

APPENDIX F: HAZARDS AND HAZARDOUS MATERIALS

REVIEW OF PUBLIC COMMENTS REGARDING HAZARDOUS WASTE

PEER REVIEW OF SITE MITIGATION PLAN—CENTRAL PLANT IMPROVEMENT PROJECT

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29 July 2004
JPR04-193

LSA Associates
1998 Santa Barbara Street, Suite 120
San Luis Obispo, CA 93401

Attention: Ms. Jill O'Connor, Santa Barbara Cottage Hospital EIR Project Manager

**SUBJECT: SANTA BARBARA COTTAGE HOSPITAL EIR – REVIEW OF
PUBLIC COMMENTS**

Dear Ms. O'Connor:

JPR Technical Services, Inc. (JPR) has conducted a review of comments and associated attached literature received by the City of Santa Barbara from individuals and organizations in conjunction with LSA's preparation of the Santa Barbara Cottage Hospital (SBCH) Draft Administrative EIR. The comments provided to JPR were apparently received by the City both during and after the public comment period.

It is important to note that the review conducted by JPR was not a "peer review" in that a technical analysis of the submitted comments and accompanying literature was not performed. Rather, a review was conducted to determine whether or not, based on the public comment submitted, additional issues should be addressed in the EIR in accordance with CEQA and the City's "Environmental Impact Evaluation Guidelines." To accomplish this task, JPR conducted the following: review of the public comments and literature received; review of select applicable on-line information published by the World Health Organization (WHO) and Centers for Disease Control (CDC); conduct of a reconnaissance of the existing SBCH (Site) buildings and facilities; review of selected SBCH permits, plans, policies, and procedures related to hazardous and medical waste management and waste water discharge; and, interviews with hospital and local regulatory agency personnel and a senior-level professional in the field of microbiology, as appropriate.

DISCUSSION

Individuals and organizations in the public have raised concerns regarding the potential risk to the environment and community health from sewage generated and discharged by SBCH. These concerns are summarized below:

- The discharge by the hospital of untreated, potentially pathogen-laden effluent (sewage) into the City's sewer lines;
- Sewer main leakage in and around the hospital and the resulting potential exfiltration of untreated hospital sewage into surrounding areas; and,
- The adequacy of the local sewer plant treatment process to treat sewage that may contain, for example, multi-drug resistant pathogens and chemical or biological waste prior to its discharge to the marine environment.

The term "pathogen" as used herein is intended to refer to disease-causing organisms such as bacteria and viruses.

The Discharge By The Hospital Of Untreated, Potentially Pathogen-Laden Effluent (Sewage) Into The City's Sewer Lines

Public comment received emphasizes the idea that "Cottage Hospital is a major foci of resistant pathogens and is thus a major contributor of these pathogens to the sewer works." Specific reference as to the source or validity of this data was not noted in the comments received. The public comment also states that "it should also be noted that the issue of sewage is a community issue." In a telephone interview, Dr. Charles Gerba, Ph.D., author and Professor of Environmental Microbiology with the University of Arizona, agreed that the issue of sewage is indeed one of the community at large rather than any individual contributor being a "major foci," and indicated that there is nothing unusual about a hospital as compared with the community with regard to the discharge of pathogens to the sewer or the disposal of unused medicines through the sewer system (1). There are approximately 24,000 total users that ultimately discharge to the local sewer system and treatment plant, of which 84% are residential users, and less than 1% are industrial (2). Given the significantly larger population outside of a hospital that may be infected and/or that is taking antibiotics or disposing of medications via the sewer, it would appear that the collective contribution of pathogen-containing and/or drug-resistant pathogen-laden discharge of sewage from the community to the sewer system is much greater than that contributed by any single source, in particular a highly regulated source such as SBCH.

A fact sheet on the Division of Healthcare Quality Promotion (DHQP) section of the CDC website further illustrates this point as follows: "There is no epidemiologic evidence to suggest that most hospital waste is any more infective than residential waste. Moreover, there is no epidemiologic evidence that current hospital waste disposal practices have caused disease in the community. Therefore, identifying wastes for which special precautions are necessary is largely a matter of judgment about the relative risk of

disease transmission. Hospital wastes for which special precautions appear prudent are microbiology laboratory waste, pathology waste, bulk blood or blood products, and sharp items such as used needles or scalpel blades. In general, these items should either be incinerated or decontaminated prior to disposal in a sanitary landfill. Bulk blood, suctioned fluids, excretions and secretions may be carefully poured down a drain connected to a sanitary sewer. Sanitary sewers may also be used to dispose of other potentially infectious wastes that can be ground and flushed into the sewer (3).”

SBCH is part of the regulated community that is mandated to identify wastes for which special precautions are necessary. Based on documents reviewed by JPR and interviews with selected hospital and regulatory agency staff, SBCH has developed and implemented programs, policies and procedures to manage such wastes including but not necessarily limited to hazardous, medical and solid wastes. SBCH maintains high standards for attaining and maintaining compliance with applicable laws, standards and regulations related to the prudent management of hazardous and medical wastes, waste disposal and waste water discharge to the sewer, a level of compliance which contributes to ensuring the absence of significant quantities of toxic chemicals, pharmaceuticals, antibiotics, etc. in the discharged sewage. SBCH discharge to the sewer is also regulated under a local Industrial Waste Water Discharge Permit from the Public Works Department of the City of Santa Barbara to control the level of conventional pollutants in its discharge to the City’s sewer. In addition, the SBCH medical staff establishes rigorous criteria and practices as set forth by CDC and the Infectious Disease Society of America (IDSA) designed to optimize the treatment of pathogens, minimize the risk of forming resistant strains of such pathogens, and curtail the spread of infection. Further, infection control policies and procedures currently implemented by SBCH are designed to identify, reduce, prevent and control the risks of acquiring and transmitting infections among patients, personnel, medical staff, contract service workers, volunteers and visitors. A high degree of compliance together with the optimal use of antimicrobial medications and control of infection throughout the hospital can significantly reduce the risk of uncontrolled pathogen discharge to the sewer. However, the community at large is generally not held to nor does it comply with such standards.

It is also noted that the SBCH project is expected to comprise a facility that will be licensed for fewer beds than the present facility, resulting in a reduced capacity for in-patient treatment. As indicated in the draft “Public Services and Utilities” section of the draft EIR, Penfield and Smith state that sewage generation for the proposed project would decrease, based on the estimate that water usage would decrease compared to existing use (4). Were there an adverse impact from the current discharge of sewage from the hospital to the City’s sewer system, it would be expected that such impact would be reduced, given the anticipated reduction in the generation of sewage.

Sewer Main Leakage In And Around The Hospital And The Resulting Potential Exfiltration Of Untreated Hospital Sewage Into Surrounding Areas

Public comment received and reviewed by JPR raises a concern that there is a history of failure of sewer mains and man-hole covers in the City of Santa Barbara, the failure of which has resulted in the release of raw sewage to the storm water and/or surface water runoff system that has contributed to the pathogen load in creeks, lagoons, and exfiltration to groundwater. This situation, according to public comment, has also resulted in adverse impact to the receiving marine environment. The matter of City-wide sewer line condition and its potential impact on receiving waters are considered to be outside the scope of the SBCH project for purposes of preparing the EIR. However, information pertaining specifically to the sewage collection system serving the SBCH is discussed below.

A document related to the sewer collection system around SBCH that was prepared by City staff was reviewed by JPR and is summarized as follows (5). The document indicates that although exfiltration may occur, this does not necessarily translate into groundwater contamination since exfiltration from a sewer pipe would subject the waste to an environment similar to that to which septic systems discharge. However, various factors related to flow through the sewer pipe would more likely result in the waste water flowing down rather than out of the pipe, and that research has shown that biofilms develop that prevent the rapid migration of wastewater through cracks or joints in sewer pipes. Exfiltration would not be expected to occur in sewer pipes that are below the groundwater table, since the pressure gradient would prohibit it.

The document also provides information regarding "Basin 14," the sewage collection system in the area surrounding the SBCH. In 2003, the City retained a consultant to conduct a study to evaluate the potential for rainwater and groundwater to enter the City's sewer system through infiltration or inflow (I&I). While such a study does not *directly* measure sewer line condition, it can identify sewers in poor condition. Basin 14 was not identified as one which required further evaluation. In addition to this study, sewer lines in the area of Cottage Hospital have been recently inspected using a closed circuit television camera within the past 5 years, and there were no areas identified as requiring repair. It was noted that the collection system in the area surrounding Cottage Hospital is routinely cleaned twice per year.

Public comment also notes that "Santa Barbara has one of the higher numbers of annual beach closures recorded along the West Coast" and raises the concern that leaking sewer lines may have contributed to the beach closures. Public comment further raises concerns that if SBCH is discharging untreated sewage to leaking sewer mains, there is the "theoretical issue of escaping pathogens and other hospital-derived materials which may intersect fluid pathways leading to the creeks or the marine resource" and therefore, consideration should be given to the installation by SBCH of some type of on-site pre-treatment of its sewage discharge. As the public comments indicate, this issue is, at the present time, no more than a "theoretical issue" for which the City Public Works

Department has responded that there is no supporting evidence. It should also be noted that no examples of hospitals in the United States that separately pre-treat sewage were identified from the American Society of Healthcare Engineers (ASHE) (6), nor is such pre-treatment of waste water in the hospital setting required by current applicable regulatory guidelines (7). Given that there is no basis upon which to establish a requirement for SBCH to pre-treat its sewage prior to discharge, to do so would be considered outside the parameters of the regulatory responsibility of the hospital. As previously referenced, the sewer collection system serving SBCH has been evaluated to be intact. The issue of adverse impact to the marine environment from polluted surface water runoff can be considered in the same manner as the issue of discharge of pathogen-laden sewage in that both appear to be more an issue of the community at large rather than that of any individual contributor. Studies have shown that the coastal drainage or watershed systems within a community that ultimately discharge to the ocean can be major contributors of pollution to the marine environment due to the numerous sources and types of pollutants within the drainage system including but not limited to pathogens. In addition to infrequent sanitary sewer overflows, there are many other ongoing sources of pollution including illegal disposal to the storm drain system, high densities of people and animals and high percentages of impervious areas in urban watersheds, all of which together can contribute to the discharge of high pathogen concentrations to the receiving ocean waters.

Surface runoff from the SBCH project Site drains to the City's storm drain system, which in turn discharges into Mission Creek. Mission Creek is currently listed by the EPA under the Clean Water Act as impaired for pathogens and unknown toxicity and is currently targeted by the Central Coast Regional Water Quality Control Board (RWQCB) for restoration. The upper portion of the Mission Creek watershed near its source in the Santa Ynez Mountains contains largely open space, but a majority of the Mission Creek Watershed flows through areas characterized by residential and commercial land use and the presence of homeless encampments, all of which pose significant continuous sources of pollution to the watershed and resultant adverse impact to the receiving marine environment (8). Confirmation of such sources of pollution was presented in a study titled "South Coast Watershed Characterization Study (9)." The study found that there was a distinct pattern of increasing bacterial concentrations from the top of the watershed to the mouth of the creek, as the creek traverses increasingly dense urban development toward the mouth. Municipal permits and the City's Storm Water Management Program require implementation of "best management practices (BMPs)" for new development/redevelopment projects to prevent significant impacts to water quality. With the implementation of the BMPs described in the Hydrology and Water Resources section of the EIR, potential water quality impacts anticipated with implementation of the SBCH project will be reduced to less than significant levels (8).

Adequacy Of The Local Sewer Plant Treatment Process To Treat Sewage That May Contain Multi-Drug Resistant Pathogens And Chemical Or Biological Waste Prior to Its Discharge To The Marine Environment

Individuals and organizations in the public have raised concerns regarding the potential risk to the environment and community health related to the capacity of the El Estero Wastewater Treatment Plant (El Estero) to adequately process sewage that may contain multi-resistant pathogens and/or chemical or biological waste such as that which may be discharged to the sewer system by facilities such as SBCH.

The City Public Works Department has indicated that there is no evidence to substantiate such statements and that El Estero has been designed to treat pathogens received from many sources throughout the City, including SBCH (2). Based on information received from the City Public Works Department, following is a brief description of the treatment process carried out at El Estero. The major function of wastewater treatment is to produce a high quality effluent that has minimal impact on the receiving waters. El Estero uses physical, chemical and biological processes to treat or clean approximately 8.5 million gallons of wastewater daily that is received primarily from households, and also businesses and industry within the community, representing an operational level of approximately 70% of its capacity. Raw wastewater entering El Estero moves through preliminary, primary and secondary treatment processes. *Preliminary treatment* is a three-stage process which involves the following: the control of production of hydrogen sulfide (detrimental to biological treatment processes and cause of corrosion in treatment facilities); the screening and grinding of large particles or debris to protect process equipment; and, the removal of inorganic or non-treatable solids or "grit." The next step in the treatment process is *primary treatment*, which involves the separation and removal of organic material, after which the accumulated solids are then transported to a Solids Handling Facility. The remaining product of primary treatment is a fluid made up of finely divided suspended solids, known as colloidal particles. The type of *secondary treatment* conducted at El Estero is "activated sludge," a process that utilizes microorganisms to remove the colloidal particles from the wastewater stream. Following the application of activated sludge, the organisms are separated from the fluid stream for reuse through further sedimentation, and the remaining portion of the solids are continuously removed to the Solids Handling Facility. The clarified wastewater (now 95% cleaner) then flows either to the El Estero Water Reclamation Facility for further treatment and reuse as recycled water for landscaping, or, it proceeds to a contact chamber where disinfection with chlorine takes place. The chlorinated water is then neutralized, and the fully neutralized, disinfected clarified wastewater flows through a land/ocean outfall which extends approximately 1.5 miles into the Santa Barbara Channel. At an ocean depth of 70 feet, the treated wastewater is dispersed over the last 720 feet of the outfall to ensure rapid mixing with the saline ocean water.

The organic solids removed from the wastewater are sent to the *solids handling* facility for further processing to thicken, digest and dewater these materials. Once the solids are thickened, they are sent through the anaerobic digestion process which stabilizes and

reduces the volume of the solids and kills pathogens. The final stages of the solids handling process incorporates the use of dewatering equipment to produce what are referred to as "biosolids," nutrient-rich organic materials that can be recycled and applied as fertilizer. Public comment refers to the biosolids produced by El Estero as "Class B" biosolids, and raises a concern that the application of this material to land could be "adding to Santa Barbara's high rate of beach closure" by becoming entrained in surface water flows. However, according to the City's Public Works Department personnel the solids generated by the treatment process are composted to Class A standards and must therefore meet a more stringent level of requirements as specified in EPA's biosolids rule (40 CFR Part 503). Class A biosolids are to have undergone treatment to the point where the concentration of pathogens is reduced to levels low enough that no additional restrictions or special handling precautions are required (40 CFR Part 503). Public Works Department personnel indicated that the final composted biosolid material produced at El Estero is a high quality compost containing levels of trace pollutants at or below levels below the regulatory threshold of concern and below commercially available fertilizers (7).

Public comment includes a statement regarding the issue of biosolids that states "what comes out of Cottage makes up a significant portion of this byproduct." Specific reference as to the source or validity of this data was not noted in the comments received. Another public comment also states that "Consequently, what exits from that plant [El Estero] is in reality an overall community problem." This statement would appear to be true, given that SBCH is only one of the approximate 24,000 users of the sewer system. It would appear that if a problem does exist, its cause and solution cannot be tied to any one discharger to the system, such as SBCH, but must be evaluated from the greater collective viewpoint of the community itself, and as such is beyond the scope both of this review, and of the EIR.

With regard to the collection and disposal of wastewater to a sewer works from health care activities, a 1999 WHO publication states the following: "In normal circumstances, the usual secondary bacteriological treatment of sewage, properly applied, complemented by anaerobic digestion of sludge, can be considered as sufficient. During outbreaks of enteric disease, however, or during critical periods effluent disinfection by chlorine dioxide or any other efficient process is recommended. If the final effluent is discharged into coastal waters close to shellfish habitats, disinfection of the effluent will be required throughout the year (10)." As previously referenced, El Estero employs the techniques recommended in this excerpt, including secondary bacteriological treatment, anaerobic digestion of sludge, and year-around disinfection using chlorine. In addition to these operational practices, El Estero is mandated to meet both federal and state monitoring and discharge requirements, activities which are locally overseen by the California State Water Quality Control Board - Central Coast Region (RWQCB). More stringent requirements with regard to pathogen content were imposed on El Estero by the State in 1999, and the treatment facility is mandated to comply with the strictest standards in the State for secondary treatment and deep water ocean discharge. El Estero has maintained compliance with those standards since that time and exceeds that standard on average by

a factor of 100X (7). Extensive water quality testing (over 4,000 tests annually) is conducted before, during and after treatment to confirm that the treated discharge does not affect marine environment (2).

Public comments also raised concerns about the introduction of pharmaceuticals to the sewer system and that antibiotics found in effluent from sewage treatment plants may cause increased resistance among natural bacterial populations, thereby resulting in the presence and discharge to the marine environment of multi-drug resistant bacteria (MDRB). The comments further suggest, as has been previously noted, that SBCH is a major source and contributor of such resistant pathogens to the sewer works, and should consider pretreatment of its waste streams prior to discharge to the sewer. A review of the literature submitted with the public comment along with WHO and CDC web-based literature appear to indicate that while antibiotic-resistant isolates of microorganisms can be found in various aquatic environments, the subject remains controversial and has only recently begun to be studied in detail owing, in part, to recent advances in investigative technologies. A 2003 WHO article regarding the issue of the presence and effects of drugs in sewage states the following: "As the full extent, magnitude, and ramifications of the presence of drugs in the aquatic environment are largely unknown, more research is required before a clear picture emerges of the true nature and importance of the problem. It would therefore be unwise to assert that these compounds are causing a significant environmental effect until conclusive evidence is available. To this end, the focus for the future should be on proper and sufficient science for establishing occurrence, exposure, susceptibility and effects, so that sound decisions can be made regarding human and environmental health (10)." The inclusion of such studies and/or research related to the presence and impact of MDRS in sewage discharge as recommended in the public comments received, would be considered outside the scope of and requirements for this EIR. The article further states the following: "The fact that any commercially produced chemical may find its way into the environment is not surprising in itself; the interesting point about pharmaceutical pollution is that it does not result primarily from manufacturing but rather from widespread and continual use, excretion, and improper disposal of both human and veterinary medicines." Again, this statement points to the need to evaluate pharmaceutical pollution and its relationship to the presence in sewage of MDRS within the context of the larger community as the source, rather than any one particular source of discharge to the sewer such as SBCH.

CONCLUSIONS

Based on the review conducted and information obtained by JPR, current regulatory guidelines, and the professional experience and judgment of JPR, the following has been concluded:

- Given the significantly larger population outside of a hospital that may be infected and/or that is taking antibiotics or disposing of medications via the sewer, the collective contribution of pathogen-containing and/or drug-resistant pathogen-laden discharge of sewage from the community to the sewer system would be much greater than that contributed by any single source, in particular a highly regulated source such as SBCH.
- SBCH maintains a high degree of compliance with applicable laws, standards and regulations for the prudent management of hazardous and medical wastes, waste disposal and waste water discharge to the sewer, and has established rigorous criteria and practices to optimize the use of antimicrobial medications and control of infection throughout the hospital. These measures contribute to ensuring the absence of significant quantities of toxic chemicals, pharmaceuticals, antibiotics, pathogens, etc. in the discharged sewage. However, *it should be noted that the community at large is generally not held to nor does it comply with such standards.*
- The “Public Services and Utilities” section of the draft administrative EIR states that sewage generation for the proposed project would decrease, based on the estimate that water usage would decrease compared to existing use. It is expected that potential existing impacts related to sewage discharge, if any, would be reduced, given the anticipated reduction in the generation of sewage.
- In a sewer line study conducted in 2003, the sewage collection system servicing SBCH was evaluated to be intact. In addition to this study, sewer lines in the area of Cottage Hospital have been recently inspected using a closed circuit television camera within the past 5 years, and no areas were identified as requiring repair. The matter of City-wide sewer line condition and its potential impact on receiving waters are considered to be outside the scope of the SBCH project for purposes of preparing the EIR.
- Pre-treatment of waste water in the hospital setting is not required by current applicable regulatory guidelines, and no examples of hospitals in the United States that separately pre-treat sewage were identified from the American Society of Healthcare Engineers (ASHE). Establishing a requirement for SBCH to pre-treat its sewage prior to discharge would be considered outside the parameters of the regulatory responsibility of the hospital.

- Studies have shown that the coastal drainage or watershed systems within a community that ultimately discharge to the ocean can be major contributors of pollution to the marine environment due to the numerous sources and types of pollutants within the drainage system including but not limited to pathogens. The collective contribution of multiple sources within a community contribute to the discharge of high pathogen concentrations to the receiving ocean waters, moreso than any one particular source of contribution to the watershed system, such as SBCH. In addition, with the implementation of the Best Management Practices described in the Hydrology and Water Resources section of the draft administrative EIR, potential water quality impacts anticipated with implementation of the SBCH project will be reduced to less than significant levels.
- El Estero Wastewater Treatment Plant has been designed to treat pathogens received from many sources throughout the City, including SBCH, and employs the wastewater treatment techniques for health care waste recommended by the World Health Organization including secondary bacteriological treatment, anaerobic digestion of sludge, and year-around disinfection using chlorine. The treatment facility is mandated to comply with the strictest standards in the State for secondary treatment and deep water ocean discharge, standards which have been maintained and exceeded since 1999 when they were first imposed. Extensive water quality testing is conducted before, during and after treatment to confirm that the treated discharge does not affect marine environment. It would appear that if a problem with the treatment process does exist, its cause and solution cannot be tied to any one discharger to the system, such as SBCH, but must be evaluated from the greater collective viewpoint of the community itself, and as such is beyond the scope both of this review, and of the EIR.
- The solids generated by El Estero's treatment process are composted to *Class A standards* and must therefore meet a more stringent level of requirements as specified by EPA. The final composted biosolid material produced at El Estero is a high quality compost containing levels of trace pollutants at or below the regulatory threshold of concern and at or below levels in commercially available fertilizers. These biosolids would therefore not be expected to impact surface water run-off to any greater degree than would such fertilizers that are similarly applied to the land.
- The subject of the presence of drug-resistant microorganisms in, and their impact on aquatic environments remains controversial and has only recently begun to be studied in detail. The presence of such microorganisms is assumed to be present in aquatic environments from widespread and continual use, excretion, and improper disposal of medicines; however, the full extent, magnitude, and ramifications of their presence in aquatic environments are largely unknown. Given these factors and the relationship of drug-resistant microorganisms to community-wide sources rather than any one contributor, the inclusion of such

studies and/or research related to the presence and impact of drug-resistant microorganisms in sewage discharge as discussed in the public comments received, would be considered outside the scope of and requirements for this EIR.

Based on the conclusions provided herein, the project would result in less than significant impacts. However, it is recommended that a third party with advanced expertise in the study of environmental microbiology be retained to conduct a technical analysis of the public comment related to the issues associated with potential drug-resistant discharges to the sewer from health care environments, and the impact of such discharges on the community's sewer treatment system.

Should you have any further questions, please do not hesitate to contact us in our Central Coast office at 805-595-2561.

Sincerely,

Lyne Hethrington, CHMM
Senior Project Scientist, JPR Technical Services, Inc.

REFERENCES

1. Gerba, Dr. Charles Peter, Professor, Environmental Microbiology, University of Arizona, 2004: telephone communication.
2. City of Santa Barbara, Public Works Department, Water Resources Division personnel: telephone communication; web-based information, 2004.
3. Centers for Disease Control (CDC), Division of Healthcare Quality Promotion (DHQP), *Issues in Healthcare Settings – Infectious Waste*: web-based fact sheet dated November 18, 2000 (last reviewed).
4. LSA Associates, Inc., *Administrative Draft EIR, Section __, Public Services and Utilities*: July 2004.
5. Bjork, R., Wastewater System Manager, City of Santa Barbara, Public Works Department, *Water Resources Division: Collection System Around Cottage Hospital*: unpublished email correspondence prepared for City of Santa Barbara planning personnel dated October 29, 2003.

6. City of Santa Barbara, Planning Division, *Notice of EIR Preparation/Notice of Environmental Scoping Hearing – Santa Barbara Cottage Hospital Modernization and Seismic Compliance Plan*: October 13, 2003.
7. Bjork, R., Wastewater System Manager, City of Santa Barbara, Public Works Department, Water Resources Division: personal and telephone communication, 2004.
8. LSA Associates, Inc., *Administrative Draft EIR, Section 4.7, Hydrology and Water Resources*: July 2004.
9. URS Greiner Woodward-Clyde, *South Coast Watershed Characterization Study, An Assessment of Water Quality Conditions in Four South Coast Creeks*: August 1999.
10. World Health Organization (WHO), *Safe Management of Wastes from Health Care Activities*, 1999.
11. World Health Organization (WHO), *Potential Impact of Pharmaceuticals on Environmental Health*: an article appearing in a 2003 edition of “Perspectives,” a bulletin of the WHO.

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29 July 2004

JPR04-193

LSA Associates
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Attention: Ms. Jill O'Connor, Santa Barbara Cottage Hospital EIR Project Manager

SUBJECT: COTTAGE HOSPITAL EIR – REVIEW OF THE DOCUMENT TITLED “SITE MITIGATION PLAN – SANTA BARBARA COTTAGE HOSPITAL – CENTRAL PLANT IMPROVEMENT PROJECT, SANTA BARBARA, CALIFORNIA”

Dear Ms. O'Connor:

JPR Technical Services, Inc. (JPR) has conducted a peer review of the above-referenced document in conjunction with LSA's preparation of the Santa Barbara Cottage Hospital (SBCH) EIR. The document ("SMP") dated June, 2003 was prepared by Fugro West, Inc. on behalf of SBCH for the following stated purposes:

- To notify the Santa Barbara County Fire Prevention Division (formerly Environmental Health Care Services) of the proposed construction project;
- To provide information regarding Site conditions associated with the previous USTs relative to construction; and,
- To provide protocols for monitoring and handling soil during earthwork.

This letter has been prepared by JPR to summarize the results of the peer review, as follows.

BACKGROUND

As part of the SBCH modernization and seismic compliance plan, the SBCH (Site) intends to construct a new Central Plant on the south corner of Bath and Junipero Streets in the city of Santa Barbara, California, the location of the original Central Plant. The project is to include a three-story concrete structure, the lower level of which will be

constructed as a one-story subterranean basement to approximately 27 feet below existing grade. This facility is intended to house mechanical equipment and maintenance operations in support of hospital operations; patient care of any kind will not be conducted in this facility.

According to the SMP one 8,000 gallon diesel underground storage tank (UST) and one 2,000 gallon waste oil tank were formerly located in the area of the old Central Plant, and the operation of these USTs impacted shallow soil with total petroleum hydrocarbons as diesel (TPH-d). In December of 1987, in cooperation with the Central Coast Regional Water Quality Control Board (RWQCB) and the Environmental Health Services Division of the County of Santa Barbara (EHSD), the USTs were removed along with an estimated 200 to 400 cubic yards of contaminated soil. Additional Site investigation and remediation activities were conducted and groundwater monitoring wells were installed between 1988 and 1989. According to hospital personnel, remaining TPH-impacted soil could not safely be removed due to its proximity to and under the building (Johnson, 2004). Therefore, as part of an approved Remedial Action Plan (RAP) for the Site, in 1990 a concrete cap and cut-off wall were installed at approximately 25 feet below ground surface (bgs) around the remaining contaminated soil to limit the infiltration and contact of surface water with the remaining contaminated soil, and to provide protection to the underlying groundwater aquifer. Periodic groundwater monitoring was conducted between 1989 and 1993, during which time TPH-d and other petroleum hydrocarbon compounds analyzed were not detected at or above action levels established by the County of Santa Barbara.

A Soil Contamination Notice for this portion of the SBCH property was approved and recorded by the County on April 26, 1991 and specified the following:

- “The property is known to contain soil contamination in excess of the County clean-up levels;
- Notice of these conditions shall remain with the land until verification of remediation is approved and signed off by the County; and,
- These conditions do not prevent the sale of the property; however, restriction may be placed on the use of the property and the construction of buildings on the property.”

The SMP indicates that it is likely that the Soil Contamination Notice will remain in effect after construction of the new Central Plant, since residual soil contamination will remain in-place below the depth of the planned excavation.

In a letter dated July 14, 1993 that was contained in the appendices of the SMP, the RWQCB concurred with a Site closure request from SBCH, and indicated that a closure letter would be forwarded when the groundwater monitoring wells on-Site had been properly abandoned and all equipment decommissioned. The EHSD confirmed the

completion of the investigation and remedial action for the Site in a letter dated March 13, 1995, (also included in the SMP appendices) indicating that no further action would be required, with two conditions:

- “Due to structural encumbrances, approximately 450 cubic yards of contaminated soil is left-in-place at the above-referenced site; and,
- If the present or proposed use of the site changes, it is the property owner’s responsibility to promptly notify this agency.”

JPR did not receive reports or documents to verify abandonment of the groundwater monitoring wells; however, given that most lead agencies will not approve closure unless wells have been abandoned and that a closure letter was issued by EHSD, JPR believes that the wells were likely abandoned.

ANTICIPATED POTENTIAL ENVIRONMENTAL IMPACTS AND ASSOCIATED MITIGATION MEASURES

The SMP identifies potential environmental concerns related to the presence of contaminated soil expected to be present at the project Site that could impact workers, the general public and the environment via the following routes of exposure: inhalation of contaminant vapors and dust from the subsurface impacted soil; the ingestion of impacted soil particles; dermal contact with contaminants during construction and soil handling activities; and, off-site deposition of impacted soils. The SMP therefore recommends that the Contractor implement a number of measures to mitigate potential impacts to the environment and reduce the likelihood of human exposure to impacted soil during construction and soil handling activities, including but not necessarily limited to the following:

- Notify the Santa Barbara County Fire Prevention Division of the proposed construction.
- Submit the SMP to the County’s Leaking Underground Fuel Tank (LUFT) Program for review and approval as part of the permitting process for the project.
- Obtain all other required permits to conduct the work, and provide all required notifications to perform all aspects of the work, including notification to the Air Quality Control District of the intent to excavate potentially contaminated soils.
- Install a shoring system in accordance with engineering and state and federal Occupational Health and Safety Administrative (OSHA) requirements.
- Prepare and implement a Site-specific Health and Safety Plan (HSP) in accordance with state and federal OSHA requirements and obtain approval by a Certified Industrial Hygienist (CIH). The HSP is intended to notify and protect workers during construction activities at the Site, and the SMP recommends that the HSP include provisions to conduct air monitoring at the Site to confirm safe working conditions for the construction workers and provisions for appropriate personal protective equipment (PPE). The SMP also specifies that the air monitoring

parameters include but not necessarily be limited to potential oxygen deficiency, TPH, volatile organic compounds (VOCs), and potentially explosive conditions, and that the Contractor's HSP designate the procedures and frequency of the air monitoring activities.

- Prepare and implement dust standard control practices to prevent the generation of dust during soil handling activities, and if the standards include increased watering for dust suppression, the Contractor will prevent the offsite runoff and comply with geotechnical requirements for moisture conditioning of the soil.
- Conduct off-site soil transport in accordance with the state and federal Department of Transportation (DOT) requirements.
- Minimize the tracking of impacted soil from the Site by cleaning truck wheels prior to departure and sweeping the exit area(s) as needed.
- Clean the surrounding streets to remove soil or contaminated materials that may have migrated from the Site during soil handling activities.
- Soil handling procedures will include the stockpiling for either onsite reuse or off-site disposal at a permitted landfill, and providing an area for soil handling and stockpiling that is protected from public access. SBCH is to be responsible for signing all required shipping documents, and will retain fully executed copies of such.
- The Contractor will implement storm water runoff control measures at the project Site to include but not necessarily be limited to the protection of soil stockpiles against storm water erosion and runoff, project site grading for internal drainage, and control of runoff to reduce sediment loading.
- The Contractor will provide for procedures to manage groundwater should it be encountered during the construction activities, including the appropriate permits and groundwater analysis for the selected method of management (e.g., discharge to the sanitary sewer or storm water collection system).
- The Contractor will develop contingency procedures to address unexpected conditions that may arise, including but not necessarily limited to encountering identifiable environmental conditions that may pose a potential risk to health, safety or the environment. Further, the Contractor will work in conjunction with the County agencies, Fugro, and SBCH to determine the need and scope of any sampling and analysis that may be warranted.
- The Contractor shall maintain a daily log of all construction activities to be provided to SBCH upon completion of the project. SBCH is to prepare a report documenting unanticipated environmental conditions and forward such reports to the County. Upon completion of the excavation and soil disposal activities, SBCH is to prepare a document certifying that the provisions of the SMP have been completed, and that certification is to be made by a person qualified to confirm implementation of the SMP.

ADDITIONAL RECOMMENDED MITIGATION MEASURES

In addition to the mitigation measures described in the SMP, JPR additionally recommend the implementation of the following:

- JPR assumes that the final SMP will be submitted to all appropriate agencies for review and final written approval; however, this is not clearly stated in the SMP. Written approval, including the receipt of permits, where applicable, should be obtained by SBCH prior to initiation of construction activities.
- The SMP indicates that the Site-specific HSP is to be approved by a CIH. JPR recommends that the CIH be a third party independent consultant with appropriate experience specific to this type of project.
- In addition to the general parameters identified in the SMP to be included in the HSP, JPR additionally recommends the inclusion of the following, at a minimum:
 - a summary of all potential risks to construction workers, maximum exposure limits for all site chemicals, and emergency procedures;
 - the identification of a Site HSP Officer for the project, that Officer's responsibilities, and routine and emergency contact information for that individual;
 - directives to include that: the HSP officer will be contacted immediately should worker exposure limits be exceeded, or if evidence of soil contamination is encountered during any of the construction activities; the Santa Barbara County Fire Department, Protection Services, Hazardous Materials Unit (CUPA) be notified if field evidence of soil contamination is encountered; and, that the HSP is required to be amended as needed if different Site conditions are encountered by the Site HSP Officer; and
 - the HSP should include technical field procedures and worker safety procedures to be implemented for sampling any observed impacted soil.
- A qualified individual should be designated as the on-Site monitor and point-of-contact (can also be the HSP officer), who should be present on a daily basis to perform monitoring and/or soil and air sampling during grading, trenching, cut or fill operations at the project Site, to ensure that surface soil conditions, conditions of exposed soils, and air conditions are safe and acceptable for on-Site workers, off-site public and the environment. This individual will also be responsible for monitoring compliance with all aspects of the HSP, including mitigation measures, and will also be responsible for preparing and submitting weekly activity reports and testing results to the SBCH and appropriate agencies. Where unanticipated events occur, a report for that incident should be prepared and submitted to all involved parties within a 24-hour period of the incident.

- The SMP does not clearly indicate whether or how contaminated soil will be segregated from non-impacted soil, and what procedures will be implemented to determine whether the soil can be reused on-Site or hauled off-site for disposal. These procedures should be clearly set forth, and should include technical field protocols for soil sampling, a decision matrix for determining when sampling and analysis should be conducted; and, an explanation of the chain-of-custody procedures to be implemented for submittal to a laboratory for analysis.
- There is no information in the SMP regarding how import soil will be determined to be “clean.” Procedures for confirming that import soil is clean should also be included in the SMP. For example, soil sampling protocol for import soils can be included, and/or the supplier of the import soil can provide a certificate to indicate that the soil is clean.

In the judgment of JPR, if the recommended mitigation measures described above are implemented as part of the SMP, the project will pose a less than significant impact.

Should you have any further questions, please do not hesitate to contact us in our Central Coast office at 805-595-2561.

Sincerely,

John Reames, R.G.
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