<table>
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<th>Title</th>
<th>2018 Excellence Award: OC Waste &amp; Recycling’s Prima Deshecha Landfill</th>
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<td>Category</td>
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Ruth.Wardwell@ocwr.ocgov.com |
| Title of entry as you want it to appear on the website | Landfill Management Excellence: OC Waste & Recycling’s Prima Deshecha Landfill |
| Jurisdiction | County of Orange, California, USA |
| Approximate population of the jurisdiction | 3.1 million |
| Cost per household for the project | FY 17/18: ~$200/year |
| Approximate budget | FY 17/18: $46M |

[CLICK TO SEE 90-SECOND VIDEO]
EXCELLENCE AWARD ENTRY, LANDFILL MANAGEMENT — OC WASTE & RECYCLING

EXECUTIVE SUMMARY

The Prima Deshecha Landfill (Prima) is owned by the County of Orange, Calif., and operated by the County’s OC Waste & Recycling Department. It has been transformed from a Class III Municipal Solid Waste Landfill into a modern, multi-use resource recovery campus to provide waste management services to the cities of south Orange County.

Landfill management is founded in environmental stewardship, contemporary operational techniques, regulatory compliance and being a good neighbor.

Prima includes:
- Household hazardous waste collection center
- Materials Recovery Facility (MRF)
- Renewable energy power plant
- Habitat restoration area
- Arterial highway

WHY WE DESERVE TO WIN the Landfill Management Award: The State of California has enacted legislation and regulatory compliance measures that add multiple degrees of complexity to the landfill’s operations and site management. Despite these rigors, Prima routinely passes or exceeds all inspections, which demonstrates a well-managed, compliant and safe solid waste campus.

SITE OVERVIEW

PRIMA AT A GLANCE
Opened – 1976
1,530 acres; 699 for disposal
1,700 tons per day
Capacity through 2102
Total capacity 172.9 m cy
Remaining capacity 136.2 m cy

Opened in 1976, Prima is located in the city of San Juan Capistrano in south Orange County, California. It is one of three landfills owned by the County of Orange and operated by the County’s OC Waste & Recycling department. The County is home to 3.1 million residents and serves as the administrator for 34 cities to implement the Countywide Integrated Waste Management Plan through source reduction, recycling and disposal.

The Prima campus is approximately 1,530 acres, including 699 permitted for disposal. The rest of the acreage is used for materials recovery, landfill gas to renewable electricity conversion, habitat conservation and preservation, recreational trails, and a recently completed arterial highway to improve south Orange County mobility.

Landfill Disposal
Prima operates six days a week, accepting approximately 1,700 tons of material per day for disposal and recycling through its onsite Materials Recovery Facility. The landfill has a total capacity of 172.9 million cubic yards with a remaining capacity of 136.2 million cubic yards as of December 31, 2017. Prima receives non-hazardous municipal solid waste, treated wood waste, and is the only landfill in Orange County permitted to receive biosolids. Environmental protection for the receipt of these materials is managed through an engineered geomembrane liner equipped with gravity fed leachate collection and recovery system.

Gas-to-Energy Facility
Since 1998, Prima manages the beneficial reuse of landfill gas through a power-generation partnership that operates a 6 megawatt facility that provides onsite power for the site’s administrative offices. Excess power is sold to San Diego Gas & Electric, which uses it to provide power for 5,500 homes. Revenue from the power plant annually generates $300,000 in royalties and offsets approximately $500,000 per year to operate and manage the gas collection and control system that assists in maintaining a stable disposal rate. Additional cost savings are achieved at Prima’s administrative offices at a savings of 25-30 percent below local electricity
utility rates through the purchase of the power directly from the power plant. This equates to a cost savings of $17,000 annually. The power plant provides an alternative to flaring of the landfill gas and reduces Prima’s carbon footprint.

**Material Recycling Facility (MRF)**

Through a public/private partnership with a local hauler, Prima is co-located with a materials recovery facility (MRF) that provides valuable recycling service to self-haulers as an alternative to landfill disposal to recover valuable recycling commodities. Opened in 2009, the facility is the only MRF located in south Orange County. The MRF helps prolong the life of the landfill while assisting area’s cities in meeting their recycling/diversion targets mandated by California’s AB 939 legislation (increase diversion). The MRF received between 220 and 330 tons per day in 2017. It processes primarily construction, demolition and self-hauled waste, and recycles 80 percent of the material received.

**Household Hazardous Waste Collection Center (HHWCC)**

Prima established an onsite permanent Household Hazardous Waste Collection Center (HHWCC) that provides free drop-off service to the public five days a week (Tuesday-Saturday). It collects common household items that could be hazardous to the environment if not properly handled, including oil based paints; cleaning supplies and other chemicals; and electronic waste, such as computer monitors. It also features a Materials Exchange Program (MEP), which lets customers take up to five gently used items at no cost. Paint received is recycled and remanufactured into bulk paint that is given away to cities for graffiti removal to improve blight conditions. The HHWCC also serves as the collection point for the landfill’s and MRF’s load checking program to remove any hazardous waste identified in the waste streams. In FY2016-2017, the facility served over 25,000 customers and collected more than 1.2 million pounds of HHW that would have otherwise been landfilled.

**Organics Pilot Demonstration Project**

In response to AB 1594 and SB 1383 (methane reduction) passed by the California Legislature, OCWR initiated a program to transform processed green material previously used as alternative daily cover into compost. In March 2018, Prima launched an organics pilot project utilizing traditional windrow aeration methods. The pilot project will serve as a platform to expand the program through customer acquisition and market development.

**Onsite Habitat Mitigation (Riparian, Thread-Leaved Brodiaea, Wetlands)**

OCWR manages mitigation areas to ensure habitat restoration success, requiring regular monitoring and maintenance to eliminate invasive weeds, replacement of plant materials that have not survived, erosion monitoring and repair, and annual reporting to the Resource Agencies (e.g., U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, and the Army Corps of Engineers). Prima retains a full-time onsite biologist to manage the habitat restoration program, which creates more than 225 acres of habitat for local plants and animals to enhance open space in south Orange County and offset the impacts of landfill development on the regional landscape. Most of Prima’s mitigation takes place before the impacts have even occurred.
Design and Construction

Prima is designed as a canyon within two filling zones surrounded by a series of ridgelines that acts a topographic barrier between the landfill and surrounding community. Prima utilizes a cut and fill method to develop the landfill, which provides for airspace capacity and soil for landfill operations. The design of the landfill incorporates either the maximum probable earthquake (MPE) or maximum credible earthquake (MCE) analysis to ensure geotechnical stability. Stability is achieved through a series of buttresses and keyways below the site’s Subtitle D liner system. When first sited in 1976, Prima was designed to be “self-sufficient” due to lack of infrastructure available. Prima’s liner system is equipped with a gravity fed subdrain and leachate collection and recovery system. Leachate and subdrain liquids collected is re-applied into the landfill as dust control due to the absence of a sewer system. Landfill final grades are designed to blend in with the natural terrain preserving the ridgelines from the view of nearby residents. All soil excavated from landfill development is stockpiled and reused onsite minimizing the need to purchase or import offsite soil. Soil stockpiled onsite is used to surcharge previously placed waste to increase compaction, airspace, and minimize surface emissions.

Geologic Challenges and Opportunities at Prima Deshecha Landfill

Of Prima’s 1,530 acres, only 699 acres are permitted for disposal. The site is situated within a structural trough developed along a fault line and a relatively shallow bay in a prehistoric sea. The area was once populated by whales and other marine creatures, the fossils of which are commonly found during grading. Sedimentary bedrock formations are exposed and underlie the site. The land is inherently weak and unstable, subject to creep, mudflow, and land sliding, and it has high porosity and low permeability.

In 1997 during the development of Phase B at Prima, a landslide was activated that threatened to block the Prima Deshecha Cañada channel, a natural water way that drains the canyons that the landfill sits. Staff working with engineers and geologists designed a remediation project that re-aligned the channel, stabilized the landslide, allowed a modification in grading gaining 4.5 million tons of additional refuse capacity, and allowed three times as much riparian vegetation habitat for the federally threatened Least Bell’s vireo. The project also restored pockets of wetlands at the terminus of the realigned channel to offset disturbance from the landslide remediation work.

Prima’s geology created a unique challenge: due to organic material buried deep below the surface, naturally occurring methane gas was discovered in 2010 showing high gas concentrations. Gas readings in this area would typically indicate gas migration from the landfill, after investigation it was discovered the readings in the area were the product of thermogenic gas. Thermogenic gas is the natural gas formed from organic matter in the rock under the influence of heat deep inside the earth. To address this issue, Prima staff developed a testing procedure to differentiate between naturally occurring gas from landfill gas generated from the landfill.

Adapting to Changes

When Prima was first sited in 1976, the adjoining land was remote, open and agricultural space. Development has since encroached close to the site; homes are as close as 100 yards from the landfill property line, and a high school campus is less than one-quarter mile from the landfill entrance. The area surrounding Prima is being developed into 13,000 homes. Implementation of a
proactive and responsive Good Neighbor Program was and continues to be critical to the site’s ongoing excellence in landfill management.

Another large challenge was the conversion of the landfill access road into a major arterial highway that cuts right through the middle of the site and became the largest roadway project in Orange County history. The 3.7-mile, $72-million project required working with Prima staff and designing controlled access to the landfill; widening an existing section of roadway that must remain in operation to serve the landfill and adjacent high school; and pioneering a new roadway through undeveloped, mountainous terrain with final roadway grades up to 7 percent.

The project team overcame multiple challenges associated with moving 15 million cy of earth; performing landslide remediation; mitigating effects of constructing the roadway through a former landfill area by performing partial clean closure and relocating more than one billion pounds (856K cubic yards) of municipal solid waste; performing partial final closure; relocating two steel lattice high voltage electrical transmission towers; actively communicating with impacted communities; and responding to numerous environmental mitigation measures. Other challenges included constructing deep drainage culverts, storm drainage systems and water quality basins, two cast-in-place bridge overcrossings and five 30-foot diameter steel multi-plate tunnel under crossings for future landfill development and wildlife crossing.

**EQUIPMENT/SYSTEMS AND TECHNOLOGIES**

Prima has been engineered to utilize advance technologies for the efficient operation and maintenance of the landfill, starting with a leachate collection and recovery system that is gravity fed into two 16,000 holding tanks. The gravity system eliminates the need for electrical power and reduces emissions and long-term maintenance of mechanical components. Leachate collected in the holding tanks is reused onsite for dust control, which eliminates the need to discharge the liquids into a sewer conveyance system.

For customers, technology is apparent as they enter the landfill. The scale house utilizes a transponder system that enable account holders to enter automatic lanes that provide express access, reducing travel time and limiting a queue of waste handling vehicles. This system directly debits from customer accounts and avoids the need to handle cash. Plus, as the waste vehicles enter the scale house, security cameras and radiation monitors are used to perform visual load checks and an initial scan to confirm the waste is permissible for acceptance.

Once refuse vehicles enter the landfill, a fleet of earthmoving and waste-handling equipment is located at the working face, ready to receive the next load. The fleet consists primarily of Tier III and Tier IV equipment, such as CAT 826 trash compactors, CAT D9T dozer, CAT D5K dirt mover, CAT
637E scrapers, and electric D7E dozer, water trucks, and a CAT 824G wheel dozer. In the past 10 years, Prima has upgraded to cleaner machines to reduce diesel emissions and reduced the number of vehicles from 35 to 23 while maintaining the same level of service.

Each piece of refuse-handling equipment is equipped with the VisionLink, a web-based control system that tracks the compaction and fill sequences at the site. This provides grade control for the equipment operators without the need to manually establish survey markers. The software has the ability to calculate in place waste volumes and the compaction densities achieved in the active cells. The software also serves as a planning tool to project finish grades, allowing staff to design future lifts and direct flow control for stormwater runoff. The technology contributes to excellence in overall fleet management by tracking maintenance of each machine and its output productivity. This has helped improve fleet performance and minimized equipment downtime.

The fleet is equipped with Caterpillar’s Machine Security System, which restricts access to only those authorized and trained to operate each piece. The system has a unique identification system to track assigned vehicles and run times for each operator. Limiting equipment operators to specific machines prevents access by untrained operators or unauthorized personnel and reduces risks of damage, injury, and theft.

To ensure Prima’s equipment is available for continuous operation, all light duty and waste handling vehicles are inspected daily. Onsite mechanics perform diagnostic tests and repairs to minimize equipment down time. If needed, Prima can borrow equipment resources from the other two OC landfills within 24 hours. In addition, Prima maintains an equipment rental contract and onsite fueling stations for diesel (12,000 gallon tank) and gasoline (1,000 gallon tank) operated machines, vehicles, generators, and tools. The fueling stations are all weather access and equipped with secondary containment with leak detection systems.

The administrative building and scale houses are equipped with generators to provide backup electricity in the event of a power loss. All office staff are equipped with computers that operate off a network server that provides remote access, security enhancements, and backup of work files which are saved on a nightly basis. These measures have ensured that the Prima can operate without any interruptions.

Since 1976, Prima has operated continuously without any interruptions due to equipment malfunctions, weather conditions or natural disasters.

Since 1976, Prima has operated continuously without any interruptions due to equipment malfunctions, weather conditions or natural disasters. In wet weather, Prima uses a “wet deck” made of asphalt grindings. It provides 45-60 days of capacity at all times. An army of litter control fences and mobile vacuum units are utilized to collect windblown litter from leaving the landfill at the end of each operating day. Prima is also equipped with light towers and flares for early morning/late evening operations and foggy conditions. Communication is the key during challenging weather conditions between personnel which is managed through an onsite radio communication system. Fire prevention is maintained through a routine vegetation removal and landscaping plan.
Stormwater Management

Given Prima’s three-mile proximity to the Pacific Ocean, it is paramount that stormwater leaves the site clean. In 2015, more stringent regulatory standards were adopted with the implementation of California’s new Industrial General Permit (IGP) guidelines. Since then, Prima has worked to effectively maintain monitored parameters below required stormwater runoff.

The stormwater management system consists of a network of concrete drainages and down-drain structures that carry runoff from active areas into a concrete-lined desilting basin at the toe of the landfill. This discharge system is designed to handle a 100-year, 24-hour storm event. With the system, total suspended solids (TSS) in stormwater discharge has decreased from as much as 2,000 to 3,000 mg/L to below 100 mg/L year-over-year.

Site stormwater eventually flows to a natural creek that traverses the site. When a landslide in the winter of 1997-1998 caused damage to this creek, Prima responded by seizing an opportunity to not only mitigate damage, but to simultaneously enhance riparian habitat and add a layer of bio-filtration for stormwater runoff. To remediate the landslide, Prima realigned the stream-course of the original creek and carefully engineered it to support nearly three-times as much riparian vegetation as the original. Remediation also included restoration of a wetland basin at the terminus of the re-aligned channel. Lined with porous materials and gabion structures, the re-aligned channel supports proper drainage characteristics, groundwater recharge, and structural integrity. The re-aligned channel and wetland basin act as an additional layer of bio-filtration that helps to further clean up surface water flows before they leave the landfill site and continue down the watershed.

To ensure that stormwater management systems function properly, Prima collects not only a compliance sample of stormwater that is ultimately discharged from the site, but also background samples at various locations throughout the site. Background sampling helps Prima to be proactive in targeting key locations for implementation of BMPs to control monitored constituents, including metals, inorganic compounds, TSS, pH, and conductivity in stormwater runoff. In a testament to stormwater control efforts, in the first monitoring year after the new IGP guidelines, Prima remained at a baseline level for all monitored parameters with no exceedances.

Water Conservation Program

Prima recognizes the need to review its current water usage and to establish a water conservation plan that minimizes water usage where possible and reuses environmental water, including collected stormwater, leachate, subdrain, and extracted groundwater. A backup option to use reclaimed water, and the least-preferred is potable water. Water usage at the landfill includes:

- **Environmental controls**
  - Odor management through misting systems.
  - Dust control.
- **Domestic / commercial water uses**
  - Site office buildings/trailers: toilet, shower, faucets
  - MRF
  - HHWCC
  - Gas-to-energy power plant at the landfill
- **Irrigation**
  - Native habitat preservation surrounding landfill office buildings
  - Mitigation of native habitat areas
Prima has taken the following steps to advance the site’s water conservation program:

**Odor Control**
Because odor concerns/complaints occur more during the warmer months than in the cooler months, Prima reduces the use of the misting systems during the cooler months of October through March resulting in a 50 percent reduction.

*Potential Savings GPY: 1,150,000 Gallons*

**Dust Control**
1. Reduce the daily amount of non-potable water for dust control by 5,000 gallons per day. At 307 operating days a year, this equates to 1,535,000 GPY.
2. Use the water that is collected in the silt basin for dust control. Depending on the rainfall, approximately 500,000 gallons per year can potentially be used for dust control.
3. Use collected groundwater, subdrain, and leachate for dust control. In 2016, the site collected approximately 387,000 gallons of extracted groundwater and leachate.

*Potential Savings GPY: 2,422,000 gallons*

Prima currently uses approximately 10-14 million gallons of water per year and reduced potable and reclaimed water use by an average of 2-3 million gallons a year (i.e., 20 percent).

**Vector Control with Falconry Program**
Located near the Pacific coast, the site was a common gull feeding area, with as many 4,500 gulls observed in a single day. As gulls fed in the trash, they carried food items off-site and dropped them in nearby neighborhood. Gulls also contributed to bacterial loading in the nearby beach, which likely was a drinking and resting area from gull feeding incursions to Prima.

In October 2013, OCWR initiated a bird abatement program using a contracted falconer who is on-site each day the site is in operation. The program takes advantage of the innate predator-prey relationship between birds of prey and gulls to haze gulls and other pest birds away from the landfill. [CLICK TO SEE VIDEO](#)

Immediately after the program was initiated in October 2013, there was a marked decrease in the overall number of observed gulls. Data collected since the initiation of the pilot program show around 20 or fewer gulls being observed at the site on a regular daily basis. Testing at the beach also showed a marked improvement in water quality. Bacterial exceedances led to only 40 days of water quality advisories, compared to as many as 187 days in 2012.

**Groundwater Collection System and Detection Monitoring Program (DMP)**
Prima operates under Waste Discharge Requirements issued by the California Regional Water Quality Control Board. The current groundwater monitoring network consists of 10 monitoring wells and seven piezometers that measure groundwater depths each quarter. A groundwater extraction system consisting of four extraction wells was installed in 1992 as a requirement for accepting treated biosolids.

The site operates under the status Detection Monitoring Program (DMP), indicating there has been no release of contaminants to the underlying groundwater. Prima is currently not required to operate a treatment system for the collected groundwater, leachate, and sub-drain water as they are used for onsite dust control.
Remote Access Weather Station

In 2013, Prima conducted a study to understand weather patterns at the site, relative to odors traveling off-site. Following the study, the site assembled a permanent weather station to continue to monitor weather patterns for odor mitigation. Initially, the station only measured wind speed and wind direction. In 2017, the station was upgraded to also monitor air temperature, relative humidity, barometric pressure, and rainfall data. Plus, the station is now remotely accessible – it sends data via radio repeater signal to computers in the main office, where data is automatically stored on OCWR’s network. Specialized software allows staff to view data in real time and to quickly create charts and graphs describing weather trends. In doing so, staff are able to plan for upcoming rain events, research what types of weather conditions may contribute to odors detected by nearby residents, and proactively make operational changes.

Odor Management

When neighbors began to complain about odors, Prima implemented various operational and engineering control techniques to manage odors that might be detected by new neighbors. First, Prima conducted an odor study with tracers to understand weather patterns and odor disbursement in the area. A permanent weather station was retained on site to continue to monitor weather patterns in relation to odor detection.

Operational controls were implemented, such as minimization of the size of the working area and covering extremely odorous loads as quickly as possible to minimize the amount of exposed trash. Certain types of waste, such as biosolids and Processed Green Materials (PGM), are more odorous. Prima has since limited deliveries of PGM and biosolids to weekdays before 11 a.m. when winds typically start to pick up, and these loads are not accepted on weekends when more residents are home. The haul route for such loads was also redirected to one that is further from the nearby neighborhood.

The site installed misting systems along the perimeter ridge closest to the homes, and procurement of portable batwing mist systems and wind deflector mist systems in an effort to slow wind and reduce odors. In 2017, Prima ran a pilot test of various odor neutralizer products, resulting in selection of a product for regular use in misting systems as well as in our water truck to douse odorous loads. A viewshed berm was also constructed at the perimeter and planted to enhance aesthetics and act as a wind barrier.

Prima management formed an odor management committee that developed a “Site Notice” email that allows residents to send their concerns to all relevant parties at OCWR. Staff are able to respond quickly to survey the neighborhood for odors, and look for issues on site, often within 15 minutes of receipt. Following investigation, staff generates a memo summarizing the survey and site status for the day including maps and weather data, and a Public Information Officer reaches out to residents to offer further information and maintain positive relationships with our neighbors. Since 2013, the number of complaints from different residents has reduced over time through Prima’s odor management and outreach efforts. The number of new complainants has reduced as the site only receives repeat complaints from a handful of residents.
Prima operates in full environmental compliance under its permits, legislation, regulations, and guidelines. Prima is inspected by the regulatory agencies on a regular basis. At least monthly an LEA inspector conducts a complete inspection of the facility. Annually inspectors from the AQMD and the RWQCB inspect for compliance with the permit terms and orders. CalRecycle inspectors perform regular inspections every 18 months to ensure that state minimum standards are met. LEA engineers and other regulators make site visits to inspect major construction projects, such as new cell construction, gas extraction system additions and leachate tank upgrades. OCWR holds quarterly coordination meetings with each of the regulators to provide updates on site operations, new regulatory requirements, and permitting activities.

To maintain consistent regulatory compliance, Prima’s operations superintendent and supervisors inspect the entire landfill every day and issue a report, supported with photographs, to document the condition of the main systems and operations in the landfill and ensure regulatory compliance. Any exceedances or non-compliance are immediately reported to OCWR management and reported to the regulatory agencies with plans for corrective action. Any citations, violations, notices and areas of concerns received are addressed immediately. Prima remains in constant communication with the regulatory agencies to provide progress on remedial activities until the citation is addressed to the satisfaction of the agencies. All onsite employees are trained in regulatory compliance through presentations, workshops, conferences, and professional certifications. Numerous staff members are certified in SWANA’s Manager of Landfill Operations (MOLO) and as Dust Control Supervisors under the SCAQMD’s Rule 403 dust control rule.

**Summary of Permits**

Please [CLICK THIS LINK](#) to view the entire list of permits.

**Compliance Alert and Reporting System (CARS)**

In 2017, OCWR developed and implemented a new Compliance Alert and Reporting System (CARS) to better manage the collection of data and reporting to the regulatory agencies. OCWR generates over 250 regulatory reports each year. The program allows Prima to save time and money, reduce risk, improve efficiency automate regulatory compliance tracking and organize data for potential audits.

The program ensures reports are submitted in a timely manner to the regulatory agencies. It also serves as a database for historical compliance information.
**Water Board Visit Roundtable Tour**

In February 2018, Prima hosted a tour for members of Regional and State Water Boards that conduct as-needed site inspections, typically during the rainy season or following new cell development. As part of the quarterly roundtable meeting for their Land Disposal Program, the San Diego Water Regional Board invited attendees to visit an active landfill site and selected Prima because it is “a large facility, one of their more geotechnically challenging sites, and is always in compliance.”

**Signatory to Southern-Sub Region Habitat Conservation Plan (HCP)**

Prima maintains compliance by properly mitigating for habitat impacts associated with landfill development as required by multiple regulatory agencies. See list at left. OCWR is a signatory agency to the Southern Sub Region Habitat Conservation Plan (HCP), a plan that assesses habitat impacts at a regional scale, and addresses appropriate mitigation for signatory agencies to streamline the permitting process for upland type habitats including coastal sage scrub (CSS) and native grasslands. Through the HCP, OCWR has committed to restore a minimum of 122 acres of CSS and 19 ac of grassland to mitigate impacts caused by development through full build-out of the landfill as well as an additional 52.9ac of CSS for impacts associated with the construction of a nearby road extension project (total of 175.9 ac of CSS). OCWR has gone beyond the minimum requirements by installing as much as 190 ac of CSS and 19.25ac of native grassland within a conservation easement (CE) area at Prima that comprises nearly half of the property (486ac).

To be proactive, the mitigation acreage required by the HCP has been installed as “pre-mitigation” projects, in which habitat restoration is installed in advance of associated impacts. Pre-mitigation saves money by maintaining minimal mitigation ratios (impacts after the point of development incur an increased ratio and would result in a requirement for more mitigation acres).

**Thermogenic Gas Testing**

Prima is equipped with 37 gas probes that are monitored in compliance with federal, state, and local regulations for landfill gas migration. Some gas probes at the site have shown methane concentrations above the regulatory compliance limit of 5% (v:v). However, because the site lies over petroliferous deposits, thermogenic (natural gas) methane may potentially be the source of methane to the probe samples. Evaluations of probe sample methane using isotope data have shown a lack of detectable anthropogenic methane 14C. A lack of 14C in the methane suggests that methane is not from modern carbon (e.g. landfill gas (LFG)). This would suggest thermogenic methane from natural gas as the likely source.
Prima has prepared an alternative compliance plan for gas probe monitoring to provide a technical approach to evaluate whether probe methane concentrations are primarily due to LFG methane or methane from other sources. The approach starts with screening that uses more rapid and less costly data and progresses to more sophisticated data, as needed, to evaluate whether probe data show more than 5% methane from LFG. The plan has been approved by oversight regulatory agencies and has provided a valuable tool to demonstrate Prima’s compliance towards controlling landfill gas migration.

Prima has followed a General Development Plan (GDP) as its long-range blueprint since its inception. The GDP has gone through several updates with one major overhaul in development: two zones for present (Zone 1) and future (Zone 4) landfill development, one zone for open space preservation, one zone for future public recreational trails, and one zone for Avenida La Pata, a major arterial roadway, that dissect the site. The GDP lays out a phasing plan for future liner installations and other capital-intensive projects, facilitating long term financial planning for the landfill by the department. It accommodates the needs of the growing neighboring communities and their desire for mobility and regional access, as well as their solid waste disposal needs through Prima’s anticipated closure date in 2102.

**Strategic Financial Planning and Construction Planning**

OCWR provides service to unincorporated County areas and has solid waste agreements with the County’s 34 cities. OCWR is enterprise funded, meaning all funds for operations and capital projects are gained through fees accessed to customers. The solid waste agreements with the cities guarantees residual waste is sent to OCWR’s landfill ensuring a predictable waste stream and stable rate structure for landfill users. To offer rate stability, OCWR has waste disposal agreement with Los Angeles County, which guarantees delivered tonnage. Using gate tonnages and waste agreements, OCWR has developed a strategic financial plan.

OCWR has developed a Master Capital Expenditure Program that ensures our long-term financial plans for construction projects are consistent and breaks each of the projects into four major funding areas: A-E design, Construction Management, A-E Support and Construction. In addition, it works with the constraints of landfill phasing, taking into account how quickly tonnage enters the landfills will affect the parameters of a given project. This program is critical to the department’s ability to rapidly assess impacts from changes in tonnage and the ability to plan prudently in response to changes. The award winning program (2017 NACo Achievement Award) improves the administration of an existing county government program by allowing different scenarios to be run and provides information that facilitates effective planning decisions because all of the project components are affected by the amount of tonnage that flows into the landfills.
OCWR annually updates its strategic financial plan, utilizing five-year, 10-year and long-term updates. The annual updates take into account feedback from the Master Capital Expenditure Program, legislative changes and labor agreement changes. To protect County taxpayers, OCWR also prefunds post closure maintenance (PCM) through an escrow account, while not required by law, prefunding insulates the County from possible liability. The escrow account for PCM is in addition to the Pledge of Revenue OCWR demonstrates to CalRecycle on meeting its financial assurance obligations. Strategic planning is especially critical at Prima, where it will be the County’s last operating landfill operating into the next century.

Prima is a Class III facility that accepts primarily residential and commercial solid waste. The MRF primarily receives construction and demolition waste from self-haulers. Each incoming load is characterized based on type of waste received such as residual MRF waste, greenwaste, biosolids, broken asphalt, etc. Incoming tonnages are recorded in real time and data stored to determine disposal trends and evaluate quantity types. Daily operations are measured through a series of metrics to evaluate performance. Through the Vision Link program, compaction, cover operations, grade control, and equipment usage is measured daily with reports generated on a weekly and monthly basis. The information is utilized to measure airspace utilization factor (AUF) and soil usage in terms of Refuse to Soil Ratios. This enables Prima to monitor what waste densities are achieved while minimizing the usage of dirt to conserve airspace.

Data collected from Prima’s information systems is evaluated against other similar landfills to verify operations are within or exceeding industry trends and standards. Performance is also based on being in compliance with the regulatory agencies’ operating standards. Where feasible, practical, and permitted, Prima management evaluates measures that can improve operations while saving on operational costs. For example, to improve conservation of airspace, tarps are the primary means of daily cover. PGM as ADC has been eliminated at Prima to conserve airspace. To date, Prima has achieved a long range AUF of 0.57 tons/cy with a Refuse to Soil ratio of 4:1. The Vision Link Program provides information on fleet utilization which measures the amount of time an equipment is in operation. The ideal number would be 100 percent indicating the fleet is being fully utilized with minimal downtime. Prima’s current fleet utilization is at 70 percent. To achieve a goal towards 100% usage, Prima continues to work towards “right sizing” the fleet in terms of machine sizes and number of pieces of equipment.

In 2017, Prima developed a long-term Soil Management Plan through the life of the landfill including post-closure maintenance. The plan identifies future developments, provides stockpile locations, and allocates soil usage on a yearly basis. The plan ensures the stockpiling of the soil is placed where it is most needed to avoid double handling or create a depletion of soil where soil would need to be purchased or imported which takes away from valuable air space. Surface emissions monitoring is performed to ensure the appropriate amount of soil is used to cover the waste and prevent exposure of gas emissions. Through the planning efforts, Prima will have sufficient soil through closure in 2102.
Safety of employees and customers is the number one priority of OCWR and Prima. OCWR’s safety program is governed by an Injury and Illness Prevention Program (IIPP) and Code of Safe Practices. The site works to foster a safe working environment by instituting controls and routine training to minimize unsafe work conditions and to change behavior towards accepting safe work practices. OCWR provides training and personal protection equipment to protect staff and directs and monitors traffic to keep customers safe. The safety program starts with a designated Safety Officer who oversees the program and serves as a liaison with CalOSHA.

Prima’s onsite Designated Safety Representative (DSR) coordinates with the Safety Officer to implement the training program. Standard training includes 40-Hours HAZWOPER, 30-Hour CAL-OSHA Construction, First Aid/CPR, back safety/ergonomics, annual hearing tests, defensive driving and more. Bi-weekly safety meetings reinforce post-training, the Safety Officer and DSR meet monthly to plan for future training, discuss any recent incidents. We also include safety mindfulness messaging on our employee information monitors in the lunchroom.

Specific on-the-job training for Prima’s heavy equipment operators is done through modular training program for each piece of heavy equipment. The course provides operators the tools to proficiency and safety operate a piece of equipment. The training is an entry level program that typically last six months to a year based on individual acumen and is also used to train new pieces of equipment and for reinforcement to seasoned operators if needed. OCWR’s training program is supported by Caterpillar’s Professional Operator Certification program to legitimize the training provided by staff through three tiers of formal certification each progressively more challenging. In addition, OCWR is in the process of procuring a mobile simulator that will contain interchangeable equipment controls for different machine types to provide realistic feel and function in working in a landfill environment. The simulators will have the ability to score performance and identify areas of improvement. The simulators will be a training tool to provide operators a safe environment to work with authentic controls in a real-world scenarios before getting on actual machines.

To help keep customers safe, Prima staff provides traffic control and supervision at the unloading areas while customers remove their waste to ensure there are no unsafe acts. If accidents or injuries occur, Prima can quickly act as two-way radios are used to communicate between equipment operators and on the ground staff. Separate dumping areas for commercial loads and public loads have been established to increase safety. Access roads are cleaned several times a day removing any bulky items that could cause an accident. Signs are placed throughout the landfill to provide direction and control speed at the site.

OCWR has developed a safety app to manage the communication and safety records of all employees. The website provides electronic copies of all health and safety plans, forms, training topics, and incident forms that is used for regulatory and internal tracking. Standardized and ad-hoc reports can be generated to establish trends and analysis of common injuries and incidents to identify areas of improvements.

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<th>Total Recordable Cases (TRC)</th>
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<th>Incident Rate</th>
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EXCELLENCE AWARD ENTRY, LANDFILL MANAGEMENT — OC WASTE & RECYCLING

PUBLIC ACCEPTANCE, APPEARANCE AND AESTHETICS

Prima is engaged in a multi-year, multi-phase viewshed mitigation project. Currently, the first three phases have been completed and phase four is now in design. This viewshed projects are the result of the Prima’s continued efforts and concerns for the impact the landfill has on the surrounding communities. The purpose of the viewshed projects is to screen and cover many of the operational buildings and daily activities from public view leaving as much of the natural landscape as possible. As a secondary purpose, the viewshed offers the opportunity to control and mitigate storm water runoff and sediment control and improve the visual landscape of the landfill site.

Prima’s viewshed mitigation projects were an outcome of OCWR’s Good Neighbor Policy, which as recognized by the National Association of Counties (NACo) and Association of California Cities Orange County (ACC-OC) for the Golden Hub of Innovation award in 2015.

Landfill Tour Program and Speakers Bureau

Prima participates in OCWR’s award winning Landfill Tour Program, which has been recognized by SWANA in the category of Education Program and by the ACC-OC for the Golden Hub of Innovation award in 2017. In 2017, we led 105 tours for 1,561 guests. We use tours to teach visitors about OCWR’s waste management practices, environmental protection, and the role of community members in resource conservation and the waste stream as well as the landfill itself.

Complementary to the Tour Program is OCWR’s Speakers Bureau launched in 2017. Two Prima employees are members of the Speakers Bureau, which connects our experts to community, educational and municipal organizations, helping enable the department to deliver key strategic messages to target audiences.

Earth Day 2018

Prima will host OCWR’s inaugural Earth Day Open House and Environmental Fair on April 21, 2018. This family-friendly event will provide a platform to inspire and educate the community to change behavior and become champions of protecting the environment as well as teach them about the landfill.