



**Grand Jury**  
**County of San Mateo**  
Hall of Justice  
400 County Center  
Redwood City, CA 94063-1655  
(650) 599-1711; Fax (650) 363-4698

[Issue](#) | [Background](#) | [Findings](#) | [Conclusions](#) | [Recommendations](#) | [Responses](#) | [Attachments](#)

## **Summary of Tsunami Alert and Evacuation On the San Mateo County Coast**

### **Issue**

To what extent are the San Mateo County coastal communities adequately prepared for a tsunami?

### **Summary**

A tsunami could cause significant loss of life along the San Mateo coast, particularly if it occurs when the beaches are crowded. The West Coast & Alaska Tsunami Warning Center (WCATWC) will typically be able to provide a few hours warning of an impending tsunami. The San Mateo County Office of Emergency Services (OES) has developed a detailed and comprehensive plan outlining the County response in the event of such a warning and has identified 15 potential inundation areas in the County.

In June 2005, WCATWC issued a warning that was in effect for 72 minutes. The event both exposed communication problems with implementing the plan at the local level, and revealed different levels of preparedness among the coastal communities.

This report focuses on certain San Mateo County coastal communities (the cities of Half Moon Bay and Pacifica and unincorporated communities of Montara, El Granada, Princeton and Pescadero) but does not include potential tsunami impact on the Bayside communities. The recommendations, however, are generally applicable to all shoreline communities.

The San Mateo County Civil Grand Jury recommends that coastal communities within potential areas of inundation from Daly City south to Pescadero upgrade their tsunami education programs. Pacifica has a comprehensive plan that, together with the National Oceanic and Atmospheric Administration's TsunamiReady plan, can serve as a useful model for other shoreline communities.



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## **Tsunami Alert and Evacuation On the San Mateo County Coast**

### **Issue**

To what extent are the San Mateo County coastal communities adequately prepared for a tsunami?

### **Background**

The California coast is exposed to tsunamis caused primarily by sub-oceanic earthquakes around the Pacific basin, mainly in Alaska, Japan, Chile, and off the coast of Oregon and Washington. In 1946, a tsunami generated in the Aleutian Islands produced wave heights of 12 to 16 feet at Half Moon Bay, caused loss of life at Martins Beach and significant property damage on the essentially undeveloped San Mateo County coast. In 1960, a tsunami generated in Chile caused over \$1 million in damages along the California coast, and in 1964, a magnitude 9.2 earthquake in Alaska generated a tsunami that killed 12 in Northern California and caused \$15 million in damages. The wave crested at 21 feet in Crescent City and wave oscillations in San Francisco Bay lasted more than 12 hours, causing \$200,000 in damages. Because most tsunamis that are likely to affect Northern California are generated around the Pacific Basin, most will take hours to reach our coast, allowing significant warning time. The December 2004 Sumatra tsunami demonstrated how destructive and costly in human life a tsunami can be.

The San Gregorio fault, just off the San Mateo County Coast, has the potential of causing a tsunami with essentially no warning time. While there is no recent history of a tsunami generated by rupture of this fault, the San Mateo County Office of Emergency Services (OES) advises that members of the public who are in low-lying areas immediately head for high ground when an earthquake occurs.

The West Coast & Alaska Tsunami Warning Center (WCATWC) provides tsunami warning guidance for British Columbia and all U.S. coastal states except Hawaii. If the United States Geological Survey (USGS) detects an earthquake of magnitude seven or greater in the northern Pacific Ocean, it alerts the WCATWC, which monitors pressure sensors within the ocean and tidal gauges along the coast. The WCATWC then alerts the

appropriate emergency service organizations on the West Coast, initially the California OES in Sacramento, then the San Mateo County OES operated by the Sheriff's Office in the Hall of Justice in Redwood City. The County OES, in turn, alerts the coastal community fire and law enforcement agencies (including State Parks, Red Cross and harbor authorities) which inform local government and other local first responders. If a tsunami is not detected by the deep-sea monitors and tidal gauges, a cancellation is issued first to the State OES which then notifies the County OES and the coastal communities.

On June 14, 2005, a magnitude 7.2 earthquake off the shore of Humboldt County triggered a warning to the West Coast. Only a minor tsunami was detected and the warning was cancelled 72 minutes after the event was announced. Although the warning was in effect for only 72 minutes, the 2005 event provided a test case for assessing the adequacy of warning and cancellation procedures. In that event the National Weather Service placed warning messages that scrolled along the bottom of television screens. This notified the public, sometimes prior to the alert getting to local authorities, and resulted in some coastal community confusion.

The County of San Mateo and the 20 incorporated cities therein have established a unified emergency organization referred to as the Emergency Services Organization (ESO) "for the purpose of preparing and carrying out coordinated plans for the protection of persons and property in the event of a disaster". The governing body of this Organization is the Emergency Services Council (ESC), which consists of one member of the Board of Supervisors and one Councilmember from each of the participating cities. Paragraph B.4. of the agreement establishing the ESO reads:

*"It shall be the duty of the Area Emergency Services Council . . . to review and recommend for adoption by the board of supervisors and the city council of each of the cities, such emergency plans, programs and agreements, . . . as are necessary to carry out the purposes of the Emergency Services Organization."*

## **Investigation**

To investigate the tsunami preparedness of San Mateo County, the San Mateo County Civil Grand Jury (Grand Jury) met with representatives of the OES, the local chapter of the American Red Cross, and the police departments of Half Moon Bay and Pacifica. The Grand Jury also reviewed the OES draft plan (available at "OES://OA Tsunami Annex July 2006"), the State of California document "The Tsunami Threat to California (CSSC 05-03)", the National Oceanic and Atmospheric Administration (NOAA) Tech Memo ERL PMEL-112, the Pacifica Tsunami Alert brochure and the NOAA TsunamiReady Program.

## **Findings**

The OES has a detailed plan that outlines how the office should respond to a tsunami warning. For the purposes of planning, a two-hour warning and a maximum tsunami of 42 feet are assumed. Maps of inundation zones based on the 42 foot assumption have been prepared for the major population centers on the coast, except for the southern

section at Pescadero (Appendix A and B) Approximately 5,000 people live in the 15 inundation zones. This number could increase considerably, depending on the timing of the tsunami. The population of Half Moon Bay is particularly volatile, swelling from 12,000 to 100,000 at times during the year, and the visitors are less likely than residents to know what to do in the event of a tsunami.

Command responsibilities have been assigned for each inundation zone (police, fire and city managers), and community contacts identified. The Red Cross is responsible for activating previously designated shelters (primarily at public schools) in each community. On receiving a tsunami warning, the County OES initiates the alert process throughout the County by informing fire, law enforcement and other agencies using several independent methods (radio, phone and internet). Two new systems for notifying emergency workers and members of the community are currently being tested and should be operational throughout the County by 2007. One system, ROAM Secure, will alert wireless devices, such as cell phones and pagers. The other system, a “neighborhood call system,” will call landline telephone numbers in the impacted area. The County OES also notifies media sources including local radio and television stations. Local law enforcement agencies are responsible for informing other local government agencies of the event. Then, the local OES procedures are executed per the County emergency response plan. Law enforcement agencies are responsible for alerting citizens to evacuate threatened areas. The current plan is to communicate using loudspeaker warnings from police cars on a street-by-street basis.

If evacuation is anticipated, local community support groups, such as the Red Cross, are activated by the County OES. The Red Cross is not involved in the tsunami warning and ensuing evacuation process, but will provide temporary living support (food, shelter, first-aid, etc.) in the event of an evacuation. Each major coastal community has Red Cross resources, including a trailer with stored blankets and 100 cots. Experienced volunteers, some with specialized expertise in nursing and mental health, are also available. Red Cross Shelters will be set up at local designated public schools in each coastal community. The Red Cross also has representation in six neighboring counties that can pool resources to assist the San Mateo Coast, although, if a tsunami occurred, movement along Highways 92 and 1 may be severely impacted, and hinder emergency assistance.

The involvement of special water and sewer districts is not clearly defined in the OES plan, but they are responsible for system integrity and damage assessment and repair.

Local level preparedness within the county is mixed. The City of Pacifica, with three of the 15 identified inundation zones, has developed a comprehensive plan consistent with the County OES plan. For the last 10 years the city has participated in the Community Alert Network (CAN) that, in the event of an emergency, alerts all citizens who have enrolled in the program. This alert system has been used successfully in the past during a major sewage leak. The service is privately operated and the city is charged only when it is used at approximately 20 cents per participant contact. Pacifica is also formalizing a “residents in need” list using local social organizations, labor unions, churches, etc., to assure that elderly and disabled residents are identified. In conjunction with County OES, the city is actively researching a siren warning system and finalizing plans to install

tsunami-warning signs in vulnerable areas. A Pacifica-specific tsunami warning and informational brochure is available and widely distributed throughout the city. In their new police department facility, Pacifica has facilities for several volunteer amateur radio operators. They have also prepared a tsunami presentation that is given to community groups on a regular basis. Other communities in San Mateo county are less well prepared than Pacifica. Isolated beaches such as Martins Beach, where there was loss of life in 1946, are particularly vulnerable. In addition, there are no inundation maps for the county's southernmost coast (Pescadero).

When the tsunami alert was issued in 2005, many coastal residents did not learn of the warning until after it was cancelled and many of those that did hear the warning did so first through the National Weather Service announcement on TV. This resulted in some confusion and lack of local coordination. Since then, local police departments have acquired the NOAA weather radios that can provide comprehensive information for tsunamis and other emergencies. Due to the brief period (72 minutes) that the 2005 warning existed, no broadcast was made either at the beaches or through community streets. The Half Moon Bay City Manager was not directly informed of the warning, nor was the local Red Cross volunteer leader; both learned of it indirectly as did other local residents. The cause of the apparent discrepancy between what should happen according to the County OES plan and what actually happened remains unclear, although part of the problem in Half Moon Bay was that the local police commander did not follow procedures and failed to inform appropriate personnel, including the City Manager. Certainly the brief period of the warning and the need to avoid unnecessary citizen response were mitigating factors, but there were clearly communication issues.

Because the San Mateo County coast represents 68 miles of International border, the County OES has been able to acquire Homeland Security funds to apply toward the installation of a siren/beach broadcast system. A photograph of a siren post is shown in Appendix C.

The National Weather Service has developed the Storm Ready and Tsunami Ready programs to help communities guard against the ravages of severe weather and potential tsunami damage. StormReady and Tsunami Ready are voluntary programs offered to provide guidance and incentive to communities that want to improve their hazardous weather and tsunami hazard operations. These programs are designed to help develop the communication and safety skills necessary to save lives and property.

On September 21, 2006 the San Mateo County Office of Emergency Services and Homeland Security received notification that they had achieved StormReady recognition for the County of San Mateo. As of October 2006, San Mateo County is one of only four counties in California and 603 counties in the nation to achieve this distinction.

San Mateo is working hard to become designated as TsunamiReady. This program promotes tsunami hazard preparedness as an active collaboration among federal, state, and local emergency management agencies. To be recognized as TsunamiReady and StormReady, a community must:

- Establish a 24-hour warning system and emergency operations center;

- Have more than one way to receive tsunami and severe weather warnings and forecasts to alert the public;
- Create a system that monitors local weather conditions;
- Promote the importance of public readiness through community seminars;
- Develop a formal hazardous weather plan, which includes training severe weather spotters and holding emergency exercises
- Define Tsunami evacuation areas and evacuation routes, and install evacuation route signs.

Tsunamis are very rare compared to hazardous weather events in the United States. As a result tsunami hazard awareness and preparedness is apt to be insufficient, even in areas such as the San Mateo County coast, which have a history of damaging tsunamis. A recent event underscores the potential hazards of these rare events. On October 14, 2006, a major earthquake occurred in Hawaii during the annual Pumpkin Festival in Half Moon Bay. On that day there were an estimated 100,000 visitors crowded into this small city. Fortunately, due to the depth of the earthquake, no tsunami was generated.

## **Conclusions**

To paraphrase NOAA, “It is critical that individuals in high-risk areas be educated about and prepared for tsunamis before the waves strike, because ultimately it is up to each individual to take appropriate actions for protection (i.e., moving inland and to higher ground). All the warnings and information in the world will not do much if the public does not get, know how to use and/or act upon this information.” (NOAA Magazine Online, story 158, p.2, <http://www.magazine.noaa.gov/stories/mag158.htm>)

San Mateo County has a comprehensive plan to respond to a tsunami warning. The response to the June 2005 warning revealed problems in implementing the plan at the local level. The most important objective of the plan is to communicate the warning of an impending tsunami to citizens at risk and to advise them how to respond. While the County OES is developing appropriate tsunami signage and researching the effectiveness of a possible siren/broadcasting system, the 2005 experience suggests that the County needs to take a more aggressive approach to educating the local communities and beach visitors about the dangers of a tsunami and what they should do in the event of an alert.

The population of Half Moon Bay can swell from 12,000 to 100,000 at times throughout the year. Visitors are less likely to know what a siren or other alert system means and what to do in the event of an alert. Signs should be posted in public areas, particularly public beaches, to educate the public on the danger of tsunamis, how to recognize an alert and what to do should an alert be broadcast.

The County Tsunami Annex draft (OES://OA Tsunami Annex July 2006) lists contacts, indicates responsibilities, and outlines procedures to be followed throughout the county should a tsunami alert be issued by the WCATWC. The draft must be completed and approved for implementation.

The Red Cross has limited supplies stored in the coastal communities. Expectations are that they could draw on neighboring communities if needed. After a tsunami, however, it is likely that traffic on Highways 92 and 1 would be seriously impacted and movement of supplies inhibited.

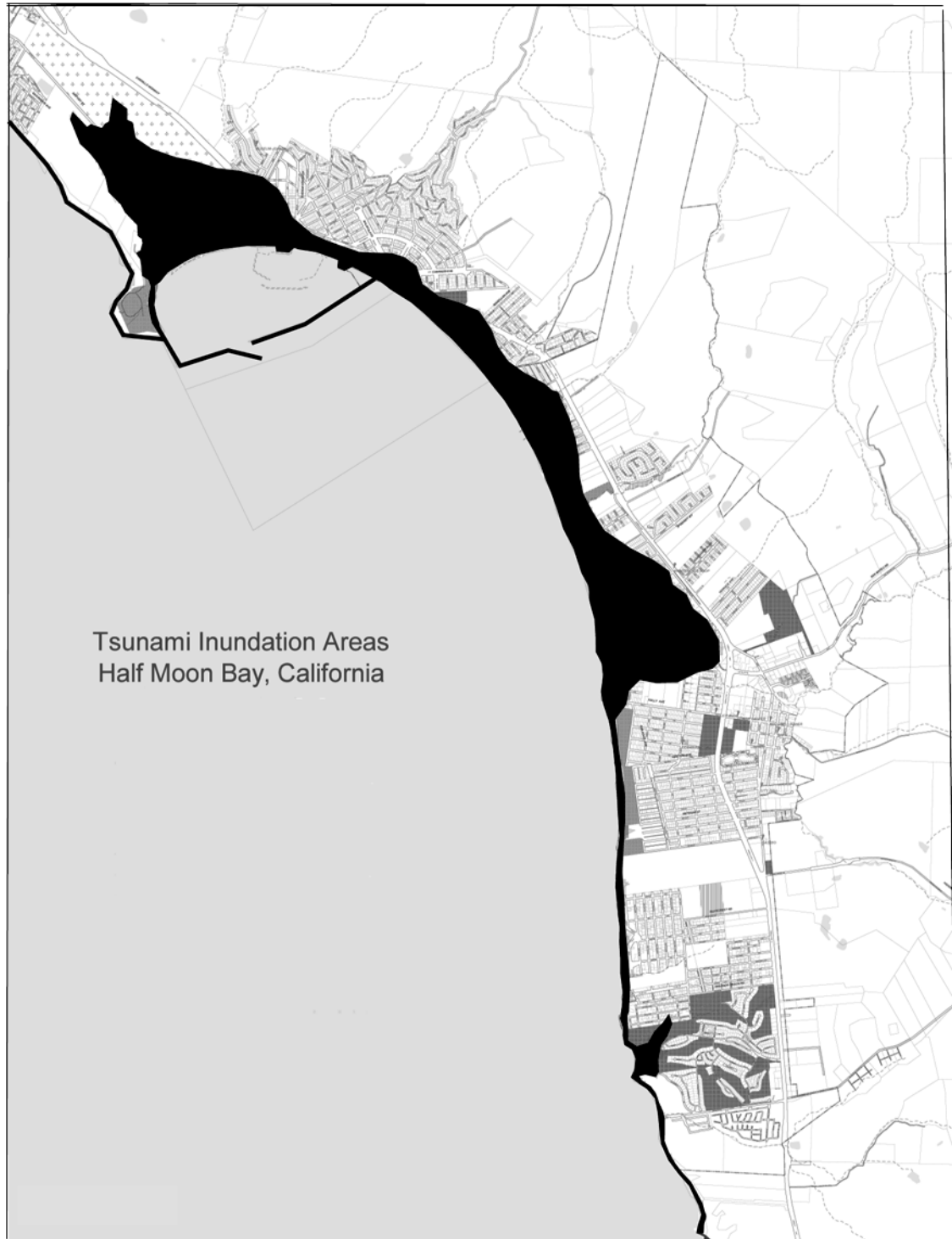
## **Recommendations**

1. The Grand Jury recommends that the Emergency Service Council (ESC) direct the OES staff to work closely with San Mateo County communities to assist them in becoming certified TsunamiReady locations. More specifically, the ESC and OES should use the TsunamiReady plan as a model to help Pacifica, Half Moon Bay and the unincorporated coastal communities accomplish the following:
  - 1.1 Develop an emergency tsunami response plan for each community that specifies how the public and emergency service providers are to be informed of an alert and what their responses should be.
  - 1.2 Educate the public on the dangers of a tsunami, how the alert system works, and what to do in the event of an alert.
  - 1.3 Obtain approval and permits from the appropriate government agencies (Coastal Commission, CalTrans and State Parks) for tsunami warning signage and a siren/broadcast system and install same.
  - 1.4 Acquire inundation maps for the entire San Mateo County coast.
  - 1.5 Ensure that the resources of the Regional Office of the Red Cross are sufficient and appropriately distributed.
  - 1.6 Acquire the resources and technology to make San Mateo County StormReady/TsunamiReady by December 31, 2007.
2. The Grand Jury recommends that the Half Moon Bay City Council direct the City Manager to:
  - 2.1 Work closely with the ESC to accomplish the goals 1.1 through 1.6 listed above;
  - 2.2 Identify hazardous areas, safe zones and evacuation routes within Half Moon Bay;
  - 2.4 Identify “residents in need” who may need help in case of an emergency;
  - 2.5 Activate a Community Alert Network or its equivalent to alert residents in case of an emergency.

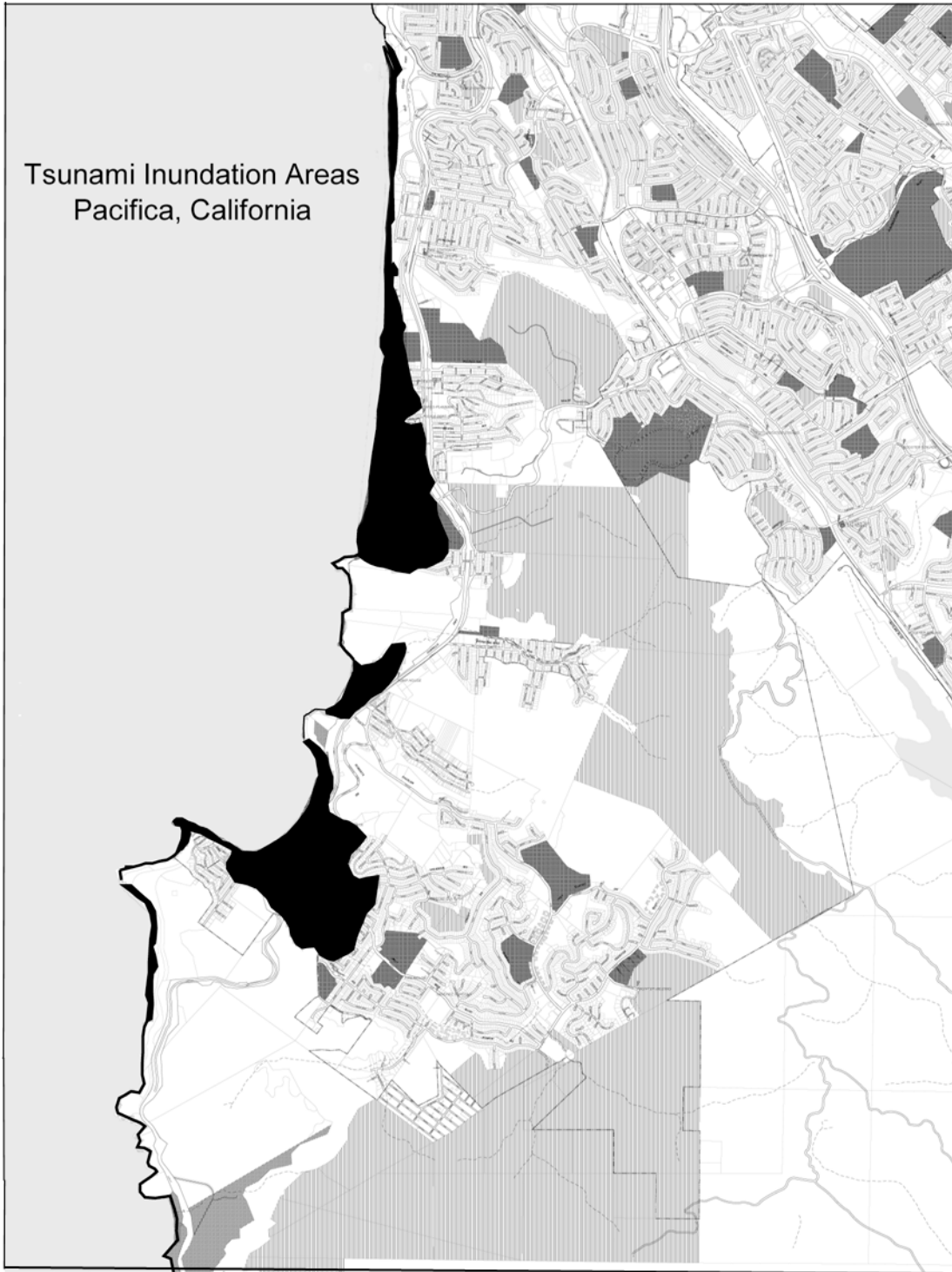
3. The Grand Jury recommends that the Pacifica City Council direct the City Manager to work closely with the ESC to accomplish goals 1.1 through 1.6 listed above.
  
4. The Grand Jury recommends that the Board of Supervisors direct the County Manager to:
  - 4.1 Work with the ESC to accomplish goals 1.1 through 1.6 listed above for the unincorporated areas;
  - 4.2 Develop a tsunami alert and evacuation plan for unincorporated coastal communities, including Princeton, El Granada, Martins Beach and Pescadero;
  - 4.3 Identify “residents in need” living in unincorporated coastal communities who may need help in case of an emergency;
  - 4.4. Activate a Community Alert Network or its equivalent to alert residents in unincorporated coastal communities in case of an emergency;
  - 4.5. Act on the July, 2006 County Tsunami Annex Draft by December 31, 2006.
  
5. The Grand Jury recommends that the Sheriff instruct the OES to:
  - 5.1 Provide advice and guidance for the development of tsunami alert and evacuation plan for the rural coastal communities.
  - 5.2 Work with the ESC to accomplish goals 1.1 through 1.6 listed above.



Appendix A. Potential tsunami inundation areas of Half Moon Bay and the Midcoast (shown in black). This is for planning purposes only and based on worst case assumptions as described in the text



Appendix B. Potential tsunami inundation areas of Pacifica (shown in black). This is for planning purposes only and based on worst case assumptions as described in the text.



Appendix C. Example of an emergency siren system.





**COUNTY OF SAN MATEO**  
**Inter-Departmental Correspondence**

County Manager's Office

**DATE:** February 5, 2007  
**BOARD MEETING DATE:** February 13, 2007  
**SPECIAL NOTICE:** None  
**VOTE REQUIRED:** None

**TO:** Honorable Board of Supervisors  
**FROM:** John L. Maltbie, County Manager  
**SUBJECT:** 2006-07 Grand Jury Response

**Recommendation**

Accept this report containing the County's responses to the following 2006-07 Grand Jury report: Tsunami Alert and Evacuation on the San Mateo County Coast.

**VISION ALIGNMENT:**

**Commitment:** Responsive, effective and collaborative government.

**Goal 20:** Government decisions are based on careful consideration of future impact, rather than temporary relief or immediate gain.

This activity contributes to the goal by ensuring that all Grand Jury findings and recommendations are thoroughly reviewed by the appropriate County departments and that, when appropriate, process improvements are made to improve the quality and efficiency of services provided to the public and other agencies.

**Discussion**

The County is mandated to respond to the Grand Jury within 90 days from the date that reports are filed with the County Clerk and Elected Officials are mandated to respond within 60 days. It is also the County's policy to provide periodic updates to the Board and the Grand Jury on the progress of past Grand Jury recommendations requiring ongoing or further action. To that end, attached is the County's response to the Grand Jury report on Tsunami Alert and Evacuation on the San Mateo County Coast issued November 22, 2006.

## **Tsunami Alert and Evacuation on the San Mateo County Coast**

### **Findings:**

Staff is in general agreement with the Grand Jury's findings.

### **Recommendations:**

**The Board of Supervisors should direct the County Manager to:**

**4.1 Work with the ESC to accomplish goals 1.1 through 1.6 for the unincorporated areas** (these recommendations were issued separately to the Sheriff's Office and ESC):

- 1.1 Develop an emergency tsunami response plan for each community that specifies how the public and emergency service providers are to be informed of an alert and what their response should be.
- 1.2 Educate the public on the dangers of tsunami, how the alert system works, and what to do in the event of an alert.
- 1.3 Obtain approval and permits from the appropriate government agencies (Coastal Commission, CalTrans, and State Parks) for tsunami warning signage and a siren/broadcast system and install the same.
- 1.4 Acquire inundation maps for entire San Mateo County Coast.
- 1.5 Ensure that the resources of the Regional Office of the Red Cross are sufficient and properly distributed.
- 1.6 Acquire the resources and technology to make San Mateo County Storm Ready/Tsunami Ready by December 31, 2007.

**Response:** Concur. Separate responses to Grand Jury recommendations 1.1 through 1.6 have been issued by both the Sheriff's Office of Emergency Services (OES) and the Emergency Services Council (ESC). The County Manager's Office concurs with these responses and will coordinate with both the OES and ESC in their ongoing efforts in these areas.

**4.2 Develop a tsunami alert and evacuation plan for unincorporated coastal communities including Princeton, El Granada, Martins Beach, and Pescadero.**

**Response:** Concur. The County Manager will direct OES to comply with this recommendation. OES/Homeland Security has a goal of reaching "Tsunami Ready" status—a program sponsored by the National Weather Service—by December 31, 2007. This program requires evacuation routes and safety zones to be clearly marked. Two Alerting Systems have been purchased with Homeland Security funds. One is a digital text messaging system, which is up and running in several

jurisdictions while others are in the training and orientation phase. The second is a Telephone Emergency Notification System (TENS) telephone calling system that that will make a telephone voice message to each home or business in the alert areas. This system also has the capability to interact with several sirens to be placed in and around the Tsunami inundation areas to alert visitors as well as residents. The computer servers that will support the TENS system are in place and mapping of alert areas is underway. The first County-wide training session was held on January 26, 2007. OES/HS is working with the Planning Departments in San Mateo County, Half Moon Bay, and Pescadero to ensure proper permits are obtained for the siren installations.

**4.3 Identify “residents in need” living in unincorporated coastal communities who may need help in case of an emergency.**

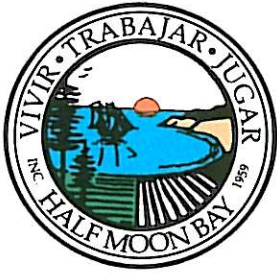
**Response:** Concur. The County Manager will direct OES to comply with this recommendation and coordinate its implementation with the Human Services Agency and the Health Department.

**4.4 Activate a Community Alert Network or its equivalent to alert residents in unincorporated coastal communities in case of an emergency.**

**Response:** Concur. The County Manager will direct OES to comply with this recommendation. As indicated in the response to Recommendation 4.2 above, two Alerting Systems were purchased with Homeland Security funds—a text messaging system that has been installed in several jurisdictions, and a telephone calling system that is currently under installation.

**4.5 Act on the July, 2006 County Tsunami Annex Draft by December 31, 2006.**

**Response:** Concur. The County Manager will direct OES to comply with this recommendation. The Tsunami Annex Draft, which is an addition to the emergency Operations Plan, is currently under revision as new threats and capabilities are discovered. Since November of 2006, OES/HS has facilitated three meetings between first responders to discuss issues and jurisdictional responsibilities. One "end to end" Tsunami exercise was held in association with the National Weather Service. OES/HS will have an adopted plan prior to December 31, 2007.



## CITY OF HALF MOON BAY

City Hall, 501 Main Street  
Half Moon Bay, CA 94019

December 26, 2006

Honorable John L. Grandsaert  
Judge of the Superior Court  
Hall of Justice  
400 County Center; 2<sup>nd</sup> Floor  
Redwood City, CA 94063-1655

Dear Judge Grandsaert,

Thank you for the opportunity to review the 2006-2007 San Mateo County Civil Grand Jury's report on Tsunami Alert and Evacuation on the San Mateo County Coast.

After reading the report, we feel that the recommendations in the Grand Jury's report (1., 1.1 through 1.6, 2., 2.1 through 2.5) are both reasonable and forward thinking. We are in agreement on all the suggested points.

In response to the Grand Jury's findings:

- 1) In the Grand Jury report it was stated that coastal residents did not learn of the tsunami warning until after it was cancelled and many of those residents that did hear the warning did so first through the National Weather Service announcement on television. The report further states that no broadcast was made either at the beaches or through community streets. The report also states that the Half Moon Bay City Manager and the Red Cross volunteer leader were not notified. The report goes on to state that part of the problem was that the Half Moon Bay Police Commander did not follow procedures and failed to inform the appropriate personnel.
- 2) It should be noted that police staff did in fact check the wrong tsunami website, in that the Pacific Tsunami Warning Center (Which was clear of any tsunami activities) instead of the Alaskan Tsunami Warning Center website was checked. This was an error on our part that has been corrected with training of staff.

According to the Governor's Office of Emergency Services, Preliminary Internal Review report (dated June 27, 2005) of the June 14<sup>th</sup> Tsunami warning incident, the report states that the Tsunami Warning issued by National Oceanic and Atmospheric Administration (NOAA) contained language and format that was unclear or obscured critical information. California State Warning Center actions were appropriate, but the NOAA messages may have confused local government responders. There was also message or coding confusion for the NOAA Hazard Radio system and with the Emergency Alert System, which are used to alert the public, but not emergency officials.

In the Grand Jury report it states that movement of supplies would be inhibited. The Tsunami Response Plan calls for the California Highway Patrol to shut down traffic at State Route 92 at the lower lakes (Highway 35). Only emergency personnel would be allowed access, thus State Route 92 would be freed up for emergency personnel and supplies coming into Half Moon Bay.

In response to the Grand Jury report recommendations:

- 1.1 Develop an emergency tsunami response plan that specifies how the public and emergency service providers are to be informed of an alert and what their responses should be.

Presently, the Half Moon Bay Police Department is working on developing a comprehensive Tsunami Response Plan for the City of Half Moon Bay. The plan is open ended, as it will continually be reviewed, updated, and improved.

A. The public will be informed of a tsunami alert by different means.

- 1) Two siren systems are scheduled to be installed within the city limits of Half Moon Bay (to be installed in 2007).
- 2) ROAM Alert system, which will alert those citizens, who sign up for the free service, of the tsunami warning by cellular telephone text message, smart telephone text message and pager text message.
- 3) NOAA Tsunami Alert system which will alert those citizens who sign up for the free service, of the tsunami warning by internet e-mail or e-mail to those internet capable cellular telephones.
- 4) The public Emergency Broadcast System when activated will broadcast the tsunami alert on local television stations and AM/FM radio stations.
- 5) Local Comcast Cable Television will broadcast the tsunami alert message on its channel 6, local broadcast station.
- 6) Those citizens with NOAA radios will be alerted to the tsunami alert by the NOAA, National Weather Service alert system.
- 7) Citizens will be advised to move to high ground (East of State Route 1)
- 8) Presently, San Mateo County OES is working on another method of notifying citizens of an emergency situation. This is commonly called "a reverse 911" or neighborhood call system. This system would call all of the citizens of Half Moon Bay listed in the A.T. & T. telephone directory. The system would call residences and businesses using "hard line or land line" telephone lines. This system would not call cellular telephones or other non-A.T. & T telephones. A computer-generated message would then be transmitted when the telephone is picked up. As of September 2006, OES has received three bid proposals. Funding for this program is being funded by a US Department of Homeland Security grant.



B. The emergency service providers will be informed as follows.

- 1) The Alaska Tsunami Warning Center will issue one of four different tsunami bulletins in regards to earthquake and tsunami incidents.
  - a. Information Statement
  - b. Tsunami Advisory
  - c. Tsunami Watch
  - d. Tsunami Warning
  
- 2) Only in incidents of a Tsunami Watch or Tsunami Warning will San Mateo County Communications be notified by County Office of Emergency Services (OES)
- 3) San Mateo County Communications will then notify the on duty Half Moon Bay Police Department supervisor or senior officer. He/she will in turn notify the Chief of Police or Commander. The Chief of Police shall then notify the City Manager, Public Works Director, and Finance Director. The Chief of Police and City Manager shall then activate the city's Emergency Operations Center.
- 4) Officers shall then be assigned duties as needed for the incident.
- 5) For further information refer to the Half Moon Bay Police Department Tsunami Response Plan.

1.2 Educate the public on the dangers of a tsunami, how the alert system works, and what to do in the event of an alert.

1) The City of half Moon Bay has already started an education process for citizens in regards to tsunamis. On the city's Internet website there is a link for "emergency preparedness information." After clicking on that link, it takes you to another page, which has more links and general emergency information. Citizens are able to go to the county's ROAM Alert web page. They are able to go to the Governor's Office of Emergency Services web page detailing "preparing your family for an Emergency." Citizens are able to go to the American Red Cross web pages, "Preparing to make a plan and Tsunamis." There is also a link for the Alaska Tsunami Warning Center Internet website. (See attached)

There are six other links to various other Internet websites, which include San Francisco Office of Emergency Services, FEMA, US Department of Homeland Security, ARES Group, National Hurricane Center, and the Smart Communities Network.

There is also a link to the Half Moon Bay Tsunami Brochure. This brochure contains general safety and emergency preparedness information. The brochure also contains the Half Moon Bay Tsunami evacuation map. (See attached brochure).

Half Moon Bay Police along with members of the San Mateo County Office of Emergency Services are presently developing a structured plan for providing tsunami and emergency preparedness information to the citizens of Half Moon Bay. Six inundation areas have been identified within the city limits of Half Moon Bay; Surfers Beach area, the Miramar Area, the Kehoe /Casa del Mar Area, the Strawflower area, the Arletta Park area and the Ocean Colony /Ritz Carlton Hotel area. The Half Moon Bay Tsunami Brochure will be printed and distributed to residents in those areas.

Tsunami and emergency preparedness information will be provided to all of the citizens of Half Moon Bay using different methods of media: the local newspaper and local public access channel (Channel 6) on Comcast Cable TV.

There are plans to hold Emergency Preparedness fairs and seminars at the Adcock Center where citizens can receive tsunami and emergency preparedness information and talk with emergency providers one on one. Tsunami and Emergency Preparedness will also be stressed in the local Neighborhood Watch program. At neighborhood watch meetings in those neighborhoods in the inundation areas, the residents will be informed of emergency preparedness and what to do in case of a Tsunami watch/warning.

The Half Moon Bay Fire Protection District has already scheduled Citizen Emergency Response Teams (CERT) classes where local citizens can be trained to assist in emergency situations. The first CERT class has been tentatively scheduled for some time in January.

Emergency preparedness handouts are available at both the Half Moon Bay Police Department and the Half Moon Bay City Hall. Tsunami inundation maps are also displayed at both locations.

Citizens of Half Moon Bay who reside in any of the tsunami inundation areas will be provided tsunami and emergency preparedness information. Those citizens will be advised to move to higher ground, (Any location east of State Route 1) in the event of a major earthquake or tsunami watch/warning. Those citizens who live outside of the tsunami inundation areas will be advised to shelter in place until the emergency ceases.

1.3 Obtain approval and permits from the appropriate government agencies for tsunami warning signage and a siren/broadcast system and install same.

1) Presently, the San Mateo County Office of Emergency Services is working on purchasing and installing an outdoor warning system (siren system). Plans call for two sirens to be placed in the Half Moon Bay city

jurisdiction. Possible locations for the sirens could be: placement of one siren in the Miramar area and the other siren placed in the Kehoe/Casa del Mar area. An additional siren will be placed in the Princeton area, which will cover the Surfers Beach area. Hormann America Inc. has been chosen to be the vendor for the siren system. This company has experience in emergency siren systems having placed siren systems in the Martinez/Concord area. These sirens will be solar powered and will have both siren and voice capabilities. The installation of the siren system is planned for sometime in 2007. (See attached)

2) Presently, San Mateo County OES is researching and designing signage to be placed on all beach areas and in the tsunami inundation areas. Signage from Tsunami prepared areas such as Hawaii and Crescent City, California, are being examined as examples. OES will meet with Half Moon Bay City officials to plan and design signage to be placed in inundation areas. OES will work with California State Parks to plan and design signage, which will place at all state park beaches. Installation of the signage is planned for 2007 (See attached signage examples).

#### 1.4 Acquire inundation maps.

The City of Half Moon Bay Planning Department, with assistance from the San Mateo County Public Works Department, using GIS database has produced a tsunami inundation map. A large map has been displayed at the Half Moon Bay Police Department and the City of Half Moon Bay City Hall. Smaller, mid-size maps have been produced for citizens to take and are available at the city hall counter. A mid-size map has also been given to the Half Moon Bay Public Library for display there. 8 1/2 by 11 inch maps have also been produced and are available as handouts for interested citizens. They are available at the police department, and city hall.

The Half Moon Bay Police Department has produced detailed maps of the six inundation areas. These maps show the areas of the Surfers Beach area, the Miramar Area, the Kehoe/Casa del Mar Area, the Strawflower area, the Arletta Park area and the Ocean Colony area. The maps show city streets, their names and the inundation in each of the areas. These maps will be reproduced for distribution to citizens of Half Moon Bay and will be available at the police department and city hall.

#### 1.5 Ensure that the resources of the regional office of the Red Cross are sufficient and appropriately distributed.

Two Half Moon Bay residents are volunteer emergency shelter/volunteer liaisons. A Red Cross trailer is parked at the Cabrillo School District Office year, 498 Kelly Ave, Half Moon Bay. The trailer is equipped with

cots and general emergency supplies. The Red Cross warehouses emergency supplies in different locations within the county and bay area. Other supplies are warehoused in regional, state and national Red Cross offices, which, can be transported to effected areas. San Mateo County Red Cross also has access to Red Cross emergency vehicles and trailers, which, can be used during emergency incidents in Half Moon Bay.

- 1.6 Acquire the resources and technology to make San Mateo County Storm Ready / Tsunami Ready by December 31, 2007.

The City of Half Moon Bay together with San Mateo County Office of Emergency Services are working together to make the City of Half Moon Bay, Storm ready/Tsunami Ready. San Mateo County has already met the requirements of the Storm Ready program. The county met the program requirements in September of 2006. Being Storm ready is a prerequisite for the Tsunami Ready program. The City of Half Moon Bay will continually work towards achieving the goal of Tsunami Ready until the goal is achieved.

- 2.1 Work closely with the Emergency Service Council (ESC) to accomplish the goals 1.1 through 1.6.

Elected officials in Half Moon Bay are members of the ESC. As described above, the City of Half Moon Bay is continually working to accomplish these goals.

- 2.2 Identify hazardous areas, safe zones and evacuation routes within Half Moon Bay

- 1) The only hazardous area identified in the inundation area is the SAM Plant (water sewage treatment plant). In the event of tsunami, the plant could be covered by wave action. Also, the sewer and drainage system could become overloaded. The plant has a plan in effect to deal with this situation. California State Parks, San Mateo County Health Department., San Mateo County Environmental Health Department, and the Pillar Point Harbormaster say raw sewage and waste water may flow directly from the treatment plant westward and into the ocean. After the wave and flooding subsides the beach and ocean waters will need to be checked for contamination.

- 2) Safe zones have been determined to be those areas east of State Route 1 or those areas not in the identified inundation areas. Citizens will be directed to move eastward and east of State Route 1. The primary emergency shelter has been identified as the Half Moon Bay High School.

- 3) Evacuation routes have been identified and determined to be eastward out of those identified inundation area neighborhoods. OES along with

Half Moon Bay City officials are developing signage, which will identify and guide citizens and tourists out of the inundations areas. The signage will be clearly labeled and not only will the evacuation routes be labeled but safe zones will be identified and marked.

2.3 Identify “residents in need” who may need help in case of an emergency.

Two Half Moon Bay Police Department personnel are members of the local Coastsides Disaster Preparedness Committee. The committee is made up of members of local non-profit groups such as the Red Cross, the Cabrillo School District, local churches, and San Mateo County health organizations, ARES, Rotary club, and Senior Coastsiders. The committee has a wide range of membership and not only represents organizations, groups, and citizens of Half Moon Bay, but also the Coastsides itself. One of the goals of the committee is for each group involved to identify those members within their groups that may be residents in need and may require special assistance during an emergency situation (Tsunami, earthquake, etc.).

2.4 Activate a Community Alert Network or its equivalent to alert residents in case of an emergency.

The City of Half Moon Bay along with the San Mateo County Office of Emergency Services is working on different methods of notifying the citizens of Half Moon Bay, whether it be from a natural emergency (Tsunami, earthquake etc) or man made emergency (Gas leak, oil spill, major accident). The public will be informed by different means:

- 1) Two emergency warning sirens are scheduled to be placed within the jurisdiction of the City of Half Moon Bay and should be in place by the beginning of 2007.
- 2) ROAM Alert system, which will alert those citizens, who sign up for the free service, of the tsunami warning by cellular telephone text message, smart telephone text message and pager text message.
- 3) NOAA Tsunami Alert system which will alert those citizens who sign up for the free service, of the tsunami warning by internet e-mail or e-mail to those internet capable cellular telephones.
- 4) The public Emergency Broadcast System when activated will broadcast the tsunami alert on local television stations and AM/FM radio stations.
- 5) Local Comcast Cable Television will broadcast the tsunami alert message on its channel 6, local broadcast station.
- 6) Those citizens with NOAA radios will be alerted to the tsunami alert by the NOAA, National Weather Service alert system.
- 7) Presently, San Mateo County OES is working on another method of notifying citizens of an emergency situation. This is commonly called “a reverse 911” or neighborhood call system. This system would call all of

the citizens of Half Moon Bay listed in the A.T. & T. telephone directory. The system would call residences and businesses using "hard line or land line" telephone lines. This system would not call cellular telephones or other non-A.T. & T telephones. A computer-generated message would then be transmitted when the telephone is picked up. As of September 2006, OES has received three bid proposals. Funding for this program is being funded by a US Department of Homeland Security grant.

The City of Half Moon Bay is committed to providing the citizens of San Mateo County with the highest level of safety and security in preparation and response to an emergency such as a Tsunami.

Thank you again for allowing us to review and respond to the report prepared by the San Mateo County Civil Grand Jury and please pass on my thanks to them for the outstanding work that they perform.

Sincerely,



Marcia Raines  
City Manager  
City of Half Moon Bay

cc: City Council, Clerk of the Court, Executive Officer, Judge Grandsaert, Grand Jury Website, & City Clerk of Half Moon Bay



COUNTY OF SAN MATEO  
**OFFICE OF THE SHERIFF**

**GREG MUNKS**  
SHERIFF

**CARLOS G. BOLANOS**  
UNDERSHERIFF

400 COUNTY CENTER    ▫    REDWOOD CITY    ▫    CALIFORNIA 94063-1662    TELEPHONE (650) 599-1664    WWW.SMCSHERIFF.COM

ADDRESS ALL COMMUNICATIONS TO THE SHERIFF

January 22, 2007

Honorable John L. Grandsaert  
Judge of the Superior Court  
Hall of Justice  
400 County Center, 2<sup>nd</sup> Floor  
Redwood City, CA 94063

Re: 2006-2007 Grand Jury Report: Tsunami Alert and Evacuation on the San Mateo County Coast

Dear Judge Grandsaert:

We wish to acknowledge the efforts of the Civil Grand Jury with this report regarding the Emergency Services Council and our Office of Emergency Services and Homeland Security (OES/HS). We feel the report is accurate, and depicts an understanding and appreciation by the members of the Grand Jury regarding issues relating to Tsunami impact on the San Mateo County coast.

The Office of Emergency Services and Homeland Security fully supports the findings of the Civil Grand Jury and appreciates a partnership in alerting residents and visitors to the very real, and often potential danger of a tsunami striking San Mateo County.

**Recommendation One:**

1. The Grand Jury recommends that the Emergency Services Council (ESC) direct the OES staff to work closely with San Mateo County communities to assist them in becoming certified Tsunami Ready locations. More specifically, the ESC and OES should use the Tsunami Ready plans as a model to help Pacifica, Half Moon Bay, and the unincorporated coastal communities accomplish the following:

1.1 Develop an emergency tsunami response plan for each community that specifies how the public and emergency service providers are to be informed of an alert and what their response should be.

- 1.2 Educate the public on the dangers of tsunami, how the alert system works, and what to do in the event of an alert.
- 1.3 Obtain approval and permits from the appropriate government agencies (Coastal Commission, CalTrans, and State Parks) for tsunami warning signage and a siren/broadcast system and install same.
- 1.4 Acquire inundation maps for entire San Mateo County Coast.
- 1.5 Ensure that the resources of the Regional Office of the Red Cross are sufficient and properly distributed.
- 1.6 Acquire the resources and technology to make San Mateo County Storm Ready/Tsunami Ready by December 31, 2007.

**Response:**

The Emergency Services Council has been briefed on the issues regarding tsunami issues regarding San Mateo County. The ESC is aware that OES/HS is actively involved and addressing the issues brought forth by the Civil Grand Jury and supports the ongoing efforts of OES/HS. Sheriff Munks also supports the ongoing efforts of OES/HS to follow the guidelines in a timely and effective manner to better prepare our residents for a tsunami event.

Recently OES/HS acquired two alert systems for public notification: the first being a digital alert system that alerts “text messaging” devices (cell phone text messaging, digital pagers, and e-mail). The second system is a Telephone Emergency Notification System (TENS), which would call each home or business in the effected area. This second system also offers either an audible siren or voice speaker alert system. Only six sirens/speakers are funded through OES/HS for the inundation areas so the three jurisdictions will need to find further funding through either general fund or other sources to increase the number of sirens necessary to alert all of the residents and visitors in the inundation areas.

Education efforts are constantly underway. OES/HS developed a written pamphlet of information that was adopted by Pacifica, Half Moon Bay, and unincorporated areas. Each jurisdiction has distributed this information to the public.

Several focus groups of emergency responders have already been held to address issues related to tsunami and will continue to dialog on the threat issues.

The three jurisdictions of San Mateo County, Pacifica, and Half Moon Bay started discussions regarding the permitting issues of both sirens and signage for the Tsunami Ready Program. All three jurisdictions are open to the idea and are willing to support the effort to the California Coastal Commission.



OES/HS requested the United States Geological Survey to survey the entire San Mateo County coast and the Bay Side of San Mateo County as to the rise in sea water as it relates to tsunami inundation.

OES/HS is in constant contact with the American Red Cross, also including other service providers such as the Salvation Army, Second Harvest Food Bank, and the State of California Office of Emergency Services as it relates to shelter support for the coast.

OES/HS received the distinct honor of the National Weather Service “Storm Ready” certification on September 21, 2006. This is a vital first step to achieve Tsunami Ready Certification. OES/HS believes it can reach the Tsunami Ready criteria by December 31, 2007.

**Recommendation Five:**

5. The Grand Jury recommends that the Sheriff instruct OES to:

5.1 Provide advice and guidance for the development of tsunami alert and evacuation plan for the rural coastal communities.

5.2 Work with the ESC to accomplish goals 1.1 through 1.6 above.

**Response:**

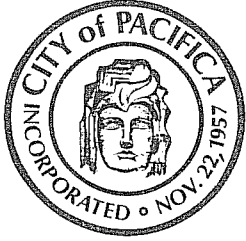
Sheriff Munks concurs with the recommendations of the Grand Jury and supports the efforts OES/HS, as mentioned above.

Once again, the San Mateo County Sheriff’s Office of Emergency Services and Homeland Security thanks the Civil Grand Jury for researching the effects of a tsunami related event in San Mateo County. Working together to prepare and educate both the public and government agencies is of the utmost importance in addressing this constant threat to our communities.

Sincerely,

Greg Munks, Sheriff

cc: The Honorable Board of Supervisors  
Grand Jury Website



*Scenic Pacifica*

**CITY MANAGER'S OFFICE**  
TEL (650) 738-7301  
FAX (650) 359-6038

**CITY ATTORNEY**  
TEL (650) 738-7409  
FAX (650) 359-8947

**CITY CLERK**  
TEL (650) 738-7307  
FAX (650) 359-6038

**CITY COUNCIL**  
TEL (650) 738-7301  
FAX (650) 359-6038

**ENGINEERING**  
TEL (650) 738-3767  
FAX (650) 738-3003

**FINANCE**  
TEL (650) 738-7392  
FAX (650) 738-7411

**FIRE ADMINISTRATION**  
TEL (650) 991-8138  
FAX (650) 991-8090

**HUMAN RESOURCES**  
TEL (650) 738-7303  
FAX (650) 359-6038

**PARKS, BEACHES  
& RECREATION**  
TEL (650) 738-7381  
FAX (650) 738-2165

**PLANNING &  
ECONOMIC DEVELOPMENT**  
TEL (650) 738-7341  
FAX (650) 359-5807  
• **Building** (650) 738-7344  
• **Code  
Enforcement** (650) 738-7343

**POLICE DEPARTMENT**  
TEL (650) 738-7314  
FAX (650) 355-1172

**PUBLIC WORKS**  
TEL (650) 738-3760  
FAX (650) 738-9747

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**CITY HALL**

170 Santa Maria Avenue • Pacifica, California 94044-2506

www.ci.pacifica.ca.us

**MAYOR**  
Peter DeJarnatt

**MAYOR PRO TEM**  
James M. Vreeland, Jr.

**COUNCIL**  
Calvin Hinton  
Julie Lancelle  
Sue Digre

February 16, 2007

Honorable John L. Grandsaert  
Judge of the Superior Court  
Hall of Justice  
400 County Center; 2<sup>nd</sup> Floor  
Redwood City, Ca 94063-1655

**Subject: Grand Jury Report –Tsunami Alert and Evacuation on the San Mateo County Coast**

We would like to take this opportunity to thank you and the Civil Grand Jury for their efforts and research in evaluating the Tsunami Alert & Evacuation plans for the San Mateo Coast. We agree with the findings and recommendations of the Grand Jury as noted in their report dated, November 22, 2006.

**Grand Jury Recommendations:**

- 1.1 Develop an emergency tsunami response plan for each community that specifies how the public and emergency service providers are to be informed of an alert and what their response should be.
- 1.2 Educate the public on the dangers of a tsunami, how the alert system works, and what to do in the event of the alert.
- 1.3 Obtain approval and permits from the appropriate government agencies (Coastal Commission, Ca Trans and State Parks) for tsunami warning signage and a siren/broadcast system and install same.
- 1.4 Acquire inundation maps for the entire San Mateo County Coast.
- 1.5 Ensure the resources of the regional Office of The Red Cross are sufficient and appropriately distributed.
- 1.6 Acquire the resources of and technology to make San Mateo County StormReady/Tsunami Ready by December 31, 2007



**Response:**

The City of Pacifica has had a good working relationship with San Mateo County Office of Emergency Services. For several years now the City of Pacifica has had a draft Tsunami Response Plan, which corresponds with the county plan. Most recently and for the past year there has been an aggressive effort to coordinate and stream line the plan for coastal communities within San Mateo County. OES has played a key role in facilitating this plan and this is a work in progress, which will include a planned and coordinated effort to inform emergency response personnel and the community in case of an evacuation.

The City of Pacifica strongly supports public education in Disaster Preparedness. Several years ago, the City of Pacifica's Emergency management team created a Tsunami brochure that informs the community of the dangers in this type of event. This brochure, which describes the characteristics of a Tsunami, provides information on how to respond to a Tsunami event. For example, the brochure depicts the Tsunami Inundation areas with the City of Pacifica and gives a brief description of the recommended evacuation routes. We agree with the Grand Jury recommendation that further education for the community in how an alert works and what to do in either of these cases is critical. Staff From OES recently met with our staff and provided us with an orientation in the ROAM SECURE NETWORK. Membership of this system provides community members and law enforcement the opportunity to circulate information to staff and the community via digital devices. This information, which will be posted on our web site under Disaster Preparedness, will allow citizens to sign up on the Roam Secure Network at their leisure. The implementation of this community education process will be coordinated with the installation of the Tsunami sirens as noted below. It is anticipated that all the majority of our emergency response personnel and department heads will be registered with the Roam Secure system by April 2007.

Currently, the City of Pacifica Planning Department is in the process of reviewing any permit issues that might become an issue with the installation of the tsunami siren and warning systems that were acquired from OES. In addition, preliminary steps have been taken to identify

signage needs within the City of Pacifica. It is anticipated that Signs and sirens will be installed by December 31, 2007.

The City of Pacifica has the most current Tsunami inundation maps for the San Mateo County Coast that are available from OES. These maps list the areas at risk as Sharp Park, Rockaway and Linda Mar.

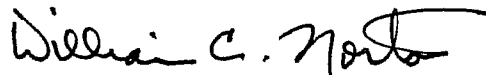
The City of Pacifica has two locations, which are designated shelters for the City of Pacifica. We are fortunate to have a liaison for the American Red Cross who serves on the City of Pacifica's Emergency Preparedness & Safety Commission. We have a Red Cross trailer, which is stationed at the Linda Mar Fire Station. This trailer is equipped with cots, blankets and various emergency supplies. The Red Cross also has other trailers located within the county that would be available in case of a tsunami event.

For the past year, the City of Pacifica has taken steps to acquire StormReady status from the National Weather Service. Several steps have been taken to meet the criteria for this status, but this is a work in progress. For example, in the past year a sophisticated weather instrument was installed in the Police Communications Center. In addition, a NOAA weather instrument was installed in the communications center to provide the most current weather information available. It is also anticipated that the City of Pacifica will have this process completed by December 31, 2007.

**Response:**

Once again, we would like to thank you and the Grand Jury for your interest in providing a safer community for the citizens of Pacifica.

Sincerely,

  
William Norton, City Manager

Cc: City Council  
Jim Saunders, Chief of Police.  
Ron Meyers, Fire Chief, North County Fire Authority

January 29, 2007

Honorable John L. Grandsaert  
Grand Jury Judge  
Hall of Justice and Records  
400 County Center  
Redwood City, CA 94063

Re: 2006-2007 Grand Jury Report: Tsunami Alert and Evacuation on the San Mateo County Coast

Dear Judge Grandsaert;

We wish to acknowledge the efforts of the Civil Grand Jury with this report regarding the Emergency Services Council (ESC). We feel the report is accurate, and depicts an understanding and appreciation by the members of the Grand Jury regarding issues relating to Tsunami impact on the San Mateo County coast.

The Emergency Services Council is in general agreement and fully supports the findings of the Civil Grand Jury. The ESC appreciates a partnership in alerting residents and visitors to the very real and often potential danger of a tsunami striking San Mateo County.

**Recommendations:**

1. The Grand Jury recommends that the ESC direct the OES staff to work closely with San Mateo County communities to assist them in becoming certified Tsunami Ready locations. More specifically, the ESC and OES should use the Tsunami Ready plans as a model to help Pacifica, Half Moon Bay, and the unincorporated coastal communities accomplish the following:

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- 1.5 Ensure that the resources of the Regional Office of the Red Cross are sufficient and properly distributed.
- 1.6 Acquire the resources and technology to make San Mateo County Storm Ready/Tsunami Ready by December 31, 2007.

**Response:**

The Emergency Services Council concurs with each of the recommendations. The ESC has been briefed of the issues regarding tsunami issues regarding San Mateo County. The ESC is aware that OES/HS is actively involved and addressing the issues brought forth by the Civil Grand Jury and supports the ongoing efforts of OES/HS. The ESC also supports the ongoing efforts of OES/HS to follow the guidelines in a timely and effective manner to better prepare our residents for a tsunami event.

Recently OES/HS acquired two alert systems for public notification: the first being a digital alert system that alerts "text messaging" devices (cell phone text messaging, digital pagers, and e-mail). The second system is a Telephone Emergency Notification System (TENS), which would call each home or business in the effected area. This second system also offers either an audible siren or voice speaker alert system. Only six sirens/speakers are funded through OES/HS for the inundation areas so the three jurisdictions will need to find further funding through either general fund or other sources to increase the number of sirens necessary to alert all of the residents and visitors in the inundation areas.

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Once again the San Mateo County Emergency Services Council thanks the Civil Grand Jury for researching the effects of a tsunami related event in San Mateo County. Working together to prepare and educate both the public and government agencies is of the utmost importance in addressing this constant threat to our communities.

Sincerely,

Rose Jacobs Gibson  
President, San Mateo County Board of Supervisors  
Chair, San Mateo County Emergency Services Council