
*Landfill Operation
and Gas Recovery
Projects of the LA
County Sanitation
Districts*

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Introduction

The County Sanitation Districts of Los Angeles County are a special purpose Districts created to serve the water pollution control and the solid waste management needs of over 50% of the population and businesses within Los Angeles County. The Districts are governed by a Board of Directors made up the city mayors and county supervisors whose jurisdictional areas are served. The Districts include 77 cities and unincorporated areas within Los Angeles County.

The County Sanitation Districts currently operate six(6) landfill gas recovery projects that are located at two(2) completed landfills and four(4) operating landfills. This report will briefly discuss all six Projects

SPADRA LANDFILL

The spadra Landfill is located on a 243 acres parcel of land and is jointly sponsored by cal poly pomona, the Los Angeles county and the Sanitation Districts. The site has been in operation since 1956. A new joint powers agreement between the three parties will provide for an additional 26 million tons of disposal capacity. This landfill has a permitted weekly tonnage limit of 18,000 tons and the site is currently closing early each day to ensure that the site will be open 6 days per week.

The landfill gas system in operation was constructed in two phases and consists of 12 trenches and 53 wells. A third phase is under design which will more than double this system and the timing is such that this should come on line just prior to the start up of the gas-to-energy system presently under construction.

All of the gas header system is constructed of PVC and is located above ground. As with all of the Districts gas systems, each system was retrofitted to eliminate condensate traps at low points in the collection system. These are now plumbed into storage tanks. The collected condensate is either currently being transported off site for treatment and disposal or treated on site and sewer. Eventually all sites will have on site treatment and disposal to sewer. Spadra is waiting on a sewer line being brought in for the gas-to-energy plant.

The gas system is currently recovering approximately 2,500 cfm of landfill gas which has a methane content of 35%. This value has been increasing due to the fact that many of the wells have had additional waste place within their tributary areas. It is anticipated that all of the gas will be delivered to the gas-to-energy plant with the flare station as a back-up.

CALABASAS LANDFILL

The Calabasas landfill consists of 505 acres which are owned by the county of Los Angeles and operated by the sanitation Districts. The landfill was opened in 1961 and accepted hazardous waste until 1980. Since then only non-hazardous wastes have been disposed of at this site. The site is currently receiving on the average 3,000 tons per day 6 days per week. The Districts are in the process of obtaining waste discharge requirements to fill in the

norther portion of the site. The site has disposal capacity to last more than 10 years at current fill rates pending permits.

The gas system consists of 141 gas wells that for the most part were drilled to depths of between 12 and 30 feet. This was done due to concern for intercepting previously planed hazardous wastes. Extensive testing was conducted prior to and during the well installation and wells were placed in areas where testing and historical information showed the lowest risk of encountering these wastes.

The present system was constructed in one phase and currently is removing approximately 2,200 cfm of gas with a methane concentration of 34% but a relatively high oxygen level. This is due to the shallow nature of the wells. The next phase, which was recently bid, will vastly increase the size of the system by the addition of 269 wells and 10 trenches. There will be two different well installation techniques utilized, the drilling of 83 wells in the area filled since hazardous wastes were discontinued and pile driving of 186 wells in the older area. Some of these pile driven wells will replace some of the phase I wells since several have not performed very well and some have degraded in gas quality. An extensive monitoring program will be conducted during the well installation to ensure worker safety. Well depths for phase II will range from 35 to 60 feet for the pile driven wells and from 35 to 90 feet for the drilled wells. The ten(10) trenches will be constructed in the arsa where non-hazardous wastes have been buried. Cost for this construction, which includes upgrades and expansion of the flare station, will be approximately \$2.4 million. Construction should start within the next couple of months as soon as necessary permits are received.

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SCHOLL CANYON LANDFILL

Scholl Canyon Landfill is another joint venture project between the city of Glendale, the county of Los Angeles and the Sanitation Districts as the operator. The site is comprised of 430 acres, owned mostly by Glendale, and commence operation in 1961. The landfill was constructed in 3 phases with the first phase taking place in partial filling of the larger main canyon. The second phase consisted of filling in the adjacent canyon which was completed in the early 1970's. When filling was completed Glendale constructed an executive golf course on the fill and installed a gas collection system. Phase III is the current operation in the main canyon. The landfill is presently accepting nearly 2,500 tons per day of waste. In late 1987, Glendale restricted the users of the site which resulted in a decrease of nearly 1,000 tons per day.

The gas recovery system in the main canyon is operated by the Sanitation Districts and was constructed in two phases. It consists of 77 gas wells and 24 trenches. The system is recovering approximately 4,400 cfm and is utilizing six(6) of the ten(10) flares. Gas quality is around 34% methane. Since the second phase was just completed within the last couple of months most of the trenches have not been covered with a layer of refuse. It is projected that the quality and quantity will improve as the current lift of trash is placed over this next year. One of the unique problems that was encountered at this site were the steep walls of the excavations and canyon side slopes. Polymer coated steel pipe was utilized within the trenches as well as for the laterals that went up the side slopes. All of the other headers are PVC.

PALOS VERDES

The Palos Verdes Landfill, now closed, was a Class I site which accepted certain liquids and hazardous wastes and non-hazardous solid wastes. Three separate areas were filled, however only the main site accepted liquids and hazardous materials. The first area filled is now the South Coast Botanic Gardens which has exotic plants from all over the world. The second smaller site has been turned into Ernie Howlett park. The ultimate use of the main site is still pending, however, there is an equestrian trail that meanders around the perimeter of the top area. The uniqueness of this site and its challenge is its proximity to residences.

The first gas recovery at this site occurred in 1974 when wells were drilled at the property to control gas migration. Many additional gas wells, headers and flaring capacity has been added over the years to where there are nearly 300 perimeter extraction wells with a total of 477 throughout the site. There are currently 2 flare stations. The gas recovery system is collecting approximately 10,000 cfm of gas with a methane concentration of 22% and oxygen at 9%.

Since many of the perimeter wells are not located in trash but in soil, air is added to the system totals. The system is somewhat designed to separate the different gases, however this quality can be flared and it is being utilized by the gas-to-energy plant. Since the energy plant can utilize all of the gas, the 13 flares are utilized as backup when the energy plant is not operating.

The majority of this gas system piping was originally buried but over the years much of the system has been modified and now most of the piping is above ground where repairs

and maintenance are much easier. The most recent addition to the system was the top deck system which utilizes polyethelene headers and laterals. Most of the balance of the system is PVC.

MISSION CANYON

The Mission Canyon Landfill was filled between June 1960 and October 1965. Gas recovery was installed in 1979. There are 74 extraction wells that range in depth from 26 to 109 feet. It has one flare station with two flares and the current gas flow is 1,200 cfm. The methane concentration is 14%. The entire gas system is below grade in 3 landscaped turf areas. Gas flow and quality has been decreasing over time as is expected from older fill areas.

PUENTE HILLS LANDFILL

The Puente Hills Landfill is located on a 1365 acre parcel of land that is owned by the Sanitation Districts. Landfilling is being conducted on approximately 700 acres. The site has been in operation since 1957 but has been owned and operated by the Sanitaion District since June 1970. This site has permits to continue operate until November 1993. There is additional fill capacity for nearly 30 more years. The site is accepting 13,200 tons per day which is the daily limit and it closing as of recent as early as noon when it reaches its limit. The gas system has been constructed in five phases starting in 1979. Phase 6 is currently out to bid. There are 280 collection wells and 68 gas collection trenches. When combined make over 20 miles of gas collection length. The site is collecting 24,000 cfm of gas with a quality of 41% methane. Of this total, a little

more than 17,000 cfm is being converted to electricity via the steam gas-to-energy plant commonly call PERG. Additional gas is going to gas turbines that are also generating electricity and some additional is sold to Rio Hondo College that uses the gas for space heating and cooling as well as to fuel a co-generation facility. The balance is flared in several of the 24 flares. The header delivery system comprises nearly 19 miles of PVC piping in sizes that range from 8 to 30 inches.

As with the other gas collection system, condensate is collected via storage tanks. This site is currently treating the condensate through the PERG plant but will shortly treat and sewer the condensate where the majority can flow by gravity and thereby eliminate costly trucking that is currently necessary.

The extensive gas system has become very complicated to operate because of its size and the dynamics of a large system. The added constraint of supplying gas to an operating power plant further compounds how the system is operated and maintained. The one advantage however, other than the revenue, is that the power plants are manned and monitored around the clock and every little cough or sputter is seen at the plant which aids in helping to diagnose problems with the collection system.

CONCLUSION

In conclusion, with the ever increasing quantities of wastes being landfilled and increased regulations, it is requiring the Districts staff to improve its understanding of landfill gas recovery, how best to manage this resource and how to keep up with its production and utilization in an environmentally acceptable manner.