Item #37 5/9/16

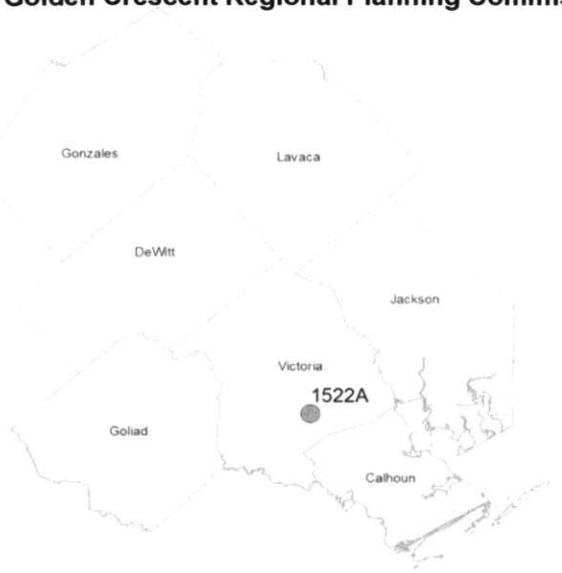
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Municipal Solid Waste in Texas: *A Year in Review*

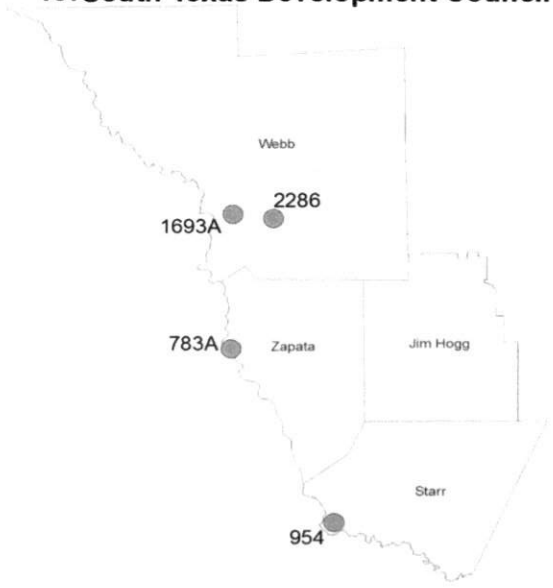
FY 2014 Data Summary and Analysis

AS-187/15 10/2015

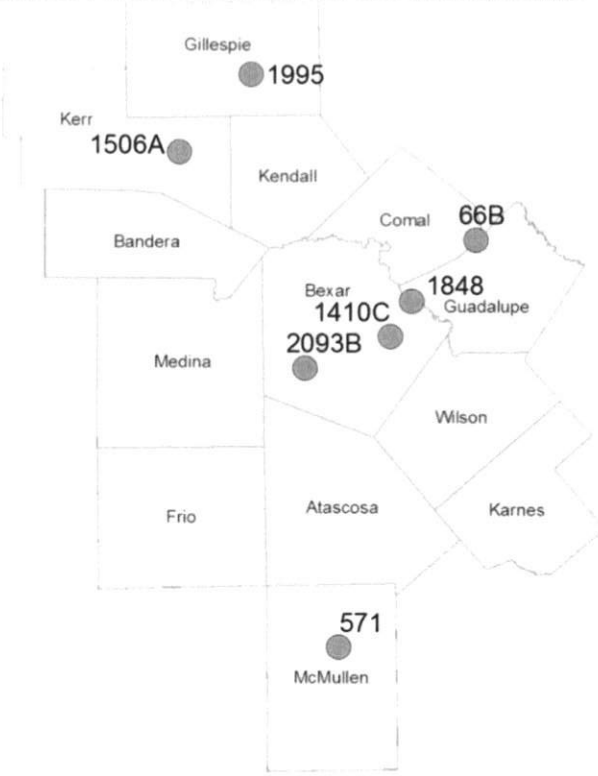
17: Golden Crescent Regional Planning Commission



19: South Texas Development Council



18: Alamo Area Council of Governments



Golden Crescent Regional Planning Commission

COG	Permit	Site Name	County	Type	2014 Tons	Rem Yds	Rate	Rem Tons	Rem Yrs
17	1522A	City of Victoria Landfill	Victoria	1	141,657	7,827,730	1366	5,346,340	26

Alamo Area Council of Governments

COG	Permit	Site Name	County	Type	2014 Tons	Rem Yds	Rate	Rem Tons	Rem Yrs
18	1410C	BFI Waste Tessman Road Landfill	Bexar	1	769,862	74,086,499	1509	55,898,263	42
18	2093B	Covel Gardens Landfill	Bexar	1	1,511,956	107,420,330	1800	96,678,297	85
18	66B	Mesquite Creek Landfill	Comal	1	368,476	12,469,358	1412	8,803,367	23
18	1995	City of Fredericksburg Landfill	Gillespie	1	31,712	1,757,718	1180	1,037,054	33
18	1848	Beck Landfill	Guadalupe	4	274,800	6,088,540	1300	3,957,551	17
18	1506A	City of Kerrville Landfill	Kerr	1	8,272	706,331	3000	1,059,497	66
18	571	McMullen County	McMullen	1AE	500	11,335	750	4,251	9

South Texas Development Council

COG	Permit	Site Name	County	Type	2014 Tons	Rem Yds	Rate	Rem Tons	Rem Yrs
19	954	City of Roma Landfill	Starr	1AE	4,773	50,101	850	21,293	5
19	1693A	City of Laredo Landfill	Webb	1	325,524	4,492,988	1296	2,911,456	9
19	2286	Ponderosa Regional Landfill	Webb	1	27,369	88,197,788	1060	46,744,828	94
19	783A	San Ygnacio Landfill	Zapata	1AE&4AE	2,146	298,651	1000	149,326	36

the clay will provide excellent material for construction of liners, caps and cover systems. Surficial soils are stable and resist erosion, as evidenced by the absence of stream beds or other drainage features cut into the surface topography.

While groundwater is encountered in thin layers of sandy or silty material within otherwise highly impermeable clay, this groundwater is essentially not usable due to its very low production potential and poor water quality. The uppermost aquifer beneath the site that is capable of producing water in potentially useful quantities to wells is the Jackson-Yegua Aquifer, which is expected to be encountered in the upper 750 feet below ground surface at the facility area. Water in this aquifer is poor to very poor in quality, due to concentrations of total dissolved solids, chloride and sulfate that exceed Federal drinking water standards. The Jackson-Yegua Aquifer is classified as a minor aquifer, because it produces relatively low yields of highly mineralized water. These water quanitiy and quality issues limit the usefulness of Jackson-Yegua Aquifer water for human consumption and agricultural uses such as livestock watering or crop irrigation. The site area is geologically stable, with no evidence of faults and a historical earthquake incidence rate significantly below the Texas state average. Rainfall averages about 20 inches per year, and will favor a water balance final cover system. Historically for this area, 3.1 inches of rain falls in May and 3 inches in September, the two wettest periods of the year. Some rainfalls are relatively intense, and this combines with the very low permeability of the site's soils and very flat slopes to produce relatively broad areas that are subject to inundation during the 100-year frequency rainfall event. However, the site is situated in a mostly upland area near the top of the watershed, and existing or proposed livestock watering tanks capture and store a portion of the area's storm water runoff. As a result, the quantity of storm water runoff that will flow across the site is relatively low. Such runoff volumes can be readily contained in the perimeter drainage system that will be designed to remove the entire landfill footprint from the 100-year flood plain.

National Trend for Regional Landfills and Longer Hauling Distances- A third factor that supports the proposed facility is the national trend to fewer but larger landfills that serve more distant waste generators through long hauling. This trend is not nearly as evident in Texas as it is in other areas of the country such as the Northeast, the Northwest and California. For years many landfills in these parts of the country have been reaching capacity and closing. Conflicting land use and too many nearby neighbors made expanding many existing landfills uneconomical or virtually impossible. In many areas of the country there is also a scarcity of potential new landfill sites that meet all the necessary criteria, including: sufficiently large land area; suitable soil, geology, and groundwater conditions; acceptable neighboring land use; and access to economical transportation.

Description of Facilities and Systems – PERC will be designed and permitted to accept a variety of waste types. However, regulated hazardous waste and regulated radioactive wastes will not be accepted. Types of wastes that will be accepted for landfill disposal include:

Municipal solid waste,

Non-hazardous industrial waste,

Construction and demolition waste,

Coal combustion ash and pollution control sludges,

Filter cake and process sludge from industrial and municipal water and wastewater treatment plants,

Non-hazardous industrial waste from maquiladora industries in Mexico, and

Event-type waste from disaster clean-ups.

Materials that will be received for processing may include:

Unsorted or mixed recyclables for processing and recovery of commodities,

Scrap tires for processing and beneficial reuse,

Electronic waste for processing and beneficial reuse, and

Grease trap and grit trap wastes for processing and potentially beneficial reuse.

Materials that will be received for deep well injection include liquids from oil and gas exploration and production under the regulatory jurisdiction of the Railroad Commission of Texas (RCT).

Waste for landfill disposal at PERC is anticipated to be between 1,000,000 and 2,000,000 tons per year (tpy) in the first few years after the landfill is permitted and constructed. This is between about 2,750 and 5,500 tons per day (tpd), based on receiving waste seven days per week. Going forward, the facility might receive a higher rate of waste, and will have ample capacity to accept larger quantities, but it is difficult to estimate what the future quantity may be. It is expected that almost all incoming waste will be received based on multi-year contracts with generating sources, which will be a combination of local governmental entities, private waste companies with local hauling contracts but no local landfill, and industries. Waste sources are not yet completely determined, as the facility will need to be much closer to being ready to operate before contracts for waste disposal can be put into effect. Consequently, the points of origin of incoming waste have not yet been determined. It is anticipated that PERC will receive solid waste

generated in the City of Laredo, as that city's existing landfill is reported to have less than 10 years of remaining capacity and is not likely to be expanded. The City of Laredo landfill received 378,000 tons of solid waste in FY 2008, and waste receipts should increase over the near future as the Laredo population continues to grow. For planning purposes, it is assumed that PERC will receive approximately half of Laredo's solid waste when its landfill closes in the future, and that the amount of future waste will be about 235,000 tpy, or about 750 tpd (six days per week basis). This waste will be brought to the site by trucks. PERC intends to offer the City of Laredo the opportunity to deliver its solid waste to a proposed transfer station that PREC would construct and operate in or near the city, to facilitate transportation of the City's waste to the facility. Additionally, municipal solid waste, construction and demolition (C&D) waste, and water and wastewater treatment sludge are expected to be between 1,250 and 4,000 tpd, and various industrial wastes are estimated to average about 750 tpd, all transported by rail. Industrial waste from the maquiladora industries in Mexico will also be rail-hauled to the site. KCS owns and operates the rail line on the International Bridge between Laredo and Nuevo Laredo, Tamaulipas.

Waste from Laredo will be trucked to the site via Hwy 359. It is anticipated that a waste transfer station will be established in the city, so that the city waste collection trucks will not need to drive to and from the facility. Instead, waste will be hauled by semi-tractor trailer units dedicated to the transfer station operation. About 30 to 35 transfer truck trips per day are anticipated to carry the 750 tpd to the site. The transfer station will be subject to obtaining a permit or registration from TCEQ. Until the permit or registration is issued, waste collection trucks would haul waste directly to the landfill.

Rail-hauled waste will be transported by several methods. The most common transportation method for the municipal solid waste will involve loading the waste into intermodal shipping containers at the waste generators' transfer stations. Once they are filled, either the containers will be directly loaded onto flat-bed rail cars if the transfer station has rail access, or they will be transported on flatbed trucks to an intermodal rail yard for loading onto rail cars. This method of shipment is commonly used for shipping a wide variety of commodities across the country and internationally, and is also used in most waste-by-rail operations. Some bulk-type industrial wastes, coal combustion waste, most municipal and industrial sludges, and many C&D waste streams may be hauled by gondola cars, provided the particular waste is not subject to odors, wind-blown release of waste, or has similar restrictions. Some generators may establish waste transfer stations that employ balers. Baled waste is readily transportable, as a baler produces a cube of highly compressed waste wrapped in wires. Baled waste is quite stable, and can be moved and stacked inside intermodal containers by conventional fork-lifts, in the same manner as many commodities. Some waste baling operations include wrapping the bale

in polyethylene film which seals in odors and any liquids that might be present, and keeps out rainwater and insects, making shipping the waste to the landfill very secure and unobjectionable.

Initially, PERC may receive waste in intermodal shipping containers at the new KCS container facility east of Laredo. If this option is employed, the intermodal containers with waste will be off-loaded from rail cars to flatbed tractor trailers that will be driver to the landfill. As the volume of waste received increases over time, PERC will construct a rail siding along the KCS main line on Yugo Ranch. The facility will employ a container moving equipment to off-load the intermodal containers from rail cars to flat bed tractor-trailer units which will haul the containers to the working face area of the landfill. A long boom crane with a container lifting mechanism will remove each container from the truck and place it near the working face, where a worker will unseal and open the doors. The crane operator will then tip the container to dump the waste into the working face, where the waste will be compacted into the landfill. The crane operator will remove the container for cleaning, and then replace the empty container on the truck bed so it can be returned to the rail car and eventually returned to a waste generator for re-use. As waste volume increases, a rail spur may be constructed into the landfill area to eliminate the step of off-loading containers onto flat-bed trailers. Also, if the disposal market offers sufficient opportunity for accepting waste in gondola cars, a rail car tipper will be added to the rail siding or spur. Car tippers are commonly used to unload coal at power plants, and are also used for waste transfer at waste-by-rail landfill sites, such as at the ECDC landfill near East Carbon, Utah.

The landfill will include a conventional RCRA Subtitle D design with a composite liner and leachate collection system. Provisions will be made for leachate recirculation, to create a bioreactor that will speed the decomposition of organics in the waste and encourage the production of landfill gas. If landfill gas recovery is authorized by a future registration, the landfill gas will be collected and treated to the degree necessary for sale of the gas into one of the natural gas collection systems that exist in the general area of the site. Gas treatment is anticipated to include drying to remove excessive water vapor and treatment to remove carbon dioxide to increase its BTU content.

Ancillary facilities proposed for PERC may include a processing facility for recyclable materials, often called a clean materials recovery facility or "clean MRF. This facility will function to separate and recover all re-usable or recyclable components that have economic value from their respective source streams. The source stream for the clean MRF will be materials collected in curbside recycling programs and citizen drop-off centers offered in most cities. The MRF will use a combination of manual picking and mechanical sorting to produce as many recyclable commodities as possible. The

recovered commodities will be baled or containerized and shipped to markets for these commodities. The site's rail access will provide economical transport of the incoming recyclables and shipment of the recovered commodities to their markets. Unrecoverable materials, or materials that have no use or value as recycled commodities will be landfilled. In addition, it is proposed that grease and grit wastes from the Laredo area will be processed to reduce the water content and then landfilled, with the expectation that recovered grease may used for energy recovery in the form of methane gas production, depending on volumes and the availability of suitable equipment or technology. Landfill gas recovery will only occur after a future registration through TCEQ to authorize this activity.

PERC will seek a permit from the Railroad Commission of Texas (RRC) to construct and operate a Class 2 underground injection well at the site. This type of injection well is limited to the injection of liquids originating in oil and gas exploration and production, which basically is limited to condensate, produced water and brine. Plans for this facility are still being formed, but the injection facility is expected to include one or more above-grade storage tanks, a pre-injection filter system to remove solid matter, an injection pump, and the well itself. The application for this injection well permit, and further details of the plans and specifications for the system, are being prepared as a separate regulatory process through the RRC. Discussion of this aspect of PERC is included here in the interests of providing a complete picture of the total anticipated development of the site. The Class 2 well, or a separate Class 5 well may also be used for the disposal by underground injection of shallow groundwater produced during the construction and initial operation of the landfill.

1.4.2 *Volumes, Rates and Characteristics of Wastes*

Types of wastes that will be accepted for landfill disposal, along with their volume or rate include:

Municipal solid waste by rail – estimated to be between 1,250 and 4,000 tpd,

Municipal solid waste by truck – estimated to be 750 tpd,

Non-hazardous industrial waste – estimated to be 750 tpd,

Construction and demolition waste – included with municipal solid waste,

Coal combustion ash and pollution control sludges – included with industrial waste,

Filter cake and process sludge from industrial and municipal water and wastewater treatment plants – included with municipal solid waste,

Non-hazardous industrial waste from maquiladora industries in Mexico – included with industrial waste, and

Event-type waste from disaster clean-ups – varies from none to occasionally up to 2,000 tpd.

The types of materials that will be received for processing, along with their volume or rate, may include:

Unsorted or mixed recyclables for processing and recovery of commodities – up to 500 tpd, and

Liquid waste, including grease trap and grit trap wastes for processing and solidification (ultimately for beneficial reuse) – up to 50,000 gallons per day.

The characteristics of these wastes and materials are provided in the definitions found at 30 TAC §330.3 (1) through (181). No regulated hazardous wastes will be accepted. Special wastes as defined by 30 TAC §330.3 (148) and Class 2 and Class 3 industrial wastes will be accepted, except for any such wastes that cannot be effectively processed, handled or disposed at this facility. Class 1 non-hazardous wastes will also be accepted. Class I Industrial Waste amounts will not exceed 20 percent of the total amount of all waste (not including Class 1 Waste) accepted for disposal during the current or previous year.

Materials the will be received for deep well injection include liquids from oil and gas exploration and production under the regulatory jurisdiction of the RRC.

Waste for landfill disposal at PERC is anticipated to be between 1,000,000 and 2,000,000 tons per year (tpy) in the first few years after the landfill is permitted and constructed. This is between about 2,750 and 5,500 tons per day (tpd), based on receiving waste seven days per week. The facility expects to receive a higher rate of waste, and will have ample capacity to accept larger quantities. The landfill units have a total disposal capacity currently estimated to be about 175-225,000,000 tons, and have a capacity to receive and dispose of as much as 10,000 tpd.

The above volumes and rates are estimates, and it should be understood that it is difficult to accurately estimate what the future volumes and rates of waste receipts may be. Almost all incoming waste will be received based on multi-year contracts with various waste generators, which will be a combination of local governmental entities, private waste companies with local hauling contracts but no local landfill, and industries.

1.4.3 Other Information

This permit application has been prepared to demonstrate compliance with the requirements established in 30 TAC 330.57 through 330.65, and related or referenced