Statement of Basis

for the U.S. Environmental Protection Agency, Region 9's
Draft Class V Experimental Underground Injection Control Permit #CA5060001
to City of Los Angeles
Los Angeles County, California

Facility Information

Bureau of Sanitation
Department of Public Works
City of Los Angeles
1149 S. Broadway St.
Los Angeles, California 90015

Contact:
Omar Moghaddam
Division Manager
Regulatory Affairs Division
Los Angeles Department of Public Works
Bureau of Sanitation
12000 Vista del Mar
Playa del Rey, CA 90293

Regulatory Contact:

George Robin, Environmental Engineer
United States Environmental Protection Agency Region IX
Ground Water Office, WTR-9
75 Hawthorne Street
San Francisco, CA 94105
(415) 972-3532

I. Purpose of the Statement of Basis

Pursuant to the Underground Injection Control (UIC) regulations in Title 40 of the Code of Federal Regulations (CFR), §124.8, the purpose of this statement of basis is to briefly describe the principle facts and the considerations that went into preparing the draft permit. To meet these objectives, this statement of basis contains background information on the permit process, a description of the facility, a brief discussion of the permit conditions, and a description of the rationale for these permit conditions.

II. Permit Information

Application and Review

The U.S. Environmental Protection Agency, Region 9 (EPA) Water Division Director has authority to issue permits for underground injection activities under 40 CFR §144.31. The City of Los Angeles (L.A.) submitted a permit application to the EPA on June 15, 2001 to replace an earlier application by Southern California Gas Company, submitted on February 18, 2000. The L.A. application proposed to demonstrate an innovative experimental technology whereby L.A.'s Class A and Class B treated municipal biosolids would be blended with treatment plant wastewater (creating a "bioslurry") and injected into a sandstone formation approximately one mile below the surface of the ground. The sources of the biosolids are the Terminal Island Treatment Plant, the Hyperion Treatment Plant, the Carson Treatment Plant and the Orange County Treatment Plant.

On September 9, 2003, EPA wrote a letter to L.A. explaining that the permit application will be classified as Class V Experimental, a classification created by the agency to encourage technological innovation. The injection of municipal waste water would normally be classified as Class 1 Non-hazardous. However, because the City proposes to blend municipal biosolids with the waste water, the injection will not conform to Class I UIC regulations. Given that, and the experimental and innovative nature of the City's project, EPA determined that a Class V Experimental classification is appropriate.

The draft permit would allow L.A. a 5-year operation period to evaluate their main objectives. The main objectives include the potential for high temperature treatment (sterilization) of the biosolids; biodegradation - converting the biomass to methane and carbon dioxide; permanent sequestration of the majority of the carbon dioxide; and recovery of the methane that is generated and eventually collected within the sandstone for energy use in its surface facilities. Experimental techniques to enhance geophysical monitoring will also be employed and evaluated by L.A. in the course of this project.

In addition to the experimental effort that will be conducted by L.A., several universities and governmental agencies will also be conducting independent research from data and samples obtained and provided by the City.

Hydraulic Fracturing

In order to inject a bioslurry, it is necessary to use injection pressures that will allow hydraulically-created fractures within the vicinity of the injection well to provide pathways for the bioslurry to flow. The fracture pattern shall also function to permanently contain the solids portion of the bioslurry while allowing the liquid medium to permeate into the sandstone matrix, thereby systematically relieving pressure accumulation through dissipation.

Fracture injection is not a new technology. It has been employed in various purposeful manners for several decades. However, the Class I UIC regulations do not provide for injection at or above fracture pressure. Only Class II (oil and gas) wells are authorized for such injection, and

Federal permitting regulations do not contain specific criteria and standards for fracturing operations. In California, there are several permitted injection wells for long-term "slurry fracture" activities (all of them Class II wells). Class II "slurry fracture" projects have been ongoing for over a decade at the THUMS platform located offshore in Long Beach Harbor, and there are several newly implemented "slurry fracture" injection projects in the near vicinity of this proposed project.

EPA took these and other existing fracturing operations into account when developing this draft permit. In addition, despite the Class V Experimental classification, the contents and requirements of this draft permit are similarly stringent to those of a Class I Nonhazardous injection well permit with the exception of the experimental and research activities and those requirements relating to fracturing operations. These latter requirements include provisions which require L.A. to use state of the art technology in the areas of fracture implementation, modeling and monitoring.

Operational Information

L.A. is proposing to drill three wells at their Terminal Island Treatment Plant site. The Treatment plant is located within the County of Los Angeles in the city of San Pedro at 445 Ferry St. (zip code 90731), on the east side of Terminal Island, an artificial, industrially-zoned island, surrounded by the Los Angeles Main Channel, the Cerritos Channel, the Back Channel and San Pedro Bay. One well will be used for injection and the two other wells will be used for monitoring purposes.

The injection well will be used to inject the bioslurry for approximately eight hours on a daily basis. The slurry volume at maximum injection will consist of approximately 400 tons of biosolids mixed with sufficient water for injection into the Tar, Ranger and Terminal sandstone formations. Each sandstone interval within this larger group of sandstones will be separately authorized for injection as needed; however the lowermost sandstone is expected to serve as the injection zone for the duration of this 5-year demonstration project.

During the technical review process for the permit application, the EPA examined the area of review (AOR) within a one-mile radius surrounding the three proposed well locations. Based on this review, EPA identified three improperly plugged and abandoned wells (Superior Well B-1, Apex Hards-Warnock Well 1, and SP LA Harbor Well 301). These wells are located within the target sandstone approximately one mile away from the project area. To address this, EPA included operational limitations in the draft permit (e.g., injection pressure/volume limits) to prevent the reservoir pressure from increasing at the location of these three wells. Therefore, EPA determined that no corrective action is needed for wells located within the AOR.

The wells will be constructed, operated, tested, monitored and eventually plugged in accordance with standards found in the federal Underground Injection Control regulations for Class I nonhazardous injection wells. The experimental and fracture-related components of the project will also adhere to specific modeling and monitoring standards included in the draft permit.

During the actual drilling and approved logging and testing operations for the proposed wells, L.A. will submit appropriate information to EPA. EPA will not grant authorization to inject for this Class V Experimental permit until all relevant and actual field information for the newly drilled wells is reviewed. In the event the actual field information provided is inconsistent with this Draft Permit, a permit modification will be prepared and submitted for public comment.

Public Participation

The public will be given **45 days** to review and comment on the Class V Experimental UIC draft permit (40 CFR §124.10). During the public comment period, the draft permit and this statement of basis are available at the following locations:

Los Angeles Central Public Library
630 W. 5th Street
Los Angeles, CA 90071

Los Angeles Harbor Gateway – Harbor City Branch Library
1555 W. Sepulveda Blvd.
Los Angeles, CA 90501

Los Angeles San Pedro Regional Branch Library
931 S. Gaffey St.
San Pedro, CA 90731

Los Angeles Wilmington Branch Library
1300 N. Avalon Blvd.
Wilmington, CA 90744

Long Beach Public Library Main Location
101 Pacific Avenue
Long Beach, CA 90822

CA Division of Oil, Gas, and Geothermal Resources
Cypress District 1 Office
5816 Corporate Avenue, Ste. 200
Cypress, CA 90630

U.S. Environmental Protection Agency, Region 9
Region 9 Library or Ground Water Office, WTR-9
75 Hawthorne Street
San Francisco, CA 94105

The draft permit and statement of basis are also available at EPA Region 9's web page at:
http://www.epa.gov/region09/water/groundwater/uic-permits.html

The public comment period begins on June 4, 2006 and ends on July 19, 2006. All written comments on the draft permit can be sent, faxed, or e-mailed to George Robin using the contact information listed on the first page of this statement of basis. George Robin is also available by phone for any questions regarding the draft permit

During the public comment period, any interested person may submit written comments on the draft permit and may request a public hearing. All persons, including the applicant, who object to any condition of the draft permit or EPA's decision to prepare a draft permit must raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position by the close of the comment period (40 CFR §124.13).

Final Decision Making Process

After the close of the public comment period, EPA will review and consider all comments and issue a final permit decision. A response to comments will be sent to the applicant and each person who has submitted written comments or requested notice of the final permit decision. The response to comments and notification will contain: a response to all significant comments on the draft permit, the final decision, any permit conditions that are changed and the reasons for the changes, and procedures for appealing the decision. The final decision shall be to either issue or deny the permit. The final decision shall become effective thirty (30) days after the service of the notice of decision. Within thirty (30) days after the final permit decision has been issued, any person who filed comments on the draft permit or participated in a public hearing, or who takes issue with any changes in the draft permit, may petition the Environmental Appeals Board to review any condition of the permit decision. Commenters are referred to 40 CFR §124.19 for procedural requirements of the appeal process.