



DEPARTMENT OF  
PUBLIC WORKS  
SOLID WASTE DIVISION

CITY OF SACRAMENTO  
CALIFORNIA

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DAVID A. PELSNER  
SOLID WASTE  
DIVISION MANAGER

April 17, 1990

Transportation and Community Development/  
Budget and Finance Committees  
Sacramento, California

Honorable Members in Session:

SUBJECT: LANDFILL GAS MIGRATION INFORMATIONAL REPORT

SUMMARY

Laidlaw Gas Recovery Systems will install a landfill gas management system at the City's 28th Street landfill this spring 1990. The system will bring the landfill into compliance with its operating permit and provide revenue to the City. This report is for information only.

BACKGROUND

This is the sixth in a series of informational reports on landfill gas (LFG). Previous reports included:

- 2/9/88 First written staff report to T&CD Committee on LFG migration.
- 3/22/88 Second written staff report to T&CD Committee on LFG migration.
- 4/19/88 Oral report update to the Joint Committees (T&CD and B&F).
- 6/21/88 Oral report update to the T&CD Committee on LFG migration.
- 9/5/89 Third written staff report to the Joint Committees (T&CD and B&F) on the status of the landfill gas management system.

The attached September 5, 1989 information report to the Joint Committees contains background information on the three aspects of the landfill gas issue, landfill gas subsurface migration, landfill gas resource recovery, and implementation of the elderberry Task Force's recommendations. This informational report updates the background information contained in the September 5, 1989 report.

#### LFG SUBSURFACE MIGRATION

Average LFG concentrations at the site boundaries fluctuate month to month but have not increased significantly since City staff began LFG monitoring. Varying concentrations of LFG have been found south of Freeway Business 80. Continuous operation of blowers in ground water pumping stations have effectively reduced but not eliminated off site migration to the south. Control measures installed by the Solid Waste Division are continuing to be effective preventing the migration of LFG toward the Riverpark Subdivision along the eastern and southeastern boundaries of the expansion area. The landfill continues to be in violation of 14 Cal. Adm. Code 17705, Gas Control, for off site migration to the south.

#### LFG RESOURCE RECOVERY PROJECT

The Solid Waste Division has completed negotiations of an amendment to the agreement with Laidlaw Gas Recovery Systems for the construction of a landfill gas management system. This amendment modifies the existing gas lease agreement between the City and Laidlaw dated January 1978. The amendment requires the City to reimburse Laidlaw for the installation cost of the LFG management system if the project becomes uneconomical. Laidlaw is prepared to begin construction of the system as soon as the agreement is fully executed. A key component of the management system, the flare, has been delivered to the landfill and is waiting to be installed.

Preliminary baseline testing of the California Almond Growers Exchange's (CAGE) biomass boiler stack gas for metals, semi-volatiles, polycyclic aromatic hydrocarbons, dioxins and furans per AB 2588 was conducted in January 1990. Laboratory analysis of these samples has not been completed. This test did not include a trial burn of LFG in the boiler. The data will be used as a baseline for comparison with test results obtained when LFG is co-fired with biomass in the CAGE boiler. An additional stack gas test will be required at that time.

Final Air Quality Management District permit approval of the co-firing of LFG with biomass will be contingent upon the results of the co-firing source testing and multi-pathway health risk assessment. If

a permit is not granted, Laidlaw will investigate other uses for the gas before deeming the project uneconomical. If a permit is issued, Laidlaw would pay the City royalties for the LFG as outlined in the original agreement.

#### **IMPLEMENTATION OF THE ELDERBERRY TASK FORCE'S RECOMMENDATIONS**

The Sacramento Local Conservation Corps completed construction of 200 watering basins on March 1, 1990. Five elderberry bushes will be planted in each watering basin. Planting is scheduled to take place on April 3, 1990. The elderberry bushes were contract grown by Cornflower Nurseries and must be planted this spring to maximize their survival rate.

Although subsurface LFG will be present at the time the bushes are planted, we are hopeful that the LFG management system will be in place and operating before the plants are seriously harmed. Delaying the planting of the elderberries risks increased plant mortality due to unfavorable climate conditions and the plants could become root bound in their containers.

#### **FINANCIAL DATA**

Under terms of the modification agreement Laidlaw Gas Recovery Systems will reimburse the City for the Cost of the engineering/design, permit fees, the LFG flare and the Southern Pacific pipeline easement. Laidlaw will install the LFG management system at no cost to the City, and will pay the City monthly royalties per the original January 1978 agreement.

#### **POLICY MATTERS**

Continued subsurface migration of LFG could pose a public health and safety risk and is in violation of landfill's operating permit.

#### **MBE/WBE**

Not applicable.

#### **RECOMMENDATION**

Forward this report to the City Council to file for information.

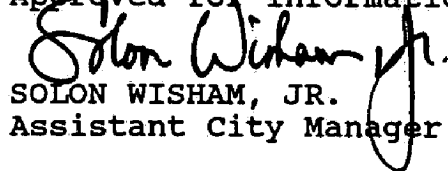
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Budget and Finance Committees  
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Respectfully submitted,



DAVID A. PELSER  
Solid Waste Division Manager

Approved for information:



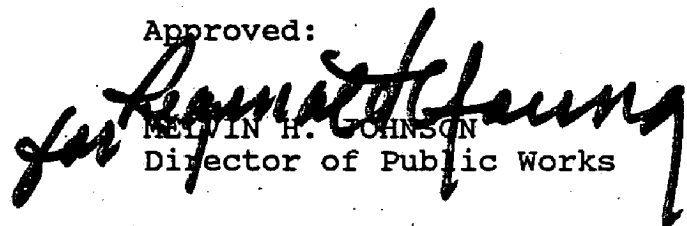
SOLON WISHAM, JR.  
Assistant City Manager

Contact Person to  
Answer Questions:

DAVID A. PELSER, SOLID WASTE DIVISION MANAGER  
449-2043

Attachments: 9/5/89 Info Report to T&CD/B&F

Approved:



MELVIN H. JOHNSON  
Director of Public Works

All Districts



DEPARTMENT OF  
PUBLIC WORKS  
  
SOLID WASTE DIVISION

CITY OF SACRAMENTO  
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September 5, 1989

Transportation and Community Development/  
Budget and Finance Committees  
Sacramento, California

Honorable Members in Session:

SUBJECT: LANDFILL GAS MIGRATION INFORMATIONAL REPORT

SUMMARY

The Solid Waste Division of the Department of Public Works is installing a landfill gas management system which will control the off site migration of landfill gas at the City's 28th Street landfill. The system will bring the landfill into compliance with it's operating permit. This report provides the status of the landfill gas program. It is for information only.

BACKGROUND

This is the fifth in a series of informational reports on landfill gas (LFG). Previous reports included:

- 2/9/88 First written staff report to T&CD Committee on LFG migration.
- 3/22/88 Second written staff report to T&CD Committee on LFG migration.
- 4/19/88 Oral report update to the Joint Committees (T&CD and B&F).
- 6/21/88 Oral report update to the T&CD Committee on LFG migration.

The issue of landfill gas migration has developed over the course of these reports into several separate but related topics. These include the problem of subsurface migration of LFG beyond landfill boundaries, the construction of the LFG resource recovery project, and implementation of the Elderberry Task Force's recommendations relating to the loss of riparian vegetation because of the subsurface migration of landfill gas.

#### LFG SUBSURFACE MIGRATION

LFG concentrations at the site boundaries have remained stable within a few percentage points. The most recent round of testing done on July 28, 1989 shows a slight decrease. Monitoring the network of LFG probes surrounding the landfill continues twice monthly. The LFG cutoff trench installed on February 9, 1988 continues to be effective at controlling subsurface migration of gas toward the Riverpark subdivision. The blowers which have been installed on two of the groundwater dewatering pump stations are operating continuously and remain effective at reducing the concentrations of LFG along the southeast boundary of the expansion area. Construction of Phase I of the LFG collection system will control the subsurface migration and result in compliance with landfill operating permits.

As a result of the uncontrolled venting of LFG into the atmosphere, concerns about the air quality on and adjacent to the landfill were raised by adjacent residents. The California Air Resources Board (ARB) was asked to perform testing for the most harmful constituent contained in the gas, vinyl chloride. ARB conducted nocturnal testing for vinyl chloride on March 20, 1989 and the results indicate that the concentrations of VC in the ambient air at night are below the 1 ppb quantitative limit. These test results agree with the results included in the City's Air SWAT Report dated November 1987.

#### LFG RESOURCE RECOVERY PROJECT

On July 14, 1989 Laidlaw Gas Recovery Systems submitted a complete set of drawings for the City's landfill gas management system pursuant to a Professional Services Agreement with the City. The initial phase of this system is designed to control the subsurface migration of LFG and may be installed and operating as soon as January, 1990. Additional phases will be installed as the landfill's final cover section is constructed. When the collection system is completed in 1991, the system will produce an estimated 1,500 standard cubic feet of gas per minute.

Several design features of the LFG collection system have been added to the basic design proposed by Laidlaw Gas Recovery Systems. The polyethylene pipes connecting the collection wells to the blower and flare will be buried in the landfill cover section and will not be visible from the surface. This will make the closed landfill more suitable for post closure use. The collection well heads will be flush with the surface and protected by a utility box. The piping connecting the gas wells to the main header system have been routed so the condensate formed in the piping will not run back into the wells and create an additional water quality problem. The collection system is designed to collect and store the LFG condensate for treatment and ultimate disposal in the City's combined sewer system.

An application for the landfill gas collection system and LFG flare has been submitted to the Sacramento Air Pollution Control District (APCD) for approval. The APCD must approve the permit for the type of flare to be purchased before the order can be placed with the vendor. The construction schedule for the LFG collection system includes a 12 to 14 week period for the purchase of a flare. Delivery of the flare is on the critical path for construction of the collection system. The flare must be in place before the collection system is completed and operational. In a separate report, staff will be recommending the award of a purchase order for the flare.

The City is still pursuing the option of burning the LFG in the Almond Grower's biomass boiler and some progress has been made. On June 19, 1989 the Almond Growers submitted a test plan to the Air Pollution Control District to satisfy the Air District's concerns regarding toxic emissions from the co-firing of landfill gas and biomass, and to satisfy the requirements of AB 2588. Once this testing protocol has been approved, testing can begin. A pipeline for the delivery of LFG to the Almond Growers facility would be built to facilitate the testing. Favorable test results would allow the proposed co-firing to continue. The test firing is expected to take place no earlier than February 1990.

#### IMPLEMENTATION OF THE ELDERBERRY TASK FORCE'S RECOMMENDATIONS

During the Fall of 1987, staff of the American River Flood Control District noticed that young Elderberry bushes, planted along the American River adjacent to the City of Sacramento Landfill, were dying. These bushes provided a habitat for the Valley Elderberry Longhorn Beetle (*Desmocerus Californicus Dimorphus*), a species listed as threatened by the U. S. Department of Interior. The Elderberry Task Force concluded that landfill gas is the cause of the plant distress and recommended replanting.

The City has contracted with Cornflower Farms nursery to grow the 1000 Elderberry plants as discussed in the Task Force's recommendations. Because the LFG collection system will not be operating until after January 1990, the planting has been postponed until spring 1990. It is hoped that by spring 1990 the phase one system will have halted the subsurface migration of gas along the north side of the landfill and favorable conditions for the growth of Elderberry bushes will exist. Additional subsurface testing will be performed by the Solid Waste Transportation and Community Development.

The Solid Waste Division will verify the absence of LFG in the Elderberry Mitigation area before the new bushes are planted.

FINANCIAL DATA

An engineering estimate of the cost of construction of the proposed LFG management system has been prepared by Laidlaw Gas Recovery Systems. The cost of the entire system is estimated to be \$650,000, substantially more than original estimates. The phase 1 and 1A systems, the mechanical equipment associated with the collection system and the flare are estimated to cost \$350,000. The LFG flare comprises about \$70,000 of this cost.

Partial funding for the project is available in CIP YA36 "Landfill Gas Control Program". The balance in YA36 on August 1, 1989 was \$152,352.70. An additional \$100,000 has been budgeted in fiscal year 1989-90 and an additional \$100,000 has been budgeted in fiscal year 1990-91. The total funding for YA36 of \$352,000 will not be sufficient to build the entire project. The existing balance and current fiscal year budget is not sufficient to construct the first phase of the collection system and the flare. Staff will identify an appropriate funding source prior to issuing bids for this construction.

POLICY MATTERS

Continued subsurface migration of LFG could pose a public health and safety risk and is in violation of landfill permits. In addition, continued subsurface migration of LFG along the American River Parkway will prevent replanting of the Elderberry bushes that were effected by the gas. Elderberries are the exclusive habitat of the Elderberry Beetle which is a ("threatened" or "endangered") species. Continuing with the project will require additional funding.

MBE/WBE

Not applicable.

RECOMMENDATION

Forward this report to the City Council to file for information.

Respectfully submitted,

*for Reginald Young*  
DAVID A. PELSER  
Solid Waste Division Manager

Approved for Committee Information:

*Solon Wisham Jr.*  
SOLON WISHAM, JR.  
Assistant City Manager

Approved:

*Melvin H. Johnson*  
MELVIN H. JOHNSON  
Director of Public Works

Contact Person to  
Answer Questions:

DAVID A. PELSER, SOLID WASTE DIVISION MANAGER  
449-2043

September 5, 1989  
All Districts