SEISMIC, TSUNAMI AND FLOOD DESIGN MITIGATION AND EMERGENCY RESPONSE PLAN

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Huntington Beach Desalination Project

for the:

Poseidon Resources

MARCH, 2013

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I. INTRODUCTION AND BACKGROUND

The Seismic, Tsunami and Flood Design Mitigation and Emergency Response Plan ("Response Plan") has been developed to demonstrate the Huntington Beach Desalination Project ("Project") complies with relevant California Coastal Act and City of Huntington Beach Local Coastal Program ("LCP") polices related to minimizing hazard risk to life and property.

Poseidon Resources is pursuing the development of a 50 Million Gallon Per day (MGD) seawater desalination Project in the City of Huntington Beach and has received permits and approvals to develop the Project, including a Conditional Use Permit ("CUP" No. 02-04), Coastal Development Permit ("CDP" No. 10-014), Tentative Parcel Map (No. 10-130), certified Subsequent Environmental Report ("SEIR") issued by the City of Huntington Beach, Lease Agreement (Amendment of Lease PRC 1980.1) issued by California State Lands Commission, and a National Pollutant Discharge Elimination ("NPDES") permit, Order No. R8-2012-0007 (NPDES CA8000403) issued by the Santa Ana Regional Water Quality Control Board.

The Project also requires a Coastal Development Permit ("CDP") issued by the California Coastal Commission for its retained jurisdiction. Poseidon first applied to the Coastal Commission for the CDP in 2006 and later amended the CDP application in 2011 to accommodate AES' plans to repower the Huntington Beach Generating Station. In addition, in September 2010, the City of Huntington Beach rescinded its previously issued CDP for the Project and issued a new CDP under its LCP authority. On October 4 and 5, 2010, the Commission received appeals on the CDP and on November 17, 2010, the Commission found that there is a substantial issue related to inconsistency with the City's LCP. Accordingly, the Project also requires the California Coastal Commission to approve the City's CDP on appeal.

In certifying the Project's SEIR and approving CDP No. 10-014, the City of Huntington Beach analyzed and found that hazards related to geology, seismic and soils impacts would be less than significant with the following mitigation:

> ***GEO-1:*** *A subsurface fault investigation shall be performed in accordance with California Geological Survey Note 49 to assess the nature and extent of possible surface-fault rupture across the southern portion of the site. If evidence for potential fault-surface rupture is found, an appropriate "setback" for structures from the zone of surface faulting will be required.*
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> ***GEO-2:*** *The potential for lateral spread shall be investigated as part of the site-specific geotechnical investigation for the project. The geotechnical report shall identify that geotechnical observation, laboratory testing, or both be completed during grading to identify areas of highly expansive soils and to determine the actual expansion potential of finish-grade soils. Compressible soils in areas that have the potential for lateral spread will require removal and recompaction in areas of proposed improvements or future fill per the specifications of a California-licensed engineer.*
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> ***GEO-3:*** *A certified engineer shall ensure that all structures associated with the proposed desalination facility have been designed to withstand the "design-level" earthquake, as set forth in the latest edition of the Uniform Building Code, prior to the issuance of grading permits. In*

addition, the project must follow the site specific geotechnical report and the professional engineer's recommendations.

GEO-4: *A California-licensed Civil Engineer (Geotechnical) shall prepare and submit to the City a detailed soils and geotechnical analysis with the first submittal of the grading plan. This analysis shall include soil sampling and laboratory testing of materials to provide detailed recommendations for grading, chemical and fill properties, liquefaction and landscaping. The grading plan for the proposed project shall contain the recommendations of the final soils and geotechnical report. The recommendations shall be implemented in the design of the project, including but not limited to the measures associated with site preparation, fill placement, temporary shoring and permanent dewatering, groundwater seismic design features, excavation stability, foundations, soil stabilization, establishment of deep foundations, concrete slabs and pavements, surface drainage, cement type and corrosion measures, erosion control, shoring and internal bracing, and plan review.*

GEO-5: *The use of Type V cement shall be used for concrete, and special coatings or other measures should be used to protect metal pipes against the effects of corrosion.*

GEO-6: *Depending upon the construction methods dewatering may be required in order to safely excavate the sites of the proposed below groundwater facilities, and may require some form of lateral support. Groundwater pumped from the dewatering wells will need to meet National Pollutant Discharge Elimination System permit requirements before it is discharged (refer to Section 4.9, Construction-Related Impacts). In order to prevent the buried tanks (and certain pipelines) from "floating" when water levels in the tanks/pipelines are drawn down, it will be necessary to either ""anchor" them down, add additional weight to the tanks/pipelines themselves, and/or add sufficient soil surcharge across the top of the tank/pipelines.*

GEO-7: *Compressible soils in areas that have the potential for lateral spread will require removal and recompaction or future fill per the specifications of a California-licensed engineer. This process will require dewatering and support of walls of excavation or use of deep foundations such as stone columns or piles and grade beams to support proposed structures.*

GEO-8: *The proposed project shall incorporate recommended measures of the final soils and geotechnical/seismic analysis to stabilize structures from on-site soils known to be prone to liquefaction. Typical methods include, but are not limited to:*

- *Over-excavation and recompaction of soils*
- *In situ soil densification, such as vibro-flotation or vibro-replacement (i.e., stone columns)*
- *Injection grouting*
- *Deep soil mixing.*

GEO-9: *A California-licensed Civil Engineer (Geotechnical) shall prepare and submit to the City a detailed soils and geotechnical analysis with the first submittal of the grading plan. This analysis shall include soil sampling and laboratory testing of materials to provide detailed recommendations for grading, chemical and fill properties, liquefaction and landscaping. The grading plan prepared for the proposed project shall contain the recommendations of the final soils and geotechnical report. These recommendations shall be implemented in the design of the project including but not*

limited to measures associated with site preparation, fill placement, temporary shoring, and permanent dewatering, groundwater seismic design features, excavation stability, foundations, soil stabilization, establishment of deep foundations, concrete slabs and pavements, surface drainage, cement types and corrosion measures, erosion control, shoring and internal bracing and plan review.

In addition, although no significant impacts have been identified in relation to potential impacts from a tsunami, the SEIR included a mitigation measure that ensures planning measures have been prepared to minimize risks to property and human safety from tsunami during operation.

HWQ-3: *Prior to issuance of grading permits, the applicant shall submit to the City for approval a plan outlining the specific planning measures to be taken to minimize or reduce risks to property and human safety from tsunami during operation. Planning measures could include but would not be limited to the following: (a) Provision of tsunami safety information to all facility personnel, in addition to posting signage on site; (b) identification of the method for transmission of tsunami watch and warnings to facility personnel and persons on the site in the event a watch or warning is issued; and (c) identification of an evacuation site for persons on site in the event of a tsunami warning.*

In July 2012, Commission staff requested additional information related to the Project's geologic hazards and Project stability, and tsunami hazards and risks. Specifically, Commission staff requested that Poseidon complete SEIR Mitigation Measures GEO 1-3. Poseidon commissioned Geosyntec Consultants Inc., (Geosyntec) to conduct a site- and project-specific geotechnical investigation and analysis that incorporated the SEIR's Mitigation Measures (GEO 1-3).

This Response Plan draws upon the March 2013 Geotechnical Hazards Assessment Report prepared by Geosyntec and recommends specific Coastal Development Permit conditions to ensure that the Project fully complies with pertinent Coastal Act and LCP requirements. We find that all hazards identified by Geosyntec are capable of being mitigated by typical design and construction practices at this site.

II. SITE DESCRIPTION AND LAYOUT

The Project site is approximately 12 acres in size and is located at 21730 Newland Street in the City of Huntington Beach, a coastal city along the Pacific Ocean in northwestern Orange County. The Project involves the construction of a desalination plant with an output capacity of approximately 50 million gallons per day or 56,000 acre feet per year. All components of the desalination plant, including on and off-site project elements, are proposed to be sized and built to accommodate and deliver approximately 50 MGD of product water. The project would require the demolition of three fuel storage tanks and the remediation of any soil/groundwater impacted by contamination associated with previous site usage as a fuel storage facility. In addition, the existing interior berms interior to the site would be demolished while the existing berms on the exterior perimeter of the site would remain as is. On-site structures would consist of an administration building, a reverse osmosis facility building, pretreatment filter structure, solids handling building, post treatment structure, chemical storage structure , product water pump station and surge tank, flush tank, ammonia tank, fluoride tank, influent pump station, a 66 kV substation and associated connections to existing electrical transmission lines, electrical building, an aboveground product water tank, and appurtenant facilities (**See Exhibit 1**).

Site Elevations, Proposed Buildings and Structures

The following paragraphs describe the proposed facilities as outlined in the Final SEIR documents. The Project's finished floor elevations range from approximately +9.0 feet MSL to approximately +14.0 feet MSL. The Site Grading Plan is attached as **Exhibit 2.**

All proposed buildings and structures would comply with state and local standards in regards to fire and structural safety. The proposed desalination project would consist of the following buildings and structures:

- **Administration Building (approximately 100 feet long x 50 feet wide x 20 feet high; 5,000 square feet):** This building is proposed to be Type-II, non-rated (generally defined by the California Building Code as structures incorporating non-combustible materials [steel, iron, concrete, or masonry] for structural elements, floors, walls, and roofs) and would be constructed of steel. The exterior walls would consist of flat metal wall panels running vertically along the face of the structure. A metal panel roof system would be screened with a metal fascia using deep-ribbed metal panels running horizontally, and the roof will potentially be fitted with photovoltaic solar panels. All glazing would be tinted and would include clear anodized window frames.
- **Reverse Osmosis Building (approximately 287 feet long x 121 feet wide x 35 feet high; 34,727 square feet):** This building would be a Type-II, non-rated, steel-constructed building housing the reverse osmosis components of the desalination facility and associated indoor pumps. The exterior would feature flat metal wall panels running vertically along the face of the structure. A metal panel roof system would be screened with a metal fascia using deep-ribbed metal panels running horizontally, and the roof will potentially be fitted with photovoltaic solar panels. Full height louvers would match the wall panel color and would be recessed slightly from the face of the structure to allow for shadowing. Panel coloring would match the Administration Building.
- **Influent Pump Station (approximately 78 feet long x 28 feet wide x 25 feet high, 2,184 square feet):** This slab on grade would house the pumps that would bring the water from the HBGS discharge pipe to the pretreatment facility.
- **Pretreatment Filter Structure (approximately 397 feet long x 150 feet wide x 28 feet high; 59,550 square feet):** This open-air structure would house the pretreatment filter components of the facility. It would feature concrete walls matching the color of the Reverse Osmosis Building. The Pretreatment Structure would be surrounded by an architecturally enhanced screen made of metal wall panels running vertically along the face of the screen wall. These panels would match the fascia of the Administration and Reverse Osmosis Buildings.
- **Solids Handling Building (approximately 55 feet long x 32 feet wide x 25 feet high; 1,760 square feet):** This Type-II, non-rated, steel-constructed building would house solids handling equipment associated with facility operation. The building would architecturally match the Administration Building, featuring flat metal wall panels running vertically along the face of the structure. The metal panel roof system would be screened with a metal fascia using deep-ribbed metal panels running horizontally, and the roof will potentially be fitted with photovoltaic solar panels. These metal roof panels would match the fascia of the Administration and Reverse Osmosis Buildings.

- **Chemical Storage and Carbon Dioxide Tank Structure (approximately 70 feet long x 30 feet wide x 24 feet high; 2,100 square):** This structure would also feature Type-II, non-rated, steel construction and would house various chemicals, as well as scale inhibitor polymers stored in bulk welded steel tanks. This structure would be surrounded by an architecturally enhanced screen made of a concrete base (for chemical containment) and metal wall panels running vertically along the face of the screen wall. These panels would match the fascia of the Administration and Reverse Osmosis Buildings. Concrete containment walls would be place around each individual chemical. The walls would be sized to contain a minimum of 1.15 percent of the largest tank inside each containment area.
- **Post Treatment Structure (approximately 105 feet long x 50 feet wide x 27 feet high; 5,250 square feet):** This structure would also feature Type-II, non-rated, steel construction and would house various chemicals stored in bulk welded steel tanks. This structure would be surrounded by an architecturally enhanced screen made of metal wall panels (reveal type) running vertically along the face of the screen wall. The panels would begin approximately 8 feet above finish grade. These panels would match the fascia of the Administration and Reverse Osmosis Buildings.
- **Electrical Building (approximately 110 feet long x 44 feet wide x 35 feet high; 4,840 square feet):** This Type-II, non-rated, steel-constructed building would match the Administration Building architecturally. The exterior design utilizes flat metal wall panels running vertically along the face of the structure. The metal panel roof system would be screened with a metal fascia using deep-ribbed metal panels running horizontally, and the roof will potentially be fitted with photovoltaic solar panels (refer to Figure 3-12, Electrical Room/Substation Building Plan/Exterior Elevations).

  Electrical Substation (to be named the "Filter Substation") (approximately 140 feet x 140 feet wide x 12 feet high; 19,600 square feet): A substation will be constructed on site to provide electrical services for the proposed project. The proposed substation will occupy approximately 19,600 square feet and will be located immediately west of the pretreatment filter structure and north of the administration building. A clear area around the perimeter of the substation measuring approximately 10 feet wide would be maintained for safety and security purposes. The10 feet wide perimeter is not included in the 19,600 square feet. The on-site substation will include a 66 kV switch rack, approximately 23 feet in height, consisting of four 66 kV circuit breakers, eight three-phase disconnect switches, twelve 66 kV surge arresters and two underground line terminators. The substation will include two28 MVA transformers on site to convert 66 kV to 12 kV, providing four 12 kV circuits to serve customer loads. Each 12 kV circuit will be constructed within a 12 feet long X 12 feet wide by 12 feet high steel support structure. Equipment containing oil will be placed within a containment area per Spill Prevention Control and Countermeasures Plan as required by Title 40 CFR Section 112.7. An approximate 20-foot x 30-foot mechanical electrical equipment room will be constructed on site to support substation components and will include switches, relay equipment, alarms, a remote terminal unit, battery and AC and DC distribution panels. The substation will be bounded by a minimum 8-feet tall chain link fence with barbed wire.
- **Flush Tank (approximately 27 feet, 9 inches in diameter by 23 feet high; 605 square feet):** This single tank would store clean RO permeate water. If an RO train is shut down for some reason it needs to be flushed with clean water so that it does not scale.

- **Ammonia Tank Structure (approximately 7 feet in diameter and 12 feet high; it sits in a containment area 18 feet by 31 feet, which it shares with the Fluoride tank. The two tanks have a divider wall between them):** This single tank would store ammonia and would be constructed of high density polyethylene or fiberglass reinforced polyester, and would have an approximate capacity of 3,000 gallons. This structure would be surrounded by an architecturally enhanced screen made of a concrete base (for chemical containment) and metal wall panels running vertically along the face of the screen wall. A concrete containment wall would also be constructed that would be capable of containing a minimum of 1.15 percent of the tanks contents in case of a leak.
- **Fluoride Tank Structure (approximately 10 feet in diameter by 10 feet high, it sits in a containment area 18 feet by 31 feet, which it shares with the Ammonia tank. The two tanks would have a divider wall between them):** This single tank would store fluoride and would be constructed of high density polyethylene or fiberglass reinforced polyester and would have an approximate capacity of 5,000 gallons. This structure would be surrounded by an architecturally enhanced screen made of a concrete base (for chemical containment) and metal wall panels running vertically along the face of the screen wall. A concrete containment wall would be placed around the tank large enough to contain a minimum of 1.15 percent of the tank contents in case of a leak.
- **Aboveground Product Water Storage Tank (approximately 251 feet in diameter by 30 feet; 49,481 square feet):** The aboveground product water storage tank would be circular in shape and would have an approximate capacity of 10 million gallons. The tank would be a concrete structure. This structure would be surrounded by an architecturally enhanced screen made of metal wall panels running vertically along the face of the screen wall. The screen would begin approximately 18 feet above finish grade.
- **Product Water Pump Station Structure (approximately 72 feet long x 58 feet wide x 20 feet high (above grade); 4,176 square feet):** This open air structure would house the pumps that would bring the water from the product water storage tank into the pipeline distribution system. This facility would be partially underground, with approximately 4 feet, 6 inches of the facility below grade, and surrounded by a chain-link fence.
- **Surge Tank Structure (approximately 12 feet in diameter x 34 feet long by 20 feet high; 408 square feet):** This steel tank would protect the distribution system from a pressure surge. If a pressure surge is realized this tank would store product water.

III. COASTAL ACT COMPLIANCE

This section provides a recitation of the provisions in the California Coastal Act and the Huntington Beach Local Coastal Program (LCP) concerning tsunamis, seismic and geotechnical issues, and sea level rise that are germane to the Commission's review of the Project.

The Coastal Act requires that new development "*[minimize risks to life and property in areas of high geologic, flood, and fire hazard,"]*. This provision is supported by the LCP Policies described below. Based on this authority, the implementation of the Response Plan ensures that potential tsunami and seismic risks to property damage and risk to life as a result of inundation or seismic activity can be minimized to the extent feasible.

A. California Coastal Act

- Pub. Res. Code Section 30253: Standards for new development

  "New development shall do all of the following:

  (a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.

  (b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.

B. City of Huntington Beach Local Coastal Program

- Policy C 1.1.9: "Minimize risks to life and property in areas of high geologic, flood (Figure C-33) and fire hazard through siting and design to avoid the hazard. New development shall be designed to assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of a protective device. (I-C 20)"

- Goal C 10: "Minimize risks to life and property in areas of high hazards (e.g., geologic, flood and fire) within the Coastal Zone and ensure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs."

- Policy C 10.1.4: "Require appropriate engineering and building practices for all new structures to withstand ground shaking and liquefaction such as those stated in the Uniform Building Code. (I-C 5)"

- Policy C 10.1.14: "During major redevelopment or initial construction, require specific measures to be taken by developers, builders or property owners in flood prone areas (Figure C-33), to prevent or reduce damage from flooding and the risks upon human safety. Development shall, to the maximum extent feasible and consistent with the Water and Marine Resource policies of this LCP, be designed and site to: (I-C 7, I-C 8)

  a) Avoid the use of protective devices,

  b) Avoid encroachments into the floodplain, and

  c) Remove any encroachments into the floodplain to restore the natural width of the floodplain.

- Policy C 10.1.19: "Identify tsunami and seiche susceptible areas (Figure C-30), and require that specific measures be taken by the developer, builder or property owner during major redevelopment or initial construction, to prevent or reduce damage from these hazards and the risks upon human safety. Development permitted in tsunami and seiche susceptible areas shall be designed and sited to minimize this hazard and shall be conditioned to prohibit a shoreline protective device. (I-C 20)"

- Code Section 221.20 (Hazards): "As a condition of new development, the applicant shall be required to submit a report evaluating geologic, seismic, flood and fire hazards, and shall be designed to:

  A. Comply with all recommendations and provisions contained in the Alquist-Priolo Special Studies Zones Act (California Public Resources Code Chapter 7.5) for identified seismic hazards.

     [*Note: The Project site is not located within an Alquist-Priolo Earthquake Fault Zone. Pursuant to Cal. Pub. Res. Code Section 2621.5(b), California Public Resources Code Chapter 7.5 is only applicable to a project "which is located within a delineated earthquake fault zone…"*]

  B. Comply with all provisions relating to the FP Floodplain Overlay District, if applicable.

     [Note: The project site is not located within the FP Floodplain Overlay District]

  C. Comply with all provisions relating to Methane Districts as defined in Chapter 17.04.

     [Note: The Project's methane-related mitigation measures are addressed in SEIR Section 4.9 (Construction).]

  D. Development in Subarea 4K as depicted in Figures C-6a, and C-10 of the Coastal Element Land Use Plan, shall comply with the approved Hazard Mitigation and Flood Protection Plan required in Table C-2 of the Coastal Element Land Use Plan.*"*

     [Note: Subarea 4K does not contain the Project site (which is located primarily in Subarea 4G. Subarea 4K was historically part of the Bolsa Chica Wetlands system.]

IV. SEISMIC, TSUNAMI AND SEA LEVEL RISE EVENT ANALYSIS

The Response Plan has been developed based on the following findings from the site and Project-specific March 2013 Geotechnical Hazards Assessment Report prepared by Geosyntec Consultants, Inc. (Geosyntec). The Geosyntec report, submitted to the Coastal Commission, includes an extensive field investigation and geotechnical evaluations (i.e., seismic hazard assessment, soil liquefaction potential evaluation and assessment of its impacts fault rupture propagation potential evaluation), and evaluation of site-specific tsunami hazard.

Fault Rupture

Geosyntec conducted a detailed evaluation of potential fault rupture at the Project site. Although the presence of a fault beneath the Project site has not been confirmed, Geosyntec's evaluation was performed using extremely conservative assumptions (e.g., the postulated fault was assumed to be located directly below the site), in order to assess a "worst-case" fault rupture scenario (i.e., conditions as severe as or more severe than considered likely at the site). Geosyntec conducted an on-site field investigation consisting of 5 Cone Penetration Test soundings ranging in depth from approximately 50 feet to approximately 98 feet, and evaluated previous geotechnical reports and investigations prepared for the adjacent AES HGBS property. Based on the results of these investigations, Geosyntec performed Finite Element Modeling (FEM) on the Project site and concluded that the presence of approximately 200-foot thick deposit of alluvial sediments below the site mitigates fault rupture hazard. The results of Geosyntec's modeling indicate that the maximum model-calculated differential settlement is

approximately 1/277. This model-calculated value is more severe than the Serviceability Limit State (associated with architectural or serviceability issues, such as wall cracking) but is less severe than the Ultimate Limit State (associated with structural damage, such as frame cracking). This result suggests that if a fault rupture were to occur beneath the Project site the Project's proposed structures may experience reparable aesthetic and temporary serviceability issues, but significant structural damage is unlikely.

Conclusion: Based on results of its investigation, Geosyntec determined that no changes to the Project layout, design, engineering or mitigation measures are needed to improve structural stability against fault rupture. Accordingly, Geosyntec concluded that the Project site's seismic characteristics will not affect Project feasibility or result in greater adverse effects on coastal resources than were evaluated in the SEIR. Based on the methods and findings of Geosyntec, we find the risk of fault rupture can be mitigated at this site.

Lateral Soil Spread

Geosyntec performed a state-of-the-practice lateral spread analysis using two methods: (i) the strain potential approach after Zhang et al. [2004]; and (ii) the Newmark sliding block approach after Bray and Travasarou [2007]. Lateral spread displacement on the Project site is estimated to range from approximately fifteen to thirty eight inches.

Conclusion: Geosyntec concludes that this range of displacement can be accommodated through design features and that based on results of the investigation and analysis, no change to the Project layout is needed to ensure structural stability.

However, to accommodate potential lateral spread displacement on the Project site, Geosyntec recommended the Project's Structural and Geotechnical Engineers collaborate on the design of a foundation system for the proposed structures that can accommodate *(1)* approximately nine inches of liquefaction-induced settlement; and (2) lateral spread displacement of approximately fifteen to thirty eight inches. Such a foundation system may include both geotechnical ground improvement methods to reduce the anticipated settlements and displacements to acceptable levels, and structural design methods to allow site structures to tolerate the estimated settlements and displacements.

Design-Level Earthquake

Geosyntec's site-specific seismic hazard analysis, developed design ground motions, and performed site response analysis and concluded that the Project should be built in accordance with the CBC [2010] requirements; hence, the "design-level" earthquake is an event with 2 percent probability of exceedance in 50 years (2% PE in 50 years). With a Moment Magnitude (M_w) of 7.1 assigned by the United States Geological Survey and a site-to-source distance of 0.5 miles, the Newport Inglewood Fault is the governing seismic source for this site. The corresponding bedrock Peak Horizontal Ground Acceleration (PHGA) for this fault is of 0.61 g.

Because the site is considered to be vulnerable to liquefaction, the site is considered to a Site Class F per the CBC [2010]. As such, the Project site required a site-specific seismic response analysis, which was conducted by Geosyntec. Geosyntec conducted a one-dimensional, non-linear, seismic site response analyses of the site, using the computer program D-MOD2000 with five representative accelerograms scaled to the design bedrock PHGA of 0.61 g. Per CBC [2010] requirements, the average acceleration response spectrum calculated from the site-specific response analysis should be compared against a

code-based minimum. The average acceleration response spectrum from the site-specific response analysis was less than the code-based minimum; therefore the code-based minimum spectrum corresponds to 80% of the probabilistically-established acceleration response spectrum for a Site Class E site.

Conclusion: In order to mitigate the seismic hazard, Geosyntec provided Design Measure A shown in Chapter V.

Liquefaction

Geosyntec conducted a supplemental field investigation to provide enhanced information with regard to the subsurface condition, which is provided in Geosyntec's report [Attachment 1]. Geosyntec performed five Cone Penetration Test (CPT) soundings at representative locations of the site. Two liquefiable zones were identified in the subsurface soils: (i) an upper layer approximately four feet-thick; and (ii) multiple lenses between 45 and 70 feet below ground surface (bgs). The presence of these potentially liquefiable soil lenses below 45 feet bgs was also observed in Geosyntec's review of CPTs from previous investigations by others on and near the site. Based on Geosyntec's evaluations, it is estimated that up to 9 in. of total liquefaction-induced reconsolidation settlement may occur at the Site. Geosyntec found that this level of liquefaction-induced settlement is within the normal range for a site with this type of soil profile in an area of high seismicity.

Conclusion: To accommodate the potential of nine inch of total liquefaction induced reconsolidation settlement Geosyntec recommends Design Measure B as outlined in Chapter V.

Tsunami Hazards and Risks

Geosyntec performed a review of the technical literature regarding tsunami hazard in Southern California and conducted a site-specific tsunami hazard evaluation. Based on its research and site-specific evaluation, Geosyntec concludes that an extreme worst-case tsunami run-up height of 10 feet is appropriate for the site's tsunami hazard assessment. As indicated in the Cal EMA [2009] map, this value is already "…adjusted to 'Mean High Water' sea-level conditions, representing a conservative sea level…"

According to a report by the NRC [2012], the elevation of the local sea level is projected to rise during the life of the proposed facilities. This projected sea level rise varies by location. Of the locations mentioned in the NRC [2012] report, Los Angeles, California, is the closest to the Site. Therefore, projected sea level rise at Los Angeles, California, is assumed to be representative of sea level rise at the Site.

The NRC [2012] projections of sea level rise in the Los Angeles, California have an upper bound value in the last year of the planned design life of approximately 2.0 ft. Therefore, a value of 2.0 ft. of sea level rise over the design life is assumed for the Site.

Geosyntec considers this value to be conservative. The selected value of 2.0 ft. represents one "extreme" in that corresponds to the last year (i.e., the highest projected sea level rise) of the design life of the proposed facility. Concurrently, the selected value represents another "extreme" in that it corresponds to the upper bound of the projections presented in the NRC [2012] report. Adding the sea level rise projection of 2.0 ft. to the baseline tsunami water level elevation of approximately 10 ft. MSL gives a sea level rise-adjusted tsunami water level elevation of approximately 12 ft. MSL.

Based on the proposed finished floor elevations, the proposed site improvements are planned to have finished floor elevations ranging from 9.0 ft. MSL to 14.0 ft. MSL. Portions of the site potentially could be inundated during the postulated extreme worst-case tsunami event. Geosyntec considered potential tsunami impacts and recommended design measures to reduce tsunami-related structural hazards. The planned site configuration includes approximately 14-feet high berms with top elevations of approximately 22.3 feet MSL around portions of the proposed facilities. Where the berms reduce the tsunami water velocity, structures within the berms might experience reduced levels of tsunami-induced loading relative to comparable structures outside the berms. However, as the current design does not provide for continuous berms around the site, Geosyntec estimated that portions of the site could be inundated by between approximately 0.0 feet and approximately 3 feet of water during a tsunami event.

Geosyntec notes that this evaluation does not consider effects of nearby construction outside the site. For example, between the ocean and the Site, new power plant facilities are planned to be constructed at the nearby AES HBGS. These facilities might have an effect on Site tsunami impacts (e.g., structures might perform a function similar to the existing berms, possibly reducing tsunami water velocity in portions of the site).

The result of Geosyntec's site-specific tsunami hazard investigation and its evaluation of the studies cited by Commission staff confirm the SEIR's findings; tsunami threat at the site is extremely low and tsunami-related site hazards do not present risk to public health and safety, effect Project feasibility or require Project components to be relocated.

Conclusion: Geosyntec concluded that tsunami hazard is not anticipated to present a significant risk to public health and safety at the project site. According to the Project's SEIR, there will be less than twenty personnel on site during desalination plant operations. The Orange County Grand Jury report on Tsunami Hazards [2008] found that the City of Huntington Beach has one of the most advanced tsunami early-warning systems in the County. The City of Huntington Beach and AES Huntington Beach have hazard mitigation plans that address tsunami risk to public health and safety

Possible tsunami impacts at the site related to a maximum inundation ranging from 0.0 feet to 3 feet of water include seepage, soil erosion, and loading on proposed structures. The impact of seepage is anticipated to be small, as water inundation will be temporary. The soil erosion impact also is likely to be small as much of the Site is anticipated to be covered with concrete or asphalt pavement. Geosyntec also concluded that tsunami-related loading on the proposed structures can be mitigated by structural design.

Based on Geosyntec's site specific analysis and recommended design measures, we conclude that the impacts of tsunami can be mitigation using standard design and construction techniques.

V. SEISMIC DESIGN REQUIREMENTS AND MITIGATION MEASURES

With the exception of the product water storage tank, water-retaining structures will be designed in accordance with ACI 350.3-06, Seismic Design of Liquid-Containing Concrete Structures and Commentary, and ACI 350-06, Code Requirements for Environmental Engineering Concrete Structures and Commentary. The product water storage tank will be designed in accordance with AWWA D110-04, Wire- and Strand-Wound, Circular, Prestressed Concrete Water Tanks, and 372R-03, Design and Construction of Circular Wire- and Strand-Wrapped Prestressed Concrete Structures. Similar to the seismic design of the buildings, seismic design for all water-retaining structures will include

consideration of both site-specific seismic response coefficients and site-specific response spectra. Non-Water retaining structures will be designed per CBC [2010]

The following measures are recommended in order to mitigate the effects of Seismic conditions:

Design Measure A: In order to mitigate the potential seismic hazard Poseidon will ensure that the project is designed following CBC [2010] requirements for Site Class F, with an acceleration response spectrum corresponding to 80% of the Site Class E response spectrum.

Design Measure B: In order to mitigate the potential seismic hazards Poseidon will ensure that the Project's Structural and Geotechnical Engineers collaborate on the design of a foundation system for the proposed structures that can accommodate (1)approximately nine inches of liquefaction-induced settlement; and (2) lateral spread displacement of approximately fifteen to thirty eight inches. Such foundation systems are possible and are currently available and may include both geotechnical ground improvement methods to reduce the anticipated settlements and displacements to acceptable levels, and structural design methods (stone columns or piles) to allow site structures to tolerate the estimated settlements and displacements.

As outlined in Chapter I GEO-8: *The proposed project shall incorporate recommended measures of the final soils and geotechnical/seismic analysis to stabilize structures from on-site soils known to be prone to liquefaction. Typical methods include, but are not limited to:*

- *Over-excavation and recompaction of soils*
- *In situ soil densification, such as vibro-flotation or vibro-replacement (i.e., stone columns)*
- *Injection grouting*
- *Deep soil mixing.*

Poseidon will ensure that one of these four suggested methods or an equivalent method is used during the construction of the project. The most likely choice would be either stone columns and/or pile foundations.

Stone columns would be incorporated to mitigate liquefaction-induced settlement and lateral spreading. Utilizing the stone column ground improvement method, structure and piping settlement can be reduced to approximately one-inch, which is typical for this type of remediation. Stone columns would be installed within the footprint of each structure plus approximately fifteen feet beyond on each side. For piping, three rows of stone columns would be used for each pipe or group of parallel pipes, one row directly under the pipe and one row on each side of the pipe. Mat foundation slabs will be utilized at all of the structures to address the potential for differential settlement.

Stone columns may also be used to construct a twenty-foot wide "L"-shaped "buttress wall" zone along the north and east sides of the site, adjacent to the buildings, which will mitigate lateral spreading towards the Huntington Beach Flood Control Channel. The buttress wall is a zone of more densely placed stone columns that would replace the typical stone columns beyond the building footprint on one or more sides of the buildings at the northern most and eastern most sides of the site. Structures to the south and west of the buttress walls would be protected from lateral spreading.

Table 1 below shows the requirements for stone column mitigation areas to meet the liquefaction inducted settlement. Table 2 includes the buttress requirements for lateral spreading mitigation.

Table 1 – Liquefaction Induced Settlement Design Mitigation by Stone Column

Structure	Length (ft)	Width (ft)	Prep. Extension (ft)
Pretreatment Filter Structure	397	150	15
Post Treatment Area	105	50	15
Transformers	100	60	15
RO Process Building	287	121	15
Chemical Storage	70	30	15
Flush Tank	27.75 Diameter		15
Electrical Building	110	44	15
Product Water Pump Station	72	58	15
Product Water Pump Station Elec. Equip.	35	23	15
Ammonia and Fluoride Storage Area	31	18	15
Surge Tank	34	12	15
Solids Handling Facilities (Building)	55	32	15
Solids Handling Facilities (Loading Area)	42	16	15
Administration Building	100	50	15
Filter Substation	140	140	15
Influent Pump Station	78	28	15

Table 2 – Lateral Spreading Design Mitigation by Stone Column Buttress Wall

Structure*	Length (ft)	Width (ft)
Pretreatment Filter Structure	397	20
Post Treatment Area	50	20
RO Process Building	408	20
Chemical Storage	30	20
Product Water Pump Station	58	20

*Buttress walls are constructed for a 20 feet width at the sides of the above structures that are closest to the open channel in lieu of the typical stone columns along the north and east sides of the site. Structures to the south and west of the buttress walls are protected from lateral spreading.

The product water storage tank would utilize pile foundations, which would address liquefaction-induced settlement. Lateral spreading would be mitigated either by the pile design or with a stone column buttress wall. Therefore we have concluded that the seismic conditions can be met using common design and construction techniques at the site.

VI. TSUNAMI AND SEA LEVEL RISE DESIGN MITIGATION MEASURES

Geosyntec's site hazard assessment found that an extreme tsunami event could result in site inundation at 12 feet MSL. This calculation includes a tsunami runup of 10 feet, plus expected sea level rise of 2

feet before the end of the Project's 30-year design life. However, the Response Plan takes a very conservative approach and implements design and mitigation measures capable of minimizing the effects of tsunami on structural integrity and health and human safety based on a higher site inundation of 13 feet MSL, as requested by California Coastal Commission staff. The finished floor elevations of the proposed project range from 9-14 feet MSL, therefore under the extreme design scenario tsunami-related loading and flooding of facilities would range from 0.0 feet at the high elevations of the project site to 4 feet at the lower elevations.

The following mitigation measures are recommended in order to mitigate the effects of tsunami inundation:

Design Measure C: Poseidon shall implement SEIR mitigation measure HWQ-3: *Prior to issuance of grading permits, the applicant shall submit to the City for approval a plan outlining the specific planning measures to be taken to minimize or reduce risks to property and human safety from tsunami during operation. Planning measures could include but would not be limited to the following: (a) Provision of tsunami safety information to all facility personnel, in addition to posting signage on site; (b) identification of the method for transmission of tsunami watch and warnings to facility personnel and persons on the site in the event a watch or warning is issued; and (c) identification of an evacuation site for persons on site in the event of a tsunami warning*.

Design Measure D: Poseidon shall develop a Hazard Emergency Response Plan with AES HBGS prior to the commencement of Project operations. A Draft Hazard Emergency Response Plan tailored after the current AES plan but specifically for a non-essential water treatment plant, is attached as Appendix B. Poseidon will meet with AES HBGS to work together on a coordinated plan.

Design Measure E: Poseidon shall incorporate tsunami-resistant design features into the design of proposed structures that are sufficient to accommodate maximum potential inundation of between approximately 0.0 feet and approximately 4.0 feet of water. Guidance on tsunami-resistant design that can sufficiently accommodate these inundation levels and provide for vertical evacuations if necessary is available in the Applied Technology Council report titled *Guidelines for Design of Structures for Vertical Evacuation from Tsunamis* [ATC, 2008].

Exhibit 3 provides a photographic illustration of the tsunami and sea level rise at each of the Project's facilities. Implementation of structural design measures and/or raising of the Project site we will be able to sufficiently mitigated flooding hazards including:

- Protection of human health and safety;
- Prevent mobilization of building materials and major detritus from buildings, and;
- Prevent release of hazardous chemicals

Tsunami and flood design mitigation measures include both raising the site and designing individual structures to resist tsunami loads.

Raising/leveling the site would be implemented by raising the grade around individual buildings that are currently below the 13.0 feet MSL runup elevation. Table 3 outlines the elevation rise needed to meet the design mitigation measure. The majority of the site buildings are above the 13.0 feet MSL elevation so no design mitigation is required for these buildings. However, the areas around the Administration, Solids, and Product Water Pump Station need to be raised as shown in Table 3. Our calculations indicate that approximately 17,500 cubic yards (CY) would be required for the areas around these

structures to be raised. The site originally had approximately 18,000 CY of material that was required to be removed from the site. Raising these grades would result in this material no longer being required to be hauled off site.

Table 3 – Tsunami Design Site Elevation Rise

Structure	Existing Elevation	Runup Elevation	Require Elevation Rise Around Structure
Pretreatment Filter Structure	13.0	13.0	0
Post Treatment Area	14.0	13.0	0
Transformers	14.0	13.0	0
RO Process Building	14.0	13.0	0
Chemical Storage	14.0	13.0	0
Flush Tank	14.0	13.0	0
Electrical Building	14.0	13.0	0
Product Water Pump Station	10.0	13.0	3.0
Product Water Pump Station Elec. Equip.	10.2	13.0	2.8
Ammonia and Fluoride Storage Area	10.2	13.0	2.8
Surge Tank	10.2	13.0	2.8
Solids Handling Facilities (Building)	12.4	13.0	0.6
Solids Handling Facilities (Loading Area)	12.4	13.0	0.6
Administration Building	11.3	13.0	1.7
Filter Substation	12.0	13.0	1.0
Influent Pump Station	9.0	13.0	NA*

* Influent pump station will be allowed to flood

Structural design of tsunami-resistant mitigation according would include components for hydrostatic, buoyant, hydrodynamic, impulsive, and debris impact forces, not all of which would occur simultaneously.

Partially buried and above-grade structures will be designed with reinforced concrete walls to resist the various combinations of tsunami force components. Similarly, the substation may be enclosed within reinforced concrete walls to resist tsunami forces. All structures will be designed with an adequate factor of safety against uplift due to tsunami buoyant forces based upon design runup water elevations. Design mitigation measures are outlined in Table 4 to show the required additional wall height and concrete thickness.

Appendix A provides the estimated costs for the tsunami and flooding structural design mitigation measures.

Table 4 – Tsunami Design Mitigation by Strengthening Individual Structure

Design Runup 13 feet

Structure	Length/ Diameter (ft.)	Width (ft.)	FF Elevation (ft.)	Above Grade or Below Grade	Runup At Structure	Conc. Wall Thickness req'd to resist tsunami bore (ft.)	Conc. Wall Thickness in the original design	Conc. Wall Height (ft.)	Δ Wall Thickness (ft.)
Pretreatment Filter Structure	397	150	13	Above/ Below	0	N/A	N/A	N/A	N/A
Post Treatment Area	105	50	14	Above	0	N/A	N/A	N/A	N/A
Transformers	100	60	14	Above	0	N/A	N/A	N/A	N/A
RO Process Building	287	121	14	Above	0	N/A	N/A	N/A	N/A
Chemical Storage	70	30	14	Above	0	N/A	N/A	N/A	N/A
Flush Tank	27.75		14	Above	0	N/A	N/A	N/A	N/A
Electrical Building	110	44	14	Above	0	N/A	N/A	N/A	N/A
Product Water Pump Station	72	58	10	Below	3	N/A	N/A	N/A	N/A
Product Water Pump Station Elec. Equip.	35	23	10.2	Above	2.8	1.25	0	3	1.25
Ammonia and Fluoride Storage Area	31	18	10.2	Above	2.8	1.25	0	3	1.25
Surge Tank	44	22	10.2	Above	2.8	1.25	0	3	1.25
Solids Handling Facilities (Building)	55	32	12.4	Above	0.6	1.25	0	1	1.25
Solids Handling Facilities (Loading Area)	42	16	12.4	Above	0.6	N/A	N/A	N/A	N/A
Administration Building	100	50	11.3	Above	1.75	1.25	0	2	1.25
Filter Substation	140	140	12	Above	1	1.25	0	1	1.25
Influent Pump Station	78	28	8	Below	5	N/A	N/A	N/A	N/A
Product Water Tank	251		10	Above	3	1.25	1.5	3	N/A

VII. RECOMMENDED COASTAL DEVELOPMENT PERMIT CONDITIONS

Based on our review of the March 2013 Geotechnical Hazards Assessment Report prepared by Geosyntec as described herein, we recommend that the design measures recommended by Geosyntec in its report be incorporated by the California Coastal Commission as Special Conditions to the CDP for the Project. The recommended design measures are listed below, including those modifications to the measures described herein, with additions in underline and deletions in ~~strikethrough~~.

- **Design Measure A**: In order to mitigate the potential seismic hazards Poseidon will ensure ~~Geosyntec recommends~~ that the Project is ~~be~~ designed following CBC [2010] requirements for Site Class F, with an acceleration response spectrum corresponding to 80% of the Site Class E response spectrum.

- **Design Measure B**: In order to mitigate the potential seismic hazards Poseidon will ensure ~~During the Project's design phase, Geosyntec recommends~~ that the Project's Structural and Geotechnical Engineers collaborate on the design of a foundation system for the proposed structures that can accommodate (1) approximately nine 9 ~~inches~~ of liquefaction-induced settlement; and (2) lateral spread displacement of approximately fifteen ~~15~~ to thirty eight ~~38~~ inches. Such foundation system may include both geotechnical ground improvement methods to reduce the anticipated settlements and displacements to acceptable levels, and structural design methods (stone columns or piles) to allow Site structures to tolerate the estimated settlements and displacements.

- **Design Measure C**: Poseidon shall implement ~~Geosyntec recommends the implementation of~~ SEIR mitigation measure HWQ-3: *Prior to issuance of grading permits, the applicant shall submit to the City for approval a plan outlining the specific planning measures to be taken to minimize or reduce risks to property and human safety from tsunami during operation. Planning measures could include but would not be limited to the following: (a) Provision of tsunami safety information to all facility personnel, in addition to posting signage on site; (b) identification of the method for transmission of tsunami watch and warnings to facility personnel and persons on the site in the event a watch or warning is issued; and (c) identification of an evacuation site for persons on site in the event of a tsunami warning*;

- **Design Measure D**: Poseidon shall develop a Hazard ~~Geosyntec recommends the development of a coordinated~~ Emergency Response Plan with AES HBGS prior to the commencement of Project operations. Poseidon has submitted a Draft Hazard Emergency Response Plan tailored to the current AES plan but revised to address a non-essential water treatment plant. Poseidon will meet with AES HBGS to work together on a coordinated plan; that is in accordance with the draft plan submitted: and

- **Design Measure E**: Poseidon shall incorporate ~~Geosyntec recommends theincorporation of~~ tsunami-resistant design features into the design of proposed structures that are sufficient to accommodate potential inundation of between ~~up to~~ approximately 0.0 feet and approximately 4.0 feet ~~3 ft.~~ of water. Guidance on tsunami-resistant design that can sufficiently accommodate these inundation levels and provide for vertical evacuation if necessary is available in the

Applied Technology Council report titled *Guidelines for Design of Structures for Vertical Evacuation from Tsunamis* [ATC, 2008]. Such tsunami-related design features may include: (1) raising the grade around individual buildings that are currently below the 13.0 feet MSL runup elevation; and (2) ensuring that buildings potentially subject to inundation have a minimum concrete wall thickness of 1.25 feet.

APPENDIX A

Estimated Costs for Seismic, Tsunami and Flood Design Mitigation Measures

APPENDIX A
Estimated Costs for Seismic, Tsunami and Flood Design Mitigation Measures

Liquefaction Induced Settlement Mitigation by Stone Column

Structure	Length/ Diameter (ft)	Width (ft)	Prep. Extension (ft)	Stone Col. Prep. Area (ft2)	Stone Col. Unit Cost ($/ft2)	Δ Cost
Pretreatment Filter Structure	397	150	15	74160	13.33	$988,553
Post Treatment Area	105	50	15	8775	13.33	$116,971
Transformers	100	60	15	11700	13.33	$155,961
RO Process Building	287	121	15	41072	13.33	$547,490
Chemical Storage	70	30	15	4500	13.33	$59,985
Flush Tank	27.75		15	2619	13.33	$34,916
Electrical Building	110	44	15	10360	13.33	$138,099
Product Water Pump Station	72	58	15	7446	13.33	$99,255
Product Water Pump Station Elec. Equip.	35	23	15	3445	13.33	$45,922
Ammonia and Fluoride Storage Area	31	18	15	2928	13.33	$39,030
Surge Tank	34	12	15	2688	13.33	$35,831
Solids Handling Facilities (Building)	55	32	15	5270	13.33	$70,249
Solids Handling Facilities (Loading Area)	42	16	15	3312	13.33	$44,149
Administration Building	100	50	15	10400	13.33	$138,632
Filter Substation	140	140	15	28900	13.33	$385,237
Influent Pump Station	78	28	15	6264	13.33	$83,499
			Mobilization Δ Cost			$65,000
			Total Δ Cost			$2,983,779

Lateral Spreading Mitigation by Stone Column Buttress Wall

Structure*	Length (ft)	Width (ft)	Buttress Wall. Area (ft2)	Buttress Wall. Unit Cost ($/ft2)	Δ Cost
Pretreatment Filter Structure	397	20	7940	27.00	$214,380
Post Treatment Area	50	20	1000	27.00	$27,000
RO Process Building	408	20	8160	27.00	$220,320
Chemical Storage	30	20	600	27.00	$16,200
Product Water Pump Station	58	20	1160	27.00	$31,320
			Total Δ Cost		$509,220

*Buttress walls are constructed for a 20ft width at the sides of the above structures that are closest to the open channel in lieu of the typical stone columns along the north and east sides of the site. Structures to the south and west of the buttress walls are protected from lateral spreading.

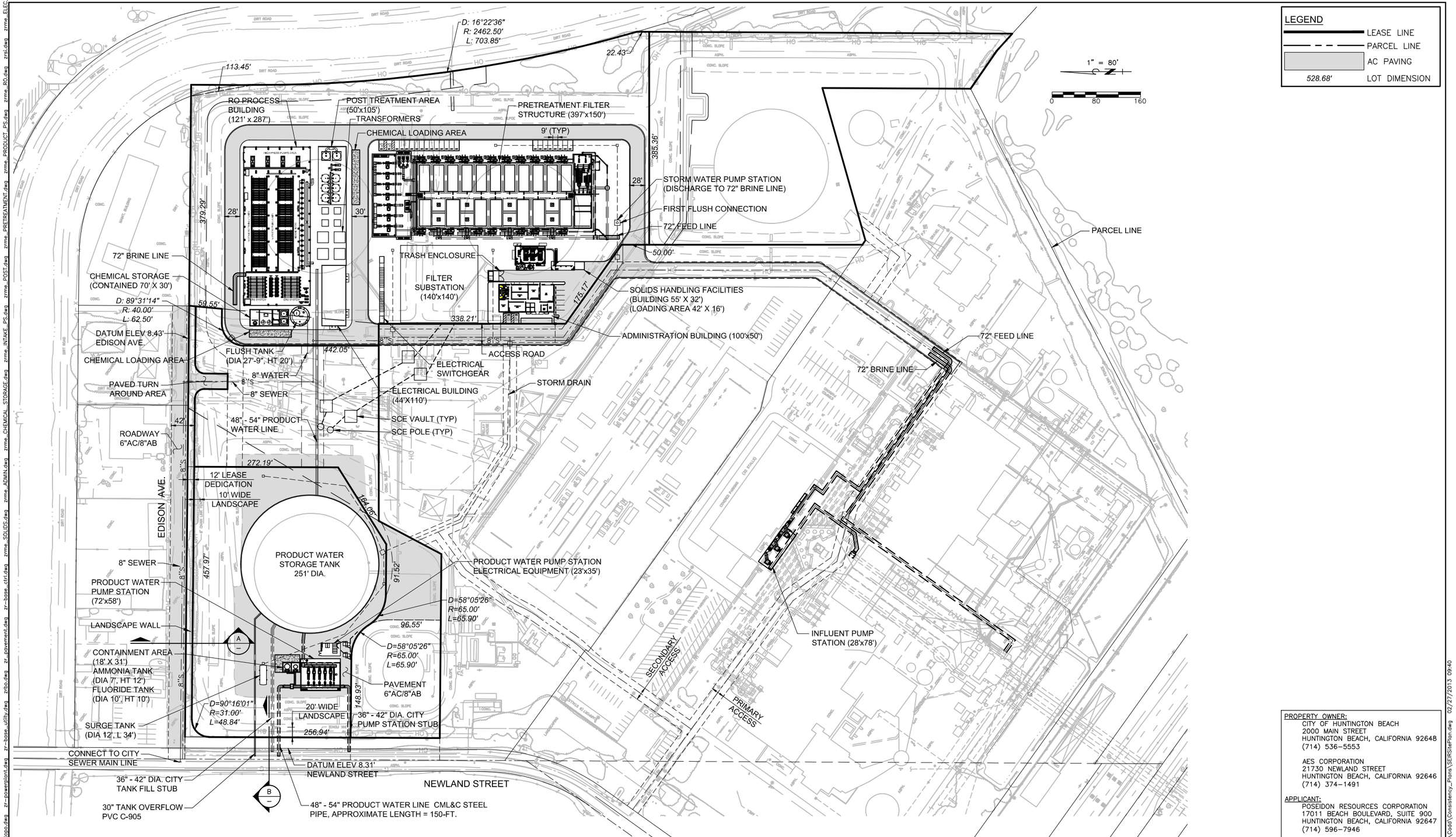
Tsunami Mitigation by Strengthening Individual Structure

Design Runup 13 ft

Structure	Length/ Diameter (ft)	Width (ft)	FF Elevation (ft)	Above Grade or Below Grade	Runup At Structure	Conc. Wall Thickness req'd to resist tsunami bore (ft)	Conc. Wall Thickness in the original design	Conc. Wall Height (ft)	Δ Wall Thickness (ft)	Δ Conc Vol (CY)	Unit Price ($/CY)	Δ Cost
Pretreatment Filter Structure	397	150	13	Above/ Below	0	N/A	N/A	N/A	N/A	N/A	1500	$0
Post Treatment Area	105	50	14	Above	0	N/A	N/A	N/A	N/A	N/A	1500	$0
Transformers	100	60	14	Above	0	N/A	N/A	N/A	N/A	N/A	1500	$0
RO Process Building	287	121	14	Above	0	N/A	N/A	N/A	N/A	N/A	1500	$0
Chemical Storage	70	30	14	Above	0	N/A	N/A	N/A	N/A	N/A	1500	$0
Flush Tank	27.75		14	Above	0	N/A	N/A	N/A	N/A	N/A	1500	$0
Electrical Building	110	44	14	Above	0	N/A	N/A	N/A	N/A	N/A	1500	$0
Product Water Pump Station	72	58	10	Below	3	N/A	N/A	N/A	N/A	N/A	1500	$0
Product Water Pump Station Elec. Equip.	35	23	10.2	Above	2.8	1.25	0	3	1.25	16	1500	$24,167
Ammonia and Fluoride Storage Area	31	18	10.2	Above	2.8	1.25	0	3	1.25	13	1500	$19,056
Surge Tank	44	22	10.2	Above	2.8	1.25	0	3	1.25	17	1500	$25,667
Solids Handling Facilities (Building)	55	32	12.4	Above	0.6	1.25	0	1	1.25	5	1500	$7,250
Solids Handling Facilities (Loading Area)	42	16	12.4	Above	0.6	N/A	N/A	N/A	N/A	N/A	1500	$0
Administration Building	100	50	11.25	Above	1.75	1.25	0	2	1.25	24	1500	$36,458
Filter Substation	140	140	12	Above	1	1.25	0	1	1.25	26	1500	$38,889
Influent Pump Station	78	28	8	Below	5	N/A	N/A	N/A	N/A	N/A	1500	$0
Product Water Tank	251		10	Above	3	1.25	1.5	3	N/A	N/A	1500	$0
										Total Δ Cost		$151,486

APPENDIX B

Hazard Emergency Response Plan



PROPERTY OWNER:
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DRAWINGS PREPARED FOR:
POSEIDON RESOURCES
Poseidon Resources Corporation
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PROJECT:
SEAWATER DESALINATION PROJECT
Huntington Beach, California

SEIR SITE PLAN
EXHIBIT 1

REFERENCE FILES: tr-base_topo.dwg tr-powerplant.dwg tr-base_utility.dwg tr-base_ctrl.dwg tr-pavement.dwg trbo.dwg trme_PRETREATMENT.dwg trme_PRODUCT_PS.dwg trme_POST.dwg trme_INTAKE_PS.dwg trme_CHEMICAL_STORAGE.dwg trme_ADMIN.dwg trme_SOLIDS.dwg trsi.dwg trme_RO.dwg trme_ELEC_BUILDIN

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LEGEND

10.00 PROPOSED FINISHED GRADE/FLOOR

528.68' LOT DIMENSION

1" = 80'

0 80 160

D: 16°22'36"
R: 2462.50'
L: 703.85'

113.45'

22.43'

POST TREATMENT

TRANSFORMERS

12.06

12.66

12.35

CB 13.33

CB 12.20

385.36'

PRE TREATMENT PLANT 13.50

ACCESS ROAD

RO PROCESS 14.00

379.29'

11.45

CB 11.25

CB 12.40

12.00

50.00'

PARCEL LINE

TRASH ENCLOSURE

CHEMICAL STORAGE (CONTAINED)

D: 89°31'14"
R: 40.00'
L: 62.50'

59.55'

FILTER SUBSTATION 12.00

11.25

175.17'

SOLIDS HANDLING FACILITIES

12.15

12.06

338.21'

ADMINISTRATION BUILDING

8"S

8"S

CB 11.30

442.05'

CB 10.33

ACCESS ROAD

ELECTRICAL SWITCHGEAR

STORM WATER PUMP STATION

72" FEED LINE

72" BRINE LINE

FLUSH TANK

PAVED TURN AROUND AREA

ELECTRICAL BUILDING

STORM DRAIN

48"-54" PRODUCT WATER LINE

ROADWAY 6"AC/8"AB

42"

8"S

272.19'

12' LEASE DEDICATION

10.80

CB 9.00

164.06'

EDISON AVE.

PRODUCT WATER STORAGE TANK 251' DIA.

91.52'

CB 9.00

ELECTRICAL EQUIPMENT

457.97'

PRODUCT WATER PUMP STATION

D=58°05'26"
R=65.00'
L=65.90'

10.40

LANDSCAPE WALL

AMMONIA AND FLUORIDE STORAGE AREA

10.20

D=58°05'26"
R=65.00'
L=65.90'

CB 9.00

10.00

SURGE TANK 9.50

PAVEMENT 6"AC/8"AB

148.93'

D=90°16'01"
R=31.00'
L=48.84'

36" - 42" DIA. CITY PUMP STATION STUB

256.94'

INFLUENT PUMP STATION

SECONDARY ACCESS

PRIMARY ACCESS

CONNECT TO CITY SEWER MAIN LINE

36" - 42" DIA. CITY TANK FILL STUB

NEWLAND STREET

30" TANK OVERFLOW PVC C-905

48" - 54" PRODUCT WATER LINE CML&C STEEL PIPE, APPROXIMATE LENGTH = 150-FT.

PROPERTY OWNER:
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DRAWINGS PREPARED FOR:

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Poseidon Resources Corporation
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(714) 596-7946

PROJECT:

SEAWATER DESALINATION PROJECT
Huntington Beach, California

SITE GRADING PLAN
EXHIBIT 2

REFERENCE FILES: zr-base_topo.dwg zr-powerplant.dwg zr-base_utility.dwg zr_pavement.dwg 2001221 2010-08-06 155 TPM 2010-130 BASE BOUNDARY DATA.dwg zrmx_SOLIDS.dwg zrmx_ADMIN.dwg zrmx_CHEMICAL_STORAGE.dwg zrmx_INTAKE_PS.dwg zrmx_POST.dwg zrmx_PRETREATMENT.dwg zrmx_PRODUCT_f

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POSEIDON'S HUNTINGTON BEACH DESALINATION PROJECT ARTIST RENDERING

LEGEND

(1.75) FINISHED GRADE AROUND STRUCTURES

[11.25] FINISHED GRADE

TETRA TECH	TSUNAMI INUNDATION DEPTHS	EXHIBIT 3

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LIQUEFACTION INDUCED SETTLEMENT MITIGATION BY STONE COLUMN

1. PRETREATMENT FILTER STRUCTURE = 397 x 150
2. POST TREATMENT AREA = 105 x 50
3. TRANSFORMERS = 100 x 60
4. RO PROCESS BUILDING = 287 x 121
5. CHEMICAL STORAGE = 70 x 30
6. FLUSH TANK = 27.75 (DIA)
7. ELECTRICAL BUILDING = 110 x 44
8. PRODUCT WATER PUMP STATION = 72 x 58
9. PRODUCT WATER PUMP STATION ELEC. EQUIP. = 35 x 23
10. AMMONIA AND FLUORIDE STORAGE AREA = 31 x 18
11. SURGE TANK = 34 x 12
12. SOLIDS HANDLING FACILITIES (BUILDING) = 55 x 32
13. SOLIDS HANDLING FACILITIES (LOADING AREA) = 42 x 16
14. ADMINISTRATION BUILDING = 100 x 50
15. FILTER SUBSTATION = 140 x 140
16. INFLUENT PUMP STATION = 78 x 28

LATERAL SPREADING MITIGATION BY STONE COLUMN BUTTRESS WALL

- A. PRETREATMENT FILTER STRUCTURE = 397 x 20
- B. POST TREATMENT AREA = 50 x 20
- C. RO PROCESS BUILDING = 408 x 20
- D. FILTER SUBSTATION = 30 x 20
- E. PRODUCT WATER PUMP STATION = 58 x 20

POSEIDON'S HUNTINGTON BEACH DESALINATION PROJECT ARTIST RENDERING

NOTE:

THE STORE COLUMN VALUES SHOWN FOR LIQUEFACTION ARE LENGTH/DIAMETER (FT) BY WIDTH (FT).
THE STORE COLUMN VALUES SHOWN FOR LATERAL SPREADING ARE LENGTH/DIAMETER (FT) BY WIDTH (FT).

TETRA TECH	SEISMIC DESIGN MITIGATION MEASURES	EXHIBIT 4

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TSUNAMI MITIGATION BY ELEVATION RISE

	STRUCTURE	RAISE ELEVATION (FT) AROUND STRUCTURES
1	PRETREATMENT FILTER STRUCTURE	0
2	POST TREATMENT AREA	0
3	TRANSFORMERS	0
4	RO PROCESS BUILDING	0
5	CHEMICAL STORAGE	0
6	FLUSH TANK	0
7	ELECTRICAL BUILDING	0
8	PRODUCT WATER PUMP STATION	3
9	PRODUCT WATER PUMP STATION ELEC. EQUIP.	2.8
10	AMMONIA AND FLUORIDE STORAGE AREA	2.8
11	SURGE TANK	2.8
12	SOLIDS HANDLING FACILITIES (BUILDING)	0.5
13	SOLIDS HANDLING FACILITIES (LOADING AREA)	0.5
14	ADMINISTRATION BUILDING	1.7
15	FILTER SUBSTATION	1.0
16	INFLUENT PUMP STATION	NA

TSUNAMI MITIGATION BY STRUCTURAL DESIGN

	STRUCTURE	RUNUP AT STRUCTURE	Δ WALL THICKNESS (FT)
A	PRETREATMENT FILTER STRUCTURE	0	0
B	POST TREATMENT AREA	0	0
C	RO PROCESS BUILDING	0	0
D	ELECTRICAL BUILDING	0	0
E	PRODUCT WATER PUMP STATION	3	-
F	SOLIDS HANDLING FACILITIES (BUILDING)	0.6	1.3
G	ADMINISTRATION BUILDING	1.7	1.3

POSEIDON'S HUNTINGTON BEACH DESALINATION PROJECT ARTIST RENDERING

TETRA TECH

TSUNAMI DESIGN MITIGATION MEASURES

EXHIBIT 5

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Appendix B

Hazard
Emergency Response Plan

POSEIDON RESOURCES -

Huntington Beach Seawater Desalination Plant

March 2013

NOTE: This is a Draft Plan that will need to be revised after the Final Design of the Desalination Plant

Table of Contents

ABOUT THIS PLAN

This Facility Emergency Response Plan (FEP) has been developed using a process called Information Mapping. The Information Mapping method is based on extensive research from a variety of disciplines such as cognitive psychology, instructional systems design and human factors engineering.

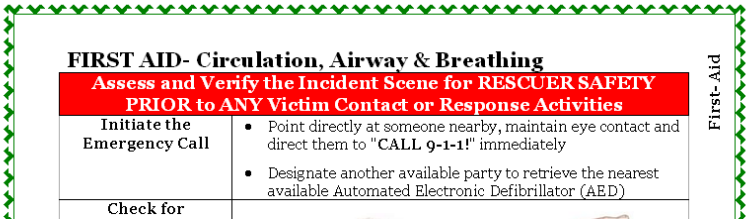
The process of Information Mapping provides you with "chunks" of information delivered in a manner that facilitates retention and learning. Additional benefits of information mapping include:

Benefits of Information Mapping	Easier Document Updating Simplified Information Retrieval • Information Grouped by Topic • Information "Chunked" for Ease of Use Improved Comprehension and Performance

While easier document updating is important, it's the latter two reasons why Information Mapping was chosen for your Emergency Plan.

The information contained in each of the sections is provided in clear, easy-to-follow directions that address those aspects of an emergency situation that you can act on.

The procedures necessary to address the most likely emergency situations at AES Huntington Beach can be found with page labels on the upper **RIGHT** corner of the page with an angled **GREEN BORDER** on the outer edge of the page for **First Aid Information** or a broken **RED BORDER** for **Emergency Procedures** contents as shown below.

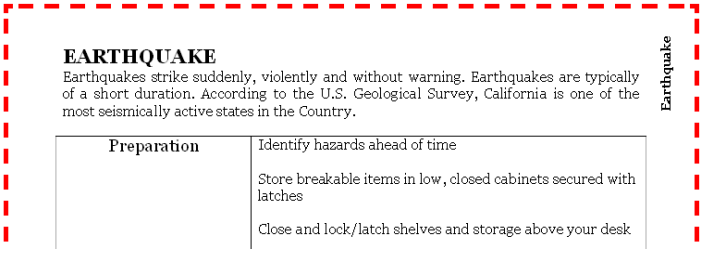


FIRST AID- Circulation, Airway & Breathing

First- Aid

Assess and Verify the Incident Scene for RESCUER SAFETY PRIOR to ANY Victim Contact or Response Activities	
Initiate the Emergency Call	• Point directly at someone nearby, maintain eye contact and direct them to "**CALL 9-1-1!**" immediately • Designate another available party to retrieve the nearest available Automated Electronic Defibrillator (AED)
Check for	

First-Aid Procedures



EARTHQUAKE

Earthquakes strike suddenly, violently and without warning. Earthquakes are typically of a short duration. According to the U.S. Geological Survey, California is one of the most seismically active states in the Country.

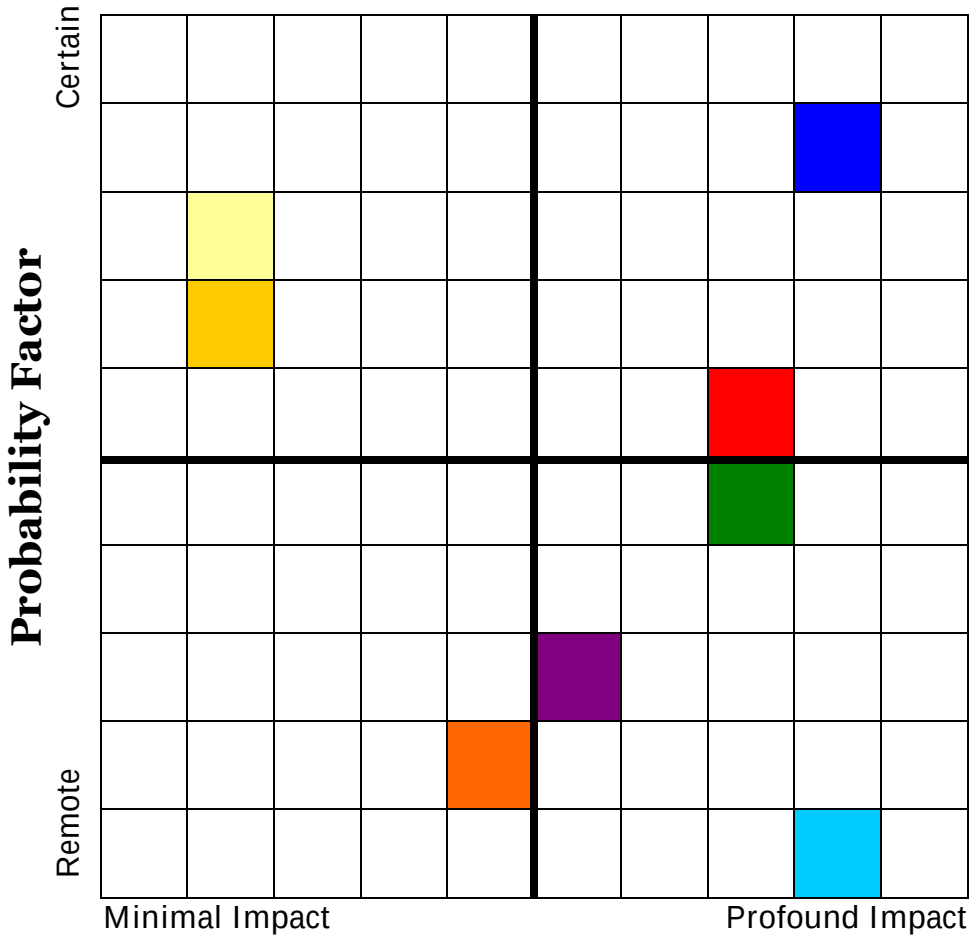
Earthquake

Preparation	Identify hazards ahead of time Store breakable items in low, closed cabinets secured with latches Close and lock/latch shelves and storage above your desk

Emergency Procedures

ABOUT THIS PLAN

The contents of this plan are based on the results of an Events Hazard Assessments as indicated in the Event Based Risk Estimation Grid shown below:



Crisis Impact Value

Event Type	
Fire/Explosion	
Earthquake	
Chemical/Hazardous Material Spill	
Bioterror/Bomb Threat	
Bloodborne Pathogen Exposure	
Workplace Violence	
Tsunami	
Medical/First-Aid/CPR Incident	

EMERGENCY RESPONSE PLAN OVERVIEW

What is the purpose of this Plan?	• to document and provide a ready reference to the plans and actions necessary to resolve a plant emergency
What IS considered a "plant emergency?"	• an abnormal condition which cannot be controlled by the area involved, requiring the immediate assistance of additional people and resources • an abnormal condition that presents a danger to the remainder of the plant, to our neighbors or our community
Why maintain an "Emergency Plan"?	• the safety and security of our people • the protection of our plant • the protection of our neighbors and our community
What are the objectives or goals of this plan?	• rescue and provide medical care for injured persons • prevent the spread of the emergency condition • within the abilities to safely do so, protect involved property from any additional damage • perform the basic functions necessary to stabilize the emergency condition without endangering life or property
Are there ANY limitations to this plan?	• Yes…this plan is limited in scope to the critical initial response phase that exists in the period between event occurrence and the arrival of emergency response personnel • This plan **IS a supplement** to and **NOT a replacement** for our longer term **Emergency Response Business Plan** and/or our **Incident Management Plan** • This plan **IS** intended to guide the User through the critical first steps in responding to an emergency
Who is responsible for this plan?	• The Desalination Plant Manager is ultimately responsible for the contents of this plan and ensuring its proper execution. • All other Desalination Plant personnel are responsible for adherence to and execution of the procedures described by this plan.

EMERGENCY RESPONSE PLAN DETAILS

GUIDING PRINCIPLES AND CARDINAL RULES

1. Although the primary emphasis of our daily operations, policies and procedures is on prevention rather than on reactive or emergency response measures, the level of risk in electrical power generation and the nature of human activity dictates that emergencies can occur. Through training, preparation and emergency planning, the risk, loss and damage resulting from such emergencies can be minimized.
2. . Poseidon shall no less than annually Conduct a survey of its facilities to identify those areas or operations where emergencies may occur and will also consider the potential of off-site and natural emergencies that may impact operations or staff. Operations must develop, communicate and practice emergency plans to respond adequately to these identified emergencies.
3. Failure to comply with the provisions of this Emergency Response Plan puts Poseidon's facilities, people, contractors, suppliers, visitors and the general public at risk. It is incumbent upon each Team Leader and employee to ensure that the provisions of this Emergency Response Plan are effectively implemented within their area of responsibility.

ROLES AND ASSIGNMENTS

Role	Assignment
Incident Commander* – Limited to a Specific Plant Location	First Team Leader to arrive on-scene or the Plant Manager
Incident Commander* – Plant-wide Emergency/Natural Disaster	Plant Manager or his designated representative
Technical Expert(s)	Plant Operations Plant Controls Maintenance/Eng: I,C&E: Engineering/Env: Environmental: Safety:
Control Room Operator	Emergency Services liaison
Outside Operator	Emergency Communications “Phone Talker”
On-Duty Operations Personnel	Security and Operation of the Plants
Plant Security Personnel	Restrict access to Emergency Responders only
Contract Administrator(s)	Location and assembly of **ALL** contractor staff
Tour Guide/Host	Location and assembly of **ALL** guests
Maintenance Personnel	Stand-by to Assist the Incident Commander
Plant Personnel	As directed
Company Spokesperson (Media)	Plant Manager

* - Until relieved by authorized Emergency Response personnel

TRAINING

Course Requirements	Plant Manager	Team Leaders	Operations	Maintenance	I,C & E	Support
Cardiopulmonary Resuscitation (CPR) and AED	●	●	●	●	●	●
Emergency Evacuation (Fire Drill)	○	○	○	○	○	○
Environmental Awareness (SPCC/RCRA/CWA)	○	○	○	○	○	○
Fire Extinguisher	○	○	○	○	○	○
First Aid	●	●	●	●	●	●
Introduction to Incident Command System (ICS)	■	■	✓	✓	✓	✓
ICS for Single Resources and Initial Action Incidents	●	●	✓	✓	✓	✓

●- Initial and Biennial ○- Initial and Annual ■- Initial Only ✓- Optional

INCIDENT DISCOVERY

Hazard and Incident Recognition	• It is the responsibility of everyone working at Poseidon to maintain vigilance and actively monitor plant conditions for **ANY** indications that an emergency may be imminent or in progress. • Indications of an emerging condition include smoke, open flames, leaks from equipment or containers, unusual smells, injured workers, damaged equipment, unusually loud noises, or indications and alarms from system monitors. • Environmental indications such as shaking, rolling or heavy vibrations, unusual shoreline recession, wall of water or loud "rushing" noises that may indicate an earthquake or tsunami.
Station, Staff and Equipment Monitoring	Station property, staff and equipment are inspected and monitored as part of the following: • Normal station equipment inspection rounds each 12-hour shift. • Normal station monitoring of bulk chemical deliveries to storage tanks. • "Schedule of Equipment Inspection" in compliance with Title 22, California Administrative Code. • Safety Walks • Work Activity Observations All suspected or confirmed hazardous conditions or incidents are to be immediately reported to the Control Room

NOTIFICATIONS

The Plant Manager, Incident Commander, Team Leaders and Support Personnel are responsible for ensuring the timely and proper agency notifications required by law.

Note: Plant Management will notify Media Relations of any events potentially effecting Plant or where the media may be involved.

Incident Commander
(First arriving Team Leader)
	• Announces the incident over the station radio system
	• Requests the **IMMEDIATE** assistance of **ALL** Team Leaders (if not already on-scene)
	• Requests Control Roomnotification of:
	  • Plant Manager
	  • Emergency Services as required by the event
	  • Plant Personnel via Alarm/Notification System
	• Directs switching Emergency communications to Channel 1

Control Room	• Designates available Outside Operator as "Phone Talker" for the duration of the incident • Notifies Plant Manager of Emergency • Alarms stations via Notification System
Phone Talker	• Notifies Emergency Services via 9-1-1 as required by Emergency • Remains to assist CO with ALL outside Communications
Contract Administrator	• Notifies ALL on-site Contract staff and directs them to the designated assembly area
Tour Guide/Host	• Notifies ALL visitors and escorts them to the designated assembly area

EMERGENCY CONTACT INFORMATION

Emergency Contact	Telephone
Emergency Services	911
Huntington Beach Fire (8:00 am – 5:00 pm)	(714) 536-5411
Huntington Beach Fire (5:00 pm – 8:00 am)	(714) 536-5469
Huntington Beach Police	(714) 960-8811
AES Control Room 1&2	(714) 374-1401
AES Control Room 3&4	(714) 374-1403
AES Plant Security	(714) 374-1464
Southern California Gas	(800) 427-2200
Orange County Emergency Management Services	(714) 628-7055
Los Angeles County Emergency Management	(323) 980-2261
California Emergency Management Agency	(800) 852-7550
Poison Control Center	(800) 222-1222
National Spill Response Center	(800) 424-8802
ANCON Marine (Spill Clean-Up)	(310) 548-8300
Federal Energy Regulatory Commission (FERC)	(888) 889-8030
North American Energy Reliability (NERC)	(609) 452-8060
California Public Utilities Commission	(800) 848-5580
California ISO	(916) 351-4400
Cal-OSHA Employee Fatality/Serious Injury‡	(714) 558-4451*

‡ - Recommend discussion with AES Counsel prior to notifications
* - Plant Manager or Safety Lead ONLY to make notification call within **8 hours**

Information to Provide the 9-1-1 Operator

Provide the following information:

- **Who** - (Name) at Poseidon Huntington Beach Desalination Plant
- **Where** – your specific location within
  21730 Newland Street
  Huntington Beach, CA 92646
- Return phone number -
- **What** - Provide details about the emergency, i.e. source of event, number of victims, type of injuries, is the event above or below ground level
- **Do not** hang up until instructed to do so by the dispatcher

EMERGENCY CONTACT INFORMATION

Title	Telephone Office	Cell
Plant Manager –		
Support Team Leader -		
Ops Leader –		
I, C & E Leader –		
Maintenance Team Leader –		
Environmental Manager –		
Safety Leader –		
Environmental Coordinator –		

Emergency Assembly Locations (see Maps)	
Primary Location- Admin	Parking Lot East of Building
Primary Location- All Other	Break Area NE of Circ Pump Pit
Alternate- All Plant	Parking Lot Near BBQ Shelter
After Hours- All Plant	Break Area NE of Circ Pump Pit

EMERGENCY RESPONSE

The following pages contain the information necessary to provide an emergency response reaction to the scenarios described while awaiting the arrival of qualified Emergency Response personnel.

Emergency Response Table of Contents

FACILITY EMERGENCY EVACUATION

Will be Provided when Final Plans of Desalination Plant are Completed.

Will be Provided when Final Plans of Desalination Plant are Completed.

Will be Provided when Final Plans of Desalination Plant are Completed.

Will be Provided when Final Plans of Desalination Plant are Completed.

Plant Prevailing Wind Information
(ALWAYS ASSEMBLE UPWIND)

Plant Emergency Assembly Areas to be Added at a Later Date

To be Added at a Later Date

EMERGENCY EVACUATION

Why Plan, Prepare and Practice?	The success of any evacuation depends on the preparation and training of all the occupants Organized activity and a cohesive response in **ANY** emergency helps prevent panic and facilitate a rapid evacuation Thorough preparation and realistic practicing (drills) provides an initial level of control that will assist the more extensive operations of the Fire Department and/or other emergency responders
Pre-Event Preparation	Locate and study the evacuation plans posted throughout the plant for each area required by your duties Identify and Practice Using **AT LEAST TWO ESCAPE ROUTES** from your workstation and your regular work locale Team Leaders and/or Plant Manager will be Incident Command in an Emergency • Assist Incident Command as directed • One Employee to the Gate to Direct Emergency Response • One Employee to retrieve Security Roster for Assembly Accountability
Evacuation Announced **DO NOT USE ELEVATORS**	**REMAIN CALM** – **YOU** set the example Take your keys & wallet with you Ensure that everyone within your immediate vicinity acknowledges the order and evacuates the area Assist and guide any contractors/vendors/visitors as necessary Proceed as quickly as possible to the assembly area. Do not run, push or shove. Hold handrails when using stairs As you exit, quickly check nearby restrooms, storage rooms, elevators, etc. AND shut all doors behind you as you go
Post-Evacuation **WATCH FOR EMERGENCY VEHICLES**	Once out of the building, move away at least 200 feet **UPWIND** from the structure or as instructed by Emergency Responders (Refer to Station Windsock for Wind Direction) Advise Emergency Response Personnel of Location and Name of ANY personnel located in the affected area Remain with your group until the "All Clear" is announced; directed and released by Emergency Response Personnel; or a Plant-wide Evacuation is ordered.

These procedures should be followed as the proper evacuation response when "Evacuate" or "Evacuation" is referenced under other emergency event descriptions.

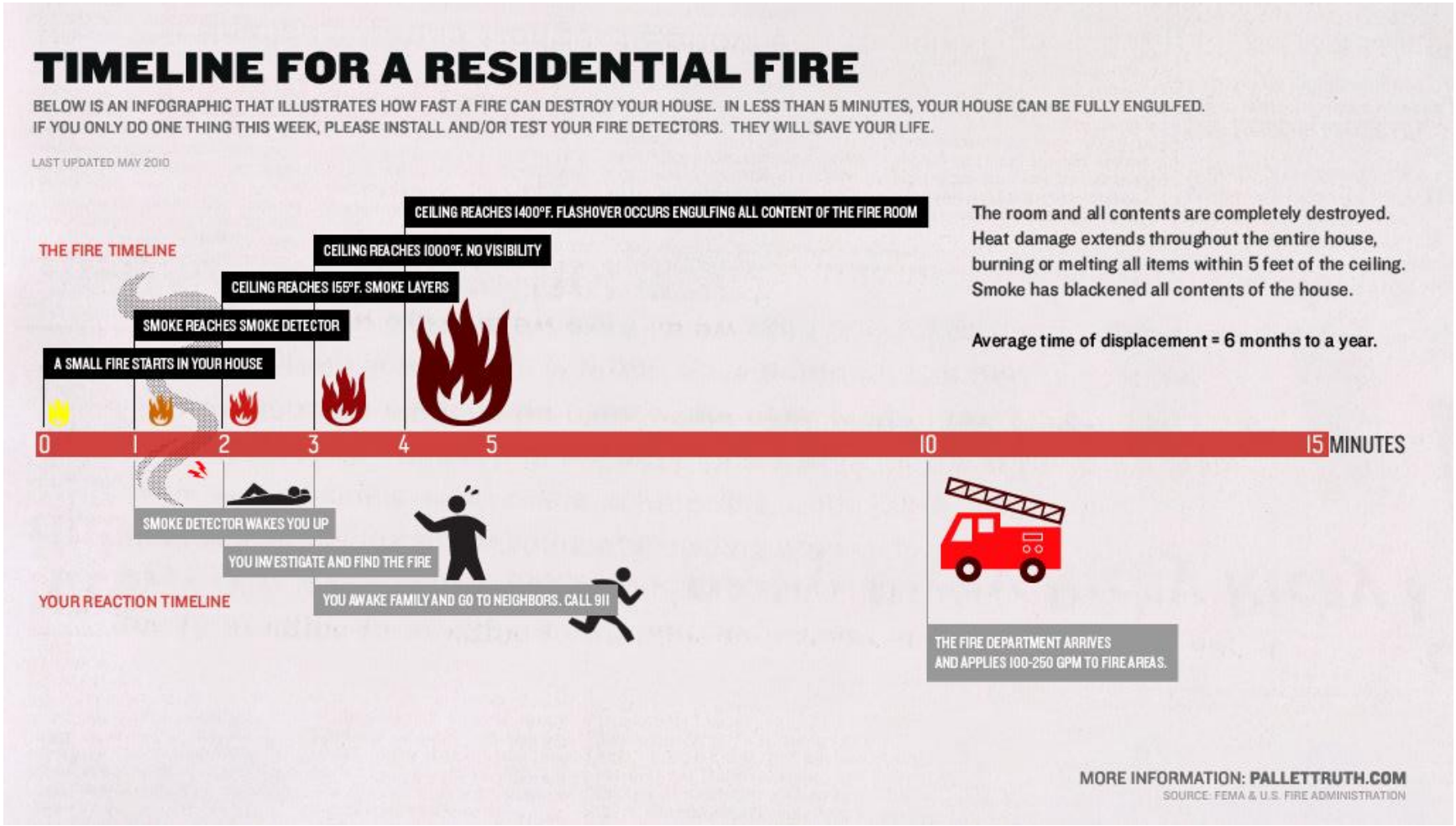
PLANT EMERGENCY EVACUATION - SAMPLE

To be Added at a Later Date

- Move quickly with purpose but don't rush
- Remain calm
- Follow the quickest, **UPWIND** path **AWAY** from the plant
- Proceed **NORTH** on Newland Street or **SOUTH** toward Pacific Coast Highway
- Follow the direction of any Emergency Response Personnel
- Proceed safely to your Family's Designated Meeting Location
- Continuing monitoring the event pending an official "**All Clear**"

FIRE RESPONSE

Preparation to Survive a Fire	**ALWAYS** know the location of, and have quick access to, **AT LEAST THE TWO FIRE EXTINGUISHERS** closest to you Identify and Practice Using **AT LEAST TWO ESCAPE ROUTES** from your workstation and your regular work routine locations
If You Discover a Fire	Notify the Control Room or Plant Security with the location and extent of the fire **If you feel confident to do so**, **USE** a portable extinguisher to extinguish the fire **PULL** the safety pin **AIM** the nozzle at the base of the flames **SQUEEZE** the handle of the extinguisher **SWEEP** the nozzle back and forth across the flame Notify **EVERYONE** in the area to Evacuate Proceed to Evacuate Be prepared to "swim" along the floor below the smoke
Fire Notification **DO NOT USE ELEVATORS**	**REMAIN CALM** – Do not run, push or shove. Take your keys, wallet, handbag and/or briefcase with you Ensure that everyone in your immediate vicinity acknowledges the alarm and evacuates the area Assist and guide any contractors/vendors/suppliers as necessary Proceed as quickly as possible but in an orderly manner to your designated assembly area Hold handrails when using stairs As you exit, quickly check nearby restrooms, copier rooms, storage rooms, elevators, etc. AND shut all doors behind you as you go
Post-Evacuation **WATCH FOR EMERGENCY VEHICLES**	Once out of the building, move away at least 200 feet **UPWIND** from the structure or as instructed by Emergency Response Personnel. Refer to Station Wind Sock between Generating Units for prevailing wind direction. Remain with your department until the "All Clear" is announced or directed and released by Emergency Response Personnel



Fire Reaction Timeline

EARTHQUAKE

Earthquakes strike suddenly, violently and without warning. Earthquakes are typically of a short duration. According to the U.S. Geological Survey, California is one of the most seismically active states in the Country.

Preparation	Identify hazards ahead of time Store breakable items in low, closed cabinets secured with latches Close and lock/latch shelves and storage above your desk Immediately remove any defective or faulty electrical equipment and/or submit maintenance notifications for any electrical discrepancies in your work area Remove materials, boxes, files, heavy items or paper from the top of shelves or cabinets Establish an **Emergency Communication Plan** for staff & contractors working in and around either plant or storage areas
Identify Safe Locations	**INDOORS**: Under sturdy furniture such as a heavy desk or table **INDOORS**: Against an inside wall **INDOORS:** Away from where glass could shatter around windows, mirrors, pictures, or where heavy bookcases or other heavy furniture could fall over **OUTDOORS**: In the open, away from buildings, trees, telephone / electrical poles & lines, overpasses, bridges, streetlights or elevated expressways **OUTDOORS IN A VEHICLE**: Stop as quickly as safety permits and stay in the vehicle. Avoid stopping near or under buildings, trees, overpasses, and utility wires Proceed cautiously once the earthquake has stopped, watching for road and bridge damage

Continued on the Next Page

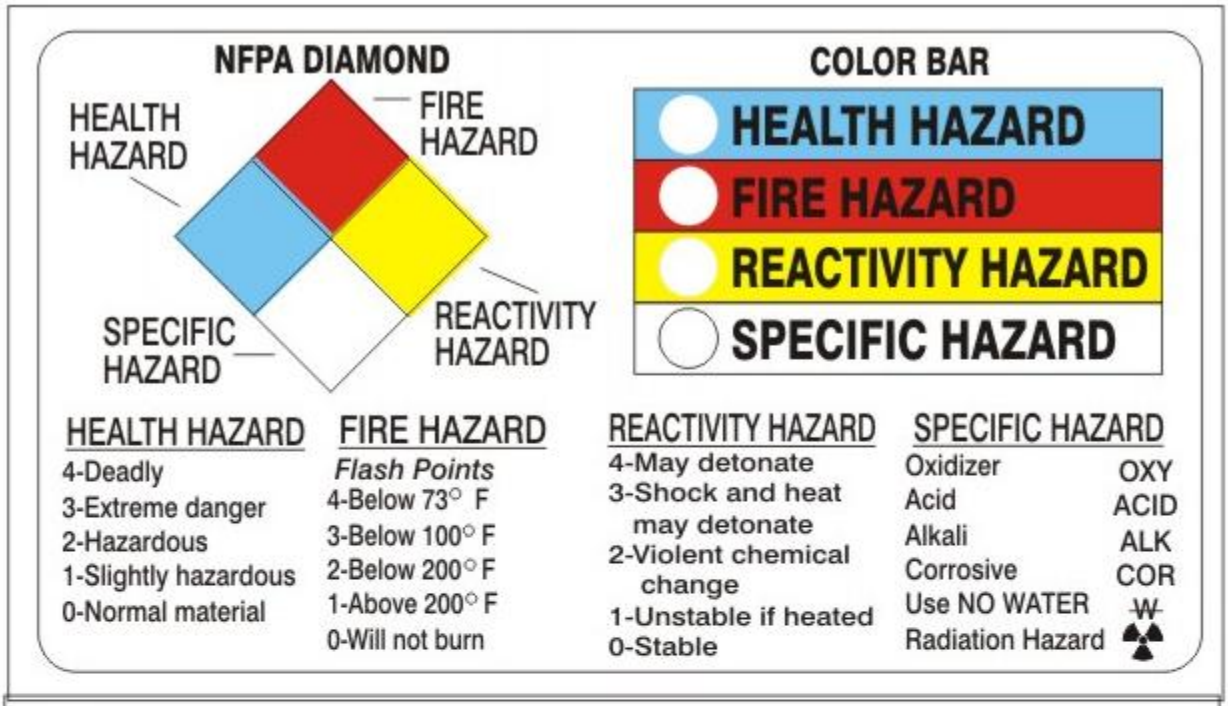
Identifying an Earthquake	You may hear a roaring or rumbling sound that gradually grows louder. You may feel a rolling sensation that starts out gently and, within a second or two, grows violent You may first be jarred by a violent jolt then, a second or two later, you may feel shaking and find it difficult to stand up or move
Earthquake Indoors (Drop, Cover and Hold-On)	**DROP** down to the floor and then take **COVER** under a sturdy desk, table or other furniture **HOLD ON** to the table or desk and be prepared to move with it – hold the position until the ground stops shaking and it is safe to move  **OR** Sit on the floor against an inside wall, away from windows, tall furniture or bookcases Protect your head and neck with your arms 

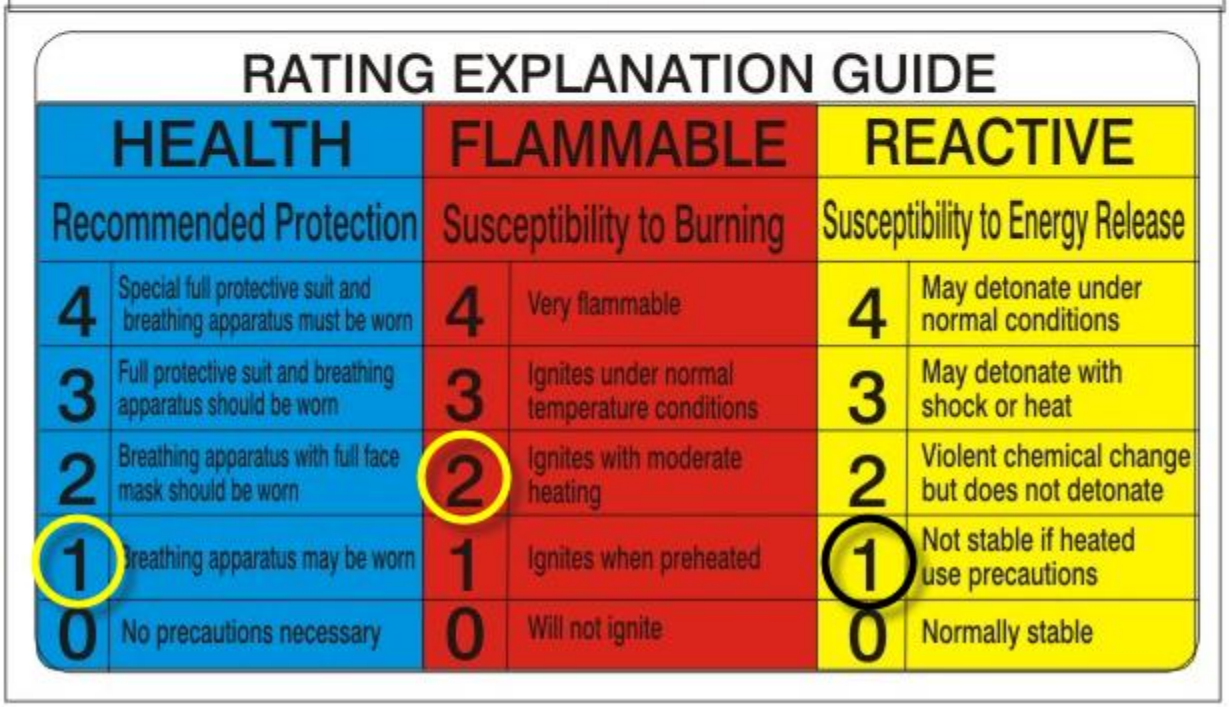
Continued on the Next Page

Post-Earthquake/ Aftershocks	Be prepared for aftershocks. While less powerful, these are capable of causing extended damage Plan where you will take cover when they occur Check for injuries. Give first aid as necessary Remain calm and reassure others Check for fire. Take appropriate actions and precautions Check gas, water and electric lines. If damaged, shut off service.
Indoor Gas Leak	If gas is leaking, call SoCal Gas Company at: **800-427-2200** Don't use matches, flashlights, appliances or electric switches Open windows, leave building and report to gas company Replace all telephone receivers and use for emergency calls only Exercise caution when opening cabinets
Outdoor Gas Leak	If gas is leaking near the supply manifold or upstream (underground) from any of the Unit Main Supply lines, call SoCal Gas Company at: **800-427-2200** If gas is leaking downstream (within the plants), **MANUALLY** close the butterfly valve located on the Power Block, South side under each Unit **USING THE INSTRUCTIONS PROVIDED AT EACH VALVE.**
Evacuate	Be prepared to calmly evacuate as described under "Evacuation" as soon as practicable after the shaking has stopped Avoid broken glass. Tune to the emergency broadcast station on radio or television Listen for emergency bulletins Stay out of damaged buildings

Most earthquake injuries occur while attempting to transit and escape during the actual seismic event.

NFPA 704 HAZARDOUS MATERIALS PLACARD RATINGS and DEFINITIONS





The values **CIRCLED** above represent the **MAXIMUM ALLOWABLE EXPOSURE** for an AES Huntington Beach employee or contractor **NOT SPECIFICALLY TRAINED AND EQUIPPED FOR SPILL RESPONSE**. **ANY** item from the following pages that exceeds the above referenced value **REQUIRES** outside response assistance, **REGARDLESS** of spill quantity or size.

CHEMICAL & HAZARDOUS MATERIALS

Chemical Name (Links to NOAA Database of Hazardous Materials)	CAS Number	Location	NFPA 704 Rating	Quantity
Ferric Sulfate	––	Chemical Area		10,000 gallons
Polymer	––	Chemical Area		5,000 lbs.
Sodium Bisulfate	7631905	Chemical Area		30,000 gallons
Carbon Dioxide	1333740	Post Treatment Area		38,000 gallons
Lime		Pre Treatment Area		200,000 gallons
(Sodium Hypochlorite solution)	7681529	Product Pump Area		10,000 gallons
Sulfuric Acid	7664939	TBD		60,000 gallons
Ammonia	1336216	Product Pump Area		1,000 gallons

CHEMICAL & HAZARDOUS MATERIALS

Chemical Name (Links to NOAA Database of Hazardous Materials)	CAS Number	Location	NFPA 704 Rating	Quantity
EVERY PRODUCT LISTED ABOVE THIS LINE REQUIRES OUTSIDE RESPONSE ASSISTANCE				
Fuel Oil, Diesel	68476346	TBD		700 gallons
Waste Paint Related Material w/MEK	110430	TBD		165 gallons
Cementious Refractory		TBD		6,000 pounds
Lube Oils		TBD		1,000 gallons

CHEMICAL & HAZARDOUS MATERIALS

Chemical Name (Links to NOAA Database of Hazardous Materials)	CAS Number	Location	NFPA 704 Rating	Quantity
Sorb-All	7631869			1,000 pounds

LIST OF EMERGENCY EQUIPMENT

Equipment	Location	Capability
Fixed Fire Main	TBD	2 diesel powered fire pumps with alarms to C/R
Fixed Fire Extinguishing	TBD	CO2 systems for electrical HALON in Control Rooms/Labs
Portable Extinguishers	TBD	Hand portable extinguishers for Class A/B/C fires
First Aid Kits	Control Room, Instrument Shop and Admin Offices	Basic minor wound and burn kits for use in all locations
Automated Electronic Defibrillators	Control Room and Instrument Shop	For use on non-breathing, non-pulse victim
Eye Wash/Safety Showers	All Chemical Storage Areas	Installed to provide 20 minute flushing under adequate flow rate
Personal Protective Equipment	Warehouse, Control Room	Dependent on JSA
Spill Control Supplies (Also: See the Spill Prevention, Control & Countermeasures plan)	Product Storage, Chemical Lab, Warehouse hallway	**Small Volume Spill Kits**: Chemical Labs, Warehouse & Machine Shop **Large Volume Kits:** Power Blocks and the Hazardous Waste Shed

CHEMICAL & HAZARDOUS MATERIALS SPILLS

Chemicals Used within AES Huntington Beach	Except as required to conduct AES business and maintain AES equipment and facilities, bringing chemicals, compounds, solvents or other hazardous materials to AES Huntington Beach is prohibited **ANY** product that requires the use of respiratory protection for the safe handling, clean up or disposal **REQUIRES** prior management approval Each functional area of AES Huntington Beach is responsible for ensuring an adequate "on-hand" supply of the materials (Spill Kits) specified by the Material Safety Data Sheet (MSDS) to contain a spill of any chemical used **ALL** chemical products used at AES Huntington Beach MUST be stored in properly labeled, sealable containers Chemical spills should **only** be cleaned-up by properly trained, knowledgeable and experienced staff

Hazardous Materials spill response activities by AES Huntington Beach personnel ARE LIMITED to Incident Level Releases ONLY

What is an "Incident" Level Release?"	An incident level release of a hazardous substance is one that: • **DOES NOT** pose a significant safety or health hazard to employees in the immediate vicinity (**MAXIMUM 1-2-1 NFPA Hazard Rating**) • **DOES NOT** pose a significant safety or health hazard to the employee cleaning it up • **DOES NOT** have the potential to become an emergency within a short time frame • **DOES NOT** impact ANY off-offsite, off-property OR unpaved location • **DOES NOT** require respiratory protection for clean-up • **DOES NOT** require a HazMat Emergency Response • **IS** limited in quantity, **IS** of a known substance **AND IS** readily controllable • **CAN, WITHIN AN HOUR,** be absorbed, neutralized or otherwise controlled **AT THE TIME OF RELEASE** by the personnel in the vicinity or maintenance personnel • **SHOULD BE** documented internally

Continued on the Next Page

When can I respond to an "Incidental Spill?"  **MAXIMUM** Allowable Hazard Categorization	• You have notified the Control Room of the spill • You understand the hazards associated with the spill • You know how to clean up the spill • You have the materials necessary to contain and clean-up the spill • You have the personal protective equipment required by the MSDS and your JSA to clean-up the spill • There are no gases or vapors present that require respiratory protection
How do I clean-up an "Incidental Spill?"	**The first priority is to ALWAYS protect yourself and others** • Notify other people in the area that a spill has occurred. Prevent others from coming in contact with the spill (i.e. walking through the spilled chemical) • Put on the Proper Personal Protective Equipment (PPE) such as goggles, gloves, etc. before beginning cleanup. Do not unnecessarily expose yourself to the chemical • Stop the source of the spill if possible, and if safe to do so • Try to prevent spilled chemicals from entering waterways by building a dike around access points (sink, cup sinks, and floor drains inside and storm drains outside) with absorbent material if you can safely do so • Use the appropriate absorbent material for liquid spills • Slowly add absorbent material on and around the spill and allow the chemical to absorb. Apply enough absorbent to completely cover the spilled liquid • Sweep up the absorbed spill from the outside towards the middle • Scoop up and deposit in a leak-proof container • For absorbed hazardous chemicals, label the container and dispose of through the hazardous waste management program.

Continued on the Next Page

What do I do about "Response" Level spills that **ARE LARGER THAN** "Incident" Level? EPA Facility ID: **TBD** Huntington Beach Fire Department Facility ID: **HBØ468 4873**	If there is an **EMERGENCY THREAT** to Health, Safety, Property or Environment, **IMMEDIATELY** NOTIFY THE CONTROL ROOM TO **CALL 9-1-1** **AND THEN** **IMMEDIATELY CALL** the Huntington Beach Hazardous Materials Section at (714) 536-5411 (Weekdays 8am-5pm) or (714) 536-5469 (Nights and Weekends) **AND THEN** **IMMEDIATELY CALL** the California Emergency Management Agency at (800) 852-7550 **AND THEN** **WITHIN 15 MINUTES CALL** the National Spill Response Center at (800) 424-8802
Are ANY other actions necessary for a Response Level Spill?	To Limit the spread of the spill, **on-duty Outside Operations personnel** should positively **CLOSE the outflow valve** from the Retention Basin
What information does the Control Room need to provide?	• Your Name and telephone number • Our address: **21730 Newland Street, Huntington Beach, CA 92646** • Time and type of incident (e.g. release, fire) • Name and quantity of material (s) involved, to the extent known (see label) • The extent of injuries, if any **AND** • The possible hazards to human health, or the environment, outside the facility.
How can I tell the difference between spill types?	If the spill is **LARGER THAN** what you could safely "step over" without stepping in the spilled material, or would take longer than an hour to clean-up, **IT IS A RESPONSE LEVEL SPILL.** **(See Above)**

California EMA 1-800-852-7550

National Spill Response Center 1-800-424-8802

National Poison Control Hotline 1-800-222-1222

BIOTERROR/BOMB THREAT

NEVER touch or move a suspicious package.

DO NOT

- **DO NOT** use two-way radios or cellular phones; radio signals have the potential to detonate a device.
- **DO NOT** evacuate the building until directed to do so.
- **DO NOT** activate any alarms.
- **DO NOT** touch or move a suspicious package.
- **DO NOT** hang up. Notify your Team Leader and Plant Management to call 7-911 from another phone. Give the phone number where the threat is received.
- **DO** notify either Control Room and Plant Management as soon as possible

If your phone has Caller ID, copy the Caller's number	( ) -

EXACT WORDS OF THE THREAT

Time of Call:		Number where call received:	

The most crucial information you can obtain from the caller are the **Detonation time**, **location** and **appearance** of the bomb or device.

When will it go off?		AM / PM	Where is it?	
What does the device look like?				
What kind of device is it?				
What will make it explode?				
Did you place the device? Why?				
What is your name?		Where are you?		
Threat Language?				
Callers Voice Characteristics?				
Background Noises?				

IMMEDIATELY Notify Your Team Leader and Plant Management
Treat this information as CONFIDENTIAL
Follow ALL Further Instructions and Direction

BIOTERROR/BOMB DEVICE SEARCH

NEVER touch or move a suspicious package.

Be Aware and Be Vigilant	Biological substances are organisms, microorganism, virus, toxin or substances derived from organisms, that primarily pose a threat to human health Early identification of any device is your best defense Pay attention to your immediate surroundings, fixtures and furnishings Report **ANY** unusual or out of place packages, containers or devices to either Control Room and plant Management
Searching for a Bomb or Bioterror Device	Authorities agree that the most effective and fastest search of a building can be made by the normal occupants of that building. The search must be made by persons who are familiar with the area in order to notice a strange or out of the ordinary object. The building or premises to be searched should be divided into areas and each person assigned a room or area. Do not go into a dark room and turn on the lights or change any environmental settings of the in the room. When searching, suspect anything that looks unusual
Identifying a Device	These devices can be constructed to look like almost anything and can be placed or delivered in any number of ways The probability of finding a bomb that looks like the stereotypical bomb is almost nonexistent Most bombs are homemade and are limited in their design only by the imagination of, and resources available to, the bomber
Reporting a Device Finding	**DO NOT TOUCH**, move or otherwise disturb any unusual findings. **IMMEDIATELY** evacuate everyone from the area Prohibit anyone from entering the affected area Notify the proper authorities regarding the location and condition of your findings

BIOHAZARD/BLOODBORNE PATHOGEN

Ensure **YOU** are equipped with Gloves, Eye Protection and a CPR Barrier

What are Bloodborne Pathogens?	Bloodborne pathogens are microorganisms present in blood and blood products that can infect and cause disease in humans Bloodborne pathogens **CAN** be found in human blood and in other potentially infectious materials (**OPIM**), because they **MAY** contain bloodborne pathogens OPIM's include any body fluid visibly contaminated with blood Where it is difficult or impossible to differentiate between body fluids they shall be treated as pathogenic
Universal Precautions 	Universal precautions is the practice of treating all blood, blood products and OPIM's as if they are carrying pathogenic microorganisms. Universal precautions will be utilized for any blood, blood product or OPIM release at AES Huntington Beach Universal precautions **DO NOT** apply to nasal secretions, sweat, tears, feces, urine or vomit Personal Protective Equipment (gloves, face shield, eye protection, CPR barriers) should be worn to maintain a protective barrier Articles contaminated with blood or blood products should be secured in red bags labeled "Medical Waste." Hands and exposed skin should be washed immediately and thoroughly following the incident. If you have suffered an exposure to an open wound or break in your skin, immediately flush the area with water and see your doctor

The practice of Universal Precautions is required toward **ALL** blood, blood products or other potentially infectious materials.

WORKPLACE VIOLENCE

Violence in the workplace can have many sources. It may be a current or former employee or it may be an angry spouse, associate or relative of an employee. It also may be someone without any relationship to the victim, the organization or the facility.

The violence may be a random act or something planned to gain public attention.

Whoever the source and whatever the reason, acts of violence, bullying, threats and intimidation **WILL NOT BE AND ARE NOT TOLERATED** at AES Huntington Beach.

The following guidelines are designed to reduce the likelihood of workplace violence and provide information for everyone to use as methods of prevention and intervention of workplace violence.

Non-Emergency Situation	• If you are not in immediate physical danger, but you have information or concerns regarding workplace violence, contact your immediate supervisor, the Safety Lead or the Plant Manager.
Intimidating Situation	• Call the Huntington Beach Police Department at (7-911) if a non-employee has communicated a direct or indirect threat of physical or mental harm against you, the plant or any AES employee in any form (e.g. oral or written, gestures, expressions). • If you are not in immediate physical danger, but an AES employee has communicated a direct or indirect threat of physical or mental harm against you, the plant or any AES employee in any form, contact your immediate supervisor, the Safety Lead or the Plant Manager.
Immediate Threat	• Call the Huntington Beach Police Department at (7-911) • As soon as it is safely possible to do so, evacuate the area away from the immediate threat
Violence Committed	• To the best of your ability, if you can't escape, barricade yourself in a secure location • As soon as it is safely possible to do so, evacuate the area away from the immediate threat • Call the Huntington Beach Police Department at (7-911)

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TSUNAMI EMERGENCY RESPONSE PROCEDURES

Tsunami Procedures Overview	• The following Pages contain Step-by-Step procedures designed to guide the user through the **CRITICAL EMERGENCY RESPONSE** phase to a tsunami. • AES Huntington Beach personnel are encouraged to **READ** these emergency response procedures and successfully **EVACUATE** in the event of a tsunami. • ALL references to the **Tsunami Hazard Zone and Designated Evacuation Routes** refer to those indicated on the map located on page 42. • The ~~Plant Manager or design~~ated representative will record the event details on the Tsunami Emergency Response Plan Checklist as shown on the **NEXT PAGE**

Huntington Beach Tsunami Emergency Response Plan Checklist

Initiating Activity

☐ Warning ↓	☐ Watch ↓	☐ Observation ↓	☐ Advisory ↓	☐ Earthquake ↓
Evacuate	Monitor WCATWC	Shelter-In-Place	Stand-By	Refer to Earthquake ERP

PLANT EVACUATION					
	Notify Plant of the Warning			Time of Notification:	
	On-Duty Operations staff to Control Rooms			All Shift Personnel Accounted for	
	Plant Manager orders Evacuation			Date:	Time:
	Non-Essential Personnel Evacuate to the North via Newland				Remaining/Essential Staff Reports to Control Rooms
	Main Gate is **SECURED**		CO Monitors WCATWC		Ops Staff Establish Watch at Turbine Deck

ESSENTIAL PERSONNEL ROSTER

Units 1 & 2		Units 3 & 4	
CO		CO	
OP		OP	
OP		OP	
OP		OP	
IE		IE	
MC		MC	

EMERGENCY NOTIFICATIONS					
	Notify Plant of the Warning			Time of Notification:	
	On-Duty Operations staff to Control Rooms			All Shift Personnel Accounted for	
	Plant Manager orders Evacuation			Date:	Time:
	Non-Essential Personnel Evacuate to the North via Newland				Remaining/Essential Staff Reports to Control Rooms
	Main Gate is **SECURED**		CO Monitors WCATWC		Ops Staff Establish Watch at Turbine Deck

PERSONNEL REMAINING ONSITE / SHELTERED-IN-PLACE					
Units 1 & 2			Units 3 & 4		
CO			CO		
OP			OP		
OP			OP		
OP			OP		
IE			IE		
MC			MC		
Status of Plant at Impact	#1:	#2:	Status of Plant at Impact	#3:	#4:
Note any System/Component Failures and Time:					

ALL CLEAR/CLEAN-UP			
	Plant Notified of All Clear	Time of Notification:	
	Plant Manager notified Team Leaders	Team Leaders Notify Team and Report Back to PM	
	Plant Manager orders Re-Opening of Plant	Date:	Time:

TSUNAMI ADVISORY ISSUED

What is a Tsunami Advisory?	This is an advisory of offshore conditions that indicate the threat of a potential tsunami which may produce strong currents or waves dangerous to those in or near the water.
What do I need to do?	No immediate actions are necessary. Recommend monitoring West Coast / Alaska Tsunami Warning Center and KWVE 107.9 for status updates. Respond as necessary (Watches, Warnings, Natural Warning Signs, Evacuation Orders) as described on the following Pages.

TSUNAMI WATCH ISSUED

(No Evacuation Order Given)

What is a Tsunami Watch?	A tsunami watch is issued by the National Oceanographic and Atmospheric Administration when a tsunami is expected to make landfall in **more than 2 hours**
What do I need to do?	Control Room and Plant Manager, or his designated representative, monitor KWVE 107.9 and the West Coast / Alaska Tsunami Warning Center for status updates and condition changes. Initiate plant wide Emergency Communication procedures (Switch Radio to Channel 1) Secure station equipment / facilities / hazardous materials Stand-by to evacuate Respond as necessary (Status Upgrades, Natural Warning Signs, Evacuation Orders)

TSUNAMI WARNING ISSUED

(No Evacuation Order Given)

What is a Tsunami Warning?	A tsunami warning is issued by the National Oceanographic and Atmospheric Administration when a tsunami is expected to make landfall in **less than 2 hours**
What do I need to do?	Monitor KWVE 107.9 and the West Coast / Alaska Tsunami Warning Center for status updates and condition changes. Initiate plant wide Emergency Communication procedures (Switch Radio to Channel 1) Essential Personnel report to their respective Control Room to await further instructions. Roster of assigned essential personnel on-duty is communicated to the Plant Manager or his designated representative AND Station Security Guard. Plant Manager or his designated representative advise **AES Southland** (Tel: (562) 493-7855) and **AES NA West** (Tel: (281) 602-2081) regarding stand-by status and roster (names/contact information) of essential personnel. Secure station equipment, facilities & hazardous materials Stand-by to evacuate Respond as necessary (Status Upgrades, Natural Warning Signs, Evacuation Orders)

This section was intentionally left blank.

TSUNAMI WARNING ISSUED

(Evacuation Order Given)

What is a Tsunami Warning?	A tsunami warning is issued by the National Oceanographic and Atmospheric Administration when a tsunami is expected to make landfall in **less than 2 hours**
What do I need to do?	Evacuation Order is issued to **ALL** non-essential personnel by Plant Manager or designated representative. Initiate plant wide Emergency Communication procedures (Switch Radio to Channel 1) Concurrent Activities: • Security Guard restricts entry, directs evacuees north on Newland Street and opens gate for egress of non-essential staff. • **ALL** non-essential personnel proceed in a calm and orderly manner, away from the plant by travelling north on Newland Street. (The projected inundation zone ends at Indianapolis Avenue) • Team Leaders verify status of all Team Members and communicate status to the Plant Manager or his designated representative. • Essential Personnel report to their respective Control Room • Control Room and Essential Staff initiate the process of securing the plants for impending event. Plant Manager, or his designated representative, advises regarding evacuation of non-essential personnel and names/contact information for essential personnel. Security Guard secures post and evacuates FOLLOWING release by the Plant Manager or his designated representative. Throughout the shutdown process, the Control room continues to monitor KWVE 107.9 and the West Coast / Alaska Tsunami Warning Center for any status updates and condition changes.

TSUNAMI WARNING ISSUED- continued

(Evacuation Order Given)

What do I need to do?	Upon completion of securing the plant(s) facility, remaining personnel will Shelter-In-Place no lower than the turbine deck of each plant. Control Room Operators will notify and update their Team Leader regarding the status of remaining personnel. Final evacuees will proceed away from the Tsunami Hazard Zone by traveling north on Newland Street. Team Leaders will immediately notify the Plant Manager, or his designated representative, regarding the status of the remaining essential personnel. The Plant Manager, or his designated representative, will notify Emergency Services personnel of the status and location of essential personnel remaining on site.

For the purposes of this plan, ALL staff will remain away until Plant Management receives an ALL CLEAR from local Emergency Services/EOC and personnel are notified by their Manager/Team Leader that it is safe to return.

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NATURAL WARNING: EARTHQUAKE

OFFSHORE EPICENTER <20 minutes estimated time to landfall (Evacuation Order Given)

What is a Natural Tsunami Warning?	A natural tsunami warning is the occurrence of an off-shore earthquake, loud rushing sound, a 'wall' of water or a drastically receding shoreline.
What do I need to do?	Evacuation Order is issued to **ALL** non-essential personnel by AES Huntington Beach Plant Manager or designated representative. Initiate plant wide Emergency Communication procedures (Switch Radios to Channel 1) Concurrent Activities: • Security Guard restricts entry, directs evacuees north on Newland Street and opens gate for egress of non-essential staff. • **ALL** non-essential personnel proceed in a calm and orderly manner, away from the plant by travelling north on Newland Street. (The projected inundation zone ends at Indianapolis Avenue) • Team Leaders verify status of all Team Members and communicate status to the Plant Manager his designated representative. • Essential Personnel report to their respective Control Room • Control Room and Essential Staff initiate the process of securing the plants for impending event. Plant Manager, or his designated representative, advises regarding evacuation of non-essential personnel and names/contact information for essential personnel. Security Guard secures post and evacuates FOLLOWING release by the Plant Manager or his designated representative. Throughout the event, the Control room continues to monitor KWVE 107.9 and the West Coast / Alaska Tsunami Warning Center for any status updates and condition changes.

NATURAL WARNING: EARTHQUAKE (continued)

OFFSHORE EPICENTER <20 minutes estimated time to landfall (Evacuation Order Given)

What do I need to do?	Upon completion of securing the plant(s) facility, remaining personnel will Shelter-In-Place. Control Room Operators will notify and update their Team Leader regarding the status of remaining personnel. Final evacuees will proceed away from the Tsunami Hazard Zone by traveling north on Newland Street. Team Leaders will immediately notify the Plant Manager, or his designated representative, regarding the status of the remaining essential personnel. The Plant Manager, or his designated representative, will notify Emergency Services personnel of the status and location of essential personnel remaining on site.

For the purposes of this plan, ALL staff will remain away until Plant Management receives an ALL CLEAR from local Emergency Services/EOC and personnel are notified by their Manager/Team Leader that it is safe to return.

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NATURAL WARNING: WALL OF WATER/SOUND

RECEDING SHORELINE

LANDFALL IMMINENT

(Shelter-In-Place Order Given)

What is a Natural Tsunami Warning?	A natural tsunami warning is the occurrence of an off-shore earthquake, loud rushing sound, a 'wall' of water or a drastically receding shoreline.
What do I need to do?	Shelter-in-Place Order is issued to **ALL** personnel (staff and contractors) by AES Huntington Beach Plant Manager or designated representative. Initiate plant wide Emergency Communication procedures. Concurrent Activities: Security Guard restricts entry and secures front gate. **With the exception of on-duty operational staff, ALL** personnel proceed in a calm and orderly manner. Team Leaders account for all Team Members and communicate status to the Plant Manager or his designated representative. Control Room and operational staff initiate the process of securing the plants as previously identified. Plant Manager, or his designated representative, advises regarding Shelter-in-Place and status of personnel. Throughout the shutdown process, the Control room continues to monitor KWVE 107.9 and the West Coast / Alaska Tsunami Warning Center for any status updates and condition changes. The Plant Manager, or his designated representative, will notify Emergency Services of the status and location of plant and contractor personnel.

For the purposes of this plan, ALL staff will remain on the plant turbine deck until Plant Management receives an ALL CLEAR from local Emergency Services/EOC and personnel are notified by their Manager/Team Leader that it is safe.

SHELTER IN PLACE

What is "Shelter in Place?"	• In an emergency where hazardous materials may have been released into the atmosphere one of the instructions you may be given is to shelter-in-place. • This precaution is aimed at keeping you safe while remaining indoors. • Shelter-in-place means selecting a small, interior room, with no or few windows, and taking refuge there. • It does not mean sealing off your entire office building.
Why would I need to "Shelter in Place?"	• Chemical, biological, or radiological contaminants may be accidentally or intentionally released into the environment. • Conditions around and outside the plant may be such that makes leaving the plant either unsafe, not possible or both.
Can I "Shelter in Place" anywhere?	• No. Ideally, select interior room(s) above the ground floor, with the fewest windows or vents. • The room(s) should have adequate space for everyone to be able to sit in. • Avoid overcrowding by selecting several rooms if necessary. • Large storage closets, utility rooms, pantries, copy and conference rooms without exterior windows will work well. • The following locations have been designated as suitable for Sheltering in Place: o Control Room o Administrative Building o RO Building
What equipment or resources do I need to "Shelter in Place?"	• Gather essential disaster supplies, such as nonperishable food, bottled water, battery-powered radios, first aid supplies, flashlights, batteries, duct tape, plastic sheeting, and plastic garbage bags. • Have these items staged or stored within your designated shelter area.

Continued on the Next Page

How do we "Shelter in Place"	
	• Bring **ALL** employees and contractors indoors as noted above. • All personnel switch radios to the Emergency Channel (Channel 1) as directed by the Incident Commander. • Account for **ALL** personnel on the plant at the time of the notification. • Control rooms to continuously monitor KWVE 107.9 for Emergency Broadcast System messages. • Staff familiar with the plants mechanical systems turn off all fans, heating and air conditioning systems. • Some systems automatically provide for exchange of inside air with outside air – these systems, in particular, need to be turned off, sealed, or disabled. • Close and lock all windows, exterior doors, and any other openings to the outside. • Notify of plant status **AND** list of personnel involved. • Use duct tape and plastic sheeting (heavier than food wrap) to seal all cracks around the door(s) and any vents into the room. • Unless there is an imminent threat, staff and contractors should call their emergency contact to let them know where they are and that they are safe. • If you are told there is danger of explosion, close the window shades, blinds, or curtains and **STAY AWAY** from windows. • Cellular telephone equipment may be overwhelmed or damaged during an emergency. • Keep listening to the radio at KWVE 107.9 until an **ALL CLEAR** or **EVACUATION** order is issued.

DO NOT Leave the Shelter Until Cleared to Do So

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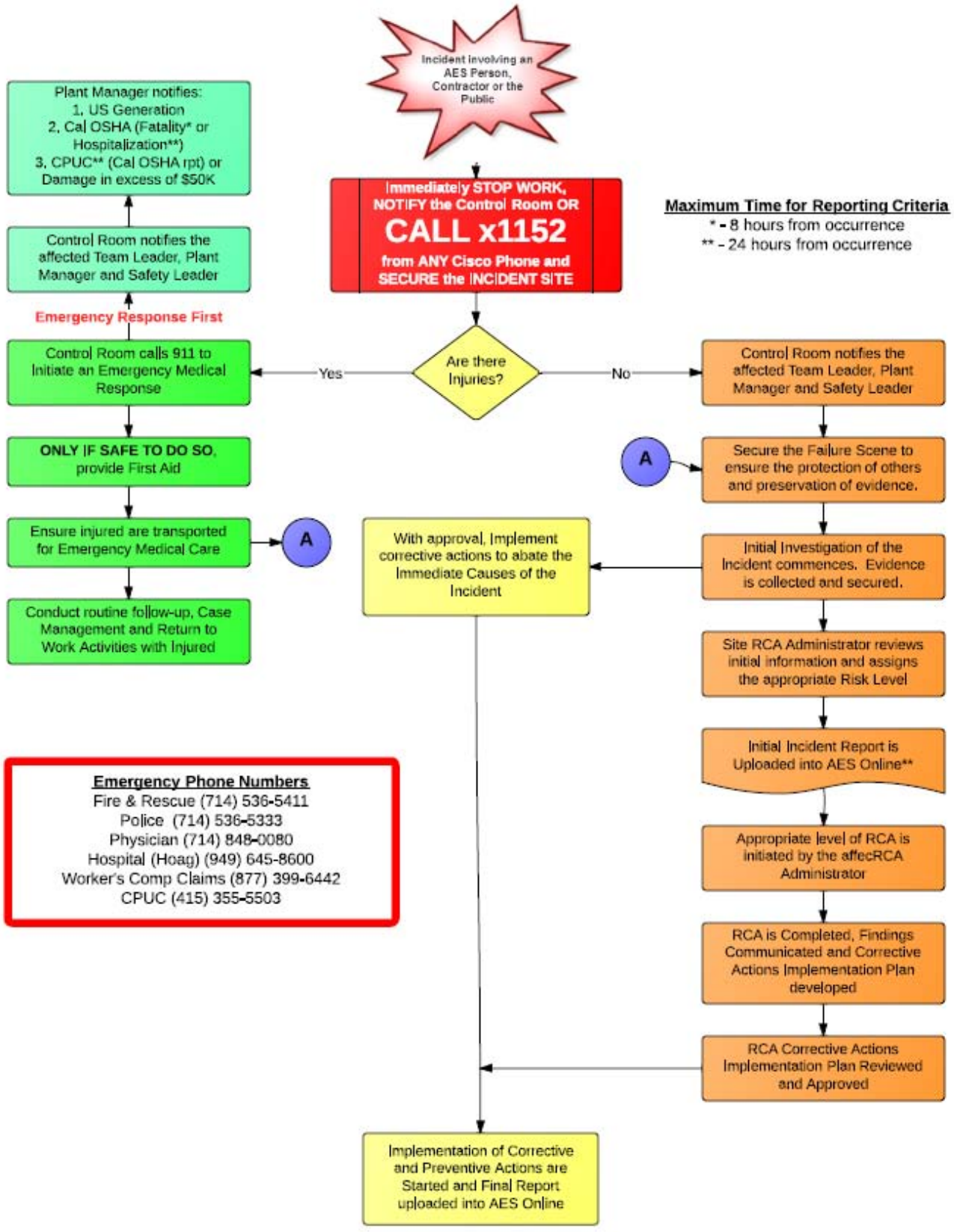
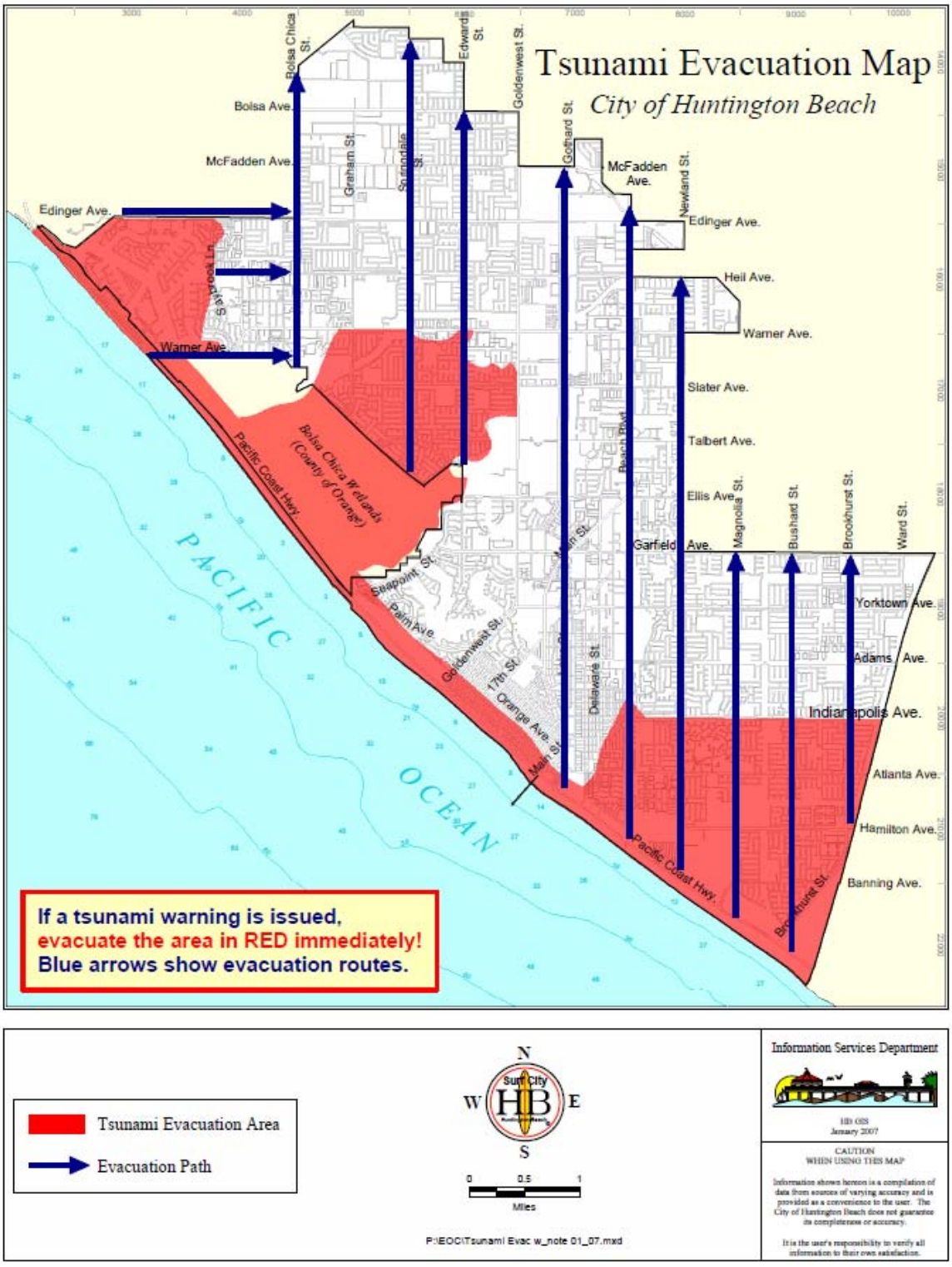
Sample Only

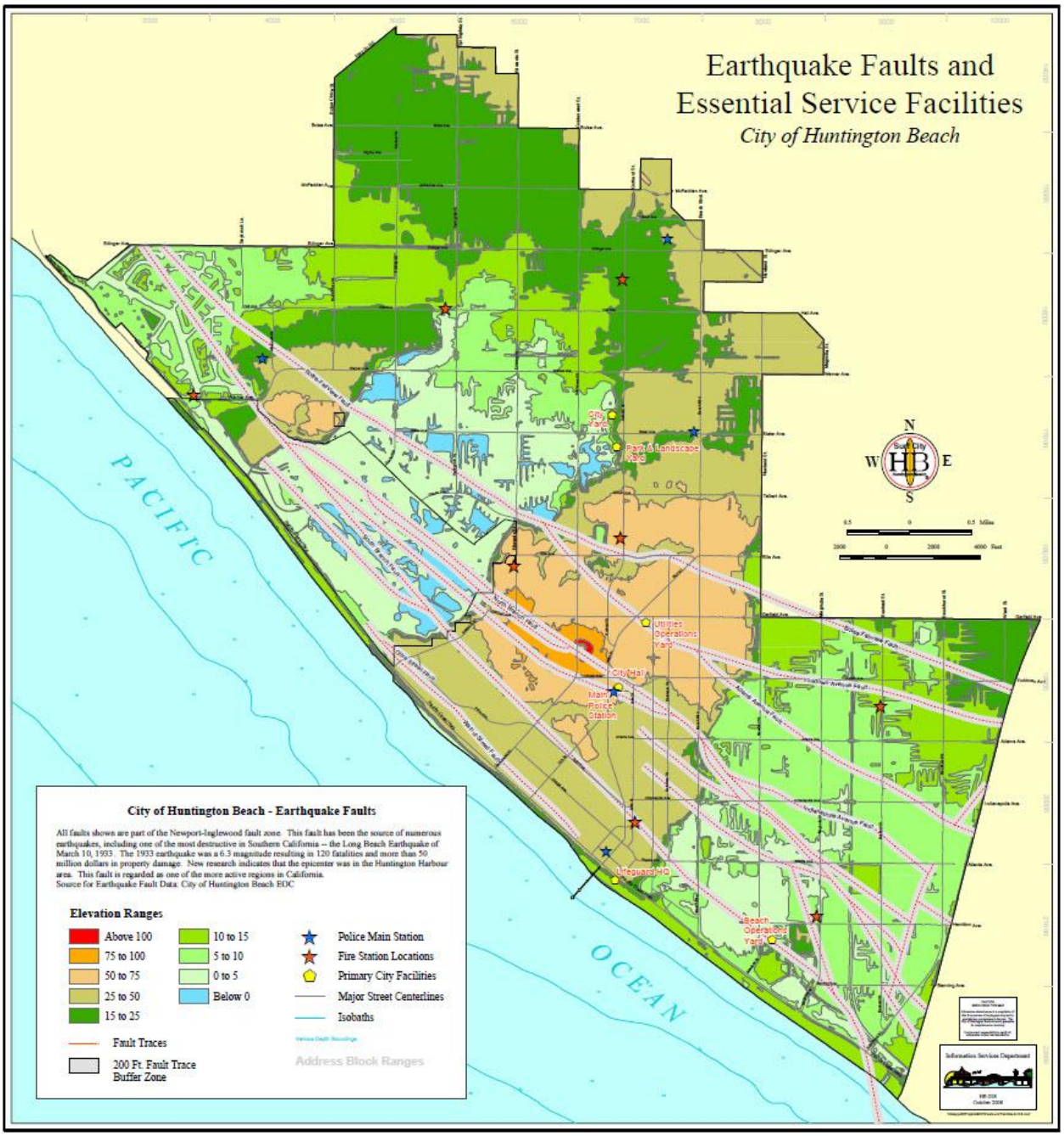
Incident Response Process Map



Incident Response Process Map

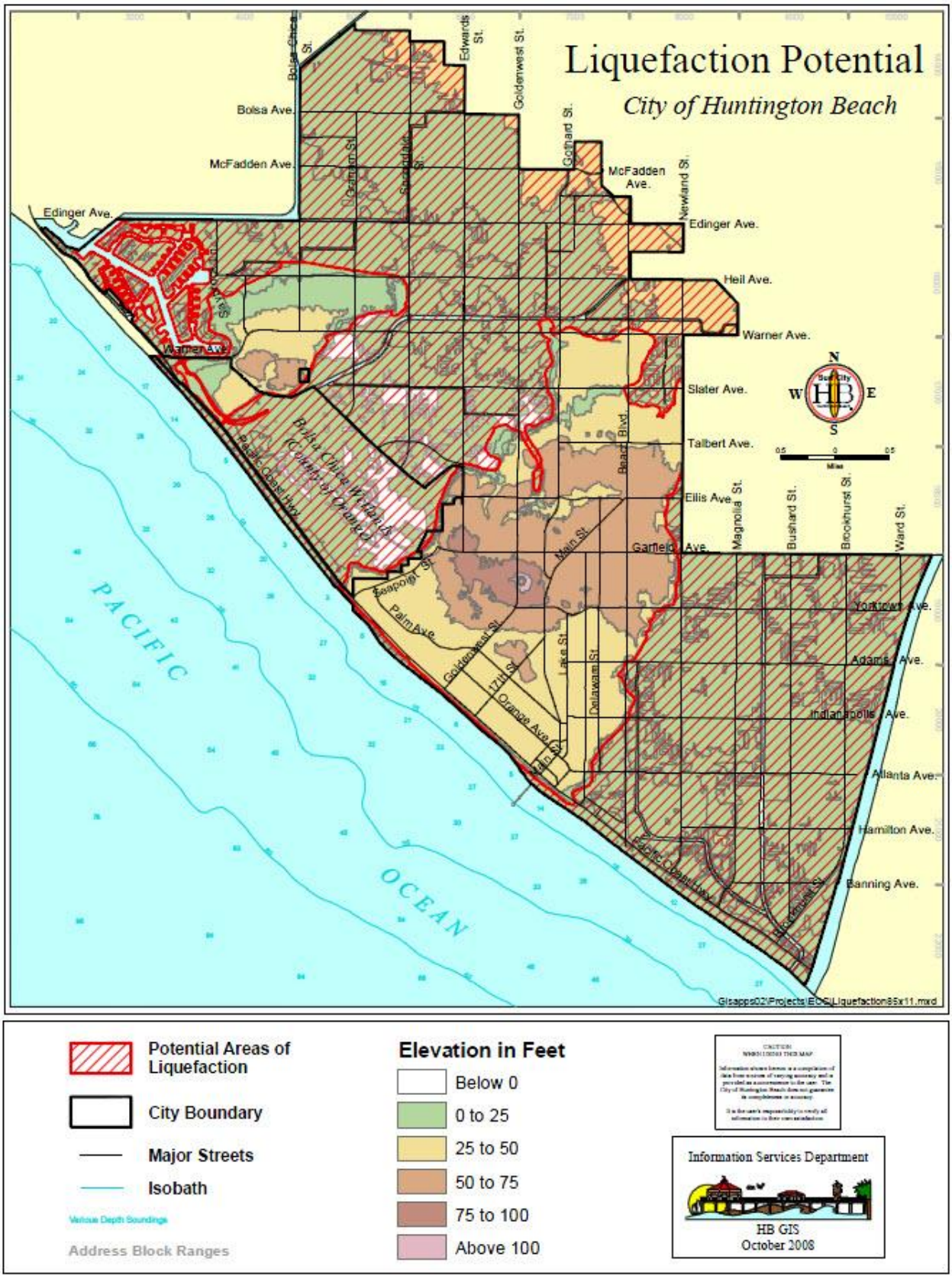


City of Huntington Beach Evacuation Map (Tsunami)

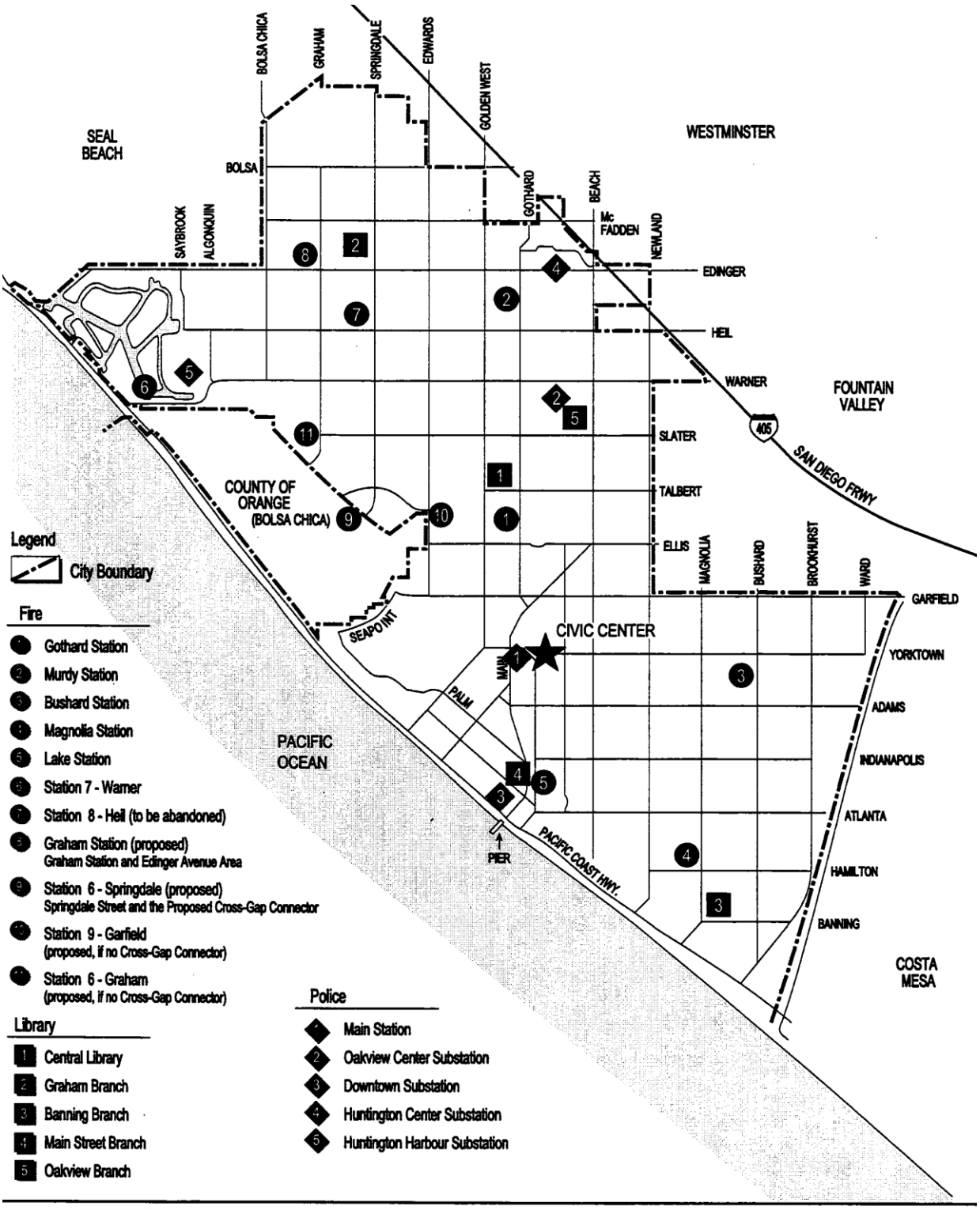


Huntington Beach Faults and Essential Services Facilities Map

Liquefaction	Liquefaction is a phenomenon in which the strength and stiffness of soil is reduced by earthquake shaking or other rapid loading. Liquefaction and related phenomena have been responsible for tremendous amounts of damage in historical earthquakes around the world.



Huntington Beach Potential Areas of Liquefaction



Huntington Beach Police and Fire Stations

EMERGENCY FIRST-AID

The following pages contain the information necessary to provide emergency assistance and stabilization while awaiting the arrival of qualified Emergency Response personnel.

PRIOR TO CONTACT WITH ANY VICTIM AND BEFORE PERFORMING ANY TYPE OF FIRST-AID, IT IS CRITICAL THAT YOU FIRST SURVEY THE INCIDENT SCENE TO ENSURE YOUR SAFETY AND THE SAFETY OF ANY ADDITIONAL RESPONSE PERSONNEL.

FAILURE TO ENSURE THAT NO CONTINUED HAZARD EXISTS COULD RESULT IN DEATH OR SERIOUS PERSONAL INJURY.

Table of Contents

Poseidon Resources **requires** the practice of Universal Precautions toward **ALL** blood, blood products or other potentially infectious materials. **Universal Precautions** is the practice of treating all blood and potentially infectious materials as if they are known to contain HIV, HBV, or other bloodborne pathogens.

California Health and Safety Code Section 1799.102
("Good Samaritan Act")
Last Modified: January 15, 2011

(a) No person who in good faith, and not for compensation, renders emergency medical or nonmedical care at the scene of an emergency shall be liable for any civil damages resulting from any act or omission. The scene of an emergency shall not include emergency departments and other places where medical care is usually offered. This subdivision applies only to the medical, law enforcement, and emergency personnel specified in this chapter.

(b) (1) **It is the intent of the Legislature to encourage other individuals to volunteer, without compensation, to assist others in need during an emergency, while ensuring that those volunteers who provide care or assistance act responsibly.**

(2) Except for those persons specified in subdivision (a), no person who in good faith, and not for compensation, renders emergency medical or nonmedical care or assistance at the scene of an emergency shall be liable for civil damages resulting from any act or omission other than an act or omission constituting gross negligence or willful or wanton misconduct. The scene of an emergency shall not include emergency departments and other places where medical care is usually offered. This subdivision shall not be construed to alter existing protections from liability for licensed medical or other personnel specified in subdivision (a) or any other law.

(c) Nothing in this section shall be construed to change any existing legal duties or obligations, nor does anything in this section in any way affect the provisions in Section 1714.5 of the Civil Code, as proposed to be amended by Senate Bill 39 of the 2009-10 Regular Session of the Legislature.

(d) The amendments to this section made by the act adding subdivisions (b) and (c) shall apply exclusively to any legal action filed on or after the effective date of that act.

Statement of Qualification

ALL personnel are required to complete Cardiopulmonary Resuscitation (CPR) AND Automated Electronic Defibrillator (AED) training at least biennially.

This information is solely intended as a ready reference for action while awaiting qualified emergency response personnel. It should be viewed and interpreted as a supplement to and **not a replacement for First-Aid Training**.

Your first reaction to **ANY** emergency situation should be to notify either Control Room requesting they contact 9-1-1 Emergency Services.

FIRST AID- Circulation, Airway & Breathing

Assess and Verify the Incident Scene for RESCUER SAFETY PRIOR to ANY Victim Contact or Response Activities

Initiate the Emergency Call	• Point directly at someone nearby, maintain eye contact and direct them to "**CALL THE CONTROL ROOM!**" immediately • Designate another available party to retrieve the nearest available Automated Electronic Defibrillator (AED)
Check for Responsiveness	• Shake or tap the person gently. See if the person moves or makes a noise. **Shout, "Are you OK?"** • Look for signs of regular breathing.
If Unresponsive, Begin CPR	• **Untrained.** If you're not trained in CPR, then provide hands-only CPR. That means uninterrupted chest compressions of about 100 a minute until paramedics arrive (described in more detail below). You don't need to try rescue breathing • **Trained, and ready to go.** If you're well trained and confident in your ability, begin with chest compressions instead of first checking the airway and doing rescue breathing. Start CPR with 30 chest compressions before checking the airway and giving rescue breaths • **Trained, but rusty.** If you've previously received CPR training but you're not confident in your abilities, then just do chest compressions at a rate of about 100 a minute (Described below) 1. Put the person on his or her back on a firm surface 2. Kneel next to the person's neck and shoulders 3. Place the heel of one hand over the center of the person's chest, between the nipples. Place your other hand on top of the first hand. Keep your elbows straight and position your shoulders directly above your hands 4. Use your upper body weight (not just your arms) as you push straight down on (compress) the chest at least 2 inches (approximately 5 centimeters). Push hard at a rate of about 100 compressions a minute 5. If you haven't been trained in CPR, continue chest compressions until there are signs of movement or until emergency medical personnel take over. If you have been trained in CPR, go on to checking the airway and rescue breathing

Hands Only CPR™ Adults who nearly-drown or have cardiac arrest due to a respiratory cause need conventional CPR. **Onsite Call either Control Room at**	

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Look for signs of Normal Breathing (**IF NECESSARY** Position the head and chin as shown for Emergency Breathing)	 1. If you're trained in CPR and you've performed chest compressions, open the person's airway using the head-tilt, chin-lift maneuver. Put your palm on the person's forehead and gently tilt the head back. Then with the other hand, gently lift the chin forward to open the airway. 2. Check for normal breathing, taking no more than five or 10 seconds. Look for chest motion, listen for normal breath sounds, and feel for the person's breath on your cheek and ear. **Gasping is not considered normal breathing.**
Breathe for the Person	 Rescue breathing can be mouth-to-mouth breathing or mouth-to-nose breathing if the mouth is seriously injured or can't be opened. 1. With the airway open (using the head-tilt, chin-lift maneuver), pinch the nostrils shut for mouth-to-mouth breathing and cover the person's mouth with yours, making a seal. 2. Prepare to give two rescue breaths. Give the first rescue breath — lasting one second — and watch to see if the chest rises. If it does rise, give the second breath. If the

AED Usage	chest doesn't rise, repeat the head-tilt, chin-lift maneuver and then give the second breath. Thirty chest compressions followed by two rescue breaths is considered one cycle. 3. Resume chest compressions to restore circulation. 4. If the person has not begun moving after five cycles (about two minutes) and an automatic external defibrillator (AED) is available, apply it and follow the prompts provided by the device. • If an AED isn't available, go to step 5 below. 5. Continue CPR until there are signs of movement, rescue personnel are exhausted or emergency medical personnel take over.

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CHOKING

Choking

To perform abdominal thrusts (Heimlich maneuver) on someone else:

- **Stand behind the person.** Wrap your arms around the waist. Tip the person forward slightly
- **Make a fist with one hand.** Position it slightly above the person's navel
- **Grasp the fist with the other hand.** Press hard into the abdomen with a quick, upward thrust — as if trying to lift the person up

Heimlich Maneuver

- **Perform a total of 5 abdominal thrusts,** if needed. If the blockage still isn't dislodged, repeat the cycle.
- If the victim becomes unconscious, call the Control room (911 if offsite) or send someone else to call, then begin CPR, first looking into mouth for obstruction. Remove obstruction if visible, otherwise attempt CPR normally.

Heimlich Maneuver on Yourself

Place fist above navel while grasping fist with other hand.

Leaning over a chair or counter-top, drive your fist towards yourself with an upward thrust.

SHOCK

Shock

- **Do NOT** give the person anything by mouth, including anything to eat or drink.
- **Do NOT** move the person with a known or suspected spinal injury.
- **Do NOT** wait for milder shock symptoms to worsen before calling for emergency medical help.

Shock is a life-threatening condition that occurs when the body is not getting enough blood flow. This can damage multiple organs. Shock requires immediate medical treatment and can get worse very rapidly.

- Call 911 for immediate medical help.
- If necessary, begin CPR and/or appropriate first aid.
- Even if the person is breathing, continue to check rate of breathing at least every 5 minutes until help arrives.
- If the person is conscious and does NOT have an injury to the head, leg, neck, or spine, place the person in the shock position. Lay the person on the back and elevate the legs about 12 inches. Do NOT elevate the head. If raising the legs will cause pain or potential harm, leave the person lying flat.
- Keep the person warm and comfortable. Loosen tight clothing.

Electrical Shock and Burns

First Aid Kits are located in:

Control Room
Admin Offices

Assess and Verify the Incident Scene for RESCUER SAFETY PRIOR to ANY Victim Contact or Response Activities

Call 9-1-1 **IMMEDIATELY**

An electrical burn may appear minor or not show on the skin at all, but the damage can extend deep into the tissues beneath your skin.

If a strong electrical current passes through the body, internal damage, such as a heart rhythm disturbance or cardiac arrest, can occur.

There may also be fractures or other associated injuries if the victim fell.

While helping someone with an electrical burn and waiting for

	medical help, follow these steps: • **Look first. Don't touch.** The person may still be in contact with the electrical source. Touching the person may pass the current through you. • **Turn off the source of electricity if possible.** If not, move the source away from both you and the injured person using a dry object made of non-conductive material. • **Check for signs of circulation (breathing, coughing or movement).** If absent, begin cardiopulmonary resuscitation (CPR) immediately. • **Prevent shock.** Lay the person down with the head slightly lower than the trunk, if possible, and the legs elevated. • **Cover the affected areas.** If the person is breathing, cover any burned areas with a sterile gauze bandage, if available, or a clean cloth. Don't use a blanket or towel, because loose fibers can stick to the burns.
Three Degree Levels of Burns	 3rd degree burn • **First-degree** burns affect only the outer layer of the skin. They cause pain, redness, and swelling. • **Second-degree** (partial thickness) burns affect both the outer and underlying layer of skin. They cause pain, redness, swelling, and blistering. • **Third-degree** (full thickness) burns extend into deeper tissues. They cause white or blackened, charred skin that may be numb.
Burn Precautions	• **Don't use ice.** Putting ice directly on a burn can cause a burn victim's body to become too cold and cause further damage to the wound. • **Don't apply butter or ointments to the burn.** This increases the severity of the burn and could cause infection. • **Don't break blisters.** Broken blisters are more vulnerable to infection.
Chemical Burns	• **Remove the cause** of the burn by first brushing any remaining dry chemical and then rinsing the chemical off the skin surface with cool, gently running water for 20 minutes or more. • **Remove clothing or jewelry** that has been contaminated by the chemical.

	• **Wrap the burned area** loosely with a dry, sterile dressing or a clean cloth. • **Rewash the burned area** for several more minutes if the person experiences increased burning after the initial washing.
Minor Burns (First Degree and small {<3-inches} Second Degree Burns)	• **Cool the burn**. Hold the burned area under cool (not cold) running water for 10 or 15 minutes or until the pain subsides. Cooling the burn reduces swelling by conducting heat away from the skin. Don't put ice on the burn. • **Cover the burn** with a sterile gauze bandage. Wrap the gauze loosely to avoid putting pressure on burned skin. Bandaging keeps air off the burn, reduces pain and protects blistered skin. • **Watch for signs of infection**, such as increased pain, redness, fever, swelling or oozing. If infection develops, seek medical help. • **Get a tetanus shot.** Burns are susceptible to tetanus.
Major Burns (Second Degree > 3-inches and Third Degree Burns)	**For major burns, call 911 or emergency medical help. Until help arrives, follow these steps**: • **Don't remove burned clothing**. However, do make sure the victim is no longer in contact with smoldering materials or exposed to smoke or heat. • **Don't immerse large severe burns in cold water**. Doing so could cause a drop in body temperature (hypothermia) and deterioration of blood pressure and circulation (shock). • **Check for signs of circulation** (breathing, coughing or movement). If there is no breathing or other sign of circulation, begin CPR. • **Elevate the burned body part** or parts. Raise above heart level, when possible. • **Cover the area of the burn**. Use a cool, moist, sterile bandage; clean, moist cloth; or moist towels. • **Treat for Shock**

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HEAT RELATED ILLNESS

Heat Related Illness	 • Do **NOT** underestimate the seriousness of heat illness, especially if the person is elderly or injured. • Do **NOT** give the person medications that are used to treat fever (such as aspirin or acetaminophen). They will not help, and they may be harmful. • Do **NOT** give the person salt tablets. • Do **NOT** give the person liquids that contain alcohol or caffeine. They will interfere with the body's ability to control its internal temperature. • Do **NOT** use alcohol rubs on the person's skin. • Do **NOT** give the person anything by mouth the person is vomiting or unconscious.
First-Aid **First Aid Kits are located in:** **Control Room** **Admin Offices**	• Have the person lie down in a cool place. Raise the person's feet about 12 inches. • Apply cool, wet cloths (or cool water directly) to the person's skin and use a fan to lower body temperature. Place cold compresses on the person's neck, groin, and armpits. • If alert, give the person beverages to sip (such as Gatorade), or make a salted drink by adding a teaspoon of salt per quart of water. Give a half cup every 15 minutes. Cool water will do if salt beverages are not available. • For muscle cramps, give beverages as above and massage affected muscles gently, but firmly, until they relax. • If the person shows signs of shock (bluish lips and fingernails and decreased alertness), starts having seizures, or loses consciousness, call 911 and give first aid as needed.

WOUND CARE

Wound Care

First Aid Kits are located in:

Control Room
Admin Offices

Apply direct pressure on external wounds with sterile cloth or your hand, maintaining pressure until bleeding stops

If possible, before you try to stop severe bleeding, wash your hands to avoid infection and put on synthetic gloves. If the wound is abdominal and organs have been displaced, don't try to push them back into place — cover the wound with a dressing.

For other cases of severe bleeding, follow these steps:

- Have the injured person lie down and cover the person to prevent loss of body heat. If possible, position the person's head slightly lower than the trunk or elevate the legs. This position reduces the risk of fainting by increasing blood flow to the brain. If possible, elevate the site of bleeding.
- While wearing gloves, remove any obvious dirt or debris from the wound. Don't remove any large or more deeply embedded objects. Don't probe the wound or attempt to clean it at this point. Your principal concern is to stop the bleeding.
- Apply pressure directly on the wound until the bleeding stops.

After bleeding stops, bind wound with tight bandage and apply ice pack with direct pressure for 10 minutes

- Use a sterile bandage or clean cloth and hold continuous pressure for at least 20 minutes without looking to see if the bleeding has stopped. Maintain pressure by binding the wound tightly with a bandage (or a piece of clean cloth) and adhesive tape. Use your hands if nothing else is available. If

	possible, wear rubber or latex gloves or use a clean plastic bag for protection. • Don't remove the gauze or bandage. If the bleeding continues and seeps through the gauze or other material you are holding on the wound, don't remove it. Instead, add more absorbent material on top of it. • Squeeze a main artery if necessary. If the bleeding doesn't stop with direct pressure, apply pressure to the artery delivering blood to the area of the wound. Pressure points of the arm are on the inside of the arm just above the elbow and just below the armpit. Pressure points of the leg are just behind the knee and in the groin. Squeeze the main artery in these areas against the bone. Keep your fingers flat. With your other hand, continue to exert pressure on the wound itself. • Immobilize the injured body part once the bleeding has stopped. Leave the bandages in place and get the injured person to the emergency room as soon as possible.
Caring for Minor Wounds 	• Wash your hands thoroughly with soap and clean water if possible. • Avoid touching the wound with your fingers while treating it (if possible, use disposable, latex gloves). • Remove obstructive materials from the injured body part. • Apply direct pressure to any bleeding wound. • Clean the wound after bleeding has stopped. • Examine wounds for dirt and foreign objects. • Gently flood the wound with bottled water or clean running water (if available, saline solution is preferred). • Gently clean around the wound with soap and clean water. • Pat dry and apply an adhesive bandage or dry clean cloth. • Leave unclean wounds, bites, and punctures open. Wounds that are not cleaned correctly can trap bacteria and result in infection.
Other Considerations	• Expect a variety of infection types from wounds exposed to standing water, sea life, and ocean water. • Wounds in contact with soil and sand can become infected. • Puncture wounds can carry bits of clothing and dirt into wounds and result in infection. • Crush injuries are more likely to become infected than wounds from cuts.

Head Trauma	Most head trauma involves injuries that are minor and don't require hospitalization. However, **call 911** or your local emergency number if any of the following signs or symptoms are apparent: • Severe head or facial bleeding • Bleeding from the nose or ears • Severe headache • Change in level of consciousness for more than a few seconds • Black-and-blue discoloration below the eyes or behind the ears • Cessation of breathing • Confusion • Loss of balance • Weakness or an inability to use an arm or leg • Unequal pupil size • Repeated vomiting • Slurred speech • Seizures If severe head trauma occurs: Keep the person still. Until medical help arrives, keep the injured person lying down and quiet, with the head and shoulders slightly elevated. Don't move the person unless necessary, and avoid moving the person's neck. Stop any bleeding. Apply firm pressure to the wound with sterile gauze or a clean cloth. But don't apply direct pressure to the wound if you suspect a skull fracture. Watch for changes in breathing and alertness. If the person shows no signs of circulation (breathing, coughing or movement), begin CPR.
Fractures	Don't move the person except if necessary to avoid further injury. Take these immediate actions while waiting for medical help: • Stop any bleeding. Apply pressure to the wound • Immobilize the injured area. Don't try to realign the bone or push a bone that's sticking out back in. • Apply ice packs to limit swelling and help relieve pain until emergency personnel arrive. Don't apply ice directly to the skin. • Treat for shock. If the person feels faint or is breathing in short, rapid breaths lay the person down with the head slightly lower than the trunk and, if possible, elevate the legs.

Dislocations	• A dislocation is an injury in which the ends of your bones are forced from their normal positions. The cause is usually trauma, such as a blow or fall. • Dislocations may occur in major joints, such as your shoulder, hip, knee, elbow or ankle or in smaller joints, such as your finger, thumb or toe. • The injury will temporarily deform and immobilize your joint and may result in sudden and severe pain and swelling. A dislocation requires prompt medical attention to return your bones to their proper positions. • If you believe you have dislocated a joint: 1. Don't delay medical care. Get medical help immediately. 2. Don't move the joint. Until help arrives, splint the affected joint into its fixed position. 3. Don't try to move a dislocated joint or force it back into place. This can damage the joint and its surrounding muscles, ligaments, nerves or blood vessels. 4. Put ice on the injured joint. This can help reduce swelling by controlling internal bleeding and the buildup of fluids in and around the injured joint.

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EYE INJURIES

Chemical Contact with the Eye(s)	• Immediately flush the eye with water or any other drinkable liquid. Hold the eye under a faucet or shower, or pour water into the eye using a clean container. Keep the eye open and as wide as possible while flushing. Continue flushing for at least 15 minutes. • DO NOT use an eyecup. • If a contact lens is in the eye, begin flushing over the lens immediately. This may wash away the lens. • DO NOT bandage the eye. • Seek immediate medical treatment after flushing.
Foreign Material in the Eye	• DO NOT rub the eye • Try to let tears wash the speck out or use an eyewash. • Try lifting the upper eyelid outward and down over the lower lid. • If the object is floating in the tear film on the surface of the eye, try flushing it out with saline solution or clean, lukewarm water. Flush the eye AWAY from your nose. • If the speck does not wash out, keep the eye closed, bandage BOTH EYES lightly, and see a doctor.
Contact Trauma to the Eye	• Apply a cold compress without putting pressure on the eye. Crushed ice in a plastic bag can be taped to the forehead to rest gently on the injured eye. • In cases of pain, reduced vision, or discoloration (black eye), seek emergency medical care. Any of these symptoms could mean internal eye damage.
Cuts and Punctures of the Eye or Eyelid	• DO NOT wash out the eye with water or any other liquid. • DO NOT try to remove an object that is stuck in the eye. • Cover the eye with a rigid shield without applying pressure. The bottom half of a paper cup can be used. • See a doctor at once.

Record of Annual Review

A record of revisions, submissions and reviews shall be maintained below:

Date	Action Taken	Name