City has adopted flood plain regulations (Floodplain Management Ordinance 08-02) in order to continue participation in the federal flood insurance program. Drainage management becomes increasingly important as new development converts additional areas in a watershed to impermeable surfaces. These impervious surfaces reduce infiltration and convey stormwater faster, increasing peak flows. Increased peak flows can accelerate erosion or require the conversion of natural drainage ways into higher capacity conveyances that can more rapidly transport stormwater.

The Eel River has flooded a number of times. In 1955, 1964 and 1986 floods caused extensive damage in the region; although damage was catastrophic elsewhere, these floods did not affect Ferndale’s business district (Schneider 1995). In January of 1995 Francis Creek burst out of its banks throughout downtown Ferndale causing flooding along Main Street, damaging businesses and homes, and killing livestock.

Fire Hazards

The City of Ferndale faces an ongoing threat from urban and wildland fire, caused by human activity and natural conditions. Fires in the historic district along Main Street pose a risk due to the proximity of the buildings to each other; many of the buildings share walls and are constructed of wood and other combustible materials. Wildland fire is a threat to the hillside areas in southern Ferndale where the wildland and residential areas intermix. The potential for wildland fires arises from the combination of ground cover and vegetation, the combustibility of building materials, ground slope, weather patterns, and adequacy of access, water supply, and water pressure. Structures built with combustible materials, such as wood siding, shake roofs, and surrounded by flammable landscaping heighten the vulnerability of residents.
City of Ferndale General Plan Safety Element: Figure 1 - Location Map

- City Limits
- Proposed Planning Area

Sources: City Boundaries - Planwest Partners Inc.
Imagery - Bing Maps Aerial
Roads - US Census TIGER data (http://www.census.gov/geo/www/tiger/)
Hazardous Materials

Hazardous materials have the potential to cause injury, and can include flammable liquids and gases, poisons, corrosives, explosives, radioactive materials, and improperly used medical supplies and wastes. The clean-up (remediation) and monitoring of hazardous waste is regulated by a series of federal, state and local agencies, including the U.S. Environmental Protection Agency, Cal EPA, the State Department of Toxic Substance Control (DTSC), the State Water Resources Control Board (SWRCB) and the Humboldt County Division of Environmental Health’s Certified Unified Program Agency (CUPA). DTSC currently has no listed hazardous waste sites in Ferndale (California 2012). However, SWRCB has identified eight contamination sites in Ferndale involving issues of leaking underground storage tanks (LUST’s). LUST’s are typically associated with past automobile-related activities.

CUPA monitors facilities handling or producing hazardous materials in Ferndale. CUPA lists 45 such facilities in or near the Planning Area; the majority are associated with the agricultural industry, including approximately 20 dairies. Because of a general lack of significant industrial operations, Ferndale does not currently experience a significant threat from hazardous materials use or storage. The transport of hazardous materials, particularly along the S.R. 211/ Main Street corridor, presents possible hazards in the event of a materials leak or if a transport truck experiences an accident.
4.0 Geologic & Seismic Hazards

Primary seismic hazards in the Planning Area include earthquake ground shaking, surface fault rupture, liquefaction, and tsunami potential. Geologic hazards not specifically related to earthquakes include landslides and soil stability.

The severity of the impact of an earthquake on a community depends on the intensity and duration of ground shaking and on the occurrence of other seismically-induced phenomena. Factors related to severity include the magnitude of the seismic event, the distance between the community and the event fault, and on local geologic and soil conditions. The greatest source of earthquake damage is caused by ground shaking, particularly horizontal ground acceleration. The City is susceptible to ground shaking caused by multiple nearby earthquake fault zones including the Little Salmon, Russ, Bear River, and Mendocino fault zones.

The Alquist-Priolo Earthquake Fault Zoning Act (formerly the Alquist-Priolo Special Studies Zone Act), signed into law in December 1972, requires the delineation of zones along active faults in California. The purpose of the Alquist-Priolo Act is to regulate development on or near active fault traces to reduce the hazard of surface fault rupture and to prohibit the location of most structures for human occupancy across these traces. Cities and counties must regulate certain development projects within the zones, which includes the withholding of permits until geologic investigations demonstrate that development sites are not threatened by future surface displacement. Surface fault rupture is not necessarily restricted to the area within an Alquist-Priolo Zone. The City of Ferndale is not located within an Alquist-Priolo Fault Rupture Zone. The closest Alquist-Priolo Zone is the Little Salmon Fault Zone located approximately 6 miles northeast of Ferndale.

Some soils in the Planning Area may be subject to liquefaction as a result of seismic activity. Liquefaction occurs when earthquakes cause soils to become almost like quicksand and lose their ability to support structures. Fine unconsolidated sand or silt saturated with water is particularly subject to liquefaction; Ferndale’s location on an alluvial plain means it may be underlain by layers of such materials and thus subject to potential liquefaction during a strong earthquake. Liquefaction may result in sinking, tilt, distortion, or destruction of buildings and bridges, rupture of underground utility lines, and ground surface cracking and spreading. A majority of the Planning Area is located in a potential liquefaction area (see Figure 2).

Soils in the Planning Area may also be subject to the sudden or gradual sinking of land, called ground settlement. Ground settlement may be caused by water removal or by gradual settlement of unconsolidated alluvial deposits or artificial fill. Earthquakes may also cause ground settlement. Because the sedimentary materials underlying Ferndale may contain layers of unconsolidated material, there is potential in the Planning Area for ground settlement during strong seismic shaking. Ground settlement may lead to tilting of buildings or differential settlement of structures, and has been a major source of property damage in other areas of the world. Geologic information is not sufficient to determine whether or not the alluvial areas of Ferndale would be subject to substantial ground settlement in the event of an earthquake.
Figure 2 - Potential Liquefaction
Earthquakes can trigger a sudden mass downslope movement of material, called a slope failure or landslide. Landslides may also be triggered by other, non-seismic events or conditions, and are most common on steep natural or artificial slopes with high water content. Landslides may be rapid, as in a rock-fall or debris flow, or very slow and gradual, as in a creep. Cutting away the toe of slope in grading for site development or road construction may trigger slope failure, as might adding weight to an area by fill, construction, or water from very heavy rain. In general, continued modification of the topography by further cut and fill would increase the landslide potential in areas such as the hilly southern end of the Planning Area. A landslide may cause rocks to fall onto roadways, buildings, utilities, and other developments below the slope, potentially causing both physical harm and property damage. In general, slopes steeper than about 15 degrees are less stable and thus more prone to landslides. A majority of the Planning Area is relatively flat and therefore not susceptible to landslides. The southern portion of the Planning Area contains steeper slopes with moderate instability (see Figure 3).

The oscillation produced by an earthquake may generate a wave, known as a seiche, within enclosed or restricted bodies of water such as lakes or reservoirs. There are no lakes or reservoirs within close enough proximity to the City of Ferndale to present a likely hazard.

A tsunami is a large sea wave generated by any large-scale disturbance of the ocean floor that occurs in a short period of time, such as an earthquake, volcanic eruption, or coastal landslide, which can cause a sudden displacement of water. Though local earthquakes may cause tsunamis, most past tsunamis in California were associated with distant earthquakes that traveled great distances across the Pacific Ocean basin. The north western portion of the Planning Area is located in a tsunami inundation and evacuation area (see Figure 4).
**Figure 3 - Soil Instability**

- City Limits
- Planning Area

**Soil/Slope Stability Zones**
- Relatively Stable
- Moderate Instability
- High Instability

Source: City Boundaries - Planwest Partners Inc.
Roads - US Census TIGER data (http://www.census.gov/geo/www/tiger/)
Soil Instability Boundaries - Humboldt CDSD (http://co.humboldt.ca.us/planning/maps)
MINIMIZING RISKS

To reduce the hazards associated with seismic activity, the City requires that all new development and significant renovations abide by the most recently adopted City and State seismic and geotechnical requirements to protect injury and structural damage due to geologic and seismic hazards.

Historically, the greatest structural damage from earthquakes has been to unreinforced masonry buildings, especially in areas of artificial fill or water soaked alluvium. Appropriate earthquake design for projects in Ferndale should be in accordance with the California Building Code seismic standards.

In areas of potential slope instability, appropriate geotechnical investigation and slope stability analyses should be performed for both static and dynamic (earthquake) conditions. For deeper slides, mitigation typically includes such measures as buttressing slopes or re-grading the slope to a different configuration. Protection from rock falls or surface slides can often be achieved by protective devices such as barriers, retaining structures, catchment areas, or a combination of these. The runout area of the slide at the base of the slope and the potential bouncing of rocks must also be considered. If it is not feasible to mitigate unstable slope conditions, building setbacks should be imposed.

A considerable part of the City is in a potential liquefaction area and is already built upon, mostly with residential and commercial development. A nearby moderate to strong earthquake could cause extensive damage to buildings and infrastructure and injury to occupants. Since retrofitting measures are generally not feasible due to cost, the City should be prepared to respond to damage and disruption in the event of an earthquake. Future construction of critical structures should be preceded by borings sufficient to assess liquefaction potential.

In the event of a large earthquake or tsunami warning, residents in the tsunami evacuation area located in the southern portion of the Planning Area should evacuate to higher ground as fast as possible. Due to the low population density and the multiple access routes in this area there is not a defined evacuation route or gathering site.
5.0 Flooding & Drainage Hazards

Primary flood related hazards in the Planning Area include river and creek flooding and drainage system overflows, mostly due to storm waters. Annual average rainfall in Ferndale is 40 to 60 inches, with 80% of that falling in the six-month period of November through April (Humboldt County 2007).

Ferndale and parts of the Planning Area have historically experienced storm water and drainage issues. Runoff associated with heavy winter rains has caused chronic flooding and sedimentation problems in the relatively flat terrain in the City, as well as in the area north of the City near the Salt River. The City has recognized that continued growth can only take place in or adjacent to those portions of the city experiencing chronic flooding, and that management of storm water runoff is in the public interest (City of Ferndale 2004).

**Drainage management** becomes increasingly important as new development converts additional areas in a watershed to impermeable surfaces. Though Ferndale is growing at a relatively slow rate, each additional unit adds impervious surfaces to the City’s total. These impervious surfaces reduce infiltration and convey stormwater faster, increasing peak flows. Increased peak flows can accelerate erosion or require the conversion of natural drainage ways into higher capacity conveyances that can more rapidly transport stormwater.

To address these issues, the City Council formed a Drainage Committee in 1989. In 1990 the City adopted a Drainage Master Plan, updated in 2003, which recognized the need to complete many major drainage improvements within the City limits. The Plan established a list of recommended drainage improvement projects, addressed drainage revenues and the drainage fee rate structure, and recommended changes to the City’s drainage ordinance to better address the City’s current needs. The Drainage Master Plan also recognized the limits imposed by both the Salt River and the Eel River estuary, in that these areas greatly influence drainage within the City (City of Ferndale 2004).

There are three storm drainage watersheds that affect Ferndale and the Planning Area: the Francis Creek Watershed, the East Side Drainage Watershed, and the West Side Drainage Watershed. These in turn contribute to the Salt River Watershed and then on to the Eel River Watershed (City of Ferndale 2004).

**Francis Creek**'s flood carrying capacity is restricted by culverts, bridges, sediment build-up, and debris (see Figure 5). Sediment erosion in the upland areas south of Ferndale contributes to the flooding problem by filling local streams and the Salt River with silt, reducing their capacity to carry peak storm runoff. While flooding and sedimentation are natural processes, the frequency and rate of sediment deposition have increased because of land use activities in the Wildcat Hills (City of Ferndale 2004).

Flooding from Francis Creek has been historically documented at regular intervals and varying intensities. In the winter of 1995-96, Francis Creek overflowed its banks, flooding Main Street and spreading silt over the city’s streets and sidewalks and causing extensive damage to buildings.
Spurred by this flood damage, the City obtained funding from the Federal Emergency Management Agency (FEMA), Caltrans, and the state Office of Emergency Services for the Francis Creek Hazard Mitigation Project, a $3 million public works project consisting of removing or widening bridges and widening the creek bed to allow for higher flow rates without flooding. The project began in the year 2000 and was completed just before the extreme storm events of December 16 and 27, 2002. The December 16 storm produced peak flows in Francis Creek that were estimated to be at least 850 cubic feet per second (cfs). The December 27 storm was even greater; over 8 inches of rain fell on the Francis Creek watershed in a 24 hour period, producing flows in Francis Creek estimated to be at least 1,000 cfs. Francis Creek was able to handle the December 16 storm flow without any problems. At least one foot of clearance was reported at all creek banks and bridges. The December 27 storm event produced some minor overtopping of Francis Creek; but no property damage was reported (City of Ferndale 2004).

The East Side Drainage System (see Figure 5) consists of a network of street gutters, storm sewers, culverts, and drainage channels that convey runoff to a natural low profile drainage swale referred to as the East Side Channel. The East Side Channel lies about 2,000 feet east of Francis Creek and flows north to Market Street and Van Ness Street where it converges with a County maintained ditch. This Channel drains the easterly portion of the City and collects overflows from both Francis Creek to the west and Williams Creek to the east (City of Ferndale 2004).

The flood mitigation projects completed on Francis Creek in 2000-2002 was intended to alleviate some of the previous flooding problems experienced in East Side Drainage watershed (City of Ferndale 2004). However, sedimentation in Williams Creek continues to cause flooding.

The West Side Drainage System (see Figure 5) consists of a network of street gutters, drainage channels, and culverts. The west side drainage area is absent of any storm sewers except for the former Navy housing and a small internal drainage system at the County Fairgrounds. The remaining acreage contains a series of drainage channels all running northerly to Port Kenyon road (City of Ferndale 2004).

According to the City of Ferndale 2004 Drainage Master Plan, the West Side drainage channels are draining at maximum capacity and any increase in storm water will only contribute to additional unmanaged run-off. In addition, the drainage ditches are densely vegetated, especially during the spring months. This vegetation significantly decreases the hydraulic efficiency of the channels and their capacity to convey stormwater runoff (City of Ferndale 2004).

The Salt River Ecosystem Restoration Project is a multi-year, multi-agency, landowner-driven endeavor that addresses drainage issues in the Salt River Watershed. Prompted by the increasingly frequent flooding, reduced drainage capacity, and sediment deposition that has negatively impacted water quality and agricultural endeavors, the Salt River Ecosystem Restoration Project includes a large tidal wetland restoration component that will improve the health of the estuary system while also improving the hydrology of the river.
The Humboldt County Resource Conservation District (HCRCD) is overseeing the Salt River restoration project, managing relations between the many agencies and property owners involved, and procuring funding. The project would also involve channel restoration for lower Francis Creek, with other improvements on Williams, Coffee and Reas creeks (HCRCD 2010).

The Eel River experiences periodic flooding which affects the Planning Area. The 1955 and 1964 floods caused extensive damage to the floodplain, although Ferndale’s historic and business districts were not affected (Schneider 1995). Ferndale resident Viola Russ McBride (1906-96) wrote the following of the 1964 flood:

“Although Ferndale had been spared, it had become a ghost town. The dairy ranchers who supported the town had been all but ruined. Store after store was empty. Buildings were for sale for almost nothing. The old Red Front Store, now Abraxas, sold for less than $1,000!” (Ferndale Enterprise 2012).

The Eel River and other flood prone areas have been mapped by FEMA. The maps provide the basis for regulating flood plains in conformance with the National Flood Insurance Program (NFIP). The National Flood Insurance Act, adopted by the U.S. Congress in 1968, made federally subsidized flood insurance available to property owners if their communities participate in the NFIP. A community establishes its eligibility to participate in the NFIP in two ways: by adopting and enforcing floodplain management measures to regulate new construction and by ensuring that substantial improvements within Special Flood Hazard Areas (SFHA’s) are designed to eliminate or minimize future flood damage.

An SFHA is an area within a floodplain having a 1 percent or greater chance of flood occurrence within any given year. SFHAs are delineated on flood hazard boundary maps issued by FEMA for individual communities. The Flood Disaster Protection Act of 1973 and the National Flood Insurance Reform Act of 1994 make flood insurance mandatory for most properties in SFHAs.
Flood Insurance Rate Maps, also prepared by FEMA, delineate potential flood zones. Flood hazards related to storm events generally are described in terms of 100- or 500-year flood. A 100-year flood is defined as a major flood event that has a one percent or greater chance of occurring during any one year. Flood hazard planning practices addresses such storms, as well as 500-year events. As implied, the 100- and 500-year floods are the largest flood events that may be expected to occur within 100-year and 500-year periods, respectively. These floods are considered severe but ones which can be reasonably predicted and therefore reasonably mitigated.

Figure 6 shows the extent of flooding potential in the Planning Area. The northern portion of the Planning Area is within the 100-year and 500-year flood zones, as are portions of the Planning Area along Reas, Williams, and Francis creeks. Sea level rise due to global warming is expected to expose more of the City to flood hazards. In particular, the 100-year and 500-year flood zones are expected to extend farther south into the City (Pacific Institute 2009).

The hazards associated with dam inundation or failure are not considered a significant threat to Ferndale (Humboldt County 2007). Dam inundation occurs when structural damage to a dam results in a flood, and can be caused by earthquake, erosion, design flaw, or storm water overflow. Scott Dam, which creates Lake Pillsbury on the Eel River, is located more than 100 miles southeast of the City. Over this distance, water surges created by dam failure would disperse considerably before reaching the Planning Area (Humboldt County 2007). Although failure of this dam would increase water levels downstream, it is expected that the levels would remain below the 100-year flood level and damage would be minor (Humboldt County 2007). The County maintains an emergency response plan for Scott Dam.
Figure 6 - Flooding Hazards

City Limits
Planning Area
FEMA Floodway

FEMA Flood Zones
- 100 Year Flood Zone
- 500 Year Flood Zone

Source: City Boundaries - Planwest Partners Inc.
Roads - US Census TIGER data (http://www.census.gov/geo/www/tiger/)
Flood data - FEMA Q3 (msc.fema.gov)
MINIMIZING RISKS

The City requires that all new development and significant renovations abide by the most recently adopted City, State, and Federal flooding and drainage requirements to protect injury and structural damage due to floods.

To prepare and mitigate hazards from flooding, both Humboldt County and the City of Ferndale participate in the National Flood Insurance Program. In order to maintain compliance with the requirements of the program, the City has encoded floodplain management regulations in Ordinance 08-02. The Ordinance specifies flood damage prevention measures for the regulation of land use and development in areas subject to flood inundation and establishes a development permit for any development within an area of special flood hazard, as defined in the Ordinance.

Property owners in potential flood areas can make modifications to their houses to reduce the impacts of flooding. FEMA has identified several flood protection measures that can be implemented by property owners to reduce flood damage. These include installing waterproof veneers on the exterior walls of buildings; putting seals on all openings, including doors, to prevent the entry of water; raising electrical components above the anticipated water level improvements; and installing backflow valves that prevent sewage from backing up into the house through the drainpipes.

The City should continue to improve and maintain storm drain systems to convey water flows and minimize damage from flood events as suggested by the Drainage Master Plan. The Plan established a list of recommended drainage improvement projects, addressed drainage revenues and the drainage fee rate structure, and recommended changes to the City’s drainage ordinance to better address the City’s current needs.
6.0 Fire Hazards

Fire hazards fall into two general categories: wildland fires, which emanate from forest, grassland, or coastal scrub; and structural fires, which damage homes and workplaces. Both bring risk of spreading to other areas. In general, structural fire protection is the responsibility of local agencies, such as fire protection districts and volunteer fire companies; wildland fire protection is the responsibility of federal and state agencies.

Urban Fire Hazard

Structure fires account for a high percentage of the yearly losses in Ferndale. Structural fires are especially an issue in high-density areas, where there is a higher potential for fire to spread from one structure to the next. Furthermore, the narrow spaces between the structures and the property lines in medium- to high-density areas provide limited room for emergency access. In the older section of downtown Ferndale, including the Main Street Historic District, streets and alleys make it difficult to maneuver and position response vehicles to be most effective in fighting a fire. Structure fires in this older section — where many buildings date from the late 1800’s to 1930s, were built to older building standards and fire codes, are very close together, and are made from non-fire resistive construction materials with no internal sprinklers and other fire safety systems in place — present higher risks.

Founded in 1897, the Ferndale Volunteer Fire Department (FVFD) is responsible for the preservation and protection of life and property for the City of Ferndale and the surrounding rural area. The Ferndale Fire Protection District (FFPD) is a special district responsible for providing fire protection services, through the FVFD, to the City of Ferndale and the unincorporated communities of Grizzly Bluff, Arlynda Corners, Centerville, Port Kenyon, Wildcat Ridge, and the remainder of the Eel River bottoms south of the Eel River. The FFPD was formed in 1934 and was subsequently reorganized under the provisions of the California Health and Safety Code in January 1964 (LAFCo 2008).

The active powers of the FFPD include structural fire protection and suppression, rescue, and emergency medical services. Latent powers include water supply and storage for fire suppression purposes. While the FFPD is responsible for structural fire protection and emergency medical responses, CDF retains responsibility for grass and forest fires. The FFPD has joint responsibility for grass and forest fires within the District through a mutual aid agreement with the California Department of Forestry and Fire Protection (CAL FIRE). The FFPD also has mutual aid...
agreements with the Loleta and Fortuna Fire Protection Districts. These mutual aid agreements allow the districts to enter into agreements for services, including emergencies which have the potential to overwhelm the resource capabilities within a single district. This enables the FFPD to maintain preparedness for a disaster beyond their capacity, without the need to expand and create an additional facility.

The FFPD has a district boundary of 44.2 square miles and a total response area of 115.7 miles. The District’s current boundaries encompass the area from the Pacific Ocean on the west to the Eel River on the north and east, and to Upper Bear River Road on the southern border. This encompasses all of the City and Planning Area. The FVFD has one rescue truck, three fire engines (pumpers), two water tenders, a utility truck and other assorted equipment (FVFD 2012). The Department also has 12 volunteers trained for Firefighter 1 and Wildland fires, 4 first responders, 10 EMTs, and 4 volunteers trained for Hazardous Materials. The largest facilities within the FFPD include downtown Ferndale, the Humboldt County Fairgrounds, and Ferndale’s Elementary and High Schools. Water wells serving the FFPD are owned by a private water company, and within the FFPD water resources have not been identified as deficient (LAFCo 2008).

Wildland Fire Hazard

Residential development in areas with high risk for wildfire has complicated the fire-protection mission of federal, state and local agencies. Decades of wildland fire-suppression has led to increasing fire fuel levels, percentages of dead fire fuel per wildland acre, and fuel ladders that allow fires to reach large conflagration sizes quicker and more frequently. Wildfire protection agencies are experiencing a change in the type and effects of wildland fire. Though fires are not necessarily larger, they are burning much more intensely, are more costly to control, and create greater risks and losses to the resources and citizens in the wildland areas.

A review of past urban/wildland interface fires in the United States shows many common contributors to major loss of life, property, and natural resources. The most common characteristics of these fires include:

- Poor access for emergency and evacuation vehicles;
- Hot, windy, dry conditions;
- Sloping topography;
- A buildup of flammable vegetation;
- Lack of defensible space;
- Use of combustible construction materials;
Lack of public education and information;
Inadequate developer planning; and,
Underequipped and undertrained firefighters (IAFC and WFCA1996).

Steeply sloped hills covered with coniferous forest and understory are located within and around the southern portion of the Planning Area. Specifically, the forested slopes south of Centerville Road west of the City and south of Bluff Road east of the City have considerable fuel loads. Prevailing winds from the west have potential to spread wildfire from those areas into Ferndale.

The Humboldt County Fire History map 1908-2001, prepared by Humboldt County Community Development Services in October 2002, indicates that there have been no major wildfires in the Planning Area in the last century. According to the Humboldt County Community Development Services Department (now the Building and Planning Department), the entire Planning Area is within a High Fire Rating Zone (see Figure 7).

The Humboldt County Fire Safe Regulations are contained in Title III - Division 11, Land Use and Development, as known as the "SRA Fire Safe Regulations" and constitute the wildland fire protection standards of the County for lands within State Responsibility Areas (SRA).

CAL FIRE has responsibility for wildland fires on SRA’s, which includes most of the steeply sloped and forested areas in the southern portion of the Planning Area. When staffed, CAL FIRE provides emergency response for wildland fires, structure fires, vehicle accidents and medical aid calls, and support for local fire agencies as needed. CAL FIRE and the Forest Service are at peak staffing from July through October. During the off-peak part the year, CAL FIRE responds as available (Humboldt County 2011).

The wildfire hazard in the Planning Area has been analyzed using the methodology of CAL FIRE’s Fire and Resource Assessment Program (FRAP). This method takes into account fuels, terrain, weather, and other relevant factors. These zones, referred to as Fire Hazard Severity Zones, provide the basis for application of various mitigation strategies to reduce risks to buildings associated with wildland fires. Specifically, the zone determines the requirements for unique building codes designed to reduce the ignition potential to buildings. According to the 2007 FRAP map, the southern portion of the Planning Area that is within the SRA is a High Fire Hazard Severity Zone.

In 2006, the Humboldt County Board of Supervisors approved the Master Fire Protection Plan (MFPP), as a resource to assist in the development of appropriate policies in the County General Plan. The MFPP was developed for use as a framework for fire coordination, prevention, and protection throughout the county. The MFPP also makes significant findings and recommendations relating to fire protection capability, fire safe education, fire risk and hazard assessment, fire risk reduction and management, community preparedness and response, and fiscal issues relating to fire protection.

The MFPP Plan contains a wildland fire risk/hazard assessment that was prepared for eleven fire planning compartments covering the entire County using the Risk Assessment and Management System (RAMS) computer model. Planning compartments were developed based on watershed
Figure 7 - Fire hazards

Source: City Boundaries - Planwest Partners Inc.
Roads - US Census TIGER data
(http://www.census.gov/geo/www/tiger/)
Fire Ratings - Humboldt CDSD
(http://co.humboldt.ca.us/planning/maps/)

Fire Ratings

- Low
- Moderate
- High

City Limits
Planning Area
Fire Station
Fire Hydrants
and planning boundaries and were designed to include areas with similar fire planning characteristics. The Planning Area is located within the Humboldt Bay Planning Compartment, which extends from Trinidad in the north to Rio Dell and Carlotta in the south.

The RAMS analysis evaluated five factors that contribute to the overall risk of catastrophic fire. The five factors are:

- fire-related fuels hazard and topography;
- resources and economic assets at risk;
- wildland ignition risk;
- wildfire history; and
- fire protection capacity.

Based on the RAMS analysis, the risk of catastrophic fire for the Humboldt Bay Planning Compartment is considered moderate.

Property damage from wildfires can be severe and can significantly alter entire communities. Structures, above-ground infrastructure, critical facilities and natural environments are vulnerable. Some land uses are more vulnerable to wildfire, such as single-family rural residential, while others are less vulnerable, such as agricultural land, gravel mining, and cemeteries. Critical facilities that are of wood frame construction are especially vulnerable during wildfire events.

MINIMIZING RISKS

Ferndale has adopted the 2010 California Fire Code. These provisions include construction standards and sprinkler and fire hydrant requirements in new structures and remodels, road widths and configurations designed to accommodate the passage of fire trucks and engines, and requirements for minimum fire flow rates for water mains.

Providing Ferndale residents, property owners, and business operators with a better education about fire risks and the potential liabilities they face is a proven low cost method to prepare for – and even avoid – fires. The City and the FFPD could facilitate this effort. The FFPD could undertake a proactive and aggressive approach with the owners of private properties who fail to meet minimum maintenance standards from a fire hazards standpoint in its role as enforcement agency for the fire code.

Adopting an annual and ongoing clean-up program to minimize or eliminate fire fuel accumulations on City-owned properties and in the public rights-of-way would allow the City to reduce fire risk while setting an example for other property owners by proactively addressing its own fire safety hazards.

Developing policies to protect existing water supplies, develop additional water supplies and maintain and/or enhance the integrity of the delivery systems would ensure access and availability of water supply in case of a fire.
7.0 Hazardous Materials

This section focuses on those hazards associated with the use, exposure, storage, or release of hazardous materials; provides an overview of federal, state, and local hazardous material regulations; and describes existing known hazardous materials in the Planning Area.

The California Health and Safety Code Section 25501 defines a Hazardous Material as "any material that because of its quantity, concentration, or physical or chemical characteristics poses a significant present or potential hazard to human health and safety or the environment if released into the work-place or environment." Hazardous materials may be associated with transportation accidents or occur in a fixed production or storage facility. Both accidental and sabotage-related releases are possible. Short-term and long-term contamination of an affected area is possible depending upon the situation.

Regulatory Setting

The storage and clean-up (remediation) of hazardous sites is regulated by a series of federal, state and local agencies, including the U.S. Environmental Protection Agency, California Environmental Protection Agency, the State Department of Toxic Substance Control, the State Water Resources Control Board, and the local Certified Unified Program Agency (CUPA).

The Humboldt County Health Department, Division of Environmental Health is the CUPA with oversight of hazardous materials for Humboldt County. The purpose of the CUPA program is to provide hazardous material information about facilities to emergency responders and the general public. Chapter 6.95 of the California Health and Safety Code requires that facilities which use or store hazardous materials at or above reporting thresholds submit a Hazardous Materials Business Plan (HMBP) containing detailed information on the storage of hazardous materials at the facility to CUPA. The intent of the Business Plan is to satisfy federal and state Community Right-To-Know laws and provide detailed information for use by emergency responders. All persons at the facility qualified to serve as emergency coordinators are required to be thoroughly familiar with the contents and use of the HMBP, with the operations and activities of the facility, and with the locations of all hazardous materials records maintained by the facility. Inspections are conducted periodically to verify a facility’s inventory and other information on the Business Plan. Facilities that are not required to complete a HMBP are still required to register their hazardous materials with CUPA. CUPA monitors facilities that handle, generate, or store hazardous materials. Such sites within or near the Planning Area are listed in Figure 8.

CUPA has a Hazardous Materials Area Plan (HMAP) that covers the County, including the City of Ferndale and its surroundings. The HMAP establishes the following:

- Policies, responsibilities, and procedures required for protecting the health and safety of Humboldt County’s population, the environment, and the public and private property from the effects of hazardous materials incidents;
- Emergency response organization for hazardous materials incidents occurring within Humboldt County; and
- Operational concepts and procedures associated with the Eureka Fire Departments Regional Hazardous Materials Response Team (EFD HMRT).
Figure 8 - Hazardous Material Facilities in the Planning Area

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</table>
Existing Conditions

Because of a general lack of significant industrial operations, Ferndale does not currently experience a significant threat from hazardous materials use or storage. The transport of hazardous materials, particularly along the S.R. 211/ Main Street corridor, presents possible hazards in the event of a materials leak or if a transport truck experiences an accident.

This section includes a summary of known regulated hazardous material sites currently listed within the Planning Area. There are numerous agencies with oversight of hazardous materials, each with a slightly differed jurisdiction or purview. Databases regarding hazardous and toxic materials use and storage are maintained by the following agencies:

- Cal-DHS - California Department of Health Services
- Cal-EPA - California Environmental Protection Agency
- CIWMB - California Integrated Waste Management Board
- CORRACTS - Corrective Action Report
- DOG - California Division of Oil and Gas
- DTSC - Department of Toxic Substances Control
- HCDEH - Humboldt County Department of Health and Human Services, Division of Environmental Health
- NPL - Environmental Protection Agency’s National Priorities List
- ODW - Cal-DHS, Office of Drinking Water
- OEHHA - Office of Environmental Health Hazard Assessment
- RCRIS-TSD - Resource Conservation and Recovery Information System
- RWQCB - Regional Water Quality Control Board, North Coast Region
- SWRCB - California (State) Water Resources Control Board

As mentioned in the previous section, CUPA monitors facilities that handle, generate, or store hazardous materials (see Figure 8). CUPA lists 45 such facilities in or near the Planning Area; the majority are associated with the agricultural industry, including approximately 20 dairies.

The Department of Toxic Substances Control (DTSC) lists sites that have known contamination or sites for which there may be reasons to investigate further. It also identifies facilities that are authorized to treat, store, dispose or transfer hazardous waste. The DTSC has no listed sites within the Planning Area (DTSC 2012).
The State Water Resources Control Board (SWRCB) lists sites that have underground storage tanks containing hazardous materials. These tanks are typically associated with past automobile-related activities, such as service stations and automobile repair shops. SWRCB has identified over 36 sites in the Planning Area that involve issues of leaking underground storage tanks (LUST’s). The primary risk LUSTs pose is leaking gasoline and diesel fuel hydrocarbons and related compounds into the soil and groundwater. Most of the sites have undergone successful remediation, which usually involves removal of the underground tanks and any contaminated soil. There are currently eight open LUST cases in the Planning Area (see Figure 9). These remaining sites are monitored by SWRCB.

Hazardous Material Incident Response

The primary responder for hazardous material-related calls within the Planning Area is the Ferndale Volunteer Fire Department (FVFD). Several members of the Ferndale Volunteer Fire Department have training and certifications in hazardous materials incident response, including Hazardous Materials Technician, Hazardous Materials Decontamination, Meth Lab Fire Scene Preservation, and Hazardous Materials: First Responder Awareness/Operations.

The Eureka Fire Department’s Regional Hazardous Material Response Team (HMRT) was established in 1993 to respond to emergencies involving hazardous materials. The HMRT is funded primarily through a Joint Powers Agreement (JPA) between Humboldt County, Del Norte County, City of Eureka, City of Crescent City, City of Arcata, City of Blue Lake, City of Ferndale, City of Rio Dell, and City of Trinidad. The JPA establishes the Humboldt/Del Norte Hazardous Material Response Authority (HMRA). The HMRA Board consists of elected officials of each member agency and meets quarterly to provide oversight to the Team.

CUPA provides staff functions for the HMRA. CUPA is the regulatory authority relative to hazardous materials and supports the HMRT at emergency incidents. The two agencies maintain a close working relationship to ensure public safety and effective response to emergencies.

The HMRT consists of twelve members of the Eureka Fire Department, each of which is certified as Hazardous Material Specialists by the State of California. HMRT members are “non-dedicated,” meaning that they have other duties within the fire department but also function as hazardous material specialists. The HMRT meets monthly for training and members are required to maintain their skills and competencies to fulfill their mission. The HMRT also conducts quarterly drills at various facilities within its response area to maintain skills and to interface with local industry. All members of the Eureka Fire Department are trained and State certified to the First Responder Operational and Decontamination for Hazardous Materials (City of Eureka 2012).
### Figure 9 - Leaking Underground Storage Tanks (LUSTs) in the Planning Area

<table>
<thead>
<tr>
<th>FACILITY ID</th>
<th>SITE NAME</th>
<th>CLEANUP STATUS</th>
<th>ADDRESS</th>
<th>CITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>T06023000448</td>
<td>Bank Of America</td>
<td>Completed - Case Closed</td>
<td>394 Main Street</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300180</td>
<td>Bar Ale Of Humboldt</td>
<td>Completed - Case Closed</td>
<td>989 Milton Ave</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300182</td>
<td>Citizen's Mortuary</td>
<td>Completed - Case Closed</td>
<td>470 Ocean Ave</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300409</td>
<td>Crane Residence</td>
<td>Completed - Case Closed</td>
<td>117 Berding St</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300230</td>
<td>Farley Property</td>
<td>Completed - Case Closed</td>
<td>1677 Market St</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300264</td>
<td>Farm Shop, The</td>
<td>Completed - Case Closed</td>
<td>817 Rose Ave</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300284</td>
<td>Fern Cafe</td>
<td>Completed - Case Closed</td>
<td>606 Main St</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300029</td>
<td>Ferndale Elementary</td>
<td>Completed - Case Closed</td>
<td>164 Shaw Ave</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300220</td>
<td>Ferndale High School /Bus Garage</td>
<td>Completed - Case Closed</td>
<td>1231 Shaw Ave</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300262</td>
<td>Ferndale Motors</td>
<td>Open - Site Assessment</td>
<td>638 Main St</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300043</td>
<td>Ferndale Museum</td>
<td>Open - Site Assessment</td>
<td>515 Shaw Ave</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300232</td>
<td>Ferndale Public Works Dept.</td>
<td>Completed - Case Closed</td>
<td>48 Francis St</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300340</td>
<td>Ferndale Union High School Gym</td>
<td>Completed - Case Closed</td>
<td>1231 Main St</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300509</td>
<td>Ferndale Veterans Memorial Bldg</td>
<td>Open - Site Assessment</td>
<td>1100 Main St</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300390</td>
<td>Fuller Property</td>
<td>Completed - Case Closed</td>
<td>1050 Van Ness</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300126</td>
<td>HCDPW Ferndale Maint. Station</td>
<td>Completed - Case Closed</td>
<td>Arlington St</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300043</td>
<td>Laffranchi Refrigeration</td>
<td>Completed - Case Closed</td>
<td>520 Mckinley Ave</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300474</td>
<td>Linos Service</td>
<td>Open - Inactive</td>
<td>318 Main St</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300072</td>
<td>Lorenzo's Gas &amp; Grocery</td>
<td>Open - Site Assessment</td>
<td>1392 Main St</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300484</td>
<td>Mary Gomes Trust</td>
<td>Completed - Case Closed</td>
<td>1154 Port Kenyon</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300445</td>
<td>McBride Estate</td>
<td>Completed - Case Closed</td>
<td>951 Van Ness</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300063</td>
<td>Nilsen Company</td>
<td>Completed - Case Closed</td>
<td>424 Main St</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300274</td>
<td>Nobles Grocery</td>
<td>Open - Site Assessment</td>
<td>2028 Market St.</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300164</td>
<td>Peers Motor Sales</td>
<td>Completed - Case Closed</td>
<td>580 Main St</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300500</td>
<td>Private Res.</td>
<td>Completed - Case Closed</td>
<td>Private Res.</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602326726</td>
<td>Private Res.</td>
<td>Completed - Case Closed</td>
<td>Private Res.</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300151</td>
<td>Private Res.</td>
<td>Completed - Case Closed</td>
<td>Private Res.</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602350415</td>
<td>Private Res.</td>
<td>Completed - Case Closed</td>
<td>Private Res.</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602393589</td>
<td>Private Res.</td>
<td>Open - Verification Monitoring</td>
<td>Private Res.</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300392</td>
<td>Rutherford Residence</td>
<td>Completed - Case Closed</td>
<td>563 Ocean Ave</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300070</td>
<td>Silva, Maurice</td>
<td>Completed - Case Closed</td>
<td>1348 Lincoln St</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300046</td>
<td>Tipple Motors, Jack</td>
<td>Completed - Case Closed</td>
<td>524 Main St</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300749</td>
<td>Us Bank Ferndale</td>
<td>Completed - Case Closed</td>
<td>330 Ocean Ave</td>
<td>Ferndale</td>
</tr>
<tr>
<td>T0602300335</td>
<td>Wiser, Ray</td>
<td>Completed - Case Closed</td>
<td>942 Main St</td>
<td>Ferndale</td>
</tr>
</tbody>
</table>

Source: State Water Resources Control Board Geotracker 2012
MINIMIZING RISKS

The City of Ferndale has adopted Humboldt County’s Integrated Waste Management Plan (IWMP). The goals of the IWMP are to reduce the amount of household hazardous waste generated through reuse and recycling, diversion from landfills, promoting alternatives to toxic household products and educating the public regarding household hazardous waste management.

Requiring that all land uses that transport, generate, use, handle, store, dispose of, and/or emit hazardous materials or waste be in compliance with all applicable, federal, state, County and local hazardous materials safety laws and regulations, as well as enforcing all building and fire codes adopted by the State, will minimize potential harm to the public from hazardous materials.

Continuing to coordinate with the County, the Regional Water Quality Control Board, Environmental Protection Agency, and State Department of Toxic Substance Control would minimize the risk of hazardous materials impacting people and property from sites that store, handle and/or use hazardous materials above local, State, and Federal thresholds.

The Ferndale Volunteer Fire Protection District’s continued maintenance of state-of-the art first responder equipment and trained personnel within the Ferndale Volunteer Fire Department would help to minimize the impacts of hazardous material releases within the Planning Area.
8.0 Acceptable Risk

The General Plan Safety Element establishes mechanisms to reduce the risk of bodily harm and property damage from natural and human-caused hazards. Hazards are an unavoidable aspect of life, and the Safety Element does not eliminate risk. Instead, the Element contains policies to minimize the effects of hazards and hazardous events and acknowledge an acceptable risk level.

The Element takes a two-tiered approach to minimizing risk associated with natural and man-made hazards. On one level, the Element examines ways in which the community can prepare for and respond to the effects of hazardous events. For example, citizens may utilize sandbags during a 100-year storm event to prevent flooding damage to an existing building. Community-level response to hazardous events will be covered in Chapter 9.0 Emergency Preparedness.

On another level, the Element establishes land use and development policies to prevent or minimize the effects of hazards. For instance, the City may regulate what type of land use is allowed in a 100-year floodplain, prohibiting such uses as power plants or hazardous material storage. The City may also require mitigation for development that is allowed in the floodplain. The following are typical policies for flooding hazards:

- Review all proposed development to ensure that structures designed for human occupancy are accessible in the event of a 100-year storm and are protected from the 100-year storm by setting lowest habitable floor elevations one foot above the floodplain.

- Request a drainage study of proposed development in the 100-year floodplain to ensure adequate protection and that implementation of the development will not create new downstream flood hazards.

Using information on the potential for man-made or natural hazards from chapters 4.0-7.0 of this Element, the City may establish policies such as these to prevent or mitigate damage from hazardous events before those events occur. High-level hazards that present the greatest risk to life and property are generally addressed by City policies. Lower-level hazards, with less risk of causing catastrophic damage, are generally addressed at the neighborhood and individual levels. In order to develop effective policies, an acceptable level of risk above which City action is required to provide protection to life and property must be established.

This section defines the term ‘acceptable risk’ as the level of risk that a majority of citizens and insurance companies will accept without asking for governmental action to provide protection. Using this definition, various structures and land uses were classified according to how the population of Ferndale would be affected in the event of loss or failure of each facility, and a level of acceptable damage was established for each facility type. This information was used to identify optimal locations for the various land uses in relation to Ferndale’s hazard areas. Regulating land use and development accordingly will enable the City to avoid or mitigate the effects of natural hazards in order to protect lives and property.
Risk Determination

The idea of risk evaluation is the central concept in planning for safety. The concept can be applied to all kinds of hazards, both natural and man-made. Although a hazard-free environment will never exist, an important initial step is to determine a level of acceptable risk. This involves determining the degree of risk, deciding how much risk is acceptable, and implementing measures to reduce the negative effects to a lower level.

The criteria for determination of risk are based on:

- Reduction or prevention of bodily harm
- Reduction or prevention of property damage
- Reduction or prevention of economic and social dislocations

Based on these criteria a risk may be categorized as acceptable, unacceptable, or avoidable. The determination of acceptable and unacceptable risk requires judgments based on weighing several factors including the nature of the hazard, the frequency or risk of a damaging event associated with the hazard, and the relative number of persons exposed to the risk. The degree or intensity of any specific hazard is a major consideration in public mitigation efforts. Thus, hazards with a high life-loss potential are less acceptable than hazards which primarily affect property, and hazards which could impact the entire community are less acceptable than hazards which may impact relatively few persons. Only minimal risk to critical facilities and functions (including water supply, emergency services, evacuation routes, and medical and mass care facilities) is considered acceptable since these facilities and functions are critical to disaster recovery for entire communities.

The Council on Intergovernmental Relations (CIR) has composed Safety Element guidelines. Central to these guidelines is the concept of acceptable risk. CIR defines acceptable risk as the level of risk below which no specific action by local government is deemed necessary, other than making the risk known and suggesting remedial measures for the public to take if they desire on their own to lessen the risk.

Critical Facilities

The determination of acceptable risk from hazardous events involves differentiating among man-made structures according to their potential effect on the loss of life and their importance in terms of emergency response and continued community functioning. If essential services are not functional after a disaster, the magnitude of the disaster can be much larger.

The term “critical facilities” is used to describe those structures or land uses which are especially important for the preservation of life, the protection of property, and the continuing functioning of society. For the purposes of planning for hazard avoidance or mitigation, structures, occupancies, and land uses in the Ferndale Planning Area are classified as indicated in Figure 10. Classes 1-A through 3-B in this table are considered to be critical facilities.

These critical facilities are vital to the community's ability to respond to a major disaster and to minimize loss of life and property. At minimum, all structures which could have a significant effect on the loss of life should be designed to remain standing in the event of a major disaster,
even if rendered useless. Critical facilities, on the other hand, should not only remain standing, but in the event of a disaster should be able to operate at peak efficiency.

**Risk Ratings**

Figure 10 lists structures and land uses for the purpose of risk classification. Figure 11 classifies the structures, occupancies, and land uses as described in Figure 10 and establishes general levels of acceptable risk in terms of risks to health and safety, risks to continuity of service, and risks of fire or structural damage. The column in Figure 11 titled “Level of Acceptable Risk” identifies the general levels of risk that are considered appropriate for each category of structure, occupancy, or land use. Tolerance levels for risk range from “near zero” for facilities whose failure might be catastrophic, such as nuclear plants and natural gas transmission lines, to “high” for open space lands with no development and low intensity occupancy. Exposure of the critical facilities to frequent or occasional hazard is not tolerable because the possibility of injuries to persons, losses of life and property, or disruption of disaster response capabilities could be so great in the event of damage to any of these facilities. On the other hand, a greater probability of damage to non-critical facilities can be tolerated because exposure to the hazard either affects relatively few people or properties, or causes relatively little personal injury or property damage. The basic premise for this table is that the City wishes to avoid all loss of life from foreseeable hazards, and to prevent personal injury and reasonably avoidable property damage.

Acceptable damage to facilities is correlated with risk levels and provides a guide to structural design requirements for all facilities and fire resistant characteristics for buildings in the several risk classes. Figure 12 provides a general guide to siting development with respect to the various hazard areas.
### Figure 10 – Risk Classifications of Structures, Occupancies, and Land Uses

<table>
<thead>
<tr>
<th>CLASS</th>
<th>GENERAL CATEGORY</th>
<th>GENERAL EXAMPLES*</th>
<th>PLANNING AREA EXAMPLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-A</td>
<td>Facilities whose failure might be catastrophic</td>
<td>Nuclear reactors, large dams</td>
<td>None</td>
</tr>
<tr>
<td>1-B</td>
<td>Facilities whose continuing function is critical</td>
<td>Power plants, power intertie systems</td>
<td>Water/wastewater treatment systems</td>
</tr>
</tbody>
</table>
| 2-A    | Facilities critically needed for services after disaster | Hospitals, fire stations, telephone exchanges | City Hall  
Fire Hall  
Telecommunications systems |
| 2-B    | Critical transportation links                        | Regional highways, bridges, rail lines, overpasses, tunnels | State Route 211, Wildcat Road |
| 2-C    | Major local utility lines and facilities             | Power substations, gas and water mains | Wastewater treatment lines  
Del Oro Water Co. lines |
| 2-D    | Small dams                                           | Small dams                             | None                                    |
| 3-A    | High occupancy structures                            | High-rise apartments and offices, schools | Ferndale High and Elementary School |
| 3-B    | Facilities highly desirable for shelter after disaster | Schools, churches                     | Schools, County Fairgrounds             |
| 3-C    | Local roads, utilities, and communication facilities | Local roads, local utility lines       | Local roads and bridges, local utility lines, telephone services, roadways that could slide out |
| 4-A    | Medium occupancy structures                          | Most commercial and industrial buildings, apartments | Navy Housing complex                   |
| 4-B    | Low occupancy structures                             | Single family homes                    | Single family homes                     |
| 5-A    | Open space lands, high intensity occupancy or development | Recreation areas, orchards, vineyards | Fireman’s Park                          |
| 5-B    | Open space lands with no development, low intensity occupancy | Grazing lands, forest                 | Ferndale Bottoms                       |

*Some of the general examples given in this table are for purposes of illustration only, and are not anticipated in the Planning Area

Adapted from Town of Woodside General Plan 2012 Natural Hazards and Safety Element
### Figure 11 – Levels of Acceptable Risk for Structures, Occupancies, and Land Uses

<table>
<thead>
<tr>
<th>CLASS</th>
<th>GENERAL CATEGORY</th>
<th>POPULATION AFFECTED IN EVENT OF FAILURE</th>
<th>ACCEPTABLE DAMAGE TO FACILITY</th>
<th>TOLERANCE FOR RISK*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-A</td>
<td>Facilities whose failure might be catastrophic</td>
<td>Vast</td>
<td>None which would result in exposing affected population to death or injury</td>
<td>Near Zero</td>
</tr>
<tr>
<td>1-B</td>
<td>Facilities whose continuing function is critical</td>
<td>Vast</td>
<td>None which would impair facility or disrupt function</td>
<td>Extremely Low</td>
</tr>
<tr>
<td>2-A</td>
<td>Facilities critically needed for services after disaster</td>
<td>Substantial</td>
<td>None which would impair facility or disrupt function</td>
<td>Extremely Low</td>
</tr>
<tr>
<td>2-B</td>
<td>Critical transportation links</td>
<td>Substantial</td>
<td>Minor non-structural; facility should remain operational and safe, or be susceptible to quick restoration of service</td>
<td>Low</td>
</tr>
<tr>
<td>2-C</td>
<td>Major local utility lines and facilities</td>
<td>Substantial</td>
<td>Minor non-structural; facility should remain operational and safe, or be susceptible to quick restoration of service</td>
<td>Low</td>
</tr>
<tr>
<td>2-D</td>
<td>Small dams</td>
<td>Moderate</td>
<td>None which would expose &quot;downstream&quot; population to injury</td>
<td>Extremely Low</td>
</tr>
<tr>
<td>3-A</td>
<td>High occupancy structures</td>
<td>Varies</td>
<td>No structural damage; minor nonstructural damage, but structures should remain safe and usable</td>
<td>Low</td>
</tr>
<tr>
<td>3-B</td>
<td>Facilities highly desirable for shelter after disaster</td>
<td>Varies</td>
<td>No structural damage; minor nonstructural damage, but structures should remain safe and usable</td>
<td>Low</td>
</tr>
<tr>
<td>3-C</td>
<td>Local roads, utilities, and communication facilities</td>
<td>Moderate</td>
<td>Damage should be susceptible to reasonably rapid repair (or utility shut-off)</td>
<td>Moderate</td>
</tr>
<tr>
<td>4-A</td>
<td>Medium occupancy structures</td>
<td>Moderate</td>
<td>Structural integrity must be retained; damage should not unduly endanger safety of occupants.</td>
<td>Low</td>
</tr>
<tr>
<td>4-B</td>
<td>Low occupancy structures</td>
<td>Few</td>
<td>Structural integrity must be retained; damage should not unduly endanger safety of occupants.</td>
<td>Ordinary</td>
</tr>
<tr>
<td>5-A</td>
<td>Open space lands, high intensity occupancy or development</td>
<td>Varies</td>
<td>Structural integrity must be retained; damage should not unduly endanger safety of occupants.</td>
<td>Moderate</td>
</tr>
<tr>
<td>5-B</td>
<td>Open space lands, no development, low intensity occupancy</td>
<td>Few</td>
<td>Not applicable</td>
<td>High</td>
</tr>
</tbody>
</table>

*Levels of acceptable risk range from lowest to highest as follows: Near Zero, Extremely Low, Low, Ordinary, Moderate, and High

Adapted from Town of Woodside General Plan 2012 Natural Hazards and Safety Element
Figure 12 – Location of Structures and Land Uses in Relation to Defined Hazard Areas

<table>
<thead>
<tr>
<th>Class</th>
<th>General Category</th>
<th>Fire</th>
<th>Flood</th>
<th>Earth Shaking</th>
<th>Landslides</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High Fire Hazard Zone</td>
<td>OK</td>
<td>OK</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>1-A</td>
<td>Facilities whose failure might be catastrophic</td>
<td>OK</td>
<td>OK</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>1-B</td>
<td>Facilities whose continuing function is critical</td>
<td>OK</td>
<td>OK</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>2-A</td>
<td>Facilities critically needed for services after disaster</td>
<td>OK</td>
<td>OK</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>2-B</td>
<td>Critical transportation links</td>
<td>OK</td>
<td>OK</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>2-C</td>
<td>Major local utility lines and facilities</td>
<td>OK</td>
<td>OK</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>2-D</td>
<td>Small dams</td>
<td>OK</td>
<td>OK</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>3-A</td>
<td>High occupancy structures</td>
<td>OK</td>
<td>OK</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>3-B</td>
<td>Facilities highly desirable for shelter after disaster</td>
<td>OK</td>
<td>OK</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>3-C</td>
<td>Local roads, utilities, and communication facilities</td>
<td>OK</td>
<td>OK</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>4-A</td>
<td>Medium occupancy structures</td>
<td>OK</td>
<td>OK</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>4-B</td>
<td>Low occupancy structures</td>
<td>OK</td>
<td>OK</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>5-A</td>
<td>Open space lands, high intensity occupancy or development</td>
<td>OK</td>
<td>OK</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>5-B</td>
<td>Open space lands, no development, low intensity occupancy</td>
<td>OK</td>
<td>OK</td>
<td>OK</td>
<td>OK</td>
</tr>
</tbody>
</table>

OK – Use usually OK without special design or construction measures required
M – Use may be appropriate if mitigating measures are taken adequate to the function of structure or occupancy
X – Use is usually NOT APPROPRIATE in a location with these characteristics

Adapted from Town of Woodside General Plan 2012 Natural Hazards and Safety Element
MINIMIZING RISKS

Regulating land use and development using the risk assessment completed in this Safety Element will enable the City to avoid or mitigate the effects of natural hazards in order to protect lives and property.

Designating and constructing development on lands in such a manner that levels of acceptable risk defined in Figure 11 are not exceeded will enable the City to avoid or mitigate unacceptable damage to lives and property. Development in hazardous areas should, in general, be limited to structures and improvements which would not threaten human life or cause substantial financial loss in the event of damage. Where hazards are identified, mitigating measures should be taken at the time of development. Mitigation measures could include providing adequate fire egress from the development and ensuring that there are no lengthy, one-way streets. Development should provide adequate water supplies, roads which are suitable for the safe passage of emergency vehicles, and legible street name signs and house numbers.
9.0 Emergency Preparedness

Emergency preparedness involves the community in planning to identify resources, provide public awareness, and formulate plans for emergency situations. The goal is for government, businesses, and local groups to coordinate emergency response, ensure the functioning of critical facilities, facilitate post-disaster relief, and expedite recovery operations.

Emergency preparedness improves the ability of local forces, such as the Ferndale Volunteer Fire Department, the Ferndale Police Department, City staff, and local citizens, to deal with emergencies quickly and effectively. Major disasters and emergencies also require outside assistance, from nearby cities, the County, the State, or from federal sources.

Whenever other agencies are involved, coordination is critical. The ability of the City and neighboring jurisdictions to prepare for and respond to emergency conditions in a coordinated manner is essential to the community’s health and safety. Wildfires can ignite in neighboring jurisdictions and spread quickly into Ferndale. Hazardous material spills or explosions outside of City limits can affect Ferndale residents. Other municipalities, public and private utilities and transportation systems, hospitals, and special districts provide vital resident-serving services that are highly vulnerable to earthquakes and other hazards. This regional interdependence of medical, transportation, communications, emergency response, and other systems necessitates active coordination and a consistent level of mitigation and preparedness.

It is well documented that community preparation reduces the risks associated with a major disaster. Neighborhoods and businesses need to be trained on how to prepare for and respond to a major disaster. When Ferndale citizens are prepared, the risk to life and property from a major disaster is significantly reduced. A major focus of the City’s mitigation efforts should be the preparation and training of the community to help itself.

Emergency Management Hierarchy

An emergency management hierarchy has been established to assist in the event that local governments require aid in dealing with emergencies (see Figure 13). At the federal level, the Federal Emergency Management Agency (FEMA) oversees United States government response efforts. At the state level, the California Emergency Management Agency (Cal EMA) oversees state organization response efforts. At the county level, the Operational Area (OA) oversees coordinated response for the county and the cities and special districts within. This hierarchy is in place to assist the organization and movement of resources to areas of need. At each level - federal, state, and local - the response organization has the statutory power to requisition resources and assistance from other governmental entities at that level (OES 2003).

The response hierarchy works in the following manner: When a city or special district cannot effectively handle a crisis with their own available resources and organization, they request county OA assistance. The county OA provides whatever available resources and assistance which can be mobilized locally from county assets and from other cities and special districts within the county. Should additional resources and assistance not available locally be needed, the county OA will request help from the Cal EMA. The state, in turn, will provide whatever resources and assistance that can be procured from state assets. FEMA is contacted when the
state needs assistance to handle the crisis. In California, Cal EMA is divided into three response support regions. The Coastal Region is comprised of the sixteen coastal counties from Del Norte to Monterey. Any assistance requests from the Humboldt County OA go directly to the Coastal Region which immediately canvasses the sixteen coastal counties for needed resources and assistance. Should more assistance be needed, the Coastal Region contacts the Cal EMA in Sacramento which, in turn, canvasses the other Regions in the State (OES 2003).

Figure 13 – Emergency Management Hierarchy

![Emergency Management Hierarchy Diagram]

Source: Humboldt County Office of Emergency Services 2003.

The Humboldt County Office of Emergency Services (OES) manages the county OA response from the county Emergency Operations Center (EOC). The EOC contains an extensive and varied communications system that allows for instant information transfer anywhere inside and outside the county. The EOC can operate independently of external power sources. Previously identified and trained personnel with expert knowledge and expertise from county departments, state and federal agencies, and other local governments, agencies, and organizations meet and efficiently coordinate the county OA response from the EOC. All responders are trained in the use of the National Incident Management System, the Standardized Emergency Management System, and in the Incident Command System to best facilitate a coordinated response from all levels of government (OES 2003).

City of Ferndale Emergency Operations

Under the emergency management hierarchy described above, the City serves as first responder in the event of a local emergency. The City is charged with the responsibility to provide effective emergency preparedness operations under State law and Federal Emergency Management Administration (FEMA) directives (Woodside 2012). This responsibility requires the City to ensure the effective direction of resources involved in preparing for and responding to situations associated with natural disasters, man-made technological incidents, or national defense emergencies. The City must be prepared to respond to emergencies that might occur within its limits and must be able to assess whether it is capable of responding effectively.
The City accomplishes this in part through its Emergency Operations Plan (EOP), prepared in 2004 and updated in 2006 by the County OES for the City of Ferndale. The EOP identifies the City’s emergency planning, organization, policies, procedures, and response to extraordinary emergency situations associated with natural disasters, technological incidents, and national security emergencies. The plan also addresses integration and coordination with other governmental levels when required (OES 2006). Figure 14 shows Ferndale’s emergency management organization as per the EOP.

**Figure 14 – City of Ferndale Emergency Management Organization**
The Ferndale EOP establishes the emergency management organization required to mitigate any significant emergency or disaster affecting the City; identifies the responsibilities, policies and procedures required to protect the health and safety of residents and property and to minimize the environmental effects of natural and technological emergencies and disasters; and establishes the operational concepts and procedures associated with field response to emergencies, City Emergency Operations Center (EOC) activities, and the recovery process (OES 2006).

The EOP is based on the functions and principles of the California Standardized Emergency Management System (SEMS), the California Incident Command System, and the National Incident Management System (NIMS), which identifies how the Ferndale emergency operational system fits in the overall California emergency management system during response and recovery operations (OES 2006). Figure 15 depicts the five levels of emergency response organization under SEMS.

Under the EOP, the City’s response to disasters is based on four phases:

- Increased readiness;
- Initial response operations;
- Extended response operations; and
- Recovery operations.
During each phase, specific actions are taken to reduce and/or eliminate the threat of specific disaster situations. In coordination with the City and Incident Commanders, the OES Coordinator will determine the phase and initiate the appropriate level of alert for response agencies, including the activation of the Emergency Operations Center (EOC) as required. Ferndale EOC is located in the City Hall at 834 Main Street (OES 2006).

According to the EOP, the overall objective in managing emergency operations is to ensure that effective direction is maximized for those emergency forces involved in preparing for and responding to situations associated with natural disasters, technological incidents, or national defense emergencies. The specific purposes of the EOC are to facilitate overall management and coordination of emergency operations; coordination and liaison with appropriate federal, state, and other local government agencies and private sector resources; management of mutual aid resources; establishment of priorities; and collection, evaluation, and dissemination of damage information and other essential data (OES 2006).

**Emergency Management Authority**

The following provides emergency management laws and authorities for conducting and/or supporting emergency operations (OES 2006):

**City**

- Ordinance No. 267 adopting the City of Ferndale Emergency Organization and Functions by the City of Ferndale City Council dated June 3, 1974.
- Ordinance No. 462 adopting City of Ferndale Emergency Procedures for expenditures and delegating of power to the City Manager dated April 9, 2002.

**County**

- Ordinance No. 2203, relating to Emergency Organization and Functions of the Humboldt County Disaster Council, by the Board of Supervisors, dated March 21, 2000.
- Resolution No. 370 of the Board of Supervisors of the County of Humboldt relative to Workers’ Compensation Insurance for Registered Volunteer Disaster Service Workers, dated June 27, 1949.
- Resolution of the Board of Supervisors of the County of Humboldt adopting the California Disaster and Civil Defense Master Mutual Aid Agreement dated December 1, 1950.
- Resolution of the Board of Supervisors of the County of Humboldt adopting the Humboldt County Emergency Operations Plan dated June 25, 2002.

**State**

- California Emergency Services Act (California Government Code, Title 2, Division 1, Chapter 7).
- Standardized Emergency Management Systems regulations (California Code of Regulations, Title 19, Division 2, Chapter 1 and California Government Code § 8607).
• Hazardous Materials Area Plan Regulations (California Code of Regulations, Title 19, Division 2, Chapter 4, Article 3, § 2720 – 2728 and California Health and Safety Code, Division 20, Chapter 6.95, § 25503.5).
• California Department of Water Resources Flood Control (California Water Code § 128).
• Orders and Regulations, which may be selectively promulgated by the Governor during a STATE OF EMERGENCY.
• Orders and regulations, which may be selectively promulgated by the Governor during a STATE OF WAR.

Federal
• Federal Civil Defense Act of 1950 (Public Law, as amended).
• Army Corps of Engineers Flood Fighting (Public Law 84-99).

Community Emergency Preparedness Training (CERT)
Despite extensive local, state, and federal planning and coordination, emergency services may be overwhelmed in the immediate aftermath of a major disaster. First responders may be hindered by impassable roads, offline utilities, damaged communications facilities, and lack of personnel. Depending on the severity of the emergency, it could take several days before basic services are restored. Emergency preparedness planning recognizes that residents must be prepared to be self-sufficient for 72 hours or more after the occurrence of a major disaster.

Formed in 2011 in response to this need for community self-sufficiency, Humboldt State University’s Regional Training Institute (RTI) is an information center for disaster preparedness training. With a focus on regional coordination, RTI provides educators, individuals, neighborhood groups, businesses and social groups the tools necessary to strengthen their disaster response capabilities. RTI offers a Community Emergency Response Team (CERT) course with the goal of helping citizens become self-sufficient in the event of a major disaster by acquiring hands-on disaster training. CERT is based on a foundation of training modules that educates individuals about disaster preparedness for hazards that may impact their area, and trains them in basic disaster response skills, such as fire safety, light search and rescue, team organization, and disaster medical operations. Using the training learned in the classroom and during exercises, CERT members can assist others in their neighborhood or workplace following an event when professional responders are not immediately available to help. CERT members also are encouraged to support emergency response agencies by taking a more active role in emergency preparedness projects in their community (RTI 2013).
The CERT concept was developed and implemented by the Los Angeles City Fire Department (LAFD) in 1985. The Whittier Narrows earthquake in 1987 underscored the area-wide threat of a major disaster in California. Further, it confirmed the need for training civilians to meet their immediate needs. As a result, the LAFD created the Disaster Preparedness Division with the purpose of training citizens and private and government employees (FEMA 2012). The success of the LAFD training program prompted FEMA to adopt and expand the CERT program in 1993, making the training available nationally. Since then, communities in 28 States and Puerto Rico have conducted the training (FEMA 2012).

There is currently only one CERT program within 20 miles of Ferndale. The Eel River Valley CERT program, started in 2009 with funding from a federal Readiness and Emergency Management for Schools (REMS) grant, serves the Fortuna Union Elementary School District (ERV-CERT 2011), as well as covering Carlotta, Ferndale, Fortuna, Hydesville, Loleta, Rio Dell, and Scotia (Citizen Corps 2013). The group held CERT training courses from May 2010 to January 2011 to achieve the following goals:

- To expand the number of school personnel and community members trained to respond to emergencies
- To assist local schools during emergencies
- To be an advocate for emergency preparedness in the Eel River Valley and beyond
- To support the work of first responders during disasters
- To support the development and continued existence of other CERT programs in Humboldt County (ERV-CERT 2011)

Eel River Valley CERT is part of the Eel River Valley Emergency Preparedness Team (ERV-EPT), a multi-agency team of volunteers working to enhance emergency preparedness in the Eel River Valley. Participating agencies include Humboldt County Sheriff’s Office of Emergency Services; Cal Fire; St. Joseph Hospital; Redwood Memorial Hospital; City Ambulance; Volunteer Fire Departments, including Fortuna, Ferndale, Scotia, and Rio Dell; Police Departments, including Fortuna, Ferndale, and Rio Dell; Ferndale Mayor and City Manager; Loleta CSD; Humboldt County Dept. of Health & Human Services; North Coast Schools' Insurance Group (NCSIG); Eel River Valley Readiness and Emergency Management for Schools (ERV-REMS); Eel River Valley schools, including: Academy of the Redwoods, Fortuna Middle School, Fortuna High School, Ferndale Elementary, Ferndale H.S., Toddy Thomas Middle School, Loleta Elementary, Fortuna Elementary (South), Rio Dell Elementary; and community groups, including Loleta Chamber of Commerce, Loleta Community Church, Loleta Community Resource Center, Fortuna Community Services, and Hydesville Community Church.
MINIMIZING RISK

Taking a three-tiered approach to emergency preparedness will best enable the City to prepare for adequate emergency response and recovery, ensure the continued functioning of critical facilities, and facilitate post-disaster relief and recovery operations. On a broad level, coordinating with other agencies, from FEMA to neighboring jurisdictions, is key to ensuring that the City will have the resources it needs in the event of a major disaster. On a local level, planning for disaster response, including such measures as continuing to refine and update the City’s EOP, will facilitate coordination among first-responders and City staff, thus streamlining the response to and recovery from an emergency. And finally, training the citizens of Ferndale on how to prepare for and respond to all types of disaster will greatly reduce loss of life and property in the initial hours of a major disaster.
10.0 Goals, Policies and Implementation Programs

NOTE: To be developed per schedule.

SCOPE: Goals, policies, and implementation programs will be developed to provide a policy basis for measures Ferndale can take to prevent loss of life, reduce injuries and property damage, and minimize economic and social dislocations which could result from earthquake, fire, or other natural and man-made disasters. The contract planner and City staff will work with the Planning Commission and City Council to craft policies and implementation strategies for reduction of risk and mitigation or abatement of those hazards and for emergency preparedness and disaster response through land use planning. Policies may address the intensity of development in hazardous areas, clearly define the scope of hazard mitigation measures by type of land use, requirements (if any) for geotechnical and geologic investigations to mitigate geologic hazards and clear procedures for geotechnical and geologic report review.
11.0 References


City of Ferndale Drainage Master Plan Update. 2004.

City of Ferndale General Plan Public Safety Element. 1975.


Humboldt County Operational Area Hazard Mitigation Plan (HMP). 2007.


10.0 Goals, Policies and Implementation Programs

Safety Element goals and policies provide a policy basis for measures Ferndale can take to prevent loss of life, reduce injuries and property damage, and minimize economic and social dislocations which could result from earthquake, fire, or other natural and man-made disasters. Policies address the intensity of development in hazardous areas, define the scope of hazard mitigation measures by type of land use, requirements for geotechnical and geologic investigations to mitigate geologic hazards and clear procedures for geotechnical and geologic report review. The contract planner and City staff worked with the Planning Commission, City Council, and agency representatives to craft policies and implementation strategies for reduction of risk and mitigation or abatement of those hazards and for emergency preparedness and disaster response through land use planning.

Goals are general statements of community values or aspirations. They define the ends toward which the City will address its efforts.

Policies are more precise expressions of the community’s position on particular issues, or how particular goals can be reached. Policies may include guidelines, standards, objectives, maps, diagrams, or a combination of these components.

Implementing Programs present specific actions that the City or other identified entity will undertake to address policy issues and move closer to the community’s goals. These might include ongoing programs sponsored by the City (e.g., a Community Emergency Response Team program), discrete time-specific actions (e.g., adopt an ordinance), or further planning action (e.g., develop a specific plan).

GOAL 1 - Geologic and Seismic Hazards

Minimize the risk to public health and safety and loss of social, economic, and environmental welfare resulting from seismic and geologic activities.

Policies

Policy 1.1 Update City zoning regulations for seismic setbacks, structural requirements, and hillside development standards.

Policy 1.2 Require geotechnical evaluation for development projects with the potential for geological hazards, such as slope failures or soil subsidence.

Policy 1.3 In areas with identified geologic hazards, development shall conform to geotechnical report mitigation measures and/or project and site modifications to respond to site-specific hazards and conditions.

Policy 1.4 Improve drainage, plant soil-stabilizing vegetation, and provide structural reinforcements in landslide-prone areas.

Policy 1.5 Collect and maintain current geologic data to identify hazardous areas.

Policy 1.6 Ensure that public facilities are structurally sound and able to withstand seismic shaking and the effects of seismically-induced ground failure.
Implementation Programs

Program 1.a Require development applications for projects on slopes of 30% or more to submit a geologic investigation and report by a qualified engineering geologist. The report shall address potential for slope failure, soil subsidence and related geologic events, and recommend measures to minimize hazards.

Program 1.b Prohibit development on excessively steep hillsides where slope stability mitigations are not deemed feasible by the City Engineer and where a significant hazard to Ferndale residents may result.

Program 1.c Where known landslide areas exist, require mitigation actions for slope stability. This can include, with affected property owner support, landslide repair extending beyond the boundaries of a proposed development project site. Encourage planting of vegetation on unstable slopes to protect structures at lower elevations. Native plants may be required for landscaping in areas with landslide potential to eliminate the need for supplemental watering and to reduce the risk of landslide.

Program 1.d Enforce California Building Code requirements, including seismic design provisions, as part of building permit issuance and inspection.

Program 1.e Review existing critical and emergency structures identified in Figure 10 for any significant siting, design, or construction problems that would make them vulnerable in an earthquake, and incorporate findings of the review into the City’s Emergency Operations Plan and long-term programs for upgrading or relocating vulnerable facilities.

Program 1.f Monitor new building materials used for earthquake stability and incorporate such materials into plan checks when applicable.

Program 1.g Adopt the Uniform Code for the Abatement of Dangerous Buildings.

GOAL 2 - Flood Protection

Reduce the risk to life and minimize physical injury, property damage, and public health hazards from the effects of flooding.

Policies

Policy 2.1 Participate with a national flood insurance program.

Policy 2.2 Work with the County and the United States Army Corps of Engineers to receive and implement updated flood control measures and information.

Policy 2.3 Assess and keep appraised of the potential risks to persons and property from flooding within the City, including updated floodplain mapping.

Policy 2.4 Periodically update the City of Ferndale Drainage Master Plan.

Policy 2.5 Implement a public outreach program to increase public awareness of stormwater management issues and techniques for stormwater management.

Policy 2.6 Inform citizens of potential risks associated with flooding within the City and provide preparation and response guidance.
Policy 2.7 Require development in areas subject to flooding to minimize or eliminate flooding hazards.

Policy 2.8 Encourage development to balance or enhance the natural landscape features of a site to reduce impervious surfaces.

Policy 2.9 Utilize flood control methods that are consistent with Regional Water Quality Control Board Policies and Best Management Practices.

**Implementation Programs**

Program 2.a In conjunction with the FEMA mandated updates to the Humboldt Operational Area Multi-Agency Multi-Hazard Mitigation Plan (HMP), identify funding sources for and facilitate mapping of the City’s flood zones.

Program 2.b Complete and implement provisions of the HMP, consistent with FEMA requirements.

Program 2.c Coordinate with FEMA and other agencies in the evaluation and mitigation of future flooding hazards that may occur as a result of sea level rise.

Program 2.d Ensure that local regulations comply with FEMA standards.

Program 2.e Coordinate flood hazard mitigation efforts with the County to seek compliance with the Disaster Management Act 2000 to ensure eligibility for funding through FEMA grant programs.

Program 2.f Request that the County refer development projects located within the City’s watersheds to the City for comment. Continue to comment on County projects with the potential to increase runoff and flood hazards within the City. Standardize mitigation requirements to offset cumulative impacts of individual projects with potential to increase runoff and flood hazards within the City.

Program 2.g Evaluate the compatibility of critical, essential, high occupancy, and normal to low risk uses in areas within the 100-year floodplain during the review of all discretionary and ministerial actions.

Program 2.h Pursue sources of funding to ensure ongoing maintenance of the City’s storm drains.

Program 2.i Construct levees surrounding at-risk facilities.

Program 2.j Perform preventative maintenance to maintain flow capacity of Francis Creek.

Program 2.k Identify areas subject to flooding, steps to reduce potential property damage, and flooding emergency evacuation procedures on the City’s website.

Program 2.l Review development plans of existing sites to ensure necessary upgrades are provided to the City’s storm drainage system.

Program 2.m Review development proposals to ensure that structures designed for human occupancy are accessible during and protected from a 100-year storm by elevating lowest habitable floor one foot above the floodplain.
Program 2.n Request a drainage study for development in the 100-year floodplain to ensure adequate protection and no net increase in downstream flood hazards.

Program 2.o Require that development comply with Regional Water Quality Control Board discharge permit requirements.

GOAL 3 - Wildland and Urban Fires

*Prevent the loss of lives, injuries, and property damage due to wildland and urban fires.*

**Policies**

Policy 3.1 Coordinate with the Ferndale Volunteer Fire District to maintain adequate fire protection staffing levels, equipment and facilities to reduce risks to persons and property within the City from urban and wildland fires. Mitigate impacts of new development on the city’s ability to maintain adequate service levels.

Policy 3.2 Ensure adequate water supplies for fire suppression within the City.

Policy 3.3 Require fire safe construction practices, through site design, landscaping and building materials, clear and legible street and address signs, and sprinklers.

Policy 3.4 Reduce fire hazard risks in existing developments by promoting defensible space standards.

Policy 3.5 Provide fire safety information to residents, business owners, and the construction, insurance, real estate, landscaping and building supply industries. This could include information about non-combustible roofing, fire safe construction, adequate emergency water supplies, visible address and road identification/signage, road clearances, and emergency evacuation procedures.

Policy 3.6 Disseminate fire prevention education programs to neighborhoods, businesses, and schools. Foster a proactive fire prevention approach, emphasizing the relationship between fire prevention/hazard reduction and forestry and ecological restoration.

Policy 3.7 Promote CAL FIRE and Humboldt Fire Safe Council goals and objectives.

Policy 3.8 Promote smoke detector and fire extinguisher installation and maintenance in all habitable structures.

**Implementation Programs**

Program 3.a Request annual fire hydrant flow pressure and volume tests, especially in high fire hazard areas, by local water providers. System deficiencies shall be addressed as soon as possible.

Program 3.b Study potential backup water supplies for emergency fire flow needs.

Program 3.c Require access for emergency vehicles and firefighting equipment on all development projects.

Program 3.d Monitor new building materials used for fire resistance and incorporate such materials into plan checks when applicable.
Program 3.e Provide information on fire safe practices through the City’s website, including fuel reduction and non-flammable landscaping.

Program 3.f Refer development proposals to the Ferndale Volunteer Fire Department for comment on measures necessary to mitigate or reduce fire hazards.

Program 3.g Update and implement the City’s weed abatement regulations.

Program 3.h Participate in the planning efforts of and work cooperatively with the Humboldt Fire Safe Council.

Program 3.i Require street signs and clear and legible addresses with Design Review and building permits.

Program 3.j Require smoke detectors and fire extinguishers as a condition for building permits.

GOAL 4 - Hazardous Materials

Protect people and property from risks associated with the use, transport, treatment and disposal of hazardous materials and wastes.

Policies

Policy 4.1 Minimize exposure to known and suspected hazardous materials by routine transport, use, disposal, or accidental release.

Policy 4.2 Work with appropriate agencies to keep current on hazardous materials transport, storage, treatment, and disposal regulations.

Policy 4.3 Work with property owners and applicable regulatory agencies to identify and eliminate hazardous waste releases.

Policy 4.4 Inform the public about regulations for hazardous material and waste transport, storage, treatment, and disposal.

Policy 4.5 Encourage safe hazardous material and waste recycling and disposal.

Policy 4.6 Ensure adequate fire protection service levels as necessary to reduce risks to persons and property from hazardous materials spills or releases.

Policy 4.7 Cooperate with other jurisdictions on regional hazardous materials use, transport, treatment and disposal practices.

Implementation Programs

Program 4.a Require that all land uses that generate, use, handle, store, dispose of, and/or emit hazardous materials or waste be in compliance with applicable laws and regulations.

Program 4.b Enforce adopted building and fire codes to minimize potential public harm from hazardous material storage.

Program 4.c Update the Ferndale General Plan Transportation & Public Facilities Element to designate City roadways used for hazardous materials transport. If facilities such as schools, hospitals, child care centers, or other facilities with special evacuation needs are located along these
routes, post emergency response plans for unauthorized hazardous materials release.

Program 4.d Require that new facilities that produce, use, store, transport or dispose of hazardous materials locate a safe distance from land uses that may be adversely impacted by such activities. Conversely, do not allow new sensitive facilities, such as schools, child-care centers, and senior centers, to be located near existing sites that use, store or generate hazardous materials.

Program 4.e Require new industries that store and process hazardous materials to provide a buffer zone at property boundaries sufficient for public safety.

Program 4.f Coordinate with County, State, and Federal agencies to minimize exposure to hazardous materials.

Program 4.g Prohibit the siting of new hazardous waste repositories, incinerators, and facilities within the 100-year floodplain.

Program 4.h Require fire safe design standards, including proper storage and use of hazardous materials, for new development consistent with applicable state and federal regulations.

Program 4.i Post household hazardous waste drop-off dates and locations on the City’s website.

Program 4.j Support County efforts to sponsor household hazardous waste and e-waste recycling and disposal drop-off days. Allow City property to be used for drop-off and assist in promoting disposal and recycling opportunities.

Program 4.k Seek Ferndale Volunteer Fire Department input for identifying measures necessary to mitigate hazardous materials use and storage risks.

Program 4.l Support the Ferndale Volunteer Fire Department’s efforts to maintain state-of-the-art first responder equipment and trained personnel for hazardous spills and emissions response.

Program 4.m Cooperate with the County to implement the Hazardous Materials Area Plan and the Integrated Waste Management Plan.

GOAL 5 – Acceptable Risk

*Reduce the effects of hazards and hazardous events to below the acceptable risk level.*

**Policies**

Policy 5.1 Protect life and property through land use and development practices that avoid or mitigate the effects of natural hazards.

Policy 5.2 Land division and development shall be designed and constructed so that acceptable risk levels as defined in Figure 11 are not exceeded.

Policy 5.3 Map known areas and sources of risk and make this public information.

Policy 5.4 Locate development, especially critical facilities, away from hazards as determined in Figure 10 unless the hazards can be mitigated to the satisfaction of responsible agencies.
Policy 5.5  Scale development proportionally to the level of acceptable risk for that development as determined in Figure 11.

Policy 5.6  Implement measures that reduce risk, including development guidelines, building occupancy limitations, renovation, and demolition.

**Implementation Programs**

Program 5.a  Regularly review and update regulations to ensure applicable mitigation measures are clearly defined; requirements for geotechnical and geologic investigations to identify and mitigate geologic hazards are provided; procedures for the review of geotechnical and geologic reports submitted for development are provided; fire safety of building construction is improved; and defensible space is defined and its benefits balanced with City conservation goals.

**GOAL 6 – Emergency Preparedness**

*Ensure that City staff and citizens are adequately prepared to respond to and recover from natural or man-made disasters.*

**Policies**

Policy 6.1  Establish and maintain an effective emergency response program appropriate for potential events.

Policy 6.2  Comply with NOAA requirements to maintain Storm Ready and Tsunami Ready certificates.

Policy 6.3  Provide guidance to citizens for preparing for and responding to emergencies.

Policy 6.4  Designate, equip, and publicize locations of emergency assembly points throughout the City.

Policy 6.5  Coordinate with the Ferndale Volunteer Fire Protection District on emergency access requirements and specifications.

Policy 6.6  Utilize mutual aid agreements that provide public safety personnel in times of emergency.

Policy 6.7  Designate alternate routes to transport public safety employees from outlying areas when main route is impassable.

Policy 6.8  Ensure that public safety facilities, apparatus, and equipment are designed and constructed adequately to efficiently operate paramedic, fire, and police services in times of disaster.

Policy 6.9  Make facilities and equipment needed by residents accessible as soon after a major disaster as possible.

**Implementation Programs**

Program 6.a  Update and adopt the City of Ferndale Emergency Operations Plan (EOP). Ensure that City departments have coordinated Standard Operating
Procedures. Update Appendix C: Recovery Operations and include measures to address post-disaster needs of the City’s residents and businesses for inspections, debris removal, streamlined permit issuance for rebuilding, and other essential services.

Program 6.b Upgrade the City’s Emergency Operations Center (EOC) and train City staff as needed. Review emergency equipment needs, such as a defibrillator at City Hall, and prioritize acquisition. Incorporate emergency preparedness expenditures into a long-term City Capital Improvement Plan.

Program 6.c Establish redundant communication capabilities throughout the city.

Program 6.d Develop and implement consolidated emergency response programs and plans for fire, flooding, seismic and other potential hazard events contained in the City’s EOP. Distribute the plans to City departments, emergency response providers and support groups.

Program 6.e Maintain National Incident Management System and Incident Command System training for City staff.

Program 6.f Identify opportunities for training Ferndale citizens and staff on community emergency response. Include the Humboldt County Office of Emergency Services (OES) in training exercises.

Program 6.g Involve the community, neighborhoods, and local businesses in disaster response planning.

Program 6.h Regularly update and publicize the City’s EOP to include evacuation routes, emergency connectors, and emergency shelters in conformance with state guidelines through the City’s website, local radio, local newspaper, and other community outreach sources.

Program 6.i Hold regular (at least one per year) emergency preparedness drills, and include local Community Emergency Response Training (CERT) groups, County OES and related emergency services agencies and groups.

Program 6.j Promote awareness and caution among residents regarding possible natural hazards, including landslides, earthquakes, flooding, and fire hazards through creating and maintaining current website information.

Program 6.k Support mutual aid agreements with local agencies and jurisdictions that provide public safety personnel in times of emergency.

Program 6.l Include a public safety “ingress” component to the City’s EOP.

Program 6.m Conduct performance audits of public safety facilities and identify any needed/corrective measures.

Program 6.n Identify needed emergency supplies to assist Ferndale residents in the first days following an emergency or major disaster.

Program 6.o Use Capital Improvement Program or similar funding to establish a readily accessible supply of funds for use by the City in times of an emergency or major disaster.
11.0 References


City of Ferndale Drainage Master Plan Update. 2004.

City of Ferndale General Plan Public Safety Element. 1975.


Humboldt County Operational Area Hazard Mitigation Plan (HMP). 2007.


