

California Geological Survey Seismic Hazard Zones of Required Investigation

- Liquefaction Zones**
Areas where historical occurrence of liquefaction, or local geological, geotechnical and ground-water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 26999(c) would be required.
- Mapping in progress**
- Mapping Planned**
- Area Not Yet Evaluated**



Scale: 1 inch equals 0.30 miles



This map is intended for planning use only, and is not intended to be site-specific. Rather, it depicts the general risk within neighborhoods and the relative risk from community to community.

For more detailed information regarding this map, please visit the CGS website at <http://gmr.consrv.ca.gov/hazmat/>

Source:
California Geological Survey, 2004

This map is available at <http://Quake.abag.ca.gov>

Request for the Navy and Regulatory Agencies to further Investigate the Hazards associated with a Liquefaction Event at the Parcel E2 Landfill

→ The Restoration Advisory Board (RAB) of the Hunters Point Shipyard is requesting an in-depth investigation into the human health and environmental hazards associated with a liquefaction event at the Parcel E2 landfill. The Navy's Landfill Liquefaction Potential Report of August 13, 2004 [1] addresses the liquefaction potential of the landfill however, questions about the potential impacts of such an event remain unanswered. With the transfer of Parcel A complete and a plan in place for the development of residential areas adjacent to Parcel E2, there is a definite need to investigate these issues. Furthermore, until these issues are investigated, an evacuation plan should be designed for residents currently living in the vicinity of the landfill.

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Background

The U.S. Geological Survey (USGS) estimates that there is a 62% probability of at least one magnitude 6.7 or greater earthquake occurring somewhere in the San Francisco Bay region before 2032 [2]. The California Department of Conservation, California Geologic Survey seismic hazard zone map of February 2003, designates Parcel E as a liquefaction zone [3].

At the request of the RAB, the U.S. Navy conducted a study to evaluate the potential for liquefaction in the area of the Industrial Landfill on HPS Parcel E2 [1]. This report concluded that the E2 landfill area is susceptible to liquefaction and that lateral movement of 4 to 5 feet and settlement on the order of 10 inches may occur in this region of the Shipyard during a large-scale earthquake, resulting in liquefaction. The report findings acknowledge that this movement may be enough to cause "distress" in a landfill cover and conclude:

"It is recognized that some distress to the cover system could occur as a result of soil liquefaction. Settlement of this magnitude is not uncommon in landfills. This distress can be accommodated, however, in both the design and post-closure plan to prevent damage to the extent practical and to ensure that any minor damage can be repaired so that discharge to the environment does not occur. If containment is selected as a remediation measure, response of the Landfill cap, overall stability of the Landfill site, slope stability analysis, and other closure features to prevent lateral movement will be assessed. Results will be presented in the Landfill RI/FS Report." (page 21)

In addition to these reports, USGS online databases [4,5] indicate historical liquefaction events (ground settlement, sand boils and/or sand intrusion) occurred on Parcels B and E during the 1989 Loma Prieta earthquake. The online maps show the locations and provide evidence that liquefaction events not only can occur in the potential liquefaction zones on the Shipyard, but that they actually have occurred in the recent past.

Remaining Concerns

The approaching development of residential areas in the vicinity of the landfill will bring construction workers and additional residents to the area. Given this fact, together with the designation of Parcel E as a liquefaction zone and the knowledge that a large-scale earthquake

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in the area is likely within the next 30 years, the RAB is requesting an investigation into the following:

- The potential impact of a liquefaction event on migration of contaminants or materials in the landfill. Please note, characterization of the landfill contents is necessary in order to determine the chemical and physical hazards of such an event.
- The potential impact of a liquefaction event on movement of gases, especially methane, associated with the landfill. This should include the potential for ignition at the landfill during a liquefaction event.
- The potential impact of a liquefaction event on movement of contaminated groundwater associated with the landfill.
- The potential movement of hazardous or radiologically-contaminated materials in the landfill, particularly in the shallow areas.
- The seismic stability of buildings and structures that remain in and around Parcels A and E and within the liquefaction zone including buildings 816, 821, 813, 819 and FUDS site 815. (Given the acknowledgement of the potential for 5 feet of lateral movement in a liquefaction event, this should include an analysis of the bentonite barrier wall of the landfill gas control system.)

It is imperative that the Navy and members of the BCT (i.e., US EPA, CA Department of Toxic Substances Control, and the SF Bay Regional Water Quality Control Board) investigate these issues before a final remedy for the landfill is determined and before residences on Parcel A are occupied. According to the Navy's latest project schedule, the Remedial Investigation/Feasibility Study (RI/FS) for Parcel E2 will be submitted in February 2005. All studies of exposure pathways, health risks, and remedial action options should explicitly address these issues as well. If the issues listed above will not be addressed in the RI/FS report, please indicate the report in which this information will be presented as well as the date of expected submittal.

We are also requesting that the members of the BCT (listed above) provide the RAB with a report on their findings and recommendations on these matters.

Additionally, a specific emergency response plan and procedure should be developed for the City of San Francisco Departments of Emergency Services and Health Services to address potential hazards to current and future residents should a major seismic event occur, as identified by the USGS.

Please accept this request as voted on by the community members of the Hunters Point Shipyard RAB on December 9th, 2004.

Vote Ayes Nays Abstentions

References:

[1] Tetra Tech EMI, 2004, Parcel E Nonstandard Data Gaps Investigation Final Landfill Liquefaction Potential, Hunters Point Shipyard, San Francisco, California, August 13.

[2] Michael, M.J., Ross, S.L., Simpson, R.W., Zoback, Mary-Lou, Schwartz, D.P., Blanpied, M.L., and Working Group 2002, 2003, Understanding earthquake hazards in the San Francisco Bay Region – Is a powerful quake likely to strike in the next 30 years? U.S. Geological Fact Sheet 039-03, 4 p. (<http://geopubs.wr.usgs.gov/fact-sheet/fs039-03/fs039-03.pdf>)

[3] http://gfw.censrv.ca.gov/shmp/download/pdf/ozn_hunp.pdf

[4] http://geode.usgs.gov/geode_frame.htm San Francisco Bay Area map

[5] Knudsen, K.L., Sowers, J.M., Witter, R.C., Wentworth, C.M., and Helley, E.J., et.al., Preliminary Maps of Quaternary Deposits and Liquefaction Susceptibility, Nine-County San Francisco Bay Region, California: A Digital Database, Liquefaction Susceptibility Map. U.S. Geological Survey Open-File Report 00-444. (http://geopubs.wr.usgs.gov/open-file/of00-444/of00-444_8b.pdf)

Addendum

The purpose of the Restoration Advisory Board (RAB) is to review, comment, and make recommendations to the Base Realignment and Closure (BRAC) Cleanup Team (BCT) on matters pertaining to the restoration and environmental cleanup of Hunters Point Naval Shipyard. In addition, the RAB should act as a forum for information exchange between the installation, affected community, Department of Defense (DOD), reuse groups, and regulatory agencies such as the SFRA.

Mayor Gavin Newsom, CCSF took what is clearly discretionary action by approving (*i.e.*, entering into) the CA with the U.S. Navy. The CA sets a specific timetable for giving CCSF a portion of the Hunters Point Shipyard for residential development (herein referred to as Parcel A), as well as giving commercial development rights to Lennar/BVHP, a private, non-governmental organization.

On November 7, 2000, CCSF voters passed, with 87% approval, Proposition P calling upon the US Navy to remediate the Hunters Point Naval Shipyard to the highest levels practical to assure the flexible reuse of the property. The Navy is required under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. § 9601 *et seq.*, and its implementing regulations, 40 CFR Parts 300-311, to take community acceptance into account in its cleanup decisions. On July 30, 2001, CCSF's Board of Supervisors (the Board) passed unanimously a resolution implementing the will of the voters as expressed by Proposition P. The Board's vote confirmed as the policy of CCSF that the Navy should clean the Hunters Point Naval Shipyard of toxic and hazardous pollution to the highest practical level. Since the voters empowered the Board to enforce Proposition P, and the Board then proceeded to do so,

There are also legal mandates for a subsequent or supplemental environmental analysis to augment the study done in 1999, which provides no complete or adequate environmental analysis of the impacts associated with the development envisioned and allowed by the CA and DDA. The impacts that are being ignored pose imminent threats of grave if not fatal harm to human life and safety, as well as the environment.

The impacts and their potentially grave harm must be analyzed by considering the pertinent documentation from the Navy and the Hunters Point and San Francisco Fire Departments, particularly in regard to the residential development being planned for Parcel A under the CA and DDA. It is common knowledge that this area has been the site of a series of fires during the summer months of the years 2003, 2002, 2001 and 2000. The ignition of these fires was fueled by flammable, explosive chemicals whose presence is documented in the Parcel A Record of Decision and include petroleum products, pesticides, volatile organic compounds in the air and soil, and gaseous emissions from the partially capped industrial landfill on Parcel E, which is immediately adjacent to Parcel A.

The US Navy and Tetra Tech Em, Inc., have provided documentation that five separate fires occurred in upland Parcel A between July and August of 2003 at the exact site where the Lennar/BVHP developers propose to begin the demolition and deconstruction of existing Parcel A buildings in time for CCSF/SFRA proposed construction of 1600 homes this summer.

As a further example of matters that must be fully investigated and analyzed to adequately protect human health and safety as well as the environment, Hunters Point Fire District Run report #45, dated September 11, 2001, documents that at 3:15 p.m. that day both SFFD and HPFD were dispatched to Crisp Avenue near Parcel A where they encountered "fire moving at a rapid speed with flames 15 to 25 feet high". The fire was observed moving towards the parking lot area of Building 815 in the Parcel A region of the Shipyard. According to the email alert sent by the Navy under the Community Notification Plan "family dwellings above the fire were threatened. After deployment of several hundred feet of hose and equipment, the fire was extinguished at 5pm". HPFD was reactivated to the Building 815 site to extinguish hot spots over the next two days as verified in fire run reports #56 and #47. A total of seven fires were responded to in September of 2001. All occurred in the Parcel A and B regions of the Shipyard.

Further CEQA/NEPA analysis is legally required for the proposed development of Parcel A given the additional facts that:

1. Parcel A has undergone boundary changes as documented in the Parcel A FOST Revision 2 dated August 26, 2002, to include sub parcels N-13a and N-18A. Additionally, in the Draft final FOST dated March 19, 2004, Parcel A boundaries were revised to exclude radiation-impacted buildings 813 and 819 situated along Spear Avenue. A NEPA compliant EPA risk assessment protecting human health is, therefore, a requirement (morally as well as legally).
2. On August 16, 2000 the Parcel E landfill, adjacent to Parcel A, was the site of a fire that burned for 6 hours. Several areas estimated to be less than five acres continued to burn for several weeks according to the ATSDR Consultation Summary. The Parcel E landfill has been classified by ATSDR as a Completed Exposure Pathway, meaning that in assessment of risk to nearby residents, it could be shown that "exposure to contaminants could have occurred in the past, is occurring or will occur in the future. Further the Navy expects a five foot lateral movement in a major earthquake, which could mean further ignition and toxic releases into the community.
3. An August 2002 landfill gas survey detected flammable, explosive methane gas emanating from the Parcel E landfill within 100 feet of Parcel A in concentrations exceeding 80% in air. This represents a violation of state law mandating that methane gas concentrations be less than 5% in air. A recent decision by the California Integrated Waste Management Board forbids construction within 1000 feet of the detection of methane gas. The Navy publicly acknowledges in the Draft Final FOST that it was required to use active extraction to remove subsurface methane gas from beneath laboratories and kennels operated by the University of California at San Francisco at the boundary of Parcel E and A in January of 2004.
4. The Draft Final Historical Radiological Assessment, released on February 25, 2004, documents Parcel A to be the site of five MARSSIM Class 1 Radiation impacted/contaminated buildings including buildings 816, 821, 813, 819 and FUDs site 815. Many of these buildings do not meet earthquake safety standards or the new MARSSIM Radiation/impacted standard, including one with two 15,000 gallon decontamination tanks.(Building 815) and is a known USGS liquefaction identified

hazard area. Parcel A covers approximately 75 acres and is the site of 61 buildings and 43 foundations according to the 1995-ROD. The Navy conducted investigations on nine Parcel A sites only. Additionally, radiation impacted buildings on Parcel A have been cleared for unrestricted use by an outdated cleanup standard that is well below the EPA recommended level and is currently being challenged in California Superior court.

5. Parcel A buildings and foundations have been determined to contain lead and asbestos. Deconstruction of these structures during development may lead to the release of these toxins into surrounding air and soil, thus producing pathways for exposure for future Parcel A residents.
6. Proposition P, which contains a Declaration of Policy, passed by a landslide 87% of the CCSF electorate after the November 7, 2000 municipal election. Proposition P states, in pertinent part: "[T]he National Contingency Plan, the regulation governing cleanup of a toxic site, established community acceptance as one of its nine principal criteria. The Bayview Hunters Point community wants HPS cleaned to a level enabling the unrestricted use of the property- the highest standard for cleanup established by the U.S. environmental Protection Agency." Proposition P was ratified by the CCSF Board of Supervisors on July 30, 2001, and signed by the Mayor on August 10, 2001.
7. The Memorandum of Agreement between the City of San Francisco and the Navy, signed on November 2, 2000, stipulates that cleanup of Parcel A and the remaining five slupyard land parcels adhere to strict health based preliminary remediation goals to provide total estimates of carcinogenic and non carcinogenic health hazards under the residential scenario. The Parcel A Human Health Risk Assessment Report (HHRA) assesses the probability and magnitude of potential harm to human health from exposure to threaten and actual releases of hazardous substances on Parcel A sites. The HHRA and supporting documents do not support the Navy's contention that the nine sites explored on Parcel A pose no threat to human health or the environment. The Navy reports hazard indices up to 36 times greater than health

protective standards for children exposed to soil on Parcel A under a residential scenario; soil lead contamination above California preliminary remediation goals; hazard indices 100 times greater than health protective standards for vegetable consumption at numerous Parcel A sites; and an exceedingly high cancer risk of 2×10^{-3} at the major IR site investigated. Studies conducted by the San Francisco Department of Public Health in 1995 and 1997 identify a high incidence and mortality from cancer among BVHP residents. The scientific documentation by the Navy of hazard indices and cancer risks above health protective standards on Parcel A is in violation of multiple federal, state and local laws and regulations in addition to violating the terms of the original Conveyance Agreement signed by Mayor Willie Brown on November 2, 2000. These laws and regulations include the CERCLA act of 1980 as amended by the SARA act of 1986, NEPA, CEQA and Proposition P.

Executive Order 12898, 59 Fed. Reg. 7629 (1994), Section 1-101, requires that each federal agency, including the US Navy and US EPA, make achieving "Environmental Justice" part of its mission by identifying and addressing any disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations. The BVHP neighborhood is a predominately African-American community of color that is disproportionately impacted by existing environmental hazards and has a disproportionately high number of families with household incomes below the poverty level compared to the CCSF as a whole.

Title VI of the Civil Rights Act of 1964 requires CCSF, and the SFRA, in coordination with the California Environmental Protection Agency, Department of Toxic Substances Control, to identify and address any disproportionately high human health, socioeconomic, or environmental impacts of their programs, policies, and actions on minority or low-income populations. CEQA is primarily a public disclosure statutory scheme allowing the affected community to be informed and members of the public to voice their opinion, and to have input, about projects that may affect their environment. CEQA requires a review of the environmental impacts of overall activities ("the whole of an action" -- 14 Cal. Code Regs. § 15378(a)) defined as "projects." (Pub. Res. Code § 21065.) This strong, broad right of public participation under CEQA has a political component (*i.e.*, CEQA allows the

compilation of a record concerning the approval of development projects that can be used by the public to vote environmentally insensitive decision makers out of office come election day), the violation or deprivation of which has constitutional ramifications on an affected community as well as the public at large.

In mandating separate Disposition Development Agreements and "conveyance agreements" for the development of the shipyard (Parcels A- E), SFRA as the lead agency under CEQA, is "piecemealing" the overall activity. CEQA strongly forbids this kind of "chopping up [of] a proposed project into bite-size pieces which, individually considered, might be found to have no significance on the environment." (*Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 716, citing *Orinda Assn. v. Board of Supervisors* (1986) 182 Cal.App.3d 1145, 1171, 1172; see also *Bozung v. LAFCO* (1975) 13 Cal.3d at 283-284; *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 309.)

CEQA provides that a proposed project may have a significant effect on the environment when the possible effects on the environment are individually limited but "cumulatively considerable." (Pub. Res. Code § 21083(b); 13 Cal. Code Regs. § 15065. "'Cumulatively considerable' means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects." (14 Cal. Code Regs. § 15065.) In addition to analyzing the direct impacts of a project, the CEQA Lead Agency must also consider a project's potentially significant cumulative impacts.

Recent statutory law has invigorated CEQA's role in ensuring "**the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies**" (i.e., **environmental justice**).¹³¹ (Emphasis added; see SB 115, Solis; Stats. 99, ch. 690, Gov. Code § 65040.12 and Pub. Res. Code §§ 72000-720001.)

In conjunction with the regulatory provisions of the federal Clean Air Act and Division 26 of the Health and Safety Code,¹³¹ CEQA provides an ideal mechanism for ensuring that Environmental Justice will be addressed in all activities and projects that may have a significant effect on the environment.

CEQA requires that environmental documents (*i.e.*, an environmental impact report (EIR) or a negative declaration) be prepared whenever a public agency proposes to undertake a discretionary activity (which is defined extremely broadly as the "whole of an action" being engaged in) that may have a significant effect on the environment. (See Pub. Res. Code §§ 21002.1, 21061, 21064, and 21080.1; *see also* 14 Cal. Code Regs. §15002.)

In enacting CEQA, the Legislature expressly declared a number of important policies with which activities and documentation must be consistent, and which must be complied with and enforced, including:

"It is the intent of the Legislature that all agencies of the state government which regulate activities of private individuals, corporations, and public agencies which are found to affect the quality of the environment, *shall regulate such activities so that major consideration is given to preventing environmental damage, while providing a decent home and satisfying living environment for every Californian.*" (Pub. Res. Code § 21000(g) (emphasis added).)

It is California policy to "[d]evelop and maintain a high-quality environment now and in the future, and *take all action necessary to protect, rehabilitate, and enhance the environmental quality of the state.*" (Pub. Res. Code § 21001(a) (emphasis added).)

It is the policy of this state to require that public agencies "[t]ake all action necessary to *provide the people of this state with clean air and water, enjoyment of aesthetic, natural, scenic, and historic environmental qualities, and freedom from excessive noise.*" (Pub. Res. Code § 21001(b) (emphasis added).)

State policy calls for ensuring "that the long-term protection of the environment, consistent with *the provision of a decent home and suitable living environment for every Californian shall be the guiding criterion in public decisions.*" (Pub. Res. Code § 21001(d) (emphasis added).)

State policy requires "governmental agencies at all levels to *develop standards and procedures necessary to protect environmental quality*" (Pub. Res. Code § 21001(f) (emphasis added).)

California policy requires "governmental agencies at all levels to *consider qualitative factors as well as economic and technical factors and long-term benefits and costs ...*" (Pub. Res. Code § 21001(g) (emphasis added).)

"The interrelationship of policies and practices in the management of natural resources and waste disposal requires *systematic and concerted efforts by public*

and private interests to enhance environmental quality and to control environmental pollution." (Pub. Res. Code § 21000(f).)

"Every citizen has a responsibility to contribute to the preservation and enhancement of the environment." (Pub. Res. Code § 21000(e).)

The recent enactment of Public Resources Code sections 71110 through 71115, and Government Code section 65040.12, in conjunction with other statutory and regulatory requirements, such as the Bay Area Air Quality Management District State Implementation Plan, and EPA regulations, require the SFRA, as well as other agencies, to infuse **Environmental Justice** into every aspect of decision-making. This panoply of statutory authority supplements the general authority to "do such acts as may be necessary for the proper execution of the powers and duties granted to, and imposed upon [a public agency] ..." (Health & Saf. Code § 39600.) Further, the rules, regulations, and standards that the SFRA and other agencies adopt must be "consistent with the state goal of providing a decent home and suitable living environment for every Californian"¹²¹ (*Id.* § 39601(e).)

All associated activities constituting the "whole of an action" being carried out by the public agencies involved capable of having an adverse environmental impact (14 Cal. Code Regs. § 15378(a); *see also* Pub. Res. Code § 21065), must be subjected to environmental review pursuant to CEQA to ensure that all the project's adverse, potentially significant impacts on the Bayview Hunters Point community, as well as the entire region in which the project is located, are fully and fairly investigated, identified, analyzed, evaluated and, perhaps most importantly of all, **mitigated** – while also ensuring that project alternatives capable of avoiding or reducing the impacts are considered and, if feasible, adopted.

¹²¹ 42 U.S.C. § 7401 *et seq.* (Public Law 88-206, 77 Stat. 392, December 17, 1963, as last amended by the Clean Air Act Amendments of 1990, P. L. 101-549, November 15, 1990); Health & Saf. Code § section 39000 *et seq.*

¹²² This overlapping of statutory goals and requirements (*see* Pub. Res. Code § 21000(g), quoted above) is typical among statutory schemes aimed at protecting the public health.