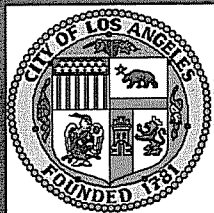


# BIOSOLIDS MANAGEMENT PROGRAM

GeoEnvironment Technologies, LLC.

For the

Terminal Island Renewable Energy Project



14-0116

1110-PI

(2)

Date: 2/5/14

Submitted in EPK Committee

Council File No: 14-0116

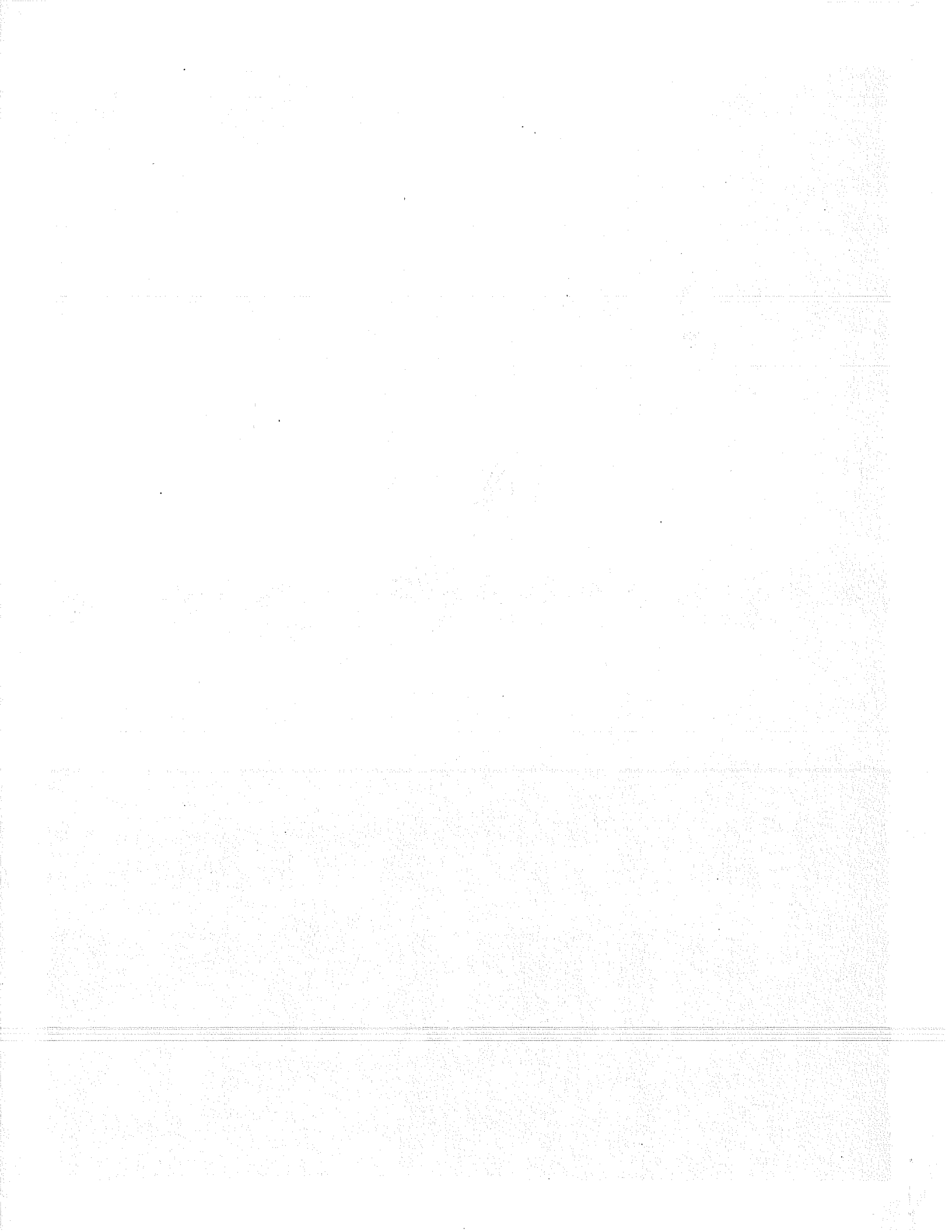
Item No.: 3

Deputy: Adam R. Lid



# Contract Renewal Updates

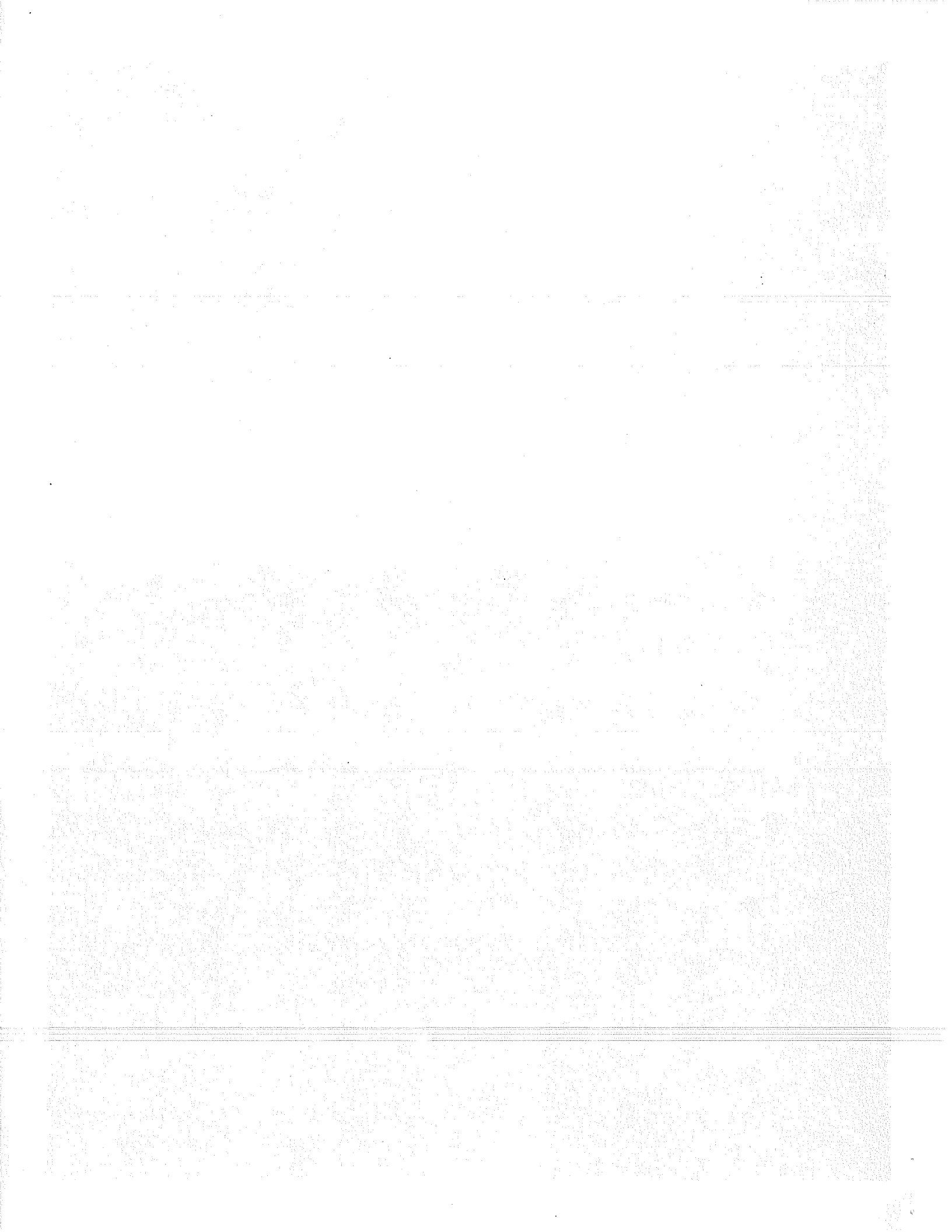
- The Board of Public Works approved the extension, effective February 1, 2014
- No changes in the Scope of Work and no increase in ceiling cost.

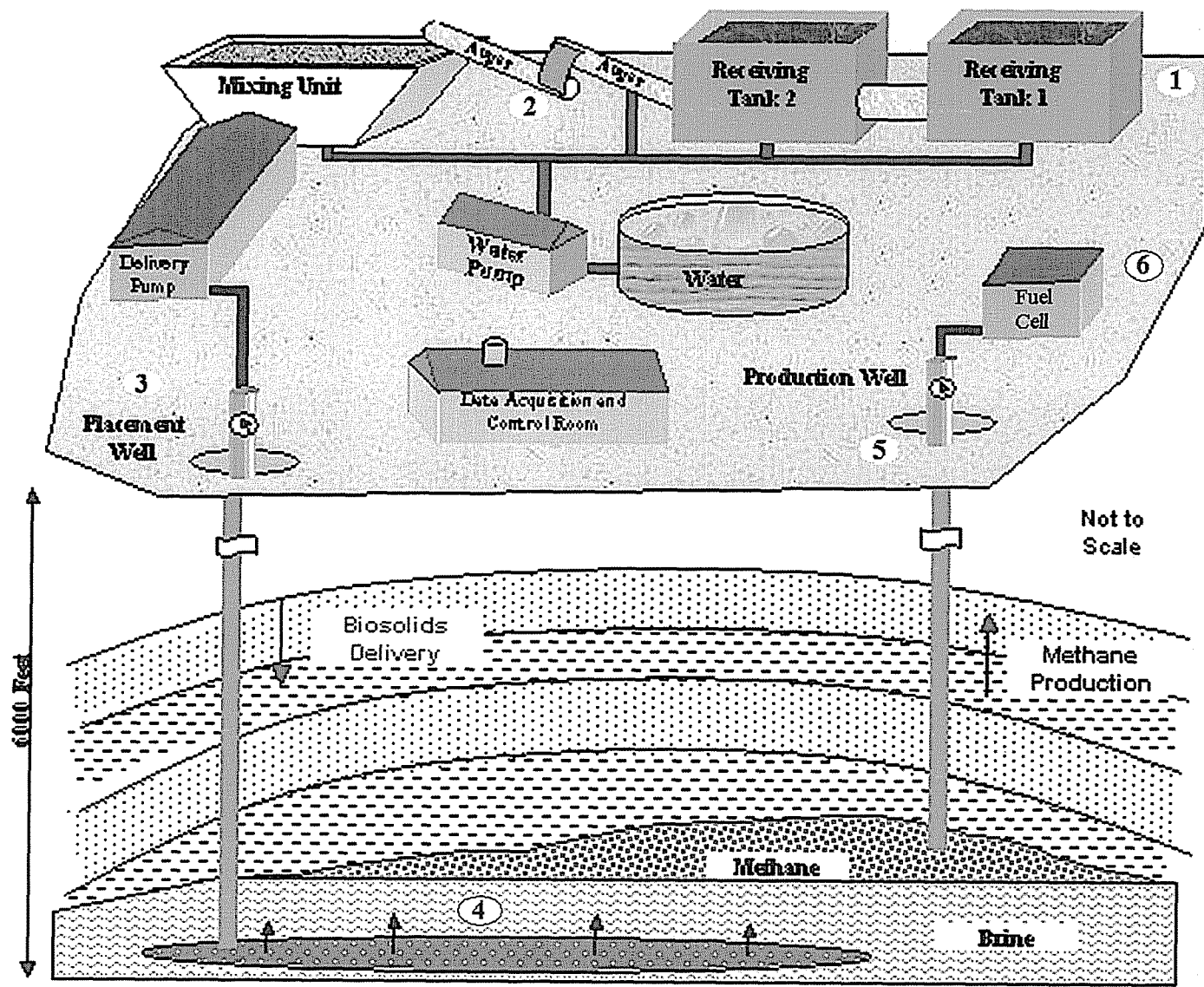




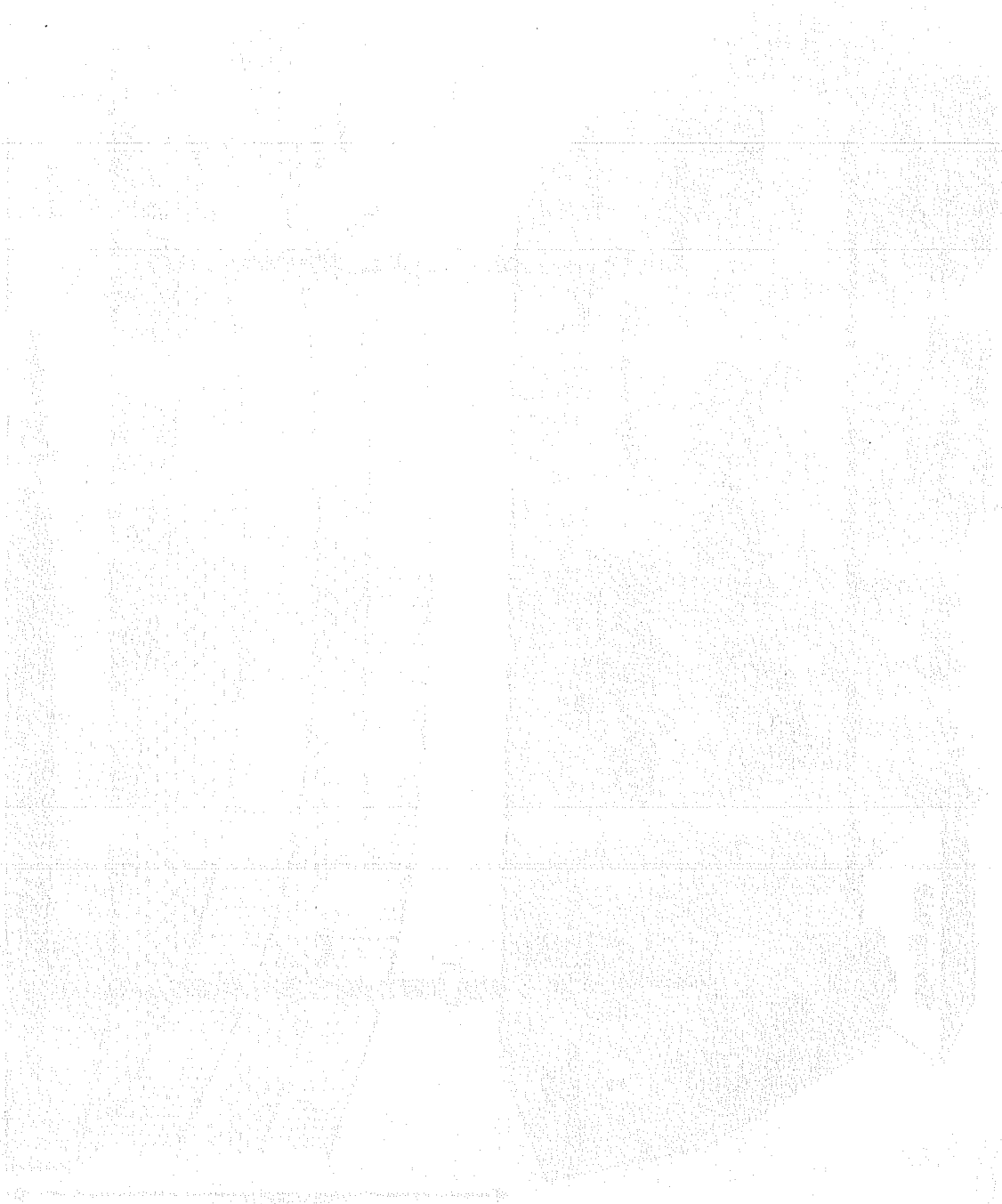
# TIRE - Process

- Biosolids are placed in sandstone more than a mile underground
- Utilize the earth's high temperatures and pressures to degrade the organic compounds and generate methane gas (usable fuel) and carbon dioxide (an undesirable greenhouse gas) that is sequestered

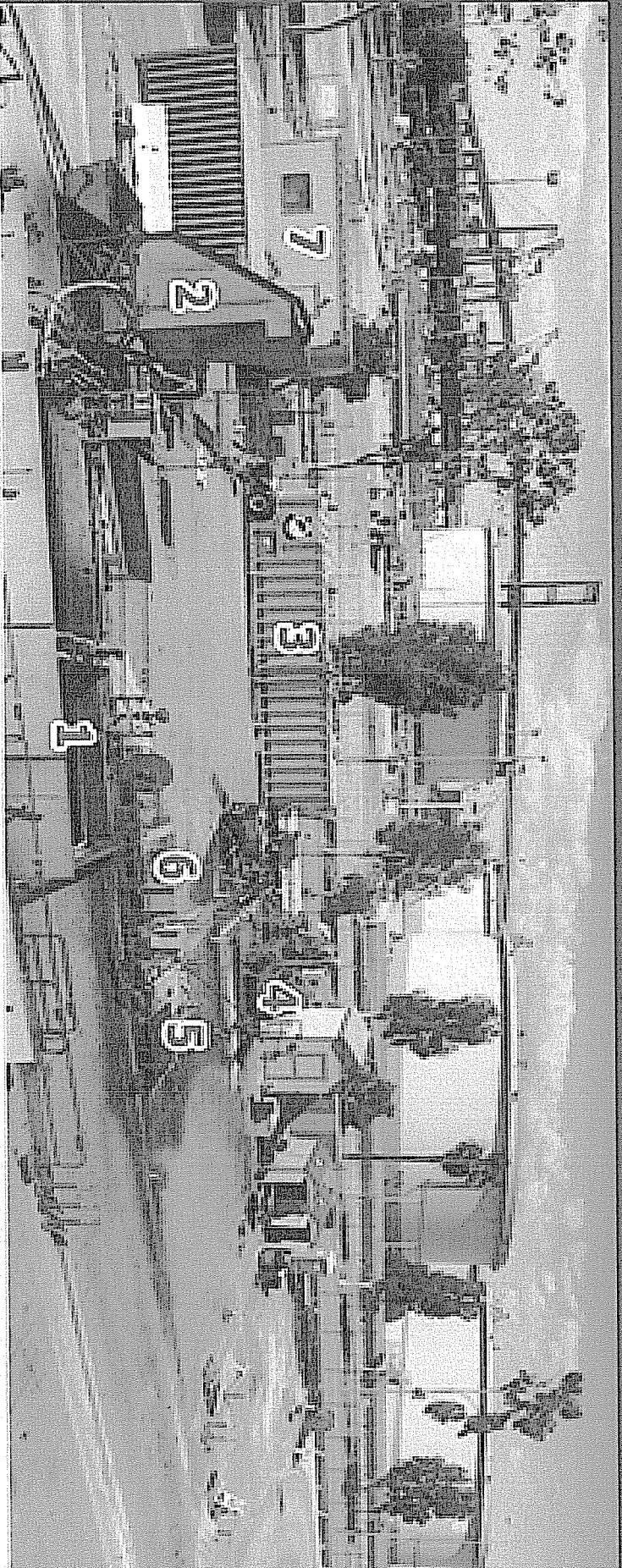




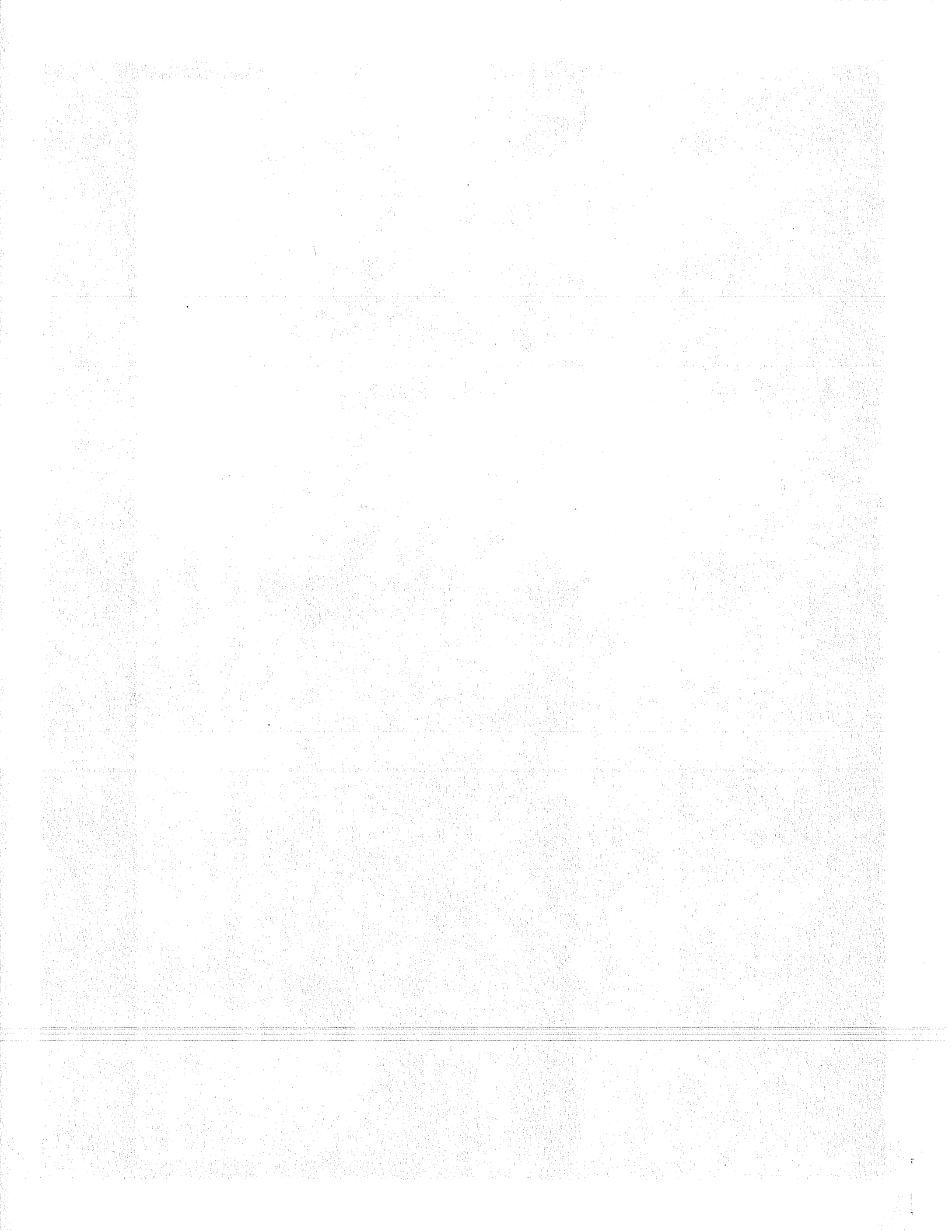
**In-Situ Biodegradation**







- 1) Wetcake & sludge blending pit
- 2) Screen
- 3) Mixing tank
- 4) Electric Pumps
- 5) Injection well
- 6) Monitoring well
- 7) Office

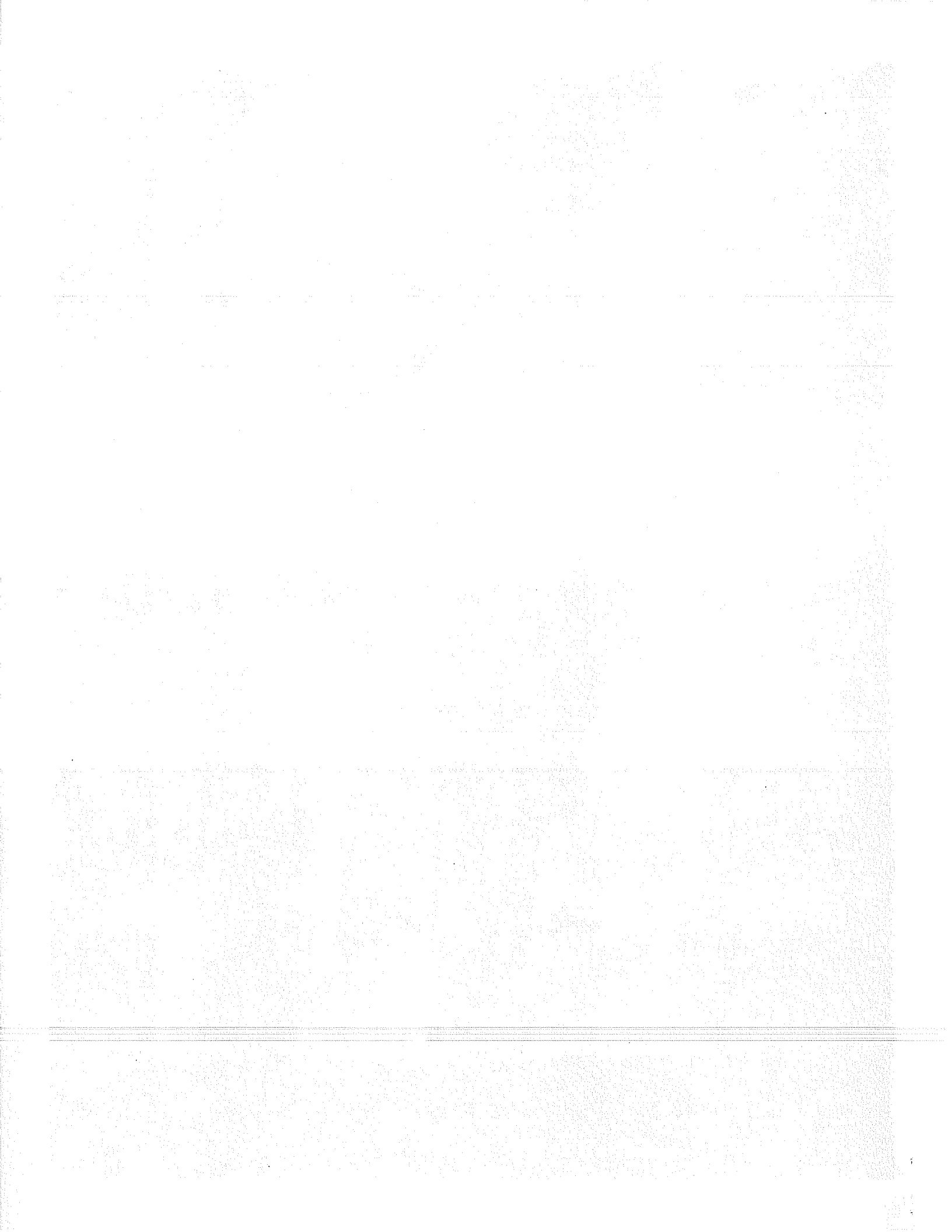




# DEEP WELL INJECTION AT TERMINAL ISLAND

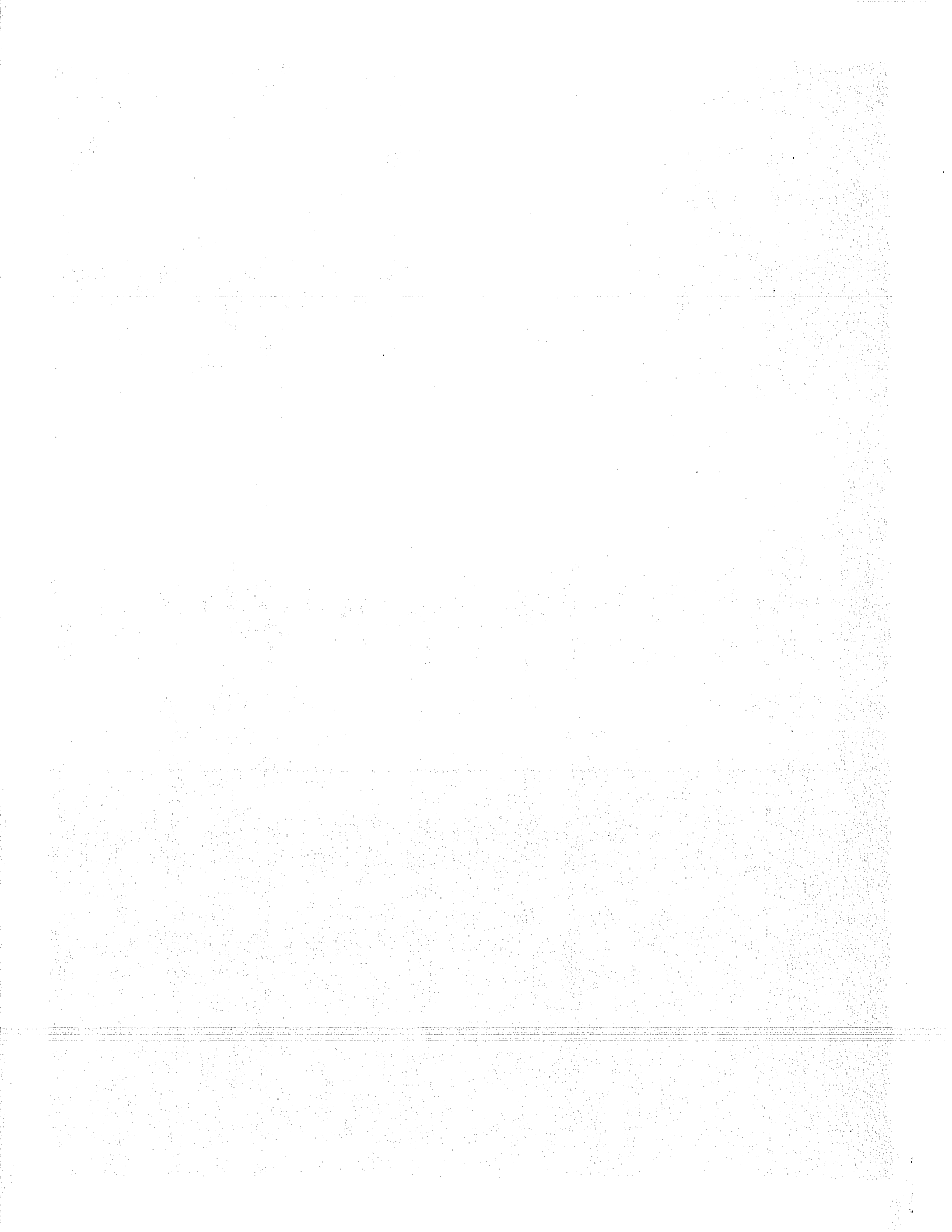






# Project Benefits

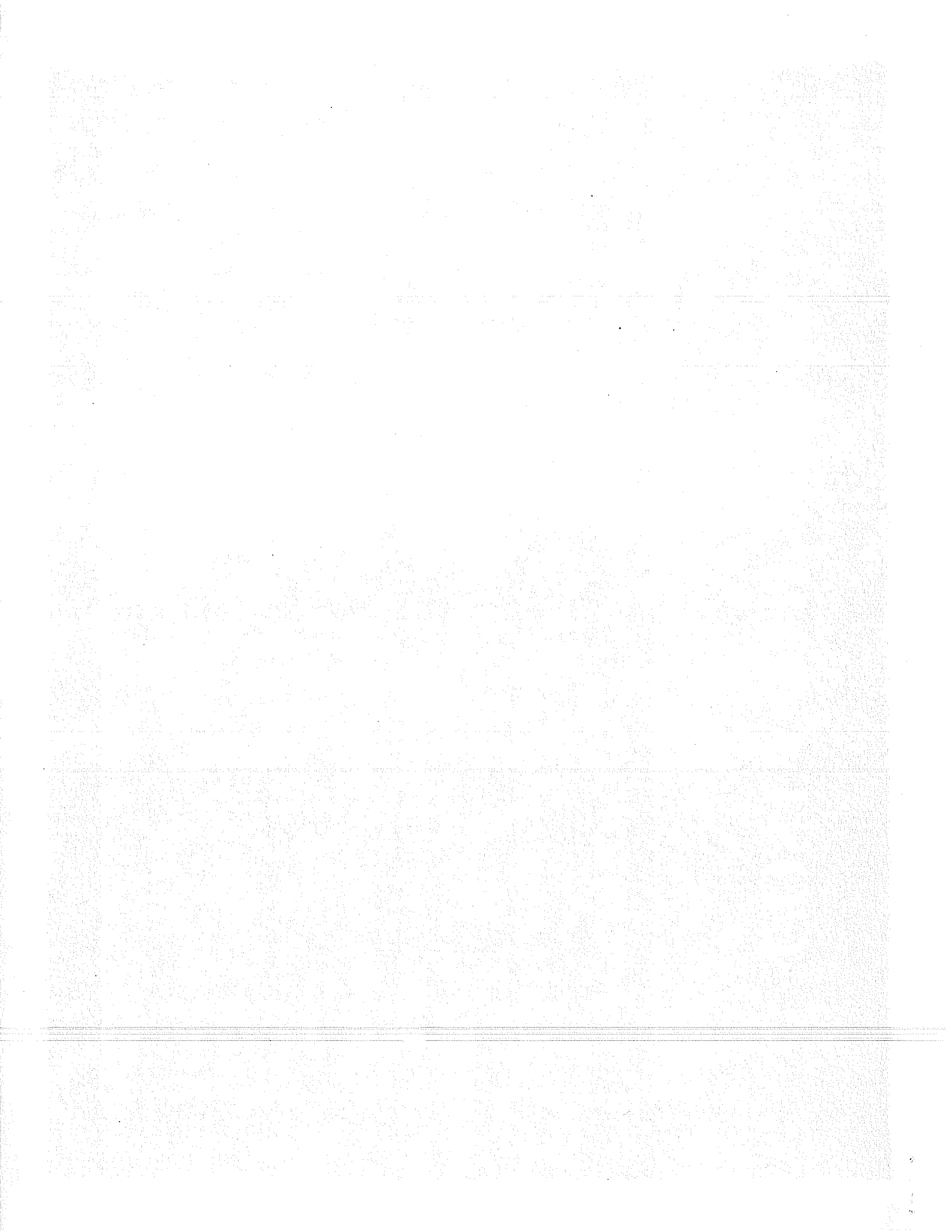
- Enhances thermal treatment and pasteurization of biosolids in a natural environment.
- Converts biosolids to clean renewable energy by biodegradation & thermal treatment.
- Methane generated would be used in fuel cells to produce green power.
- Reduces greenhouse gas emissions by permanently sequestration of CO<sub>2</sub> in the formation brine.
- Reduces traffic, vehicle emission, and odor by eliminating long distance trucking.





# COST COMPARISON

Technology	Cost (\$/wt)
Land Application at GAF	\$43.02
Land Application at Yuma, Az & Merced, CA	\$56
Composting	\$58 to \$74
TIRE	\$74/\$65





# Justification for Two-Year Extension

- Continue the biosolids injection and testing
- Potential to open doors to a new innovative option for biosolids management and wastewater byproducts as a renewable resource in an environmentally safe manner
- Potential of producing green renewable energy, resulting in reduced gas emissions
- Sequestration of carbon dioxide
- Allow time for City to take over TIRE O & M operations



