



City of Manteca Department of Public Works

Solid Waste Master Plan

APRIL 2016

HERWIT
Engineering



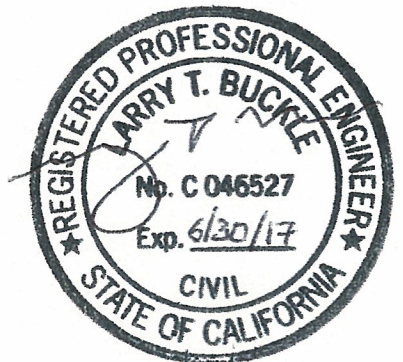
INTERNATIONAL
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**City of Manteca
Department of Public
Works**

Solid Waste Master Plan

April 2016



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Solid Waste Master Plan

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Solid Waste Master Plan

The City of Manteca's Solid Waste Master Plan (Master Plan) was developed by the Department of Public Works, with assistance from Herwit Engineering, and International Engineering Services, Inc. This Master Plan demonstrates the City's commitment to protect the economic viability of the City, conserve natural resources, protect the environment, and ensure public health and safety. The City is a state and regional leader in solid waste management, and the Master Plan was developed with the goal of maintaining and strengthening this leadership position. The initial primary goal of the City is to achieve 75% diversion of municipal solid waste, a goal of Assembly Bill (AB) 341. During drafting of the Master Plan the State passed AB 1826, requiring recycling of commercial generated organic waste. This legislation altered the primary emphasis of the Master Plan, such that the 75% municipal solid waste diversion goal will include a significant component of organics recycling. After drafting and initial review of the Master Plan the California Air Resources Board (ARB) issued a concept paper regarding development of regulation to control short-lived climate pollutants (SLCP), pursuant to Senate Bill (SB) 605. ARB proposes to require 75% diversion of all organic waste by 2020, and 90% diversion by 2025. For the City to meet these proposed requirements the City will need to recycle both commercial and residential organic waste.

To develop this Master Plan, it is imperative that timely and pertinent data be utilized. To facilitate this objective, two significant studies were conducted, a *Residential Solid Waste Characterization Study*, and a *Commercial Fats, Oils and Grease & Food Waste Generation Study*. Copies of both studies are included in the appendix of this Master Plan. In an effort to maximize the inherent synergies of solid waste, wastewater treatment, and their associated programs and infrastructure, this Master Plan was developed simultaneously and collaboratively with the *Manteca Wastewater Quality Control Facility, Biosolids Master Plan*.

Collection, transportation, processing and disposal of solid waste in the State of California is regulated by California's Department of Resource Recycling and Recovery (CalRecycle). CalRecycle's Division of Local Assistance was consulted throughout development of the Master Plan. In addition, San Joaquin County, Environmental Health Department, who provides Local Enforcement Agent (LEA) services for CalRecycle was also consulted.

The Master Plan is comprised of the following 10 Sections:

Section 1 - Introduction.**Section 2 – Regulatory Compliance****Section 3 – Residential Curbside Blue Bin Material Processing**

Section 4 – Residential and Commercial Green Waste Processing Options

Section 5 – Fats, Oils, and Grease (FOG) Plan

Section 6 – Residential Brown Bin Waste Characterization Study

Section 7 – Waste Hauler Franchise Ordinance for Commercial Hauling

Section 8 – Commercial Food Waste Collection and Processing Program Plan

Section 9 – Residential Food Waste Collection and Processing Plan

Section 10 – Manteca’s Solid Waste Master Plan

In the 10-year planning horizon of this Master Plan, it is reasonable to assume increased regulatory requirements will be placed on municipal solid waste (MSW) generation, collection, processing, and disposal. Some recent examples are the plastic bag ban, prohibition of landfill disposal of commercially generated organic waste, and diversion being disallowed for use of greenwaste as alternate daily cover (ADC). Based on the publicly stated intent of ARB, the vast majority of organic waste will be banned from landfill disposal by 2020. Conventional composting of highly volatile organic solids such as food waste will not be allowed due to the unintended creation of SLPC. Implementation of programs presented in this Master Plan will significantly assist the City in meeting current regulations, and provide a foundation to meet anticipated future regulations.

This Master Plan presents budgets and schedules for programs and infrastructure to be used to meet regulatory requirements and goals. There are opportunities within the regulations for the City to reduce, and offset some current expenditures. With full implementation, residential processing and disposal costs could be reduced up to 80%, and the City could produce up to 500 diesel gallon equivalents (DGE) of renewable-compressed natural gas (R-CNG).

One fundamental goal of the Master Plan is identification of cost effective programs the City could implement to achieve 75% landfill diversion, a goal of AB 341. Currently, the City is at 60% diversion. Table ES-1 below shows proposed programs in the order they should be implemented to meet 75% diversion.

Table ES-1, Diversion Program Phases

Diversion Program (By Priority)		Annual Tons Diverted	Annual Tons Landfilled	% Diversion
Existing Programs		85,222	57,467	60%
Proposed New Diversion Programs				
Required By AB 1826	1. Commercial Self Haul Food Waste	1500	55,967	61%
	2. Commercial Source Separated Food Waste	1910	54,057	62%
3. WQCF Biosolids to Land Disposal		8000	46,057	68%
4. Residential Brown Bin CRV Capture		669	45,388	68%
5. Residential Food Waste		9128	36,260	75%
6. Brown Bin Recycling non CRV		4950	31,310	78%

Diversion programs are prioritized by legal requirement, cost, diversion impact, and other benefits. Additionally there is a proposed FOG program. City processing of FOG will have no direct impact on solid waste diversion, but will have public benefit. Table ES-2 below shows budget cycle, and estimated program completion for proposed programs including FOG.

Table ES-2, Program Schedule

Program	Starting Budget Cycle	Program Completion¹
AB 1826 Rate Study		
Rate Study	2016	July 30, 2016
FOG (Grease) Processing		
FOG Receiving Station at the WQCF	2016/17	May 2018
Commercial Organic Waste Collection & Processing		
Organic Waste Processing Facility Phase I	2015/16	January 2017
Commercial Organic Waste Collection Phase I	2015/16	April 2016
Commercial Organic Waste Collection Phase II	2016/17	January 2017
Organic Waste Processing Facility Phase II	2020/21	December 2025
WQCF Biosolids Landfill Avoidance		
WQCF Biosolids Landfill Avoidance	2017/18	December 2018
Bio CNG Facility		
R-CNG Facility Phase	2016/17	May 2018
Residential Waste Separation Efficiency		
Residential Waste Separation Efficiency	2017/18	January 2025 ²

¹ Schedule intended to meet AB 1826-phased implementation

² AB 341 has a goal of 75% diversion by 2020. With this schedule the goal will be achieved by 2025.

Figure ES-1 at the end of the executive summary provides a graphical 10-year program schedule.

Table ES-3 below shows proposed programs and infrastructure, along with their associated costs and budgeting timeframe.

Table ES-3, Master Plan Recommended Improvement Costs

Food Processing at Lovelace with Digestion at the WQCF				
Project Description	Phase 1 Food Waste		Phase 2 Food Waste	Total Project Cost (ENR 9970)
	Minimum Costs 2015-2016	Remaining Costs 2015-2019	Totals Costs 2020-2024	
Solid Waste Funded Infrastructure				
Rate Study	\$70,000			\$70,000
CEQA MND	\$100,000			\$100,000
Food Waste Processing Equipment at Lovelace	\$1,100,000		\$1,000,000	\$2,100,000
Food Waste Puree Transport & Equipment	\$250,000			
Solid Waste Total	\$1,520,000		\$1,000,000	\$2,520,000
Wastewater Funded Infrastructure at WQCF				
FOG and Food Receiving Facility at WQCF	\$1,800,000			\$1,800,000
Industrial Digesters at WQCF			\$1,875,000	\$1,875,000
Dewatering Building and Equipment at WQCF			\$4,585,000	\$4,585,000
Renewable Natural Gas Fueling Station at WQCF		\$3,940,000	\$1,667,000	\$5,607,000
Wastewater Total	\$1,800,000	\$3,940,000	\$8,127,000	\$13,867,000
Combined Total				
Combined Total	\$3,320,000	\$3,940,000	\$9,127,000	\$16,387,000

Notes:

- 1) Phase 1 processed food waste includes Commercial Self Haul at 1,500 tons/year and City collected commercial at an additional 1,433 tons/year. See Table 10.6.3-1.
- 2) Phase 2 processed food waste includes the addition of residential food waste at 5,580 tons/year. See Table 10.6.3-1.

AB 1826 places considerable obligations on the City to divert organic waste from landfill disposal. In the short term, timing of organic waste diversion programs could significantly be accelerated by ARB under provisions of SB 605. Table ES-4 outlines legislative requirements and processing options for commercial organic waste.

Table ES-4 Interim Food Waste Processing Options for AB 1826 Compliance

1. By January 1, 2017 all commercial businesses producing greater than 4 cubic yards of organic waste per week, must divert <u>all</u> organic waste from landfill disposal. <i>“Organic Waste” is food waste, greenwaste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste mixed with food.”</i> • City must start commercial food waste collection. • Approve ordinance regulating food waste diversion. • City needs to complete community outreach and education program. (Plan must be established by January 1, 2016) • Large "self haul" Businesses that are currently composting their food waste will continue to do so until the City is ready to receive waste. • We do not know the volume of food waste that will be generated in the early program stages.		
2. Food waste is collected and delivered by the City to the Lovelace food waste processing site. Food waste processing will: • Remove contaminants • Process clean food waste into a puree. • Load puree into greenwaste trucks going to Harvest Power, or tanker trucks for transport to WQCF.		
3. Phasing for downstream processing for landfill avoidance until WQCF digester and Lovelace food processing facilities are ready.		
Phase 1 Until Lovelace is Ready	Phase 2 Until WQCF is Ready	Phase 3 After WQCF is Ready
• Change residential green waste collection so that City collects Green waste daily and picks up food waste on green waste routes. (<i>Harvest Power can only accept 15% food in loads or organic waste</i>) • No processing of food waste for contaminants. • Driver inspects for contaminants. • Training for food waste producers to limit contamination. • Harvest Power process and markets compost.	• Change residential green waste collection so half the City is collected every week. • City develops dedicated food waste collection truck. • City processes food waste at Lovelace. • Residential greenwaste trucks will stop at Lovelace to have processed food waste added to greenwaste load. The truck will then continue on to Harvest Power. • Harvest Power processes and markets compost.	• Construct a processed food waste receiving facility at WQCF by January 1, 2018, to coincide with completion of two new digesters. • City operates dedicated food waste collection trucks. • City processes food waste at Lovelace. • City transfers processed food waste in tanker trailers from Lovelace to WQCF. • All biosolids must be diverted from landfill disposal if containing food waste. • City or third party markets biosolids or disposes of biosolids outside of landfill.

With the proposed programs and infrastructure a considerable volume of biogas will be produced utilizing Wastewater Quality Control Facility (WQCF) biosolids, FOG, and food waste. This Master Plan, in conjunction with the WQCF Biosolids plan, evaluates a number of electricity production options, along with production of R-CNG. Based on simple payback in years, R-CNG is the preferred option. Table ES-5 below shows simple payback in years for three production options with four levels of phasing.

The last program scheduled for implementation is Residential Waste Separation Efficiency. A number of communities have had success increasing residential source separation participation through increased educational programs, and through modification of the collection schedule. Table ES-6 below shows approximate current residential disposal and composting costs, with revenue from Blue Bin processing. Table ES-7 shows how costs and revenue could be influenced with optimized residential source separation efficiency. Costs assume food waste is diverted to the Green Bin to be composted or processed for energy production.

With optimized residential source separation there can be as much as an 80% reduction in net processing costs.

Table ES-5, Project Simple Payback for Biogas Projects in Years By Feedstock Phasing

Digester Feedstock	Bio CNG 100 Simple Pay Back in Years	Existing 400kW Waukesha Simple Pay Back in Years	New 600 kW Engine Simple Pay Back in Years
Biosolids Only	11.7 (367 DGE/D)	87.71	28.40
+ FOG	8.25 (367 DGE/D)	34.75	21.27
++ Food Phase I	5.8 (500 DGE/D)	24.62	18.16
+++ Food Phase II	5.13 (500 DGE/D)	19.62	15.88

(1) Assume purchase of natural gas to fill RNG shortfall. Average offset for Diesel purchase at \$3.18/gal. Average offset for Electricity at \$0.122/kW-hr.

(2) DGE/D: Diesel Gallon Equivalent per day

(3) Includes RIN credits at \$1.65/RIN

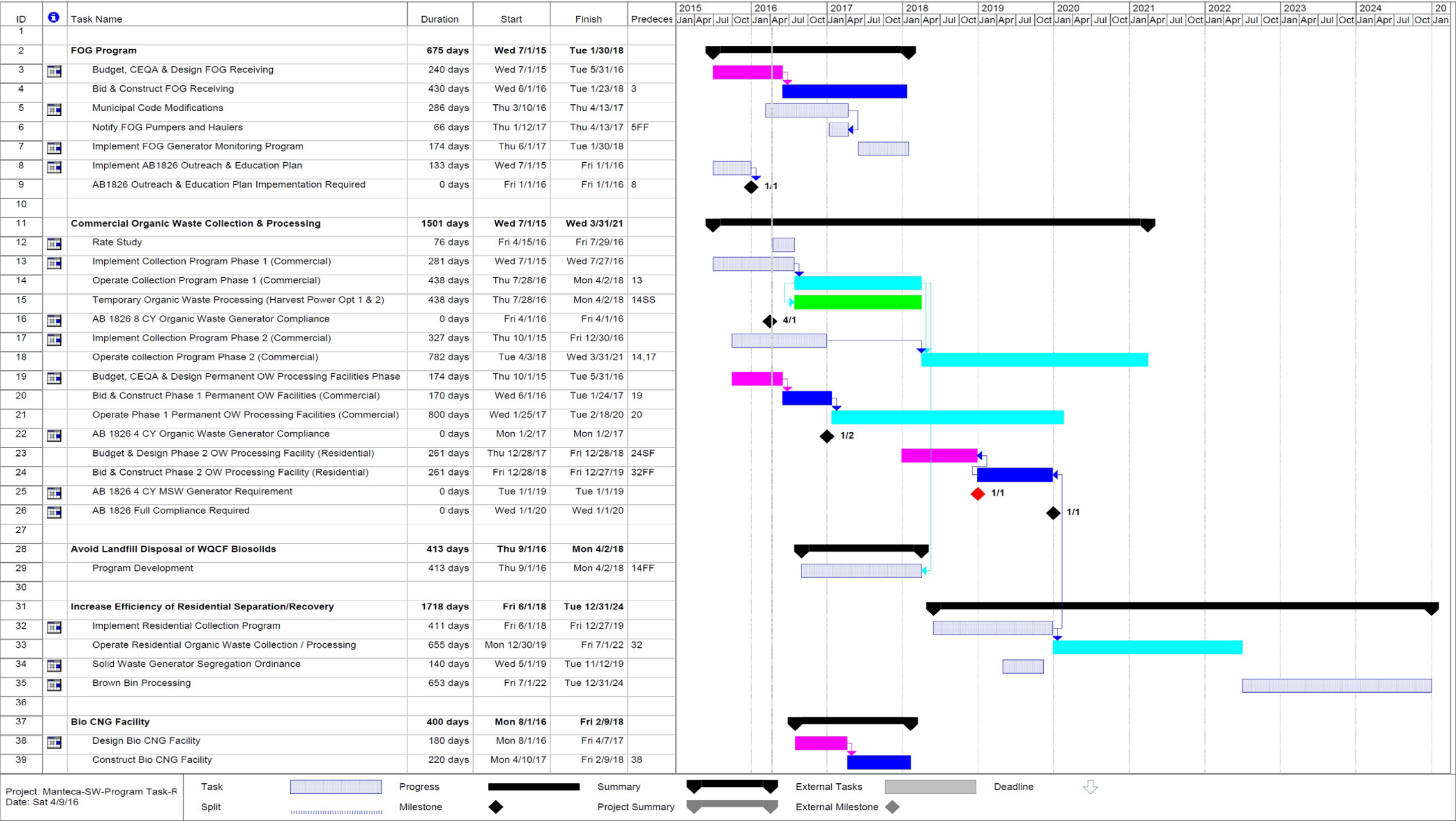
Table ES-6, Current Residential Brown, Green and Blue Bin Processing Fees and Revenue

Material	Tons/Year	Processing Cost or (Payment) Per Ton	Annual Expenditure or (Revenue)
Brown Bin	20,018	\$44.17	\$884,195
Green Bin	8,000	\$19.25	\$154,000
Blue Bin	5,300	(\$36.00)	(\$190,800)
TOTAL			\$847,800

**Table ES-7, Residential Brown, Green and Blue Bin Processing
Fees and Revenue With Optimized Source Separation**

Material	Tons/Year	Processing Cost or (Payment) Per Ton	Annual Expenditure or (Revenue)
Brown Bin	5,365	\$44.17	\$236,972
Green Bin	17,008	\$19.25	\$327,404
Blue Bin	10,945	(\$36.00)	(\$394,020)
TOTAL			\$170,356

Figure ES-7, Manteca Solid Waste Master Plan 10-Year Program Schedule



LIST OF ABBREVIATIONS

City of Manteca

Solid Waste Master Plan

Abbreviation	Description
AB	Assembly Bill
AD	Anaerobic Digestion
ADC	Alternate Daily Cover
ARB	Air Resources Board
BMP	Best Management Practice
BP	British Petroleum
BTU	British Thermal Units
CalRecycle	California Department of Resource Recycling and Recovery
Cal-EPA	California Environmental Protection Agency
CCS	Carbon Capture and Sequestration
CFD	Cubic Foot per Day
CFR	Code of Federal Regulations
CH ₄	Methane
CIWMB	California Integrated Waste Management Board
CNG	Compressed Natural Gas
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalent
CRT	Cathode Ray Tube
CRV	California Redemption Value
DPW	Department of Public Works
DWQ	Department of Water Quality
Env	Environmental
EPR	Extended Producer Responsibility
ES	Executive Summary
EU	European Union
FOB	Freight on Board
FOG	Fats, Oils, and Grease
Ft ³	Cubic Foot
g	Gram
GGE	Gasoline Gallon Equivalent
GHG	Green House Gas
gpm	Gallons Per Minute
HDPE	High Density Polyethylene
IES	International Engineering Services, Inc.
K	Potassium
kW	Kilo-Watt
kWh	Kilo-Watt-Hour
l	Liter

Abbreviation	Description
LEA	Local Enforcement Agency
lbs	Pounds
LLC	Limited Liability Corporation
mgd	Million Gallons Per Day
MRF	Material Recovery Facility
MSW	Municipal Solid Waste
N	Nitrogen
OCC	Old Corrugated Cardboard
P	Phosphorus
PETE	Polyethylene Terephthalate
PET	Polyethylene Terephthalate
POTW	Publicly Owned Treatment Works
R-CNG	Renewable Compressed Natural Gas
RNG	Renewable Natural Gas
SB	Senate Bill
SRC	Sacramento Rendering Company
SSO	Sanitary Sewer Overflow
UBC	Used Beverage Container
UPC	Universal Plumbing Code
USDA	United States Department of Agriculture
US-EPA	United States Environmental Protection Agency
VS	Volatile Solid
WARM	Waste Reduction Model
WQCF	Wastewater Quality Control Facility

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1.0 PURPOSE AND SCOPE

The City of Manteca provides collection of solid waste for residential and commercial customers within City limits. Currently the City serves a population of approximately 72,000 people. The City disposes of most of its generated solid waste at the privately owned Forward Landfill, located in San Joaquin County. In addition approximately 10% of solid waste is processed through the County owned Lovelace transfer station on Lovelace Road.

The City also owns and operates the Wastewater Quality Control Facility (WQCF) located at 2450 W. Yosemite Ave in Manteca, CA. The WQCF is a regional facility in that it provides treatment and disposal service for commercial and residential customers within Manteca, a portion of the City of Lathrop, and Raymus Village located in San Joaquin County. The permitted capacity of the WQCF is 9.87 million gallons per day, with a current average flow of 6.5 million gallons per day.

The purpose of this report is to develop a plan for achieving the following City and Regulatory goals:

- 75% diversion of Solid Waste by the year 2020
- Compliance with existing solid waste legislation
- Cost effective energy recovery from solid waste and fats, oils, and grease
- Cost effective solid waste collection, processing, and disposal
- Position the City for future legislation
- Maximize the use of existing City assets at the WQCF

This report has been prepared in conjunction with the **WQCF Biosolids and Gas Utilization Plan**, which considers related improvements to the WQCF, and benefits of combining processes and facilities to maximize energy production through utilization of food waste and, fats, oils, and grease (FOG). Cross references are made between the two reports.

The remainder of this report includes the following sections:

- Regulatory Compliance
- Residential Curbside Blue Bin Material Processing Plan
- Residential and Commercial Green Waste Processing Plan
- Fats, Oils, and Grease (FOG) Plan
- Residential Black Bin Waste Characterization Study

- Waste Hauler Franchise Ordinance for Commercial Hauling
- Commercial Food Waste Collection and Processing Plan
- Residential Food Waste Collection and Processing Plan
- Solid Waste Master Plan

2.0 REGULATORY COMPLIANCE

2.1 Manteca Solid Waste Mass Balance

Annually the City of Manteca produces an **Annual Report** of solid waste activities for the State of California. The California Department of Resources Recycling and Recovery (CalRecycle), formally the California Integrated Waste Management Board (CIWMB) reviews the Annual Report for completeness and accuracy. The last submitted and CalRecycle reviewed report was for calendar year 2012. Even with the comprehensive nature of a solid waste annual report, there is still information that needs to be gathered from additional sources to produce a comprehensive City wide mass balance. These sources include interviews with waste generators and processors, actual budgetary spending, and extrapolation of data.

Solid Waste Mass Balance for Calendar Year 2012

Table 2.1-1, Disposal

57,467 Tons	Tons	Description
	20,120 Tons	Commercial Solid Waste
	20,018 Tons	Residential Solid Waste (Brown Bin)
	7,099 Tons	General Self Haul Solid Waste
	8,000 Tons	Wastewater Biosolids Disposal
	1,500 Tons	Commercial Food Waste Self Haul
	730 Tons	Curbside Residue
57,467 Tons	57,467 Tons	

Table 2.1-.2, Known Materials Diverted From Landfill Disposal in Calendar Year 2012

19,791 Tons	Tons	Description
	8,000 Tons	Residential Greenwaste
	2,700 Tons	Commercial Greenwaste
	5,300 Tons	Residential Curbside
	2,700 Tons	Commercial Recycling
	700 Tons	Tires
	290 Tons	Concrete and Asphalt
	73 Tons	Scrap Metal
	19 Tons	Cathode Ray Tube (CRT)
	6 Tons	Non-CRT Electronics
	2 Tons	Universal Waste
	1 Ton	Dry Cell Batteries
19,791 Tons	19,791 Tons	

In addition the city also recycled approximately 12,000 gallons of automobile oil.

To achieve the required 50% landfill diversion required under Assembly Bill (AB) 939 for calendar year 2012, CalRecycle estimated a citywide disposal of 5.6 pounds per person per day. In 2012 CalRecycle calculated the citywide actual disposal to be 4.5 pounds per person per day. In 2012 the state estimated the City population to be 69,815 people.

AB 939 requires California cities to divert 50% of solid waste from landfill disposal through new programs initiated after 1990. Landfill diversion can be accomplished through reduce, reuse, and/or recycle of materials. CalRecycle utilizes a combination of several factors including sales tax revenue, population, the City base year study, and other data sets to estimate total potential solid waste generation. In 2012 the total potential solid waste generated by Manteca was two-times the CalRecycle target disposal of 5.6 pounds per person per day, or 11.2 pounds per person per day. The total CalRecycle calculated potential waste generated by Manteca in calendar year 2012 was 11.2 pounds per person per day times a population of 69,815 people, times 365 days, for a total of 142,702 tons.

Table 2.1-3, CalRecycle Solid Waste Mass Balance

142,702 Tons		Potential Waste Generated
	57,467 Tons	Actual Disposed Solid Waste
	19,791 Tons	Actual Recycled Material Utilizing City Programs
	65,444 Tons	Tonnage Diverted From Landfill Disposal Utilizing Private Reduce, Reused and/or Recycle Programs Initiated After 1990
142,702 Tons	142,702 Tons	

Even though the state requires Manteca to divert 50% of waste generated from landfill disposal under provisions of AB 939, the state no longer actually calculates landfill diversion. However data provided by CalRecycle in the 2012 Annual Report provides adequate information to estimate landfill diversion. As previously stated the estimated potential waste generation was 142,702 tons. The CalRecycle calculated landfill disposal was 4.5 pounds per person per day for a total of 57,467 tons. Therefore landfill diversion for 2012 is:

$$(142,702 \text{ Tons} - 57,467 \text{ Tons}) / 142,702 \text{ Tons} \times 100 = 59.7\% \text{ Diversion}$$

A significant portion of CalRecycle, *Potential Waste Generate*, comes from private reduce and reuse programs. These programs can include:

Reduce

- Reduction in the volume of packaging surrounding new products.
- Home composting and grasscycling.
- Electronic periodicals rather than print.
- Reduction in the volume of junk mail.
- Reusable shopping bags over disposable.

Reuse

- Donation of clothing, furniture, and appliances to charities.
- Use of lunch boxes over paper sacks.
- Use all writing paper on both sides.
- Use silverware and dishes instead of disposable plastic utensils and plates.
- Store food in reusable plastic containers.
- Purchase of used items rather than new.

Conclusions and Recommendations

- In 2012 CalRecycle estimated the City to have the potential to generate 142,702 tons of solid waste.
- Of the 142,702 tons, 65,444 tons (45.9%) were allocated to unaccounted diversion programs.
- City diversion programs account for 19,791 tons, less than one-third the volume of diversion from unaccounted programs.

2.2 Review of CalRecycle Annual Reports

Each year the City of Manteca is required under State of California law to file an Annual Report with CalRecycle. The report is intended to describe progress the City has made in achieving requirements of the Integrated Waste Management Act, AB 939.

Prior to 2007 municipalities were required to track tonnages of diverted materials in an effort to determine compliance with AB 939 landfill diversion requirements. Tracking of tonnages of multiple programs became cumbersome and problematic for many reporting agencies. In an effort to simplify reporting requirements and improve reliability of reporting information, CalRecycle went to a system that estimated per capita disposal expressed in pounds per person per day. This generated number was then compared to actual statewide disposal tonnage reported for each municipality. Solid waste percent diverted is no longer calculated. In addition the question was often asked if the municipality was receiving credit for a diversion program. This new program eliminates the need for these questions.

Today CalRecycle estimates the tonnage a municipality would be expected to dispose if it were to meet the 50% diversion requirement. To calculate this number CalRecycle primarily looks at base-year generation tonnage, population, taxable sales, employment, and consumer price index. CalRecycle will determine a target disposal tonnage based on both population, and number of people employed. Over a three-year period these numbers have changed for the City of Manteca per the Table below:

Table 2.2-1, CalRecycle Generated Per Capita Disposal, Target and Actual

Reporting Year	Population Pounds/Person/Day Disposed		Employment Pounds/Employee/Day Disposed	
	Target	Actual	Target	Actual
2010	5.6	4.9	21.1	22.5
2011	5.6	4.6	21.1	20.6
2012	5.6	4.5	21.1	19.9

In each of the three-years the target tonnage disposed has remained consistent. To the City's credit, the actual tonnage disposed per person or employee, per day decreases with each year. More importantly, with the exception of 2010 disposal tonnage based on employment, the actual tonnage disposed has been less than the target. It can be assumed that the target represents 50% diversion.

Table 2.2-2, CalRecycle Generated Tonnage Disposal, Target and Actual

Reporting Year	Population	Employment	Target Population (Tons/Year)	Target Employment (Tons/Year)	Actual Disposal (Tons/Year)
2010	66,749	14,444	68,217	55,620	59,206
2011	68,410	15,251	69,915	58,727	57,462
2012	69,815	15,850	71,351	61,034	57,467

In addition to tracking disposed tonnage in an effort to determine compliance with AB 939, the Annual Report also tracks progress with implementation of various diversion programs. These programs include:

- o Xeriscaping/Grasscycling
- o Business Waste Reduction Programs
- o Procurement
- o Government Source Reduction Programs
- o Residential Curbside
- o Residential Drop-off
- o Residential Buy-Back
- o Commercial On-Site Pickup
- o Commercial Self-Haul
- o Special Collection Seasonal
- o Special Collection Events
- o Other Recycling
- o Residential Curbside Greenwaste Collection
- o Residential Self-haul Greenwaste
- o Commercial On-site Greenwaste Pick-up
- o Commercial Self-Haul Greenwaste

- o Sludge
- o Tires
- o White Goods
- o Wood Waste
- o Concrete/Asphalt/Rubble
- o Other Special Waste
- o Print (brochures, flyers, guides, news articles)
- o Outreach (tech assistance, presentations, awards, fairs, field trips)
- o Schools (education and curriculum)
- o Economic Incentives
- o Ordinance
- o Material Recovery Facility
- o Transfer Station
- o Composting Facility
- o Permanent Facility
- o Mobile or Periodic Collection
- o Curbside Collection
- o Education Programs

Conclusions and Recommendations

- To date the City has met required annual reporting requirements of CalRecycle.
- In the near future additional programs will need to be developed to meet the 75% diversion goal of AB 341.
- The City may also consider development of programs to assist businesses with future organic waste diversion and processing requirements under AB 1826.

2.3 CalRecycle Perspective on Manteca Regulatory Compliance

HERWIT Engineers, utilizing the services of International Engineering Services, Inc. (IES) met with CalRecycle Staff on four occasions regarding the City of Manteca. The meetings are summarized in Table 2.3-1.

There are five significant pieces of California legislation that have potential to influence municipal solid waste operations. Table 2.3-2 below lists the legislation and provides highlights of the associated regulations.

Table 2.3-1, CalRecycle Meetings

Date	Persons In Attendance	Subjects Discussed
May 29, 2014	Rexie LeStrange, City of Manteca Dinorah Hall , CalRecycle Julie Trueblood, CalRecycle Larry Buckle, IES	Conference call to discuss the 2013 Annual Report and to make plans for the annual site inspection
June 5, 2014	Rexie LeStrange, City of Manteca Julie Trueblood, CalRecycle Larry Buckle, IES	Annual site inspection. Most of the time was spent discussing and visiting commercial and multi-family locations regarding contamination in recycle bins. Possible solutions for contamination were discussed.
October 23, 2014	Julie Trueblood, CalRecycle John Muma, CalRecycle Mitch Delmage, CalRecycle Larry Buckle, IES	The meeting was held at CalRecycle offices in Sacramento. The group discussed City compliance with AB 32, AB 939, AB 341, AB 1826, AB 1594
October 25, 2014	Ken Decio, CalRecycle Larry Buckle, IES	This phone meeting was at the recommendation of CalRecycle staff that attended the October 23 meeting. This call focused on AB 1826, and AB 1594.

Table 2.3-3, California Legislation

Legislation	Regulations
AB 939	• Established the Integrated Waste Management Board (CIWMB), which would later transition into CalRecycle. • Established waste diversion mandates primarily consisting of 50% diversion of municipal solid waste from landfill disposal. • Established a comprehensive statewide system of permitting, inspection, enforcement, and maintenance of solid waste facilities.
AB 341	• Requires commercial and multifamily recycling. • Establishes a statewide goal of 75% diversion. • Has no enforcement mechanism.
AB 32	• Requires California to reduce greenhouse gas (GHG) emissions to 1990 levels by 2020. • Each sector of the economy must demonstrate reduction. • CalRecycle must work with the Air Resources Board (ARB) to establish regulations. • Every 5-years the ARB will update their <u>Climate Change Scoping Plan</u> to meet AB 32 requirements
AB 1594	• The use of green material for alternate daily cover (ADC) will no longer be counted as diversion but as disposal.
AB 1826	• “Organic waste” generated by “business” must be diverted from landfill disposal. • The first phase of enforcement begins April 1, 2016, and will include businesses that generate eight cubic yard or more per week of organic waste. • The second phase of enforcement begins on January 1, 2017 and includes businesses that generate four cubic yards or more per week of organic waste. • The third phase of enforcement begins on January 1, 2019 and includes businesses that generate four cubic yards or more of commercial solid waste. • If on January 1, 2020 CalRecycle determines the state has not reduced organic waste disposal by at least 50% from 2014 levels, businesses that generate two cubic yards per week of commercial solid waste will be included in the program. • Organic waste is defined as food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food soiled paper waste that is mixed with food. • Business is defined as a commercial or public entity, including multifamily residential dwellings of five units or more.

Conclusions and Recommendations

- CalRecycle staff has consistently reported Manteca to be in compliance with CalRecycle staff's interpretation of current regulations.
- Going forward the City will need to develop additional diversion programs to meet the 75% diversion goal of AB 341, and to assist business to meet the phased compliance of AB 1826.
- The City may be required to develop programs for the state to comply with AB 32. The ARB will determine if and when additional programs will be required.

2.4 Manteca Green Ordinance

The City of Manteca does not have a Green Ordinance. CalRecycle staff knows of no regulation requiring such an ordinance.

Conclusions and Recommendations

- The City currently does not have a green ordinance. Going forward there is no known requirement to develop such an ordinance.

2.5 Current Program Regulatory Compliance

CalRecycle staff reports, the primary legislation the City will need to be concerned with are AB 939, AB 341, AB 32, AB 1594, and AB 1826. Of the five laws only AB 939 provides CalRecycle with ability of enforcement through punitive action. However the City must implement programs under AB 939 that demonstrate true effort to comply with the other legislation.

AB 939

In meeting with CalRecycle staff, staff indicated the City has programs in place to meet provisions of current solid waste regulations. CalRecycle is not significantly concerned with actual diversion percentage, but is primarily concerned with development and implementation of approved programs. This said, the City is clearly exceeding diversion targets established by CalRecycle.

If the City is not meeting requirements of the remaining four pieces of legislation, CalRecycle could exercise enforcement through AB 939. Due in part to phasing in of requirements of the various pieces of legislation, the City, for the time being is in compliance with all legislation from the perspective of CalRecycle.

However the City must implement additional programs in the near and extended future to remain in compliance as regulatory requirements begin to take effect. Below is a

discussion of the key regulatory requirements of the existing legislation, with the time frames for compliance.

AB 341

The main provisions of AB 341 establishes a statewide goal of 75% diversion, and requires recycling of commercial businesses and public entities that generate 4 cubic yards or more of solid waste per week. In addition multi-family complexes with 5 or more units are subject to mandatory recycling. This provision of the law became effective on July 1, 2012.

The 75% diversion goal is just a goal. The legislation goes so far as to state CalRecycle shall not establish or enforce a diversion rate on a jurisdiction that exceeds the current 50% diversion rate. In addition CalRecycle had to provide a report to the Legislature on January 1, 2014 identifying strategies to achieve the 75% diversion goal by 2020.

From CalRecycle's perspective Manteca is providing required recycling services to commercial, public entities, and multi-family businesses. CalRecycle would like to see better participation resulting from public education and other outreach efforts to multi-family complexes. At this time CalRecycle considers the City to be in compliance with AB 341.

AB 32

The California Air Resources Board (ARB) website states that passage of AB 32, the California Global Warming Solutions Act of 2006, marked a watershed moment in California's history. This legislation requires a sharp reduction in greenhouse gas (GHG) emissions by requiring California to reduce its GHG emissions to 1990 levels by 2020. This represents an approximate 15% reduction over what would be expected without the legislation. ARB goes on to say:

Pursuant to AB 32, ARB must adopt regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions. The full implementation of AB 32 will help mitigate risks associated with climate change, while improving energy efficiency, expanding the use of renewable energy resources, cleaner transportation, and reducing waste.

It is widely accepted that one of the lowest cost GHG emission reduction strategies is development of recycling, composting, and other landfill diversion programs. Organic matter placed in a landfill will often produce fugitive methane emission. Methane has been determined by NASA to be 105 times more potent than carbon dioxide (CO²) within a 20-year window¹, and 34 times that of CO² over 100 years.

¹ Drew T. Shindell, *et al.*, "Improved Attribution of Climate Forcing to Emissions," *Science* **326**, 716 (2009).

The United States-Environmental Protection Agency (US-EPA) has developed the Waste Reduction Model (WARM)² that estimates GHG reduction as a result of landfill diversion, composting, and recycling. The unit of measure of the model is carbon dioxide equivalent (CO₂e). Based on the Manteca CalRecycle Annual Report for 2012, the US-EPA WARM Model estimates a CO₂e avoidance of 13,061 metric tons resulting from just the residential curbside, and residential and commercial greenwaste composting programs. Table 2.5-1 shows a breakdown of CO₂e emission avoidance.

US-EPA estimates the average passenger car in the US will emit 4.75 metric tons of CO₂e in one year³. Based on the US-EPA WARM Model, processed residential recyclables, and residential and commercial green waste sent to composting, have the GHG effect of removing 2,750 standard passenger cars from the road.

Table 2.5-1, CO₂e Avoidance From 2012 Residential Diversion With Commercial Greenwaste

WARM Summary close or Esc Key

Material	Baseline Scenario					Alternative Scenario						Change (Alt - Base) MTCO2E
	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total MTCO2E	Tons Source Reduced	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total MTCO2E	
Aluminum Cans	0	27	0	N/A	1	0	27	0	0	N/A	-241	-242
Glass	0	381	0	N/A	15	0	381	0	0	N/A	-105	-120
HDPE	0	85	0	N/A	3	0	85	0	0	N/A	-75	-78
PET	0	90	0	N/A	3	0	90	0	0	N/A	-102	-105
Corrugated Containers	0	965	0	N/A	497	0	965	0	0	N/A	-3,010	-3,507
Yard Trimmings	N/A	10,700	0	0	-1,889	0	N/A	0	0	10,700	-1,315	574
Mixed Paper (primarily from offices)	0	1,770	0	N/A	1,348	N/A	1,770	0	0	N/A	-6,348	-7,696
Mixed Metals	0	259	0	N/A	10	N/A	259	0	0	N/A	-1,133	-1,143
Mixed Plastics	0	694	0	N/A	27	N/A	694	0	0	N/A	-717	-744

Note: A negative value indicates an emission reduction; a positive value indicates an emission increase.

a) For an explanation of the methodology used to develop emission factors, see Documentation for Greenhouse Gas Emission and Energy Factors Used in the Waste Reduction Model (WARM) — available on the Internet at <http://epa.gov/epawaste/conserve/tools/warm/SWMGHGReport.html>

Based on the Brown Bin waste characterization study (see Section 6.) conducted in August of 2014, the Manteca residential Brown Bin contains 45.7% food waste. In 2012 the City transported about 20,018 tons of residential Brown Bin waste to the landfill containing 8,407 tons of food waste. If the City were to implement a residential food waste composting program, the US-EPA WARM Model estimates 7,627 metric tons of CO₂e avoidance. This is the same as removing 1,606 cars from the road. Residential food waste CO₂e avoidance is shown in Table 2.5-2

² http://epa.gov/epawaste/conserve/tools/warm/Warm_Form.html

³ <http://www.epa.gov/cleanenergy/energy-resources/refs.html>

Table 2.5-2, Residential CO₂e Avoidance From Food Waste

WARM Summary												close or Esc Key
GHG Emissions Analysis — Summary Report												Print Summary
(Version 13, 6/14)												
Analysis of GHG Emissions from Waste Management												
GHG Emissions from Baseline Waste Management Scenario (MTCO ₂ E):						6,344						
GHG Emissions from Alternative Waste Management Scenario (MTCO ₂ E):						-1,283						
Total Change in GHG Emissions: (MTCO₂E):						-7,627						
Material	Baseline Scenario					Alternative Scenario					Total MTCO ₂ E	Change (Alt - Base) MTCO ₂ E
	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total MTCO ₂ E	Tons Source Reduced	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted		
Food Waste (non-meat)	N/A	8,407	0	0	6,344	0	N/A	0	0	8,407	-1,283	-7,627
Note: A negative value indicates an emission reduction; a positive value indicates an emission increase. a) For an explanation of the methodology used to develop emission factors, see Documentation for Greenhouse Gas Emission and Energy Factors Used in the Waste Reduction Model (WARM) — available on the Internet at http://epa.gov/epawaste/conservation/tools/warm/SWMGHGreport.html b) Emissions estimates provided by this model are intended to support voluntary GHG measurement and reporting initiatives. c) Total emissions estimates provided by this model may not sum due to independent rounding.												

Solid waste diversion and processing could provide Manteca with a significant portion of the 2020 GHG reductions called for in AB 32. In October of 2014 the Governor of California signed AB 1826 that requires a significant portion of organics produced by commercial establishments to be diverted from landfill disposal. In Section 8 of this report, it is estimated that the City food service businesses generate 1,910 tons per year of food waste that is currently going to landfill disposal. If this material were to be diverted to a composting program the US-EPA WARM Model estimates 1,733 metric tons of CO₂e avoidance annually. This is equivalent to removing 365 cars from the road.

AB 1594

AB 1594 became law in September of 2014. Prior to AB 1594 *Green Material* could be used as alternative daily cover (ADC) and be considered diverted from landfill disposal. Under AB 1594 green material can, where appropriate, be used for ADC but will now be considered disposed in the landfill. CalRecycle considers Yard waste to be green material.

Currently greenwaste collected by Manteca is composted and not used for ADC. This law, for the time being, will have little to no impact on City operations or disposal calculations.

Going forward there could be an opportunity for the City's wastewater biosolids to be used for ADC. Currently City biosolids are taken to Forward Landfill for disposal. CalRecycle does not consider biosolids to be Green Material; therefore biosolids could be used for ADC and not be considered disposed. Currently the City produces in excess of 8,000 tons

of wastewater biosolids per year. For biosolids to be used for beneficial use they must meet Title 40 of the Code of Federal Regulation (CFR) Part 503. At this time biosolids produced by the City do not meet standards for beneficial use due to insufficient hydraulic retention time in the wastewater anaerobic digestion process.

AB 1826

In an effort to reduce the volume of material disposed in the states landfills, and to reduce fugitive GHG emissions emitted from landfills, the state in September 2014 signed AB 1826 into law. This law requires commercial establishments to divert *Organic Waste* from landfill disposal. The law defines organic waste to be food, greenwaste, nonhazardous wood waste, and food-soiled paper waste that is mixed with food waste.

The law will be phased in per the Table below.

Table 2.5-3, AB 1826 Phasing

Commercial Waste Generator	Date of Program Participation
Eight cubic yards or more of organic waste per week.	April 1, 2016
Four cubic yards or more of organic waste per week.	January 1, 2017
Four cubic yards of commercial solid waste per week.	January 1, 2019
If organic waste disposal in the state is not reduced by 50% from 2014 levels: Two cubic yards of commercial solid waste per week	January 1, 2020

On or after January 1, 2020 if CalRecycle determines the statewide disposal of organic waste has not been reduced by 50% from the 2014 volume, a business that generates two cubic yards per week will be required to participate in programs established by AB 1826.

Businesses that produce in excess of the threshold in the above table must source separate organic waste, or have their commercial solid waste taken to a mixed waste material recovery facility for organic waste recovery. Captured organic waste must be composted or anaerobically digested.

A Commercial Waste Generator is defined as any business including multi-family complexes of five or more units. Multi-family waste generators are not required to separate food waste.

In the near future the City will need to plan for how to deal with commercial generators producing in excess of eight cubic yards of organic waste per week. The majority of restaurant waste is technically organic waste, the question then becomes which accounts exceed the volume threshold, and then what will be the program for separation of organic

waste. In Manteca all major grocery stores have existing programs for diversion of organic waste.

Conclusions and Recommendations

- Currently the City is in compliance with all state regulations.
- In the next 10-years ARB may impose regulations that the City will need to comply with regarding AB 32.
- If the City intends to meet AB 341, 75% diversion goal, the City will need to develop additional diversion programs.
 - o Based on the 2012 solid waste mass balance from Section 2 of this report, the City has the potential to generate 142,702 tons of MSW per year.
 - o To achieve 75% diversion, disposal cannot exceed 35,676 tons. In 2012 the City disposed 57,467 tons. The City is going to need to divert an additional 22,000 tons from what is now being landfill disposed.
 - o 8,000 tons of biosolids could be diverted from landfill disposal with increased hydraulic retention time in the wastewater treatment plant's anaerobic digestion process.
- Manteca can assist businesses comply with AB 1826 through development of commercial organic waste collection and processing programs.

3.0 RESIDENTIAL CURBSIDE BLUE BIN MATERIAL PROCESSING PLAN

3.1 Existing Economic and Environmental Conditions

In July of 2013 the City entered into a five-year contract with Forward Inc. for processing of the City's residential curbside and commercial recycling material. Under this agreement, the City will deliver collected materials to a location adjacent to the Forward Landfill. Forward Landfill is the disposal site for the City's municipal solid waste.

Forward Inc. is a subsidiary of Allied Waste. Allied Waste merged with Republic Services to form the second largest waste and recycling organization in America. Republic Services was incorporated in 1998, and is a Fortune 500 company that is publicly traded on the New York Stock Exchange (NYSE:RSG).

Under the current agreement between the City and Forward Inc. the City receives \$36.00 per ton for Blue Bin and commercial recycled materials. Prior to July 2013 the City received \$20.00 per ton. For a period starting in January 2009, during the economic recession, the City received no compensation for Blue Bin and commercial recyclable materials. Based on a three-year average price for key commodities, including California Redemption Value (CRV), the weighted value of residential Blue Bin material is \$175.26 per ton. This is based on material that is sorted, baled and loaded on transport price, otherwise known as Freight on Board (FOB) pricing.

Once the City delivers residential curbside and commercial recycle materials to the site adjacent to Forward Landfill, Forward Inc. takes possession of the material. Forward is contractually obligated to provide the City with certified weight tickets, in the form of an electronic data file, for all materials delivered by the City to Forward facilities. Forward then hauls the material in transfer trailers to Newby Island Resource Recovery Facility in San Jose, California. The round trip travel distance is 146 miles. Under the current agreement the City does not pay for transfer of materials from Forward Landfill to Newby Island.

Forward understands and accepts that there could be up to 15% unmarketable residue mixed with marketable commodities. Forward is responsible for separation of this material and for the cost of disposal of unmarketable materials. If residue were to exceed 15% the City would be responsible for actual cost of excessive residue disposal.

Under AB 32 the State must reduce GHG emission to 1990 levels by 2020. Utilizing the US-EPA WARM Model, the City's 2012 Blue Bin program avoided emission of 13,635 metric tons of CO²e⁴, which is equivalent to taking 2,870 standard cars off the road. This is based on 5,300 tons of Blue Bin materials collected and processed, and assuming the same distribution of materials found in the August 2014 Blue Bin waste characterization

⁴ The reason curbside materials have a greater CO²e avoidance than the same material with greenwaste is (Section 2.5) , is per the WARM Model, greenwaste is a net emitter of CO²e.

study. In calculating CO²e, the US-EPA WARM Model takes into consideration potential emissions generated by production of virgin materials with the emissions generated with their landfill disposal, as compared to capture and reprocessing of materials recovered from municipal waste sources.

Under the current agreement with Forward Inc. the City should expect to be paid annually about \$190,800 for 5,300 tons of Blue Bin material. The approximate processed scrap and CRV value of this material is \$928,875.44. Greater detail of the value will be discussed later in this section.

Conclusions and Recommendations

- The City has done a commendable job in maintaining control of its waste.
- The City is following industry standard procedures for collection, processing and disposal.
- City costs and environmental impacts associated with solid waste are in line with industry standards.
- The City should verify regularly that Republic scales and weight tickets are accurate.

3.2 Blue Bin Waste Characterization

Herwit Engineering and IES have conducted a Waste Characterization Study of the residential Blue Bin material for the City of Manteca. The Study was conducted August 17 through 19, 2014. The site of the study was the City corporation yard located at 208 East Wetmore Street, in Manteca.

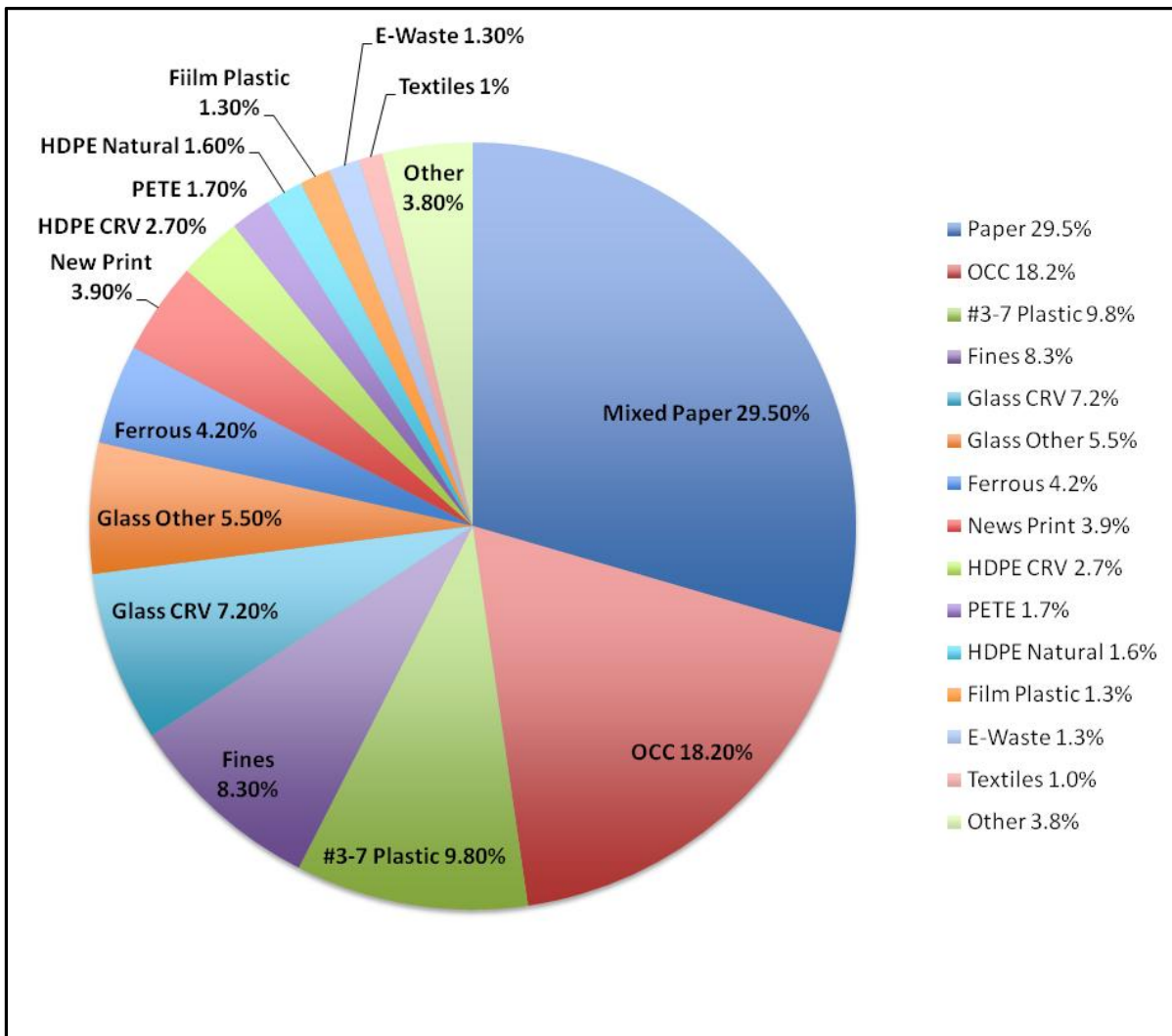
The Waste Characterization Study identified the types and percentages of materials contained in collected samples. Due to logistic reasons this study deviated from the standard protocol outlined in the California CalRecycle guidelines. However, after meeting with CalRecycle staff it was agreed the used protocol was overall more accurate because it eliminated settling and segregation of materials before sampling. The complete Waste Characterization Study containing a full description of protocol used is included in the appendices of this document. Results are summarized in Figure 3.2-1

For the study City crews randomly selected a total of 54 Blue Bins totaling 976 pounds of material. The samples were collected on Wednesday, Thursday and Friday. City crews pulled samples from various neighborhood representing differing socioeconomic profiles.

The City currently collects Blue and Green Bins on alternate weeks. Brown Bins are collected every week. Blue Bins are for designated recyclables, Brown Bins are for residential garbage, and Green Bins are for residential yard waste.

Manteca, along with most California cities have challenges with street scavenging of primarily CRV materials from Blue Bins. The primary focus of the theft is aluminum cans, and to a lesser extent plastic soda bottles and glass beer bottles. Wine bottles are not CRV eligible. Aluminum cans are simply compressed and transported, often in shopping carts. Of all CRV materials, aluminum has the highest value based on volume and weight. In addition to the loss of value of material contained in Blue Bins as a result of scavenging, often the scavenger will create a mess when searching for high value items. City crews know when a Blue Bin has been scavenged because of the items left on the ground around the Blue Bin. There was an attempt to determine the loss in value between the scavenged Blue Bin, and the un-scavenged Blue Bin. Unfortunately the week the study was conducted City crews were not able to locate Blue Bins that had been scavenged. Based on Blue Bins sampled, aluminum cans represents approximately 0.5% by weight of the total volume of a Blue Bin.

Figure 3.2-1, Residential Blue Bin Characterization



Conclusions and Recommendations

- Manteca Blue Bin materials are consistent with other California communities.

3.3 Residential Blue Bin Scrap and California Redemption Value

In conducting the Waste Characterization Study for Blue Bin materials, 28 different materials were targeted. Of the targeted materials, 14 had no appreciable volume and/or value. Of the remainder, a number of the material categories were combined into a single category for which there is a market. For this Waste Characterization Study, there are ten marketable categories. A breakdown of all material categories and marketable materials are presented in Table 3.3-1.

Table 3.3-1, Captured Blue Bin Materials From Waste Characterization Study

Material	Total Adjusted Weight (lbs.)	Marketable Categories	Total Marketable Weight (lbs.)
OCC	146.9	OCC	146.9
Mixed Paper/Fiber	237.9	Mixed Fiber	269.0
News Print	31.1		
HDPE CRV	22.2	HDPE CRV	22.2
HDPE no CRV	3.5	Mixed Plastic	106.0
Film Plastic	10.7		
HDPE Natural	12.6		
#3-7 Plastic	79.2		
PET (CRV)	13.6	PET CRV	13.6
Glass CRV	58.1	Glass CRV	58.1
Glass Other	44.1	Glass	44.1
Textiles/Fabric	7.9	No Market	
Mixed Ferrous	33.8	Mixed Ferrous	33.8
Aluminum UBC	4.1	Aluminum UBC	4.1
Mixed Non-Ferrous	5.8	Mixed Non-Ferrous	5.8
Copper & Brass	0.0	No Market or No Material	
Stainless Steel	0		
Wood	0.0		
Inert Materials	6.6		
Food Waste	4		
Green/Yard Waste	0.0		
Fines < 1"	66.8		
E-Waste	10.1		
Hazardous Waste	1.0		
Diapers	5.5		
Kitty Litter	0.0		
Water	1.5		
Vinyl	0.0		
TOTAL	807		

Recycle commodity values can be extremely volatile. It is not uncommon for values to double or be reduced by half one month to the next. The exception to the rule is commodities that have a CRV value. The CRV value is so large; swings in the scrap commodity value have little impact on overall combined value. Tables 3.3-2 and 3.3-3 below utilize commodity values based primarily on a three-year average. Values are based on processed, baled, and FOB pricing. By averaging commodity values short-term volatility is mitigated, and a long-term value perspective is achieved.

Table 3.3-2, Blue Bin Material Percentages and Commodity Value

Marketable Categories	Total Marketable Weight (lbs.)	Percent of Blue Bin Weight*	Value (\$)/Ton FOB⁵
OCC	146.9	18.2%	\$162.11
Mixed Fiber	269.0	33.3%	\$109.83
HDPE CRV	22.2	2.8%	\$689.53
Mixed Plastic	106.0	13.1%	\$95.56
PET CRV	13.6	1.7%	\$2,012.67
Glass CRV	58.1	7.2%	\$25.11
Glass	44.1	5.5%	\$1.00
Mixed Ferrous	33.8	4.2%	\$249.33
Aluminum UBC	4.1	0.5%	\$4,457.78
Mixed Non-Ferrous	5.8	0.7%	\$1,222.33

* The adjusted total Blue Bin weight is 807 pounds

Table 3.3-3, Anticipated Manteca Blue Bin Annual Material Volumes and Values

Marketable Categories	Annual Tons	Value (\$)/Ton FOB	Annual Value (\$)
OCC	964.7	\$162.11	\$156,366.05
Mixed Fiber	1766.7	\$109.83	\$193,992.13
HDPE CRV	145.8	\$689.53	\$100,511.79
Mixed Plastic	696.2	\$95.56	\$66,510.91
PET CRV	89.3	\$2,012.67	\$179,730.73
Glass CRV	381.6	\$25.11	\$9,579.30
Glass	289.6	\$1.00	\$289.57
Mixed Ferrous	222.0	\$249.33	\$55,335.28
Aluminum UBC	26.9	\$4,457.78	\$120,008.87
Mixed Non-Ferrous	38.1	\$1,222.33	\$46,550.82
Other	679.1	\$0.00	\$0.00
TOTAL	5300		\$928,875.44

The value of \$928,875.44 is an average commodity value over an extended period of time, and is subject to price volatility in any specific period of time.

⁵ Provided by Burg Mill Supply Co.

Conclusions and Recommendations

- Scrap commodity market values are highly volatile.
- Values of Manteca Blue Bin materials are small compared to the costs to develop a Blue Bin sorting facility.

3.4 Alternatives to Maximize Economic Value of Blue Bin Materials

The 2014 Waste Characterization Study indicated an annual Blue Bin commodity value of \$928,875.44. In comparison 28.1% of the Brown Bin material is recoverable with a commodity value of \$1,311,015.92 (See Section 6). Approximately 28.1% of the 20,018 tons of residential Brown Bin material transported and disposed at Forward landfill could be diverted to Newby Island for processing. Given a current Forward Landfill disposal fee of \$44.17 per ton, and a Blue Bin value of \$36.00 per ton, the City could save \$80.17 for every ton diverted from the Brown Bin to the Blue Bin. Based on 28.1% of 20,018 disposed Brown Bin material tons being recyclable, approximately 5,630 tons could be diverted from landfill disposal to Blue Bin value. The cost to the City to landfill 5,630 tons is \$248,677.10. City revenue from this same material if processed as Blue Bin would be \$202,680.00. Proper sorting of residential Brown Bin and Blue Bin materials could positively impact the City budget \$451,000.

Based on a total potential City solid waste generation of 142,702 tons (Section 2.1), diversion of 5,630 tons from disposal would result in a citywide solid waste diversion of 3.95%. Proper sorting of residential Blue and Brown Bin materials could play a significant role in the City achieving the 75% diversion goal of AB 341.

Based on the US-EPA WARM Model, if recoverable Brown Bin material were diverted from disposal to recycle, the net impact would be 14,154 metric tons of CO₂e annually not being emitted to the atmosphere. This would be the same as taking 2,980 standard cars off the road. Table 3.4-1 shows the results of estimated GHG emissions resulting from divertible Brown Bin materials.

There are a number of steps the City could consider to encourage proper placement of materials in residential Brown and Blue Bins. Other communities have seen positive change by implementation of the following:

1. Increased public outreach and education.
2. Creation of ordinance requiring proper placement of materials combined with enforcement.
3. Collection of Blue Bin every week. This could be combined with collection of Brown Bin every other week.
4. Under the current Blue Bin processing contract, the City can have up to 15% contamination. Maximum revenue to the City can be achieved by having contamination of the Blue Bin be close to 15%.

5. Work with the recycle material processor to increase materials that can be included in the Blue Bin.
6. Increase home and property value. There is a correlation between property value and recycle participation.⁶
7. People are motivated to recycle by actual pressure they receive from family and friends.⁷
8. Increase the cost of Brown Bin collection based on bin size.
9. Divert food waste to Green Bin and collect Brown Bin materials every 2-weeks.

Table 3.4-1, Divertible Brown Bin Material Emission Estimates

GHG Emissions Analysis — Summary Report												
(Version 13, 6/14)												
Analysis of GHG Emissions from Waste Management for Manteca												
Prepared by Brown to Blue Bin												
GHG Emissions from Baseline Waste Management Scenario (MTCO2E):						1,249						
GHG Emissions from Alternative Waste Management Scenario (MTCO2E):						-12,905						
Total Change in GHG Emissions: (MTCO2E):						-14,154						
Material	Baseline Scenario					Alternative Scenario						Change (Alt - Base) MTCO2E
	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total MTCO2E	Tons Source Reduced	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total MTCO2E	
Aluminum Ingot	0	44	0	N/A	2	0	44	0	0	N/A	-316	-318
Glass	0	679	0	N/A	26	0	679	0	0	N/A	-188	-214
HDPE	0	211	0	N/A	8	0	211	0	0	N/A	-186	-194
PET	0	166	0	N/A	6	0	166	0	0	N/A	-188	-194
Corrugated Containers	0	52	0	N/A	27	0	52	0	0	N/A	-162	-189
Mixed Paper (general)	0	2,378	0	N/A	1,098	N/A	2,378	0	0	N/A	-8,385	-9,483
Mixed Metals	0	392	0	N/A	15	N/A	392	0	0	N/A	-1,715	-1,731
Mixed Plastics	0	1,709	0	N/A	66	N/A	1,709	0	0	N/A	-1,765	-1,831

Note: A negative value indicates an emission reduction; a positive value indicates an emission increase.

a) For an explanation of the methodology used to develop emission factors, see Documentation for Greenhouse Gas Emission and Energy Factors Used in the Waste Reduction Model (WARM) — available on the Internet at <http://epa.gov/epawaste/conserve/tools/warm/SWMGHGreport.html>

b) Emissions estimates provided by this model are intended to support voluntary GHG measurement and reporting initiatives.

c) Total emissions estimates provided by this model may not sum due to independent rounding.

Conclusions and Recommendations

- Develop a politically palatable method to achieve proper sorting of residential Blue and Brown Bin Materials.

⁶ http://etd.lsu.edu/docs/available/etd-0402103-24721/unrestricted/Lockhart_thesis.pdf

⁷ <http://www.call2recycle.org/motivated-to-recycle-waste-recycling-news/#sthash.REKgiPPf.dpuf>

4.0 RESIDENTIAL AND COMMERCIAL GREENWASTE PROCESSING OPTIONS

4.1 Existing Economic and Environmental Conditions

The City currently has a residential yard waste (Green Bin) collection program. This material is collected every other week, the alternate week of residential Blue Bin collection. The city does not charge extra for participation in the Green Bin program.

Residential Green Bin materials are transported to Harvest Power California, LLC, located at 916 Frewert Road in Lathrop. This 20-acre processing site is a 24-mile round trip drive from the City's Solid Waste Corporation Yard. Photos of the site are shown in Figures 4.1-1 and 4.1-2.

The agreement with Harvest Power allows for 2% contamination by weight in material delivered to the processing site. In the Greenwaste Waste Characterization Study conducted in August 2014 (See Appendix), the residential Greenwaste contained 1.2% inert materials, primarily soil, 0.5% food waste, which was often associated with home garden produced food, 0.5% wood, 0.3% fines. There was a negligible volume of PET water bottles, and cardboard. Most importantly there was no glass contamination.

The Characterization Study identified approximately 2.5% contamination by weight, yet most of the contamination was compostable or material such as soil that would not diminish the value of the finished compost product.

Harvest Power processes the City's greenwaste utilizing aerated windrow processing followed by static pile stabilization. Given proper time this process is adequate to produce a stable, marketable product.

Under the contract with Harvest Power the City pays the following:

Table 4.1-1, Harvest Power Processing Rates

Material	Tip Fee
Residential/Commercial mixed Greenwaste	\$19.75 per ton
Pallets and Wood Waste	\$15.00 per ton
Sod & Dirt	\$28.00 per ton
Christmas Trees	\$19.75 per ton

Material processed by Harvest Power is marketed to agricultural users for use primarily in orchards. Under Harvest Powers permits to operate any load delivered to the site can contain up to 15% food.⁸ There is an opportunity for the City to encourage disposal of food waste in the Green Bin. If the City were to do this there would be a net savings to the

⁸ Per Jed B. Phelps, General Manager of Harvest Power. States at a November 12, 2014 meeting with Larry T. Buckle, PE of IES

City of \$24.42 per ton, the difference between the \$44.17 per ton landfill disposal fee, and the \$19.75 per ton compost processing fee.

The City's greenwaste collection and processing appears to meet the State's environmental objectives. The cost of the program is in line with local industry standards.

Figure 4.1-1, Screened Finished Compost



Figure 4.1-2, Harvest Power's Windrow Turner



Conclusions and Recommendations

- Manteca is conforming to local industry standards for processing of greenwaste.

4.2 Alternatives to Maximize Environmental and Economic Benefit

The City's greenwaste is a form of biomass. Biomass is universally recognized to have a very strong potential in the global energy future. One significant development hurdle in the progress of biomass based energy projects is procurement of secure, long-term supply agreements for biomass. Energy in biomass can be exploited conventionally through one of three processes:

- **Thermal** – This is the oldest and most common form of energy, burning wood. Biomass can be dried and burned in a boiler to produce high-pressure steam, which is used to produce electricity.
- **Thermochemical** - Heating biomass in an oxygen-depleted environment will break the biomass down into gases, liquids, and solids that can be processed into gasses, liquid fuels, and chemicals.
- **Biochemical** – By adding bacteria, enzymes and/or yeast to grass in a controlled environment, grass can be broken down into alcohol. This is basically how ethanol is produced.

Significant research is occurring in all three areas. Grass has been converted to conventional gasoline, diesel, and jet fuel in bench scale processes. Crude oil pulled from the ground originated as biomass. Prehistoric biomass exposed to heat and pressure converted naturally to oil. Industrial research today intends to mimic the natural process. Rather than taking thousands of years to convert biomass to oil, it can be done in seconds in a laboratory, and soon at industrial scale. This type of fuel is considered renewable in that it is completely biogenic and does not contribute to added carbon in the global atmosphere.

Urban greenwaste can also play a significant role in carbon sequestration. Biomass can be converted into biochar. Biochar when added to soil will remain in the soil for more than a thousand-years. Biochar has been used for more than a thousand-years as a soil amendment to increase crop production.

In Europe, grasses are being processed as silage, then anaerobically digested to produce methane, and a stable form of compost. Recently, research conducted in Marin County found compost placed on grazing land resulted in a significant increase in natural grass root depth and vitality. This not only increased grazing potential of the land, but also sequestered significant carbon in the root structure of the plants. The carbon capture is significant enough that efforts are underway to monetize the process through the states carbon cap and trade system.⁹ In addition the soil's capacity to retain water is improved with the addition of compost.

⁹ <http://www.sfgate.com/science/article/A-sprinkle-of-compost-helps-rangeland-lock-up-5832244.php>

Conventional composting requires water to keep compost hydrated. The composting process will stop if moisture content drops below 50%. Moisture is lost to the atmosphere due to evaporation driven by the heat of the compost process. Compost temperatures can exceed 150°F.



The value of compost can be increased with addition of basic nutrients, potassium, nitrogen, and phosphorus, (P, N, K). These are primary components of commercial fertilizer. Nutrients can be added by composting food waste or by hydrating the compost with digestate from food waste fed anaerobic digesters. The City has the ability to compost greenwaste in windrows at the City's wastewater treatment plant, then hydrate the compost with digestate produced from anaerobic digesters digesting commercial food waste. Separation of commercial food waste will soon be required under AD 1826. By 2019 the City must develop a process to keep commercial food waste from landfill disposal.

Composting of greenwaste with or without food waste can from time to time have odors. Odors can be mitigated with aggressive aeration, which will increase operational costs. Also maintenance of temperature for pathogen kill can become difficult with increase aeration. Proximity of the City wastewater plant to homes and businesses may preclude it from being considered as an optimum location for composting operations. Site options could include low value farmland, or to continue working with Harvest Power.

The City's greenwaste is a biogenic product that has the potential to be converted into clean renewable forms of conventional energy. At the same time greenwaste can be used to sequester carbon from the atmosphere, and thereby produce a revenue stream for the City through the states' cap and trade system. Lastly, greenwaste can play a role in soil vitality and moisture retention.

Conclusions and Recommendations

- The City is following industry standards regarding greenwaste collection and processing.
- Developing technology combined with climate change could transform greenwaste into a valued commodity.

4.3 Potential Greenwaste Energy Outputs

Given greenwaste is a form of biomass it can be dried and burned in a boiler to produce high-pressure steam to in turn produce electricity. Grass clippings have been burned with woodchips derived from forestry waste in a fluidized bed boiler for that very purpose. Technically, burning grass can be done; politically it is far more difficult.

Under AD 939 only ten-percent (10%) of the required fifty-percent (50%) diversion can be processed in a transformation facility and still be considered diverted. The legal definition of transformation is highly contested and under near constant assault for legal revision. Many in the industry consider the current definition to be technically flawed. All this said, under no legitimate definition of transformation, is combustion or burning not considered transformation.

Thermochemical processing of greenwaste has significant political support, however the current definition of transformation does not provide the legal clarity to definitively consider thermochemical processing of greenwaste diversion. In the future this could change. Recently AB 222 would have made such a change. Even though AB 222 had unprecedented support of industry, environmental groups, and divisions of Cal-EPA, the bill never made it to the Senate Floor for a vote.

For Manteca to take a thermochemical approach to processing of municipal greenwaste, many technological and economic obstacles would have to be overcome. The most significant is scale. Thermochemical processing plants currently can only operate economically at very large scale. One industry standard is 500 bone dry tons per day. Manteca produces about 10,000 tons of greenwaste per year. When dried Manteca greenwaste becomes about 2,200 tons of bone dry solids. This is only about 6 tons per day, a far cry from the industry target of 500 tons.

The industry is working to economically scale down thermochemical processes. If this were to occur, about 140 pounds of collected greenwaste would be required to produce one gallon of standard 89-octane gasoline. At 10,000 tons per year of collected greenwaste, the City has the potential to produce about 145,000 gallons of fuel. At this point in time, the capital, political, and regulatory requirements to produce such a facility would be insurmountable.

Traditional biochemical processes for the production of ethanol have the same scaling issues as thermochemical. A simplified biochemical approach for production of energy from grass has been successfully demonstrated at commercial scale many times in Europe. However, Europe has favorable economic and political policies not available in California. Germany has had renewable electricity feed-in-tariffs in excess of 25 cents per kWh. In California feed-in tariffs are far less, Table 4.3-1 shows the California Public Utilities Commission feed-in-energy tariff schedule¹⁰.

¹⁰ <http://www.cpuc.ca.gov/PUC/energy/Renewables/Feed-in+Tariff+Price.htm>

Table 4.3-1, California Energy Commission, Feed-In-Energy Tariff Schedule

Adopted 2011 Market Price Referents (Nominal - dollars/kWh)				
Contract Start Date	10-Year	15-Year	20-Year	25-Year
2012	0.07688	0.08353	0.08956	0.09274
2013	0.08103	0.08775	0.09375	0.09695
2014	0.08454	0.09151	0.09756	0.10081
2015	0.08804	0.09520	0.10132	0.10464
2016	0.09156	0.09883	0.10509	0.10848
2017	0.09488	0.10223	0.10859	0.11206
2018	0.09831	0.10570	0.11218	0.11572
2019	0.10186	0.10928	0.11587	0.11946
2020	0.10550	0.11296	0.11965	0.12326

In Europe grasses have been processed as silage, then anaerobically digested to produce methane, and a nutrient rich digestate. The function of the silage step is to preserve grass for digestion during times of the year grass production is low, and as a pretreatment to breakdown lignin in the grass thereby making grass more biologically available to bacteria in the anaerobic digester.

In Ireland native range grasses have been harvested and processed as silage to anaerobic digestion¹¹. The end result of the commercial scale project is the production of 1,961 cubic feet of methane (CH⁴) from one ton of grass. Assuming, of the annual 10,000 tons of greenwaste Manteca produces is composed of 75% lawn, as opposed to leaves and wood, the potential energy production would be:

7,500 tons grass:

$$1,961 \text{ ft}^3, \text{CH}^4 \text{ per ton} \times 7,500 \text{ tons} = 14.708 \times 10^6 \text{ ft}^3 \text{ of CH}^4$$

1 KiloWatt-Hour (kWh) of pure energy can be produced from 3.412 ft³ of CH⁴

$$14.708 \times 10^6 \text{ ft}^3 \text{ of CH}^4 / 3.412 \text{ ft}^3 \text{ of CH}^4 \text{ per kWh} = 4.310 \times 10^6 \text{ kWh}$$

$$4.310 \times 10^6 \text{ kWh} / 365 \text{ days} / 24 \text{ hours} = 492 \text{ KiloWatt (kW)}$$

¹¹ Renewable and Sustainable Energy Reviews www.elsevier.com/locate/rser

Assuming the generator is 26% efficient the generator will produce¹²:

$$492 \text{ kW} \times .26 = 127.9 \text{ kW}$$

If the City were to take the same $14.708 \times 10^6 \text{ ft}^3$ of CH_4 and convert the methane to compressed natural gas (CNG) the potential energy output could be measured as a gasoline gallon equivalent. One gasoline gallon equivalent (GGE) is equal to 5.66 pounds of methane.¹³ Also one cubic foot of standard natural gas at standard temperature and pressure weighs .0444 pound per cubic foot.¹⁴ One gasoline gallon equivalent is comparable to 127.5 cubic feet of natural gas.

$$14.708 \times 10^6 \text{ ft}^3 \text{ of } \text{CH}_4 / 127.5 \text{ ft}^3 \text{ of } \text{CH}_4 \text{ per GGE} = 115,400 \text{ GGE of CNG}$$

If the City were to proceed with a project to turn greenwaste into energy, an option would be to augment energy consumption at the City's wastewater treatment facility, or provide fuel for the City fleet of vehicles. The vicinity of the wastewater treatment facility would provide an optimal location for a greenwaste to energy processing plant.

Conclusions and Recommendations

- There are existing and developing processes to convert greenwaste to energy. At this time the processes are at a scale and/or cost that are not practical.
- The City should maintain long term control of its greenwaste for a time when cost effective greenwaste to energy processes are developed at a scale the City could utilize.

¹² <http://www.epa.gov/region9/organics/ad/EBMUDFinalReport.pdf>

¹³ http://en.wikipedia.org/wiki/Gasoline_gallon_equivalent

¹⁴ Unitrove Natural Gas Density Calculator,
<http://www.unitrove.com/engineering/tools/gas/natural-gas-density>

5.0 FATS, OILS, AND GREASE (FOG) PLAN

5.1 Survey of Commercial Generators of FOG

Herwit Engineering, with assistance of IES, conducted a survey of 143 locations identified by Manteca, Department of Public Works (PDW), to have potential for fats, oils and grease (FOG) production and discharge to the City's sanitary sewer system. A list of the generators is provided in Table 5.1-2. The appendix includes a copy of all commercial FOG producer survey forms.

All jurisdictions in the State of California are required to develop and implement a FOG Control Programs. These programs vary in size and complexity based on community need. Programs include educational components with stringent pumping requirements, permits, inspections, enforcement, record keeping, etc.

The California State Water Resources Control Board adopted Order 2006-0003-DWQ on May 2, 2006. This order requires the City to have a FOG Control Program. FOG is a by-product of food service establishments. Typically, FOG enters a facility's plumbing system from ware washing, floor cleaning, and equipment sanitation. Sanitary sewer systems are neither designed nor equipped to handle FOG that can accumulate on the interior of the sewer collection system pipes from improperly maintained discharges. These accumulations may, and often do, cause sanitary sewer overflow (SSO). A SSO is the unintentional flow of untreated sewage onto the ground or into a facility, home, storm water system or waterway. SSOs create a health risk to the public, damage property, and pollute the environment.

To reduce the occurrence of SSO, businesses that produce grease should install and maintain a system to intercept grease before it has the ability to enter the publicly owned conveyance system. The typical system includes various forms of grease traps and grease interceptors.

Of the 143 locations inspected 122 have potential to produce grease in volumes required to cause a SSO. Of the 122 grease producing locations 93 had grease control infrastructure in the form of a grease trap or grease interceptor. 28 of the 93 locations producing grease with grease capture infrastructure have undersized equipment, or are not maintaining their equipment. Only 65 of the 122 (53%) grease-producing locations appear to be complying with industry standard, the remainder, 47% have significant issues that could result in a SSO.

None of the locations visited had records indicating the volume of grease produced, captured or disposed. Grease interceptor pumping and hauling companies only produced records of the volume of grease and water pumped. Industry standards must be used to estimate volume of grease produced from the 122 grease producing locations.

CalRecycle conducted an extensive study of fast food and standard restaurants to determine

the volume of food and grease produced¹⁵. This study determined fast food restaurants produced 312 pounds of grease per employee per year. Standard restaurants produced 478 pounds of grease per employee per year.

Industry standard average number of employees at a fast food restaurant is 15.6¹⁶. The average number of employees at a standard restaurant is approximately 17.0¹⁷. The Manteca FOG survey indicated approximately 51 fast food restaurants, and 41 standard restaurants. This results in 4,867 pounds of grease being produced at an average fast food restaurant, and 8,126 pounds produced at a standard restaurant each year. The approximate volume of grease produced citywide is 291 tons per year.

Today in Manteca there is no enforcement of a standard requiring grease trap/interceptor pumping. As a result, some smaller grease collection systems are serviced daily, some of the larger systems have never been serviced. Frequency of servicing appears to be at the discretion of the business or property owner.

The survey indicated there are at least 15 grease trap/interceptor pumping and hauling companies operating in Manteca. Of the 15 haulers, 5 disposal sites have been identified (See Table 5.1-1). The cost of disposal for haulers ranges from 3 cents per gallon, to as high as 9.6 cents per gallon. Only Sacramento Rendering Company (SRC) processes materials they pump and haul. A number of haulers are very suspect regarding disposal site. There is a likely probability some Manteca material is being improperly disposed.

Many contacted haulers indicate they would welcome a local disposal site for grease they pump and haul. Haulers charge generators on average \$300 to service a 1,500-gallon interceptor. Haulers then pay between 3-cent per gallon, and 10-cents per gallon, or \$45.00 to \$150.00 to dispose material pumped from a 1,500-gallon interceptor. Due to savings in travel time, haulers would pay a premium for a local disposal site.

¹⁵ Targeted Statewide Waste Characterization Study: Waste Disposal and Diversion Findings for Select Industry Groups, June 2006,

<http://www.calrecycle.ca.gov/Publications/Documents/Disposal/34106006.pdf>

¹⁶ <http://www.statista.com/statistics/196672/employees-per-establishment-in-us-fast-food-restaurants-since-2002/>

¹⁷ http://www.restaurant.org/Downloads/PDFs/advocacy/20130314_minwage_senate_nra_testimony

Table 5.1-1, Manteca Interceptor and Grease Trap Haulers and Pumpers

Name	% Of City Serviced	Disposal Site
Sacramento Rendering Company (SRC)	29%	Self process and sell the grease
H P Commodities	13%	Would not state
Sisk	13%	Organic Solutions Management
Clarks Septic	8%	Organic Solutions Management
Mountain Valley Septic	4%	Organic Solutions Management
Premier Plumbing and Drain	4%	Would not state
ETS Plumbing	4%	Would not state
Liquid Environmental Solutions	4%	Organic Solutions Management
Pipe Maintenance	2%	Sacramento Regional Wastewater
AAA Septic	2%	East Bay MUD
GCG Fresno	2%	Would not respond
American Maintenance Service	2%	East Bay MUD
Pioneer Liquid Transport	2%	Watsonville Wastewater Treatment Plant
Brennin Discount Plumber	2%	They do not pump

Table 5.1-2, Manteca FOG Generator Information

Name	Address	Control Device	Service Frequency	Pumper/Hauler
Aki's Grocery & Food to go	368 N Main	2 Floor Traps	3 Months	Sisk
Applebee's	1272 E Yosemite	Interceptor	Unknown	Unknown
Athens Burgers	306 W Yosemite	Interceptor	2 time per year	HP Commodities
Baskin Robbins	970 N Main	None		
Baskin Robbins	1111 South Main	None		
Bean Leaf Café	1254 W Lathrop	None		
Billie Hills Hillbilly Bar-B-Q	106 Pierce Ave	None		
Black Bear Dinner	1703 E Yosemite Ave	Interceptor	Unknown	SRC

Name	Address	Control Device	Service Frequency	Pumper/Hauler
Burger King	700 N Main	Interceptor	4 Times per year	SRC
Café Aroma	1499 W Yosemite	None		
Carl's Jr	1489 Hulsey Way	Interceptor	4 Times per year	Env. Pumping Service
Carl's Jr	1465 W Yosemite	Interceptor	4 Times per year	Env. Pumping Service
Carl's Jr	990 N Main	Interceptor	4 Times per year	Env. Pumping Service
Carniceria Rosita	1297 N Main	None		
Casa Flores	1160 N Main	None		
Casino Real	1355 N Main	Same as Ernie’s Food & Sprits		
Chili's	2262 Daniels St	Interceptor	4 Times per year	SRC
China Express	1184 E Yosemite	Interceptor	4 Times per year	Clark’s
Chipotle	1440 Hulsey Way	Interceptor	Unknown	Pipe Maintenance
Chubby's Restaurant	737 N Main	None		
Chucks Sports Bar	1447 Historical Plaza Way	None		
Cindy's Donuts	520 N Main	Interceptor	3 Months	Unknown
Costco	2440 Daniels St	3 Interceptors	3 Months	Unknown
Country Skillets	1471 W Yosemite	Interceptor	Never	
Crush Frozen Yogurt	882 Lifestyle St.	None		
Daily Fresh Donuts	1154 W Yosemite	Floor Trap	Weekly	Solid Waste
Dairy Queen	1138 S Main	None		
DeVega Bros	Out of Business			
Del Taco	1194 E Yosemite	Interceptor	6 Months	Mountain Valley Septic
Denny's	1135 S Main St	Interceptor	Unknown	Unknown
Doctor's Hospital	1205 E North Street	Interceptor	6 Months	Clark’s
Eckert Cold Storage	757 Moffat Blvd	None		
El Jardin	1111 S Main	Interceptor	Yearly	SRC
El Pollo Loco	1730 E Yosemite	Interceptor	3 Months	SRC
Emeritus Care	430 N Union	Interceptor	6 Months	SRC
Ernie's Food & Sprits	1351 N Main	Interceptor	6 Months	Unknown
Fagundes Meats & Catering	142 Jason St	Interceptor, 2 Traps	6 Months, Daily	AAA Septic

Name	Address	Control Device	Service Frequency	Pumper/Hauler
Food 4 Less	131 Spreckels	Interceptor	3 Months	Clark's
Foster Freeze	906 W Yosemite	None		
George McParland Annex	1370 London Ave	Interceptor	Never	
GK Mongolian BBQ	1039 S Main St	None		
Grocery Outlet	1391 E Yosemite	None		
Guido's Take & Bake	1192 W Louse	None		
Ho Suns Kitchen	1150 N Main St	Floor	3 Months	CGC Fresno
Hob Nob Hot Dog	1315 N Main	None		
Hong Kong Chinese	2028 Schaffhausen St.	Not a Business		
IHOP	1150 E Yosemite	Interceptor	3 Months	SRC
In & Out Burger	1490 E Yosemite	Interceptor	2 Months	SRC
Iron Horse Deli	301 E Yosemite	Interceptor	Never	
Jack in the Box	1081 S Main	Interceptor	3 Months	All Valley
Jack in the Box	1310 E Yosemite	Interceptor	3 Months	All Valley
Jack in the Box	1105 N Main	Interceptor	3 Months	All Valley
Jacks Pizza	1223 W Yosemite	Floor Trap	Weekly	Solid Waste
Jamba Juice	2160 Daniels	None		
Jamba Juice	1445 Hulsey Way	None		
Jimmy's Market	2268 E Yosemite	None		
Johnny's Restaurant	610 E Yosemite	Interceptor	6 Months	Sisk
Joshua Cowell School	740 Pestana	Interceptor	Never	
Kaiser Hospital	1777 W Yosemite	Interceptor	2 Years	Unknown
Kentucky Fried Chicken	1211 E Yosemite	Interceptor	3 Months	Unknown
Kinnaree Thai Cuisine	229 E Yosemite	None		
Kitty's Kitchen	532 N Main	Interceptor	3 Months	Unknown
LaCosta	205 Moffat Blvd	Under Sink	Weekly	HP Commodities
La Estrella	1361 E Yosemite	Floor	Monthly	Solid Waste
La Estrella	1110 N Main	Interceptor	Yearly	Mountain Valley
La Mexicana Market	502 E Yosemite	None		
La Pina Loca	504 W Yosemite	Interceptor	Yearly	HP Commodities
Las Casuelas	1580 W Yosemite	Interceptor	3 Months	Clark's
Las Palmas	1021 N Main St	Burned Down		
Le Croissant Bakery	162 N Maple	None		
Lee's Chinese	102 Pierce	Interceptor	Unknown	Unknown
Lincoln School	750 E Yosemite	Interceptor	Never	
Little Caesar Pizza	353 W Louise	Under Sink	3 Months	Amerigaurd

Name	Address	Control Device	Service Frequency	Pumper/Hauler
	Ave			
Luu's Chicken Bowl	300 N Main	Interceptor	6 Months	CGC
Main Street Doughnuts	1041 S Main	None		
Mangy Moose Café	506 E Yosemite	None		
Manteca Donut	1194 N Main	None		
Manteca Unified School	2271 W Louise Ave	None		
Matsu Sushi	874 Lifestyle St	None		
Matsyama Sushi	293 Spreckels Ave	Floor	Yearly	Unknown
McDonalds	1360 E Yosemite	Interceptor	3 Months	SRC
McDonalds	1205 S Main St	Interceptor	3 Months	SRC
McDonalds	2050 Daniels	Interceptor	3 Months	SRC
McDonalds	1236 W Yosemite	Interceptor	3 Months	SRC
McDonalds	1137 W Lathrop	Interceptor	3 Months	SRC
McFall School	1810 Hoyt Lane	Interceptor	Never	
Milano Pizza	347 N Main	None		
Mom's Thai House	439 N Main	None		
Mountain Mikes	1120 N Main St	Floor	2 times a week	Solid Waste
Mr. Biggs Deli	137 N Main St	None		
Mr. Pickle	1456 Hulsey Way	Interceptor	Never	
Neil Hafley School	849 Northgate	Interceptor	Never	
New China	1457 W Yosemite	Interceptor	6 Months	Sisk
Nic's Place	160 W Center	None		
ONO Hawaiian	2152 Daniels St.	Interceptor	3 Months	Sisk
Pacos Taqueria	275 W Louise	Interceptor	Yearly	Premier
Panda Express	1467 Hulsey Way	Interceptor	3 Months	ETS
Panda Express	2130 Daniels St.	Interceptor	3 Months	ETS
Papa Joe's BBQ	211 E Yosemite	None		
Papa John's Pizza	1248 W Lathrop	Floor	Never	
Papa Murphy's	552 N Main	Interceptor	Never	
Saigon Town Noodles	1311 Historical Plaza Way	Interceptor	Never	
Pizza & Pints	449 N Main	None		
Pizza Guys	520 E Yosemite Ave	Floor	Yearly	Unknown
Pizza Hut	920 N Main St.	Floor	Unknown	
Prestige Senior Living	1130 Empire Ave	Interceptor	6 Months	Sisk
Quiznos	127 Spreckels	None		

Name	Address	Control Device	Service Frequency	Pumper/Hauler
	Ave			
Raley's	1280 W Lathrop	Interceptor	3 Months	SRC
Red Robbin	873 Lifestyle St	Interceptor	45 Days	Once Upon A Time
Round Table Pizza	2120 Daniels St.	Interceptor	Never	
Round Table Pizza	253 Spreckels Ave	Interceptor	3 times per year	Pioneer Liquid Trans.
Safeway	1187 S Main	Interceptor	3 Months	Liquid Env. Solutions
Sakana Japan Bistro	1512 W Yosemite	Interceptor	Yearly	SRC
Savemart Supermarket	1172 N Main	Floor	3 Months	SRC
Savemart Supermarket	1431 W Yosemite	Interceptor	3 Months	SRC
Sicily Pizza (Happy Pizza)	1166 E Yosemite	None		
Sierra High School	1700 Thomas Street	Interceptor	Never	
Silver Chop Stick	293 W Louise	Interceptor	Yearly	Premium
Stella Brockman School	763 Silverado Dr.	Interceptor	Never	
Straw Hat Pizza	1238 N Main	None		
Strings	1125 S Main	None		
Subway	1172 E Yosemite	None		
Subway	1186 N Main	None		
Subway	1235 W Yosemite	None		
Subway	2126 Daniels St	Floor	Yearly	Unknown
Subway	878 Lifestyle St	None		
Sunny Valley Smoked Meats	2475 W Yosemite	Interceptor	Monthly	SRC
Super Buffet	1405 E Yosemite	Interceptor	Unknown	
Taco Bell	201 Northgate Dr	Interceptor	3 Months	SRC
Taco Bell	421 E Yosemite	Interceptor	3 Months	SRC
Taqueria Nayarit	1124 W Yosemite	Out of Business		
The Codfather	290 N Main	Under Sink	Daily	Solid Waste
The Pub	1305 N Main	None		
Togo's Eatery	1115 S Main	None		
Tony & Mrs. K Café	1195 E Yosemite	Floor	Yearly	Unknown
Uncle Franks Grill	305 N Union	Interceptor	3 Months	HP Commodities
Village Sandwich Shoppe	123 W Yosemite	None		
Waffle Shop	1021 N Main	Floor	As Needed	Sisk
Wal-Mart	1205 S Main	Interceptor	3 to 4 times a (Y)	Liquid Env. Solutions

Name	Address	Control Device	Service Frequency	Pumper/Hauler
Walter Woodward School	575 Tannehill Dr.	Interceptor	Never	
Webers BBQ	825 Mellon Ave	Interceptor	Never	
Weinerschnitzel	1200 W Yosemite	Interceptor	Unknown	Unknown
Wendy's	1630 E Yosemite	Interceptor	3 Months	SRC
Zen Bakery	1316 Dupont Ct	Floor	Unknown	Unknown

Conclusions and Recommendations

- There is no apparent City monitoring of commercial FOG producers or haulers.
- There is opportunity for the City to increase revenue, and for haulers and FOG generators to save money, if the City develops a FOG disposal site.

5.2 FOG Service Schedule and Monitoring Program

PURPOSE

This proposed policy is intended to provide procedures for establishment and operation of a FOG Control Program. It is the intent of the City to direct FOG to the City Wastewater Quality Control Facility (WQCF) for processing and energy recovery.

BACKGROUND

All jurisdictions in the State of California have or are developing and implementing FOG Control Programs. Programs vary in size and complexity based on community need. Programs include educational components with stringent pumping requirements, permits, inspections, enforcement, record keeping, etc.

The California State Water Resources Control Board adopted Order 2006-0003-DWQ on May 2, 2006. This order requires Manteca to have a FOG Control Program. A copy of the order is included in the appendix.

FOG is a by-product of food service establishments. Typically, FOG enters a facility's plumbing system from ware washing, floor cleaning, and equipment sanitation. Sanitary sewer systems are neither designed nor equipped to handle FOG that can accumulate on the interior of the sewer collection system pipes from improperly maintained discharges. These accumulations may, and often do, cause SSO. A SSO is the unintentional flow of untreated sewage onto the ground or into a facility, home, storm water system or waterway. SSO's create a health risk to the public, damage property, and pollute our environment.

EXISTING RULES AND REGULATIONS

Manteca Municipal Code Chapter 13.20.020 defines any commercial FOG generator to be reasonably designated as a “Significant Industrial User”. Under the definition any commercial FOG generator has the reasonable potential to adversely affect the POTW’s operation or to violate a pretreatment standard or requirement. With this designation, the City has the authority to issue a permit, inspect and sample, and collect fees.

Manteca Municipal Code Chapter 13.24 *Septic Tank Cleaning* provides needed provisions for a Septic Debris Hauler Franchise Program. The existing code is intended to monitor movement of residential septic pumping. The code should be expanded to include servicing of FOG control devices. This could be accomplished by modifying the code to include commercial FOG control devices in any language where “septic tank” or “residential septic tank” is used. The intent of the change is to insure movement of FOG with be through a “Permitted Septic Hauler”.

FOG CONTROL PROGRAM PROCEDURES

FOG Program focus is intended to:

- Educate commercial customers on FOG source control measures that they can implement,
- Utilize data to improve maintenance and operation efforts through a proactive Asset Management Program,
- Evaluate collected data and modifying the program as needed, and
- Prioritizing areas more likely to have an overflow for outreach, education, maintenance, and operation efforts.
- Elimination of FOG related SSO’s.
- Direct FOG to WQCF for processing and energy recovery.

It is the intent of the Department of Public Works (DPW) to establish a FOG Control Program that minimizes requirement of staff time and cost to the department. To accomplish this, the property owner and the City Permitted Septic Hauler will be required to self-monitor and regulate the FOG Control Program.

COMMERCIAL FOG GENERATORS

All commercial businesses possessing the potential to discharge FOG to the sanitary sewer system will be required to participate in the FOG Control Program. It is the responsibility of these commercial establishments to (Example program forms are included in the appendix):

- Complete and submit a “FOG Program Registration” form.
- Complete and submit a “Grease Trap Certification” form.

- o A California licensed plumber or engineer must certify:
 - The size or type of the site grease trap or interceptor
 - All plumbing fixtures that flow direction
 - The proper installation and operation of the FOG control device including, where appropriate flow restrictors.
- o The owner or manager must certify that the plumber/engineer supplied information is, to the best of their knowledge, correct.
- Clean or have cleaned by a Permitted Septic Debris Hauler, the FOG control device:
 - o **Grease Interceptors and Grease Traps** will require two different protocols for cleaning.
 - **Grease Interceptors** will require cleaning by a Permitted Septic Debris Hauler (please see Permitted Septic Debris Hauler below):
 - A minimum of every 90 days or
 - When grease and solids exceed 25% of interceptor depth.
 - Complete and submit or have submitted by a Permitted Septic Hauler a “Pump Out Report” form within 72 hours of the FOG control device cleaning.
 - Properly maintain and operate all FOG control devices.
 - Retain maintenance records onsite for a minimum of three years.
 - **Grease Traps** can be cleaned by the business owner or by a Permitted Septic Hauler.
 - A minimum of every four weeks or
 - When grease and solids exceed 25% of trap depth.
 - o When cleaned by a Permitted Septic Hauler
 - Complete and submit or have submitted by a Permitted Septic Hauler a “Pump Out Report” form within 72 hours of the FOG control device cleaning.
 - Properly maintain and operate all FOG control devices.
 - o When cleaned by the business owner.
 - Submit to the City a cleaning schedule showing the date and times for cleaning. This schedule can show a year of cleaning.
 - Clean the trap every scheduled time, on the scheduled time and date. Record the level of grease and solids in the trap.
 - Dispose of the trap contents by:
 - o Placing the contents in a bin to be serviced by a Permitted Septic

- Hauler, or a rendering company.
 - o Self haul material to a legal entity authorized to receive this material. Material cannot be placed with solid waste.
- The business must maintain:
 - o Disposal records for three years.
 - o Cleanout records showing the levels of grease and solids removed.

OIL/SAND SEPARATORS

In addition to grease traps and grease interceptors there are a number of oil/sand separators in the City. These devices are primarily located at car washes and other automotive service locations. The intent of a oil/sand separator is to remove from wastewater grease, oils and grit before discharged to the sanitary sewer. The operational requirements of an oil/sand separator are:

- **Oil/Sand Separators** will require cleaning by a Permitted Septic Hauler.
 - o A minimum of every 6 months or
 - o When grease, oil and solids exceed 25% of interceptor depth.
 - o Complete and submit or have submitted by a Permitted Septic Hauler a “Pump Out Report” form within 72 hours of the FOG control device cleaning.
 - o Properly maintain and operate all FOG control devices.
 - o Retain maintenance records onsite for a minimum of three years.

USE OF ENZYMES AND/OR HIGH TEMPERATURE WATER

Under no condition shall a business use enzymes or high temperature water to clean or maintain a FOG control device. These methods will move FOG from the control device to the City sanitary sewer system where the grease will re-coagulate and potentially cause a blockage in the City sanitary sewer system.

PERMITTED SEPTIC DEBRIS HAULER

Manteca Municipal Code Chapter 13.24 *Septic Tank Cleaning* includes need provisions for a Permitted Septic Hauler Program. The existing code is intended to monitor movement of

residential septic pumping. The code should be expanded to include servicing of FOG control devices.

For a company to receive a Septic Debris Hauler Franchise the business must:

1. Submit to the Public Works Department a completed Debris Hauler Application.
2. Provide a cash or corporate surety bond in the sum of one thousand dollars described in Section 13.24.050.
3. Meet the insurance requirement of Chapter 13.24.
4. Evidence of current unrevoked registration with the San Joaquin local health district.

There are notable requirements and responsibilities to be placed on Permitted Septic Debris Haulers. These include but are not limited to:

1. Within 72 hours of performing a pump out of a grease collection control device, submit a pump out report to the City.
2. Inspect and certify proper installation and operation of the grease control device being serviced.
3. Meet all State of California requirements including:
 - a. AB 1065, State Department of Agriculture.
 - b. AB 1333, Specific hauler requirements
4. Dispose of pumped material at a City authorized facility.
5. Obtain a City of Manteca Business License.

If the Permitted Septic Hauler does not abide by conditions of the permit the City can take action to suspend or terminate the permit.

NEW COMMERCIAL DEVELOPMENT

All new commercial construction for which there is the likelihood that a FOG generating business will occupy space, will install dual drain plumbing and a 1,500 gallon minimum two stage grease interceptor, meeting all installation requirements of the City.

- **FOG Drain** will capture flow from all floor drains, kitchen sinks, mop sinks, dish washers, food grinders, stove drains and any other source that has the potential for FOG. This drain will be routed through the grease interceptor.
- **Sanitary Drain** will capture flow from toilets and lavatory sinks. This flow will not enter the grease interceptor.

Flow from the two drains will meet after flow exits the grease interceptor but before flow enters the City sanitary sewer system.

No FOG producing business can occupy space in a building less than 10 years old that does not have dual plumbing and a grease interceptor installed.

TENNANT IMPROVEMENT

New tenant improvements involving new businesses in buildings older than 10 years shall install a FOG control device meeting requirements of the Universal Plumbing Code (UPC) and the City. In all cases of tenant improvement, all potential FOG generating drains and fixtures will be connected to an approved FOG control device.

New tenant improvements involving new businesses in buildings newer than 10 years shall install a dual plumbing and a 1,500 gallon grease interceptor minimum.

EXISTING BUSINESS FOG CONTROL UPGRADE

If in the course of business inspection the City discovers an existing business that at the time of occupancy met all the requirements of the time, but is now found to be out of compliance, the business shall:

1. Meet with the Public Works Director or the appointed representative to determine a proper course of action. That action shall meet all requirements of UPC.
2. The action can be a combination of physical changes and modification to business practices.
3. In all cases all FOG will be captured or diverted from discharge to the City sanitary sewer system.

CITY MUNICIPAL CODE CHANGE

The DPW shall expeditiously draft changes to Chapter 13.24 of the City Municipal Code. These changes will include addition of a FOG Control Program.

OTHER FOG PROGRAM GOALS AND OBJECTIVES

In addition to the above, the FOG Control Program is intended to:

- Inform and educate property and business owners of the significant financial liability that exists with any SSO. It is clearly in the business and property owner's best interest to control FOG at the source.
- The City intends to document the movement of all FOG related material from their creation to their ultimate disposal.
- Property and business owners must fully disclose to the City all activity that could impact the publicly owned sewer system.
- The City will work with property and business owners to install required "flow restrictors" where required.

- As the City collects data on various businesses, the frequency of trap interceptor and oil/sand separator cleaning will be adjusted to meet individual need. The goal being to clean devices when the trapped material is 25% of the device volume.
- The Permitted Septic Hauler is intended to provide the City with day-to-day information on the business they serve, such that the City will require minimal staff time to administer the program.
- All FOG producing businesses will be required to use best management practices (BMP) to control FOG. The City shall prepare a BMP Guideline for businesses.
- The City shall prepare a facility to receive FOG at the WQCF. All commercial FOG generated and disposed in the City shall be directed to this location.

Conclusions and Recommendations

- The City has little control over generation, capture and disposal of commercially produced FOG.
- The City needs to develop a cradle to grave monitoring system for FOG.
- All parties associated with FOG would benefit by the City developing a FOG disposal site at the WQCF.
-

5.3 Potential Energy Production From FOG

Previously in this document it was estimated the City commercial sector produced approximately 291 tons of grease per year.¹⁸ Grease has significant potential for energy production as a co-digestate. Unfortunately anaerobic digestion of grease trap waste without addition of other substrates is not practical due to acidification, nutrient imbalance, and inhibitory compounds. Theoretically, methane potential from grease (lipids) is 1014 dm³/kg (16.27 ft³/pound) of volatile solids.¹⁹ This is significantly higher than methane potential for carbohydrates and proteins. In addition grease trap solids have been found to be 99% volatile. Other studies have generated a similar estimate for gas production from grease. Table 5.3-1 shows anticipated biogas production from fats, carbohydrates and proteins.

¹⁸ Task 4 Section A of this report

¹⁹ Environmental Protection Engineering, Volume 39 2013 No. 2
http://epe.pwr.wroc.pl/2013/2-2013/Neczaj_2-2013.pdf

Table 5.3-1, Theoretical Gas Digestion Yields From Carbohydrates, Proteins and Lipids²⁰

Substrate	Composition	CH ⁴ yield l/g VS	CH ⁴ yield ft ³ /lbs VS	Biogas CH ⁴ content (%)	Biogas yield ft ³ /lbs VS
Carbohydrate	C ₆ H ₁₀ O ₅	0.415	6.6	50	13.3
Protein	C ₅ H ₇ NO ₂	0.496	7.9	62.5	12.7
Lipid	C ₅₇ H ₁₀₄ O ₆	1.014	16.2	70	23.2

The solid portion of grease trap pumping has been found to be about 67% solid². Therefore the 291 tons per year of calculate grease trap pumped solids represent 195 tons of pure grease. The referenced grease digestion study from Environmental Protection Engineering demonstrated successful digestion of grease co-digested with sewage sludge in concentrations of 20% to 30% based on volatile solids. This study showed as much as a 41% increase in methane production based on total volatile solid added to a mesophilic anaerobic digester. Other studies have indicated a symbiotic effect of co-digestion of grease and sewage sludge. The symbiotic effect has been suggested due to a decrease in solid digestate production apparently do to only the addition of grease.²¹

The science of digestion of grease trap solids is still in development. Contemporary studies indicate a wide range of statistic conclusions. This is an indication of the complexity of the biology and chemistry occurring in the digestive process, combined with variations in substrate constituent makeup. A conservative estimate of methane production from grease would disregard any symbiotic relationship to increased methane production from accelerated digestion of sewage sludge. Research indicates a conservative estimate for methane generation from grease to be 16.2 ft³/lbs. Given an annual dry weight estimate of 195 tons of grease collected per year, a conservative methane generation estimate would be 6.318 x 10⁶ ft³ per year. Following the same power production theory utilized in other sections of this report, 1kWh of energy could be produced from 3.412 ft³ of methane. In addition, a standard electric generator is assumed to be 26% efficient.²² With this set of assumptions, power production would be:

$$(6.318 \times 10^6 \text{ ft}^3 / \text{year} \times 3.412 \text{ ft}^3 \text{ per kWh}) \times .26 = 481,441 \text{ kWh/year}$$

$$(481,441 \text{ kWh/year}) / 8,760 \text{ hours per year} = 55 \text{ kW}$$

²⁰ Restaurant Trap Waste Characterization and Full Scale FOG Co-Digestion at San Francisco Oceanside Plant.

http://assets.conferencespot.org/fileserver/file/34333/filename/a860_1.pdf

²¹ FOG Collection & Co-Digestion CWEA Specialty Conference, Karri Ving, Alexandre Miot & Bonnie M. Jones, http://labsofcwea.com/wp-content/uploads/downloads/2012/01/SFPUC_CWEA_Presentation_Final-sm.pdf

²² Chapter 5 Section C.

Standard natural gas has a density of 0.0444 pounds per cubic foot. CNG used for transportation fuel is sold as a GGE. One GGE is comprised of 127.5 ft³ of natural gas (5.66 lbs.). 6.318 x 10⁶ ft³ of annual WQCF digester methane production could be made into approximately 50,000 GGE of CNG.

FOG co-digestion with wastewater biosolids may yield additional gas production through a symbiotic effect. The San Francisco Oceanside Pollution Control Plant demonstrated a 27% increase in methane production; resulting from a 6% increase in VS FOG loading.³ Manteca WQCF currently produces about 108,000 ft³ per day of 60% methane biogas from anaerobic digestion of 13,000 pounds of VS. 195 tons of grease per year is equivalent to 1,068 pounds per day. Assuming grease to be 100% VS, FOG VS loading at the WQCF will be 8.2%. Conservatively Manteca should expect to replicate the San Francisco Oceanside Pollution Control Plant demonstration of an overall 27% methane production increase.

The WQCF currently produces 64,800 ft³ per day methane. With FOG addition this should increase to 82,300 ft³ per day. As demonstrated above, FOG methane production alone should be expected to be 6.318 x 10⁶ ft³/year, or 17,300 ft³/day. The remaining 200 ft³ per day of methane production would be generated through the symbiotic effect of co-digestion. Simply stated there will be greater destruction of the current WQCF biosolids. Using standard assumptions of biogas being 60% methane, biogas production of 13 cubic feet per pound of VS destruction, and dewatered biosolids produced at the WQCF are 15% solids, we could expect biosolids production to decrease 5 tons per year from the current 8,000 tons. This would be a reduction of 0.1%.

Energy production from 82,300 ft³ of methane per day utilizing the above methods would generate 260 kW, or 235,600 GGE of CNG per year. This volume of energy does not take into account parasitic load.

Material pumped and hauled from a restaurant interceptor will be about 10% grease, and 90% water. If the anticipated volume of 291 tons of grease is produced annually, the total volume of grease and water will total 700,000 gallons (13,500 gallons per week). The City will need to schedule delivery of FOG such that the WQCF receives a consistent, steady, supply of material.

Conclusions and Recommendations

- Co-digestion of wastewater biosolids and FOG appears to have significant potential benefit for the City.
- The City should develop a FOG receiving station at the WQCF.
- The City should develop programs to fully exploit energy generation from digester biogas production.
- Co-digestion could reduce biosolids disposal resulting in a citywide solid waste disposal diversion of 1.1%.

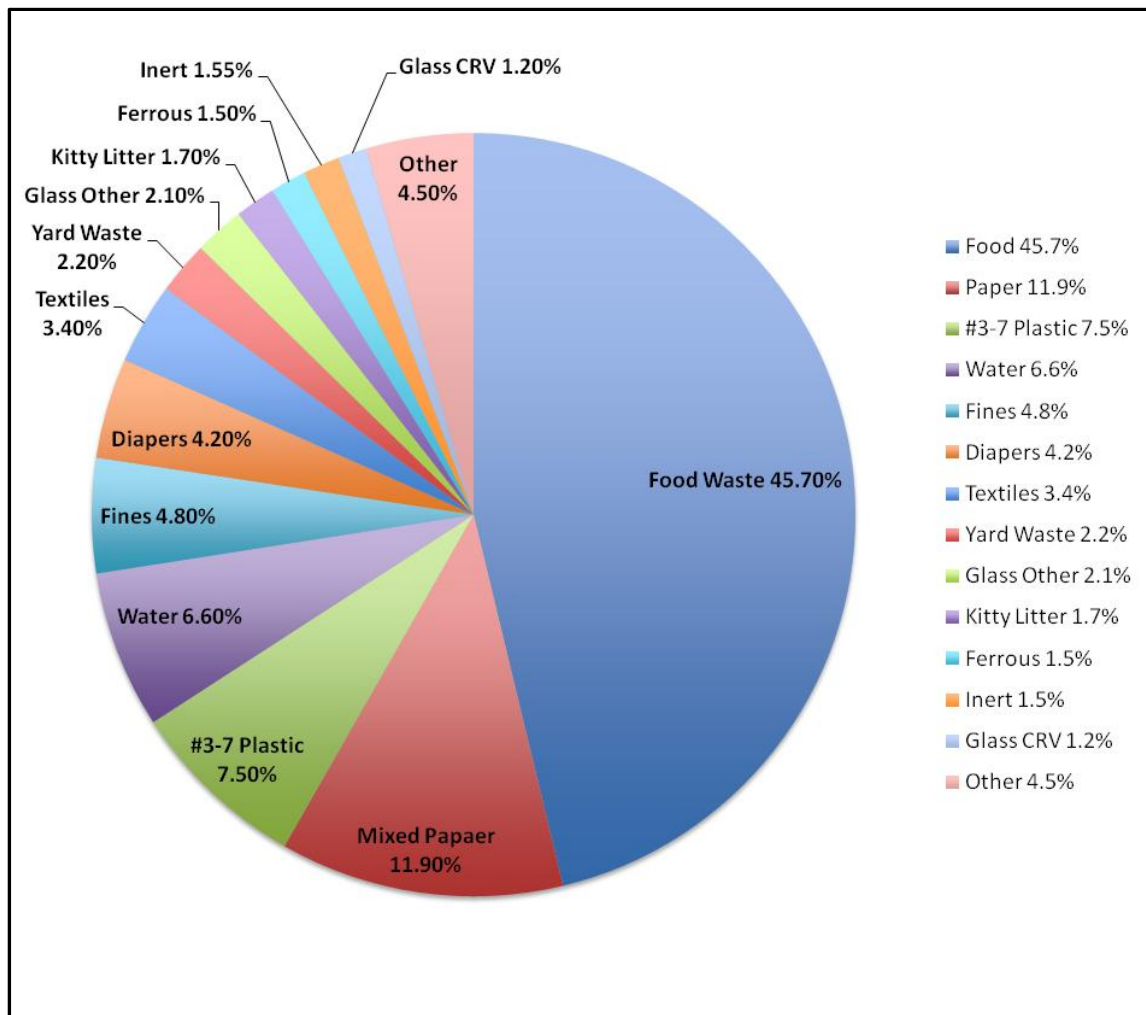
6.0 RESIDENTIAL BROWN BIN WASTE CHARACTERIZATION STUDY

6.1 Brown Bin Waste Characterization Study

Herwit Engineering and IES conducted a Waste Characterization Study of residential Brown Bin material for the City of Manteca. The Study was conducted August 17 through 19, and on August 22 through August 24, 2014. The site of the study was the City corporation yard located at 208 East Wetmore Street, in Manteca.

The study identified the types and percentages of materials contained in collected samples. Due to logistic reasons, this study deviated slightly from the standard protocol outlined in the California CalRecycle guidelines. However, after meeting with CalRecycle staff it was agreed the used protocol was overall more accurate because it eliminated settling and segregation of materials before sampling. The complete Waste Characterization Study containing a full description of the protocol used is in the appendices of this document. Results of the waste characterization study are presented in Figure 6.1-1.

Figure 6.1-1, Brown Bin Waste Characterization Results



For the characterization City crews randomly selected a total of 71 Brown Bins totaling 2,270.7 pounds of material. The samples were collected on Thursday and Friday, then the following week on Monday, Tuesday, and Wednesday. City crews pulled samples from various neighborhoods representing differing socioeconomic profiles.

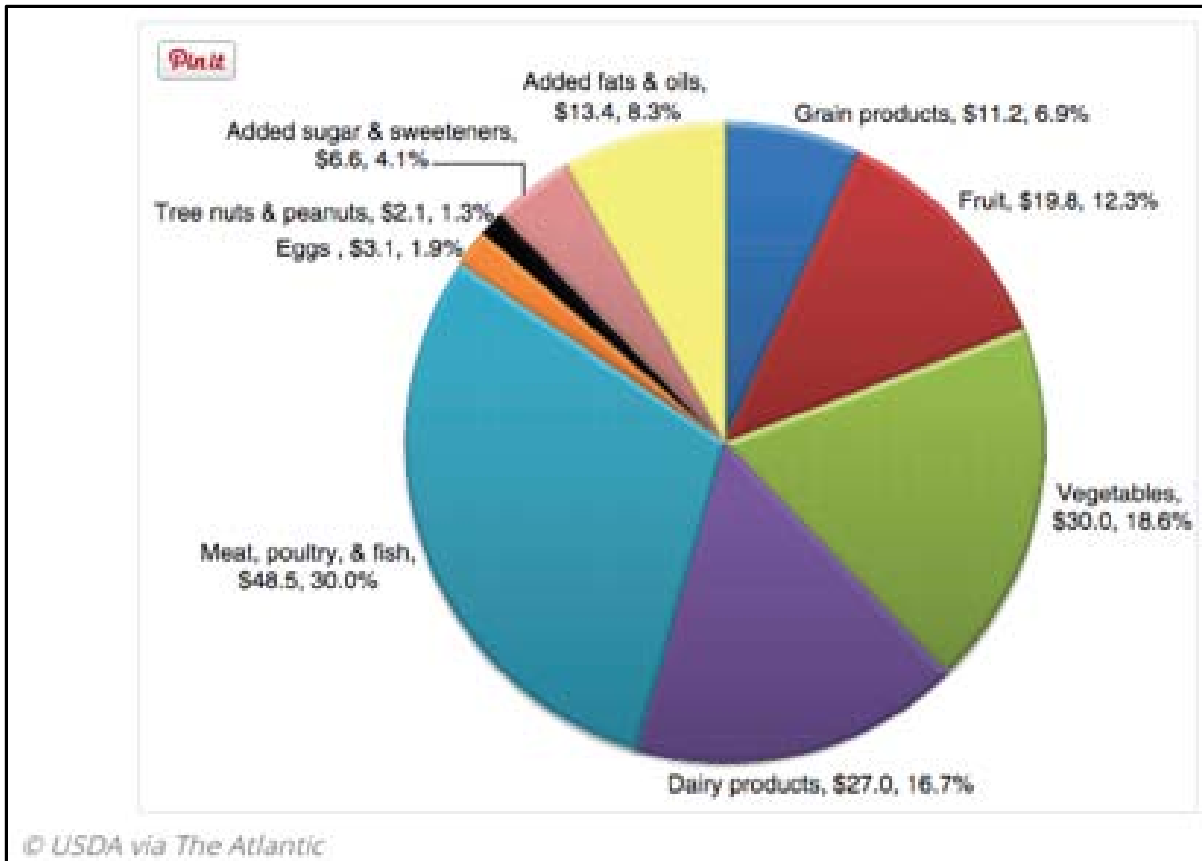
The City currently collects Blue and Green Bins on alternate weeks. Brown Bins are collected every week. Blue Bins are for designated recyclables, Brown Bins are for residential garbage, and Green Bins are for residential yard waste.

Recyclables are intended to go in the Blue Bin, however recyclables were also found in the Brown Bin, but at lower percentages than the Blue Bin. Because there is significantly more volume of material in the Brown Bin than the Blue Bin there are actually more total recyclables in the Brown Bin than in the Blue Bin, this includes high value CRV materials. This does not appear to be the result of scavenging of the Blue Bin. This is most likely the result of improper sorting and placement of recyclable materials in the Blue Bin. This could also be the result of the Brown Bin being picked up weekly, where the Blue Bin is picked up every other week. Once the Blue Bin is full everything may be deposited in the Brown Bin. Then there are clearly homes that do not recycle and put everything in the Brown Bin. Significant revenue is lost to recyclable materials being improperly disposed.

The study determined food waste to comprise 45.7% of residential Brown Bin material. Annually food waste totals 9,128 tons per year. Based on a City population of 70,000 people, the average person will throw out 261 pound of food per year. This is higher than the national average of 218.75 pounds per person, as reported by the United States Department of Agriculture (USDA) and published in the Atlantic magazine.

Based on the USDA, Americans throw away 35 million tons of groceries annually, having a value of \$124 billion. Based on a US population of 320 million people, and a Manteca population of 70,000, Mantecan's throw away \$27 million worth of food annually.

Figure 6.1-2, Value of Waste Food in Billions Dollars in the US



Conclusions and Recommendations

- There is a higher value of recyclables in the Brown Bin than in the Blue Bin.
- The Brown Bin contains a high volume of food waste that can be captured and transformed into energy and soil amendments.
- Capture and diversion of Brown Bin materials is a key for Manteca to achieve their 75% diversion goal.

6.2 Volume and Value of Recyclable Material in the Brown Bin

In conducting the Waste Characterization Study for Brown Bin materials 28 different materials were targeted. Of the targeted materials 14 had no appreciable volume and/or value. Of the remainder, a number of the material categories were combined into a single category for which there is a market. For this study there are ten marketable categories. Results are presented in Table 6.2-1.

Table 6.2-1, Brown Bin Materials

Material	Total Adjusted Weight	Marketable Categories	Total Marketable Weight
OCC	5.2	OCC	5.2
Mixed Paper/Fiber	237.8	Mixed Fiber	237.8
News Print	-		
HDPE CRV	21.1	HDPE CRV	21.1
HDPE no CRV	-	Mixed Plastic	170.9
Film Plastic	17.7		
HDPE Natural	3.2		
#3-7 Plastic	150.0		
PETE	16.6	PET CRV	16.6
Glass CRV	23.8	Glass CRV	23.8
Glass Other	44.1	Glass	44.1
Textiles/Fabric	68.3	No Market	
Mixed Ferrous	29.1	Mixed Ferrous	29.1
Aluminum UBC	4.4	Aluminum UBC	4.4
Mixed Non-Ferrous	10.1	Mixed Non-Ferrous	10.1
Copper & Brass	-	No Market or No Material	
Stainless Steel	-		
Wood	-		
Inert Materials	29.3		
Food Waste	913		
Green/Yard Waste	43.9		
Fines < 1"	95.3		
E-Waste	19.3		
Hazardous Waste	16.8		
Diapers	83.9		
Kitty Litter	33.8		
Water	132.6		
Vinyl	2.6		
TOTAL	2001.9		

Recycle commodity values can be extremely volatile. It is not uncommon for values to double or be reduced by half one month to the next. The exceptions to the rule are commodities that have CRV value. The CRV value is so large; swings in the scrap commodity value have little impact on the overall combined value. Table 6.2-2 below utilizes commodity values based primarily on a three-year average. By averaging commodity values the short-term volatility is mitigated, and a long-term value perspective is achieved.

Table 6.2-2, Brown Bin, 3-Year Average Commodity Volume and Value

Marketable Categories	Total Marketable Weight (lbs.)	Percent of Brown Bin Weight*	Value (\$)/Ton F.O.B.
OCC	5.2	0.3%	\$162.11
Mixed Fiber	237.8	11.9%	\$109.83
HDPE CRV	22.1	1.1%	\$689.53
Mixed Plastic	170.9	8.5%	\$95.56
PET CRV	16.6	0.8%	\$2,012.67
Glass CRV	23.8	1.2%	\$25.11
Glass	41.1	2.2%	\$1.00
Mixed Ferrous	29.1	1.5%	\$249.33
Aluminum UBC	4.4	0.2%	\$4,457.78
Mixed Non-Ferrous	10.1	0.5%	\$1,222.33
Other	1440.8	71.8%	\$0.00
TOTAL	2001.9		

Table 6.2-3, Annual Value of Brown Bin Recyclables

Marketable Categories	Annual Tons	Value (\$)/Ton FOB	Annual Value (\$)
OCC	52.0	\$162.11	\$8,429.30
Mixed Fiber	2377.9	\$109.83	\$261,162.69
HDPE CRV	221.0	\$689.53	\$152,378.52
Mixed Plastic	1709.0	\$95.56	\$163,303.88
PET CRV	166.0	\$2,012.67	\$334,086.53
Glass CRV	238.0	\$25.11	\$5,975.88
Glass	411.0	\$1.00	\$410.98
Mixed Ferrous	291.0	\$249.33	\$72,551.41
Aluminum UBC	44.0	\$4,457.78	\$196,132.52
Mixed Non-Ferrous	101.0	\$1,222.33	\$123,449.16
Other	14,407.3	\$0.00	\$0.00
TOTAL	20,018		\$1,317,880.87

The value of \$1,317,880.87 is an average value of what the City could expect over an extended period of time, and is subject to price volatility in any specific time period. On average Brown Bin material has a value of \$65.83 per ton.

Conclusions and Recommendations

- 28.2% of Brown Bin material is composed of conventional recyclables.
- There is greater recyclable value in the Brown Bin than in the Blue Bin.
- Brown Bin material contains \$65.83 in commodity value per ton.

6.3 Energy Potential of Food Waste in Brown Bin

The August 2014 Waste Characterization Study of the Manteca Brown Bin material identified food waste to comprise 45.7% of the overall material. 20,018 tons of Brown Bin materials are collected annually, resulting in 9,148 tons of food waste sent to landfill disposal from residential collection.

Food waste is generally assumed to be 70% water and 30% solid.²³ Of the solid material approximately 80% is volatile solid. In a typical mesophilic digestive process 70% destruction of food waste volatile solids should be expected.²⁴ The US-EPA estimates 3,300 ft³ of methane production for every ton of wet food delivered to a digester. The same US-EPA document estimated 250 kWh of electricity production from one wet ton of food waste delivered to a mesophilic digestion facility.

Based on the volume of food in the residential Brown Bin, the City could expect 30.122 x 10⁶ ft³ methane production per year, or 2.282 x 10⁶ kWh per year. This is equivalent to 260 kW of consistent production. This is also equivalent to about 350 horsepower.

If the City were to opt to produce CNG from the potential annual 30.122 x 10⁶ ft³ of methane produced the City should expect to produce 236,250 GGE of CNG. This is based on 127.5 ft³ of methane per GGE. This volume does not include parasitic load deductions.

A second method of estimating potential power production is:

$$9,148 \text{ tons of food/ year at 30\% solids} = 2,738 \text{ tons of solids}$$

The food is generally estimated to be 80% volatile with 70% volatile solids destruction.

$$2,738 \times .8 \times .7 = 1,533 \text{ tons of solids destroyed}$$

One pound of destroyed solids will produce about 13 ft³ of biogas, which is estimated to be 65% methane.

$$1,533.5 \text{ tons of solids destroyed} \times 2,000 \text{ pound per ton} \times 13 \text{ ft}^3 \text{ per pound destroyed} \times 65\% \text{ methane} = 25.916 \times 10^6 \text{ ft}^3 \text{ of methane}$$

3.412 ft³ of methane will produce 1 kWh of power.

If 25.916 x 10⁶ ft³ of methane converted to electricity utilizing the information above, will produce about 225 kW. The same volume of methane will produce 203,250 GGE of CNG. This volume does not include parasitic load deductions.

²³ http://waste360.com/mag/waste_profiles_garbage_food

²⁴ <http://www.epa.gov/region9/organics/ad/EBMUDFinalReport.pdf>

Clearly there are a number of factors that will determine the potential energy output based on a volume of food waste in the Manteca residential Brown Bin. Energy output can change based on age and disposition of waste. This said, it would be reasonably safe to assume the potential energy output from available Brown Bin food waste could be between 225 and 260 kW, or production of 203,250 to 236,250 GGE of CNG before parasitic load deductions.

Conclusions and Recommendations

- Food Waste in the Manteca Brown Bin contains significant energy production potential.
- Brown Bin food waste annually totals 9,128 tons. If this waste were diverted from landfill disposal the City would increase citywide diversion by 6.34%.

7.0 WASTE HAULER FRANCHISE ORDINANCE

7.1 City Programs for Grease Generation

In 2006 the State Water Resources Control Board issued a Statewide General Waste Discharge Requirement for Sanitary Sewer Systems. A copy of this document is included in the appendix. A portion of that requirement dealt with documentation of programs the City has to minimize or eliminate SSO resulting from FOG. The City's response to the requirement is the April 2014 **City of Manteca Sewer System Management Plan (Plan)**. Nowhere in the plan or in existing City ordinance is there a requirement for monitoring of FOG control devices or disposal of grease they generate.

The survey of 143 locations of potential SSO resulting from generation of grease demonstrated no City monitoring of any portion of grease generation, capture, or disposal. The Plan states the City intends to hire personnel in fiscal year 2014-2015 to enforce compliance of Section 13.20 of the Municipal Code, Industrial Waste. Commercial discharges of FOG to the City's wastewater collection system fall under the Municipal Code definition of "Significant Industrial User". Clearly under existing Municipal Code, the City has the ability to require installation and operation of grease control devices where warranted. The City has the ability to require reporting of operation and maintenance of grease control devices. Therefore a franchise ordinance for solid waste collection is not desired or needed by the City. However the ability of the City to control movement of waste materials removed from grease control equipment isn't definitive. In other words, the City may not have the ability to determine if grease pumped from a trap is being properly disposed or processed.

Conclusions and Recommendations

- The FOG control program discussed in Section 5.0, can be implemented without a franchise ordinance.

7.2 Existing Ordinance for Franchise Haulers

Manteca hasn't had a need to develop a traditional solid waste franchise hauler ordinance, due in large part to the City's exclusive right to haul all residential and commercial waste. The City has elected to exercise its exclusivity thereby not allowing private haulers to operate in the City. The City's exclusivity is codified in Municipal Code Section 8.12.160 Garbage-Transportation-Restriction:

No person shall move, convey or transport or cause or permit to be moved, conveyed or transported any garbage upon or along any public street or alley or other public place in the City; provided, that the provisions of this section shall not apply to any person employed by the City who shall be assigned to the work of refuse removal while acting within the scope of his employment or to any person with whom the City has entered into or may hereafter enter into a contract for the collection, removal or disposal of refuse or to any employee of such contractor during such time as such contract shall be in force.

Grease trap and interceptor pumping could fall under the definition of “Garbage” as defined by Municipal Code 8.12.010:

“Garbage” means kitchen and table refuse, offal, swill, and also every accumulation of animal and vegetable refuse, and other matter that attends the preparation, consumption, decay or dealing in, or storage of meats, fish, fowl, birds, fruits or vegetables.

Grease could be considered “animal and vegetable refuse”. It could be argued existing grease trap and interceptor pumpers and haulers are in violation of existing Manteca Municipal Code, by hauling “Garbage” on City streets.

Possibly a more expeditious means of controlling movement and disposal of grease is by including the movement of fats, oils, and grease in the existing Manteca Municipal Code Chapter 13.24 *Septic Tank Cleaning*. A thorough discussion of this option is discussed in Section 5.2 of this report.

Conclusions and Recommendations

- Manteca Municipal Code 13.24, Septic Cleaning, could be modified to be applied to commercial grease generation.

7.3 Franchise Hauler Ordinance Language

As previously discussed above, the City has an exclusive right to haul all residential and commercial waste. At this time the City does not have an interest, or a need to develop a Waste Hauler Franchise Ordinance, or Waste Hauler Franchise Program for control of solid waste within the City.

Conclusions and Recommendations

- The City has regulations in place that precludes the need for development of a franchise hauler ordinance for solid waste.

7.4 Modifications to Franchise Ordinance

The City has no interest or need to develop a Franchise Hauler Ordinance to control solid waste. However guidelines have been establish for the development of a Permitted Septic Hauler Program. Those guidelines can be found in Section 5.2, of this report.

Conclusions and Recommendations

- The City has no interest or need to develop a franchise hauler ordinance for solid waste.

8.0 COMMERCIAL FOOD WASTE COLLECTION AND PROCESSING PLAN

8.1 Survey of Generators of Wet Organic Waste (Food)

In September and October of 2014 Herwit Engineering with the assistance of IES conducted a survey of 143 commercial establishments identified by Manteca DPW to have potential for significant food waste production. A copy of the survey is attached in the Appendix of this report. CalRecycle has identified food waste to be the next logical target for significant landfill disposal avoidance. Under its Strategic Directive 6.1, CalRecycle seeks to reduce by 50 percent the amount of organic waste disposed in the state's landfills by 2020²⁵. The US-EPA has identified less than 3% of food waste is being diverted from landfills²⁶.

In September of 2014 California signed into law AB 1826. This new law will phase in mandatory diversion of "organic waste" generated by a business from landfill disposal. The first phase of the legislation will take effect April 1, 2016 and will target generators producing eight cubic yards or more per week of organic waste. The last phase will target businesses that generate four or more cubic yards of commercial solid waste (criteria changes from "organic waste" to "commercial solid waste"), this phase will commence January 1, 2019. If CalRecycle determines after January 1, 2020 that the state has not reduced organic waste disposal by 50% or more, based on 2014 generation levels, CalRecycle could require generators of two cubic yards or more of commercial solid waste, participate in an organic waste diversion program. The legislation definition of "organic waste" is food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed with food waste.

Currently all major grocery stores in Manteca have food waste composting programs. These stores include, Raley's, Costco, Walmart, Safeway, and two Savemarts. Each of these stores returns expired food and produce trimmings to their main warehouse where it is then transferred to a composter. Grocery Outlet does not have a food waste composting program; they donate expired food to charity, and claim to not have any produce trimming. No grocery store has a program for segregation of food waste generated by customers while consuming food in the store.

Restaurants in the City generate significant volumes of food waste. Cal Recycle estimates that after uncoated corrugated cardboard (OCC) is removed from the waste stream, as is the case in Manteca, the remaining fast-food restaurant waste is 69.7% food. A full service restaurant's waste stream is 70.5% food waste after OCC is removed²⁷.

²⁵ <http://www.calrecycle.ca.gov/swfacilities/compostables/AnaerobicDig/ReviewGuide.pdf>

²⁶ <http://www.epa.gov/region9/organics/ad/Why-Anaerobic-Digestion.pdf>

²⁷ CalRecycle Targeted Statewide Waste Characterization Study: Waste Disposal and Diversion Findings for Selected Industry Groups

The owner of Mr. Pickles owns a small farm. All Mr. Pickles food waste resulting from preparation is used for animal feed. Food waste generated by customers goes to solid waste. Mr. Pickles is the only restaurant identified to divert a portion of its food waste from solid waste disposal. Eckert Cold Storage, which processes bell peppers and cabbage, sends all trimming to cattle feed.

Eight public schools surveyed receive food service from Manteca Unified School District. The district attempts to divert waste fruits and vegetables for composting at the district farm. There the district grows crops for school consumption. Other food waste is sent to solid waste. Even with existing food waste diversion, the district would be interested in participating in a City food waste diversion program.

Manteca has a plethora of low cost take and bake or take home pizza providers. Most of these establishments have extremely limited or no seating for on site consumption of food. With this category of food establishment almost no food waste is generated. A list of City food waste generators is presented in Table 8.1-1. The Solid Waste Mass Balance, Table 2.1-1 Disposal, identifies 1,500 tons of Self-Haul Commercial Food Waste that was landfill disposed in 2012.

Table 8.1-1, Commercial Establishments with Significant Food Waste Disposal

Commercial Establishment Name	Location
Aki's Grocery & Food to go	368 N Main
Applebee's	1272 E Yosemite
Athens Burgers	306 W Yosemite
Billie Hills Hillbilly Bar-B-Q	106 Pierce Ave
Black Bear Dinner	1703 E Yosemite Ave
Burger King	700 N Main
Carl's Jr	1489 Hulsey Way
Carl's Jr	1465 W Yosemite
Carl's Jr	990 N Main
Carniceria Rosita	1297 N Main
Casa Flores	1160 N Main
Chili's	2262 Daniels St
China Express	1184 E Yosemite
Chipotle	1440 Hulsey Way
Chubby's Restaurant	737 N Main
Chucks Sports Bar	1447 Historical Plaza Way
Costco	2440 Daniels St
Country Skillets	1471 W Yosemite
Dairy Queen	1138 S Main
Del Taco	1194 E Yosemite
Denny's	1135 S Main St
Doctor's Hospital	1205 E North Street

Commercial Establishment Name	Location
El Jardin	1111 S Main
El Pollo Loco	1730 E Yosemite
Emeritus Care	430 N Union
Ernie's Food & Sprits	1351 N Main
Fagundes Meats & Catering	142 Jason St
Food 4 Less	131 Spreckels
Foster Freeze	906 W Yosemite
George McParland Annex	1370 London Ave
GK Mongolian BBQ	1039 S Main St
Ho Suns Kitchen	1150 N Main St
Hob Nob Hot Dog	1315 N Main
IHOP	1150 E Yosemite
In & Out Burger	1490 E Yosemite
Iron Horse Deli	301 E Yosemite
Jack in the Box	1081 S Main
Jack in the Box	1310 E Yosemite
Jack in the Box	1105 N Main
Jacks Pizza	1223 W Yosemite
Jamba Juice	2160 Daniels
Jamba Juice	1445 Hulsey Way
Jimmy's Market	2268 E Yosemite
Johnny's Restaurant	610 E Yosemite
Joshua Cowell School	740 Pestana
Kaiser Hospital	1777 W Yosemite
Kentucky Fried Chicken	1211 E Yosemite
Kinnaree Thai Cuisine	229 E Yosemite
Kitty's Kitchen	532 N Main
LaCosta	205 Moffat Blvd
La Estrella	1361 E Yosemite
La Estrella	1110 N Main
La Mexicana Market	502 E Yosemite
La Pina Loca	504 W Yosemite
Las Casuelas	1580 W Yosemite
Le Croissant Bakery	162 N Maple
Lee's Chinese	102 Pierce
Lincoln School	750 E Yosemite
Luu's Chicken Bowl	300 N Main
Mangy Moose Café	506 E Yosemite
Matsu Sushi	874 Lifestyle St
Matsyama Sushi	293 Spreckels Ave
McDonalds	1360 E Yosemite
McDonalds	1205 S Main St
McDonalds	2050 Daniels

Commercial Establishment Name	Location
McDonalds	1236 W Yosemite
McDonalds	1137 W Lathrop
McFall School	1810 Hoyt Lane
Mom's Thai House	439 N Main
Mountain Mikes	1120 N Main St
Mr. Biggs Deli	137 N Main St
Mr. Pickle	1456 Hulsey Way
Neil Hafley School	849 Northgate
New China	1457 W Yosemite
Nic's Place	160 W Center
ONO Hawaiian	2152 Daniels St.
Pacos Taqueria	275 W Louise
Panda Express	1467 Hulsey Way
Panda Express	2130 Daniels St.
Papa Joe's BBQ	211 E Yosemite
Saigon Town Noodles	1311 Historical Plaza Way
Pizza & Pints	449 N Main
Pizza Hut	920 N Main St.
Prestige Senior Living	1130 Empire Ave
Quiznos	127 Spreckels Ave
Raley's	1280 W Lathrop
Red Robbin	873 Lifestyle St
Round Table Pizza	2120 Daniels St.
Round Table Pizza	253 Spreckels Ave
Safeway	1187 S Main
Sakana Japan Bistro	1512 W Yosemite
Savemart Supermarket	1172 N Main
Savemart Supermarket	1431 W Yosemite
Sierra High School	1700 Thomas Street
Silver Chop Stick	293 W Louise
Stella Brockman School	763 Silverado Dr.
Straw Hat Pizza	1238 N Main
Strings	1125 S Main
Subway	1172 E Yosemite
Subway	1186 N Main
Subway	1235 W Yosemite
Subway	2126 Daniels St
Subway	878 Lifestyle St
Sunny Valley Smoked Meats	2475 W Yosemite
Super Buffet	1405 E Yosemite
Taco Bell	201 Northgate Dr
Taco Bell	421 E Yosemite
The Codfather	290 N Main

Commercial Establishment Name	Location
Togo's Eatery	1115 S Main
Tony & Mrs. K Café	1195 E Yosemite
Uncle Franks Grill	305 N Union
Waffle Shop	1021 N Main
Walmart	1205 S Main
Walter Woodward School	575 Tannehill Dr.
Webers BBQ	825 Mellon Ave
Weinerschnitzel	1200 W Yosemite
Wendy's	1630 E Yosemite
Zen Bakery	1316 Dupont Ct

Conclusions and Recommendations

- There are greater than 100 establishments in the City that produce volumes of waste that will require the business to meet provisions of AB 1826.

8.2 Collection Options for Capture of Food Waste

With passage of AB 1826, recycling of commercially generated organic waste went from elective to required. The legislation requires businesses to take at least one of the following actions:

1. A business shall separate organic waste from other waste and subscribe to a basic level of organic waste recycling service that includes collection and recycling of organic waste.
2. Recycle its organic waste onsite or self-haul its own organic waste for recycling.
3. Subscribe to an organic waste recycling service that may include mixed waste processing that specifically recycles organic waste.

The legislation clearly places responsibility for separation and recycling of organic waste on the generating business. Manteca businesses will need to abide by both AB 1826, and Manteca Municipal Code. Manteca Municipal Code gives the City exclusive right to haul “garbage” in the City. Organic waste would fall under the City definition of garbage. Implementation of AB 1826 will be phased based on the volume of waste the business produces. Table 8.2-1 below shows the scheduled implementation of the law.

Table 8.2-1, AB 1826 Phased Implementation

Commercial Waste Generator	Date of Program Participation
Eight cubic yards or more of organic waste per week.	April 1, 2016
Four cubic yards or more of organic waste per week.	January 1, 2017
Four cubic yards of commercial solid waste per week.	January 1, 2019
If organic waste disposal in the state is not reduced by 50% from 2014 levels: Two cubic yards of commercial solid waste per week	January 1, 2020

The City of Manteca has the following options:

1. Do nothing and force City businesses to separate and recycle their organic waste.
2. Require commercial businesses to separate organic waste, which the City will collect by dedicated collection. The City then will arrange for proper recycling of the material through a vendor contract or through a program the City establishes.
3. The City provides separation of organic waste from commercial solid waste through a mixed waste separation process. A vendor or a new City operation could provide this service. The organic waste will then be recycled through a vendor contract or through a program the City establishes.

The majority of the City's commercial food waste collection and hauling utilizes bins serviced with a front loader garbage truck. The bins are typically housed in a trash enclosure that often also houses a used cooking oil rendering container. There could be challenges in placing an additional bin in existing trash enclosures.

The City does have the option to continue to collect primarily restaurant waste per the current method. The City could then process the material to remove organic waste. The vast majority of the 143 commercial locations surveyed could be serviced by such a method. In the majority of cases the commercial waste contains food, paper, and plastic. Separation of food from the paper and plastic is a simple straightforward process. Table 8.2-2 lists all surveyed commercial generators of organic waste, along with an opinion if the organic waste could be simply mechanically separated.

Table 8.2-2, Ability to Mechanically Separate Organic Waste From Trash

Business Name	Simplified Organic Waste Processing Practical
Aki's Grocery & Food to go	Yes
Applebee's	Yes
Athens Burgers	Yes
Billie Hills Hillbilly Bar-B-Q	Yes
Black Bear Dinner	Yes
Burger King	Yes
Carl's Jr	Yes
Carl's Jr	Yes
Carl's Jr	Yes
Carniceria Rosita	Yes
Casa Flores	Yes
Chili's	Yes
China Express	Yes
Chipotle	Yes
Chubby's Restaurant	Yes
Chucks Sports Bar	Yes
Costco	No
Country Skillets	Yes
Dairy Queen	Yes
Del Taco	Yes
Denny's	Yes
Doctor's Hospital	No
El Jardin	Yes
El Pollo Loco	Yes
Emeritus Care	Yes
Ernie's Food & Sprints	Yes
Fagundes Meats & Catering	Yes
Food 4 Less	No
Foster Freeze	Yes
George McParland Annex	Yes
GK Mongolian BBQ	Yes
Ho Suns Kitchen	Yes
Hob Nob Hot Dog	Yes
IHOP	Yes
In & Out Burger	Yes
Iron Horse Deli	Yes
Jack in the Box	Yes
Jack in the Box	Yes
Jack in the Box	Yes
Jacks Pizza	Yes
Jamba Juice	Yes

Business Name	Simplified Organic Waste Processing Practical
Jamba Juice	Yes
Jimmy's Market	Yes
Johnny's Restaurant	Yes
Joshua Cowell School	Yes
Kaiser Hospital	No
Kentucky Fried Chicken	Yes
Kinnaree Thai Cuisine	Yes
Kitty's Kitchen	Yes
LaCosta	Yes
La Estrella	Yes
La Estrella	Yes
La Mexicana Market	Yes
La Pina Loca	Yes
Las Casuelas	Yes
Le Croissant Bakery	Yes
Lee's Chinese	Yes
Lincoln School	Yes
Luu's Chicken Bowl	Yes
Mangy Moose Café	Yes
Matsu Sushi	Yes
Matsyama Sushi	Yes
McDonalds	Yes
McDonalds	Yes
McDonalds	Yes
McDonalds	Yes
McDonalds	Yes
McDonalds	Yes
McFall School	Yes
Mom's Thai House	Yes
Mountain Mikes	Yes
Mr. Biggs Deli	Yes
Mr. Pickle	Yes
Neil Hafley School	Yes
New China	Yes
Nic's Place	Yes
ONO Hawaiian	Yes
Pacos Taqueria	Yes
Panda Express	Yes
Panda Express	Yes
Papa Joe's BBQ	Yes
Saigon Town Noodles	Yes
Pizza & Pints	Yes
Pizza Hut	Yes

Business Name	Simplified Organic Waste Processing Practical
Prestige Senior Living	Yes
Quiznos	Yes
Raley's	No
Red Robbin	Yes
Round Table Pizza	Yes
Round Table Pizza	Yes
Safeway	No
Sakana Japan Bistro	Yes
Savemart Supermarket	Yes
Savemart Supermarket	Yes
Sierra High School	Yes
Silver Chop Stick	Yes
Stella Brockman School	Yes
Straw Hat Pizza	Yes
Strings	Yes
Subway	Yes
Subway	Yes
Subway	Yes
Subway	Yes
Subway	Yes
Sunny Valley Smoked Meats	Yes
Super Buffet	Yes
Taco Bell	Yes
Taco Bell	Yes
The Godfather	Yes
Togo's Eatery	Yes
Tony & Mrs. K Café	Yes
Uncle Franks Grill	No
Waffle Shop	No
Walmart	No
Walter Woodward School	Yes
Webers BBQ	Yes
Weinerschnitzel	Yes
Wendy's	Yes
Zen Bakery	Yes

City staff has indicated a preference in proceeding with commercial establishment source separating organic waste as defined by AB 1826. The material would then be hauled by the City to the City wastewater treatment plant, or other site for processing. This method of separation could prove challenging with customer waste at fast food establishments. The

process would require customer separation of food waste at the point of disposal, likely with a separate disposal container in the dining area.

Even with source separation of commercial food waste, there will be a level of contamination that will require processing to separate plastics, glass, and metals. WQCF processing of food waste will require reasonably clean streams of food waste.

Conclusions and Recommendations

- The vast majority of food establishments produce a stream of waste comprised of food, paper and plastic. Paper and plastic can be simply separated from food waste.
- The City would prefer to conduct a program of source separation of commercial food waste.
- Collection of source separated food waste will require a dedicated collection route.

8.3 Energy Production Potential From Commercial Food Waste

CalRecycle has conducted a study of fast food and full service restaurants to determine the volume of food waste generated. Section 5.1 of this report used this study to determine the volume of grease generation.²⁸ The CalRecycle study has identified the following:

Table 8.3-1, Annual Waste Generated Per Employee

Restaurant Type	Waste Generated/Employee (lbs/Year)	Percentage of Food Waste in their MSW	Food Waste Per Employee (lbs/Year)
Fast Food	4,262	52.5%	2,237
Full Service	4,403	66.5%	2,928

Also discussed in Section 5.1 of this report is the number of employees in a standard restaurant. Based on studies, fast food restaurants average 15.6 employees, and a full service restaurant will average 17.0 employees. Manteca was found to have 51 fast food and 41 full service restaurants. Total food waste generation is summarized in Tables 8.3-2 and 8.3-3.

Table 8.3-2, Annual Food Waste Generated Per Restaurant

Restaurant Type	Waste/Employee (lbs/Employee/Year)	Employees	Waste Generated Per Restaurant (lbs/Year)
Fast Food	2,237	15.6	34,897
Full Service	2,928	17.0	49,776

²⁸ Targeted Statewide Waste Characterization Study: Waste Disposal and Diversion Findings for Select Industry Groups, June 2006, <http://www.calrecycle.ca.gov/Publications/Documents/Disposal/34106006.pdf>

Table 8.3-3, Annual Food Waste Generated From Manteca Restaurants

Restaurant Type	Waste Generated Per Restaurant	Number of Restaurants	Total Food Waste
Fast Food	34,897	51	890 Tons
Full Service	49,776	41	1,020 Tons
TOTAL			1,910 Tons

Based on the US-EPA study as presented in Section 6.0, each wet ton of food waste delivered to a mesophilic digester could result in 250 kWh of electricity production. Based on this the City could generate:

$$1,910 \text{ tons} \times 250 \text{ kWh per ton} = 477,500 \text{ kWh}$$

This is equivalent to 54.5 kW or about 72 horsepower.

If the same commercial food waste were used to produce CNG, the US-EPA estimates one ton of food waste delivered to a mesophilic digester would produce 3,300 ft³ of methane. By calculating CNG generation by the same method as in Section 6.0, the commercial food waste would generate 49,500 GGE of CNG. This generation does not include parasitic load.

Conclusions and Recommendations

- Commercial food waste can provide the City with a significant source of renewable energy.
- AB 1826 provides the City with an opportunity to exploit the energy in food waste.
- If commercial food waste were diverted from landfill disposal, there would be a 1.3% increase in overall City solid waste diversion.
- Commercial food waste could be combined with commercial FOG to produce energy.

8.4 Commercial Food Waste Processing Facility

As noted previously, co-locating a commercial food waste facility at the WQCF provides cost savings, and allows for joint utilization of biogas, facilitating the most efficient biogas project. A preliminary layout for solid waste organics digestion has been developed for the WQCF. Figure 8.4-1 shows the overall site layout for the WQCF, including an area for solid waste organics digestion. Figure 8.4-2 shows a site layout for a food waste processing facility in greater detail. Figure 8.4-3 shows a detailed facility layout broken out by phase. A process flow diagram with mass balance for each project phase is shown in Figure 8.4-4 and Figure 8.4-5.

Figure 8.4-1, Manteca WQCF Biosolids and Solid Waste Site Plan With Solid Waste Organics Digestion

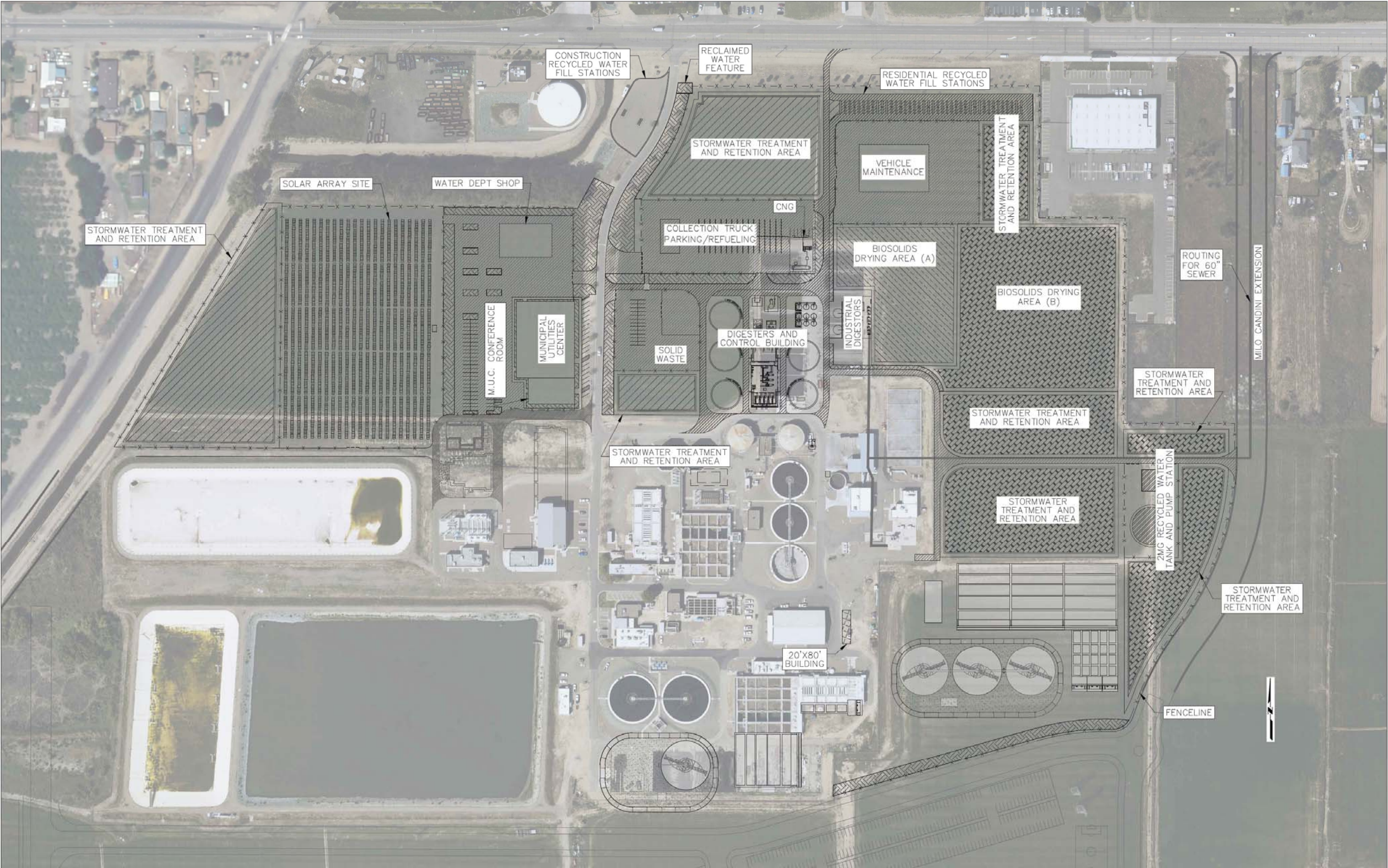


Figure 8.4-2, Manteca WQCF Solid Waste Organics Digestion Site Layout

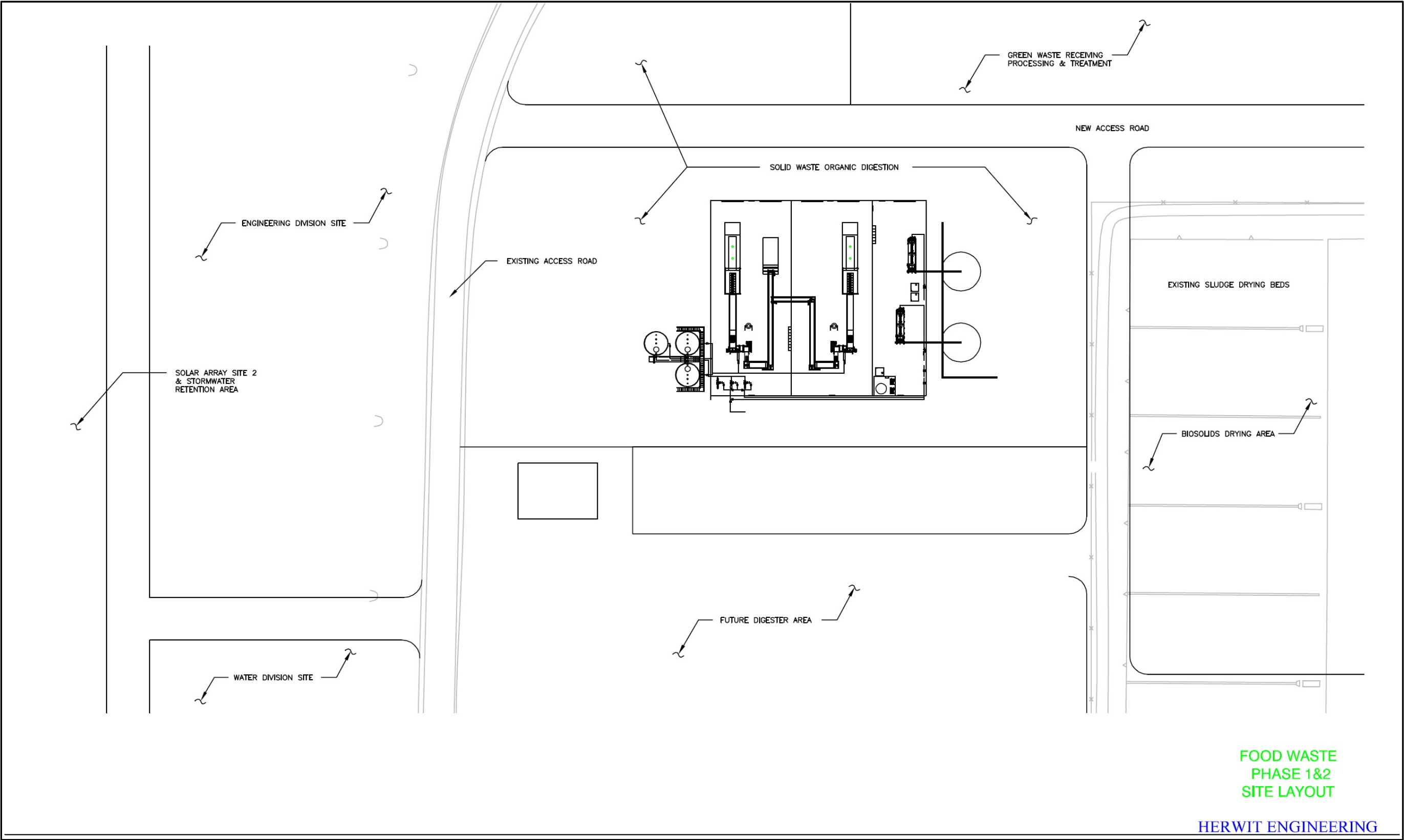


Figure 8.4-3, Manteca WQCF Solid Waste Organics Digestion Detailed Facility Layout by Phase

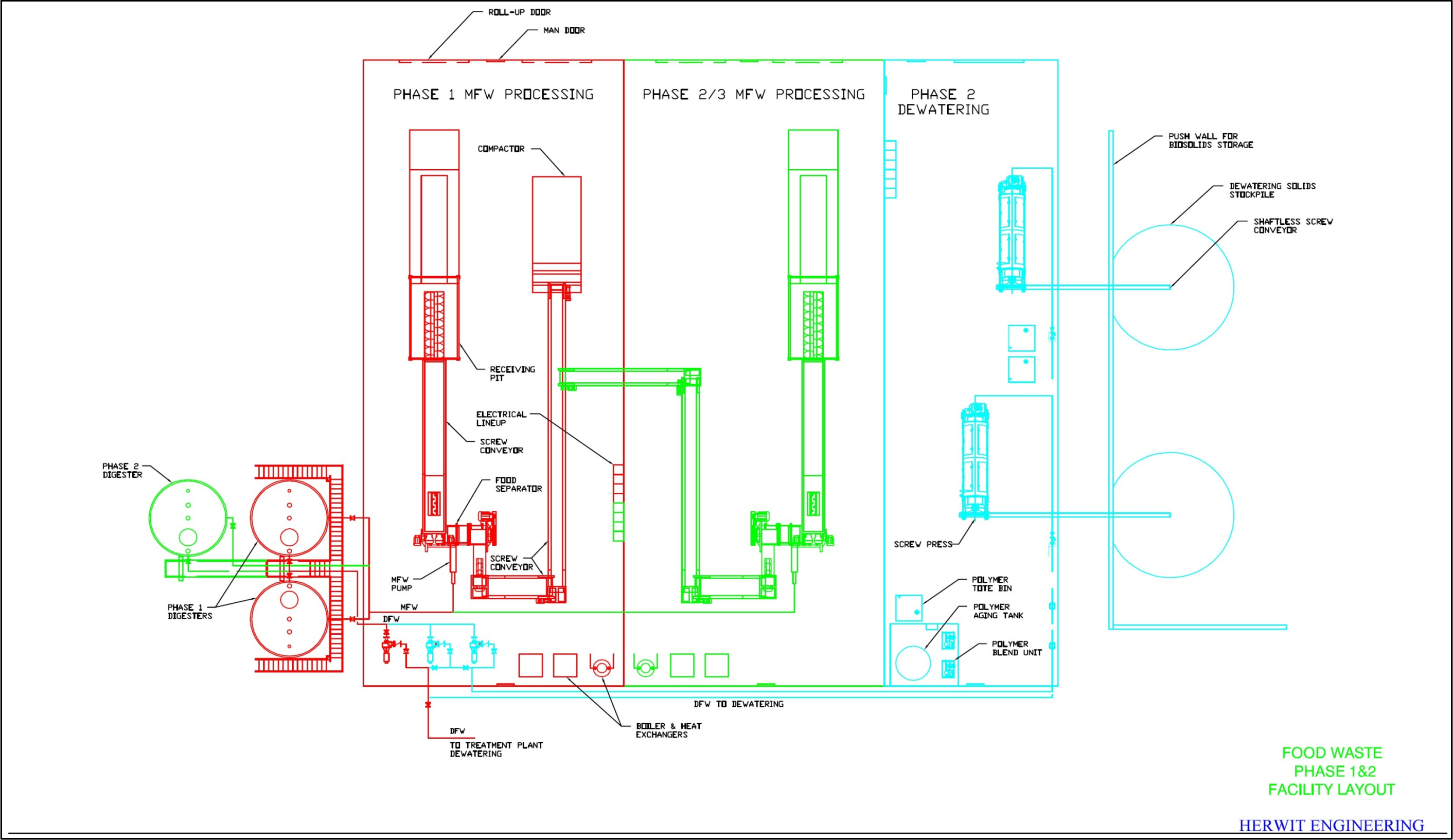


Figure 8.4-4, Manteca WQCF Solid Waste Organics Digestion Facility Phase 1 Process Flow and Mass Balance

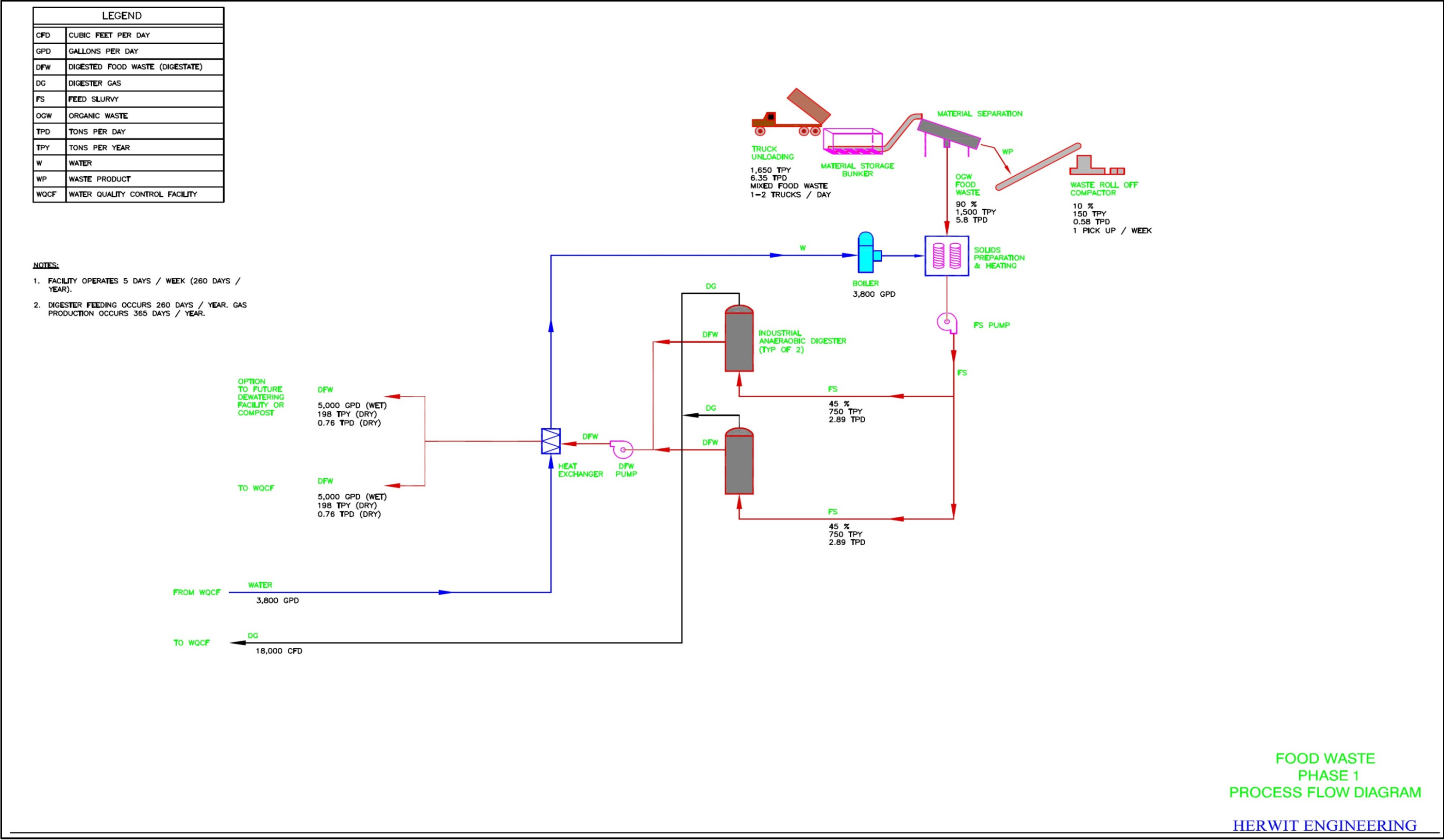
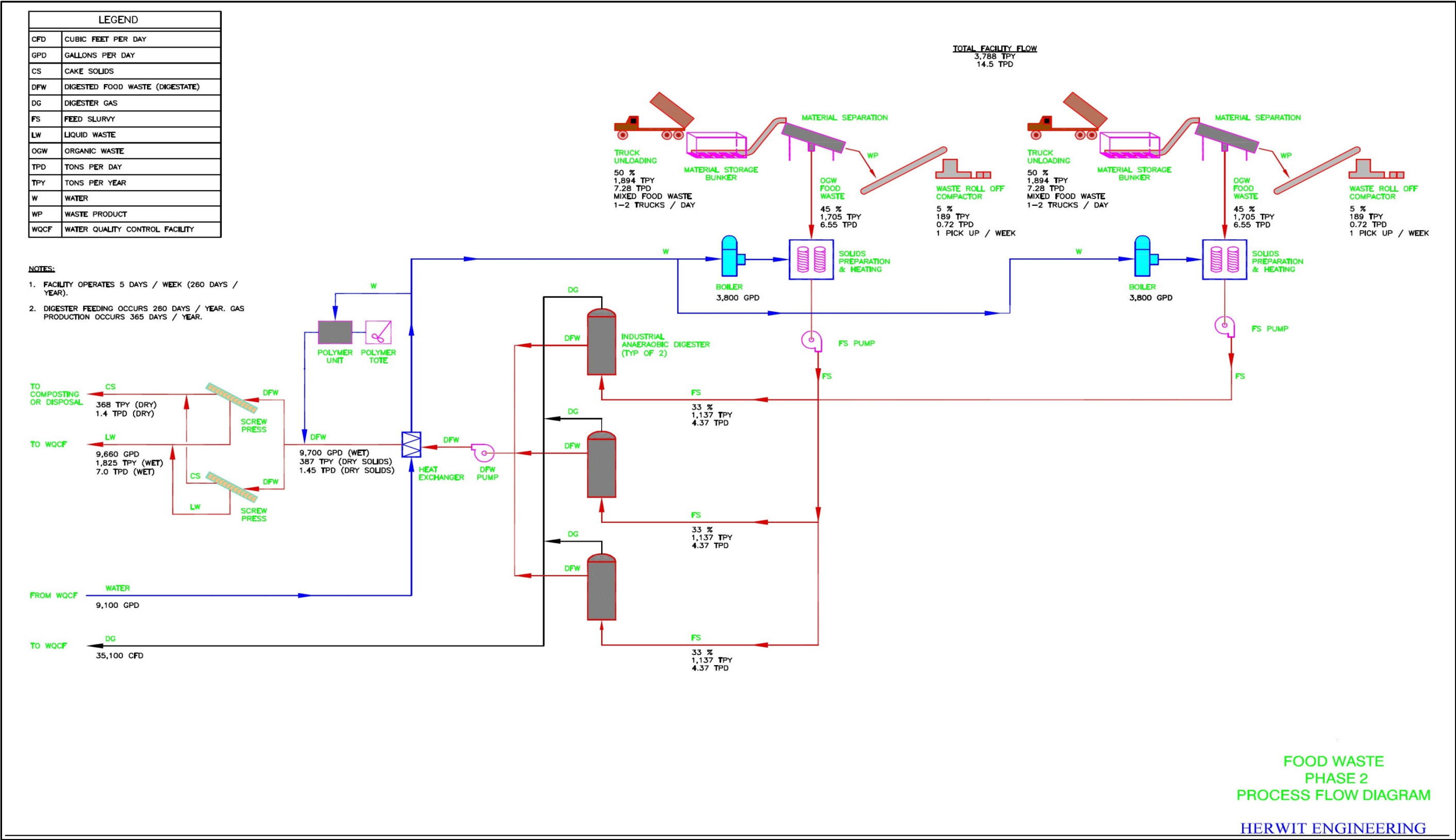


Figure 8.4-5, Manteca WQCF Solid Waste Organics Digestion Facility Phase 2 Process Flow and Mass Balance



9.0 RESIDENTIAL FOOD WASTE COLLECTION AND PROCESSING

9.1 Options for Collection and Processing of Residential Food Waste

In 2011, BioCycle Magazine reported that there were 53 residential food waste collection programs in California. This was a 50% increase from just two years before.²⁹ This number should continue to increase due to the collateral effect of commercial sector food waste diversion, stimulated by AB 1826.

Throughout California's residential food waste programs, there appears to be no uniformity in program approach. Several municipalities are conducting pilot programs to refine their respective programs before proceeding with system wide investment and rollout. The City of San Francisco has the most publicized residential program, due in part to mandatory participation.

Almost every pilot and full-scale residential food waste program processes waste by aerobic composting. The one small exception is a pilot program in the Elmhurst Neighborhood of Sacramento that is collecting food waste for production of energy. In this pilot residents are encouraged to place food waste in plastic bags, which are then placed in their greenwaste bin. The City collects the greenwaste and delivers it to Republic Services who separates the food. The food is then taken to Clean World Partners for processing into fuel. This is a one-year pilot program that started in April of 2014. The Sacramento pilot program is the only program found to accept non-compostable plastic bags.

Other California food waste programs include, Alameda County, City of Arvin, City of Bakersfield, Central Contra Costa County, City of Los Angeles, Marin County, Napa County, Santa Cruz County, Sonoma County, and the City of Stockton. In addition it is important to note there are at least 23 states that ban yard waste from landfill disposal. It is generally concluded that food waste will follow the same regulatory restriction. On January 1, 2015, Germany's 2012 Kreislaufwirtschaftsgesetz law requires organic waste be collected separately.³⁰ Germany has been a global leader in waste and recycling, and often establishes global industry trends. Hernani, Spain implemented a mandatory residential food waste source separation and recycling program. In the first year of the program the community had reduced landfill disposal by 58.3%.³¹

Currently Manteca collects Brown Bin waste weekly, with Blue and Green Bins collected on alternate weeks. Given almost every municipal residential program collects food waste through some means of placement of material in Green Bin, this would be the optimal approach for Manteca. If this were to occur, Green Bin collection would need to be

²⁹ BioCycle January 2012, Vol 53, No. 1, p. 23

³⁰ Umwelt Bundesamt, Organic-waste treatment, <http://www.umweltbundesamt.de/en/topics/waste-resources/waste-disposal/organic-waste-treatment>

³¹ Cultivating Climate Justice Through Compost: The Story of Hernani, December 9, 2014

changed to weekly in an effort to avoid odors. This could have a negative impact on the cost of residential collection. Currently there are four can pickups every two weeks; with this change there could potentially be five. In 2010 the Center for a Competitive Waste Industry prepared a report for Region 9 of the US-EPA in which they suggest that if all food and food soiled paper were placed in the Green Bin that the Brown Bin could then be serviced every other week. In the case of Manteca the collection of Brown and Green Bins would simply change places. The report also suggests that servicing the Brown Bin every two-weeks would encourage residence to place putrescible food waste in the Green Bin.³² Also California requires putrescible material to be collected weekly.

Michael Armstrong, sustainability manager for Portland Oregon has reported that in 2011 the City went to collecting their brown bin every other week, and recyclables and compostable materials every week. When Portland did this they had a 50 to 70% increase in recycling, with a decrease in garbage collection of 35%.³³

The August 2014 Manteca Waste Characterization Study identified food waste to comprise 45.7% of residential Brown Bin material as a function of weight. As was discussed in Section 6.3 of this report, residential food waste is estimated to account for 9,128 of the 20,018 tons disposed annually. A successful residential food waste collection program, combined with greater diversion of recyclable materials from the Brown Bin to the Blue Bin could reduce the hauled weight of the Brown Bin by more than half. The Waste Characterization Study showed a potential to reduce Brown Bin disposal by almost 75%.

The CalRecycle website states the most successful pilot and full-scale food waste diversion programs have the following elements:³⁴

- *Collecting food discards with yard trimmings in a toter at the curbside.*
 - *Allowing residents to set out soiled paper with their food discards.*
 - *Collecting organics weekly. (Some European programs collect organics one week and trash the other, with organics collected weekly during the warmer months. Aerated carts can allow for biweekly collection.) In California, putrescibles are required by code to be collected weekly.*
 - *Providing households with a lidded pail to use in their kitchen for collecting food scraps.*
 - *Encouraging residents to rinse out their toters and pails as needed.*
- Allowing residents to line their pails or curbside bins with paper bags or newspaper (if they wish).*

Public participation in a residential food waste collection program will determine the success of the program. Food could be considered to be just another commodity residents

³² Beyond Recycling Composting, Food Scraps and Soiled Paper, By the Center for Competitive Waste Industry, http://beyondrecycling.org/pdf_files/FinalReport.pdf

³³ CNBC: Rebels, Icons and Leaders, 23 December 2014, <http://www.cnbc.com/id/102253283>

³⁴ <http://www.calrecycle.ca.gov/lgcentral/library/innovations/FoodWaste/Program.htm>

are asked to separate. Table 9.1-1 shows the separation efficiency of various Blue Bin commodities as determined in the recent Brown and Blue Bin waste characterization study. On average Manteca residence demonstrated a 60.7% separation efficiency of key commodities.

Table 9.1-1, Manteca Residential Commodity Source Separation Efficiency

Commodity	Adjusted Weight Blue (Pounds) 2 Weeks	Adjusted Weight Brown Bin (Pounds)	Blue Bin Pounds per Home per Weeks	Brown Bin Pounds per Home per Week	Efficiency of Collection, %
OCC	146.9	5.2	1.36	0.07	94.9
News Print	31.1	0.0	0.29	0.0	100
HDPE CRV	22.2	21.1	0.205	0.30	40.9
HDPE Nat.	12.6	3.2	0.115	0.05	72.1
PET (CRV)	13.6	16.6	0.125	0.23	35.0
Glass (CRV)	58.1	23.8	0.54	0.34	61.6
Ferrous	33.8	29.1	0.315	0.41	43.3
Aluminum (CRV)	4.1	4.4	0.04	0.06	38.0
Homes Sampled	54	71			
Average Collection Efficiency					60.7

On November 12, 2014 IES met with Jed Phelps, General Manager of Harvest Power California, the City greenwaste processor. Mr. Phelps indicated they could accept 15% food waste in loads from the City. From an infrastructure perspective, Manteca could implement a residential food waste collection and processing program without additional investment. If the public were to participate the City could save significant revenue by offsetting landfill disposal fees of \$44.17 per ton with composting fees of \$19.25 per ton. Based on a potential 9,128 tons of residential food waste, the City could save \$227,500 per year.

At this time the City does not have infrastructure to move forward with a residential food waste, anaerobic digestion program. If the City were to move forward with such a program there would be a need to collect residential food waste segregated from greenwaste. This is the reason Sacramento is allowing food waste to be placed in plastic bags before residence place food in the Green Bin. The reason for segregation is the difficulty associated with anaerobic digestion of lignocellulose materials. Virtually every program, having aerobic processing, directs residence to place food waste directly in the Green Bin, allowing for mixing with greenwaste.

Some municipalities provide a “kitchen pail” to assist residence with food waste collection and disposal (See Figure 9.1-1). The intent of the kitchen pail is to provide a storage container for food scraps when meals are being prepared. The kitchen pail contents are taken to the Green Bin daily. The kitchen pail can be lined with newspaper or paper towels. The food-soiled paper can also be placed in the Green Bin.



Figure 9.1-1, Residential Food Waste Collection Pail

Many municipalities operating food waste collection and processing programs include many types of paper. In some cases this includes waxed cardboard, paper cups, and cereal boxes.

If Manteca were to initiate a pilot residential food waste collection and processing program, the program should include the following aspects:

1. The Green Bin will be serviced by the City weekly.
2. The City will service the Brown Bin every other week.
3. The City will provide, free of charge, participating homes with a kitchen pail.
4. The City will include food soiled paper in the program.
5. The City will work with Harvest Power California to accept food-soiled paper.

A pilot program should include a minimum of 150 single-family homes. If at some point the City develops an anaerobic residential food waste processing program the City could purchase mechanical equipment to separate food waste from greenwaste.

Figures 9.1-2 and 9.1-3 show information disseminated from municipalities to residence regarding residential food waste collection programs.

Figure 9.1-2, City of Sacramento Residential Pilot Food Waste Collection Program

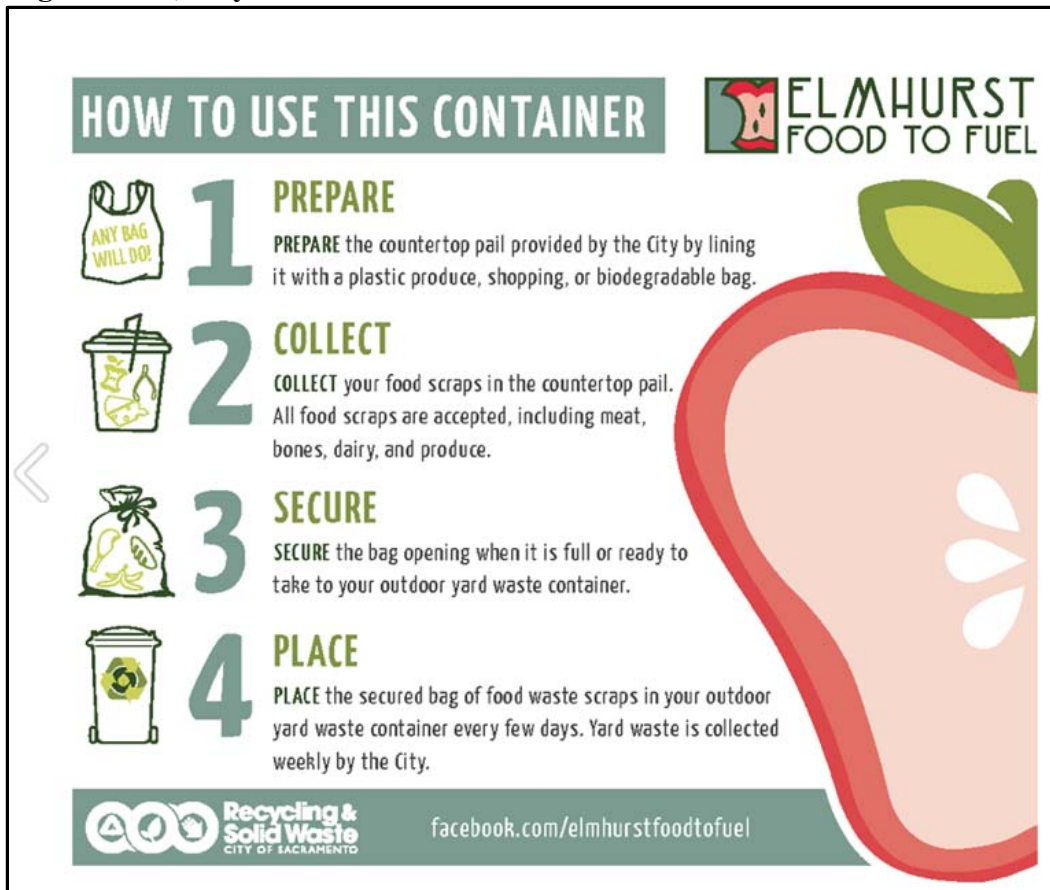


Figure 9.1-3, Napa County Residential Food Waste Collection Program Information



If the City elects to construct a commercial food and/or FOG waste disposal facility, residential food waste could be processed at the same location.

Conclusions and Recommendations

- There are many examples of residential food waste collection programs in California.
- CalRecycle is developing protocol for food waste collection. They expect a document to be published summer 2015.

9.2 Energy Production Potential For Residential Food Waste

The August 2014 Waste Characterization Study of the Manteca Brown Bin material identified food waste to comprise 45.7% of the overall material. 20,018 tons of Brown Bin materials are collected annually, resulting in 9,128 tons of food waste sent to landfill disposal from residential collection.

Food waste is generally assumed to be 70% water and 30% solid.³⁵ Of the solid material approximately 80% is volatile solid. In a typical mesophilic digestive process 70% destruction of food waste volatile solids should be expected.³⁶ The US-EPA estimates 3,300 ft³ of methane production for every ton of wet food delivered to a digester. The same US-EPA document estimated 250 kWh of electricity production from one wet ton of food waste delivered to a mesophilic digestion facility. If the City were to develop a residential food waste anaerobic digestion process, the process would more than likely be a mesophilic process.

Based on the volume of food in the residential Brown Bin, the City could expect 30.122 x 10⁶ ft³ methane production per year, or 2.282 x 10⁶ kWh per year. This is equivalent to 260 kW of consistent production. This is also equivalent to about 350 horsepower. If the City elects to produce CNG they could expect to 236,250 GGE of CNG annually. This volume of energy does not include parasitic load.

A second method of estimating potential power production is:

$$9,128 \text{ tons of food/ year at 30\% solids} = 2,738.4 \text{ tons of solids}$$

The food is generally estimated to be 80% volatile with 70% volatile solids destruction.

$$2,738.4 \times .8 \times .7 = 1,533.5 \text{ tons of solids destroyed}$$

³⁵ http://waste360.com/mag/waste_profiles_garbage_food

³⁶ <http://www.epa.gov/region9/organics/ad/EBMUDFinalReport.pdf>

One pound of destroyed solids will produce about 13 ft³ of biogas, which is estimated to be 65% methane.

$$1,533.5 \text{ tons of solids destroyed} \times 2,000 \text{ pound per ton} \times 13 \text{ ft}^3 \text{ per pound destroyed} \times 65\% \text{ methane} = 25.916 \times 10^6 \text{ ft}^3 \text{ of methane}$$

3.412 ft³ of methane will produce 1 kWh of power. Following the same protocol from above this equates to 225 kW of energy, or 203,250 GGE of CNG. The volume of energy does not include parasitic load.

Clearly there are a number of factors that will determine the potential energy output based on a volume of food waste in the Manteca residential Brown Bin. Energy output can change based on the age and disposition of the waste. This said, it would be reasonably safe to assume a potential energy output of brown bin food waste between 225 and 260 kW, or the option of an annual production of 203,250 to 236,250 GGE of CNG.

Conclusions and Recommendations

- There is potential to produce an organic waste to energy facility that will process residential and commercial food waste, and commercial FOG waste.
- If residential food waste were to be diverted from landfill disposal there would be a 6.4% increase in Citywide landfill diversion.
- Significant green energy production could be generated from City collected residential food waste.
- The City should start to plan a pilot residential food waste collection program.

10.0 SOLID WASTE MASTER PLAN REPORT

10.1 10-Year Technology Development Forecast for Processing Solid Waste

A modern gold mining operation can function profitably with ore containing 5 parts per million gold. Under current market conditions a ton of gold ore can contain as little as \$175 in gold. The recent waste characterization study conducted in Manteca demonstrated residential curbside materials to contain \$167 per ton in recycle value, and a ton of residential Brown Bin waste contained \$65 per ton in recycle value.

The reason gold mining is profitable isn't primarily due to the value of gold, but is due to efficiency of extraction and the associated technology development. The value of Manteca Blue Bin and Brown Bin material is based on a very crude extraction method. If an extraction process were to be developed that separated everything into pure commodity streams that met specifications of virgin materials, the value of a ton of MSW would far exceed the value of a ton of gold ore. Given that the current value of MSW is close to the value of gold ore, there is significant economic incentive to increase efficiency of municipal "ore" extraction.

There are processes today that demonstrate high commodity value production from raw, unsorted, MSW. One such example is Sierra Energy of Davis, California's FastOx[®] system. They claim to produce \$236 worth of pure hydrogen from one ton of MSW.³⁷ Sierra Energy is just one of a field of companies working on high technology processes to extract the maximum value from waste. In the World today the greatest concentration of resources can be found in the US waste stream.

Many of the advancing technologies not only provide the promise of significant economic return, but significant environmental return. If the Sierra Energy's process were used on the states annual 33.4 million tons of MSW, the result could have the vehicle emission equivalent of removing three-quarters of the states cars off the road.

Many advancing technologies will fall away, but the ones that remain have the potential to transform MSW from something we pay to dispose, to something we sell. In the next decade we should expect transformative technological breakthroughs in how we process MSW. The bigger question is, will the regulatory environment keep pace with technology? Many of the most profitable and environmentally beneficial processes are thermal. In California these processes would not be considered recycling or diversion from the landfill, they would be essentially considered a form of incineration. From a regulatory standpoint, thermal transformation and incineration is considered to be a landfill with a match.

It is well documented that the country of Sweden has "run out of garbage". In Sweden 250,000 homes and 20% of the country's district heat is supplied by waste to energy. Due

³⁷https://gallery.mailchimp.com/73ba9fcff85ec9b3768d2848c/files/California_Hydrogen_Report_rev2.pdf

in part to Sweden's high rate of recycling, Sweden no longer has enough waste to power their generation capacity.³⁸ Sweden is going as far as North America to attract waste for their energy plants.

Many emerging technologies convert MSW to liquid fuels. The main component the processes mine is carbon. Carbon is the base building block for hydrocarbon chain materials. Paper, food, lawn, and wood are all considered biomass, and as such provide a source of carbon for biomass to liquid fuels processes. British Petroleum (BP) has invested more than a billion dollars in biomass to liquid fuels research and development. Recently they abandoned the effort because they could not find a consistent, long-term supply of biomass. Many other developers are encountering the same obstacle. MSW can supply long-term, consistent supplies of biomass that can't be found in agriculture and forestry residues.

Dr. Alan Del Paggio of CRI, a wholly owned subsidiary of Royal Dutch Shell has said, "There is enough carbon on the surface and atmosphere of the earth that we shouldn't have to drill below the surface to get it."³⁹ Royal Dutch Shell is one of many companies that are developing catalytic processes to convert biomass to conventional hydrocarbon-chain liquid fuels.

With greater acceptance of global climate change and the link to manmade emissions to the atmosphere, there is significant likelihood there will be greater pressure to utilize carbon other than petroleum or fossil based. In addition many of the advancing technologies will produce fuels at a lower price than those utilizing petroleum. MSW is well positioned to be a feedstock of choice for future energy products.

The political forecast for California is, portions of waste will be accepted for conversion to energy products through thermal processes. MSW will first need to be separated, with recyclable materials removed and sent to conventional markets. Only zero value materials will be transformed. This policy will be difficult to manage. When the value of a waste commodity going to an energy product far exceeds the value of the same commodity going to conventional recycling, the market is going to ultimately determine the final point of use. This is why there is increasing political pressure for MSW to be utilized at its "highest and best use".

When AB 939 really came into full implementation in 2000, much of the available sorting technology was based in converted agricultural sorting equipment and manual picking. Over the last 15 years technology has significantly advanced to where computers, lasers and cameras quickly identify objects and material types. MSW is quickly and efficiently sorted with little human contact.

³⁸ <http://www.pachamama.org/blog/models-of-sustainability-sweden-runs-out-of-garbage>

³⁹ CRI presentation on IH² Process for Organic Energy Corporation

Many communities around the World are developing plans to get to “zero waste”. The zero waste movement considers complete materials management system, from product design and manufacture, through distribution, use, reuse, recycling and disposal. Europe has an aggressive “extended producer responsibility (EPR)”. Under EPR disposal of a product becomes the responsibility of the manufacturer. The result of EPR is design and production of products and packaging that can be simply returned to the material stream with little cost or effort. At a recent CalRecycle meeting discussing consumer packaging the packaging industry made it clear, in the next five-years consumer packaging will change significantly.

One example of the changing packaging industry is the expanding use of Tetra Pak. This cube shaped paper, plastic, aluminum, and paraffin laminate container is lightweight, compact and recyclable. Due to the rectangular shape shipping and storage is 21% more efficient than cans, and the container weighs one-third less.⁴⁰ Figure 10.1-1 is an example of Tetra Pak packaging. The recent waste characterization study found very little use of steel cans and glass jar consumer packaging.

Residential and commercial waste streams are rapidly changing. Not only are cans and jars going away, but so is newsprint, one time use plastic bags, and to some extent paper correspondence. All of this is being replaced with greater sustainable materials and processes. In the next decade we should expect a combination of policy change, technology advancement, and resource material value increase, to economically drive Manteca toward zero waste. Ninety percent diversion of material from landfill disposal should be expected in the coming decade. Manteca could reach the position of Sweden, where the problem isn't too much waste, but not enough.



Figure 10.1-1, Tetra Pak packaging

Conclusions and Recommendations

- In coming years cost of commodity extraction from MSW is going to be reduced.
- MSW is going to be a greater resource for new manufactured products, and as a feedstock for chemical and energy production.

⁴⁰ Is Tetra Pak better for the environment than tin cans? The Guardian, retrieved 1 December 2011

10.2 Utilizing Existing Assets at the WQCF to Achieve Project Goals and Objectives.

To achieve the goal of 75% diversion of solid waste from landfill disposal by 2020 the City must implement a number of new or expanded programs. The WQCF provides many of the assets and infrastructure required to develop and implement the proposed programs. In addition the WQCF currently has unutilized or underutilized land that could be developed for such projects.

Processing of organic waste through AD is a proposed project that could be developed in phases, with initial phases utilizing WQCF infrastructure. An initial phase could simply process collected commercial food waste to a state that it could be introduced to the existing digesters for destruction of the volatile solid component. After digestion, remaining solids could be dewatered with WQCF equipment. Utilizing WQCF infrastructure will allow the City to initiate a commercial food waste program with a low capital investment. As later phases of the commercial food waste program develop, dedicated food waste infrastructure will replace the need for WQCF infrastructure.

Projects or programs intended for the WQCF site include:

- Expanding treatment capacity of the WQCF to 10 million gallons per day (mgd)
- Food waste processing, digestion, and dewatering
- Greenwaste composting
- Solar biosolids drying
- Photovoltaic electricity generation
- Biogas conditioning and compression to CNG
- CNG fueling station
- Storm water treatment and retention area
- Corporation yard sites for:
 - o Solid waste division
 - o Water division
 - o Engineering division

Advantages of locating food waste processing and digestion at the WQCF have been discussed. One of constraint of any AD system is utilization of the liquid and solid digestate and biogas. All food waste digestate could be absorbed into aerobic processing of greenwaste. Liquid digestate is often a liability of an AD project. Colocation of food waste AD with aerobic composting of greenwaste transforms into an asset. In addition the nutrients and organic carbon contained in digestate improves the value of greenwaste compost. In the summer months water demand of the composting process will exceed AD generation, when this occurs WQCF effluent could be used.

The most significant asset of the WQCF is land. Two proposed projects, greenwaste composting and solar biosolids drying are both land intensive.

Conclusions and Recommendations

- WQCF provides significant infrastructure assets that can be exploited for optimal synergistic benefit.

10.3 Discussion Regarding Maximizing the Environmental and Monetary Potential of Solid Waste

Manteca has done an excellent job of positioning itself to take full advantage of future benefits generated from municipal solid waste. Unlike other municipalities that have signed on to long-term deals, Manteca has only very short-term contractual obligations. In addition, Manteca has some of the lowest solid waste rates in the region. The face of MSW is changing rapidly. Not only is the characterization of waste changing, but also technology of extraction, and processing.

There is a lot of discussion today about carbon capture and sequestration (CCS). This type of activity is thought to play a significant role in the state meeting compliance with AB 32. With CCS coal and natural gas fired power plants would capture carbon, primarily in the form of CO₂ from emissions. One of the many problems with CCS is, what do you do with the carbon once it is captured, and the extremely high process cost. CCS at coal-fired plants can consume 24 to 40% of the entire plants generation capacity; while natural gas fired power plants CCS can consume 11 to 22% of plant generation.⁴¹ CCS at some power plants could more than double the cost of electricity as it reaches the consumer. Solid waste can provide a lower cost alternative for CCS.

Much of the Manteca waste stream is comprised of biogenic produced biomass. Some examples are paper, grass and wood. When these materials are heated to above 700° F, in a low oxygen environment, 3 to 9 times the energy input is produced. In addition a form of charcoal known as biochar is produced.⁴² Biochar can be used as a soil amendment, therein sequestering carbon in the soil for hundreds of thousands of years.

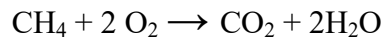
Landfill owners and operators will say placing biogenic materials in a landfill is a form of CCS. Eventually those materials will be biologically broken down and methane will be formed. Methane is a powerful GHG. Again landfill owners and operators will say methane is captured and taken to beneficial use. These claims are suspect in that capture efficiencies are highly debated, and on average it takes 3-years from the time waste is placed in a landfill until a impermeable cap is placed. Even Palos Verdes landfill, which has a 5-foot thick clay cap only has an 85% capture.⁴³ This does not take into account

⁴¹ "IPCC Special Report: Carbon Capture and Storage Technical Summary. IPCC. p. 27"

⁴² Lehmann 2007a, pp. 381-387

⁴³ "Initial Statement of Reasons for the Proposed Regulation to Reduce Methane Emissions from Municipal Solid Waste Landfills," (May 2009) p. IV-5 and Appendix D (<http://www.arb.ca.gov/regact/2009/landfills09/isor.pdf>).

GHG release before the cap was placed. When methane is burned in a landfill flare the reaction is:



For every molecule of methane destroyed, one molecule of CO₂ is formed. However due to the molecular weight of the various molecules, for every ton of CH₄ destroyed, 2.0 tons of carbon dioxide is created. Table 10.3-1 shows the molecular weight of discussed elements and molecules.

Table 10.3-1, Molecular Weight of Elements and Molecules

Elements	Molecular Weight
Carbon (C)	15.99
Oxygen (O)	12.01
Hydrogen (H)	1.008
Molecules	Molecular Weight
CH ₄ (Methane)	20.02
CO ₂ (Carbon Dioxide)	40.01

When 15% of methane escapes the landfill cap, and methane is determined to be 34 times more powerful GHG than CO₂, the result is the escaping methane is six times more damaging to the environment than the CO₂e emitted from the landfill flare.⁴⁴ The net impact to the atmosphere is six times the CO₂ added to the atmosphere than what was removed when plants captured CO₂ to grow the biomass. From a GHG perspective, even with BMP, a landfill is not sustainable. The exception would be landfilling of inert materials.

There is clearly an environmental advantage to anaerobically digesting non-lignocellulose materials in a digester, over placing these materials in landfill with gas capture. The efficiency of methane capture in a digester is well above 99%, and there is no waiting for a landfill cap to be placed. There is also an advantage over thermal processes due to the fact thermal processes require removal of water before any energy or chemicals can be generated. Removal of water in a thermal process is a significant parasitic load. Technologies are being developed to digest lignocellulose, when this occurs digestion of all wet biomass may become the preferred environmental and economic alternative. Digestion not only produces clean/green energy, but it also provides for nutrients to be returned to soils.

The Manteca residential and commercial waste streams, including Brown, Blue, and Green Bins, combined with commercial green waste totaled 77,258 tons in 2012. Table 10.3-.2 below shows a general breakdown of all materials.

⁴⁴ Drew T. Shindell, *et al.*, "Improved Attribution of Climate Forcing to Emissions," *Science* **326**, 716 (2009).

Table 10.3-2, General Materials in Manteca Waste Stream in 2012

Material	Residential Waste (Tons)	Commercial Waste (Tons)	Self Haul (Tons)	Total (Tons)
OCC	1025	2700		3725
Mixed Fiber	4159	7272		11431
HDPE	369			369
Mixed Plastic	2404	1212		3616
PET	251			251
Glass	1357			1357
Mixed Ferrous	524	679		1203
Aluminum	67			67
Mixed Non-Ferrous	137			137
Food	9600	9500		19100
Mixed MSW	6155	3030	9599	18784
Green Waste	8000	2700		10700
Bio Solids		8000		8000
Tires		700		700
Concrete		290		290
Electronics	28			28
TOTAL	34076	36083		79758

If all 77,258 tons were taken to their highest and best use, with residual materials converted to energy in a thermal process, there would be a significant GHG offset compared to AB 32, 1990 threshold levels. The US-EPA WARM Model summary for this scenario is shown in Table 10.3-3.

The US-EPA WARM Model estimates the base difference between landfilling 77,258 tons of Manteca produced MSW, and taking this material to its highest and best use is 152,719 metric tons of CO₂e. Removing 152,719 metric tons of CO₂e is equivalent to removing 32,150 cars off the road. Taking all Manteca MSW to the highest and best use could be the most significant GHG reduction the City is capable of producing.

CalRecycle is considering supporting allowing waste materials, after removal of conventional recyclables, to be used at their highest and best use. The highest and best use could include thermal processes with the exclusion of conventional incineration. The intent of highest and best use is to keep materials out of the landfill, potentially produce clean, green energy, and provide communities with lower cost solid waste services.

Table 10.3-3, AB 32 Summary of GHG Offset if Available Manteca Materials Were Taken to Their Highest and Best Use.

GHG Emissions Analysis — Summary Report												
(Version 13, 6/14)												
Analysis of GHG Emissions from Waste Management for City of Manteca												
Reporting Period for this Analysis is from 1/1/2012 to 12/31/2012												
GHG Emissions from Baseline Waste Management Scenario (MTCO2E):						84,064						
GHG Emissions from Alternative Waste Management Scenario (MTCO2E):						-68,655						
Total Change in GHG Emissions: (MTCO2E):						-152,719						
Material	Baseline Scenario					Tons Source Reduced	Alternative Scenario					Change (Alt - Base) MTCO2E
	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total MTCO2E		Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total MTCO2E	
Aluminum Cans	0	67	0	N/A	3	0	67	0	0	N/A	-610	-613
Glass	0	1,357	0	N/A	53	0	1,357	0	0	N/A	-375	-428
HDPE	0	369	0	N/A	14	0	369	0	0	N/A	-325	-339
PET	0	251	0	N/A	10	0	251	0	0	N/A	-284	-294
Corrugated Containers	0	3,725	0	N/A	6,264	0	3,725	0	0	N/A	-11,618	-17,881
Food Waste (non-meat)	N/A	19,100	0	0	29,380	0	N/A	0	0	19,100	-2,915	-32,295
Yard Trimmings	N/A	10,700	0	0	1,048	0	N/A	0	0	10,700	-1,315	-2,363
Mixed Paper (general)	0	11,431	0	N/A	18,207	N/A	11,431	0	0	N/A	-40,308	-58,515
Mixed Metals	0	1,340	0	N/A	52	N/A	1,340	0	0	N/A	-5,864	-5,916
Mixed Plastics	0	3,616	0	N/A	140	N/A	3,616	0	0	N/A	-3,734	-3,874
Mixed Organics	N/A	5,500	0	0	4,638	N/A	N/A	0	0	5,500	-761	-5,399
Mixed MSW	N/A	18,784	0	N/A	24,216	N/A	N/A	0	18,784	N/A	-203	-24,420
Personal Computers	0	28	0	N/A	1	0	28	0	0	N/A	-70	-71
Concrete	0	290	N/A	N/A	11	N/A	290	0	N/A	N/A	-2	-14
Tires	0	700	0	N/A	27	0	700	0	0	N/A	-271	-298

Note: A negative value indicates an emission reduction; a positive value indicates an emission increase.
a) For an explanation of the methodology used to develop emission factors, see Documentation for Greenhouse Gas Emission and Energy Factors Used in the Waste Reduction Model (WARM) — available on the Internet at <http://epa.gov/epawaste/conservation/warm/SWMGHGreport.html>
b) Emissions estimates provided by this model are intended to support voluntary GHG measurement and reporting initiatives.
c) Total emissions estimates provided by this model may not sum due to independent rounding.

Globally there is a growing recognition of the finite state of many resources, and the need to reduce environmental stresses on the environment. Nations, led primarily by Northern Europe and Southern Asia are recognizing the economic and environmental benefits of the “Circular Economy”.

*The circular economy is a generic term for an industrial economy that is, by design or intention, restorative and in which material flows are of two types, biological nutrients, designed to reenter the biosphere safely, and technical nutrients, which are designed to circulate at high quality without entering the biosphere.*⁴⁵

⁴⁵ Walter Stahel, “How to Measure it”, The Performance Economy second edition - Palgrave MacMillan

In a circular economy new products are designed for their end of life. The first sources of raw materials used in manufacturing are recycle markets. Biogenic materials are fully utilized, with their residues returned to the soil. As the cost of virgin resource capture grows, and the availability of the materials captured out of recycle markets increases due to advancing recovery productivity, conventional markets will drive the global economy toward the circular economy.

Looking forward, the cost of disposal is going to escalate. Much of the escalation will be due to intensification of environmental regulations, and long-term liabilities associated with landfill closure. The US-EPA has commissioned studies on state-of-the-art, dry tomb landfills, and has concluded the landfill technology will always fail. When the landfills fail the underlying groundwater will be poisoned. Once groundwater is contaminated it is extremely costly to clean.⁴⁶

Proper source separation of materials will provide a significant benefit to the environment and economic viability of Manteca. Based on a 2012 residential landfill disposal volume of 20,018 tons, and a landfill disposal tip fee of \$44.17, the City spent \$884,195 for residential disposal. If the City were to develop a residential food waste collection program, with the material going to Harvest Power, and optimize source separation of materials, the net disposal fee to the City for the same volume of material would be reduced to \$170,731 (See Table 10.3-4 below). This would provide an annual savings of \$713,463, or 81% of the existing disposal cost.

Table 10.3-4, Potential Disposal Costs with Optimal Brown Bin Source Separation

Material	% of Waste	Tons/Year	\$/Ton	Total
Food Waste	45.7%	9,148	\$19.25 ⁴⁷	\$176,099
Recyclables	28.2%	5,645	\$36.00	(\$203,220)
Solid Waste	19.5%	3,903	\$44.17	\$172,396
Water ⁴⁸	6.6%	1,322	\$19.25	\$25,448
TOTAL	100%	20,018		\$170,723

The first municipal landfill was established in Athens Greece in 400 BC.⁴⁹ Archeological studies have shown a Native American community living around 6,500 BC produced 5.3 pounds of waste per person per day. CalRecycle estimated in 2012 that the population of Manteca disposed 4.5 pounds of waste per person per day. In our society we are very much handling waste like we always have. Science is telling us this is no longer sustainable.

⁴⁶ G. Fred Lee and Anne R. Jones, Municipal Solid Waste Management In Lined, "Dry Tomb" Landfills: A Technologically Flawed Approach For Protection Of Groundwater Quality (El Macero, Calif.: G. Fred Lee & Associates, March, 1992).

⁴⁷ Assume the standard composting processing cost of \$19.25/ton

⁴⁸ Water is assumed to be associated with food waste and is assumed to move with food waste.

⁴⁹ <http://deq.louisiana.gov/portal/Portals/0/assistance/educate/DYK-Landfills.pdf>

Conclusions and Recommendations

- The statewide objectives of AB 32 can be substantially met with MSW programs.
- The City is well positioned to exploit the commodity value of MSW.
- The City should begin work to capture the wet organic fraction of MSW for conversion to energy.

10.4 Provide a Preliminary Overview of Where the City Could Be in 10-Years

California has a reputation for being an environmental trendsetter. To a great extent California has not taken a global lead when it comes to sustainable resource management of MSW. California's AB 1826 will require most commercial food waste generators to send waste to processors, not landfills. This law follows the states of Massachusetts, Connecticut, and Vermont, and the cities of New York, Seattle, Portland and San Francisco.⁵⁰ Lisa Jackson, administrator of the US-EPA said in a 2012 interview regarding the advantages of anaerobic digestion, "There's no question that waste is an opportunity," she went on to say. "Waste has incredible energy potential, and if that potential can be harnessed in a way that doesn't unleash pollution, it can be transformative on a national scale."⁵¹

Members of the European Union (EU) have been on the Global cutting edge of technology development, and development of regulations regarding management of MSW resources. Clearly the EU does not have the aversion to thermal processes for MSW that we have in California. Much of the EU has stringent emission regulations that in many criteria exceed those of the US. Certainly there are tradeoffs between landfills and thermal processes. The EU has pursued an economic and environmental thermal path that they expect will pay dividends into the future.

Germany has taken the landfill diversion lead in the EU. Germany landfills 1% of its MSW, while sending 35% to thermal processes, 46% to recycling, and 18% to composting or AD. Switzerland recycles about half its MSW, with the other half going to thermal. Switzerland does not landfill any MSW.⁵² In Section 10.1 the shortage of MSW use by Sweden's thermal waste to energy facilities was discussed.

⁵⁰ American Recycler News, Inc. January 2014

⁵¹ The Boston Globe, May 3, 2012, <http://www.bostonglobe.com/lifestyle/health-wellness/2012/05/03/state-propose-banning-commercial-food-waste-from-landfills/uXVV6DXZxbf0vW0WfcHsQN/story.html>

⁵² Waste Management in Europe: Framework, Trends, and Issues, February 2010. A report commissioned by the European Federation of Public Service Unions. http://www.epsu.org/IMG/pdf/it_10_2010-02_Waste_trends-3.pdf

Many California objectors to thermal processing of MSW feel the economic advantages of thermal will preclude recycling. This theory is not supported by the EU experience. In the EU countries with the lowest recycle rates have high landfill utilization. Of the 28 countries in the EU only 6 countries have incineration rates exceeding a combination of recycling and composting.⁵³

The population of the EU is about 510 million people; the US population is about 320 million. The EU experience is not small scale, it's larger than the US. Europe has a robust environmental movement that appears to recognize the merits of thermal processing of MSW over landfilling. Section 10.3 of this report discusses how the US-EPA has determined that every landfill liner will eventually fail, and the underlying ground water will be poisoned.

In the next 10-years it is hoped the environmental, national security, economic, and business interests of Californian's will be enough to drive the political process to embrace the concepts of the circular economy and highest and best use. There is building movement in Sacramento to facilitate the change.

AB 341 has established a City goal of 75% diversion. Based on the 2012 Manteca Annual Report to CalRecycle the City produces about 142,702 tons per year of solid waste. This is based on a population of 69,815 people, and a target disposal of 5.6 pounds per person per day.

$$69,815 \text{ people} \times 5.6 \text{ pounds/person/day} \times 365 \text{ days/year} = 71,350 \text{ tons disposed}$$

71,350 tons disposed represents 50% diversion, so generation is estimated to be:

$$71,350 \text{ tons} / 0.5 = 142,702 \text{ tons}$$

For Manteca to get to 75% diversion the City cannot dispose more than 25% of the total generated tons:

$$142,702 \text{ tons} \times 0.25 = 35,675 \text{ tons}$$

CalRecycle does currently allow transformation to count toward diversion, if performed under very strict rules. CalRecycle defines transformation as “incineration, pyrolysis, distillation, or biological conversion other than composting.”⁵⁴ The definition of transformation does not include gasification. In addition under Senate Bill (SB) 1016 a jurisdiction can claim no more than 10% of the average per capita generation tonnage as

⁵³ EU28 countries that thermally process more MSW than they divert through recycling and composting combined: Czech Republic, Denmark, France, Luxembourg, Portugal, and Slovakia

⁵⁴ <http://www.calrecycle.ca.gov/lgcentral/basics/transform.htm#Definitions>

transformed. In addition the transformation can only occur at one of three permitted facilities in the state.

Under the current rules of transformation it will be extremely difficult for Manteca to claim diversion through a transformation process. In the next 10-yers the regulations may be liberalized to the extent that more facilities implementing additional processes will be allowed. However the 10% rule will more than likely still apply for sometime into the future. Table 10.4-1 shows the probable progression of existing and future programs the City will need to implement to achieve 75% diversion.

Table 10.4-1, Programs to Achieve 75% Diversion

Diversion Program	Annual Tons Diverted	Annual Tons Landfilled	% Diversion
	0	142,702	0
Existing Diversion Programs			
Other Programs ⁵⁵	65,444	77,258	46
Residential Greenwaste	8,000	69,258	51
Commercial Greenwaste	2,700	66,558	53
Residential Curbside	5,300	61,258	57
Commercial Recycling	2,700	58,558	59
Tires	700	57,858	60
Concrete	290	57,568	60
Scrap Metal	73	57,495	60
CTR	19	57,476	60
Electronics	9	57,467	60
Implementation of New Programs			
Commercial Self Haul Food Waste to AD	1500	55,967	61
Commercial Source Separated Food Waste to AD	1910	54,057	62
WQCF Biosolids to land disposal	8000	46,057	68
Residential Brown Bin CRV capture	669	45,388	68
Residential Food Waste composting or AD	9128	36,260	75
Residential Brown Bin Recycling (Non-CRV))	4950	31,310	78
Implementation of a Thermal Process			
Thermal	14,270 ⁵⁶	17,040	88

⁵⁵ Based on CalRecycle Base Year Study and other factors

⁵⁶ Thermal transformation is assumed capped at 10% of the anticipated generation tonnage. Per CalRecycle website.

In many of the CalRecycle conducted public hearings discussing implementation of AB 341, it was concluded that the only way most cities will achieve 75% diversion would be through processing of their Brown Bin material. This more than likely will be the case for Manteca. It appears the City can only achieve 66% diversion without development of programs that process the Brown Bin. One method of processing the Brown bin could be through a draconian municipal ordinance approach to public participation in proper sorting of materials, combined with composting/AD of residential food waste with greenwaste.

Manteca Solid Waste Collection and Processing 2025

In the next 10-years there will be advancements in solid waste processing, combined with changes in regulations. The EU has performed and will continue to perform much of the developmental heavy lifting regarding diversion from landfills, and maximizing the value of solid waste. There will be ever increasing political pressure on regulators regarding common sense approaches to management of solid waste. Regulations will be applied to minimize long-term and short-term environmental liabilities, and maximize economic return. Taking this into account, along with the realization of the speed of infrastructure development, this is how Manteca should look in 10-years.

1. All existing diversion programs currently in place will continue to operate.
2. The City will operate a source separated commercial food waste collection program.
3. The WQCF will process food waste through an AD facility.
4. WQCF biosolids will be land applied.
5. Residential food waste will be placed in the Green Bin for composting or AD.
6. Residential Green and Blue Bins will be picked up weekly.
7. Residential Brown Bins will be picked up every two-weeks.
8. The City will be enforcing policies regarding proper placement of materials in both the residential and commercial sectors.
9. The City will be working toward thermal processing of remaining Brown Bin materials.

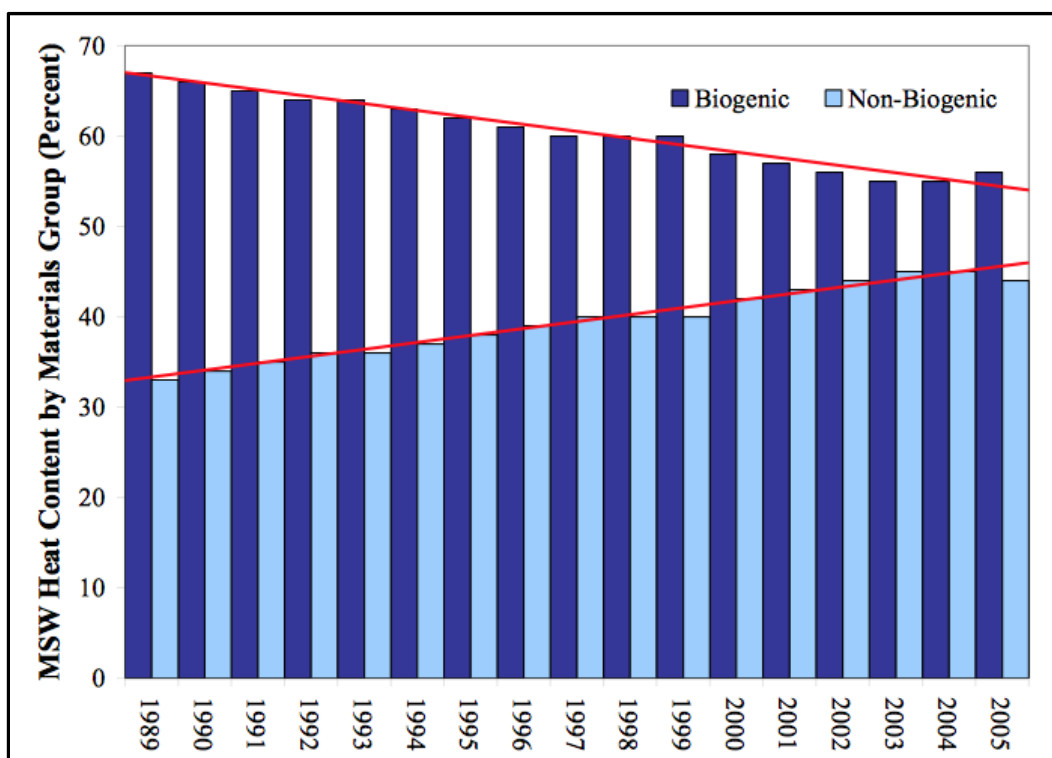
Conclusions and Recommendations

- The City will rapidly work to develop a food waste AD facility at the WQCF.
- The City will work with Harvest Power to receive residential food waste with green waste.
- The City will work to land apply WQCF biosolids.
- The City will modify residential bin collection in an effort to encourage proper placement of materials.

10.5 Potential Energy Output Types and Volumes for Different Waste Streams

MSW has potential to provide significant volumes of energy. US-EPA estimated that MSW produced in 2005 contained 11.73 million BTU per ton.⁵⁷ This quantity of potential energy is a 16% increase from just 16 years before in 1989. The energy value of waste has steadily increased as more non-biogenic waste is produced, while biogenic waste volumes decrease.⁵⁸ This is the result of greater production and disposal of plastics, and diminished use of, and disposal of paper. Figure 10.5-1 shows the changing nature of energy in MSW.

Figure 10.5-1, Trends in MSW Composition⁵⁹



Given the steady trend lines in Figure 10.5-1, combined with knowledge of ever increasing use of plastics, and reduced use of paper, we could expect a 10% energy increase of MSW in the last 10-years. This would translate to a MSW energy content of 12.90 million BTU

⁵⁷ Municipal Solid Waste in the United States: 2005 Facts and Figures, Table 4.

<http://www.epa.gov/msw/msw99.htm>

⁵⁸ Methodology for Allocating Municipal Solid Waste to Biogenic and Non-Biogenic Energy, Energy Information Administration

⁵⁹ US-EPA, MSW in the United States:2005 Facts and Figures.

www.epa.gov/msw/msw99.htm

per ton, or 3,780kwh per ton.⁶⁰ Based on the California regulatory climate, it is unlikely to expect the ability to generate energy from waste in the mass-burn form depicted by UE-EPA data.

China and India have experienced a number of failed mass-burn projects due to the volume of water in the waste stream. Water in waste is a result of placement of primarily food in MSW. Moisture has been high enough that supplemental fuels such as natural gas and coal are used to incinerate MSW. The result is the energy output of the MSW is negative. The recent **Waste Characterization Study** found the Manteca residential Brown Bin contains 45.7% food. China and India have discovered to generate optimum energy waste should be separated into three streams, inert, wet organic, and dry organic. The wet organic fraction of waste can be biologically converted to energy. The dry organic fractions energy content is optimized through removal of excess moisture (wet organic fraction). Even with separation, it is unlikely in the next 10-years the dry organic fraction of Brown Bin will be able to pass regulatory scrutiny for thermal conversion to energy. However biological waste to energy conversion can meet regulatory scrutiny.

It is unlikely in the planning horizon of this document California will allow thermal conversion of dry organic fraction of MSW. This could change given issues associated with GHG generation of landfilled organic streams. For this document we will assume only conversion of wet organic streams comprising primarily food-based waste to energy, through biological, non-thermal processes.

At this time Manteca has five identified significant sources of wet organic waste that have potential for conversion to energy through biological process. Exploitation of these sources should follow a progression based on regulatory compliance, and logistic and economic complexity. Table 10.4-1 of Section 10.4 of this chapter identified a hierarchy of projects that could be utilized to achieve 75% diversion. This same hierarchy could be utilized for development of wet organic fraction of MSW, biological conversion programs.

Green Bin waste, including lawn and shrubbery trimming could fall under the definition of wet organic waste. Due to the lignocellulosic nature of this material it is not readily biologically available for conversion to energy in conventional anaerobic digestion processes. Therefore conventional Green Bin materials should continue to be processed aerobically, without energy capture, as they are now.

⁶⁰ 3,412 BTU = 1 kwh

Recommended Progression of Wet Organic Fraction of MSW to Energy, Through Biological Process

1. WQCF biosolids are currently biologically converted to biogas. At this time the biogas is being flared with no energy recovery. Given significant infrastructure exists, this program should continue and a means of energy recovery developed.
2. Commercially generated FOG is an energy dense form of waste that can be easily captured. Chapter 4 of this report discussed the synergistic effect of codigestion of FOG with wastewater biosolids.
3. The 2012 CalRecycle Annual Report identified 1,500 tons per year of commercially generated and source separated food waste being disposed in a landfill. This material could be simply diverted to a digestion facility for conversion to energy.
4. In September of 2014 California passed AB 1826. This law requires the eventual diversion of commercially generated organic waste from landfill disposal. Infrastructure must be developed to divert and capture waste, and process the waste. The law does not require the material be converted to energy, however energy production through biological process has a high potential for optimum economic and environmental return.
5. As previously stated in this section, the Manteca Brown Bin has been identified to contain 45.7% food waste. Table 8.A.1 of chapter 8, section A estimated a potential residential source separation capture of approximately 61%. Even with this modest capture rate the potential energy production is greater than the above steps 2, 3 and 4 combined.

Based on anticipated waste generation for various sources of wet organic waste, Table 10.5-1 shows potential cumulative energy output for anticipated capture volumes based on the above project progression. Energy outputs are expressed in DGE, and kW. Table 10.5-2 shows the same data based on 100% capture of potential waste. An expanded data table is included in the appendix.

Table 10.5-1, Expected Energy Generation from Anticipated Captured 2013/2014 Waste Sources

	WQCF Biosolids	WQCF Biosolids with FOG	Food Waste (With Estimated Participation)		
STEP	1	2	3	4	5
PROGRAM	Average Annual Flow	Average Annual Flow	Commercial Self Haul	Commercial Source Separated	Residential Source Separated
Generated Tons		291	1,500	1,910	9,128
Capture %		95%	100%	75%	61%
Processed Tons		276	1,500	1,433	5,568
Biogas Utilization					
DGE/Day Step Increase	156	120	68	65	256
DGE/Day Cumulative	156	276	344	409	661
Step Electricity Production (Kw)	257	75	45	43	166
Cumulative Electricity Production (Kw)	257	332	376	419	585

Table 10.5-2, Full Potential Energy Generation from Produced 2013/2014 Food Waste Sources

	WQCF Biosolids	WQCF Biosolids with FOG	Food Waste (With Estimated Participation)		
STEP	1	2	3	4	5
PROGRAM	Average Annual Flow	Average Annual Flow	Commercial Self Haul	Commercial Source Separated	Residential Source Separated
Generated Tons		291	1,500	1,910	9,128
Capture %		95%	100%	100%	100%
Processed Tons		276	1,500	1,910	9,128
Biogas Utilization					
DGE/Day Step Increase	156	120	68	87	414
DGE/Day Cumulative	156	276	344	431	844
Step Electricity Production (kW)	257	75	45	57	273
Cumulative Electricity Production (Kw)	257	332	376	433	706

Conclusions and Recommendations

- AB 1826 provides a catalyst for development of wet organic waste to energy systems.
- Manteca needs to move quickly to meet program timing requirements of AB 1826.
- Source separation of wet organic waste increases the economic viability of the remaining waste stream.
- Utilization of existing WQCF infrastructure reduces capital expenditure requirements to develop a wet organic waste processing system.
- There is significant energy production potential in Manteca wet organic waste.

10.6 Options for Material Processing, Disposal, Energy Generation, and Reuse.

The previous sections of this document provide a number of options for all aspects of the Manteca solid waste system. It is the intent of this section to eliminate many options and provide the City with a comprehensive plan to move forward. The plan will take into account all information previously provided, combined with expressed goals and interests of the City.

10.6.1 Anaerobic Digestion

Three significant sources of digestible materials have been identified. First the City is currently digesting primary and secondary wastewater treatment process solids at the WQCF. The resulting biogas is being flared and the associated biosolids are disposed in Forward Landfill. Digested biosolids total about 8,000 tons per year. If this volume were diverted from landfill disposal there would be about a 4% increase in landfill diversion (See Table 10.4-1, Section 10.4). Under 40 CFR 503 “Biosolids Rule” use of wastewater biosolids are highly regulated. Any other biosolid mixed with wastewater biosolids will assume end use regulations associated with the more highly regulated material. Manteca wastewater biosolids currently do not meet treatment requirements allowing for their beneficial use.

Second, commercial foodservice establishments produce an estimated 291 tons of digestible grease per year. After water is removed there is an estimated 195 tons of pure grease. Currently this material is being disposed through private haulers utilizing at least 5 disposal sites. Due to volatility of grease, almost no biosolid is generated from grease digestion; therefore grease can be combined with wastewater treatment solids with no negative impact on quality or quantity of resultant biosolid. However there is evidence grease digested with wastewater treatment solids will generate heightened microbial activity resulting in greater solids destruction. Biosolids produced from wastewater solids combined with grease, should be expected to be less than the same volume of wastewater solids digested alone.

The third source of anaerobically digestible solids is food waste. Anything a human can eat can be digested in a conventional anaerobic digester. Food waste provides a reasonable source of energy when processed through an anaerobic digestive process. There is the option to aerobically digest food in combination with greenwaste. However, when this process is utilized it results in a net energy consumption. Biosolids resulting from anaerobic digestion of food alone is a desirable soil amendment that does not fall under the US-EPA Part 503 Biosolids Rule, associated with wastewater treatment plant biosolids. However food waste biosolids are required to meet California Code of Regulations, Title 14, Division 7 §17852 (a) (24.5) for metals, pathogens, and physical contamination. This is the approximate same set of rules required for land application of compost. Digestion of food waste in combination with wastewater solids complicates the ability to divert food-generated biosolids from landfill disposal.

AB 1826 recently established phased requirements for diversion of commercial generated food waste from landfill disposal. The state has yet to establish full interpretation of the legislation, but the indication is the aerobically or anaerobically digested biosolid will be regulated out of landfill disposal. This could, in many cases, legislatively preclude anaerobic digestion of food in combination with wastewater solids.

In many instances both liquid and solid digestate from anaerobic digestion of food can be utilized to enhance aerobic digestion of greenwaste. Digestate provides required moisture of the aerobic digestive process, and accentuates marketability of greenwaste compost with added nutrients. Increased nutrients will also increase microbial activity of the aerobic process, thereby decreasing time needed to stabilize greenwaste. Aerobic composting is used in Europe to dry materials. Aerobic composting can also be used as a means to dispose of liquid digestate generated in an anaerobic digestive process.

There are existing and developing processes that convert greenwaste to energy. At this time none of the processes are viable for Manteca.

Conclusions and Recommendations

1. Development of a food waste anaerobic digestive process, in combination with aerobic processing of greenwaste provides an optimized materials management process.
2. Grease/FOG should be anaerobically digested with wastewater treatment plant solids. The City should quickly move to develop a grease receiving facility, with associated infrastructure required to facilitate digestion.

10.6.2 Utilization of Biogas

With anaerobic digestion of wastewater solids, FOG, and food waste, a notable volume of biogas will be produced. Conventional technologies, combined with economics of process, and products produced, demonstrate the optimum end product will be CNG.

Tables 10.5-.2 and 10.5-3 of Section 10.5 demonstrate potential electricity and CNG production from two scenarios of wastewater solids, FOG and food collection. Table 10.6.2-1 below shows anticipated return on investment for electricity and CNG production from optimum generation scenarios.

Table 10.6.2-1, Project Simple Payback for Biogas Projects in Years By Feedstock Phasing

Digester Feedstock	Bio CNG 100 Simple Pay Back in Years	Existing 400kW Waukesha Simple Pay Back in Years	New 600 kW Engine Simple Pay Back in Years
Biosolids Only	11.7 (367 DGE/D) ⁶¹	87.71	28.40
+ FOG	8.25 (367 DGE/D)	34.75	21.27
++ Food Phase I	5.8 (500 DGE/D)	24.62	18.16
+++ Food Phase II	5.13 (500 DGE/D)	19.62	15.88

(1) Assume purchase of natural gas to fill RNG shortfall. Average offset for Diesel purchase at \$3.18/gal. Average offset for Electricity at \$0.122/kW-hr.

(2) DGE/D: Diesel Gallon Equivalent per day

(3) Includes RIN credits at \$1.65/RIN

As more biogas is produced the return on investment of all generation alternatives gets better. Yet the very best possible return on investment for electricity generation is less than the worst case scenario for CNG production. Therefore the optimum use of biogas is the production of CNG. Full economic analyses of the various scenarios are included in the appendix of this report.

Conclusions and Recommendations

- CNG production is a superior alternative for use of RNG.
- For economics of CNG to work the City must have the ability to offset its own consumption of diesel.

10.6.3 Composting of Greenwaste With or Without Food Waste

The City has both commercial and residential sources of food waste, with potential to process food through anaerobic digestion or aerobic digestion (composting). Under AB 1826 “organic waste” which includes food, must be diverted from landfill disposal by virtually all commercial generators. Table 10.6.3-1 shows existing annual volumes of greenwaste and food waste produced in the City.

61. Yearly existing diesel fuel usage for solid waste trucks was 134,105 gallons in 2014 or 367 gallons per day. For future conditions it is assumed additional NG vehicles will be purchased to utilize the maximum output of the Bio-CNG system (500 gal/day).

Table 10.6.3-1, Annual Greenwaste and Food Waste Expected to Be Captured

Material	Tons Generated	Anticipated Capture %	Captured Tons
Commercial Self Haul Food	1,500	100%	1,500
Commercial Food	1,910	75%	1433
Residential Food	9,148	61%	5,580
Residential Greenwaste	8,000	100%	8,000
Commercial Greenwaste	2,700	100%	2,700

Harvest Power is under contract to the City to process City collected greenwaste. Under the Harvest Power permit to operate Harvest Power can accept up to 15% food waste in each load of greenwaste. Harvest Power cannot accept a load of pure food waste. The City could collect and process food waste, then add the processed food waste to greenwaste when greenwaste collection trucks are near full and on their way to Harvest Power. A second option is for greenwaste trucks to go directly to the food establishments and collect food while on their greenwaste collection routes. This second option will require strong community outreach and education, along with inspection of food waste toters for contamination before pickup. For both options greenwaste will need to be collected 5-days every week, not every other week, that is now the case for residential greenwaste collection.

The City currently annually collects about 10,700 tons of residential and commercial greenwaste. This volume of greenwaste will allow Harvest Power to accept 1,605 tons of food waste to be mixed with greenwaste. This is only 84% of the anticipated commercial food waste shown in Table 10.6.3-1. Commercial Self Haul food waste should be allowed to continue until an option other than Harvest Power is developed.

Conclusions and Recommendations

- Composting of commercial food waste at Harvest Power could be an interim processing solution until adequate WQCF digestive capacity is developed. This may require portions of the City residential greenwaste to be collected on the same days commercial food waste is collected and processed.
- The City should quickly develop AD capacity for food waste.
- Food waste will need to be cleaned before composting or digestion.

10.6.4 Separation of Recycling Materials for Resale by City

Based on the recent waste characterization study, there is approximately \$2.25 million dollars in scrap and CRV in the City residential waste stream. Unfortunately the majority of the value is contained in the Brown Bin that is currently lost to landfill disposal. One

key to achieving 75% diversion of solid waste from landfill disposal is capture of Brown Bin recyclables. CalRecycle has concluded, and stated in a number of public forums, the only path to achieving the AB 341 goal of 75% diversion will require processing of Brown Bin materials for capture of recyclable materials. Capture of recyclable Brown Bin materials, not including food waste, will increase citywide diversion about 3%.

Brown Bin processing is technically similar to mixed waste processing. Mixed waste is material with no source separation. The economics of a mixed waste processing facility is based on the value of recyclables contained in the waste. Processing of Manteca Brown Bin would be very expensive due to much of the value having been diverted to the Blue Bin. The best opportunity for Manteca to capture value of recyclables in the Brown Bin is to first have source separation of wet organics. Once wet organics are removed the total weight will be reduced by about half, and the percentage of recyclable material in the remaining waste would about double. If this were to occur there is a chance a mixed waste facility would accept the material, however such a facility would charge in the range of \$80 per ton (including disposal of residue) with the value of recyclables going to the processor and not the City. Such a mixed waste facility can only operate processing large volumes of material, generally in the range of 500 tons per day. Manteca Brown Bin material, after food waste is diverted would be less than 45 tons per day, based on 5-daya week collection.

Currently the City has a contractor process Blue Bin materials. The contractor pays the City \$36 per ton for the annual processing of 5,300 tons. As a result the City is paid about \$191,000 for material with a scrap/CRV value of about \$929,000. Manteca Blue Bin material is processed in a very large facility that also processes Blue Bin materials from other cities. An average ton of Manteca Blue Bin material has a value of about \$175. For the City to develop a Blue Bin processing facility based on 5,300 ton per year (20 tons per day) the cost of processing would far exceed the value of the material. For a Blue Bin processing facility to be cost effective the facility needs to utilize advanced processing systems that are only cost effective with high volume processing. The City's better option is to continue with the existing processing contract, and to maximize source separation of material to the Blue Bin.

Conclusions and Recommendations

- The volume of Manteca waste is not sufficient to meet economy of scale requirements for cost effective capture of recyclables from residential waste, utilizing a material recovery facility (MRF).
- The better option is to encourage diversion of greater volumes of recyclable material from the Brown Bin to the Blue Bin. This will have a net economic impact of \$80.17 per diverted ton.
- Cities have had great success in improving residential source separation of recyclables by bi-weekly collection of Brown Bin material.

10.6.5 Projected Costs for Facilities

To achieve the AB 341 goal of 75% diversion, the City will need to develop a number of facilities. Some facilities will be developed in phases, and others will be built out in a single step. The table below shows recommended programs the City could develop to achieve the 75% goal.

Table 10.6.5-1, Diversion Program Phases

Diversion Program (By Priority)		Annual Tons Diverted	Annual Tons Landfilled	% Diversion
Existing Programs		85,222	57,467	60%
Proposed New Diversion Programs				
Required By AB 1826	1. Commercial Self Haul Food Waste	1500	55,967	61%
	2. Commercial Source Separated Food Waste	1910	54,057	62%
3. WQCF Biosolids to Land Disposal		8000	46,057	68%
4. Residential Brown Bin CRV Capture		669	45,388	68%
5. Residential Food Waste		9128	36,260	75%
6. Brown Bin Recycling non CRV		4950	31,310	78%

Facilities associated with programs from Table 10.6.5-1 with their associated cost and approximate development time frame are shown in Table 10.6.5-2 below. In addition a solid waste rate study should be conducted very early in the development process. This cost is anticipated to be \$70,000.

Table 10.6.5-2, Solid Waste Facility Development Projects and Associated Cost

Food Processing at Lovelace with Digestion at the WQCF				
Project Description	Phase 1 Food Waste		Phase 2 Food Waste	Total Project Cost (ENR 9970)
	Minimum Costs 2015-2016	Remaining Costs 2015-2019	Totals Costs 2020-2024	
Solid Waste Funded Infrastructure				
Rate Study	\$70,000			\$70,000
CEQA MND	\$100,000			\$100,000
Food Waste Processing Equipment at Lovelace	\$1,100,000		\$1,000,000	\$2,100,000
Food Waste Puree Transport & Equipment	\$250,000			
Solid Waste Total	\$1,520,000		\$1,000,000	\$2,520,000
Wastewater Funded Infrastructure at WQCF				
FOG and Food Receiving Facility at WQCF	\$1,800,000			\$1,800,000
Industrial Digesters at WQCF			\$1,875,000	\$1,875,000
Dewatering Building and Equipment at WQCF			\$4,585,000	\$4,585,000
Renewable Natural Gas Fueling Station at WQCF		\$3,940,000	\$1,667,000	\$5,607,000
Wastewater Total	\$1,800,000	\$3,940,000	\$8,127,000	\$13,867,000
Combined Total				
Combined Total	\$3,320,000	\$3,940,000	\$9,127,000	\$16,387,000

Notes:

- 1) Phase 1 processed food waste includes Commercial Self Haul at 1,500 tons/year and City collected commercial at an additional 1,433 tons/year. See Table 10.6.3-1.
- 2) Phase 2 processed food waste includes the addition of residential food waste at 5,580 tons/year. See Table 10.6.3-1.

The estimated \$17,123,000 of capital development does not include funds for operation of constructed facilities and development of associated, and other recommended programs.

Conclusions and Recommendations

- Continued utilization of Blue Bin and Green Bin processing contractors will limit capital investment requirements to achieve 75% diversion.
- Under the current regulatory environment, development of food waste processing infrastructure, combined with a CNG facility, will optimize energy recovery from MSW.

10.6.6 Proposed Site Plan For WQCF Facilities

The City has expressed an interest in consolidating a number of public works divisions, along with a number of processes, on the existing WQCF site. Section 10.2 of this chapter discusses the synergies of the various site uses. Those uses include:

- Expanding treatment capacity of the WQCF to 10 mgd
- Food waste processing, digestion, and dewatering
- Greenwaste composting
- Solar biosolids drying
- Photovoltaic electricity generation
- Biogas conditioning and compression to CNG
- CNG fueling station
- Storm water treatment and retention area
- Corporation yard sites for:
 - o Solid waste division
 - o Water division
 - o Engineering division

Figure 10.6-1 shows a proposed site plan including all above existing and proposed WQCF infrastructure. In addition Figure 10.6-2 shows in greater detail a proposed site layout for a food waste processing facility. Food waste processing should be developed in phases as additional sources of food waste are developed. Figure 10.6-3 shows site plan phasing. Figures 10.6-4 and 10.6-5 depict mass balance, and process flow diagrams for proposed phasing.

Conclusions and Recommendations

- A site plan has been developed based on anticipated needs of the City over the next 10-years. The plan should be considered flexible, adjusting to needs as they develop and/or change.

Figure 10.6.6-1, Manteca WQCF Biosolids and Solid Waste Site Plan

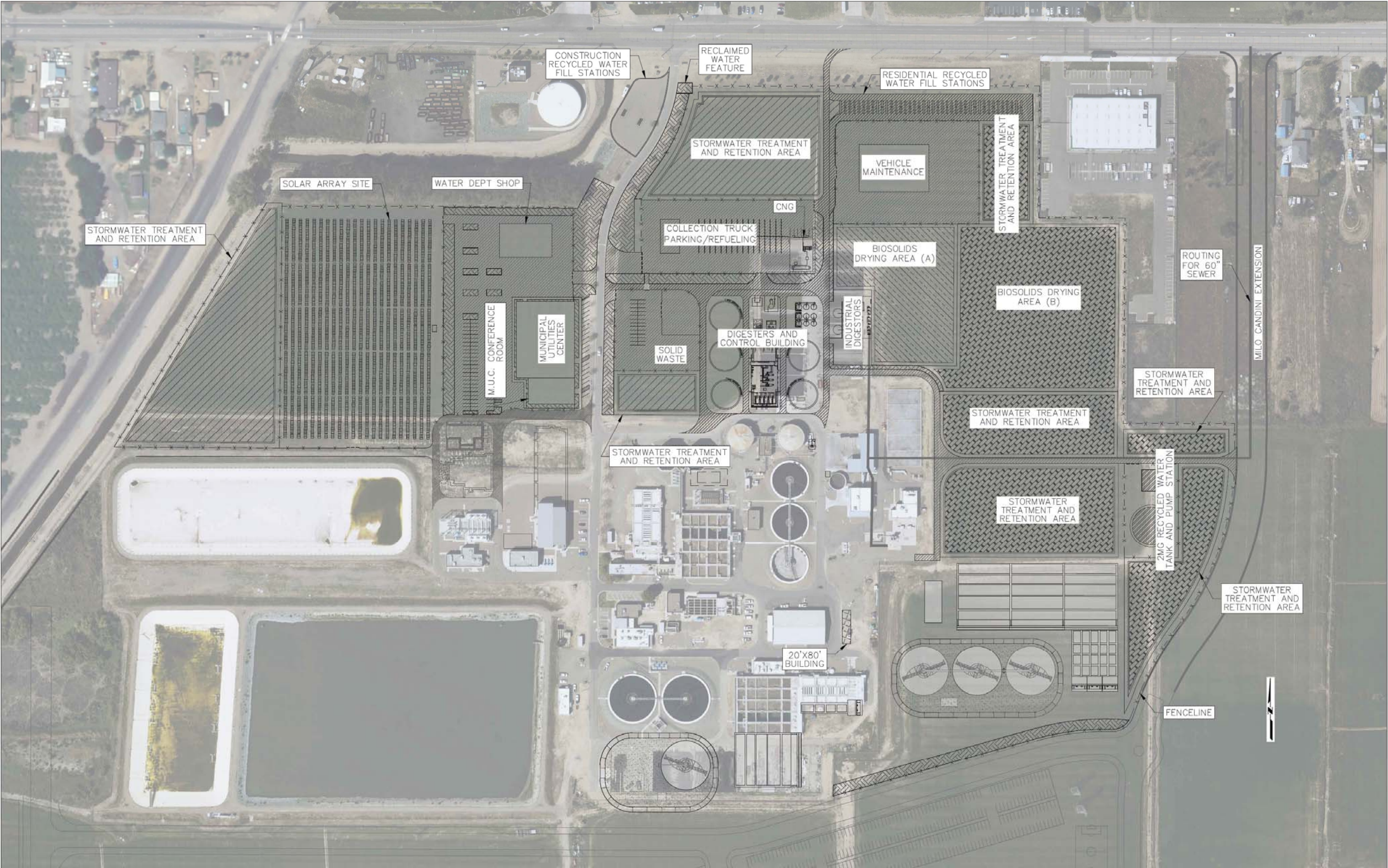


Figure 10.6.6-2, Manteca WQCF Solid Waste Organics Digestion Site Layout

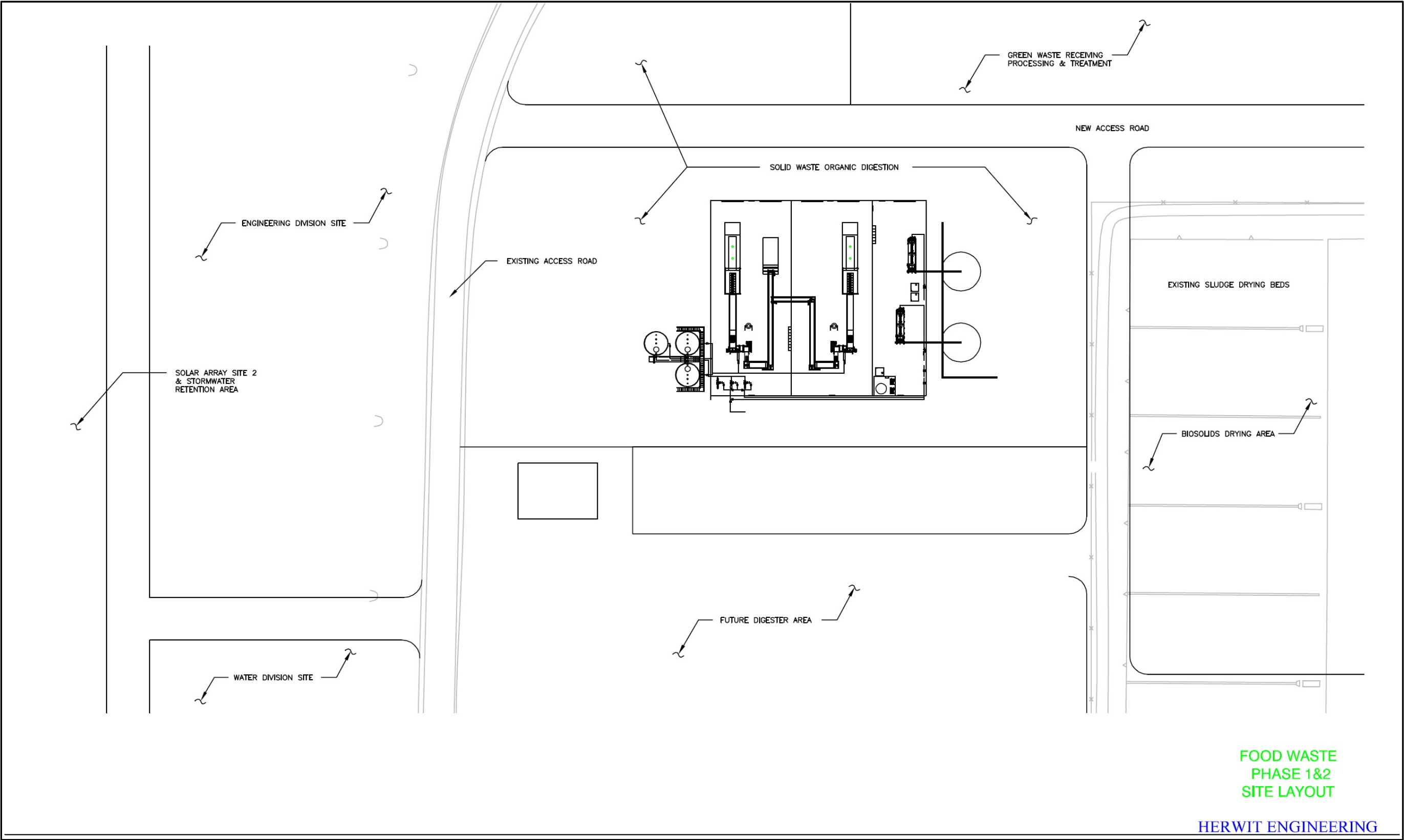


Figure 10.6.6-3, Manteca WQCF Solid Waste Organics Digestion Detailed Facility Layout by Phase

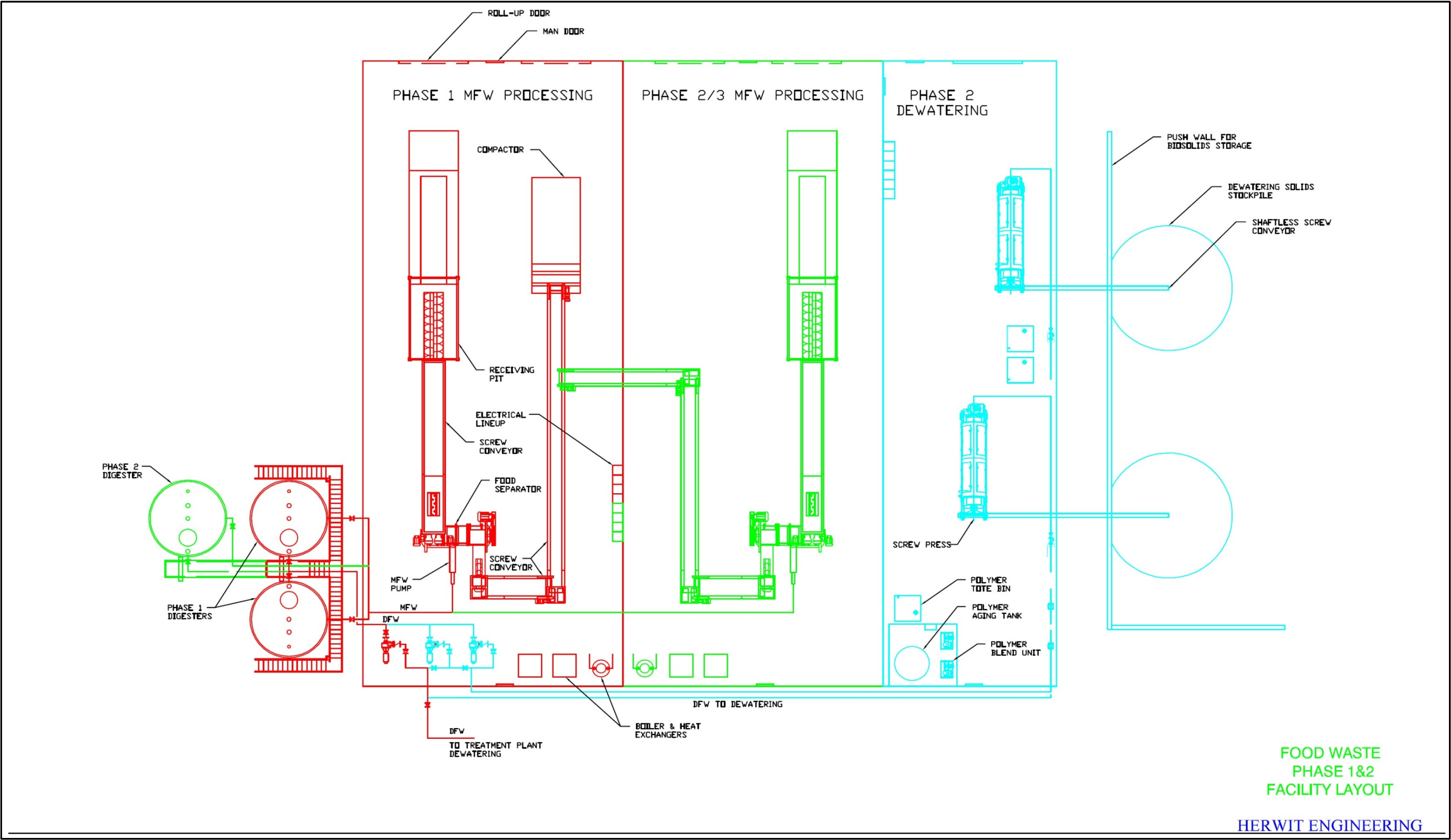


Figure 10.6.6-4, Manteca WQCF Solid Waste Organics Digestion Facility Phase 1 Process Flow and Mass Balance

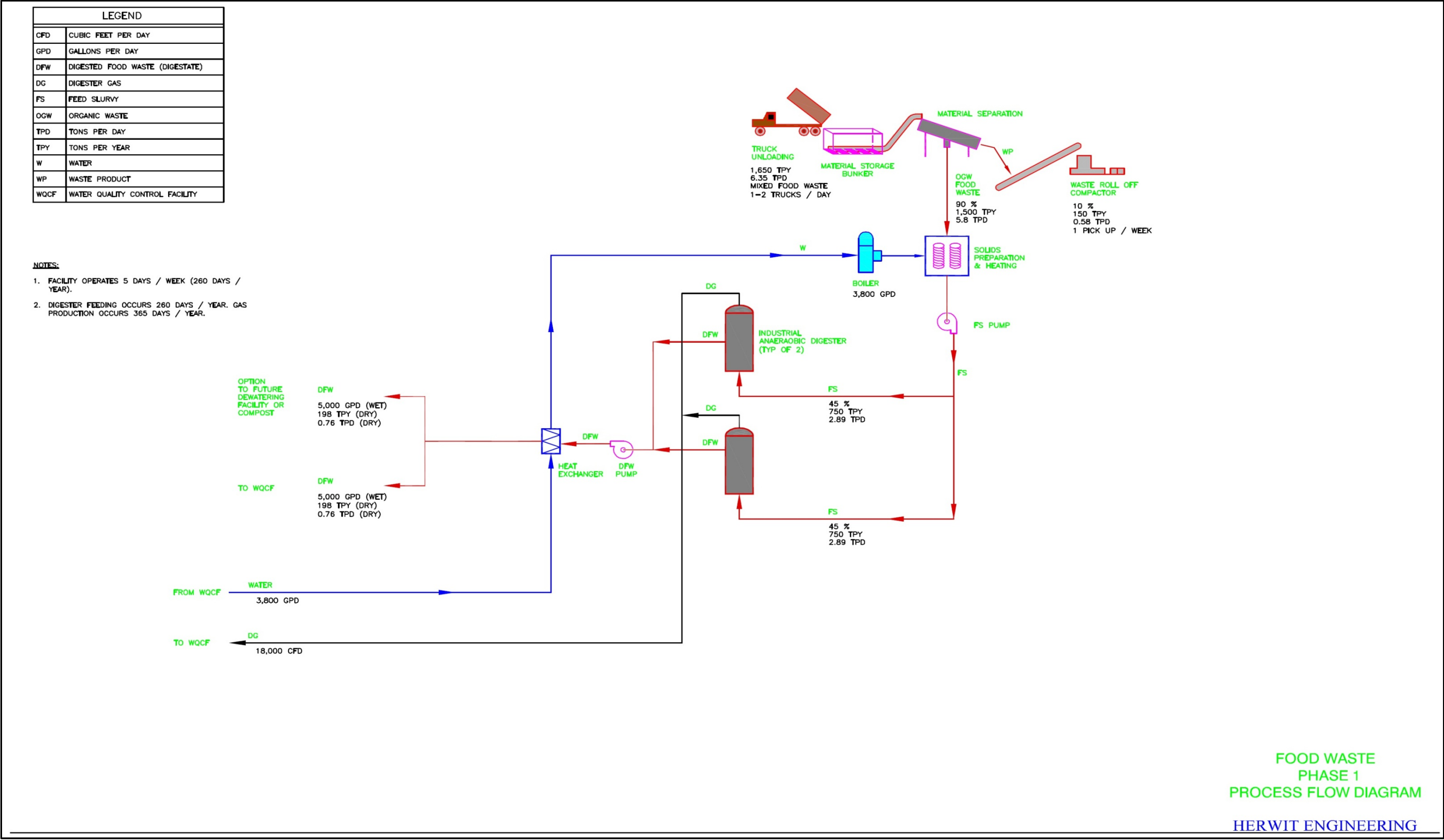
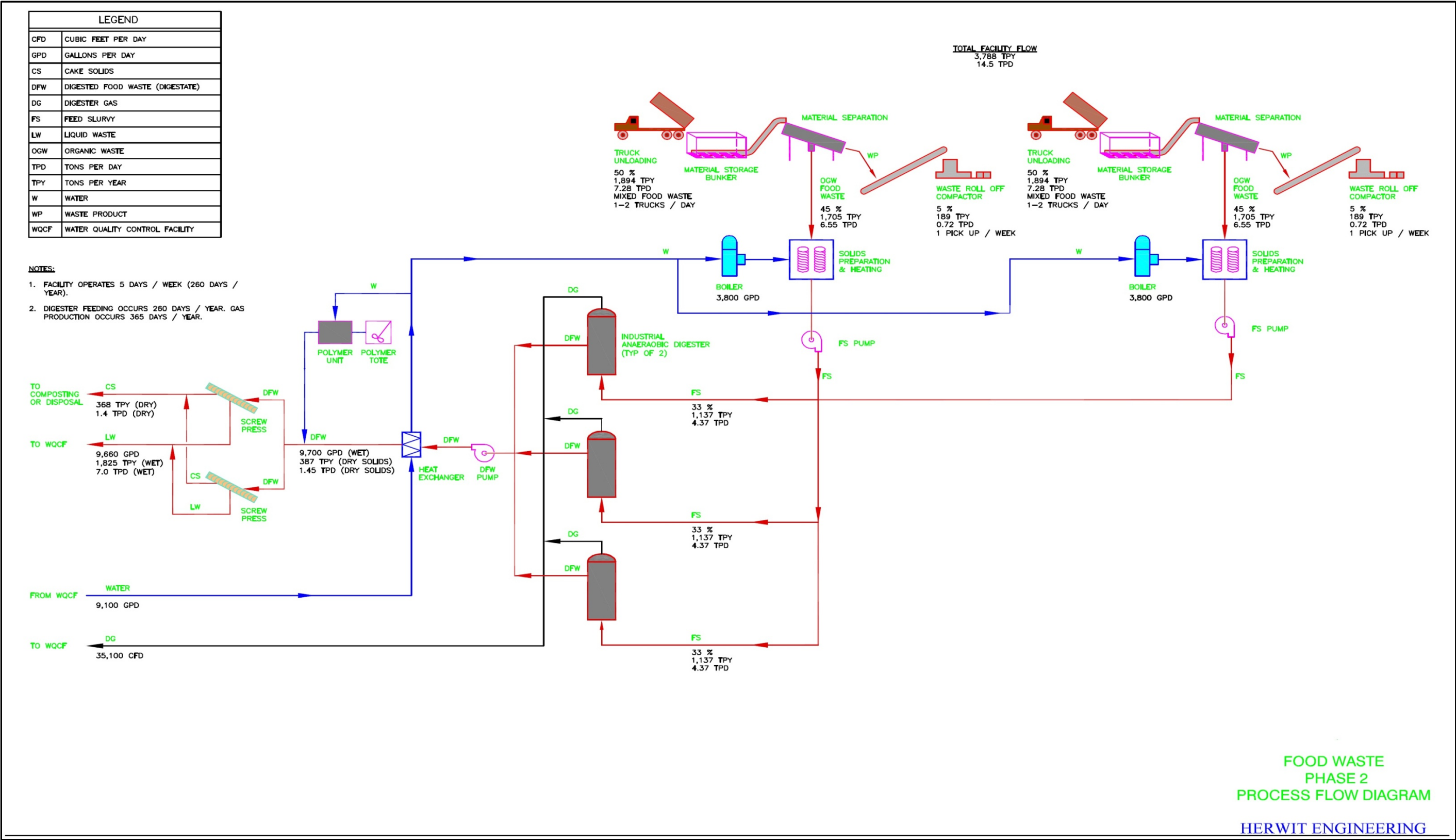


Figure 10.6.6-5, Manteca WQCF Solid Waste Organics Digestion Facility Phase 2 Process Flow and Mass Balance



10. 7 Impacts to Receiving Landfill Resulting From Recommendations

With passage of AB 939 in 1990 the state made a declaration that the volume of waste disposed in the states landfills was going to decrease substantially in the following years. At the time of passage the motivation of the legislation was to preserve landfill space. Since passage issues associated with GHG generation have come to the forefront of environmental discussion, and the GHG impacts of landfill diversion are recognized.

AB 32, 341, and 1826 followed AB 939. Landfill disposal is and will continue to decrease by the following three pieces of legislation. In addition the state has come to recognize the economic advantages of diversion over disposal. With full implementation of AB 939 in 2000 the California Integrated Waste Management Board (CIWMB), the predecessor of CalRecycle commissioned a report titled **The Economic Impacts of Waste Disposal and Diversion In California**⁶². The report concludes that when material is diverted rather than disposed:

- Total sales and value-added impacts more than doubled,
- Secondary economic impacts and total impacts nearly doubled, and
- Job creation nearly doubled.

To a great extent landfill owners have diversified their business models to take advantage of the changing environment. For many waste companies, even though landfill disposal volumes have decreased, overall revenues have increased. In 1990 the state reported 40,108,000 tons of material going to the states landfills. In 2013 this volume was reduced to 30,265,000 tons, a reduction of 25%.⁶³ At the same time the population of the state has increased from 29-million to 36-million people, a population increase of 24%.⁶⁴ In 1990 we were landfill disposing about 2,770 pounds per person per year, in 2013 this was reduced to 1,680 pounds. This represents a 39% reduction in per capita landfill disposal. Figure 10.7-1 shows the reduction in the states landfill disposal tonnage, from 1990 to 2013.

The majority of the City's solid waste is disposed at Forward Landfill. Forward is permitted to receive 620 trucks per day.⁶⁵ Based on the 2012 Forward Landfill Expansion, Draft Environmental Impact Report, the landfill expects to accept 1.88×10^6 cubic yards of waste per year. Manteca disposes about 57,500 tons per year with a landfill density of

⁶² By George Goldman and Aya Ogishi, Department of Agriculture and Resource Economics, University of California, Berkeley, April 4, 2001

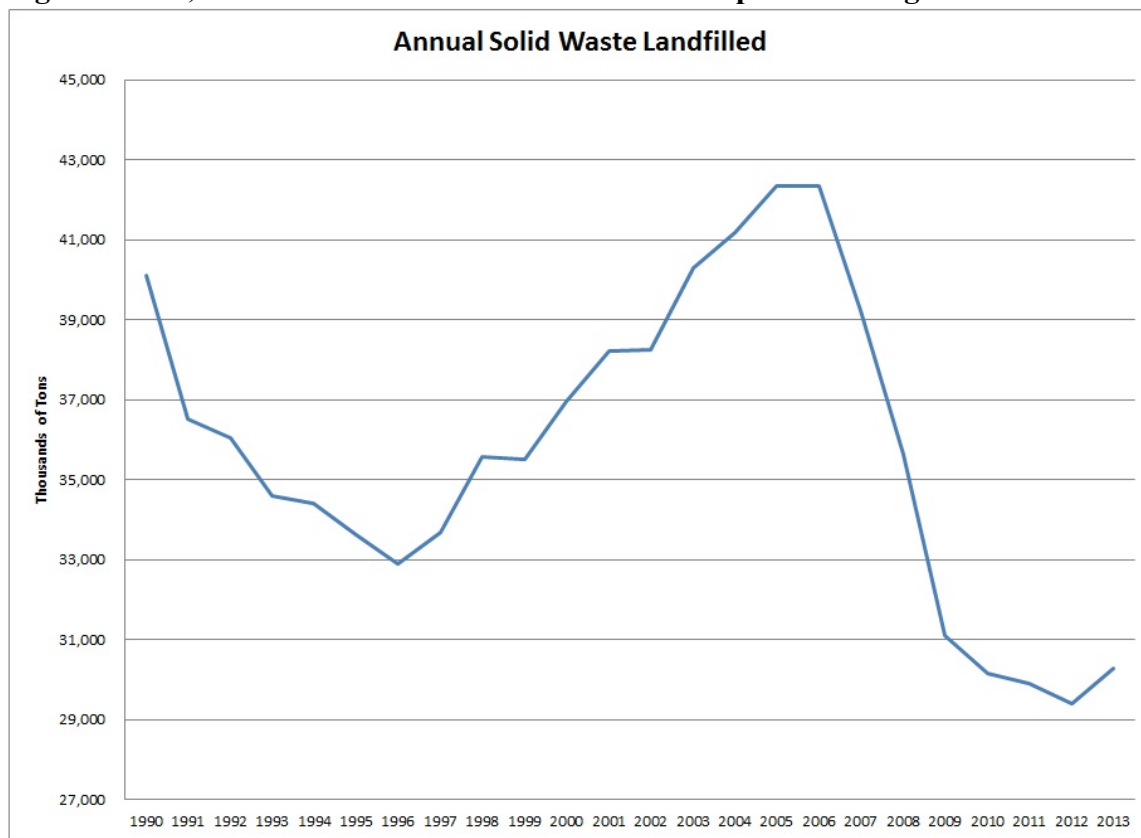
⁶³ <http://www.calrecycle.ca.gov/SWFacilities/Landfills/LFData.htm>

⁶⁴ Public Policy Institute of California,
http://www.ppic.org/main/publication_show.asp?i=259

⁶⁵ <http://www.sjfb.org/news/253-forward-landfill-refuse-still-stirring-up-a-big-stink.html>

about 1,000 pounds per cubic yard.⁶⁶ This volume of material will consume about 115,000 cubic yards of air space, or about 6.1% of the expected annual volume. The City's volume of waste is very small compared to the overall volume of material disposed at Forward Landfill. Any decrease in revenue to the landfill resulting from diversion programs should not adversely impact the economic viability of the landfill.

Figure 10.7-1, State of California Annual Landfill Disposal Tonnage⁶⁷



Conclusions and Recommendations

- Impacts to receiving landfills should not be a significant consideration when developing solid waste programs.

10.8 Schedule of Activities to Meet Requirements of AB 939, 341, 32, and 1826

The State of California has established a number of goals and regulations requiring establishment of new and expanded solid waste programs. In addition the City has

⁶⁶[http://www.deq.state.ms.us/MDEQ.nsf/page/Recycling_MaterialDensityandVolumeCon](http://www.deq.state.ms.us/MDEQ.nsf/page/Recycling_MaterialDensityandVolumeConversion)
version

⁶⁷ CalRecycle, <http://www.calrecycle.ca.gov/SWFacilities/Landfills/LFData.htm>

identified opportunities within solid waste collection and processing to increase productivity, save money, and/or develop renewable energy from waste. The City has done a remarkable job in developing programs to meet existing requirements. Programs requisite of new requirements should dovetail simply into existing programs.

The main legislation the City needs to plan for are AB 939, 341, 32, and 1826. Based on discussions with CalRecycle, the City is meeting all requirements of AB 939. The main focus of AB 341 is commercial and multifamily recycling programs, along with a goal of 75% diversion. The City currently has commercial and multifamily recycling, and the 75% diversion goal is just that, a goal. AB 1826 has established a number of requirements for commercial businesses. The City can choose to participate in development of programs, or the City can choose to place the full burden on businesses. Based on current passed solid waste legislation, the only program the City will need to develop is diversion of organic waste from City owned and managed facilities. All other proposed programs are intended to meet goals, assist business, or to provide peripheral benefits such as renewable energy.

ARB has responsibility to develop a Climate Change Scoping Plan, establishing strategy to meet AB 32 goals. The Scoping Plan must be updated every five-years. The ARB Board approved the first scoping plan in December 2008, with the first update approved in May of 2014. AB 32 requires ARB to update the Scoping Plan to achieve reductions of GHG emissions based on “maximum technologically feasible and cost-effective”⁶⁸ processes. ARB works with other divisions of Cal-EPA, including CalRecycle, to establish programs and policies to achieve AB 32 goals. Due to changing technology, and technology costs, the City could be required to establish additional programs with the next Scoping Plan update.

State and federal agencies have established regulations regarding FOG and avoidance of SSO. In an effort to avoid SSOs, with the associated fines, the City needs to establish protocol for management, collection and disposal of FOG.

There are a number of projects proposed in this report. Below is a list of the core four projects. Each of the four projects has multiple subprojects that comprise all discussed projects.

1. Develop a cradle to grave program for commercially produced FOG.
2. Develop a program for collection and digestion of organic waste as defined by AB 1826.
3. Avoid landfill disposal of WQCF biosolids.
4. Increase efficiency of residential separation and recovery of materials.

To achieve 75% diversion of MSW from landfill disposal, the goal of AB 341, the City must implement a number of diversion programs. Currently the City is diverting

⁶⁸ State of California, Air Resources Board, Climate Change Scoping Plan, Resolution 14-16, May 22, 2014

approximately 60% of its MSW. Table 10.8-1 below shows proposed programs in the order they should be implemented to meet 75% diversion. Diversion programs are prioritized by legal requirement, cost, diversion impact, and other benefits. Additionally there is a proposed FOG program. City processing of FOG will have no direct impact on solid waste diversion, but will have public benefit. Table 10.8-2 shows budget cycle, and estimated program completion for proposed programs including FOG.

Table 10.8-1, Diversion Program Phases

Diversion Program (By Priority)		Annual Tons Diverted	Annual Tons Landfilled	% Diversion
Existing Programs		85,222	57,467	60%
Proposed New Diversion Programs				
Required By AB 1826	1. Commercial Self Haul Food Waste	1500	55,967	61%
	2. Commercial Source Separated Food Waste	1910	54,057	62%
3. WQCF Biosolids to Land Disposal		8000	46,057	68%
4. Residential Brown Bin CRV Capture		669	45,388	68%
5. Residential Food Waste		9128	36,260	75%
6. Brown Bin Recycling non CRV		4950	31,310	78%

Table 10.8-2, Program Schedule

Program	Starting Budget Cycle	Program Completion¹
AB 1826 Rate Study		
Rate Study	2016	July 30, 2016
FOG (Grease) Processing		
FOG Receiving Station at the WQCF	2016/17	May 2018
Commercial Organic Waste Collection & Processing		
Organic Waste Processing Facility Phase I	2015/16	January 2017
Commercial Organic Waste Collection Phase I	2015/16	April 2016
Commercial Organic Waste Collection Phase II	2016/17	January 2017
Organic Waste Processing Facility Phase II	2020/21	December 2025
WQCF Biosolids Landfill Avoidance		
WQCF Biosolids Landfill Avoidance	2017/18	December 2018
Bio CNG Facility		
R-CNG Facility Phase	2016/17	May 2018
Residential Waste Separation Efficiency		
Residential Waste Separation Efficiency	2017/18	January 2025 ²

¹ Schedule intended to meet AB 1826-phased implementation

² AB 341 has a goal of 75% diversion by 2020. With this schedule the goal will be achieved by 2025.

Table 10.8-3 below shows Master Plan improvements, along with their associated cost and budgeting timeframe.

Table 10.8-3. Master Plan Recommended Improvement Costs

Food Processing at Lovelace with Digestion at the WQCF				
Project Description	Phase 1 Food Waste		Phase 2 Food Waste	Total Project Cost (ENR 9970)
	Minimum Costs 2015-2016	Remaining Costs 2015-2019	Totals Costs 2020-2024	
Solid Waste Funded Infrastructure				
Rate Study	\$70,000			\$70,000
CEQA MND	\$100,000			\$100,000
Food Waste Processing Equipment at Lovelace	\$1,100,000		\$1,000,000	\$2,100,000
Food Waste Puree Transport & Equipment	\$250,000			
Solid Waste Total	\$1,520,000		\$1,000,000	\$2,520,000
Wastewater Funded Infrastructure at WQCF				
FOG and Food Receiving Facility at WQCF	\$1,800,000			\$1,800,000
Industrial Digesters at WQCF			\$1,875,000	\$1,875,000
Dewatering Building and Equipment at WQCF			\$4,585,000	\$4,585,000
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Wastewater Total	\$1,800,000	\$3,940,000	\$8,127,000	\$13,867,000
Combined Total				
Combined Total	\$3,320,000	\$3,940,000	\$9,127,000	\$16,387,000

Notes:

- 1) Phase 1 processed food waste includes Commercial Self Haul at 1,500 tons/year and City collected commercial at an additional 1,433 tons/year. See Table 10.6.3-1.
- 2) Phase 2 processed food waste includes the addition of residential food waste at 5,580 tons/year. See Table 10.6.3-1.

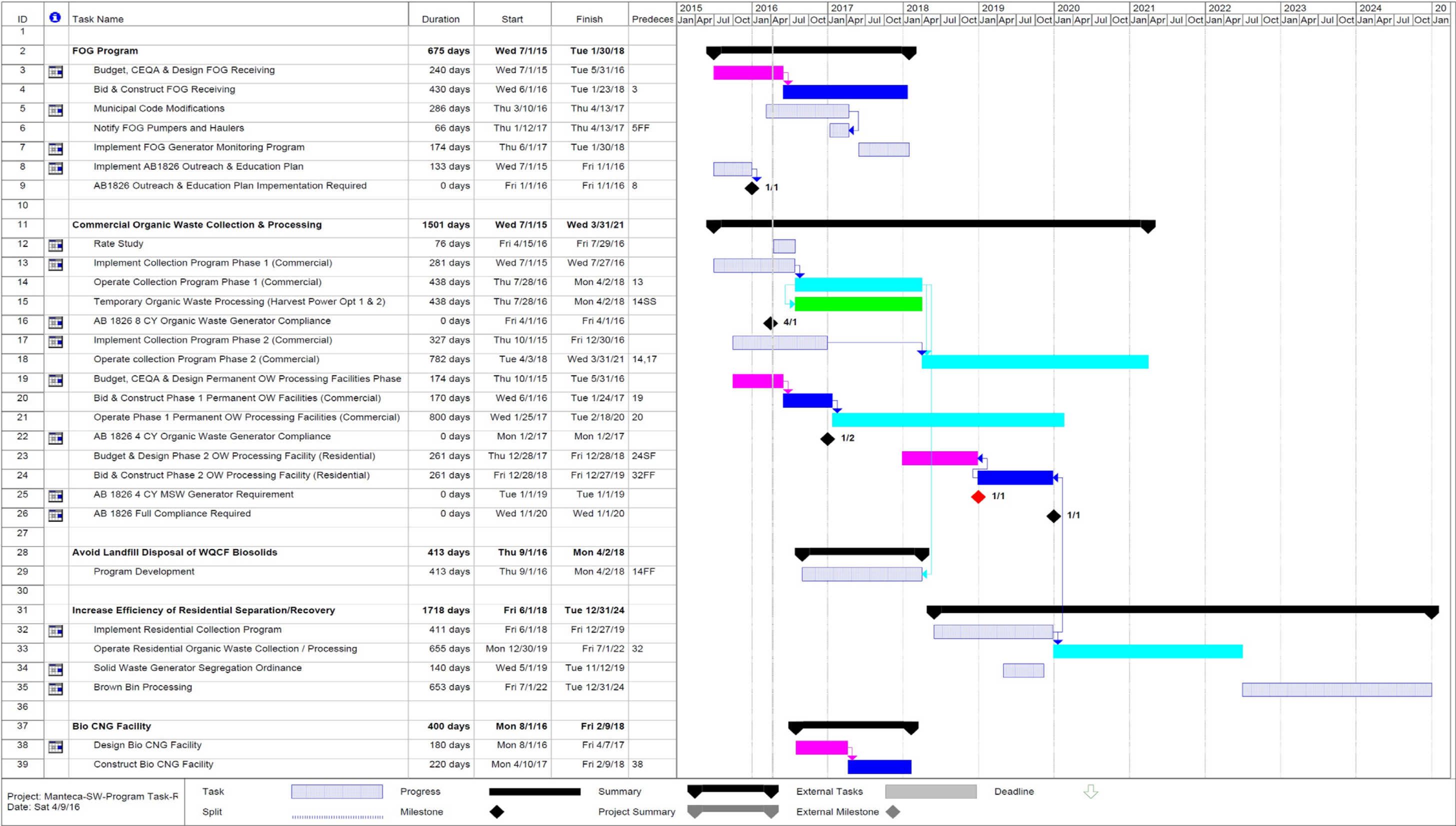
Figure 10.8-1 presents a 10-year program schedule. In the 10-year planning horizon of this report there will undoubtedly be new and expanded legislation requiring the City to start or modify new or existing programs. Proposed programs and schedules can be modified to meet future requirements.

Conclusions and Recommendations

- To assist commercial organic waste generators, Manteca should quickly move to develop collection and processing programs for organic waste.
- The City should move quickly to develop FOG cradle to grave monitoring.

- The City should move quickly to conduct a Solid Waste Rate Study to determine sources of funding for existing and future requirements.

Figure 10.8-1, Manteca Solid Waste Master Plan 10-Year Program Schedule



APPENDIX

- A) Residential Solid Waste, Waste Characterization Study
- B) Commercial Fats, Oils and Grease & Food Waste Generation Study
- C) Detailed Gas Utilization Economic Analysis
- D) California State Water Resources Control Board, Order 2006-0003-DWQ
- E) AB1826
- F) FOG Monitoring Program Forms

Residential Solid Waste, Waste Characterization Study

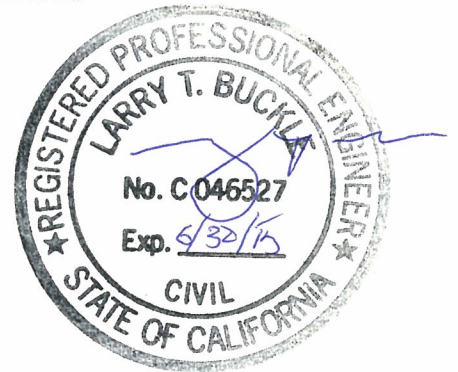
**RESIDENTIAL SOLID WASTE
WASTE CHARACTERIZATION STUDY
CITY OF MANTECA, CALIFORNIA
SEPTEMBER 2014**



**CONDUCTED BY INTERNATIONAL ENGINEERING SERVICES, INC. UNDER
THE DIRECTION OF HERWIT ENGINEERING**

Prepare By: _____

Larry T. Buckle, P.E.
International Engineering Services, Inc.



Reviewed By: _____

Gregory P. Harris P.E.
HERWIT Engineering



**CITY OF MANTECA
RESIDENTIAL WASTE CHARACTERIZATION STUDY
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INTRODUCTION

HERWIT Engineering and International Engineering Services, Inc. (IES) have conducted this Waste Characterization Study of residential solid waste for the city of Manteca. Information and data gathered for this report will be used in the preparation of a comprehensive solid waste mater plan. The Study was conducted August 17 through 19, 2014 and then again on August 22 through 24, 2014. The site of the study was the city Corporation Yard located at 208 East Wetmore Street, in Manteca. Data was collected from Brown, Blue, and Green Bin waste.

The study identified the types and percentages of materials contained in collected samples. Due to logistical reasons this study deviated from the standard provisions outlined in the California CalRecycle guidelines. Rather than collected 25, 200 pound samples from materials dumped from residential route trucks onto a transfer station tip floor, a similar tonnage was studied from randomly selected residential bins. City crews randomly selected a total of 54 Blue Bins, 71 Brown Bins, and 41Green Bins. A total of 5,380.6 pounds of material was sorted.

The city currently collects Blue and Green Bins on alternate weeks. Brown Bins are collected every week. Blue Bins are for designated recyclables, Brown Bins are for residential garbage, and Green Bins are for residential yard waste. Brown Bin waste was found to be abnormally wet, and contained significant maggot populations. The Brown Bin also typically contained a high percentage of traditional recyclable materials, however fiber was often saturated.

Larry T. Buckle P.E led the study with the assistance of C. Frank Bradham, P.E. In addition assistance from Rexie LeStrange and Steve McClary from the city of Manteca Solid Waste Division was indispensable and greatly appreciated.

METHODOLOGY

Sampling deviated from the State of California, Department of Conservation, Division of CalRecycle procedures for conducting a waste characterization study. Below is a summary of the procedures used.

To obtain representative sampling, City staff randomly selected residential Blue, Green and/or Brown Bins at selected homes. The advantage of this method of sampling is there is no opportunity for segregation of materials to occur in dumping and transfer. Individual Blue and Brown Bins were deposited onto a 4.0feet X 8.0 feet sorting table. Green Bins were dumped and sorted in the Corporation Yard's street sweeping wash down area.

Please consult APPENDIX A for a listing of the material types identified during the sorting process.

A standard form (See Appendix B) was used to record the quantities of the different material types. The net weights were logged. Following completion of the sorting, the data was entered into a Microsoft Excel Spreadsheet. The data is presented in table and chart formats, indicating the quantities and percentages of all material categories and types sorted.

The following protocol was uniformly applied throughout the sampling process:

1. Personnel protection equipment was worn by all sampling workers
2. Sorting tables, scales, buckets, trash bags etc were used to isolate materials.
3. Safety procedures for handling chemicals, glass and other hazardous waste were followed.
4. Materials were separated, weighed, and recorded on premade data sheets.
5. Materials approximately 1" and larger were segregated by commodity and weighed. Materials smaller than 1" will be weighed but not segregated.
6. Over the course of five days approximately 54 homes Blue Bins, 41 homes Green Bins, and 71 homes Brown Bins were sampled.

A detailed description of the sampling protocol can be found in Appendix C.

Complete raw data forms can be found in Appendix D.

Pictures taken during the waste characterization process are presented in Appendix E.

ITEMS OF NOTE

There are a number of events that occurred in conducting this study that need to be noted:

1. **Scavenging:** The city requested the study attempt to determine the value of materials stolen from Blue Bins by scavengers collecting materials between the time the Blue Bins are placed on the street and when the collection truck collects the material. Data for this estimation was to result from the differential value of non-scavenged Blue Bins compared to scavenged Blue Bins. Unfortunately, when city staff randomly collected Blue Bins for the study they could not find any scavenged Blue Bins.
2. **Shrinkage:** In a typical waste characterization study there is a statistically significant difference between the weight of the material in the unsorted bin and the sum of the materials accounted for. The difference is often the result of evaporation of moisture and just loss of material. Due to the

control exercised in conducting this study, material loss or "shrinkage" was not an issue. Therefore it was not accounted for in the processing of data.

3. **Unanticipated Materials:** Before the study commenced a data collection form was produced (See Appendix). This data collection form included all anticipated materials. Once the study started there were significant volumes of water, diapers, and vinyl that needed to be accounted for even though they were not listed on the original data form. The volume of these and other less significant material was included in the data collection form notes. Final data presented in this report includes these three materials just as if they had been included in the original form.
4. **Unanticipated Moisture:** The Brown Bin material was almost consistently saturated. The source of this water was often food waste. The final data has an adjustment for the weight of mixed paper due to the saturated nature. The final estimate predicts a dry weight of paper.
5. **Daily Percentage Brown Bin Waste:** The question was asked regarding demographics of Brown Bin Waste based on day of collection. Cumulative Brown Bin data for each daily period is also provided. This would allow comparison of different neighborhoods.

SAMPLES

Table 1 summaries the samples dates, type of bin, and location for all samples taken for the waste characterization.

TABLE 1 - TABLE OF SAMPLES

Sample #	Date Sorted	Material Weight	Bin Type	Sample Location
1	8/21/14	38.8	Brown	219 Hemlock
1	8/21/14	36.6	Blue	"
2	8/21/14	14.8	Brown	554 Apenzel
2	8/21/14	19.2	Blue	"
3	8/21/14	35.0	Brown	449 Greenbriar
3	8/21/14	10.6	Blue	"
4	8/21/14	22.4	Brown	736 Jackolyn
4	8/21/14	19.4	Blue	"
5	8/21/14	35.8	Brown	781 La Mesa
5	8/21/14	17.4	Blue	"
6	8/21/14	6.2	Brown	1469 Clubhouse
6	8/21/14	26.6	Blue	"
7	8/21/14	2.4	Brown	2451 Plum Creek Lane
7	8/21/14	16.7	Blue	"
8	8/21/14	46.4	Brown	435 Greenbriar
8	8/21/14	22.0	Blue	"
9	8/21/14	21.8	Brown	2444 Plum Creek
9	8/21/14	19.7	Blue	"
10	8/21/14	56.8	Brown	743 Jackolyn
10	8/21/14	17.8	Blue	"
11	8/21/14	34.4	Brown	793 La Mesa
11	8/21/14	40.4	Blue	"
12	8/21/14	39.8	Brown	542 Apenzel
12	8/21/14	23.6	Blue	"
13	8/21/14	28.8	Brown	214 Hemlock
13	8/21/14	13.4	Blue	"
14	8/21/14	67.8	Brown	220 Acacia
15	8/21/14	8.2	Blue	538 Foxfire
16	8/21/14	37.2	Blue	1249 Hollyberry
17	8/21/14	25.9	Blue	1951 Sherwood
18	8/21/14	6.2	Blue	1072 Birch Run
19	8/21/14	30.4	Blue	1558 Liverpool
20	8/21/14	17.6	Blue	1382 Gianna

TABLE 1 - TABLE OF SAMPLES
(Continued)

Sample #	Date Sorted	Material Weight	Bin Type	Sample Location
21	8/21/14	17.6	Blue	1528 Linden
22	8/21/14	27.4	Blue	1437 Madelena
23	8/21/14	12.2	Blue	1007 Hickory Hollow
24	8/21/14	39.4	Blue	1157 Silver Trail
25	8/21/14	23.0	Blue	1444 Midland
26	8/21/14	27.8	Blue	1739 Berthhold
27	8/21/14	22.8	Blue	1833 Delia
28	8/21/14	31.0	Blue	960 Wembley
29	8/21/14	20.0	Blue	347 Laurelwood
30	8/21/14	25.0	Blue	1208 Pleasant Hollow
31	8/21/14	13.6	Blue	1023 Trenton Place
32	8/22/14	9.0	Brown	1070 Eleanor
32	8/22/14	8.4	Blue	"
33	8/22/14	107.6	Brown	1066 Eleanor
33	8/22/14	21.4	Blue	"
34	8/22/14	44.4	Brown	1982 Boxcar
34	8/22/14	51.5	Blue	"
35	8/22/14	19.3	Brown	1662 Cache
35	8/22/14	10.0	Blue	"
36	8/22/14	90.0	Brown	1123 Muir
36	8/22/14	14.6	Blue	"
37	8/22/14	64.8	Brown	1353 Maserati
37	8/22/14	9.4	Blue	"
38	8/22/14	14.4	Brown	1073 Merced
38	8/22/14	36.6	Blue	"
39	8/22/14	44.6	Brown	222 Wawona
39	8/22/14	29.0	Blue	"
40	8/22/14	27.0	Brown	1249 Countryside
40	8/22/14	62.2	Blue	"
41	8/22/14	10.2	Brown	10.2
41	8/22/14	17.4	Blue	17.4
42	8/22/14	83.2	Brown	1059 Merced
42	8/22/14	38.2	Blue	"

TABLE 1 - TABLE OF SAMPLES
(Continued)

Sample #	Date Sorted	Material Weight	Bin Type	Sample Location
43	8/22/14	20.0	Brown	1337 Maserati
43	8/22/14	7.6	Blue	"
44	8/22/14	28.8	Brown	1654 Cash
44	8/22/14	20.0	Blue	"
45	8/22/14	20.4	Brown	1990 Boxcar
45	8/22/14	14.0	Blue	"
46	8/22/14	15.0	Brown	214 Wawona
46	8/22/14	14.0	Blue	"
47	8/25/14	37.8	Brown	1452 Diamond Oak
48	8/25/14	9.4	Brown	1945 Linda Jean
49	8/25/14	11.8	Brown	1440 Diamond Oak
50	8/25/14	14.4	Brown	?? Arlington
50	8/25/14	53.8	Green	"
51	8/25/14	41.0	Brown	1123 Empire
51	8/25/14	47.6	Green	"
52	8/25/14	11.2	Brown	1141 Empire
52	8/25/14	39.2	Green	"
53	8/25/14	14.2	Brown	1946 Linda Jean
53	8/25/14	112.6	Green	"
54	8/25/14	52.2	Brown	2065 Fountain Square
54	8/25/14	18.2	Green	"
55	8/25/14	19.0	Brown	1379 Santana
55	8/25/14	11.4	Green	"
56	8/25/14	44.6	Brown	2087 Fountain Square
56	8/25/14	62.8	Green	"
57	8/25/14	29.6	Brown	1981 Buena Vista
57	8/25/14	10.6	Green	"
58	8/25/14	14.6	Brown	1987 Buena Vista
58	8/25/14	66.2	Green	"
59	8/25/14	16.6	Brown	975 Jasmine Hollow
59	8/25/14	250.2	Green	"
60	8/25/14	28.2	Brown	1865 Arlington
60	8/25/14	49.4	Green	"

TABLE 1 - TABLE OF SAMPLES
(Continued)

Sample #	Date Sorted	Material Weight	Bin Type	Sample Location
61	8/25/14	39.8	Brown	797 Garden Gate
61	8/25/14	28.8	Green	"
62	8/25/14	30.6	Green	None
63	8/25/14	67.2	Green	None
64	8/26/14	58.8	Brown	947 Alfonso
64	8/26/14	102.8	Green	"
65	8/26/14	22.0	Brown	953 Alfonso
65	8/26/14	37.0	Green	"
66	8/26/14	22.2	Brown	1154 Springtime
66	8/26/14	38.4	Green	"
67	8/26/14	71.2	Brown	588 Santa Rosa
67	8/26/14	20.0	Green	"
68	8/26/14	15.0	Brown	1007 Placer
68	8/26/14	20.0	Green	"
69	8/26/14	20.2	Brown	583 Manor Oak
69	8/26/14	16.8	Green	"
70	8/26/14	52.2	Brown	1133 May
70	8/26/14	21.0	Green	"
71	8/26/14	36.6	Brown	1215 Yvonne
71	8/26/14	29.0	Green	"
72	8/26/14	28.0	Brown	883 Elm
72	8/26/14	42.0	Green	"
73	8/26/14	15.2	Brown	491 Sharon
73	8/26/14	37.4	Green	"
74	8/26/14	39.8	Brown	556 Swallow
74	8/26/14	1.6	Green	"
75	8/26/14	64.0	Brown	517 Morgan
76	8/26/14	56.4	Brown	575 Manor Oak
77	8/26/14	31.4	Green	579 Manor Oak
78	8/26/14	68.0	Green	595 Morgan
79	8/27/14	12.2	Brown	1540 Kingwood
79	8/27/14	100.2	Green	"
80	8/27/14	49.2	Brown	1839 Hastings
80	8/27/14	60.0	Green	"
81	8/27/14	16.0	Brown	1266 Ivy
81	8/27/14	39.2	Green	"

TABLE 1 - TABLE OF SAMPLES
(Continued)

Sample #	Date Sorted	Material Weight	Bin Type	Sample Location
82	8/27/14	30.4	Brown	2015 Bolton
82	8/27/14	68.4	Green	"
83	8/27/14	47.4	Brown	1776 Abby
83	8/27/14	10.8	Green	"
84	8/27/14	14.6	Brown	1641 Maywood
84	8/27/14	42.6	Green	"
85	8/27/14	60.4	Brown	858 Pebble
85	8/27/14	74.2	Green	"
86	8/27/14	26.2	Brown	454 Ericwood
86	8/27/14	59.2	Green	"
87	8/27/14	5.8	Brown	1206 Silver Trail
87	8/27/14	28.8	Green	"
88	8/27/14	30.0	Brown	1366 Sprague
88	8/27/14	107.0	Green	"
89	8/27/14	11.4	Brown	1825 Delia
89	8/27/14	60.4	Green	"
90	8/27/14	21.6	Brown	1847 Berthhold
90	8/27/14	44.8	Green	"
91	8/27/14	5.0	Brown	1472 Hastings
91	8/27/14	122.0	Green	"
92	8/27/14	19.0	Brown	772 Cypress
92	8/27/14	28.0	Green	"

COMPOSITE SAMPLE RESULTS

Composite results for the brown, blue, and green bins are presented in the following Composite Tabulations and Summary of Results., Summary tables are comprised of nine columns. The following is a description of each column.

1. Material: This is a list of 27 materials segregated in sampling of all Brown, Blue, and Green Bins. It includes all items in the data forms and added items (diapers etc.) noted during the study.
2. Total: This is the sum in pounds of each material collected from all Brown, Blue and Green Bins
3. High: To better remove statistical anomalies from the collected samples, the high weight of each material was identified and listed. Removal of the High and Low sample weights for each material in the calculation of “% of Total” (column 7) helps to estimate an accurate commodity percentage in the entire waste stream.
4. Low: Same explanation as #3
5. Moisture Adjustment: In some cases fiber contained a high volume of moisture. To get an accurate weight of fiber, weight due to moisture was removed from the final weight of fiber.
6. Final adjusted weight with maximum and minimum material weight removed.
7. Percent of total: The adjusted percentage of a commodity as a portion of the final adjusted weight in the colored bin.

TABLE 2- SUMMARY OF RESULTS, BROWN BIN

Material	Total Weight all samples	Sample Maximum Weight	Sample Minimum Weight	Moisture Adjustment	Final Adjusted Weight	%
OCC	6.6	1.4	0		5.2	0.3%
Mixed Paper/Fiber	375.6	21.8	0	-116	237.8	11.9%
News Print	0					0%
HDPE Color CRV	23.3	2.2	0		21.1	1.1%
HDPE Color no CRV	0					0%
HDPE Natural	4.2	1	0		3.2	0.2%
PETE	19.8	3.2	0		16.6	0.8%
#3-7 Plastic	160.2	10.2	0		150	7.5%
Film Plastic	20.3	2.6	0		17.7	0.9%
Glass CRV	41.6	17.8	0		23.8	1.2%
Glass Other	49.3	8.2	0		41.1	2.1%
Textiles/Fabric	83.9	15.6	0		68.3	3.4%
Mixed Ferrous	32.5	3.4	0		29.1	1.5%
Aluminum UBC	7.4	3	0		4.4	0.2%
Mixed Non-Ferrous	12.3	2.2	0		10.1	0.5%
Copper & Brass	0					0.0%
Stainless Steel	0.0					0.0%
Wood	0.8	0.8	0		0	0.0%
Inert Materials	37.8	8.5	0		29.3	1.5%
Food Waste	962.1	48.1	1		913	45.7%
Green/Yard Waste	67.9	24	0		43.9	2.2%
Fines < 1"	114.7	19.4	0		95.3	4.8%
E-Waste	27.9	8.6	0		19.3	1.0%
Hazardous Waste	27.4	10.6	0		16.8	0.8%
Diapers	105.9	22	0		83.9	4.2%
Kitty Litter	53.6	19.8	0		33.8	1.7%
Water	28.4	11.8	0	116	132.6	6.6%
Vinyl	7.2	4.6	0		2.6	0.1%

FIGURE 1 - BROWN BIN SUMMARY OF RESULTS

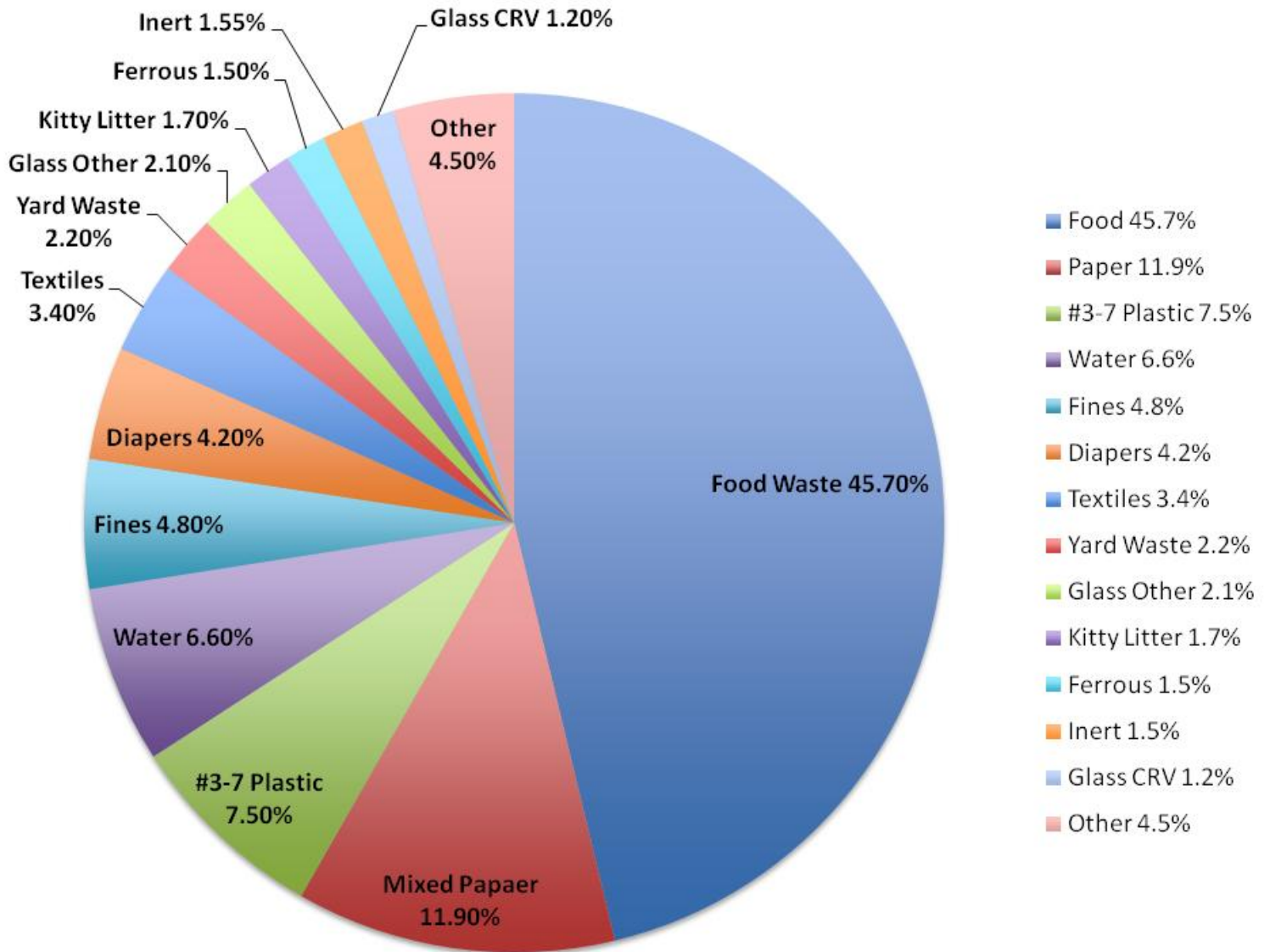


**TABLE 3 - SUMMARY OF RESULTS, DAILY PERCENTAGE OF BROWN
BIN WASTE**

MATERIAL	8/21	8/22	8/25	8/26	8/27
OCC	0	0	0.2	0.4	1.2
Mixed Paper/Fiber	25.1	17.9	12.8	10.4	14.4
News Print	0	0	0	0	0
HDPE Color CRV	1.3	0.5	1.6	0.8	1.2
HDPE no CRV	0	0	0	0	0
HDPE Natural	.2	0.4	0.1	0.1	0.1
PETE	.5	1.1	1.0	1.0	0.7
#3-7 Plastic	9.5	6.9	5.7	6.1	6.3
Film Plastic	0.1	1.5	0.7	0.8	0.9
Glass CRV	1.8	3.7	0.7	0.7	1.2
Glass Other	0.4	2.5	2.3	2.4	3.3
Textiles/Fabric	3.0	2.5	6.5	1.8	5.9
Mixed Ferrous	1.0	1.6	1.6	1.8	0.9
Aluminum UBC	0	0.2	0.3	0.8	0.2
Mixed Non- Ferrous	0.3	0.1	1.0	1	0.3
Copper & Brass	0	0	0	0	0
Stainless Steel	0	0	0	0	0
Wood	0	0	0	0.2	0
Inert Materials	2.6	0.8	5.4	0	0.1
Food Waste	31.5	41.3	53.2	39.9	45.2
Green/Yard Waste	10.5	0	0	0.4	5.5
Fines < 1"	0	8.7	3.1	6.7	4.1
E-Waste	1.4	0.1	0	0.9	4.9
Hazardous Waste	0	0	0	4.0	2.1
Diapers	7.1	7.7	0	9.2	0
Kitty Litter	0.9	0	1.0	9.1	0
Water	2.7	2.6	0.9	1.6	1.4
Vinyl	0.0	0	1.9	0	0

TABLE 4 - SUMMARY OF RESULTS, BLUE BIN

Material	Total Weight all Samples	Sample Maximum Weight	Sample Minimum Weight	Moisture Adjustment	Final Adjusted Weight	%
OCC	163.9	17.0	0		146.9	18.2%
Mixed Paper/Fiber	257.7	19.6	0.2		237.9	29.5%
News Print	40.3	9.2	0		31.1	3.9%
HDPE Color CRV	26.2	4.0	0		22.2	2.7%
HDPE Color no CRV	6.47	3.0	0		3.47	0.4%
HDPE Natural	14.6	2.0	0		12.6	1.6%
PETE	17.6	4.0	0		13.8	1.7%
#3-7 Plastic	88.6	9.4	0		79.2	9.8%
Film Plastic	12.5	1.8	0		10.7	1.3%
Glass CRV	65.5	7.4	0		58.1	7.2%
Glass Other	51.0	6.9	0		44.1	5.5%
Textiles/Fabric	12.5	4.6	0		7.9	1.0%
Mixed Ferrous	64.6	30.8	0		33.8	4.2%
Aluminum UBC	5.4	1.3	0		4.1	0.5%
Mixed Non-Ferrous	11.8	6	0		5.8	0.7%
Copper & Brass	0					0.0%
Stainless Steel	1.2	1.0	0		0	0.0%
Wood	0.0	0.8	0		0.0	0.0%
Inert Materials	11.8	5.2	0		6.6	0.8%
Food Waste	7.2	3.2	0		4	0.5%
Green/Yard Waste	0.0					0.0%
Fines < 1"	93.4	26.6	0		66.8	8.3%
E-Waste	16.3	6.2	0		10.1	1.3%
Hazardous Waste	7.8	6.8	0		1.0	0.1%
Diapers	20.3	14.8	0		5.5	0.7%
Kitty Litter	0.0	0.0	0		0.0	0.0%
Water	16.4	14.9	0		1.5	0.2%
Vinyl	0.0					0.0%

Figure 2 - BLUE BIN SUMMARY OF RESULTS

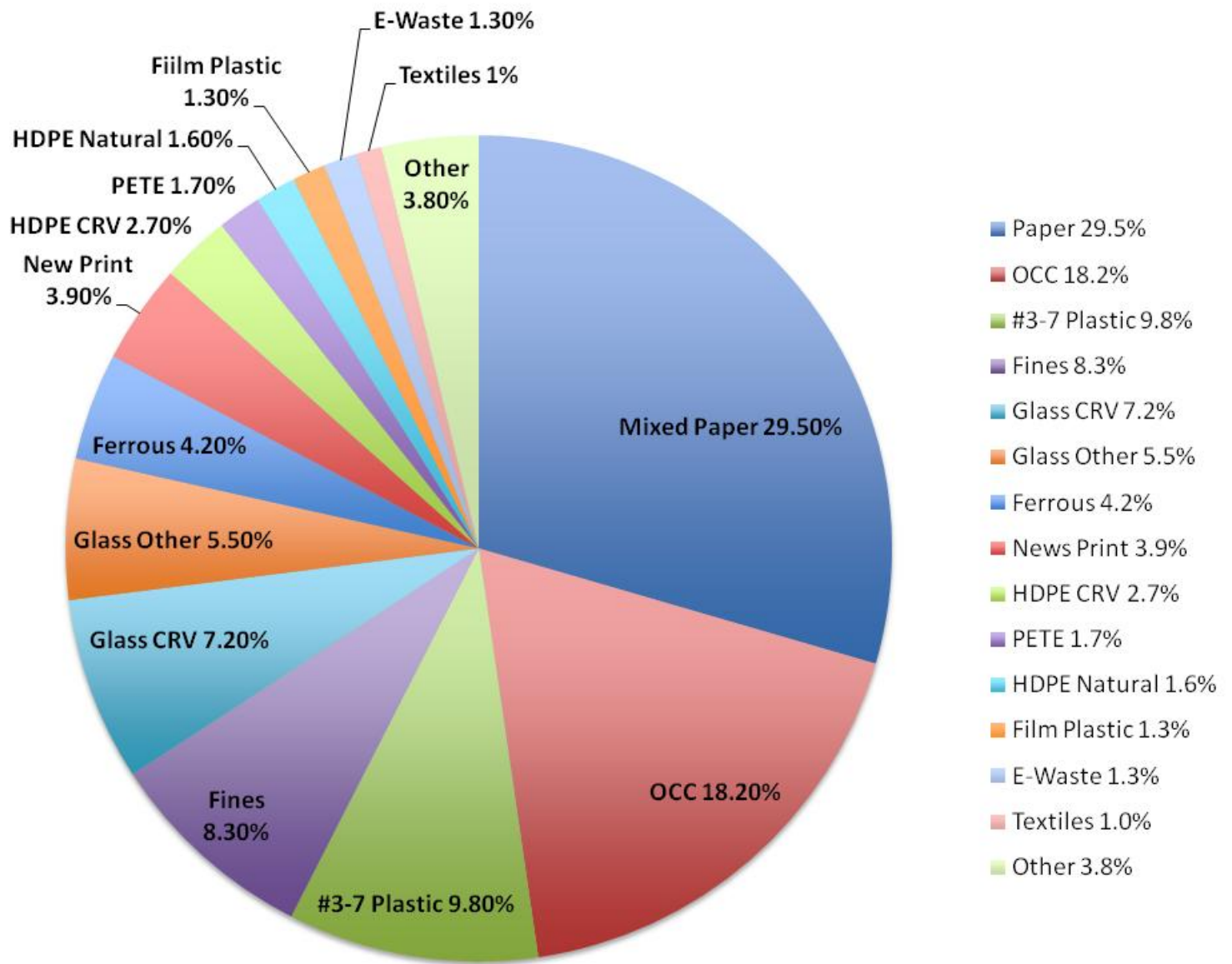
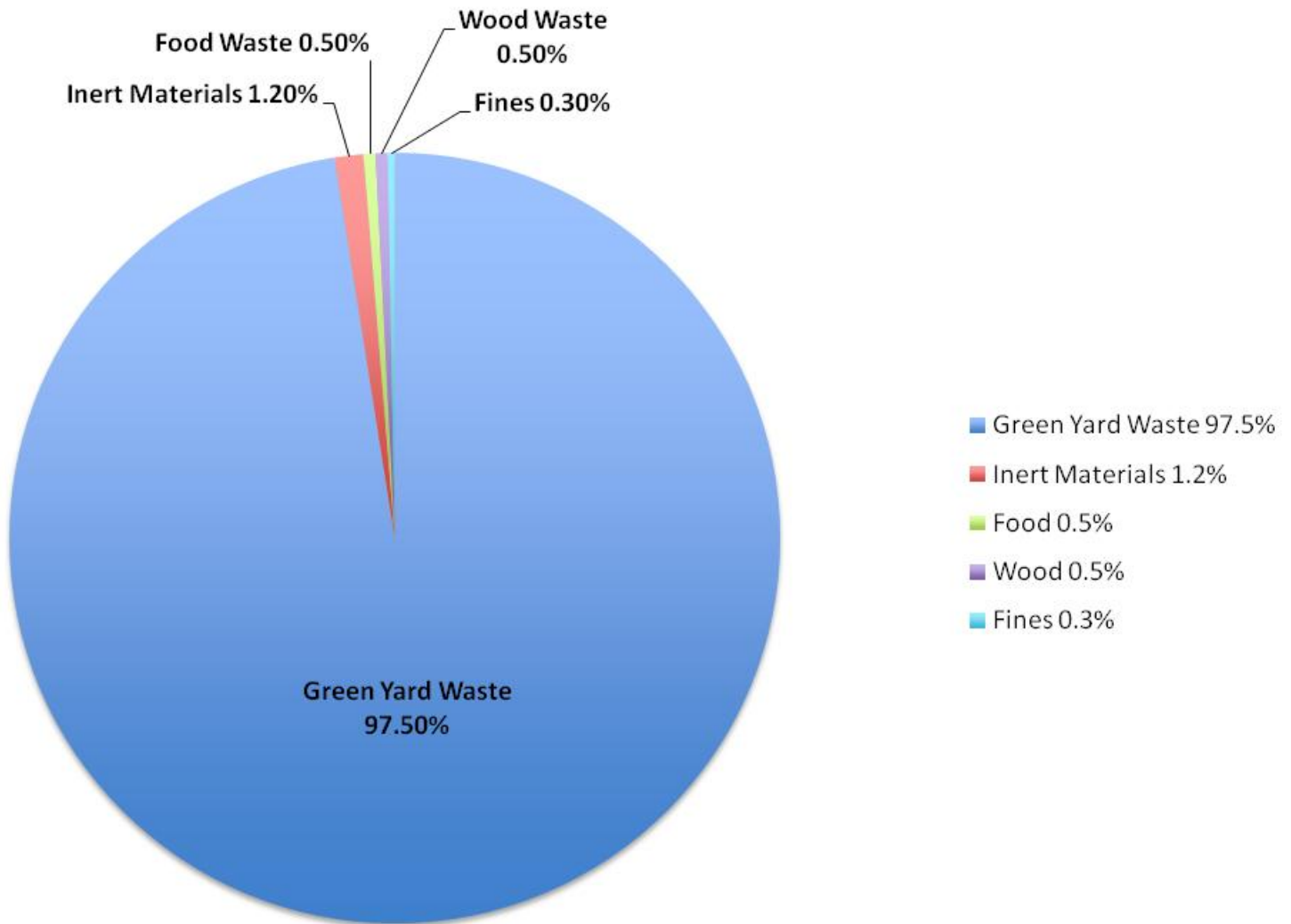


TABLE 5 - SUMMARY OF RESULTS, GREEN BIN

Material	Total Weight all Samples	Sample Maximum Weight	Sample Minimum Weight	Moisture Adjustment	Final Adjusted Weight	%
OCC	1.4	0.8	0		0.6	0.0%
Mixed Paper/Fiber	0.5	0.4	0		0.1	0.0%
News Print						0.0%
HDPE Color CRV						0.0%
HDPE Color no CRV						0.0%
HDPE Natural PETE						0.0%
#3-7 Plastic	0.2	0.1	0		0.1	0.0%
Film Plastic	0.1	0.1	0		0.0	0.0%
Glass CRV						0.0%
Glass Other						0.0%
Textiles/Fabric	1.8	1.8	0		0.0	0.0%
Mixed Ferrous						0.0%
Aluminum UBC	0.1	0.1	0		0.0	0.0%
Mixed Non-Ferrous						0.0%
Copper & Brass						0.0%
Stainless Steel						0.0%
Wood	17.5	8.6	0		8.9	0.5%
Inert Materials	59.0	37.0	0		22.0	1.2%
Food Waste	14.1	5.5	0		8.6	0.5%
Green/Yard Waste	2044.7	250.2	1.6		1792.9	97.5%
Fines < 1"	17.4	12.2	0		5.2	0.3%
E-Waste	1.0	1.0	0		0.0	0.0%
Hazardous Waste	1.8	1.8	0		0.0	0.0%
Diapers						0.0%
Kitty Litter						0.0%
Water						0.0%
Vinyl						0.0%

**FIGURE 3 - GREEN BIN SUMMARY
OF RESULTS**



APPENDIX

- **A - LIST OF MATERIALS ACCOUNTED FOR**
- **B - BLANK DATA COLLECTION FORM**
- **C- SAMPLING PROTOCOL**
- **D - COMPLETED DATA FORMS**
- **E- PICTURES**

Appendix A - Materials Accounted For:

Material Item	Description
OCC:	Old corrugated cardboard
Mixed Paper/Fiber:	Paper that is not newsprint or cardboard. This is mostly comprised of junk mail.
News Print:	Newspapers
HDPE Color CRV:	Plastic recycle number "2", comprised of post consumer bottles.
HDPE no CRV:	Plastic recycle number "2" other than post consumer bottles.
HDPE Natural:	Plastic recycle number "2" that does not contain color. As an example, milk jugs
PETE:	This is plastic recycle number "1". The best example is soda bottles.
#3-7 Plastic:	This is all plastics other than film, and recycle numbers "1" and "2"
Film Plastic:	Plastic bags, recycle number "4".
Glass CRV:	Post consumer bottles that a deposit has been paid. Example, soda and beer bottles.
Glass Other:	This is mostly wine bottles.
Textiles/Fabric:	Clothing and shoes
Mixed Ferrous:	Any iron content metal, or metal attracted to a magnet.
Aluminum UBC:	Used beverage containers for which a deposit has been paid.
Mixed Non-Ferrous:	Metals other than iron, brass, copper or stainless steel
Copper & Brass:	Metals copper and brass
Stainless Steel:	Steel alloy with a minimum of 10.5% chromium content.
Wood:	Mostly dimensional lumber, or tree trimmings
Inert Materials:	Soil, rock, concrete, plaster
Food Waste:	Fruit and vegetable trimmings, spoiled food, food scraps.
Green/Yard Waste:	Yard trimmings other than large diameter tree branches
Fines < 1":	Anything smaller than 1 inch in its largest dimension.
E-Waste:	Any electrical device.
Hazardous Waste:	Poisons, pesticides, fertilizer, paint, flammable liquids, etc.
Diapers:	Baby diapers
Water:	Liquids remaining in soda and water bottles.
Vinyl:	Flexible plastic banners and signs.

APPENDIX B - BLANK DATA COLLECTION FORM



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date		Brown			
Sample#		Blue			
Address		Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample			
Final Weight			
Shrinkage			
OCC			
Mixed Paper/Fiber			
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural			
PETE			
#3-7 Plastic			
Film Plastic			
Glass CRV			
Glass Other			
Textiles/Fabric			
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste			
Green/Yard Waste			
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT			

• NOTES:

APPENDIX C - SAMPLING PROTOCOL

2.1.01 Recommended personal safety/protective equipment

The following section lists some of the personal safety/protective equipment recommended for a visual and physical sort of solid waste.

7. Body protection:

Hard bottomed, non-slip boots

A supply of outer rubber (cut and puncture resistant) gloves

Chemical goggles or safety glasses

Dust masks

A supply of inner (latex) gloves

2. Hearing protection (if site has equipment or activities that generate loud noises):

Earplugs

3. Other safety equipment:

Industrial first aid kit

Eye wash kit

Moist, disposable towelettes (e.g., baby wipes)

Small fire extinguisher

Cell phone

High visibility traffic cones and tapes

Liquids to replenish fluids (water and cups for dehydration)

2.2.01 Recommended sorting equipment

1. Knife with a fixed blade.
2. Small bins or buckets (5 gal and/or larger) for weighing sorted materials.
3. Sorting table.
4. A scale that is accurate to two-tenths of a pound. Depending upon the waste stream, a larger capacity scale may be useful.
5. Permanent markers.
6. Clipboard and data sheets.
7. Magnets.
8. Calculator.
9. Trash bags.
10. Rake with a long handle.
11. Shovel with a long handle.
12. Broom
13. Camera
14. Duct tape
15. Plastic sheeting (minimum of 3 mm thick)

2.3.01 General sorting protocol

1. Physical sampling is to be performed at the business site of the city, try to minimize interference with normal operations.
2. Place traffic cones or high visibility warning tape around the active sorting area.
3. Always wear the following before beginning the sorting procedure: both pairs of gloves (outer rubber and inner latex), chemical goggles or safety glasses and dust mask.
4. There will be absolutely no eating, smoking or drinking during sorting activities in the sorting area. Plenty of fluids (e.g., water, sports drinks, etc.) must be available away from the sorting area. Hands and faces should be washed before eating or drinking. Frequent rest, drink and food breaks should be given during hot days.
5. There will be no attempt to identify unknown chemical substances present in the waste stream: vials of chemicals, unlabeled pesticide/herbicide containers, and substances (e.g., chemicals, or needles) in unlabeled plastic/glass bottles/jugs.

2.4.01 Physical, nonhazardous solid waste characterization

1. The "line of sight buddy system" must always be maintained at the sorting site. The "line of sight buddy system" is as follows: sorters are grouped into pairs and each member is to periodically assessing the physical condition of his/her "buddy".
2. Set up the sorting table. It is recommended that the buckets be placed around the table so that the buckets that will receive the most material are nearest to the table. To reduce reaching distances, all buckets within a broad material category (i.e. paper) should be positioned close together.
3. When removing only part of the contents, use a shovel to remove the sample all the way to the bottom to insure that smaller, denser elements are included. Remove sub samples of approximately 50 pounds from a preselected pile onto the table until an appropriate sample weight has been sorted. If there is not enough material in a dumpster/bin, sort the entire contents. Tear open garbage bags (not red bags) with rakes or other equipment and visually inspect for potential hazards. If hazardous or bio-hazardous wastes are detected, the sort will be halted and the Site Safety Officer must be notified.
4. Begin the sort by removing and characterizing the largest, bulkiest elements. Sort the remaining items into the categories and material types shown on the sample sheet. If a bucket becomes full, the full bucket is weighed; the data recorded on the data sheet, and the bucket is emptied and reused. The scale will be adjusted for the weight of the bucket such that the scale will only read the weight of the material sampled.
5. When sorting glass, remove and sort the larger pieces that are on top first. Never use your hands to dig down through the waste. Use a rake or small shovel to pull/push the material to the side and continue sorting.
6. When a sorter has a question regarding the material category or type into which an element should be placed, the Crew Leader will be consulted. For composites or multi material items, the predominant material type (as measured by weight) determines which material type it is classified as.
7. Return all sorted materials to the bin in which it was delivered.
8. At the end of each shift reusable equipment shall be cleaned after use. All sorters shall wash their hands.

2.5.01 Documentation

1. Over the course of five days approximately 54 homes Blue Bins, 41 homes Green Bins, and 71 homes Brown Bins were sampled.
2. Materials approximately 1" and larger will be segregated by commodity and weighed. Materials smaller than 1" will be weighed but not segregated.
3. The field data that is collected will be recorded on a standard form (See Appendix A).

Appendix D - COMPLETED DATA COLLECTION FORMS

August 21, 2014

Brown and Blue Bin



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/21/2014	Brown	71.0	32.2	38.8
Sample#	1	Blue	72.6	36.0	36.6
Address	219 Hemlock	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	38.8	36.6	
Final Weight	38.8	35.3	
Shrinkage		1.3	
OCC		12.4	
Mixed Paper/Fiber	17.7	2.4	
News Print			
HDPE Color CRV			
HDPE no CRV		0.1	
HDPE Natural			
PETE		0.1	
#3-7 Plastic	3.0	2.4	
Film Plastic		0.6	
Glass CRV		4.0	
Glass Other		1.6	
Textiles/Fabric			
Mixed Ferrous	1.4		
Aluminum UBC		0.1	
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	12.5		
Green/Yard Waste			
Fines < 1"		11.4	
E-Waste			
Hazardous Waste		0.2	
TOTAL WEIGHT	34.6	35.3	

NOTES: Brown – Diapers – 4.2#
Wet Paper



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/21/2014	Brown	43.6	28.8	14.8
Sample#	2	Blue	54.6	35.4	19.2
Address	554 Apenzel	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	14.8	19.2	
Final Weight	14.8	18.8	
Shrinkage		0.4	
OCC		4.4	
Mixed Paper/Fiber	5.8	4.6	
News Print			
HDPE Color CRV		0.4	
HDPE no CRV			
HDPE Natural		0.6	
PETE	0.2		
#3-7 Plastic	2.9	3.0	
Film Plastic		0.1	
Glass CRV		0.4	
Glass Other		2.0	
Textiles/Fabric			
Mixed Ferrous		3.2	
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	3.5		
Green/Yard Waste	2.4		
Fines < 1"		0.1	
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	14.8	18.8	

NOTES:



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/21/2014	Brown	63.4	28.4	35.0
Sample#	3	Blue	45.6	35.0	10.6
Address	449 Greenbriar	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	35.0	10.6	
Final Weight	35	10.6	
Shrinkage			
OCC			
Mixed Paper/Fiber	3.0	0.4	
News Print			
HDPE Color CRV	0.8		
HDPE no CRV			
HDPE Natural	0.2	0.1	
PETE			
#3-7 Plastic	2.0		
Film Plastic		0.1	
Glass CRV		0.8	
Glass Other			
Textiles/Fabric	0.1		
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	8.8		
Green/Yard Waste	20.1		
Fines < 1"		9.2	
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	35	10.6	

NOTES:

Blue – Brown Bin Stuff in Plastic Bags - 9.2#



City of Manteca Waste Characterization Study

Date	08/21/2014	Brown	Total #	Bin #	Scav.
Sample#	4	Blue	51.4	29.0	22.4
Address	736 Jackolyn	Green	56.2	36.8	19.4

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	22.4	19.4	
Final Weight	22.4	19.4	
Shrinkage			
OCC		0.8	
Mixed Paper/Fiber	6.5	3.4	
News Print			
HDPE Color CRV		1.0	
HDPE no CRV			
HDPE Natural			
PETE			
#3-7 Plastic	4.9	2.2	
Film Plastic		0.2	
Glass CRV			
Glass Other			
Textiles/Fabric			
Mixed Ferrous		2.2	
Aluminum UBC			
Mixed Non-Ferrous	1.0		
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	10.0		
Green/Yard Waste			
Fines < 1"		9.6	
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	22.4	19.4	

NOTES:



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/21/2014	Brown	64.2	28.4	35.8
Sample#	5	Blue	52.8	35.4	17.4
Address	781 La Mesa	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	35.8	17.4	
Final Weight	33.2	15.6	
Shrinkage	2.6	1.8	
OCC		4.0	
Mixed Paper/Fiber	5.0	2.2	
News Print			
HDPE Color CRV		0.4	
HDPE no CRV		0.8	
HDPE Natural		0.3	
PETE			
#3-7 Plastic	1.0	1.4	
Film Plastic		0.2	
Glass CRV		3.6	
Glass Other		2.0	
Textiles/Fabric			
Mixed Ferrous		0.2	
Aluminum UBC		0.4	
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	5.2		
Green/Yard Waste			
Fines < 1"		0.4	
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	11.2	15.9	

NOTES: Brown – Diapers – 22.0#
Very Wet



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/21/2014	Brown	34.6	28.4	6.2
Sample#	6	Blue	62.6	35.8	26.6
Address	1469 Clubhouse	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	6.2	26.6	
Final Weight	6.1	25.7	
Shrinkage	0.1	0.9	
OCC		1.0	
Mixed Paper/Fiber	1.0	5.2	
News Print		7.4	
HDPE Color CRV		0.6	
HDPE no CRV			
HDPE Natural		0.2	
PETE		0.4	
#3-7 Plastic	1.8		
Film Plastic		0.4	
Glass CRV		2.2	
Glass Other		6.9	
Textiles/Fabric	1.8		
Mixed Ferrous	0.1		
Aluminum UBC		1.3	
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	1.4		
Green/Yard Waste			
Fines < 1"		0.1	
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	6.1	25.7	

NOTES:



City of Manteca Waste Characterization Study

Date	08/21/2014	Brown	Total #	Bin #	Scav.
Sample#	7	Blue	31.4	29.0	2.4
Address	2451 Plum Creek Lane	Green	51.0	34.3	16.7

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	2.4	16.7	
Final Weight	1.6	16.5	
Shrinkage	0.8	0.2	
OCC			
Mixed Paper/Fiber		8.0	
News Print			
HDPE Color CRV	1.0		
HDPE no CRV			
HDPE Natural		0.2	
PETE		0.1	
#3-7 Plastic		0.8	
Film Plastic	0.4		
Glass CRV		7.2	
Glass Other			
Textiles/Fabric			
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	0.2		
Green/Yard Waste			
Fines < 1"		0.2	
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	1.6	16.5	

NOTES:



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/21/2014	Brown	77.4	31.0	46.4
Sample#	8	Blue	57.2	35.2	22.0
Address	435 Greenbriar	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	46.2	22.0	
Final Weight	46.4	22.0	
Shrinkage	-		
OCC		13.6	
Mixed Paper/Fiber	11.1	3.8	
News Print			
HDPE Color CRV	2.2		
HDPE no CRV			
HDPE Natural	0.8	0.1	
PETE			
#3-7 Plastic	4.0	1.2	
Film Plastic			
Glass CRV			
Glass Other			
Textiles/Fabric	1.2		
Mixed Ferrous	2.2		
Aluminum UBC		0.1	
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials	8.5		
Food Waste	12.0		
Green/Yard Waste			
Fines < 1"		3.2	
E-Waste	4.4		
Hazardous Waste			
TOTAL WEIGHT	46.4	22	

NOTES:

Blue – Cigarettes/trash as Fines



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/21/2014	Brown	50.0	28.2	21.8
Sample#	9	Blue	54.0	34.3	19.7
Address	2444 Plum Creek	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	21.8	19.7	
Final Weight	19.7	19.7	
Shrinkage	2.1		
OCC		1.8	
Mixed Paper/Fiber	2.9	7.0	
News Print		8.4	
HDPE Color CRV			
HDPE no CRV			
HDPE Natural			
PETE			
#3-7 Plastic	1.8	0.2	
Film Plastic		1.6	
Glass CRV			
Glass Other			
Textiles/Fabric	0.6		
Mixed Ferrous		0.1	
Aluminum UBC			
Mixed Non-Ferrous	0.4		
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials	2.0		
Food Waste	12.0		
Green/Yard Waste			
Fines < 1"		0.6	
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	19.7	19.7	

NOTES:



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/21/2014	Brown	84.4	27.6	56.8
Sample#	10	Blue	53.4	35.6	17.8
Address	743 Jackolyn	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	56.8	17.8	
Final Weight	52.3	15.8	
Shrinkage	4.5	2.0	
OCC		1.0	
Mixed Paper/Fiber	14.2	2.2	
News Print			
HDPE Color CRV	1.0	0.6	
HDPE no CRV		0.8	
HDPE Natural		1.0	
PETE			
#3-7 Plastic	1.5	1.4	
Film Plastic		0.4	
Glass CRV	8.2	6.2	
Glass Other			
Textiles/Fabric	4.6		
Mixed Ferrous		2.2	
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	22.8		
Green/Yard Waste			
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	52.3	15.8	

NOTES:

Blue – Diapers – 5.5#



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/21/2014	Brown	64.2	30.0	34.4
Sample#	11	Blue	78.0	37.6	40.4
Address	793 La Mesa Court	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	34.4	40.4	
Final Weight	31.2	39.9	
Shrinkage	3.2	0.5	
OCC		9.6	
Mixed Paper/Fiber	6.5	19.6	
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural			
PETE			
#3-7 Plastic	3.3	1.2	
Film Plastic		1.2	
Glass CRV		1.0	
Glass Other			
Textiles/Fabric		2.2	
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous		0.1	
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	21.4	1.4	
Green/Yard Waste			
Fines < 1"		2.6	
E-Waste		1.0	
Hazardous Waste			
TOTAL WEIGHT	31.2	39.9	

NOTES:



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/21/2014	Brown	67.4	27.6	39.8
Sample#	12	Blue	60.0	36.4	23.6
Address	542 Apenzel Lane	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	39.8	23.6	
Final Weight	39.8	22.7	
Shrinkage		0.9	
OCC		1.8	
Mixed Paper/Fiber	7.0	11.4	
News Print			
HDPE Color CRV	0.6	4.0	
HDPE no CRV			
HDPE Natural		0.1	
PETE			
#3-7 Plastic	3.0	3.2	
Film Plastic			
Glass CRV			
Glass Other			
Textiles/Fabric			
Mixed Ferrous		0.8	
Aluminum UBC			
Mixed Non-Ferrous		0.2	
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials	1.2		
Food Waste	2.4		
Green/Yard Waste	24.0		
Fines < 1"		0.8	
E-Waste	1.6		
Hazardous Waste		0.4	
TOTAL WEIGHT	39.8	22.7	

NOTES:



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/21/2014	Brown	58.6	29.8	28.8
Sample#	13	Blue	47.6	34.2	13.4
Address	214 Hemlock	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	28.8	13.4	
Final Weight	28.8	13	
Shrinkage		0.4	
OCC		4.8	
Mixed Paper/Fiber	8.7	2.4	
News Print		0.4	
HDPE Color CRV			
HDPE no CRV		0.1	
HDPE Natural		0.6	
PETE		0.1	
#3-7 Plastic	2.9	1.2	
Film Plastic			
Glass CRV		3.0	
Glass Other	0.8		
Textiles/Fabric	4.6		
Mixed Ferrous	0.2	0.4	
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	7.4		
Green/Yard Waste			
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	24.6	13	

NOTES: Brown – Cat Litter – 4.2#

August 21 2014

Brown Bin Only



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/21/2014	Brown	98.8	31.0	67.8
Sample#	14	Blue	None		
Address	220 Acacia	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	67.8		
Final Weight	67.8		
Shrinkage			
OCC			
Mixed Paper/Fiber	21.8		
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural			
PETE	1.8		
#3-7 Plastic	10.2		
Film Plastic			
Glass CRV			
Glass Other	1.0		
Textiles/Fabric	0.4		
Mixed Ferrous	0.6		
Aluminum UBC	0.2		
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	20.0		
Green/Yard Waste			
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	56		

NOTES: Brown – Liquid –Carbonated Beverages-11.8#

Wet Paper

August 21, 2014

Blue Bin Only



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/21/2014	Brown			
Sample#	15	Blue	45.4	37.2	8.2
Address	538 Foxfire	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample		8.2	
Final Weight		8.6	
Shrinkage			
OCC		2.2	
Mixed Paper/Fiber		5.6	
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural		0.2	
PETE			
#3-7 Plastic			
Film Plastic		0.4	
Glass CRV			
Glass Other			
Textiles/Fabric			
Mixed Ferrous		0.2	
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste			
Green/Yard Waste			
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT		8.6	

NOTES:



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/21/2014	Brown			
Sample#	16	Blue1	48.8	35.2	13.6
		Blue2	62.8	39.2	23.6
Address	1249 Hollyberry	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample		37.2	
Final Weight		35	
Shrinkage		2.0	
OCC		4.2+5.6=9.8	
Mixed Paper/Fiber		2.4+15.2=17.6	
News Print			
HDPE Color CRV			
HDPE no CRV		0+0.6=0.6	
HDPE Natural		0.2+0=0.2	
PETE			
#3-7 Plastic		1.2+0=1.2	
Film Plastic		0.2+1.4=1.6	
Glass CRV			
Glass Other		0.4+0=0.4	
Textiles/Fabric		0+0.1=0.1	
Mixed Ferrous		0.1+0=0.1	
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste			
Green/Yard Waste			
Fines < 1"		2.8+0=2.8	
E-Waste		0.4+0=0.4	
Hazardous Waste		0.1+0.1=0.2	
TOTAL WEIGHT		35	

- NOTES: Blue1&2 – Haz Waste – AAA batteries



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/21/2014	Brown			
Sample#	17	Blue	61.2	35.3	25.9
Address	1951 Sherwood Place	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample		25.9	
Final Weight		25.6	
Shrinkage		0.3	
OCC		1.4	
Mixed Paper/Fiber		4.0	
News Print			
HDPE Color CRV		0.4	
HDPE no CRV			
HDPE Natural		0.2	
PETE		0.2	
#3-7 Plastic		2.6	
Film Plastic		0.6	
Glass CRV		7.0	
Glass Other		4.0	
Textiles/Fabric			
Mixed Ferrous		4.8	
Aluminum UBC		0.2	
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste			
Green/Yard Waste			
Fines < 1"		0.2	
E-Waste			
Hazardous Waste			
TOTAL WEIGHT		25.6	

- NOTES:



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/21/2014	Brown			
Sample#	18	Blue	40.8	34.6	6.2
Address	1072 Birch Run Way	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample		6.2	
Final Weight		6.2	
Shrinkage			
OCC		2.2	
Mixed Paper/Fiber		1.6	
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural		0.1	
PETE		0.4	
#3-7 Plastic		0.4	
Film Plastic			
Glass CRV		1.0	
Glass Other			
Textiles/Fabric			
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste			
Green/Yard Waste			
Fines < 1"		0.5	
E-Waste			
Hazardous Waste			
TOTAL WEIGHT		6.2	

- NOTES: Blue – Fines – Cat Poop & Kitty Litter -Stinks!



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/21/2014	Brown			
Sample#	19	Blue	66.2	35.8	30.4
Address	1558 Liverpool Court	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample		30.4	
Final Weight		30.2	
Shrinkage		0.2	
OCC		7.2	
Mixed Paper/Fiber		15.4	
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural		0.8	
PETE		1.4	
#3-7 Plastic		2.6	
Film Plastic		0.2	
Glass CRV			
Glass Other		1.6	
Textiles/Fabric			
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel		1.0	
Wood			
Inert Materials			
Food Waste			
Green/Yard Waste			
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT		30.2	

NOTES:



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/21/2014	Brown			
Sample#	20	Blue	52.6	35.0	17.6
Address	1382 Gianna Way	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample		17.6	
Final Weight		17.4	
Shrinkage		0.2	
OCC		5.4	
Mixed Paper/Fiber		7.0	
News Print			
HDPE Color CRV		0.4	
HDPE no CRV			
HDPE Natural			
PETE		0.4	
#3-7 Plastic		2.4	
Film Plastic			
Glass CRV		1.2	
Glass Other			
Textiles/Fabric			
Mixed Ferrous			
Aluminum UBC		0.6	
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste			
Green/Yard Waste			
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT		17.4	

- NOTES: Blue – Pizza's, Beer & Cosmo's



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/21/2014	Brown			
Sample#	21	Blue	54.0	36.4	17.6
Address	1528 Linden Way	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample		17.6	
Final Weight		17.8	
Shrinkage		-	
OCC		0.4	
Mixed Paper/Fiber		7.4	
News Print			
HDPE Color CRV		0.4	
HDPE no CRV			
HDPE Natural			
PETE		0.2	
#3-7 Plastic		2.4	
Film Plastic		0.4	
Glass CRV			
Glass Other		5.6	
Textiles/Fabric			
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous		0.6	
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste			
Green/Yard Waste			
Fines < 1"		0.4	
E-Waste			
Hazardous Waste			
TOTAL WEIGHT		17.8	

NOTES:



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/21/2014	Brown			
Sample#	22	Blue	62.8	35.4	27.4
Address	1437 Madelena	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample		27.4	
Final Weight		25.8	
Shrinkage		1.6	
OCC		1.4	
Mixed Paper/Fiber		6.0	
News Print			
HDPE Color CRV		2.8	
HDPE no CRV			
HDPE Natural			
PETE		1.3	
#3-7 Plastic		2.6	
Film Plastic		0.1	
Glass CRV		1.4	
Glass Other		1.6	
Textiles/Fabric			
Mixed Ferrous		1.8	
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste			
Green/Yard Waste			
Fines < 1"		6.8	
E-Waste			
Hazardous Waste			
TOTAL WEIGHT		25.8	

- NOTES:



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/21/2014	Brown			
Sample#	23	Blue	46.2	34.0	12.2
Address	1007 Hickory Hollow Street	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample		12.2	
Final Weight		11.6	
Shrinkage		0.6	
OCC		0.6	
Mixed Paper/Fiber		3.6	
News Print			
HDPE Color CRV		0.6	
HDPE no CRV			
HDPE Natural		0.2	
PETE		0.6	
#3-7 Plastic		0.3	
Film Plastic			
Glass CRV		5.0	
Glass Other		0.6	
Textiles/Fabric			
Mixed Ferrous			
Aluminum UBC		0.1	
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste			
Green/Yard Waste			
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT		11.6	

NOTES:



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/21/2014	Brown			
Sample#	24	Blue	75.8	36.4	39.4
Address	1157 Silver Trail	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample		39.4	
Final Weight		39.2	
Shrinkage		0.2	
OCC		1.8	
Mixed Paper/Fiber		0.2	
News Print			
HDPE Color CRV			
HDPE no CRV		3.0	
HDPE Natural			
PETE			
#3-7 Plastic		3.4	
Film Plastic			
Glass CRV			
Glass Other			
Textiles/Fabric			
Mixed Ferrous		30.8	
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste			
Green/Yard Waste			
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT		39.2	

- NOTES: Blue -Ferrous - Brake Disc



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/21/2014	Brown			
Sample#	25	Blue	60.4	37.4	23.0
Address	1444 Midland Court	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample		23.0	
Final Weight		23	
Shrinkage			
OCC		2.4	
Mixed Paper/Fiber		6.0	
News Print			
HDPE Color CRV		1.6	
HDPE no CRV			
HDPE Natural		0.6	
PETE		1.2	
#3-7 Plastic		3.6	
Film Plastic		0.4	
Glass CRV			
Glass Other		1.0	
Textiles/Fabric			
Mixed Ferrous		3.4	
Aluminum UBC			
Mixed Non-Ferrous		1.2	
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste			
Green/Yard Waste			
Fines < 1"		1.6	
E-Waste			
Hazardous Waste			
TOTAL WEIGHT		23	

- NOTES: Blue – Fines – Broken Syringes w/ Ends cut off



City of Manteca Waste Characterization Study

Date	08/21/2014	Brown	Total #	Bin #	Scav.
Sample#	26	Blue	68.2	40.4	27.8
Address	1739 Berthhold Street	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample		27.8	
Final Weight		27.8	
Shrinkage			
OCC		2.6	
Mixed Paper/Fiber		3.8	
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural			
PETE		0.2	
#3-7 Plastic		9.4	
Film Plastic			
Glass CRV			
Glass Other			
Textiles/Fabric		1.4	
Mixed Ferrous			
Aluminum UBC		0.2	
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste			
Green/Yard Waste			
Fines < 1"			
E-Waste		3.4	
Hazardous Waste		6.8	
TOTAL WEIGHT		27.8	

• NOTES:

Blue – E-Waste – Radio Car



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/21/2014	Brown			
Sample#	27	Blue	62.8	40.0	22.8
Address	1833 Delia Court	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample		22.8	
Final Weight		22.2	
Shrinkage		0.6	
OCC		5.2	
Mixed Paper/Fiber		9.0	
News Print		1.4	
HDPE Color CRV		0.4	
HDPE no CRV			
HDPE Natural		0.1	
PETE		0.1	
#3-7 Plastic			
Film Plastic			
Glass CRV			
Glass Other			
Textiles/Fabric			
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste			
Green/Yard Waste			
Fines < 1"		2.8	
E-Waste		3.2	
Hazardous Waste			
TOTAL WEIGHT		22.2	

- NOTES:



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/21/2014	Brown			
Sample#	28	Blue	67.0	36.0	31.0
Address	960 Wembley Way	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample		31.0	
Final Weight		30.9	
Shrinkage		0.1	
OCC		9.4	
Mixed Paper/Fiber		10.2	
News Print			
HDPE Color CRV		0.6	
HDPE no CRV			
HDPE Natural		0.6	
PETE		0.4	
#3-7 Plastic			
Film Plastic			
Glass CRV			
Glass Other		1.0	
Textiles/Fabric			
Mixed Ferrous		4.0	
Aluminum UBC		0.1	
Mixed Non-Ferrous		2.4	
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste			
Green/Yard Waste			
Fines < 1"		2.2	
E-Waste			
Hazardous Waste			
TOTAL WEIGHT		30.9	

- NOTES:



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/21/2014	Brown			
Sample#	29	Blue	56.2	36.2	20.0
Address	347 Laurelwood Court	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample		20.0	
Final Weight		19.7	
Shrinkage		0.3	
OCC		0.8	
Mixed Paper/Fiber		4.6	
News Print		9.0	
HDPE Color CRV		1.2	
HDPE no CRV			
HDPE Natural		0.2	
PETE			
#3-7 Plastic		2.4	
Film Plastic		0.1	
Glass CRV			
Glass Other			
Textiles/Fabric			
Mixed Ferrous		1.0	
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste			
Green/Yard Waste			
Fines < 1"		0.4	
E-Waste			
Hazardous Waste			
TOTAL WEIGHT		19.7	

NOTES:



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/21/2014	Brown			
Sample#	30	Blue	61.0	36.0	25.0
Address	1208 Pleasant Hollow Way	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample		25.0	
Final Weight		25.0	
Shrinkage			
OCC		1.6	
Mixed Paper/Fiber		8.2	
News Print		0.3	
HDPE Color CRV		0.8	
HDPE no CRV			
HDPE Natural		0.4	
PETE			
#3-7 Plastic		06	
Film Plastic		0.1	
Glass CRV		4.0	
Glass Other		1.8	
Textiles/Fabric			
Mixed Ferrous		0.8	
Aluminum UBC		0.2	
Mixed Non-Ferrous		0.8	
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste			
Green/Yard Waste			
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT		25.0	

- NOTES:



City of Manteca Waste Characterization Study

Date	08/21/2014	Brown	Total #	Bin #	Scav.
Sample#	31	Blue	50.0	36.4	13.6
Address	1023 Trenton Place	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample		13.6	
Final Weight		13.8	
Shrinkage			
OCC		5.4	
Mixed Paper/Fiber		3.6	
News Print			
HDPE Color CRV		0.4	
HDPE no CRV			
HDPE Natural		0.4	
PETE			
#3-7 Plastic		1.4	
Film Plastic			
Glass CRV			
Glass Other		1.8	
Textiles/Fabric			
Mixed Ferrous		0.6	
Aluminum UBC			
Mixed Non-Ferrous		0.2	
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste			
Green/Yard Waste			
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT		13.8	

NOTES:

August 22, 2014

Brown and Blue Bin



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/22/2014	Brown	47.0	38.0	9.0
Sample#	32	Blue	44.6	36.2	8.4
Address	1070 Eleanor	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	9.0	8.4	
Final Weight	9.0	8.4	
Shrinkage			
OCC		0.8	
Mixed Paper/Fiber	1.0	4.7	
News Print			
HDPE Color CRV		0.4	
HDPE no CRV			
HDPE Natural		0.4	
PETE		0.4	
#3-7 Plastic	1.0	0.2	
Film Plastic			
Glass CRV			
Glass Other		0.8	
Textiles/Fabric			
Mixed Ferrous		0.4	
Aluminum UBC		0.1	
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	7.0		
Green/Yard Waste			
Fines < 1"		0.2	
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	9	8.4	

- NOTES: Brown – Light



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/22/2014	Brown	144.0	36.4	107
Sample#	33	Blue	60.4	39.0	21.4
Address	1066 Eleanor	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	107.6	21.4	
Final Weight	105.3	20.5	
Shrinkage	0.3	0.9	
OCC		5.0	
Mixed Paper/Fiber	7.8	3.8	
News Print			
HDPE Color CRV	1.4		
HDPE no CRV			
HDPE Natural	0.4	0.4	
PETE	3.2	0.2	
#3-7 Plastic	5.0	1.8	
Film Plastic	1.4		
Glass CRV	17.8	7.4	
Glass Other	8.2		
Textiles/Fabric			
Mixed Ferrous	0.2		
Aluminum UBC	0.3		
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	39.6		
Green/Yard Waste			
Fines < 1"		1.9	
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	85.3	20.5	

- NOTES: Brown – Did not Recycle
Diapers – 20.0#
Blue - Good



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/22/2014	Brown	72.6	28.2	44.4
Sample#	34	Blue	87.9	36.4	51.5
Address	1982 Boxcar	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	44.4	51.5	
Final Weight	44.4	51.5	
Shrinkage			
OCC			
Mixed Paper/Fiber	3.0	0.4	
News Print			
HDPE Color CRV	0.2		
HDPE no CRV		0.87	
HDPE Natural		2.0	
PETE	0.2	0.1	
#3-7 Plastic		0.1	
Film Plastic	0.1	0.6	
Glass CRV			
Glass Other	0.4		
Textiles/Fabric	0.4	3.0	
Mixed Ferrous			
Aluminum UBC		0.2	
Mixed Non-Ferrous	0.1	6.0	
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials		5.2	
Food Waste	40.0		
Green/Yard Waste			
Fines < 1"		26.6	
E-Waste		6.2	
Hazardous Waste		0.2	
TOTAL WEIGHT	44.4	51.5	

• NOTES:

Blue – Carpet as Fines
E Waste – Shop Vac
Haz Waste – Glue container



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/22/2014	Brown	48.5	29.2	19.3
Sample#	35	Blue	49.2	39.2	10.0
Address	1662 Cache	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	19.3	10.0	
Final Weight	19.3	10.2	
Shrinkage			
OCC		4.2	
Mixed Paper/Fiber	7.8	3.6	
News Print			
HDPE Color CRV		0.8	
HDPE no CRV			
HDPE Natural			
PETE	0.2	0.2	
#3-7 Plastic			
Film Plastic	2.0		
Glass CRV			
Glass Other	0.4	1.1	
Textiles/Fabric			
Mixed Ferrous	1.2		
Aluminum UBC		0.2	
Mixed Non-Ferrous	0.1	0.1	
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	6.0		
Green/Yard Waste			
Fines < 1"	1.6		
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	19.3	10.2	

- NOTES: Brown – Diapers – 4.5#
Blue – Good



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/22/2014	Brown	128.2	38.2	90.0
Sample#	36	Blue	50.2	35.6	14.6
Address	1123 Muir Court	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	90.0	14.6	
Final Weight	90.3	14.6	
Shrinkage			
OCC		0.8	
Mixed Paper/Fiber	20.4	1.6	
News Print			
HDPE Color CRV		2.8	
HDPE no CRV			
HDPE Natural		0.4	
PETE	2.0	2.0	
#3-7 Plastic	7.5	1.2	
Film Plastic	0.8		
Glass CRV			
Glass Other	3.2	1.8	
Textiles/Fabric	1.0		
Mixed Ferrous	2.2	0.4	
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials	3.3	3.6	
Food Waste	48.1		
Green/Yard Waste			
Fines < 1"	1.8		
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	90.3	14.6	

- NOTES: Brown – 20+ Syringes w/ Needles cut off
Blue – Good, including empty syringe box



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/22/2014	Brown	102.4	37.6	64.8
Sample#	37	Blue	46.6	37.2	9.4
Address	1353 Maserati	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	64.8	9.4	
Final Weight	64.8	9.4	
Shrinkage			
OCC		0.7	
Mixed Paper/Fiber	9.2	1.8	
News Print		2.0	
HDPE Color CRV	1.0		
HDPE no CRV		0.2	
HDPE Natural			
PETE		1.8	
#3-7 Plastic	4.2		
Film Plastic	0.4		
Glass CRV	0.6	0.1	
Glass Other			
Textiles/Fabric	4.8		
Mixed Ferrous	0.4	2.6	
Aluminum UBC	0.1	0.2	
Mixed Non-Ferrous	0.4		
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	41.8		
Green/Yard Waste			
Fines < 1"	1.5		
E-Waste	0.4		
Hazardous Waste			
TOTAL WEIGHT	64.8	9.4	

- NOTES: Brown – Good
E-Waste – stereo wiring
Blue – Good



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/22/2014	Brown	54.0	39.6	14.4
Sample#	38	Blue	72.4	35.8	36.6
Address	1073 Merced Way	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	14.4	36.6	
Final Weight	14.4	36.6	
Shrinkage			
OCC		4.0	
Mixed Paper/Fiber	2.2	0.2	
News Print			
HDPE Color CRV		0.8	
HDPE no CRV			
HDPE Natural		0.4	
PETE	0.4	4.0	
#3-7 Plastic		3.5	
Film Plastic	0.2	0.4	
Glass CRV	1.6	0.4	
Glass Other		2.2	
Textiles/Fabric			
Mixed Ferrous			
Aluminum UBC	0.2	0.8	
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials		3.0	
Food Waste	8.6	2.0	
Green/Yard Waste			
Fines < 1"	1.2		
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	14.4	21.7	

NOTES:

Blue – Water – 14.9#



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/22/2014	Brown	71.0	26.4	44.6
Sample#	39	Blue	69.4	40.4	29.0
Address	222 Wawona	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	44.6	29.0	
Final Weight	44.6	30	
Shrinkage			
OCC		1.6	
Mixed Paper/Fiber	8.8	7.2	
News Print			
HDPE Color CRV	0.3	0.6	
HDPE no CRV			
HDPE Natural	0.2	0.2	
PETE	0.2	0.8	
#3-7 Plastic	4.4	5.0	
Film Plastic	2.6	1.8	
Glass CRV	3.0	5.2	
Glass Other		2.6	
Textiles/Fabric	1.8		
Mixed Ferrous	1.2	0.4	
Aluminum UBC	0.4	0.4	
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel		0.2	
Wood			
Inert Materials			
Food Waste	10.2	3.2	
Green/Yard Waste			
Fines < 1"	11.5	0.8	
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	44.6	30	

- NOTES: Brown – 1 Syringe w/ end cover



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/22/2014	Brown	61.6	34.6	27.0
Sample#	40	Blue1	58.8	37.6	62.2
		Blue2	79.4	38.4	
Address	1249 Countryside	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	27.0	62.2	
Final Weight	25.0	62.4	
Shrinkage	2.0		
OCC		13.2+3.8=17.0	
Mixed Paper/Fiber	2.0	4.2+9.2=13.4	
News Print		0+ 9.2=9.2	
HDPE Color CRV		1.0+1.6=2.6	
HDPE no CRV			
HDPE Natural			
PETE	0.4		
#3-7 Plastic	1.0	1.2+0.8=2.0	
Film Plastic	0.1	0+0.6=0.6	
Glass CRV		0+3.0=3.0	
Glass Other		0+3.2=3.2	
Textiles/Fabric		0+1.2=1.2	
Mixed Ferrous	1.0	0.4+2.2=2.6	
Aluminum UBC	0.4	0.1+0=0.1	
Mixed Non-Ferrous		0+0.2=0.2	
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	7.5		
Green/Yard Waste			
Fines < 1"	12.6	1.1+4.2=5.3	
E-Waste		0+2.0=2.0	
Hazardous Waste			
TOTAL WEIGHT	25	62.4	

- NOTES: Brown – Sockets & Allen wrenches



City of Manteca Waste Characterization Study

Date	08/22/2014	Brown	Total #	Bin #	Scav.
Sample#	41	Blue	39.4	29.2	10.2
Address	1135 Muir Court	Green	51.4	34.0	17.4

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	10.2	17.4	
Final Weight	10.2	14.4	
Shrinkage			
OCC			
Mixed Paper/Fiber	5.0	4.8	
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural	0.6	0.2	
PETE			
#3-7 Plastic	0.5	8.8	
Film Plastic	0.1		
Glass CRV			
Glass Other			
Textiles/Fabric			
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	4.0	0.6	
Green/Yard Waste			
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	10.2	14.4	

• NOTES:

Blue – PVC Chair –6.4 of the 8.8#



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/22/2014	Brown	120.8	37.6	83.2
Sample#	42	Blue	72.6	34.4	38.2
Address	1059 Merced Way	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	83.2	38.2	
Final Weight	83.2	38.2	
Shrinkage			
OCC		3.6	
Mixed Paper/Fiber	19.4	3.0	
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural	1.0	0.4	
PETE			
#3-7 Plastic	9.0	4.3	
Film Plastic	1.6		
Glass CRV			
Glass Other	1.4	6.0	
Textiles/Fabric	5.6	4.6	
Mixed Ferrous	1.0		
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	15.8		
Green/Yard Waste			
Fines < 1"	19.4	1.5	
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	74.2	23.4	

- NOTES: Brown - Mixed Paper-Lots of Toilet Paper/Food Waste
Diapers – 9.0#B
Blue – Garbage &Diapers – 14.8#



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/22/2014	Brown	50.0	30.0	20.0
Sample#	43	Blue	45.4	37.8	7.6
Address	1337 Maserati Way	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	20.0	7.6	
Final Weight	20.2	7.6	
Shrinkage			
OCC			
Mixed Paper/Fiber	8.4	5.4	
News Print			
HDPE Color CRV	0.2	0.6	
HDPE no CRV			
HDPE Natural		0.2	
PETE			
#3-7 Plastic	4.0	0.8	
Film Plastic			
Glass CRV			
Glass Other			
Textiles/Fabric			
Mixed Ferrous	0.8	0.6	
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	6.8		
Green/Yard Waste			
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	20.2	7.6	

NOTES:



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/22/2014	Brown	58.0	29.2	28.8
Sample#	44	Blue	53.6	33.6	20.0
Address	1654 Cash	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	28.8	20.0	
Final Weight	28.5	20.0	
Shrinkage	0.3		
OCC		5.8	
Mixed Paper/Fiber	6.6	8.8	
News Print		2.2	
HDPE Color CRV		0.2	
HDPE no CRV			
HDPE Natural		0.8	
PETE	0.1	0.6	
#3-7 Plastic	2.2		
Film Plastic	0.2	0.2	
Glass CRV		1.0	
Glass Other	1.8	0.6	
Textiles/Fabric	2.4		
Mixed Ferrous	1.4		
Aluminum UBC		0.1	
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	13.8		
Green/Yard Waste			
Fines < 1"		0.2	
E-Waste		0.1	
Hazardous Waste			
TOTAL WEIGHT	28.5	20.6	

- NOTES: Blue – Good Sort



City of Manteca Waste Characterization Study

Date	08/22/2014	Brown	Total #	Bin #	Scav.
Sample#	45	Blue	52.0	31.6	20.4
Address	1990 Boxcar	Green	49.6	35.6	14.0

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	20.4	14.0	
Final Weight	18.2	14.3	
Shrinkage	2.2		
OCC		4.6	
Mixed Paper/Fiber	6.4	3.8	
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural		1.2	
PETE		0.2	
#3-7 Plastic	1.8	1.6	
Film Plastic	0.2	0.1	
Glass CRV			
Glass Other		0.8	
Textiles/Fabric			
Mixed Ferrous		1.0	
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	4.8		
Green/Yard Waste			
Fines < 1"	5.0	1.0	
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	18.2	14.3	

- NOTES: Blue – Good Sort



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/22/2014	Brown	43.0	28.0	15.0
Sample#	46	Blue	50.4	36.4	14.0
Address	214 Wawona	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	15.0	14.0	
Final Weight	15.0	14.0	
Shrinkage			
OCC		0.8	
Mixed Paper/Fiber	4.5	8.8	
News Print			
HDPE Color CRV		0.8	
HDPE no CRV			
HDPE Natural		0.8	
PETE		0.4	
#3-7 Plastic	2.8	0.4	
Film Plastic		0.1	
Glass CRV		0.4	
Glass Other			
Textiles/Fabric			
Mixed Ferrous	0.4		
Aluminum UBC			
Mixed Non-Ferrous	0.2		
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials	1.5		
Food Waste	5.6		
Green/Yard Waste			
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	15	12.5	

NOTES: Blue water in PET 1.5#

August 25, 2014

Brown Bin Only



City of Manteca Waste Characterization Study

Date	08/25/2014	Brown	Total #	Bin #	Scav.
Sample#	47	Blue			
Address	1452 Diamond Oak	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	36.4		
Final Weight	37.8		
Shrinkage			
OCC			
Mixed Paper/Fiber	7.2		
News Print			
HDPE Color CRV	2.2		
HDPE no CRV			
HDPE Natural	0.2		
PETE	0.4		
#3-7 Plastic	1.8		
Film Plastic	0.2		
Glass CRV			
Glass Other	0.4		
Textiles/Fabric	5.4		
Mixed Ferrous	0.4		
Aluminum UBC	0.2		
Mixed Non-Ferrous	1.4		
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials	3.8		
Food Waste	7.6*		
Green/Yard Waste			
Fines < 1"	4.0		
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	35.2		

- NOTES: Vinyl – 2.6#
*Kitty Litter – 3.8#
Damp Paper



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/25/2014	Brown	38.0	28.6	9.4
Sample#	48	Blue			
Address	1945 Linda Jean	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	9.4		
Final Weight	9.4		
Shrinkage			
OCC			
Mixed Paper/Fiber	2.2		
News Print			
HDPE Color CRV	0.2		
HDPE no CRV			
HDPE Natural			
PETE			
#3-7 Plastic	0.4		
Film Plastic			
Glass CRV			
Glass Other	0.6		
Textiles/Fabric			
Mixed Ferrous	0.2		
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	5.8		
Green/Yard Waste			
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	9.4		

- NOTES:



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/25/2014	Brown	42.2	30.4	11.8
Sample#	49	Blue			
Address	1440 Diamond Oak	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	11.8		
Final Weight	11.8		
Shrinkage			
OCC			
Mixed Paper/Fiber	3.2		
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural			
PETE			
#3-7 Plastic	1.2		
Film Plastic	0.2		
Glass CRV			
Glass Other			
Textiles/Fabric			
Mixed Ferrous	0.1		
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	7.1		
Green/Yard Waste			
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	11.8		

- NOTES: Damp Paper

August 25, 2014

Brown and Green Bins



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	8/25/2014	Brown	42.8	28.4	14.4
Sample#	50	Blue			
Address	?? Arlington Court	Green	90.4	36.6	53.8

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	14.4		53.8
Final Weight	12.2		53.8
Shrinkage	2.2		
OCC			
Mixed Paper/Fiber	1.4		
News Print			
HDPE Color CRV	0.2		
HDPE no CRV			
HDPE Natural			
PETE	0.2		
#3-7 Plastic	1.0		
Film Plastic	0.4		
Glass CRV			
Glass Other			
Textiles/Fabric	0.2		
Mixed Ferrous	0.2		
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	7.4		
Green/Yard Waste			53.8
Fines < 1"	1.2		
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	12.2		53.8

NOTES: Paper Dry Palm 17.8# in green waste



City of Manteca Waste Characterization Study

Date	08/25/2014	Brown	Total #	Bin #	Scav.
Sample#	51	Blue			
Address	1123 Empire Street	Green	84.6	37.0	47.6

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	41.0		47.6
Final Weight	41.0		47.6
Shrinkage			
OCC			
Mixed Paper/Fiber			
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural			
PETE	0.1		
#3-7 Plastic	1.2		
Film Plastic	0.3		
Glass CRV			
Glass Other	0.6		
Textiles/Fabric			
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			8.6
Inert Materials			
Food Waste	38.8		
Green/Yard Waste			39.0
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	41		47.6

- NOTES: Brown – Wet Food Waste
Green – Old Lumber , Remainder – Lawn Clippings



City of Manteca Waste Characterization Study

Date	08/25/2014	Brown	Total #	Bin #	Scav.
Sample#	52	Blue			
Address	1141 Empire Street	Green	86.4	47.2	39.2

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	11.2		39.2
Final Weight	11.2		39.2
Shrinkage			
OCC			
Mixed Paper/Fiber	2.6		
News Print			
HDPE Color CRV	0.4		
HDPE no CRV			
HDPE Natural			
PETE	0.2		
#3-7 Plastic	1.4		
Film Plastic	0.4		
Glass CRV			
Glass Other			
Textiles/Fabric	0.8		
Mixed Ferrous	1.4		
Aluminum UBC	0.2		
Mixed Non-Ferrous	0.8		
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	3.0		
Green/Yard Waste			39.2
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	11.2		39.2

- NOTES: Green – Tomato Vines
Lawn Clippings



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/25/2014	Brown	43.8	29.6	14.2
Sample#	53	Blue			
Address	1946 Linda Jean	Green	149.6	37.0	112

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	14.2		112.6
Final Weight	14.2		112.6
Shrinkage			
OCC			
Mixed Paper/Fiber	4.2		
News Print			
HDPE Color CRV	1.4		
HDPE no CRV			
HDPE Natural			
PETE			
#3-7 Plastic	2.0		
Film Plastic			
Glass CRV	0.4		
Glass Other	0.8		
Textiles/Fabric			
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials	3.9		
Food Waste	1.5		
Green/Yard Waste			112.6
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	14.2		112.6

- NOTES: Brown – Nasty – No Bags
Dry Paper
Green – Lawn Waste – 94.8#
Shrubbery – 17.8#



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/25/2014	Brown	80.4	28.2	52.2
Sample#	54	Blue			
Address	2065 Fountain Square	Green	56.2	38.0	18.2

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	52.2		18.2
Final Weight	52.2		18.2
Shrinkage			
OCC			
Mixed Paper/Fiber	7.4		
News Print			
HDPE Color CRV	0.6		
HDPE no CRV			
HDPE Natural			
PETE	0.2		
#3-7 Plastic	2.4		
Film Plastic	0.4		
Glass CRV			
Glass Other	1.2		
Textiles/Fabric	2.0		
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials	6.8		
Food Waste	31.2		
Green/Yard Waste			18.2
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	52.2		18.2

- NOTES: Brown – Damp Paper Green – All Shrubbery cuttings



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/25/2014	Brown	49.0	30.0	19.0
Sample#	55	Blue			
Address	1379 Santana Street	Green	50.6	39.2	11.4

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	19.0		11.4
Final Weight	19.0		11.4
Shrinkage			
OCC			
Mixed Paper/Fiber	1.4		
News Print			
HDPE Color CRV	0.4		
HDPE no CRV			
HDPE Natural			
PETE	1.0		
#3-7 Plastic	0.4		
Film Plastic	0.1		
Glass CRV			
Glass Other	0.4		
Textiles/Fabric	0.2		
Mixed Ferrous			
Aluminum UBC	0.2		
Mixed Non-Ferrous	0.2		
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials	5.4		
Food Waste	9.3		
Green/Yard Waste			11.4
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	19		11.4

- NOTES: Brown – Dry Paper
Green – All Lawn clippings



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/25/2014	Brown	75.0	30.4	44.6
Sample#	56	Blue			
Address	2087 Fountain Square	Green	101.6	38.8	62.8

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	44.6		62.8
Final Weight	44.6		62.8
Shrinkage			
OCC			
Mixed Paper/Fiber	4.4		
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural			
PETE			
#3-7 Plastic	1.5		
Film Plastic	0.2		
Glass CRV			
Glass Other	1.5		
Textiles/Fabric			
Mixed Ferrous	1.5		
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	35.5		
Green/Yard Waste			62.8
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	44.6		62.8

- NOTES: Brown – Damp Paper
Great Bag Sort
Green – 1 Palm Frond,



City of Manteca Waste Characterization Study

Date	08/25/2014	Brown	Total #	Bin #	Scav.
Sample#	57	Blue			
Address	1981 Buena Vista	Green	54.6	44.0	10.6

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	29.6		10.6
Final Weight	29.6		10.6
Shrinkage			
OCC	0.8		
Mixed Paper/Fiber	5.2		
News Print			
HDPE Color CRV	0.4		
HDPE no CRV			
HDPE Natural			
PETE			
#3-7 Plastic	2.4		
Film Plastic	0.1		
Glass CRV			
Glass Other	2.6		
Textiles/Fabric	1.0		
Mixed Ferrous	1.4		
Aluminum UBC			
Mixed Non-Ferrous	0.4		
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials	1.0		
Food Waste	14.3		
Green/Yard Waste			10.6
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	29.6		10.6

- NOTES: Brown – Damp Paper
Green – All Grass Clippings



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/25/2014	Brown	44.4	29.8	14.6
Sample#	58	Blue			
Address	1987 Buena Vista	Green	107.2	41.0	66.2

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	14.6		66.2
Final Weight	14.6		66.2
Shrinkage			
OCC			
Mixed Paper/Fiber	1.2		
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural			
PETE	0.2		
#3-7 Plastic	1.4		
Film Plastic	.2		
Glass CRV			
Glass Other			
Textiles/Fabric			
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	11.6		
Green/Yard Waste			66.2
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	14.6		66.2

- NOTES: Green – Wet Green Waste w/ 1 small plastic bag



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/25/2014	Brown	46.2	29.6	16.6
Sample#	59	Blue			
Address	975 Jasmine Hollow	Green1	238.0	36.2	201
		Green2	86.4	38.0	

48.4

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	16.6		250.2
Final Weight	16.6		250.2
Shrinkage			
OCC			
Mixed Paper/Fiber	1.0		
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural			
PETE			
#3-7 Plastic	0.6		
Film Plastic	0.1		
Glass CRV			
Glass Other			
Textiles/Fabric			
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	10.3		
Green/Yard Waste			250.2
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	12		250.2

NOTES:

Brown – Vinyl – 4.6#

Damp Paper

Green1 – Root Ball – 183.2#, Wet Pine Needles – 18.6#

Green2 – Palm Fronds – 2.0#, Pine Needles – 16.0#, Grass 30.0#



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/25/2014	Brown	58.6	30.4	28.2
Sample#	60	Blue			
Address	1865 Arlington Court	Green	97.0	47.6	49.4

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	28.2		49.4
Final Weight	28.2		49.4
Shrinkage			
OCC			
Mixed Paper/Fiber	3.6		
News Print			
HDPE Color CRV	0.4		
HDPE no CRV			
HDPE Natural			
PETE			
#3-7 Plastic	2.8		
Film Plastic			
Glass CRV			
Glass Other	0.6		
Textiles/Fabric			
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	20.8		
Green/Yard Waste			49.4
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	28.2		49.4

- NOTES: Brown – Damp Paper



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/25/2014	Brown	73.6	33.8	39.8
Sample#	61	Blue			
Address	797 Garden Gate	Green	68.2	39.4	28.8

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	39.8		28.8
Final Weight	39.8		28.8
Shrinkage			
OCC			0.8
Mixed Paper/Fiber	4.6		
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural			
PETE	1.4		
#3-7 Plastic	1.6		
Film Plastic	0.2		0.1
Glass CRV	2.2		
Glass Other			
Textiles/Fabric	15.6		
Mixed Ferrous	1.0		
Aluminum UBC	0.6		0.1
Mixed Non-Ferrous	1.2		
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	1.0		
Green/Yard Waste			27.8
Fines < 1"	6.7		
E-Waste	0.1		
Hazardous Waste			
TOTAL WEIGHT	36.2		28.8

- NOTES: Brown – Messy! No bags, unsorted, rats nest
Liquids – 3.6#
Green - Pizza Box, Plastic, Alum Can – 1.0#

August 25, 2014

Green Waste Only



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/25/2014	Brown			
Sample#	62	Blue			
Address	None	Green	67.2	36.6	30.6

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample			30.6
Final Weight			30.6
Shrinkage			
OCC			
Mixed Paper/Fiber			
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural			
PETE			
#3-7 Plastic			
Film Plastic			
Glass CRV			
Glass Other			
Textiles/Fabric			
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste			
Green/Yard Waste			30.6
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT			30.6

- NOTES: All Grass Clippings



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/25/2014	Brown			
Sample#	63	Blue			
Address	None	Green	106.0	38.8	67.2

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample			67.2
Final Weight			67.2
Shrinkage			
OCC			
Mixed Paper/Fiber			
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural			
PETE			
#3-7 Plastic			
Film Plastic			
Glass CRV			
Glass Other			
Textiles/Fabric			
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste			
Green/Yard Waste			67.2
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT			67.2

- NOTES: Shrubbery – 40.0#
Lawn – 19.0#
Palm Fronds – 8.2#

August 26, 2014

Brown and Green Waste Bins



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/26/2014	Brown	87.2	28.4	58.8
Sample#	64	Blue			
Address	947 Alfonso Lane	Green	140.4	37.6	102

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	58.8		102.8
Final Weight	58.8		102.8
Shrinkage			
OCC			
Mixed Paper/Fiber	6.2		
News Print			
HDPE Color CRV	0.2		
HDPE no CRV			
HDPE Natural			
PETE	1.0		
#3-7 Plastic	4.8		
Film Plastic	0.2		
Glass CRV	1.2		
Glass Other	1.4		
Textiles/Fabric	0.2		
Mixed Ferrous	2.4		
Aluminum UBC	0.2		
Mixed Non-Ferrous	1.8		
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	18.2		
Green/Yard Waste			101.4
Fines < 1"	0.2		1.4
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	38		102.8

- NOTES: Brown – Diapers – 16.8#
Damp Paper, Messy
Water 4.0
Green – Soil – 1.4#, Remainder - Grass



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/26/2014	Brown	43.4	21.4	22.0
Sample#	65	Blue			
Address	953 Alfonso Lane	Green	74.4	37.4	37.0

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	22.0		37.0
Final Weight	21.0		37.0
Shrinkage	1.0		
OCC			
Mixed Paper/Fiber	0.8		
News Print			
HDPE Color CRV	0.4		
HDPE no CRV			
HDPE Natural			
PETE			
#3-7 Plastic	1.2		
Film Plastic	0.1		
Glass CRV			
Glass Other			
Textiles/Fabric	0.2		
Mixed Ferrous	3.4		
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			1.4
Inert Materials			
Food Waste	14.9		
Green/Yard Waste			35.6
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	21		37

- NOTES: Green – Guitar
Remainder - Shrubbery



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/26/2014	Brown	47.2	25.0	22.2
Sample#	66	Blue			
Address	1154 Springtime	Green	73.6	35.2	38.4

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	22.2		38.4
Final Weight	22.2		
Shrinkage			
OCC			
Mixed Paper/Fiber	0.4		
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural			
PETE	0.1		
#3-7 Plastic	0.8		
Film Plastic	1.0		
Glass CRV			
Glass Other	2.0		
Textiles/Fabric	0.6		
Mixed Ferrous	0.6		
Aluminum UBC			
Mixed Non-Ferrous	0.4		
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	14.6		
Green/Yard Waste			38.4
Fines < 1"	0.3		
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	20.8		38.4

- NOTES: Brown – Diapers – 1.4#
Green – Lawn Waste – 16.0#
Shubbery – 22.4#



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/26/2014	Brown	98.6	27.4	71.2
Sample#	67	Blue			
Address	588 Santa Rosa Court	Green	58.6	38.6	20.0

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	71.2		
Final Weight	71.2		
Shrinkage			
OCC			
Mixed Paper/Fiber	7.2		
News Print			
HDPE Color CRV	0.8		
HDPE no CRV			
HDPE Natural	0.2		
PETE	0.2		
#3-7 Plastic	4.6		
Film Plastic			
Glass CRV	2.4		
Glass Other	1.6		
Textiles/Fabric	0.2		1.8
Mixed Ferrous	0.4		
Aluminum UBC	0.2		
Mixed Non-Ferrous	0.1		
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	43.4		
Green/Yard Waste	2.0		18.2
Fines < 1"	4.1		
E-Waste	1.4		
Hazardous Waste			
TOTAL WEIGHT	68.8		20

- NOTES: Brown – Diapers – 2.4#
Green – 1 Burlap sack and Remainder – dry onion skins



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/26/2014	Brown	37.8	22.8	15.0
Sample#	68	Blue			
Address	1007 Placer Avenue	Green	60.4	40.4	20.0

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	15.0		20.0
Final Weight	15.0		20.0
Shrinkage			
OCC			
Mixed Paper/Fiber	1.4		
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural			
PETE	0.4		
#3-7 Plastic			
Film Plastic	0.1		
Glass CRV			
Glass Other	0.1		
Textiles/Fabric			
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	3.0		
Green/Yard Waste			20.0
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	5		20

- NOTES: Brown – Kitty Litter – 10.0#
Green – All Shubbery



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/26/2014	Brown	47.6	27.4	20.2
Sample#	69	Blue			
Address	583 Manor Oak	Green	53.0	36.2	16.8

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	20.2		16.8
Final Weight	21.4		16.8
Shrinkage			
OCC			
Mixed Paper/Fiber	2.0		
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural			
PETE	0.4		
#3-7 Plastic	1.8		
Film Plastic	0.1		
Glass CRV			
Glass Other	0.8		
Textiles/Fabric	0.1		
Mixed Ferrous			
Aluminum UBC	0.2		
Mixed Non-Ferrous	2.2		
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	13.6		
Green/Yard Waste			16.8
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	21.2		16.8

- NOTES: Brown – Diapers – 1.2#
Green – All Lawn Clippings



City of Manteca Waste Characterization Study

Date	08/26/2014	Brown	Total #	Bin #	Scav.
Sample#	70	Blue			
Address	1133 May Avenue	Green	62.6	41.6	21.0

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	52.2		21.0
Final Weight	52.2		21.0
Shrinkage			
OCC	0.8		
Mixed Paper/Fiber	5.2		
News Print			
HDPE Color CRV	0.6		
HDPE no CRV			
HDPE Natural			
PETE			
#3-7 Plastic	3.4		
Film Plastic	0.3		
Glass CRV			
Glass Other			
Textiles/Fabric	1.2		
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	23.0		
Green/Yard Waste			21.0
Fines < 1"	2.7		
E-Waste			
Hazardous Waste	10.6		
TOTAL WEIGHT	47.8		21

- NOTES: Brown -Diapers - 4.4#
Green - All Shrubby



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/26/2014	Brown	58.2	21.6	36.6
Sample#	71	Blue			
Address	1215 Yvonne Avenue	Green	67.8	38.8	29.0

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	36.6		29.0
Final Weight	36.3		29.0
Shrinkage	0.3		
OCC			
Mixed Paper/Fiber	3.2		0.1
News Print			
HDPE Color CRV	0.2		
HDPE no CRV			
HDPE Natural			
PETE	0.2		
#3-7 Plastic	4.4		0.1
Film Plastic	0.2		
Glass CRV			
Glass Other			
Textiles/Fabric			
Mixed Ferrous	0.4		
Aluminum UBC	0.4		
Mixed Non-Ferrous	0.2		
Copper & Brass			
Stainless Steel			
Wood			2.4
Inert Materials			
Food Waste	25.6		4.6
Green/Yard Waste			20.0
Fines < 1"	1.5		
E-Waste			
Hazardous Waste			1.8
TOTAL WEIGHT	36.3		29

NOTES: Brown –Unbagged – 14.0#
 Green - Mixed Paper – 0.1#, Plastic – 0.1#
 Wood – 2.4#, Food Waste -4.6"
 Haz Waste – Insecticide – 1.8#
 w/ Remainder - Shrubbery



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/26/2014	Brown	56.2	28.2	28.0
Sample#	72	Blue			
Address	883 Elm Street	Green	80.0	38.0	42.0

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	28.0		42.0
Final Weight	28.0		42.0
Shrinkage			
OCC			
Mixed Paper/Fiber	3.6		0.4
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural			
PETE			
#3-7 Plastic	1.0		
Film Plastic			
Glass CRV			
Glass Other	0.1		
Textiles/Fabric			
Mixed Ferrous	0.2		
Aluminum UBC			
Mixed Non-Ferrous	0.1		
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	5.8		
Green/Yard Waste			41.6
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	10.8		42

NOTES:

Brown – Kitty Litter – 15.8#

Diapers – 1.4#

Damp Paper

Green - Mixed Paper – 0.4#

w/ Remainder - Shrubbery



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/26/2014	Brown	46.2	31.0	15.2
Sample#	73	Blue			
Address	491 Sharon Court	Green	75.2	37.8	37.4

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	15.2		37.4
Final Weight	15.2		37.4
Shrinkage			
OCC			
Mixed Paper/Fiber	5.0		
News Print			
HDPE Color CRV	0.4		
HDPE no CRV			
HDPE Natural			
PETE			
#3-7 Plastic	1.4		
Film Plastic	0.2		
Glass CRV			
Glass Other			
Textiles/Fabric	0.2		
Mixed Ferrous	1.2		
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	4.6		
Green/Yard Waste			37.4
Fines < 1"	2.2		
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	15.2		37.4

- NOTES: Brown – complete syringe w/ cap
Green - Shrubbery – 23.2#
Grass Clippings – 14.2#



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/26/2014	Brown	71.0	31.2	39.8
Sample#	74	Blue			
Address	556 Swallow Drive	Green	40.0	38.4	1.6

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	39.8		1.6
Final Weight	39.8		1.6
Shrinkage			
OCC			
Mixed Paper/Fiber	6.8		
News Print			
HDPE Color CRV	1.0		
HDPE no CRV			
HDPE Natural			
PETE			
#3-7 Plastic	3.2		
Film Plastic	0.2		
Glass CRV			
Glass Other	2.4		
Textiles/Fabric			
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood	0.8		
Inert Materials			
Food Waste	9.0		
Green/Yard Waste			1.6
Fines < 1"	6.4		
E-Waste	0.6		
Hazardous Waste	9.4		
TOTAL WEIGHT	39.8		1.6

- NOTES: Green - Light – All Shrubbery

August 26, 2014

Brown Bin Only



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	8/26/2014	Brown	94.2	30.2	64.0
Sample#	75	Blue			
Address	517 Morgan Street	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	64.0		
Final Weight	64.0		
Shrinkage			
OCC			
Mixed Paper/Fiber	6.2		
News Print			
HDPE Color CRV	0.4		
HDPE no CRV			
HDPE Natural			
PETE	2.6		
#3-7 Plastic	1.8		
Film Plastic	1.4		
Glass CRV			
Glass Other	3.6		
Textiles/Fabric	1.0		
Mixed Ferrous	0.4		
Aluminum UBC	3.0		
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	19.6		
Green/Yard Waste			
Fines < 1"	14.4		
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	54.4		

NOTES: Liquid – 4.0#
 Diapers – 5.6#
 NOT SORTED



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/26/2-14	Brown	85.2	28.8	56.4
Sample#	76	Blue			
Address	575 Manor Oak	Green			

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	56.4		
Final Weight	56.4		
Shrinkage			
OCC	1.0		
Mixed Paper/Fiber	4.2		
News Print			
HDPE Color CRV	0.2		
HDPE no CRV			
HDPE Natural	0.2		
PETE			
#3-7 Plastic	2.2		
Film Plastic	0.4		
Glass CRV			
Glass Other			
Textiles/Fabric	5.2		
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous	0.2		
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	5.4		
Green/Yard Waste	0.2		
Fines < 1"	2.0		
E-Waste	2.4		
Hazardous Waste			
TOTAL WEIGHT	23.6		

- NOTES: Kitty Litter – 19.8#
Diapers - 13.0#
Batteries – as E-Waste – batteries
Damp Paper

August 26, 2014

Green Bin Only



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/26/2014	Brown			
Sample#	77	Blue			
Address	579 Manor Oak	Green	74.0	42.6	31.4

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample			31.4
Final Weight			31.4
Shrinkage			
OCC			
Mixed Paper/Fiber			
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural			
PETE			
#3-7 Plastic			
Film Plastic			
Glass CRV			
Glass Other			
Textiles/Fabric			
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste			
Green/Yard Waste			31.4
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT			31.4

- NOTES: Green – Lawn Clippings



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/26/2014	Brown			
Sample#	78	Blue			
Address	595 Morgan Court	Green	115.2	47.2	68.0

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample			68.0
Final Weight			68.0
Shrinkage			
OCC			
Mixed Paper/Fiber			
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural			
PETE			
#3-7 Plastic			
Film Plastic			
Glass CRV			
Glass Other			
Textiles/Fabric			
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			37.0*
Food Waste			
Green/Yard Waste			17.8
Fines < 1"			12.2**
E-Waste			1.0
Hazardous Waste			
TOTAL WEIGHT			68

- NOTES: Green – Mixed! More Waste than Green-Grass Clippings!
 *Soil – 37.0#
 **Unbagged Diapers, cans, rags, plastic toys, stuffed Animals – 12.2#

August 27, 2014

Brown and Green Bin



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/27/2014	Brown	42.8	30.6	12.2
Sample#	79	Blue			
Address	1540 Kingwood Avenue	Green	138.2	38.0	100

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	12.2		100.2
Final Weight	12.2		100.2
Shrinkage			
OCC			
Mixed Paper/Fiber	4.0		
News Print			
HDPE Color CRV	0.4		
HDPE no CRV			
HDPE Natural			
PETE	0.4		
#3-7 Plastic	1.8		
Film Plastic	0.1		
Glass CRV			
Glass Other			
Textiles/Fabric	0.4		
Mixed Ferrous	0.4		
Aluminum UBC	0.2		
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	3.0		
Green/Yard Waste			99.0
Fines < 1"	0.9		1.2
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	11.6		100.2

- NOTES: Brown - Water - 0.6 #



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/27/2014	Brown	80.2	31.0	49.2
Sample#	80	Blue			
Address	1839 Hastings Street	Green	99.2	39.2	60.0

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	49.2		60.0
Final Weight	49.2		60.0
Shrinkage			
OCC	1.0		
Mixed Paper/Fiber	3.4		
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural			
PETE	0.8		
#3-7 Plastic	3.8		
Film Plastic	0.2		
Glass CRV	1.0		
Glass Other			
Textiles/Fabric	2.4		
Mixed Ferrous	0.2		
Aluminum UBC			
Mixed Non-Ferrous	0.1		
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	18.8		
Green/Yard Waste			60.0
Fines < 1"	1.7		
E-Waste	8.4		
Hazardous Waste	4.0		
TOTAL WEIGHT	45.8		60

- NOTES: Brown – Water – 3.4#, DVD's & Dog Poop
Green – Shrubbery/Palm Fronds – 49.8#
Grass – 10.2#



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/27/2014	Brown	39.0	23.0	16.0
Sample#	81	Blue			
Address	1266 Ivy Street	Green	78.8	39.6	39.2

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	16.0		39.2
Final Weight	15.6		39.2
Shrinkage	0.4		
OCC	0.8		0.6
Mixed Paper/Fiber	1.2		
News Print			
HDPE Color CRV	0.2		
HDPE no CRV			
HDPE Natural			
PETE			
#3-7 Plastic	1.2		
Film Plastic	0.2		
Glass CRV	0.6		
Glass Other			
Textiles/Fabric			
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous	0.4		
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	10.6		
Green/Yard Waste	0.4		38.6
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	15.6		39.2

- NOTES: Green – 1 Pizza Box
Lawn Clippings



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/27/2014	Brown	54.0	23.6	30.4
Sample#	82	Blue			
Address	2015 Bolton Street	Green	107.4	39.0	68.4

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	30.4		
Final Weight	29.9		
Shrinkage	0.5		
OCC			
Mixed Paper/Fiber	1.2		
News Print			
HDPE Color CRV	0.4		
HDPE no CRV			
HDPE Natural			
PETE	0.2		
#3-7 Plastic	0.4		
Film Plastic	0.1		
Glass CRV			
Glass Other	1.4		
Textiles/Fabric			
Mixed Ferrous	0.4		
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	6.8		
Green/Yard Waste	18.6		68.4
Fines < 1"	0.4		
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	29.9		68.4

- NOTES: Brown – N/C
Green – All Lawn



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/27/2014	Brown	77.0	29.6	47.4
Sample#	83	Blue			
Address	1776 Abby Way	Green	48.4	37.6	10.8

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	47.4		10.8
Final Weight	47.8		10.8
Shrinkage			
OCC			
Mixed Paper/Fiber	13.2		
News Print			
HDPE Color CRV	0.8		
HDPE no CRV			
HDPE Natural			
PETE			
#3-7 Plastic	3.4		
Film Plastic	0.2		
Glass CRV			
Glass Other	1.8		
Textiles/Fabric			
Mixed Ferrous	1.0		
Aluminum UBC			
Mixed Non-Ferrous	0.2		
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	15.6		
Green/Yard Waste			10.8
Fines < 1"	3.0		
E-Waste	8.6		
Hazardous Waste			
TOTAL WEIGHT	47.8		10.8

- NOTES: Green - All Lawn



City of Manteca Waste Characterization Study

Date	08/27/2014	Brown	Total #	Bin #	Scav.
Sample#	84	Blue			
Address	1641 Maywood Street	Green	89.0	46.4	42.6

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	14.6		42.6
Final Weight	13.8		42.6
Shrinkage	0.8		
OCC			
Mixed Paper/Fiber	2.6		
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural			
PETE			
#3-7 Plastic	2.8		
Film Plastic	0.2		
Glass CRV			
Glass Other			
Textiles/Fabric			
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	7.4		
Green/Yard Waste			42.6
Fines < 1"	0.8		
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	13.8		42.6

- NOTES: Green - Shrubbery – 33.6#
Grass – 9.0#



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/27/2014	Brown	90.2	29.8	60.4
Sample#	85	Blue			
Address	858 or 9 Pebble Street	Green	114.4	40.2	74.2

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	60.4		74.2
Final Weight	60.1		74.2
Shrinkage	0.3		
OCC			
Mixed Paper/Fiber	4.6		
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural	0.4		
PETE	0.6		
#3-7 Plastic	1.0		
Film Plastic	0.1		
Glass CRV			
Glass Other	0.8		
Textiles/Fabric	13.6		
Mixed Ferrous	0.6		
Aluminum UBC	0.4		
Mixed Non-Ferrous	0.2		
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	34.0		
Green/Yard Waste			71.6
Fines < 1"	2.8		2.6
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	59.1		74.2

- NOTES: Brown - Water - 1.0 #
Brown - Biggest Textile Pile - Stuffed Toys



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/27/2014	Brown	56.4	30.2	26.2
Sample#	86	Blue			
Address	454 Ericwood Court	Green	98.2	39.0	59.2

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	26.2		59.2
Final Weight	26.2		59.2
Shrinkage			
OCC			
Mixed Paper/Fiber	12.4		
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural			
PETE	0.4		
#3-7 Plastic	1.8		
Film Plastic	0.4		
Glass CRV			
Glass Other	0.6		
Textiles/Fabric	3.2		
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	6.6		
Green/Yard Waste	0.2		59.2
Fines < 1"	0.6		
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	26.2		59.2

- NOTES: Green - All Lawn



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/27/2014	Brown	27.8	22.0	5.8
Sample#	87	Blue			
Address	1206 Silver Trail Lane	Green	71.2	42.4	28.8

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	5.8		28.8
Final Weight	5.7		28.8
Shrinkage	0.1		
OCC			
Mixed Paper/Fiber	1.0		
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural			
PETE			
#3-7 Plastic	0.6		
Film Plastic	0.1		
Glass CRV	2.6		
Glass Other			
Textiles/Fabric			
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	1.4		
Green/Yard Waste			28.8
Fines < 1"			
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	5.7		28.8

- NOTES: Green – All Lawn



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/27/2014	Brown	51.6	21.6	30.0
Sample#	88	Blue			
Address	1366 Sprague	Green	148.8	41.8	107

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	30.0		107.0
Final Weight	30.6		107.0
Shrinkage			
OCC	1.4		
Mixed Paper/Fiber	0.8		
News Print			
HDPE Color CRV	2.0		
HDPE no CRV			
HDPE Natural			
PETE			
#3-7 Plastic	1.4		
Film Plastic	1.2		
Glass CRV			
Glass Other	6.8		
Textiles/Fabric			
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials	0.4		
Food Waste	10.6		4.0
Green/Yard Waste			103.0
Fines < 1"	2.6		
E-Waste			
Hazardous Waste	3.4		
TOTAL WEIGHT	30.6		107

NOTES: Brown - Saturated OCC
Wet Textiles – Underwear-Ladies
Brown – Soil – 0.4#
Haz Waste – Open Paint cans & used, uncleaned brushes
Green - Food Waste – 4.0#, Remainder - Lawn Clippings



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/27/2014	Brown	47.6	36.2	11.4
Sample#	89	Blue			
Address	1825 Delia Street	Green	98.6	38.2	60.4

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	11.4		60.4
Final Weight	11.2		60.4
Shrinkage	0.2		
OCC			
Mixed Paper/Fiber	1.2		
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural			
PETE			
#3-7 Plastic	0.8		
Film Plastic	0.2		
Glass CRV			
Glass Other			
Textiles/Fabric	0.8		
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous	0.2		
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			20.0
Food Waste	7.6		
Green/Yard Waste			40.4
Fines < 1"	0.4		
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	11.2		60.4

- NOTES: Green – Soil – 20.0#
Grass 40.4#



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/27/2014	Brown	52.0	30.4	21.6
Sample#	90	Blue			
Address	1847 Berthhold	Green	87.2	42.4	44.8

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	21.6		44.8
Final Weight	21.5		44.8
Shrinkage	0.1		
OCC	0.8		
Mixed Paper/Fiber	4.0		
News Print			
HDPE Color CRV	0.4		
HDPE no CRV			
HDPE Natural			
PETE	0.1		
#3-7 Plastic	1.6		
Film Plastic	0.2		
Glass CRV			
Glass Other			
Textiles/Fabric			
Mixed Ferrous	0.4		
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			1.6
Inert Materials			
Food Waste	13.8		
Green/Yard Waste			43.2
Fines < 1"	0.2		
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	21.5		44.8

- NOTES: Brown – No Recycle Separation
Green – Wood – 1.6#, Remainder Lawn



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/27/2014	Brown	26.4	21.4	5.0
Sample#	91	Blue			
Address	1472 Hastings Street	Green	162.4	40.4	122

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	5.0		122.0
Final Weight	4.6		122.0
Shrinkage	0.4		
OCC			
Mixed Paper/Fiber	0.1		
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural			
PETE			
#3-7 Plastic	0.6		0.1
Film Plastic			
Glass CRV			
Glass Other			
Textiles/Fabric	0.1		
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			3.5
Inert Materials			2.0
Food Waste	3.2		5.5
Green/Yard Waste			110.9
Fines < 1"	0.6		
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	4.6		122

- NOTES: Green - 1 PETE bottle
Food Waste – 5.5#
Kitty Litter – 2.0#
Wood – Branches – 3.5#, Remainder - Lawn



City of Manteca Waste Characterization Study

			Total #	Bin #	Scav.
Date	08/27/2014	Brown	40.0	21.0	19.0
Sample#	92	Blue			
Address	772 Cypress	Green	65.6	37.6	28.0

MATERIAL	Brown Bin	Blue Bin	Green Bin
Mixed Sample	19.0		28.0
Final Weight	19.0		28.0
Shrinkage			
OCC			
Mixed Paper/Fiber	0.4		
News Print			
HDPE Color CRV			
HDPE no CRV			
HDPE Natural			
PETE			
#3-7 Plastic	0.6		
Film Plastic			
Glass CRV			
Glass Other			
Textiles/Fabric			
Mixed Ferrous			
Aluminum UBC			
Mixed Non-Ferrous			
Copper & Brass			
Stainless Steel			
Wood			
Inert Materials			
Food Waste	17.6		
Green/Yard Waste			28.0
Fines < 1"	0.4		
E-Waste			
Hazardous Waste			
TOTAL WEIGHT	19		28

- NOTES: Green - All Lawn

Appendix E - Pictures



Weighing Material



Recording Data in the Field



Sorting Brown Bin Material



Sorting Green Bin Material



Typical Brown Bin Material

Commercial Fats, Oils and Grease & Food Waste Generation Study

COMMERCIAL FATS, OILS AND GREASE & FOOD WASTE GENERATION STUDY

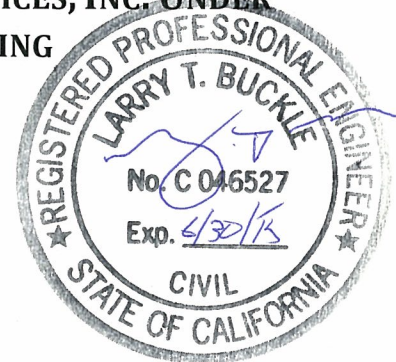
SEPTEMBER/OCTOBER 2014



CONDUCTED BY INTERNATIONAL ENGINEERING SERVICES, INC. UNDER
THE DIRECTION OF HERWIT ENGINEERING

Prepare By: _____

Larry T. Buckle, P.E.
International Engineering Services, Inc.



Reviewed By: _____

Gregory P. Harris P.E.
HERWIT Engineering



**CITY OF MANTECA
COMMERCIAL FATS, OILS AND GREASE
&
FOOD WASTE
GENERATION STUDY
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INTRODUCTION

HERWIT Engineering and International Engineering Services, Inc. (IES) have conducted this Fats, Oils and Grease (FOG) and Food Waste Generation Study for the city of Manteca. Information and data gathered for this report will be used in the preparation of a comprehensive solid waste master plan. The Study was conducted through the months of September and October 2014.

METHODOLOGY

City of Manteca, Department of Public Works (DPW) generated a list of 143 businesses that they considered to be generators of FOG and/or significant generators of commercial food waste. On September 8, 2014 IES, Herwit, and the DPW met to discuss protocol for the proposed survey. At this meeting the to be used survey form was discussed and approved for use.

The DPW generated and mailed a letter to each of the 143 businesses stating that a survey was to be conducted and that their cooperation was requested. The city also provided Herwit with a letter of introduction to the businesses. A copy of the letter of introduction, and a sample business letter is included in the appendix.

IES contacted each of the 143 businesses by phone and scheduled a time to meet with a management level person to conduct the survey. The intent of the survey was to determine how FOG was being managed, from generation through disposal. Also the survey was intended to determine how food waste was being processed and the steps required to harvest food waste from the businesses solid waste.

A copy of a blank survey form is included in the appendix.

ITEMS OF NOTE

A typical food service business has three forms of food based waste. The first is food that is not eaten or is disposed as a function of preparation, the second is grease that is washed into the sanitary sewer system, and third is cooking or fry oil that after use is almost always sold to a rendering company. Given that used fry oil has a positive commodity value, and is sold or traded the city will have little ability to capture or control this resource. Grease is captured by grease traps or interceptors maintained by the business or property owner. Private pumpers and haulers charge to pump and haul this material to various forms of processing. Food waste is typically put in the business solid waste for transportation and disposal by the city.

The city would like to capture commercial food waste, so during the survey the business solid waste was evaluated for viability for mechanical separation of food. A summary of business producing significant volumes of food and the ability to separate food mechanically is summarized in Table 1 of this report.

Table 2 of this report is a summary of the surveyed businesses grease control devices and maintenance practices.

SUMMARY OF SURVEY RESULTS

Table 1 Ability to Mechanically Separate Organic Waste From Trash

Business Name	Simplified Organic Waste Processing Practical
Aki's Grocery & Food to go	Yes
Applebee's	Yes
Athens Burgers	Yes
Billie Hills Hillbilly Bar-B-Q	Yes
Black Bear Dinner	Yes
Burger King	Yes
Carl's Jr	Yes
Carl's Jr	Yes
Carl's Jr	Yes
Carniceria Rosita	Yes
Casa Flores	Yes
Chili's	Yes
China Express	Yes
Chipotle	Yes
Chubby's Restaurant	Yes
Chucks Sports Bar	Yes
Costco	No
Country Skillets	Yes
Dairy Queen	Yes
Del Taco	Yes
Denny's	Yes
Doctor's Hospital	No
El Jardin	Yes
El Pollo Loco	Yes
Emeritus Care	Yes
Ernie's Food & Sprits	Yes
Fagundes Meats & Catering	Yes
Food 4 Less	No
Foster Freeze	Yes

Business Name	Simplified Organic Waste Processing Practical
George McParland Annex	Yes
GK Mongolian BBQ	Yes
Ho Suns Kitchen	Yes
Hob Nob Hot Dog	Yes
IHOP	Yes
In & Out Burger	Yes
Iron Horse Deli	Yes
Jack in the Box	Yes
Jack in the Box	Yes
Jack in the Box	Yes
Jacks Pizza	Yes
Jamba Juice	Yes
Jamba Juice	Yes
Jimmy's Market	Yes
Johnny's Restaurant	Yes
Joshua Cowell School	Yes
Kaiser Hospital	No
Kentucky Fried Chicken	Yes
Kinnaree Thai Cuisine	Yes
Kitty's Kitchen	Yes
LaCosta	Yes
La Estrella	Yes
La Estrella	Yes
La Mexicana Market	Yes
La Pina Loca	Yes
Las Casuelas	Yes
Le Croissant Bakery	Yes
Lee's Chinese	Yes
Lincoln School	Yes
Luu's Chicken Bowl	Yes
Mangy Moose Café	Yes
Matsu Sushi	Yes
Matsyama Sushi	Yes
McDonalds	Yes
McDonalds	Yes
McDonalds	Yes
McDonalds	Yes
McDonalds	Yes

Business Name	Simplified Organic Waste Processing Practical
McFall School	Yes
Mom's Thai House	Yes
Mountain Mikes	Yes
Mr. Biggs Deli	Yes
Mr. Pickle	Yes
Neil Hafley School	Yes
New China	Yes
Nic's Place	Yes
ONO Hawaiian	Yes
Pacos Taqueria	Yes
Panda Express	Yes
Panda Express	Yes
Papa Joe's BBQ	Yes
Saigon Town Noodles	Yes
Pizza & Pints	Yes
Pizza Hut	Yes
Prestige Senior Living	Yes
Quiznos	Yes
Raley's	No
Red Robbin	Yes
Round Table Pizza	Yes
Round Table Pizza	Yes
Safeway	No
Sakana Japan Bistro	Yes
Savemart Supermarket	Yes
Savemart Supermarket	Yes
Sierra High School	Yes
Silver Chop Stick	Yes
Stella Brockman School	Yes
Straw Hat Pizza	Yes
Strings	Yes
Subway	Yes
Subway	Yes
Subway	Yes
Subway	Yes
Subway	Yes
Sunny Valley Smoked Meats	Yes
Super Buffet	Yes

Business Name	Simplified Organic Waste Processing Practical
Taco Bell	Yes
Taco Bell	Yes
The Godfather	Yes
Togo's Eatery	Yes
Tony & Mrs. K Café	Yes
Uncle Franks Grill	No
Waffle Shop	No
Walmart	No
Walter Woodward School	Yes
Webers BBQ	Yes
Weinerschnitzel	Yes
Wendy's	Yes
Zen Bakery	Yes

Table 2 Manteca FOG Generator Information

Name	Address	Control Device	Service Frequency	Pumper/Hauler
Aki's Grocery & Food to go	368 N Main	2 Floor Traps	3 Months	Sisk
Applebee's	1272 E Yosemite	Interceptor	Unknown	Unknown
Athens Burgers	306 W Yosemite	Interceptor	2 time per year	HP Commodities
Baskin Robbins	970 N Main	None		
Baskin Robbins	1111 South Main	None		
Bean Leaf Café	1254 W Lathrop	None		
Billie Hills Hillbilly Bar-B-Q	106 Pierce Ave	None		
Black Bear Dinner	1703 E Yosemite Ave	Interceptor	Unknown	SRC
Burger King	700 N Main	Interceptor	4 Times per year	SRC
Café Aroma	1499 W Yosemite	None		
Carl's Jr	1489 Hulsey Way	Interceptor	4 Times per year	Env. Pumping Service
Carl's Jr	1465 W Yosemite	Interceptor	4 Times per year	Env. Pumping Service
Carl's Jr	990 N Main	Interceptor	4 Times per year	Env. Pumping Service
Carniceria Rosita	1297 N Main	None		
Casa Flores	1160 N Main	None		
Casino Real	1355 N Main	Same as Ernie's Food & Sprits		
Chili's	2262 Daniels St	Interceptor	4 Times per year	SRC
China Express	1184 E Yosemite	Interceptor	4 Times per year	Clark's
Chipotle	1440 Hulsey Way	Interceptor	Unknown	Pipe Maintenance
Chubby's Restaurant	737 N Main	None		
Chucks Sports Bar	1447 Historical Plaza Way	None		
Cindy's Donuts	520 N Main	Interceptor	3 Months	Unknown
Costco	2440 Daniels St	3 Interceptors	3 Months	Unknown
Country Skillets	1471 W Yosemite	Interceptor	Never	
Crush Frozen Yogurt	882 Lifestyle St.	None		

Name	Address	Control Device	Service Frequency	Pumper/Hauler
Daily Fresh Donuts	1154 W Yosemite	Floor Trap	Weekly	Solid Waste
Dairy Queen	1138 S Main	None		
DeVega Bros	Out of Business			
Del Taco	1194 E Yosemite	Interceptor	6 Months	Mountain Valley Septic
Denny's	1135 S Main St	Interceptor	Unknown	Unknown
Doctor's Hospital	1205 E North Street	Interceptor	6 Months	Clark's
Eckert Cold Storage	757 Moffat Blvd	None		
El Jardin	1111 S Main	Interceptor	Yearly	SRC
El Pollo Loco	1730 E Yosemite	Interceptor	3 Months	SRC
Emeritus Care	430 N Union	Interceptor	6 Months	SRC
Ernie's Food & Sprits	1351 N Main	Interceptor	6 Months	Unknown
Fagundes Meats & Catering	142 Jason St	Interceptor, 2 Traps	6 Months, Daily	AAA Septic
Food 4 Less	131 Spreckels	Interceptor	3 Months	Clark's
Foster Freeze	906 W Yosemite	None		
George McParland Annex	1370 London Ave	Interceptor	Never	
GK Mongolian BBQ	1039 S Main St	None		
Grocery Outlet	1391 E Yosemite	None		
Guido's Take & Bake	1192 W Louse	None		
Ho Suns Kitchen	1150 N Main St	Floor	3 Months	CGC Fresno
Hob Nob Hot Dog	1315 N Main	None		
Hong Kong Chinese	2028 Schaffhausen St.	Not a Business		
IHOP	1150 E Yosemite	Interceptor	3 Months	SRC
In & Out Burger	1490 E Yosemite	Interceptor	2 Months	SRC
Iron Horse Deli	301 E Yosemite	Interceptor	Never	
Jack in the Box	1081 S Main	Interceptor	3 Months	All Valley
Jack in the Box	1310 E Yosemite	Interceptor	3 Months	All Valley
Jack in the Box	1105 N Main	Interceptor	3 Months	All Valley
Jacks Pizza	1223 W Yosemite	Floor Trap	Weekly	Solid Waste
Jamba Juice	2160 Daniels	None		
Jamba Juice	1445 Hulsey Way	None		
Jimmy's Market	2268 E Yosemite	None		
Johnny's Restaurant	610 E Yosemite	Interceptor	6 Months	Sisk

Name	Address	Control Device	Service Frequency	Pumper/Hauler
Joshua Cowell School	740 Pestana	Interceptor	Never	
Kaiser Hospital	1777 W Yosemite	Interceptor	2 Years	Unknown
Kentucky Fried Chicken	1211 E Yosemite	Interceptor	3 Months	Unknown
Kinnaree Thai Cuisine	229 E Yosemite	None		
Kitty's Kitchen	532 N Main	Interceptor	3 Months	Unknown
LaCosta	205 Moffat Blvd	Under Sink	Weekly	HP Commodities
La Estrella	1361 E Yosemite	Floor	Monthly	Solid Waste
La Estrella	1110 N Main	Interceptor	Yearly	Mountain Valley
La Mexicana Market	502 E Yosemite	None		
La Pina Loca	504 W Yosemite	Interceptor	Yearly	HP Commodities
Las Casuelas	1580 W Yosemite	Interceptor	3 Months	Clark's
Las Palmas	1021 N Main St	Burned Down		
Le Croissant Bakery	162 N Maple	None		
Lee's Chinese	102 Pierce	Interceptor	Unknown	Unknown
Lincoln School	750 E Yosemite	Interceptor	Never	
Little Caesar Pizza	353 W Louise Ave	Under Sink	3 Months	Amerigaurd
Luu's Chicken Bowl	300 N Main	Interceptor	6 Months	CGC
Main Street Doughnuts	1041 S Main	None		
Mangy Moose Café	506 E Yosemite	None		
Manteca Donut	1194 N Main	None		
Manteca Unified School	2271 W Louise Ave	None		
Matsu Sushi	874 Lifestyle St	None		
Matsyama Sushi	293 Spreckels Ave	Floor	Yearly	Unknown
McDonalds	1360 E Yosemite	Interceptor	3 Months	SRC
McDonalds	1205 S Main St	Interceptor	3 Months	SRC
McDonalds	2050 Daniels	Interceptor	3 Months	SRC
McDonalds	1236 W Yosemite	Interceptor	3 Months	SRC
McDonalds	1137 W Lathrop	Interceptor	3 Months	SRC
McFall School	1810 Hoyt Lane	Interceptor	Never	
Milano Pizza	347 N Main	None		
Mom's Thai House	439 N Main	None		
Mountain Mikes	1120 N Main St	Floor	2 times a week	Solid Waste
Mr. Biggs Deli	137 N Main St	None		

Name	Address	Control Device	Service Frequency	Pumper/Hauler
Mr. Pickle	1456 Hulse Way	Interceptor	Never	
Neil Hafley School	849 Northgate	Interceptor	Never	
New China	1457 W Yosemite	Interceptor	6 Months	Sisk
Nic's Place	160 W Center	None		
ONO Hawaiian	2152 Daniels St.	Interceptor	3 Months	Sisk
Pacos Taqueria	275 W Louise	Interceptor	Yearly	Premier
Panda Express	1467 Hulse Way	Interceptor	3 Months	ETS
Panda Express	2130 Daniels St.	Interceptor	3 Months	ETS
Papa Joe's BBQ	211 E Yosemite	None		
Papa John's Pizza	1248 W Lathrop	Floor	Never	
Papa Murphy's	552 N Main	Interceptor	Never	
Saigon Town Noodles	1311 Historical Plaza Way	Interceptor	Never	
Pizza & Pints	449 N Main	None		
Pizza Guys	520 E Yosemite Ave	Floor	Yearly	Unknown
Pizza Hut	920 N Main St.	Floor	Unknown	
Prestige Senior Living	1130 Empire Ave	Interceptor	6 Months	Sisk
Quiznos	127 Spreckels Ave	None		
Raley's	1280 W Lathrop	Interceptor	3 Months	SRC
Red Robbin	873 Lifestyle St	Interceptor	45 Days	Once Upon A Time
Round Table Pizza	2120 Daniels St.	Interceptor	Never	
Round Table Pizza	253 Spreckels Ave	Interceptor	3 times per year	Pioneer Liquid Trans.
Safeway	1187 S Main	Interceptor	3 Months	Liquid Env. Solutions
Sakana Japan Bistro	1512 W Yosemite	Interceptor	Yearly	SRC
Savemart Supermarket	1172 N Main	Floor	3 Months	SRC
Savemart Supermarket	1431 W Yosemite	Interceptor	3 Months	SRC
Sicily Pizza (Happy Pizza)	1166 E Yosemite	None		
Sierra High School	1700 Thomas Street	Interceptor	Never	
Silver Chop Stick	293 W Louise	Interceptor	Yearly	Premium

Name	Address	Control Device	Service Frequency	Pumper/Hauler
Stella Brockman School	763 Silverado Dr.	Interceptor	Never	
Straw Hat Pizza	1238 N Main	None		
Strings	1125 S Main	None		
Subway	1172 E Yosemite	None		
Subway	1186 N Main	None		
Subway	1235 W Yosemite	None		
Subway	2126 Daniels St	Floor	Yearly	Unknown
Subway	878 Lifestyle St	None		
Sunny Valley Smoked Meats	2475 W Yosemite	Interceptor	Monthly	SRC
Super Buffet	1405 E Yosemite	Interceptor	Unknown	
Taco Bell	201 Northgate Dr	Interceptor	3 Months	SRC
Taco Bell	421 E Yosemite	Interceptor	3 Months	SRC
Taqueria Nayarit	1124 W Yosemite	Out of Business		
The Codfather	290 N Main	Under Sink	Daily	Solid Waste
The Pub	1305 N Main	None		
Togo's Eatery	1115 S Main	None		
Tony & Mrs. K Café	1195 E Yosemite	Floor	Yearly	Unknown
Uncle Franks Grill	305 N Union	Interceptor	3 Months	HP Commodities
Village Sandwich Shoppe	123 W Yosemite	None		
Waffle Shop	1021 N Main	Floor	As Needed	Sisk
Wal-Mart	1205 S Main	Interceptor	3 to 4 times a (Y)	Liquid Env. Solutions
Walter Woodward School	575 Tannehill Dr.	Interceptor	Never	
Webers BBQ	825 Mellon Ave	Interceptor	Never	
Weinerschnitzel	1200 W Yosemite	Interceptor	Unknown	Unknown
Wendy's	1630 E Yosemite	Interceptor	3 Months	SRC
Zen Bakery	1316 Dupont Ct	Floor	Unknown	Unknown

APPENDIX

- **A - COMPLETED MANTECA FOG AND FOOD WASTE SURVEY FORMS**
- **B – BLANK SURVEY FORM**
- **C – CITY ISSUED LETTERS**

APPENDIX – A

**COMPLETED MANTECA FOG AND FOOD WASTE
SURVEY FORMS**

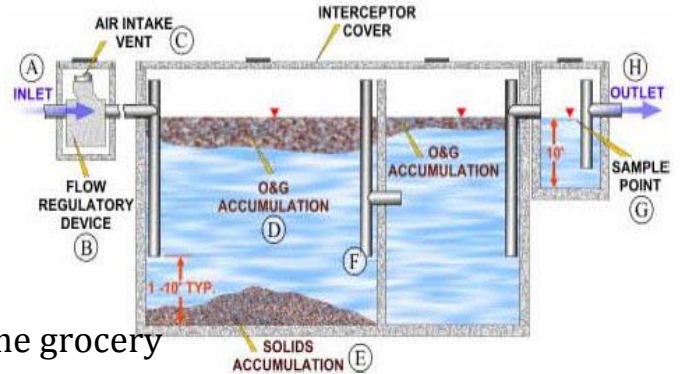


City of Manteca
FOG Program Survey

Survey # 1

Facility Information

Facility Name: Aki's Grocery
Location: 368 N Main Street
Business Address: Same
Telephone: (209) 626-8280
Representative: Elda Paneda
Business Description: Fast food with some grocery



FOG Control Device

Under Sink ___ **In Floor 2x** ___ Interceptor ___ Other ___ None ___
Size: 2 x 100 gallon
Drains Included:
Maintenance: **Vacuum Truck** ___ Manual ___ Frequency: 3 months
Name of Service Vendor:
Cost per Service: \$125
Copy of Invoice Provided: **Yes** No
Condition of Unit: good
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin: Standard. Every 3 months Sisk
Frequency of Service:
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: Recycle OCC, Turbo would work.



Two in the ground grease traps

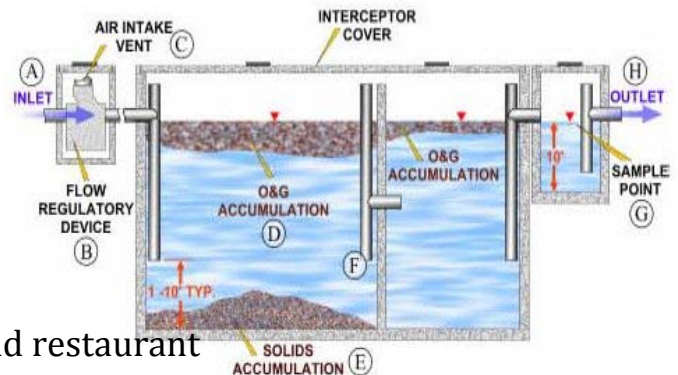


City of Manteca FOG Program Survey

Survey # 2

Facility Information

Facility Name: Applebee's
Location: 1272 E Yosemite
Business Address: Same
Telephone: (209) 824-4499
Representative: Hector
Business Description: Full service bar and restaurant



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐
Size: 1500 gallon
Drains Included:
Maintenance: **Vacuum Truck** ☒ Manual ☐ Frequency: Not known
Name of Service Vendor:
Cost per Service:
Copy of Invoice Provided: Yes **No**
Condition of Unit: New
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin: They have an internal system. See pictures
Frequency of Service:
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: Waste is estimated to be 70% food.
Trash can contain some glasses and plates.



New and used oil storage



City of Manteca
FOG Program Survey

Survey # 3

Facility Information

Facility Name: Athens Burbers

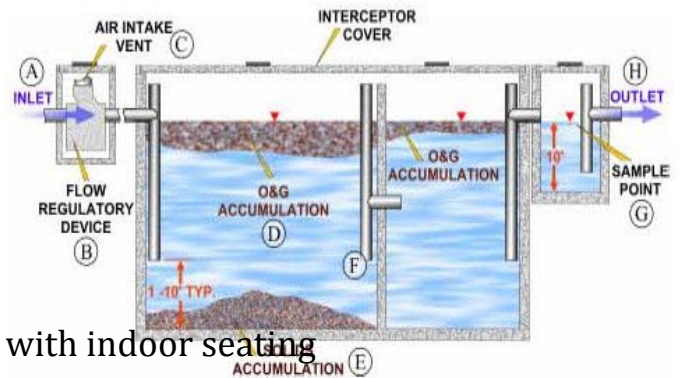
Location: 306 W Yosemite

Business Address: Same

Telephone: (209) 825-7111

Representative: Tricia Taxidix

Business Description: Burgers and salad with indoor seating



FOG Control Device

Under Sink ___ In Floor ___ **Interceptor** ___ Other ___ None ___

Size: 1000 gallon

Drains Included:

Maintenance: **Vacuum Truck** ___ Manual ___ Frequency: 2 times a year

Name of Service Vendor: HP Commodities

Cost per Service: Free, par of oil deal

Copy of Invoice Provided: **Yes** No

Condition of Unit: Old

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: 200 gallons

Frequency of Service: As needed

Cost of Service Free

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: They estimate 30% food waste.

Turbo will work

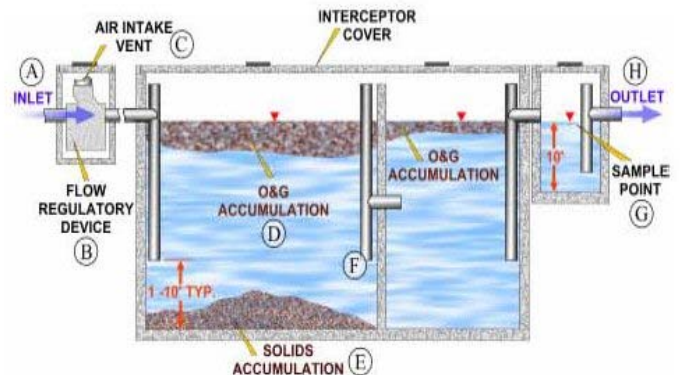


City of Manteca
FOG Program Survey

Survey # 4

Facility Information

Facility Name: Baskin Robbins
Location: 970 N Main
Business Address: Same
Telephone: (209) 239-1031
Representative: Joe Mashni
Business Description: Ice cream



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes **No**

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work. Joe estimates 10% food. No disposal.

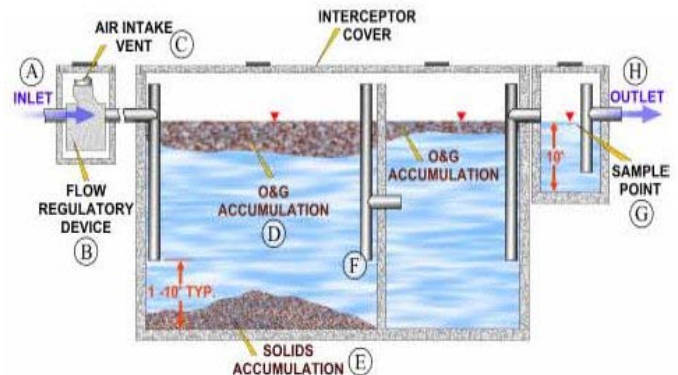


City of Manteca
FOG Program Survey

Survey # 4A

Facility Information

Facility Name: Baskin Robbins
Location: 1111 S. Main
Business Address: Same
Telephone: (209) 823-1810
Representative: Frieda
Business Description: Ice Cream



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☒

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes ☐ No ☐

Condition of Unit:

Visible Flow Regulating Device: Yes ☐ No ☐

Is There a Rendering Bin: Yes ☐ No ☒

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Solid Waste

Dish Washing (Plate Scraping): Sink

Customer Disposal: Solid waste

Additional Notes on Back of Page: They had a problem with plugging in sink due to ice cream disposal. Now everything goes to trash. Turbo will work. Food about 25% by weight

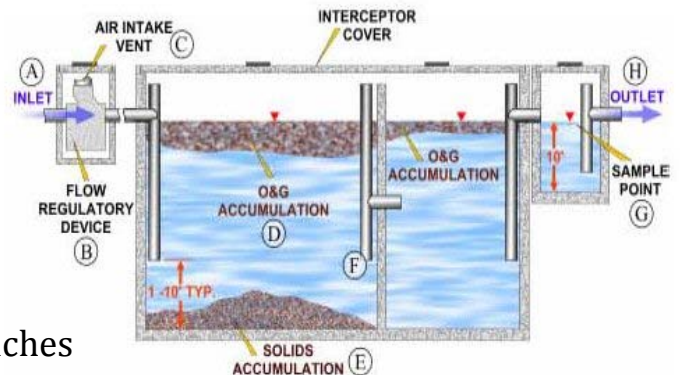


City of Manteca
FOG Program Survey

Survey # 5

Facility Information

Facility Name: Bean Leaf Cafe
Location: 1254 W Lathrop
Business Address: Same
Telephone: (209) 239-2326
Representative: Heather
Business Description: Coffee and sandwiches



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes **No**

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: 10% food waste. They recycle everything they can through a county youth program. They only have a toaster oven. Turbo will work.

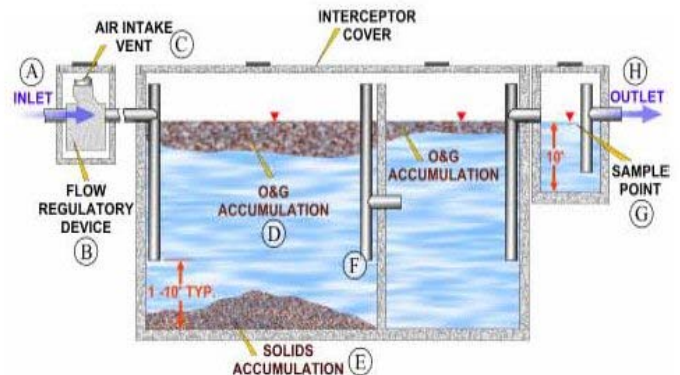


City of Manteca
FOG Program Survey

Survey # 6

Facility Information

Facility Name: Billie Hills BBQ
Location: 106 Pierce
Business Address: Same
Telephone: (209) 239-1227
Representative: Brenda David(owner)
Business Description: BBQ Restaurant



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: **Yes** No Sisk

Size of Rendering Bin: Standard

Frequency of Service: Weekly

Cost of Service The get about \$25 per month

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: They estimate about 60% food waste in trash. Turbo will work



Front of restaurant

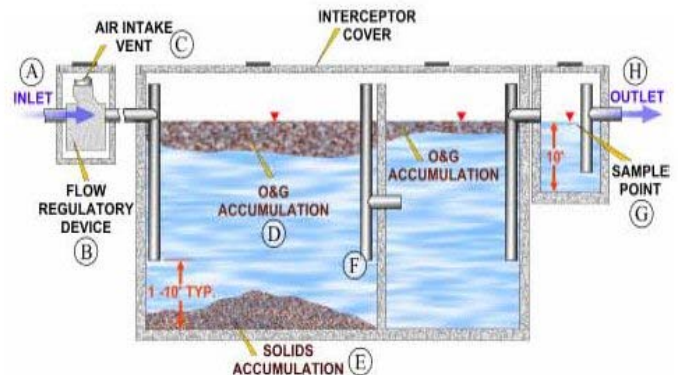


City of Manteca
FOG Program Survey

Survey # 7

Facility Information

Facility Name: Black Bear Diner
Location: 1701 E Yosemite
Business Address: Same
Telephone: (209) 239-6400
Representative: Marlene
Business Description: Large Cafe



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐

Size: 1500

Drains Included: Floors and Sinks

Maintenance: **Vacuum Truck** ☐ Manual ☐ Frequency:

Name of Service Vendor: SRC

Cost per Service: \$300

Copy of Invoice Provided: Yes **No**

Condition of Unit: In the grass, could have I&I

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: Standard

Frequency of Service: 2 months

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work. Manager estimates 40% food.



Interceptor in south landscaping of restaurant

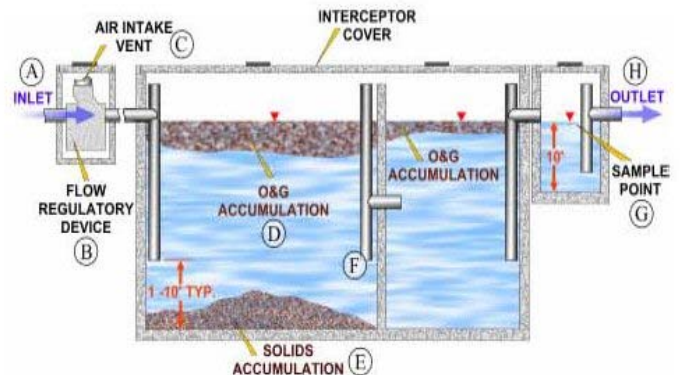


City of Manteca
FOG Program Survey

Survey # 8

Facility Information

Facility Name: Burger King
Location: 700 N Main
Business Address: Same
Telephone: (209) 239-9261
Representative: Janete
Business Description: Fast Food



FOG Control Device

Under Sink ___ In Floor ___ **Interceptor** ___ Other ___ None ___

Size: 1500

Drains Included: Floors and sinks

Maintenance: **Vacuum Truck** ___ Manual ___ Frequency: 4 times a year

Name of Service Vendor: SRC

Cost per Service: \$300

Copy of Invoice Provided: **Yes** No

Condition of Unit: Ok

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: Standard

Frequency of Service: As needed

Cost of Service Free

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work

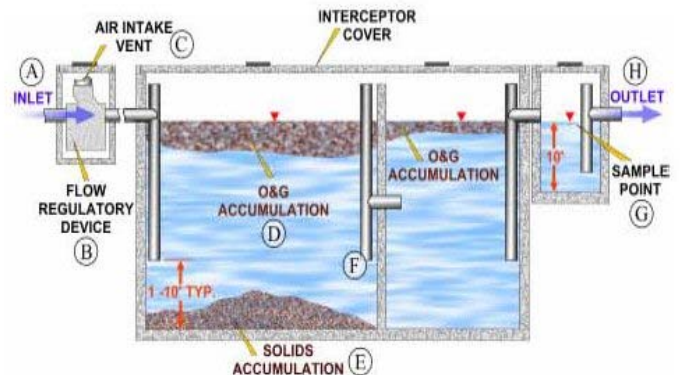


City of Manteca
FOG Program Survey

Survey # 9

Facility Information

Facility Name: Café Aroma
Location: 1499 W Yosemite
Business Address: Same
Telephone: (209) 824-9978
Representative: Joe
Business Description: Restaurant



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes **No**

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Almost no food waste. Oven only

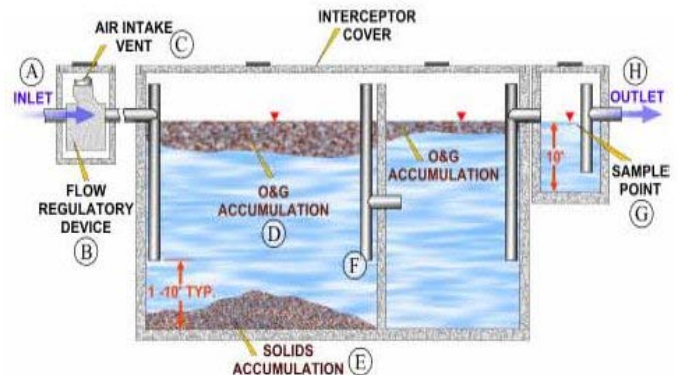


City of Manteca FOG Program Survey

Survey # 10

Facility Information

Facility Name: Carl's Jr. Restanurant
Location: 1489 Hulsey Way
Business Address: Same
Telephone: (209) 825-7190
Representative: Jacky Manager
Business Description: Fast Food



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐

Size: 1,500

Drains Included: Floor and Sinks

Maintenance: **Vacuum Truck** ☐ Manual ☐ Frequency: 4 time a year

Name of Service Vendor: Env. Pumping Service, 866-747-0237

Cost per Service: \$270

Copy of Invoice Provided: **Yes** No

Condition of Unit: Ok

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: Standard

Frequency of Service: Weekly

Cost of Service Free

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work



Interceptor in landscaping behind restaurant

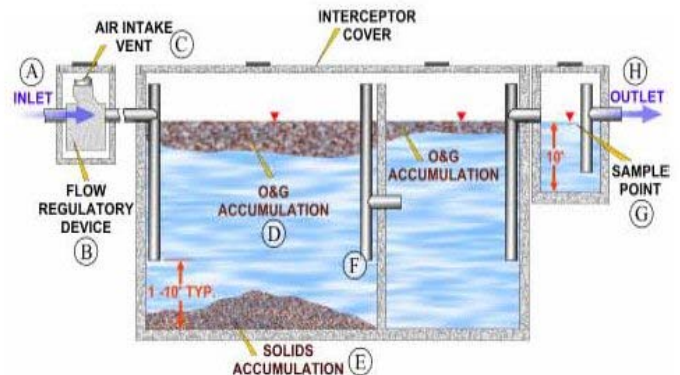


City of Manteca FOG Program Survey

Survey # 11

Facility Information

Facility Name: Carl's Jr.
Location: 1465 W Yosemite
Business Address: Same
Telephone: (209) 239-7705
Representative: Cynthia
Business Description: Fast Food



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☐ Other ☐ None ☐
Size: 1500 gallon
Drains Included: Floors and sinks
Maintenance: **Vacuum Truck** ☐ Manual ☐ Frequency: 4 times a year
Name of Service Vendor: Env. Pumping Service 866-747-0237
Cost per Service: \$270
Copy of Invoice Provided: **Yes** No
Condition of Unit: ok
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin: Standard
Frequency of Service: As needed, One More Time
Cost of Service Free

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work



Rendering bin inside restaurant

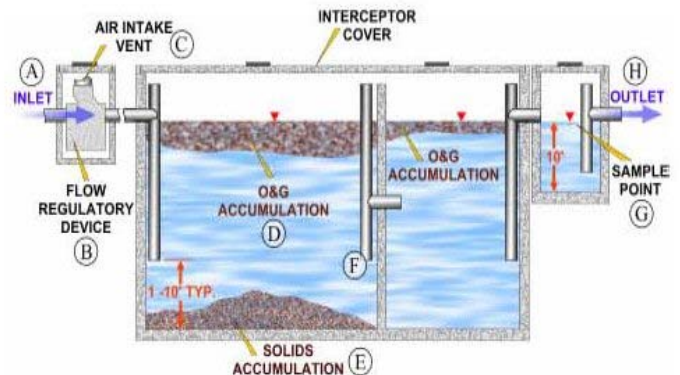


City of Manteca
FOG Program Survey

Survey # 12

Facility Information

Facility Name: Carl's Jr.
Location: 990 N Main
Business Address: Same
Telephone: (209) 239-5851
Representative: Jaun Carls
Business Description: Fast Food



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin:

Frequency of Service: Two times a week

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Manager did not know of a grease trap. I could not find anything. Turbo will work.



City of Manteca
FOG Program Survey

Survey # 13

Facility Information

Facility Name: Carniceria Rosita

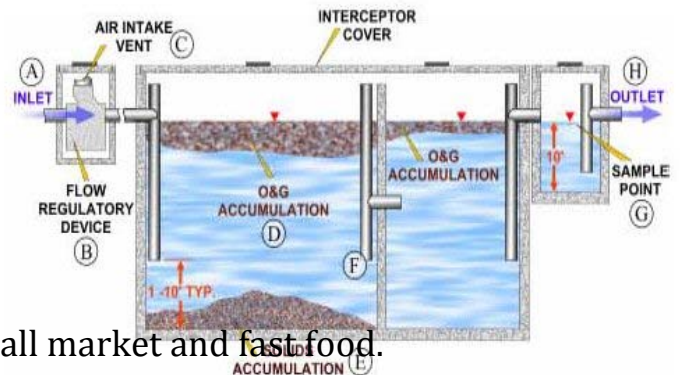
Location: 1297 N Main St.

Business Address: Same

Telephone: (209) 239-6238

Representative: Lety (with a translator)

Business Description: Butcher with a small market and fast food.



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: **Yes** No Golden Gate Env. LLC 866-932-7851

Size of Rendering Bin: Standard Oil only

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Open drain in back. Turbo will not work.

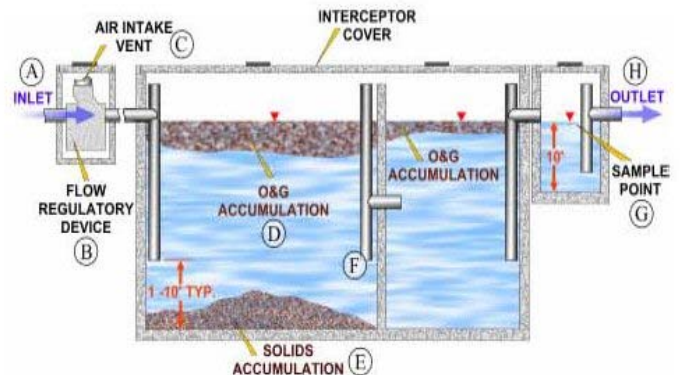


City of Manteca
FOG Program Survey

Survey # 14

Facility Information

Facility Name: Casa Flores
Location: 1160 N Main
Business Address: Same
Telephone: (209) 239-7775
Representative: Efrin
Business Description: Mexican



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: CGC of Fresno

Frequency of Service: 3 times a month

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: OCC recycle. Turbo will work

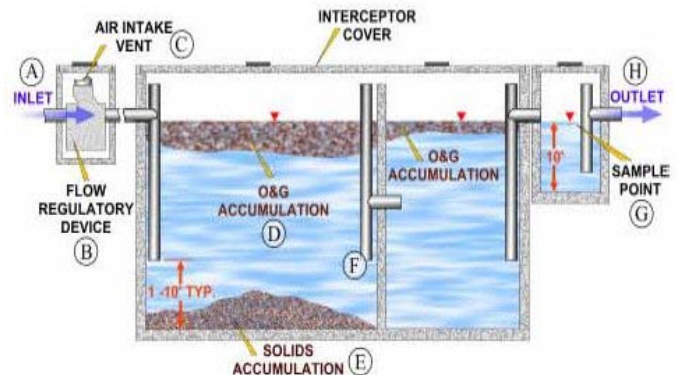


City of Manteca FOG Program Survey

Survey # 15

Facility Information

Facility Name: Casino Real
Location: 1355 N Main
Business Address: Same
Telephone: (209) 239-1455
Representative: Rick Dunn and Randy
Business Description: Casino



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐

Size: 1,500 gallon

Drains Included: Floor drains and sinks

Maintenance: **Vacuum Truck** ☒ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes **No**

Condition of Unit: New

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: Standard

Frequency of Service: 2 times a week

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: This is part of Ernie's Food and Sprits. They are the same business with on interceptor. Turbo will work

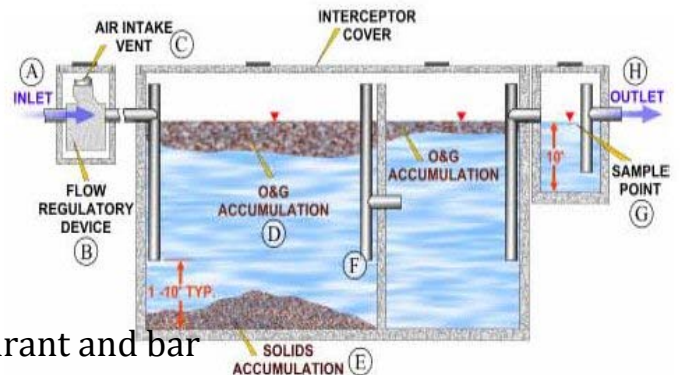


City of Manteca
FOG Program Survey

Survey # 16

Facility Information

Facility Name: Chili's
Location: 2262 Daniels
Business Address: Same
Telephone: (209) 824-5200
Representative: Christen and Justin
Business Description: Full service restaurant and bar



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐
Size: 1500 gallon
Drains Included:
Maintenance: **Vacuum Truck** ☒ Manual ☐ Frequency: 3 months
Name of Service Vendor: SRC
Cost per Service:
Copy of Invoice Provided: Yes **No**
Condition of Unit:
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: Yes **No** No fryer
Size of Rendering Bin:
Frequency of Service:
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: No disposal, Turbo will work. Food about 1/2 by weight.



Kitchen with food waste bin



Mop sink to interceptor



City of Manteca
FOG Program Survey

Survey # 17

Facility Information

Facility Name: China Express (Food-4-Less)

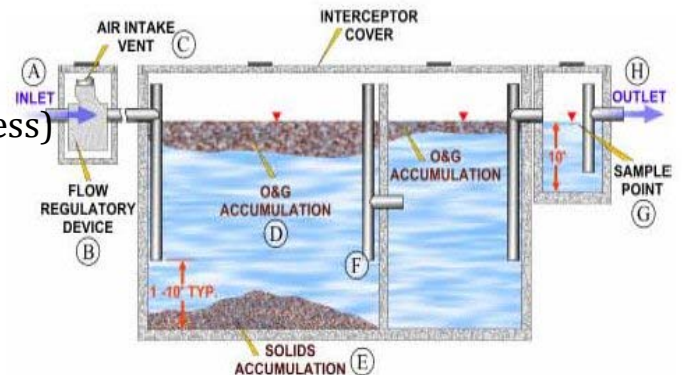
Location: 1184 E Yosemite

Business Address: Same

Telephone: (209) 824-3162

Representative: Melissa

Business Description:



FOG Control Device

Under Sink ___ In Floor ___ **Interceptor** ___ Other ___ None ___

Size: 1500

Drains Included:

Maintenance: **Vacuum Truck** ___ Manual ___ Frequency: 4 times a year

Name of Service Vendor: Clarks

Cost per Service: \$450

Copy of Invoice Provided: **Yes** No

Condition of Unit:

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: Standard

Frequency of Service: 2 weeks

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work

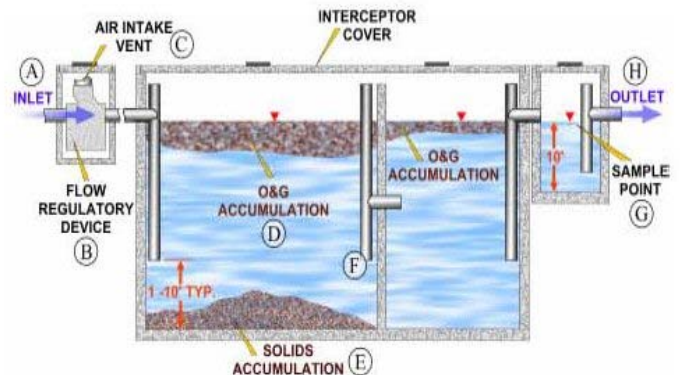


City of Manteca
FOG Program Survey

Survey # 18

Facility Information

Facility Name: Chipotle
Location: 1440 Husley Way
Business Address: Same
Telephone: (209) 823-1017
Representative: Lauren Applegate
Business Description: Frast Food



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐
Size: 1000 gallon
Drains Included: Sinks and Floors
Maintenance: **Vacuum Truck** ☒ Manual ☐ Frequency: Annual?
Name of Service Vendor: Pipe Maintenance CA 877-793-6272
Cost per Service: ?
Copy of Invoice Provided: **Yes** No
Condition of Unit: Ok
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: Yes No
Size of Rendering Bin: Standard
Frequency of Service: As needed
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work

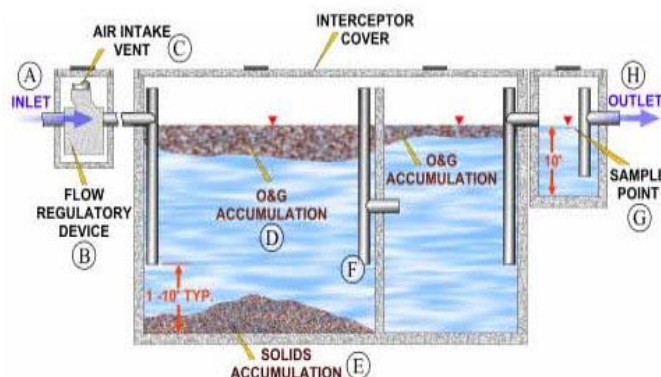


City of Manteca
FOG Program Survey

Survey # 19

Facility Information

Facility Name: Chubby's Restaurant
Location: 737 N Main
Business Address: Same
Telephone: (209) 824-1546
Representative: Fatima
Business Description: Restaurant



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin:

Frequency of Service: Monthly

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Recycle OCC. Turbo will work.

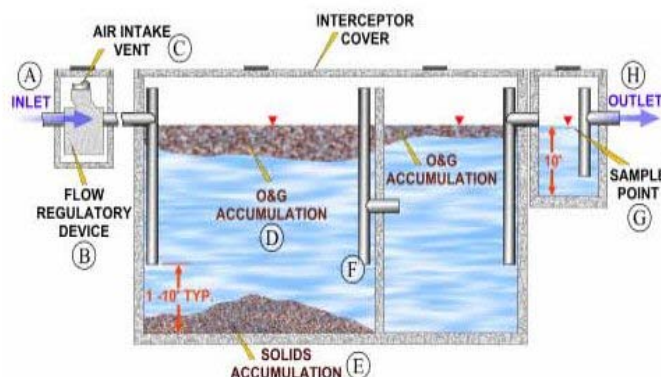


City of Manteca
FOG Program Survey

Survey # 20

Facility Information

Facility Name: Chuck's Sports Bar
Location: 1447 Historical Plaza Way
Business Address: Same
Telephone: (209)
Representative: David
Business Description: Sports Bar



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: Standard

Frequency of Service: Monthly

Cost of Service Free

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: They have a full kitchen. They should have an interceptor. They say about 25% food in trash. Turbo will work.



Used oil storage

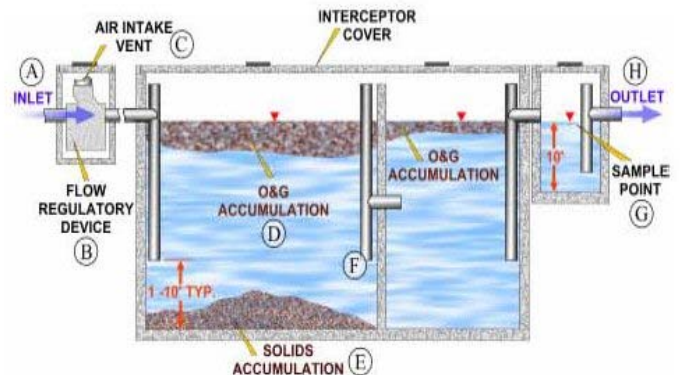


City of Manteca
FOG Program Survey

Survey # 21

Facility Information

Facility Name: Cindy's Donuts
Location: 520 N Main
Business Address: Same
Telephone: (209) 825-3069
Representative: Watana Chai
Business Description:



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐
Size: 750 gallon
Drains Included:
Maintenance: Vacuum Truck ☐ Manual ☐ Frequency: 3 months
Name of Service Vendor: Landlord takes care of it.
Cost per Service: \$700/year
Copy of Invoice Provided: Yes **No**
Condition of Unit: new
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin: Standard
Frequency of Service: As needed
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work



Used oil storage and grease interceptor on east side of building.

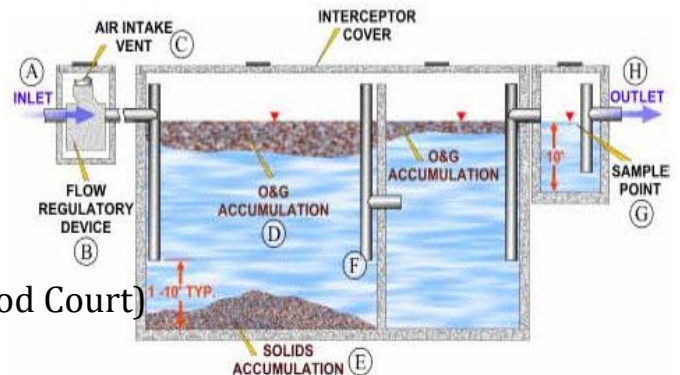


City of Manteca
FOG Program Survey

Survey # 22

Facility Information

Facility Name: Costco
Location: 2440 Daniels St.
Business Address: Same
Telephone: (209) 825-8200
Representative: Vince (deli), Charlie (Food Court)
Business Description:



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor 3X** Other ☐ None ☐
Size: 1500 gallon
Drains Included: Sinks and floor drains
Maintenance: **Vacuum Truck** ☐ Manual ☐ Frequency: 3 months
Name of Service Vendor: ? part of national contract
Cost per Service:
Copy of Invoice Provided: Yes **No**
Condition of Unit: new
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin: Standard
Frequency of Service:
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Solid waste
Dish Washing (Plate Scraping): Solid waste
Customer Disposal: Solid waste

Additional Notes on Back of Page: They have a composter pickup food waste from trimmings. They capture oil from chicken ovens that go to rendering. Turbo will work for food court waste.



Costco kitchen and used oil storage.

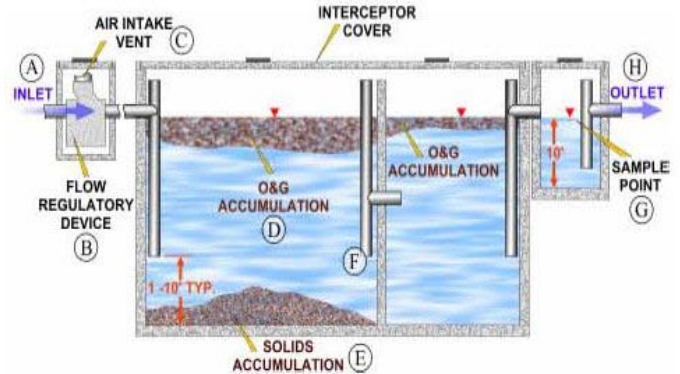


City of Manteca
FOG Program Survey

Survey # 23

Facility Information

Facility Name: Country Skilletts
Location: 1471 W Yosemite
Business Address: Same
Telephone: (209) 665-7177
Representative: Shank (owner)
Business Description: Breakfast Cafe



FOG Control Device

Under Sink ___ In Floor ___ **Interceptor** ___ Other ___ None ___
Size: About 1,000 gallon
Drains Included: Floors and sinks
Maintenance: Vacuum Truck ___ Manual ___ Frequency: It has not been pumped in the 1 ½ years they have been in business
Name of Service Vendor:
Cost per Service:
Copy of Invoice Provided: Yes **No**
Condition of Unit: Ok
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin: Standard
Frequency of Service: As needed
Cost of Service + \$30 to \$40 per month

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work.



Interceptor behind restaurant.

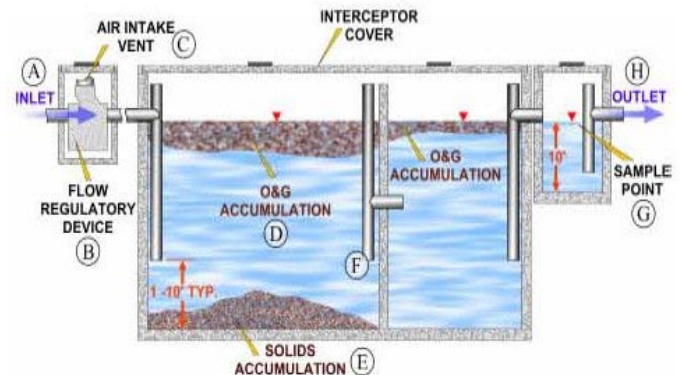


City of Manteca
FOG Program Survey

Survey # 24

Facility Information

Facility Name: Crush Frozen Yogurt
Location: 882 Lifestyle St.
Business Address: Same
Telephone: (209) 239-5384
Representative: Mackenzie
Business Description: Dessert



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☒

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes ☐ No ☐

Condition of Unit:

Visible Flow Regulating Device: Yes ☐ No ☐

Is There a Rendering Bin: Yes ☐ No ☒

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: None. Premade container poured into machine.

Dish Washing (Plate Scraping): Wash in sink

Customer Disposal: Trash

Additional Notes on Back of Page: Everything to trash. Turbo will work. Food about 25% of waste.



There is no food prep. Yogurt is poured into machines.

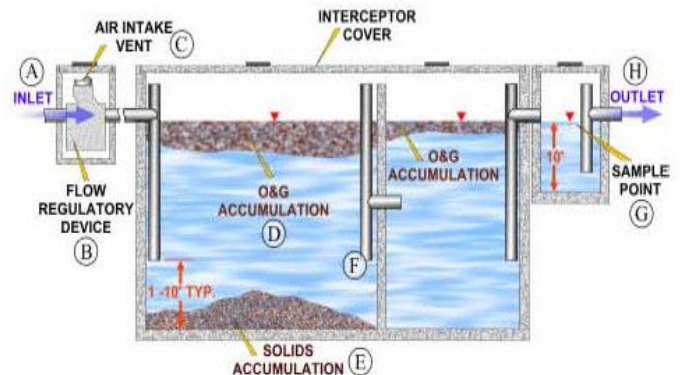


City of Manteca
FOG Program Survey

Survey # 25

Facility Information

Facility Name: Daily Fresh Donuts
Location: 1154 W Yosemite
Business Address: Same
Telephone: (209) 751-9440
Representative: Sovuth
Business Description: Donut shop



FOG Control Device

Under Sink ___ In **Floor** ___ Interceptor ___ Other ___ None ___
Size: 25 gallon Big Dipper
Drains Included: Sinks only
Maintenance: Vacuum Truck ___ **Manual** ___ Frequency: Weekly
Name of Service Vendor: None
Cost per Service: N/A
Copy of Invoice Provided: Yes No N/a
Condition of Unit: OK
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: Yes **No They filter and recycle**
Size of Rendering Bin:
Frequency of Service:
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: They have a \$4,000 oil filter system



Used oil filter



Big Dipper under the sink

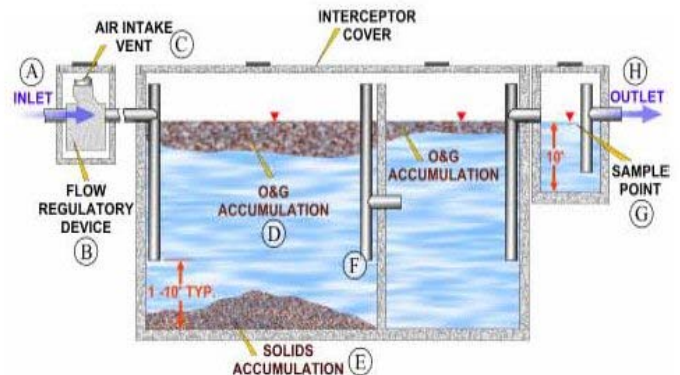


City of Manteca FOG Program Survey

Survey # 26

Facility Information

Facility Name: Dairy Queen
Location: 1138 S. Main
Business Address: Same
Telephone: (209) 823-3108
Representative: Zack
Business Description:



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☒

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes ☐ No ☐

Condition of Unit:

Visible Flow Regulating Device: Yes ☐ No ☐

Is There a Rendering Bin: **Yes** ☒ No ☐

Size of Rendering Bin: Standard

Frequency of Service: As needed

Cost of Service Free

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Sink and trash

Customer Disposal: Trash

Additional Notes on Back of Page: Older place. Burgers are cooked in a machine. Grease is captured and taken to solid waste. Oil goes to rendering. Turbo will work. Food is about ½ by weight.



Burger grill with grease capture.



Grease captured in grill

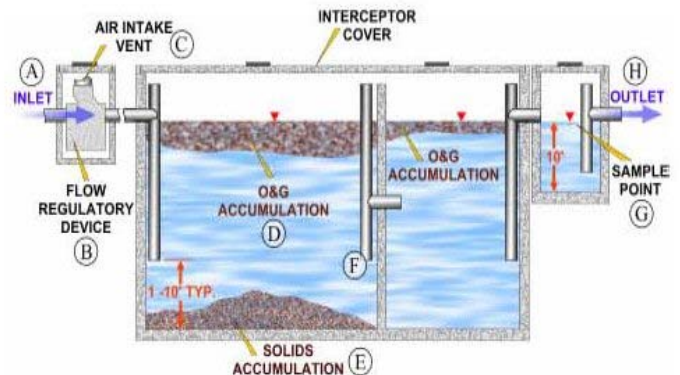


City of Manteca
FOG Program Survey

Survey # 27

Facility Information

Facility Name: De Vega Bros.
Location: 1139 S. Main
Business Address: Same
Telephone: (209)
Representative:
Business Description: **CLOSED**



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ None ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes No

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste:

Dish Washing (Plate Scraping):

Customer Disposal:

Additional Notes on Back of Page:

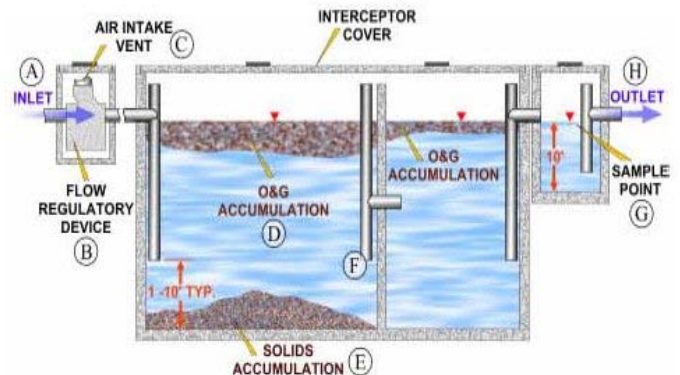


City of Manteca
FOG Program Survey

Survey # 28

Facility Information

Facility Name: Del Taco
Location: 1194 E Yosemite
Business Address: Same
Telephone: (209) 239-0233
Representative: Sydni
Business Description: Fast Food



FOG Control Device

Under Sink ___ In Floor ___ **Interceptor** ___ Other ___ None ___

Size: 1500

Drains Included: Floors and Sinks

Maintenance: **Vacuum Truck** ___ Manual ___ Frequency: 6 months

Name of Service Vendor: Mountain Valley Septic, Oakdale CA

Cost per Service: \$375

Copy of Invoice Provided: **Yes** No

Condition of Unit: ok

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: **Yes** No Sun Valley Service

Size of Rendering Bin: Standard

Frequency of Service: As needed

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work. About 40% food.



Used oil storage

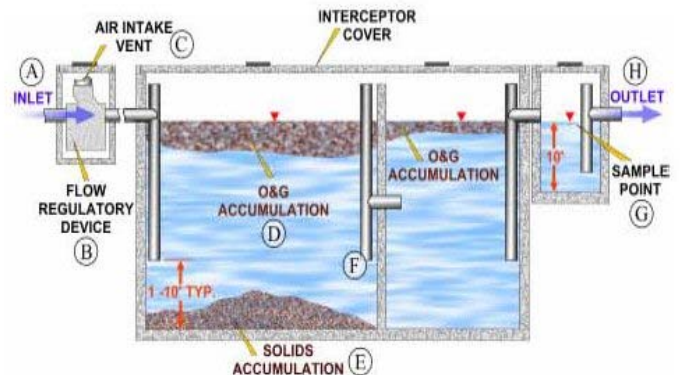


City of Manteca
FOG Program Survey

Survey # 29

Facility Information

Facility Name: Denny's
Location: 1135 S Main Street
Business Address: Same
Telephone: (209) 825-2050
Representative: Dianne
Business Description: Cafe



FOG Control Device

Under Sink ___ In Floor ___ **Interceptor** ___ Other ___ None ___

Size:

Drains Included:

Maintenance: Vacuum Truck ___ Manual ___ Frequency: Unknown

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin:

Frequency of Service: As needed

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: No one can answer questions. The apparent contact is Lewis 209-982-0215. Turbo will work.



Used oil being picked up

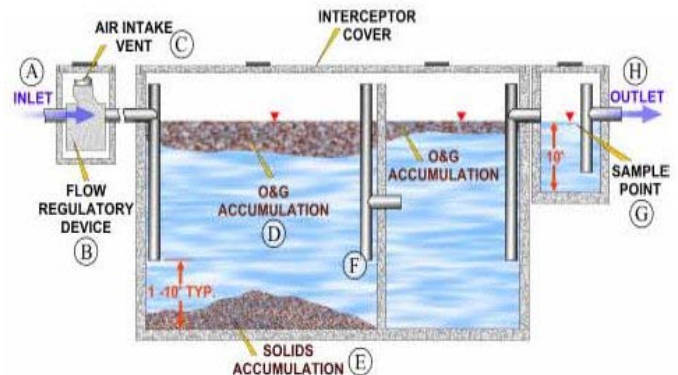


City of Manteca FOG Program Survey

Survey # 30

Facility Information

Facility Name: Doctor's Hospital
Location: 1205 E North Street
Business Address: Same
Telephone: (209) 823-3111
Representative: Gary Modlan
Business Description: Hospital



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐

Size: 1500

Drains Included: Sinks only, no floor drains

Maintenance: **Vacuum Truck** ☐ Manual ☐ Frequency: 6 months

Name of Service Vendor: Clark Septic

Cost per Service: \$450

Copy of Invoice Provided: Yes **No**

Condition of Unit: Ok

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: Standard

Frequency of Service: As needed

Cost of Service They pay a small fee

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash, but there is a disposal

Customer Disposal: Trash

Additional Notes on Back of Page: Food is not supposed to go into the disposal. Turbo will not work



Interceptor in loading area for kitchen

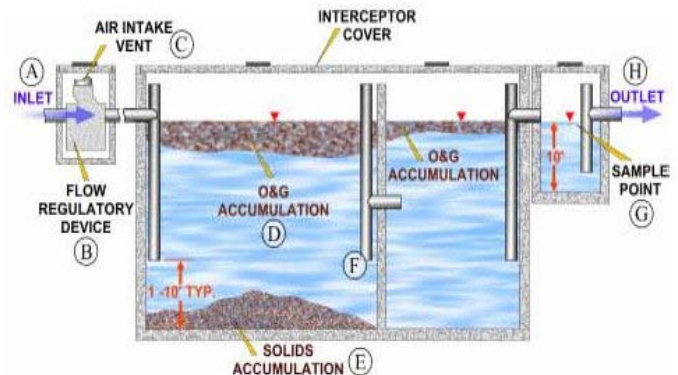


City of Manteca
FOG Program Survey

Survey # 31

Facility Information

Facility Name: Eckert Cold Storage
Location: 757 Moffat Blvd
Business Address: Same
Telephone: (209) 823-3181
Representative: Mike (Plant Manager)
Business Description: Food Processor



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes ☐ No ☐

Condition of Unit:

Visible Flow Regulating Device: Yes ☐ No ☐

Is There a Rendering Bin: Yes ☐ No ☒

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Cattle feed

Dish Washing (Plate Scraping): N/A

Customer Disposal: N/A

Additional Notes on Back of Page: They steam cook then freeze cabbage and bell peppers. They also recycle wood pallets.

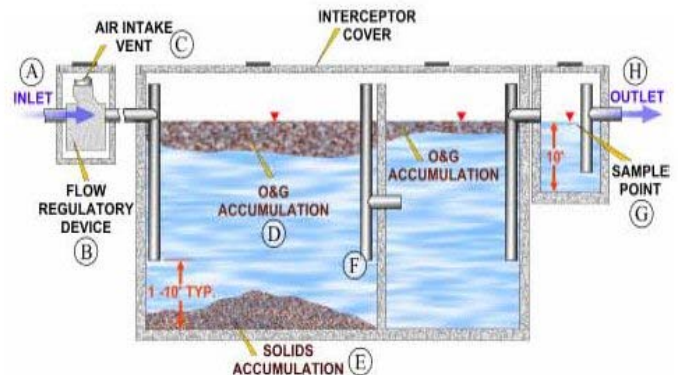


City of Manteca FOG Program Survey

Survey # 32

Facility Information

Facility Name: El Jardin
Location: 1111 South Main
Business Address: Same
Telephone: (209) 825-8552
Representative: Chris
Business Description: Restaraunt



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐
Size: 3,000
Drains Included: Floors and sinks
Maintenance: **Vacuum Truck** ☐ Manual ☐ Frequency: Annual
Name of Service Vendor: SRC
Cost per Service: \$690
Copy of Invoice Provided: **Yes** No
Condition of Unit: OK
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin: Standard
Frequency of Service: As needed
Cost of Service Free

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: Property manager pumps trap.
Susan at 209-599-1800 ext. 22. Turbo will work

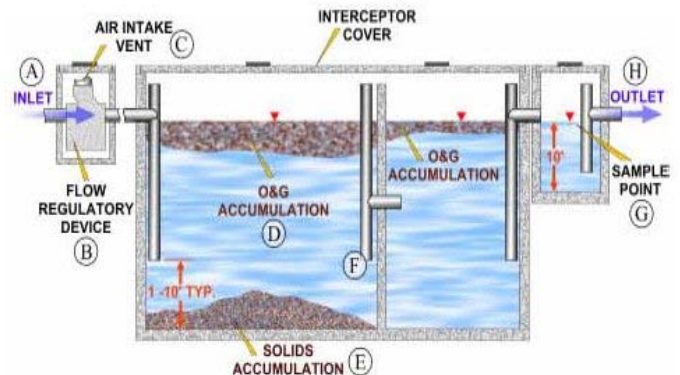


City of Manteca
FOG Program Survey

Survey # 33

Facility Information

Facility Name: El Pollo Loco
Location: 1730 E Yosemite
Business Address: Same
Telephone: (209) 239-0100
Representative: Miriam
Business Description: Grilled fast food



FOG Control Device

Under Sink ___ In Floor ___ **Interceptor** ___ Other ___ None ___

Size: 1500

Drains Included: Floors and Sinks

Maintenance: **Vacuum Truck** ___ Manual ___ Frequency: 2 to 3 months

Name of Service Vendor: SRC

Cost per Service: \$300

Copy of Invoice Provided: **Yes** No

Condition of Unit: ok

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: Standard

Frequency of Service: As needed

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work

[illegible]

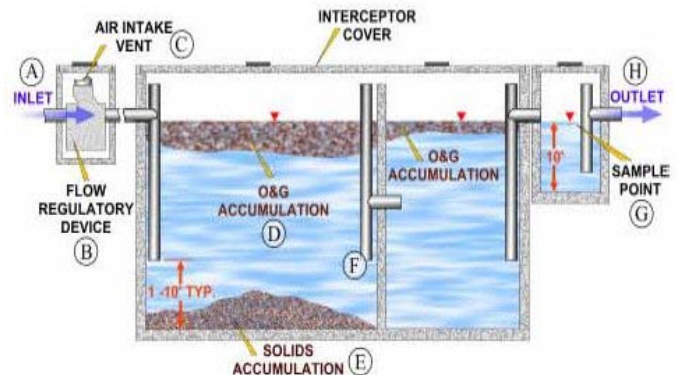


City of Manteca
FOG Program Survey

Survey # 34

Facility Information

Facility Name: Emeritus Care
Location: 430 N Union
Business Address: Same
Telephone: (209)
Representative: Tim
Business Description: Senior Care Home



FOG Control Device

Under Sink ___ In Floor ___ **Interceptor** ___ Other ___ None ___
Size: 1200
Drains Included: Kitchen floors and sinks
Maintenance: **Vacuum Truck** ___ Manual ___ Frequency: 6 Months
Name of Service Vendor: SRC
Cost per Service: \$345
Copy of Invoice Provided: **Yes** No
Condition of Unit: New
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin: Standard
Frequency of Service: 2 months
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: Has 1 disposal for material after plate scraping but before dishwasher. Turbo will not work.

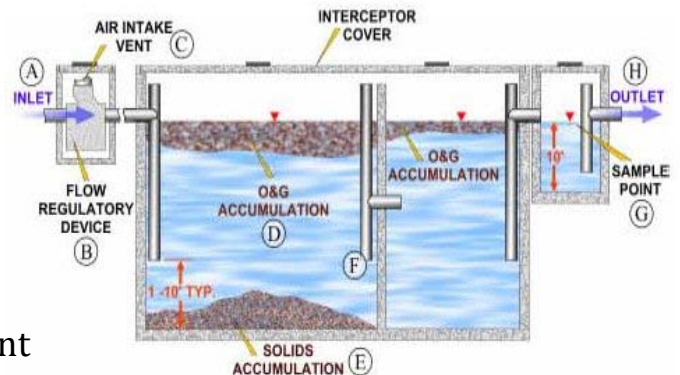


City of Manteca
FOG Program Survey

Survey # 35

Facility Information

Facility Name: Ernie's Food and Sprits
Location: 1351 N Main St.
Business Address: Same
Telephone: (209)
Representative: Brian
Business Description: High end restaurant



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐
Size: 1,500 gallon
Drains Included: floor drains and sinks
Maintenance: Vacuum Truck ☐ Manual ☐ Frequency: Twice a year
Name of Service Vendor:
Cost per Service:
Copy of Invoice Provided: Yes No
Condition of Unit:
Visible Flow Regulating Device: Yes No
Is There a Rendering Bin: Yes No
Size of Rendering Bin:
Frequency of Service: 2 times a month
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: No disposal. 10% food in trash.
This is part of Casio Real



City of Manteca
FOG Program Survey

Survey # 36

Facility Information

Facility Name: Fagundes Meats and Catering

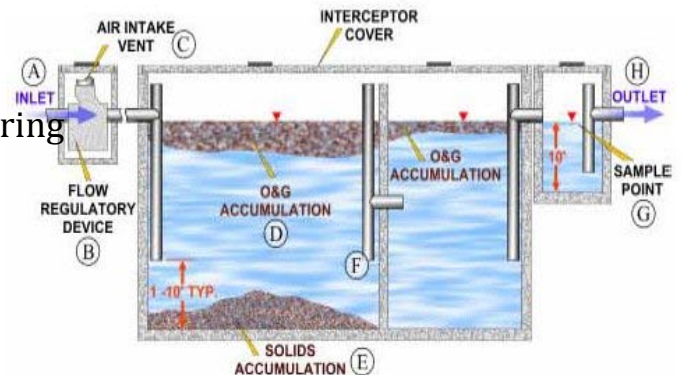
Location: 142 Jason Street

Business Address: Same

Telephone: (209) 239-4184

Representative: Frank

Business Description: Butcher and BBQ



FOG Control Device

Under Sink ☐ In **Floor** ☐ **Interceptor** ☐ Other ☐ None ☐ 2 traps, Big Dipper on a sink and an interceptor

Size: 25 gallon and 1500

Drains Included: Floors and sinks

Maintenance: **Vacuum Truck** ☐ Manual ☐ Frequency: 6 Months

Name of Service Vendor: AAA Septic

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Tallow takes fat and bone. Sac. Rendering

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Interceptor has an overflow drain.
Big Dipper material to tallow. Turbo will work.



Big Dipper under the sink



Interceptor with overflow outlet

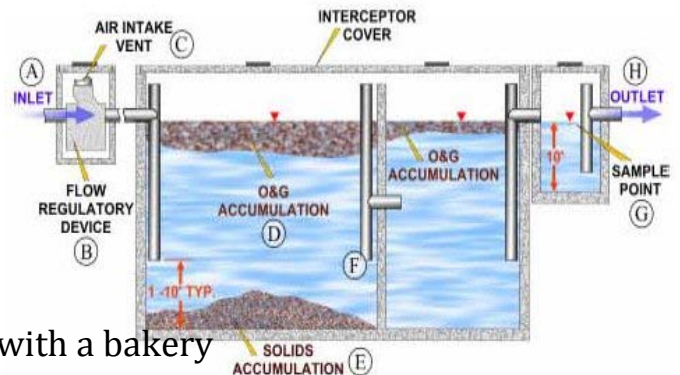


City of Manteca
FOG Program Survey

Survey # 37

Facility Information

Facility Name: Food-4-Less
Location: 131 Spreclels
Business Address: Same
Telephone: (209) 823-0806
Representative: Melisa
Business Description: Discount Grocery with a bakery



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐

Size:

Drains Included:

Maintenance: **Vacuum Truck** ☐ Manual ☐ Frequency: 3 months

Name of Service Vendor: Clark's Septic Service 209-537-6624

Cost per Service: \$450 to \$695

Copy of Invoice Provided: **Yes** No

Condition of Unit:

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: Yes **No**

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: China Express is part of store but has separate sewer. They do have a composted for food waste. They have rendering for meat scraps. Turbo will work.

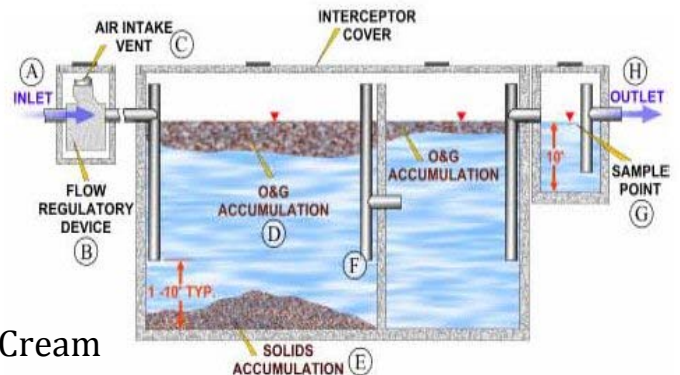


City of Manteca
FOG Program Survey

Survey # 38

Facility Information

Facility Name: Foster's Freeze
Location: 906 W Yosemite
Business Address: Same
Telephone: (209) 823-5691
Representative: Singh
Business Description: Fast Food and Ice Cream



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: Standard, HP Commodities

Frequency of Service: 3 weeks

Cost of Service Free

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: He tries to capture grease off the grill, then put in oil bin. Almost no food waste.

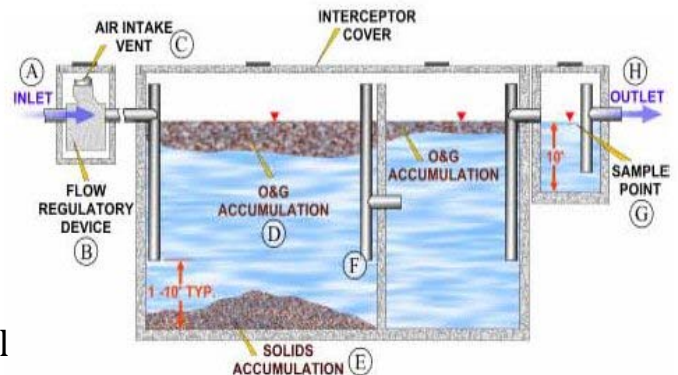


City of Manteca FOG Program Survey

Survey # 39

Facility Information

Facility Name: George McParland Annex
Location: 1370 London Ave.
Business Address: Same
Telephone: (209) 825-4281
Representative: Stephanie Huff
Business Description: Elementary School



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐

Size: 1500

Drains Included: Sinks and floor is food prep

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency: never

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes ☐ No ☐

Condition of Unit:

Visible Flow Regulating Device: Yes ☐ **No** ☒

Is There a Rendering Bin: Yes ☐ **No** ☒

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Turbo could be a problem due to other waste.

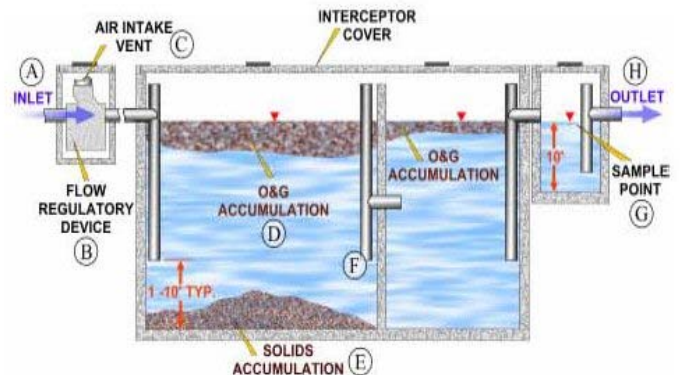


City of Manteca
FOG Program Survey

Survey # 40

Facility Information

Facility Name: GK Mongolian BBQ
Location: 1039 S Main
Business Address: Same
Telephone: (209) 824-4516
Representative: Andrew
Business Description: Sit down fast food



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin:

Frequency of Service: They take oil to another store for processing due to fire hazard at site.

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work. Waste is about ½ food by weight

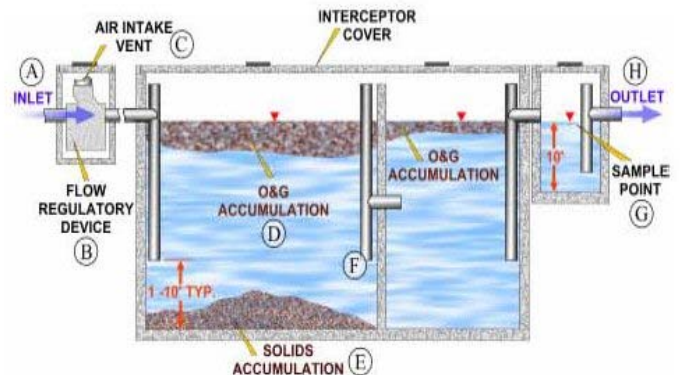


City of Manteca
FOG Program Survey

Survey # 41

Facility Information

Facility Name: Grocery Outlet
Location: 1391 E Yosemite
Business Address: Same
Telephone: (209) 239-8288
Representative: Debbie Tarr
Business Description: Discount grocery



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes **No**

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

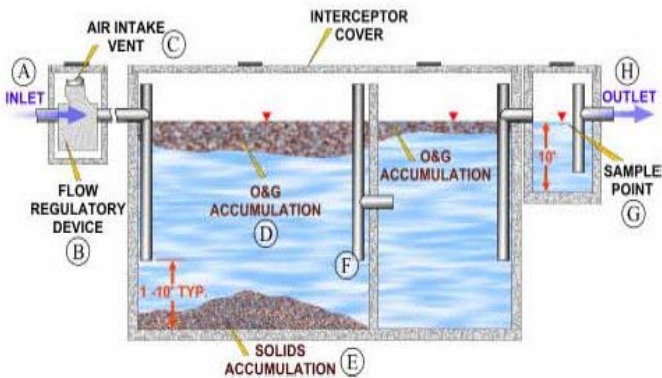
Additional Notes on Back of Page: Most expired food is donated.

Food comes ready to sell.



Facility Information

Facility Name: Guido’s Take and Bake
Location: 1192 W Louse
Business Address: Same
Telephone: (209) 239-6335
Representative: Tina
Business Description: Pizza take out raw



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None ☐**
Size:
Drains Included:
Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:
Name of Service Vendor:
Cost per Service:
Copy of Invoice Provided: Yes ☐ No ☐
Condition of Unit:
Visible Flow Regulating Device: Yes ☐ No ☐
Is There a Rendering Bin: Yes ☐ No ☐
Size of Rendering Bin:
Frequency of Service:
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: No cooking

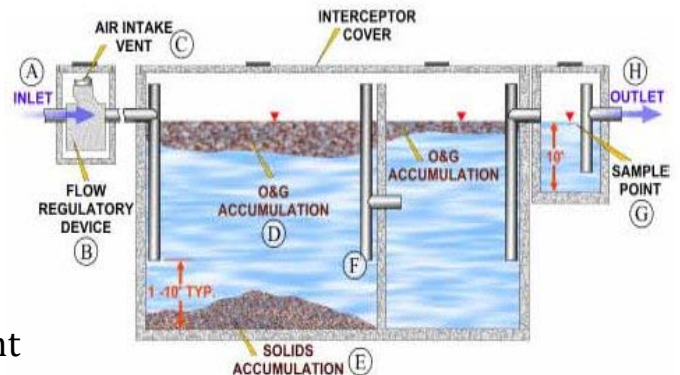


City of Manteca
FOG Program Survey

Survey # 43

Facility Information

Facility Name: Ho Suns Kitchen
Location: 1150 N Main
Business Address: Same
Telephone: (209) 239-8522
Representative: Sui (Simon)
Business Description: Chinese Restaurant



FOG Control Device

Under Sink ___ **In Floor** ___ Interceptor ___ Other ___ None ___
Size: 50 gallon
Drains Included: Sinks
Maintenance: Vacuum Truck ___ **Manual** ___ Frequency: 3 months
Name of Service Vendor: CGC of Fresno
Cost per Service: 0, part of oil deal
Copy of Invoice Provided: Yes **No**
Condition of Unit: old and small
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin: 60 gallon
Frequency of Service: 3 months
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work



City of Manteca
FOG Program Survey

Survey # 44

Facility Information

Facility Name: Hob Nob Bob's

Location: 1315 N Main

Business Address: Same

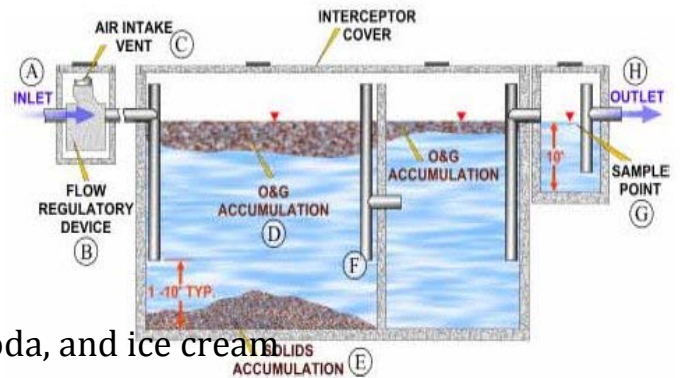
Telephone: (209) 825-2657

Representative: Bob

Business Description: Hot dogs, chips, soda, and ice cream

No fries or burgers

FOG Control Device



Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes **No**

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: No disposal, owner estimates 10% food waste. Turbo will work.

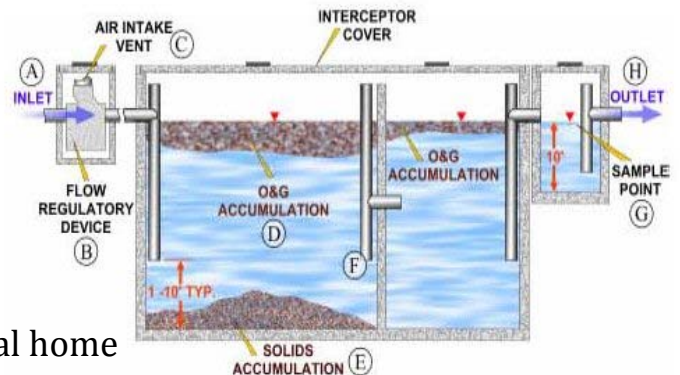


City of Manteca
FOG Program Survey

Survey # 45

Facility Information

Facility Name: Hong Kong Chinese
Location: 2028 Schaffhausen St.
Business Address: Same
Telephone: (209) 824-2938
Representative:
Business Description: This is a residential home



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ None ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes No

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Residential home



Residential Home

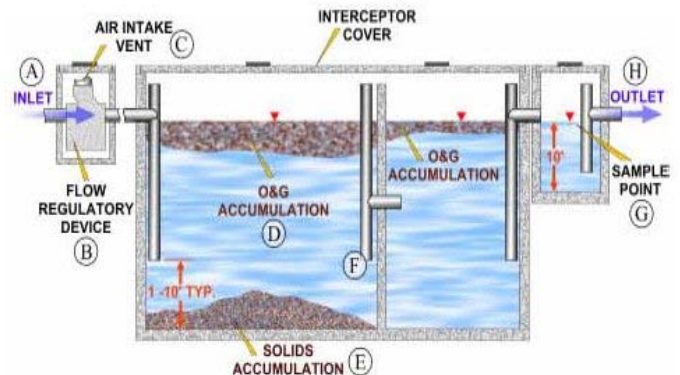


City of Manteca
FOG Program Survey

Survey # 46

Facility Information

Facility Name: IHOP
Location: 1150 E Yosemite
Business Address: Same
Telephone: (209) 825-3950
Representative: Joe Ramirez
Business Description: Restaurant



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐

Size:

Drains Included: Floor and sinks

Maintenance: **Vacuum Truck** ☐ Manual ☐ Frequency: 3 months

Name of Service Vendor: SRC

Cost per Service: ?

Copy of Invoice Provided: Yes **No**

Condition of Unit: Ok

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin:

Frequency of Service: Weekly, Sacramento Rendering

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: 40% food, turbo will work



Interceptor in parking lot

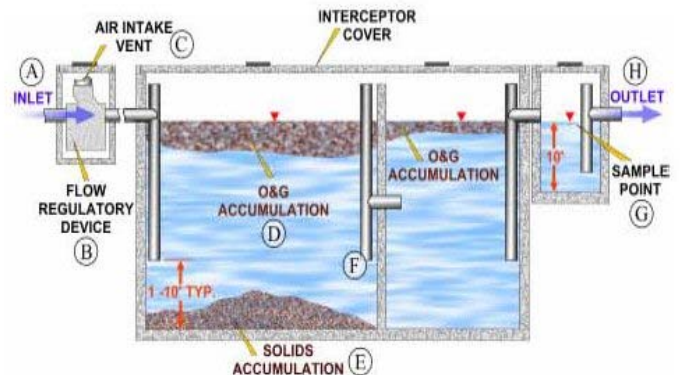


City of Manteca
FOG Program Survey

Survey # 47

Facility Information

Facility Name: In & Out Burger
Location: 1490 E Yosemite
Business Address: Same
Telephone: (800) 786-1000
Representative: Keegan Wallace
Business Description: Fast Food



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐
Size: 1600 gallon Jenson Precast
Drains Included:
Maintenance: **Vacuum Truck** ☒ Manual ☐ Frequency: 2 months
Name of Service Vendor: SRC
Cost per Service: \$330
Copy of Invoice Provided: **Yes** No
Condition of Unit: Ok
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin: Standard
Frequency of Service: Weekly
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: 50% to 70% food. Turbo will work

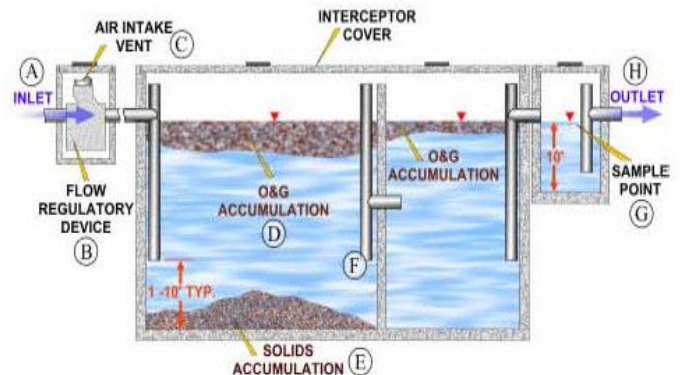


City of Manteca
FOG Program Survey

Survey # 48

Facility Information

Facility Name: Iron Horse Deli
Location: 301 E Yosemite
Business Address: Same
Telephone: (209) 823-3888
Representative: Viney Vaughn
Business Description: Fast Food



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ None ☐

Size: 1,000

Drains Included: Floors and sinks

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency: Not done in 5 years

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: Standard

Frequency of Service:

Cost of Service Free

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work.

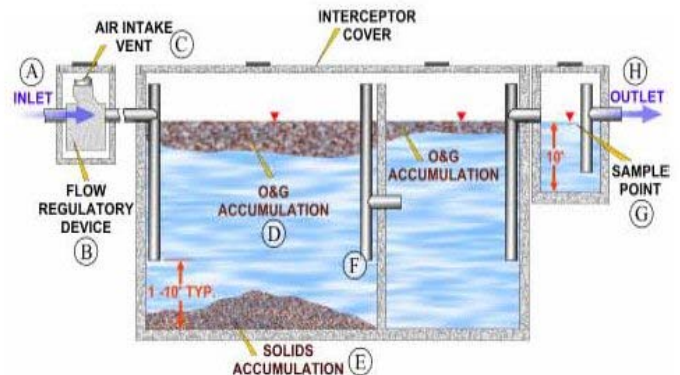


City of Manteca
FOG Program Survey

Survey # 49

Facility Information

Facility Name: Jack-in -the -Box
Location: 1081 S Main
Business Address: Same
Telephone: (209) 239-8288
Representative: Enrique
Business Description: Fast Food



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐

Size: 1500

Drains Included: Floor and sinks

Maintenance: **Vacuum Truck** ☐ Manual ☐ Frequency: 3 Months

Name of Service Vendor: All Valley

Cost per Service:

Copy of Invoice Provided: Yes **No**

Condition of Unit:

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: Standard

Frequency of Service: 2 weeks

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work



Rendering bin



Used oil storage

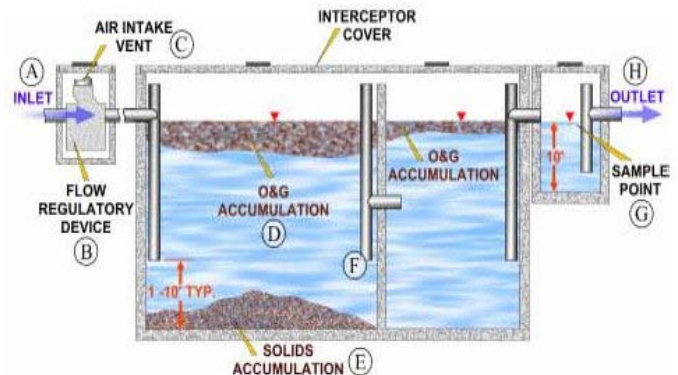


City of Manteca
FOG Program Survey

Survey # 50

Facility Information

Facility Name: Jack-In-The-Box
Location: 1310 E Yosemite
Business Address: Same
Telephone: (209) 824-5359
Representative: Paloma
Business Description: Fast Food



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐

Size: 1500

Drains Included: Sinks and floor drains

Maintenance: **Vacuum Truck** ☐ Manual ☐ Frequency: 3 months

Name of Service Vendor: All Valley Environmental, Inc. (559) 498-8378

Cost per Service: \$240

Copy of Invoice Provided: **Yes** No

Condition of Unit: OK

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: They have two, first for meat fat and the second for oil. The oil is a tank in the building

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work

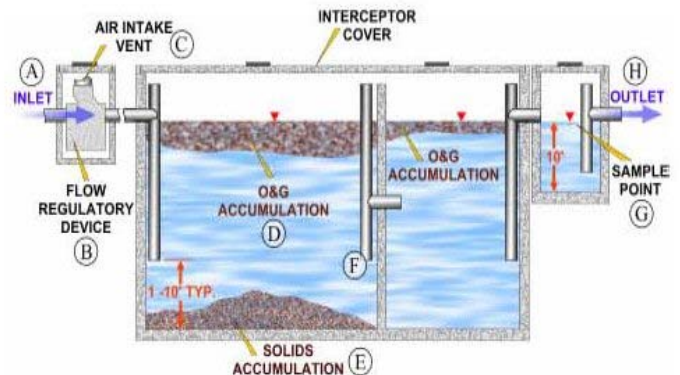


City of Manteca
FOG Program Survey

Survey # 51

Facility Information

Facility Name: Jack-In-The-Box
Location: 1105 N Main
Business Address: Same
Telephone: (209) 239-9524
Representative: Elilio
Business Description:



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐

Size: 1500

Drains Included: Sinks and floors

Maintenance: **Vacuum Truck** ☐ Manual ☐ Frequency: 3 months

Name of Service Vendor: All Valley

Cost per Service:

Copy of Invoice Provided: Yes **No**

Condition of Unit:

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: Large

Frequency of Service: weekly

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Recycle OCC, 60% food. Turbo will work.



Used oil storage.

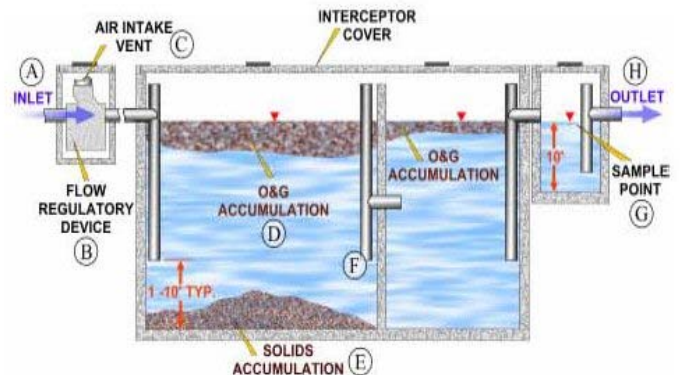


City of Manteca
FOG Program Survey

Survey # 52

Facility Information

Facility Name: Jack's Pizza Cafe
Location: 1223 W Yosemite
Business Address: Same
Telephone: (209) 823-8282
Representative: Jazz
Business Description: Pizza Restaurant



FOG Control Device

Under Sink ___ In **Floor** ___ Interceptor ___ Other ___ None ___

Size:

Drains Included:

Maintenance: Vacuum Truck ___ **Manual** ___ Frequency: Weekly

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No N/A

Condition of Unit: To small

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes **No**

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: They bake only, no frying. The trap is so small it will never work. Turbo will work



Small under the sink trap

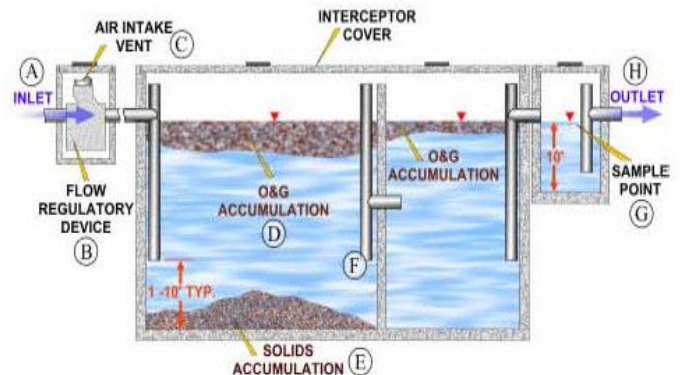


City of Manteca
FOG Program Survey

Survey # 53

Facility Information

Facility Name: Jamba Juice
Location: 2160 Daniels
Business Address: Same
Telephone: (209) 239-2492
Representative: Moses
Business Description: Juice Bar



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes ☐ No ☐

Condition of Unit:

Visible Flow Regulating Device: Yes ☐ No ☐

Is There a Rendering Bin: Yes ☐ No ☒

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Orange peels go to trash

Dish Washing (Plate Scraping): Sewer

Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work. Trash is about 10% food



Orange juicer

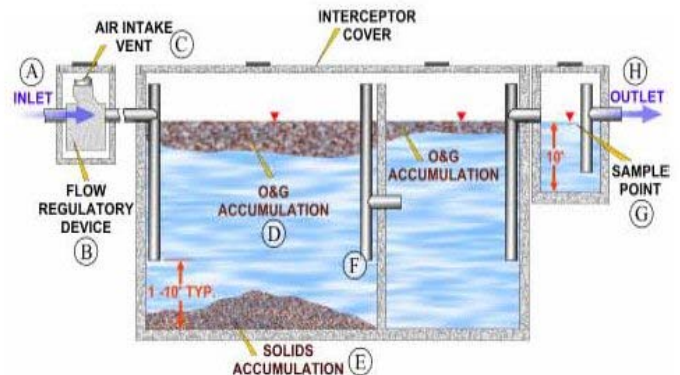


City of Manteca
FOG Program Survey

Survey # 53 A

Facility Information

Facility Name: Jamba Juice
Location: 1445 Hulsey Way
Business Address: Same
Telephone: (209) 824-2434
Representative: Melynee
Business Description:



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☒

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes ☐ No ☐

Condition of Unit:

Visible Flow Regulating Device: Yes ☐ No ☐

Is There a Rendering Bin: Yes ☐ No ☒

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Some orange peels and wheat grass in trash. Turbo will work.

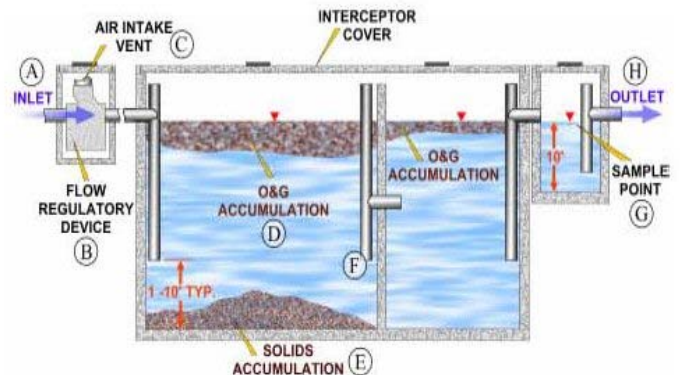


City of Manteca
FOG Program Survey

Survey # 54

Facility Information

Facility Name: Jimmy's Market
Location: 2268 E Yosemite
Business Address: Same
Telephone: (209) 239-8870
Representative: Sam
Business Description: Small Market



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: Standard

Frequency of Service: As needed

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Almost no food in trash.



Fried food served at the market

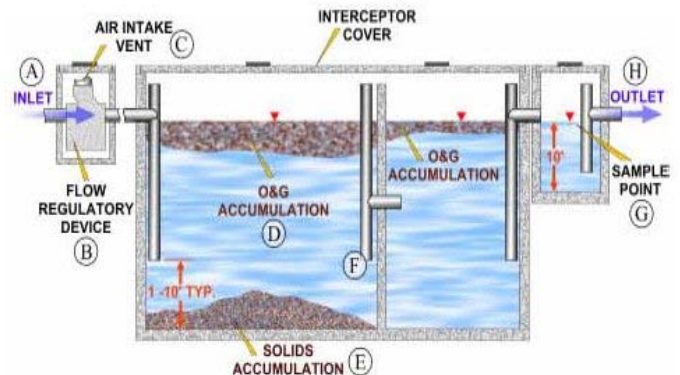


City of Manteca
FOG Program Survey

Survey # 55

Facility Information

Facility Name: Johnny's Restaurant
Location: 610 E Yosemite
Business Address: Same
Telephone: (209) 239-9111
Representative: Arsenio
Business Description: Cafe



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐
Size: 1200 gallon, 3 400 gallon tanks in series
Drains Included: Sinks and floors
Maintenance: Vacuum Truck ☐ Manual ☐ Frequency: 6 months
Name of Service Vendor: Sisk
Cost per Service: \$180
Copy of Invoice Provided: Yes **No**
Condition of Unit: Good
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin:
Frequency of Service: Monthly
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: 100% food waste. Turbo will work.



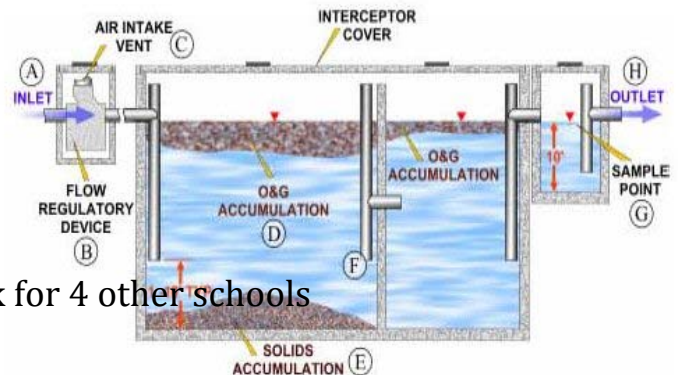
Triple cell interceptor on south side of building



City of Manteca
FOG Program Survey
Facility Information

Survey # 56

Facility Name: Joshua Cowell School
Location: 740 Pestana
Business Address: Same
Telephone: (209) 858-0720
Representative: Stephanie Huff
Business Description: School /they cook for 4 other schools



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency: Never

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes **No**

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Has a disposal. Styrofoam trays are recycled. They would be interested in a food program. About 50 pounds of food a day. They have a goal to compost all fruit and vegetables. There is a farm run by students.

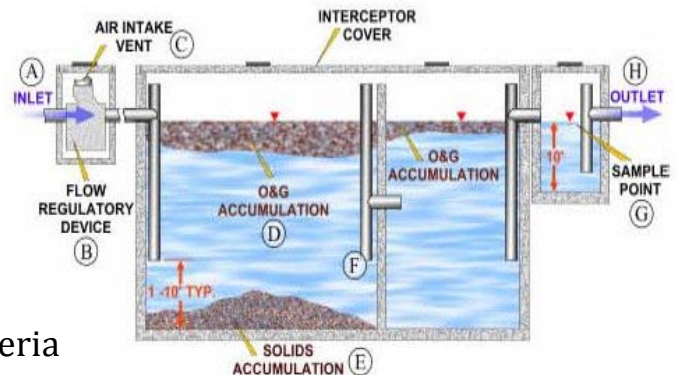


City of Manteca
FOG Program Survey

Survey # 57

Facility Information

Facility Name: Kaiser Hospital
Location: 1777 W Yosemite
Business Address: Same
Telephone: (209) 735-5086
Representative: Pat Miller, David
Business Description: Hospital and cafeteria



FOG Control Device

Under Sink ___ In Floor ___ **Interceptor** ___ Other ___ None ___
Size: 1500
Drains Included: Floors and sinks
Maintenance: **Vacuum Truck** ___ Manual ___ Frequency: 2 years
Name of Service Vendor: Corporate takes care of
Cost per Service:
Copy of Invoice Provided: Yes **No**
Condition of Unit: Ok
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin: Standard
Frequency of Service: About 3 months
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: Last pumping 2012.. Morrison has the contract to run the cafeteria. Kaiser brings in all food for hospital, it looks like airplane food. All they do is warm it. They have a small fryer.



Interceptor in emergency entrance

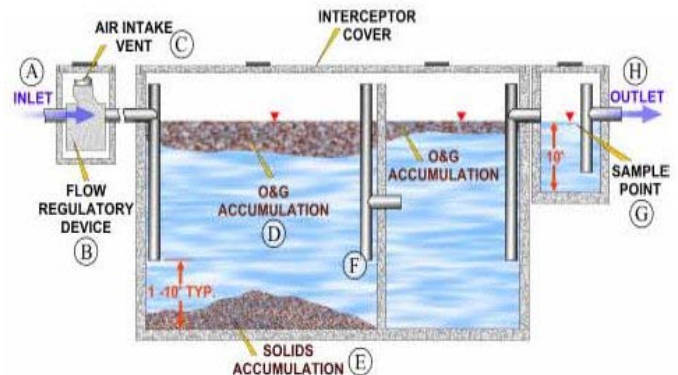


City of Manteca
FOG Program Survey

Survey # 58

Facility Information

Facility Name: KFC
Location: 1211 E Yosemite
Business Address: Same
Telephone: (209) 239-7330
Representative: Mat
Business Description: KFC Only



FOG Control Device

Under Sink ___ In Floor ___ **Interceptor** ___ Other ___ None ___

Size:

Drains Included:

Maintenance: **Vacuum Truck** ___ Manual ___ Frequency: 3 months

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes **No**

Condition of Unit:

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: 55 gallon drum

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: They recycle their oil in the fryers.
Very little oil waste. They only change the oil every 3 months.



Used oil stored in open barrel



Interceptor in landscaping

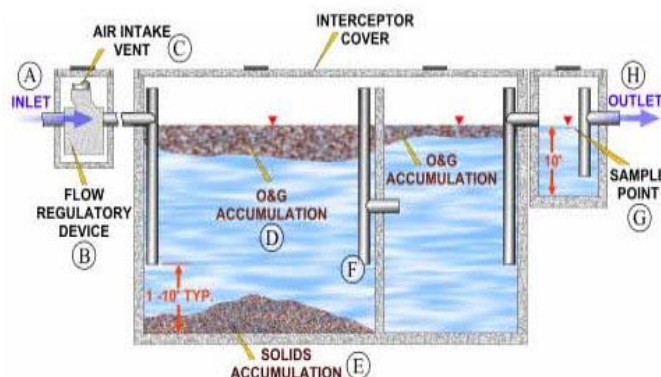


City of Manteca
FOG Program Survey

Survey # 59

Facility Information

Facility Name: Kinneree
Location: 229 E Yosemite
Business Address: Same
Telephone: (209) 824-8897
Representative: Rosa
Business Description: Thai Restaurant



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin:

Frequency of Service: 2 weeks

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Estimated 20% food waste. Turbo will work.



Used oil storage

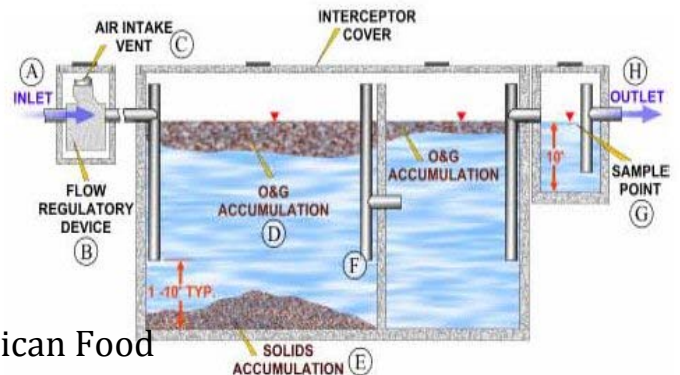


City of Manteca
FOG Program Survey

Survey # 60

Facility Information

Facility Name: Kitty's Kitchen
Location: 532 N Main
Business Address: Same
Telephone: (209) 825-8839
Representative: Wayne
Business Description: Chinese and American Food



FOG Control Device

Under Sink ___ In Floor ___ **Interceptor** ___ Other ___ None ___

Size:

Drains Included:

Maintenance: **Vacuum Truck** ___ Manual ___ Frequency: 3 times a year

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes **No**

Condition of Unit: New

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: Standard

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work



Used oil storage and grease interceptor on east side of building.

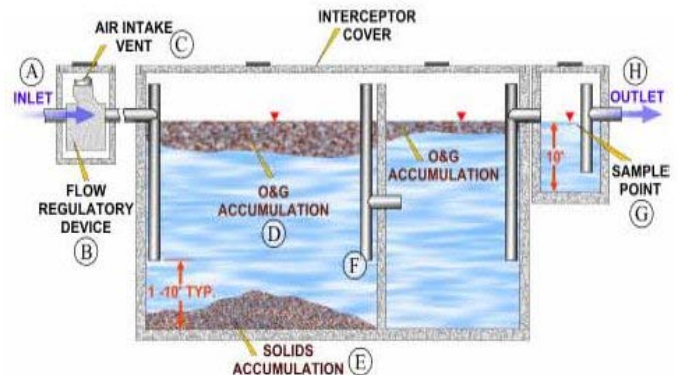


City of Manteca
FOG Program Survey

Survey # 61

Facility Information

Facility Name: LaCasta
Location: 205 Moffat Blvd.
Business Address: Same
Telephone: (209) 825-4843
Representative: Jorge
Business Description: Fast Food



FOG Control Device

Under Sink ___ **In Floor** ___ **Interceptor** ___ **Other** ___ **None** ___
Size: 35 Gallon
Drains Included: Triple sink only
Maintenance: **Vacuum Truck** ___ **Manual** ___ Frequency: Weekly
Name of Service Vendor: HP
Cost per Service: \$30/month
Copy of Invoice Provided: Yes **No**
Condition of Unit: Ok
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin: Standard
Frequency of Service: Weekly
Cost of Service See notes

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: They pay \$30 for both services.
Trap will wash out. Turbo will work.



Under the sink trap

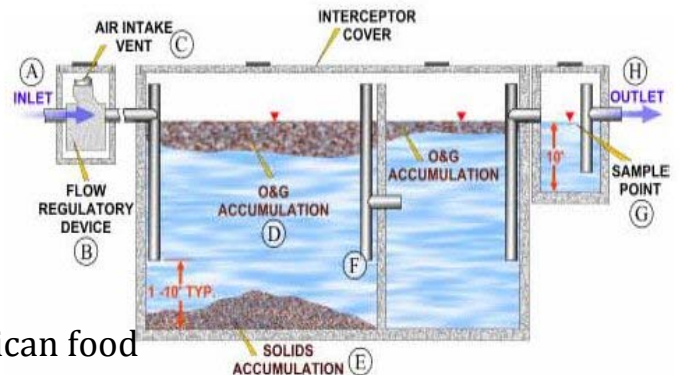


City of Manteca
FOG Program Survey

Survey # 62

Facility Information

Facility Name: La Estrella
Location: 1361 E Yosemite
Business Address: Same
Telephone: (209) 823-8481
Representative: Juan Arroyo
Business Description: Juice bar and Mexican food



FOG Control Device

Under Sink ___ In **Floor** ___ Interceptor ___ Other ___ None ___
Size: 30 gallon
Drains Included:
Maintenance: Vacuum Truck ___ **Manual** ___ Frequency: Monthly
Name of Service Vendor:
Cost per Service:
Copy of Invoice Provided: Yes No
Condition of Unit:
Visible Flow Regulating Device: Yes No
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin: Standard Biotane
Frequency of Service: Monthly
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: Juan estimated 40% food. Turbo will work

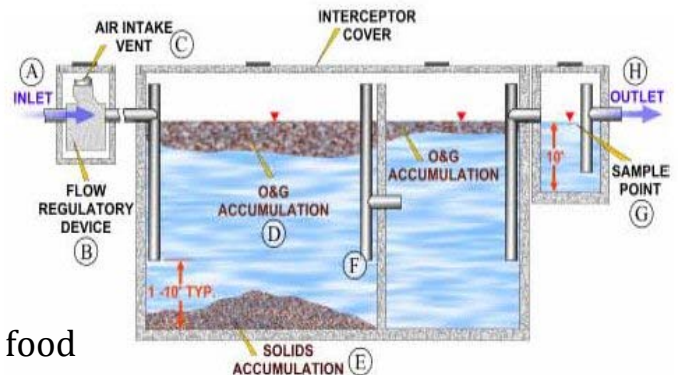


City of Manteca FOG Program Survey

Survey # 63

Facility Information

Facility Name: La Estrella
Location: 1110 N Main
Business Address: Same
Telephone: (209) 823-9001
Representative: Jaun
Business Description: Juice and Mexican food



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☐ Other ☐ None ☐
Size: There are apparently 2 1500, and 1000 gallon
Drains Included:
Maintenance: **Vacuum Truck** ☐ Manual ☐ Frequency:
Name of Service Vendor: Mountain Valley Septic and San Fce Pumping Inc.
Cost per Service: \$300 to \$375
Copy of Invoice Provided: **Yes** No
Condition of Unit: Ok
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin: Standard
Frequency of Service: Monthly Biotane
Cost of Service Free

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: Jaun estimates 40% food. Turbo will work.



City of Manteca
FOG Program Survey

Survey # 64

Facility Information

Facility Name: La Mexicana Market

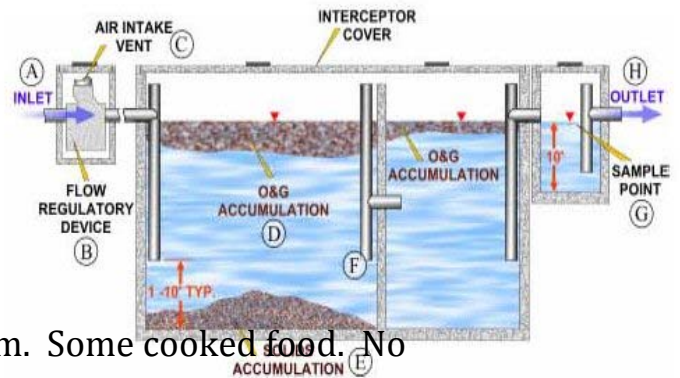
Location:

Business Address: Same

Telephone: (209) 239-6461

Representative: Bertha

Business Description: Juice and Ice Cream. Some cooked food. No Market



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin:

Frequency of Service: once a month

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Manager estimates 50% food.
Turbo will work.



There is almost no market, all food service

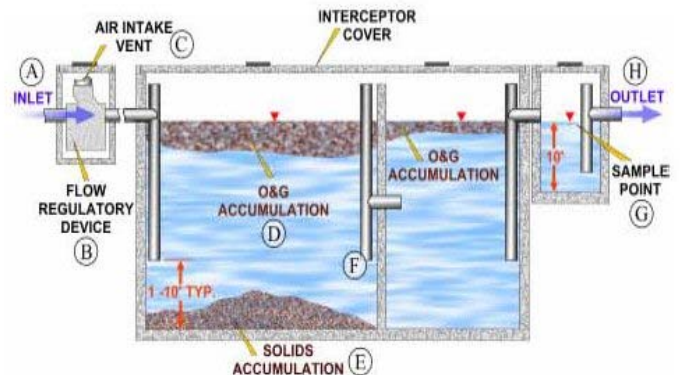


City of Manteca
FOG Program Survey

Survey # 65

Facility Information

Facility Name: La Pina Loca
Location: 504 W Yosemite
Business Address: Same
Telephone: (209) 239-8226
Representative: Carlos
Business Description: Fast Food



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐
Size: 1,000
Drains Included: Floors and Sinks
Maintenance: **Vacuum Truck** ☒ Manual ☐ Frequency: Yearly
Name of Service Vendor: HP Commodities
Cost per Service:
Copy of Invoice Provided: **Yes** No
Condition of Unit: Newer
Visible Flow Regulating Device: Yes No
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin: 55 Gallon
Frequency of Service: Monthly
Cost of Service Paid 9 cents a gallon

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: Interceptor has a opening on flow restrictor. It is elevated so no I&I.



Interceptor in parking lot.

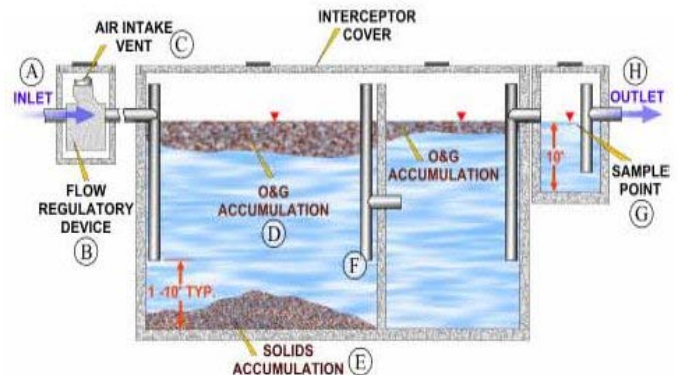


City of Manteca
FOG Program Survey

Survey # 66

Facility Information

Facility Name: Las Casuelas
Location: 1580 W Yosemite
Business Address: Same
Telephone: (209) 825-0434
Representative: Claudia
Business Description: Restaurant



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐
Size: 3,000 gallon
Drains Included: Sinks and Floors
Maintenance: Vacuum Truck ☐ Manual ☐ Frequency: 3 months
Name of Service Vendor: Clarks Septic Service
Cost per Service: \$800
Copy of Invoice Provided: **Yes** No
Condition of Unit: New
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin: Standard
Frequency of Service: As needed
Cost of Service Free

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: About 60% food waste. Turbo will work. Hauler takes to East Bay MUD.



Large Interceptor in parking entrance

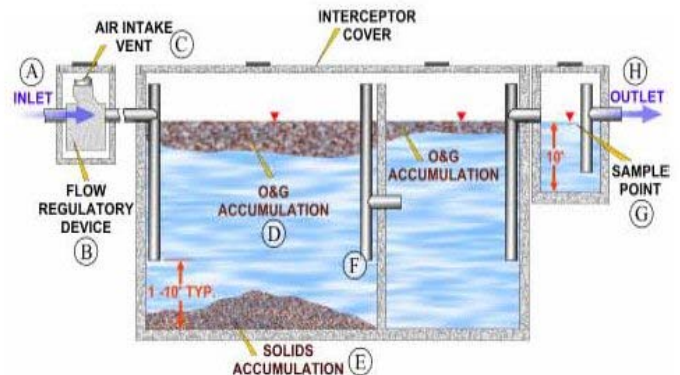


City of Manteca
FOG Program Survey

Survey # 67

Facility Information

Facility Name: Las Palmas
Location: 1021 N Main St.
Business Address: Same
Telephone: (209) 825-8560
Representative:
Business Description:



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ None ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes No

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Burned down in 2011

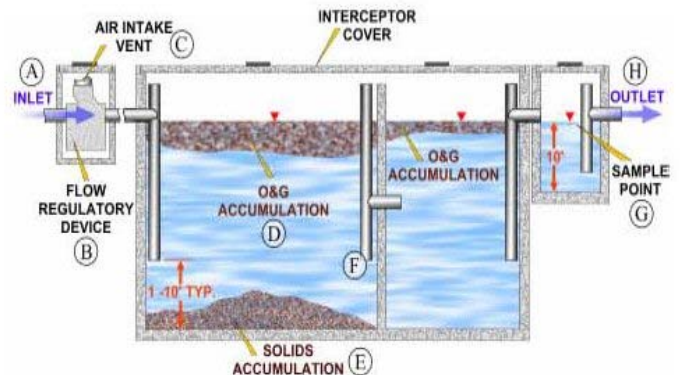


City of Manteca
FOG Program Survey

Survey # 68

Facility Information

Facility Name: Le Croissant Bakery
Location: 162 N Maple
Business Address: Same
Telephone: (209) 825-7979 / 676-7306
Representative: Botha Walters
Business Description: Bakery



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☒

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes ☐ No ☐

Condition of Unit:

Visible Flow Regulating Device: Yes ☐ No ☐

Is There a Rendering Bin: Yes ☐ No ☒

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Baked goods only. Turbo will work.

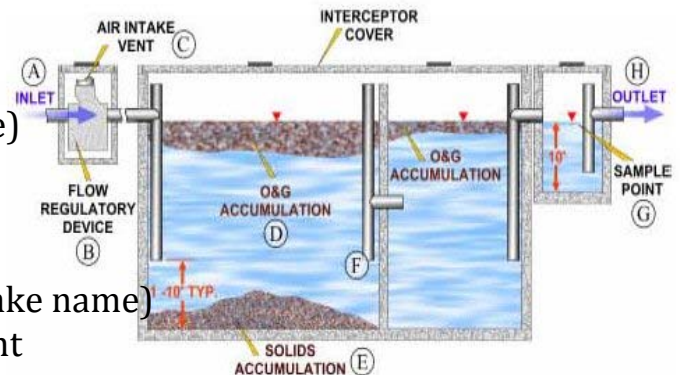


City of Manteca
FOG Program Survey

Survey # 69

Facility Information

Facility Name: Mai Mai (was Lee Chinese)
Location: 102 Pierce
Business Address: Same
Telephone: (209) 239-2919
Representative: Ken Wong (could be a fake name)
Business Description: Chinese Restaurant



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☐ Other ☐ None ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin:

Frequency of Service:

Cost of Service Free

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: This should be followed up on. They had no receipts, was very cagy. He said interceptor has just been cleaned but the company had not sent a bill. This is not the standard practice of leaving a manifest.



Front of Restaurant

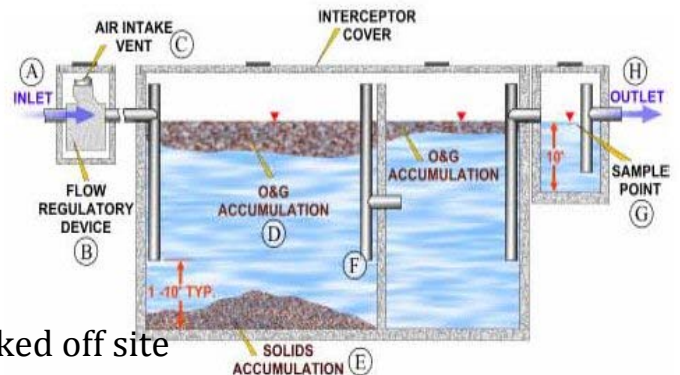


City of Manteca
FOG Program Survey

Survey # 70

Facility Information

Facility Name: Lincoln School
Location: 750 E Yosemite
Business Address: Same
Telephone: (209) 858-0720
Representative: Stephanie Huff
Business Description: School food is cooked off site



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency: Never

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes **No**

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Has a disposal. Styrofoam trays are recycled. They would be interested in a food program. About 50 pounds of food a day. They have a goal to compost all fruit and vegetables. There is a farm run by students.

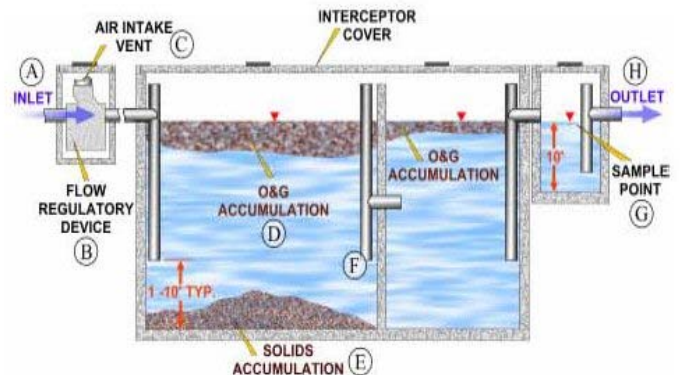


City of Manteca
FOG Program Survey

Survey # 71

Facility Information

Facility Name: Little Caesar's Pizza
Location: 353 W Louise Ave
Business Address: Same
Telephone: (209) 239-0808
Representative: David
Business Description: Pizza take out



FOG Control Device

Under Sink ___ **In Floor** ___ **Interceptor** ___ **Other** ___ **None** ___
Size: 25 gallon
Drains Included: Just triple sink
Maintenance: **Vacuum Truck** ___ **Manual** ___ Frequency: 3 months
Name of Service Vendor: Amerigaurd Maintenance Service LLC 800-347-7876
Cost per Service: \$100
Copy of Invoice Provided: **Yes** **No**
Condition of Unit: Small
Visible Flow Regulating Device: **Yes** **No**
Is There a Rendering Bin: **Yes** **No**
Size of Rendering Bin:
Frequency of Service:
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work.



Under the sink trap

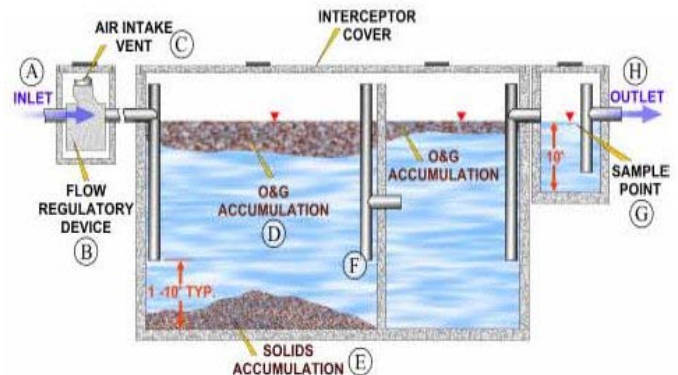


City of Manteca
FOG Program Survey

Survey # 72

Facility Information

Facility Name: Luu's Chicken Bowl
Location: 300 N Main
Business Address: Same
Telephone: (209) 825-7144
Representative: Tiem
Business Description: Fast Food



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐
Size: 1,000 gallon
Drains Included: Floors and sinks
Maintenance: **Vacuum Truck** ☒ Manual ☐ Frequency: 6 months
Name of Service Vendor:
Cost per Service:
Copy of Invoice Provided: Yes **No**
Condition of Unit: Old, could have I&I
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: Yes **No**
Size of Rendering Bin: Very large CGC Services
Frequency of Service:
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work



Large used oil storage near garbage.



Grease interceptor in landscaping.

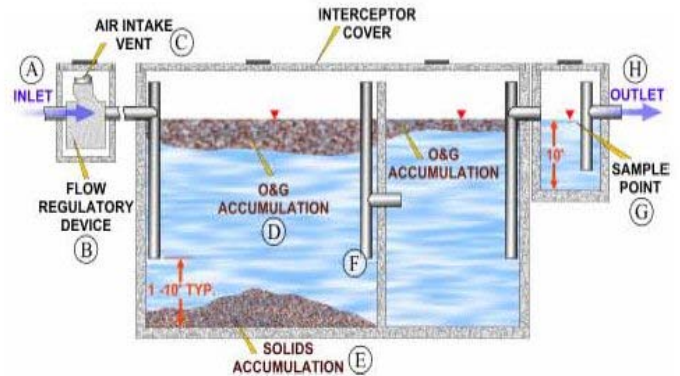


City of Manteca
FOG Program Survey

Survey # 73

Facility Information

Facility Name: Main Street Doughnut
Location: 1041 S Main
Business Address: Same
Telephone: (209) 823-0123
Representative: Ratamony Pral
Business Description: Donut Shop



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☒

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes ☐ No ☐

Condition of Unit:

Visible Flow Regulating Device: Yes ☐ No ☐

Is There a Rendering Bin: Yes ☐ No ☒

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: The used oil is put in jugs and then put in the trash. Turbo will work.

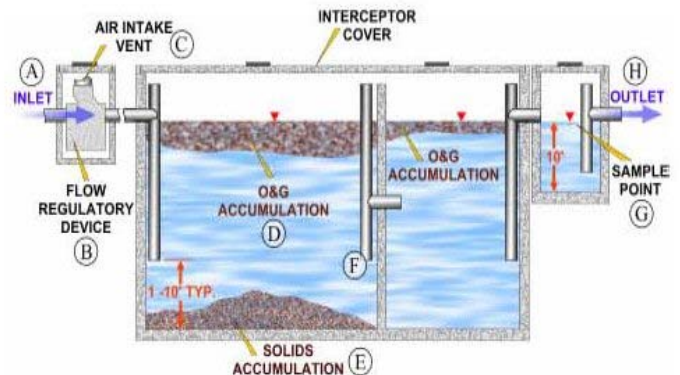


City of Manteca
FOG Program Survey

Survey # 74

Facility Information

Facility Name: Mangy Moose Cafe
Location: 506 E Yosemite
Business Address: Same
Telephone: (209)
Representative: Oscar
Business Description: Breakfast Cafe



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: Very small in closet Biotane is provider

Frequency of Service: Not offer

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: 1/3 food, Turbo will work

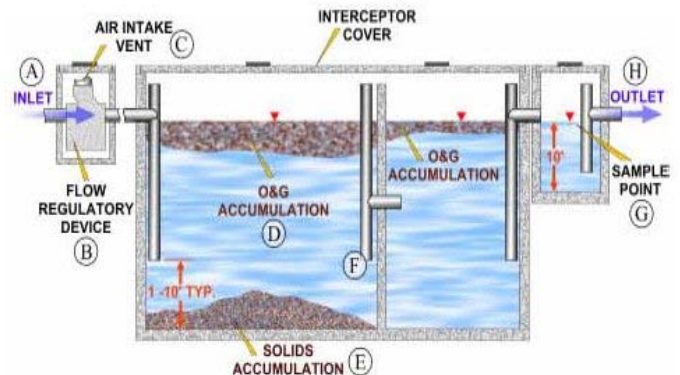


City of Manteca
FOG Program Survey

Survey # 75

Facility Information

Facility Name: Manteca Donut
Location: 1194 N Main
Business Address: Same
Telephone: (209) 823-4809
Representative: Vantha
Business Description: Donuts



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes **No**

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work



City of Manteca
FOG Program Survey

Survey # 76

Facility Information

Facility Name: Manteca Unified School District

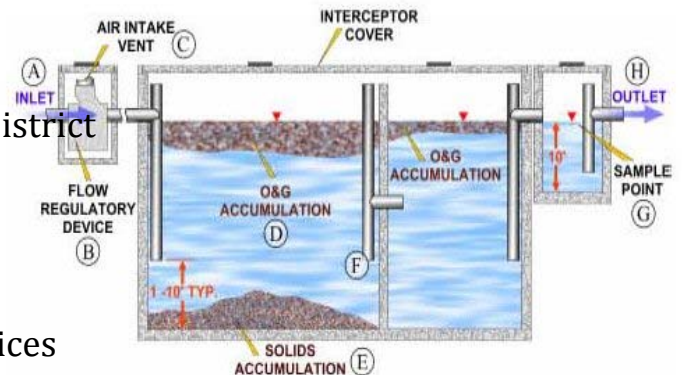
Location: 2271 W Louise Ave

Business Address: Same

Telephone: (209) 858-0720

Representative: Stephanie Huff

Business Description: School District offices



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ None ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency: Never

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes No

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: none

Dish Washing (Plate Scraping): none

Customer Disposal: none

Additional Notes on Back of Page: No food service here. There is a farm where composting occurs.

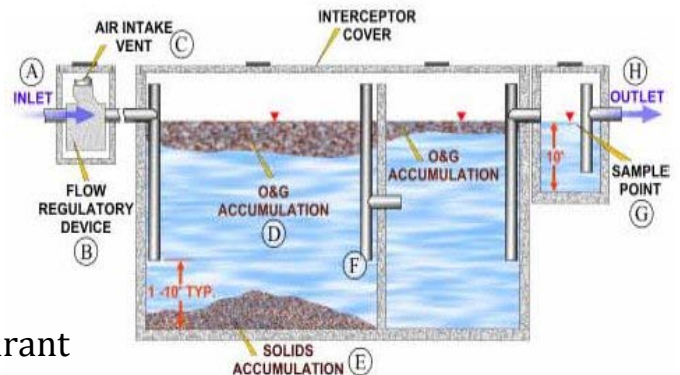


City of Manteca
FOG Program Survey

Survey # 77

Facility Information

Facility Name: Matsu Sushi
Location: 874 Lifestyle St.
Business Address: Same
Telephone: (209) 823-2500
Representative: Show
Business Description: Full service restaurant



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes ☐ No ☐

Condition of Unit:

Visible Flow Regulating Device: Yes ☐ No ☐

Is There a Rendering Bin: **Yes** ☒ No ☐

Size of Rendering Bin: Standard

Frequency of Service: As needed for oil

Cost of Service They are paid

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work. No disposal

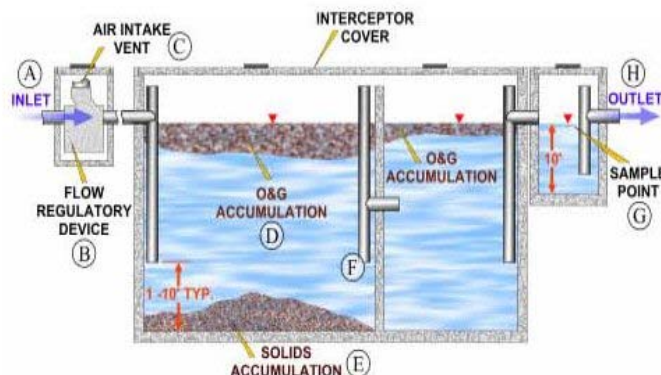


City of Manteca
FOG Program Survey

Survey # 78

Facility Information

Facility Name: Matsuyama Sushi
Location: 295 Spreckels Ave.
Business Address: Same
Telephone: (209) 825-0688
Representative: Owner
Business Description: Standard Sushi



FOG Control Device

Under Sink ___ **In Floor** ___ Interceptor ___ Other ___ None ___
Size: 35 gallon
Drains Included: Floors and sinks
Maintenance: **Vacuum Truck** ___ Manual ___ Frequency: 1 time a year
Name of Service Vendor:
Cost per Service: \$100
Copy of Invoice Provided: Yes **No**
Condition of Unit: New
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin: Standard
Frequency of Service: Monthly
Cost of Service Free

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: 60% food. Turbo will work



In the floor grease trap

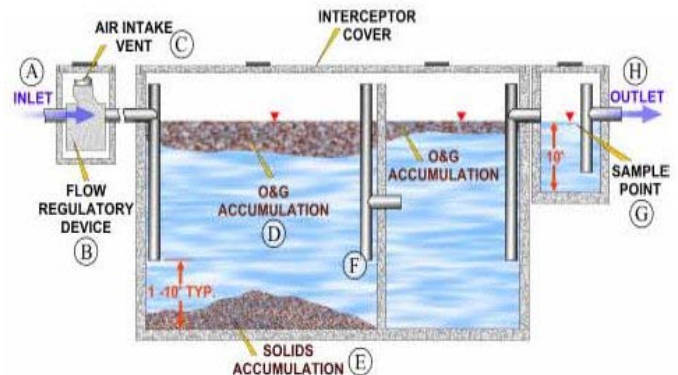


City of Manteca FOG Program Survey

Survey # 79

Facility Information

Facility Name: McDonalds
Location: 1360 E Yosemite
Business Address: Same
Telephone: (209) 665-4721
Representative: Bob Lutz
Business Description: Fast Food



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐
Size: 1,500 gallon
Drains Included: Sinks and floor drains
Maintenance: **Vacuum Truck** ☐ Manual ☐ Frequency: 3 months
Name of Service Vendor: SRC Pumping
Cost per Service: \$350
Copy of Invoice Provided: Yes **No**
Condition of Unit: New
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin:
Frequency of Service: As needed
Cost of Service They are paid for oil on an exchange for new oil

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Solid waste. No disposal

Dish Washing (Plate Scraping): Solid waste

Customer Disposal: Solid waste

Additional Notes on Back of Page: Oil goes to RTI. Turbo will work.

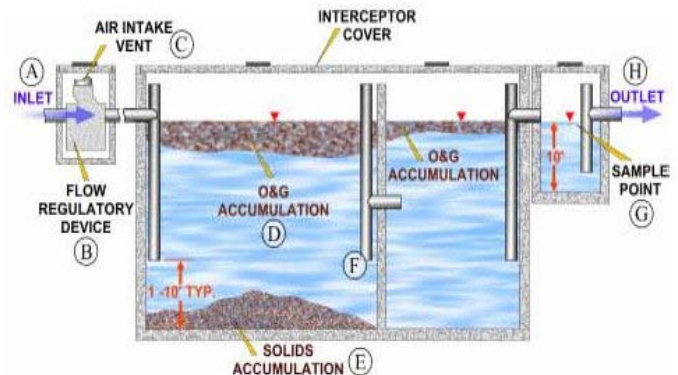


City of Manteca
FOG Program Survey

Survey # 80 A

Facility Information

Facility Name: McDonalds
Location: 1205 S Main St.
Business Address: In Walmart
Telephone: (209) 824-0942
Representative: Bob Lutz
Business Description: Fast Food



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐
Size: 1,500 gallon
Drains Included: Sinks and floor drains
Maintenance: **Vacuum Truck** ☐ Manual ☐ Frequency: 3 months
Name of Service Vendor: SRC Pumping
Cost per Service: \$350
Copy of Invoice Provided: Yes **No**
Condition of Unit: New
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin:
Frequency of Service: As needed
Cost of Service They are paid for oil on an exchange for new oil

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Solid waste. No disposal

Dish Washing (Plate Scraping): Solid waste

Customer Disposal: Solid waste

Additional Notes on Back of Page: Oil goes to RTI. Turbo will work.

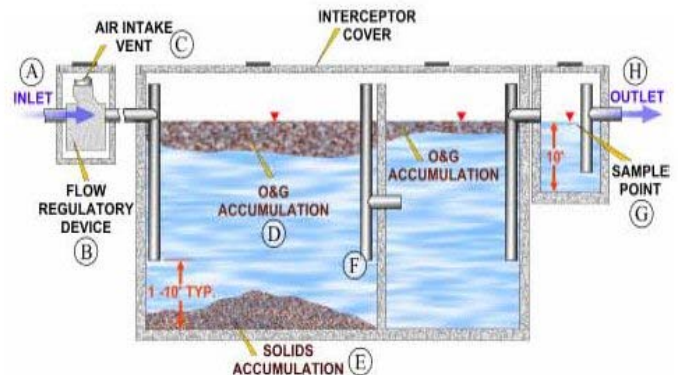


City of Manteca
FOG Program Survey

Survey # 80

Facility Information

Facility Name: McDonalds
Location: 2050 Daniels
Business Address: Same
Telephone: (209) 823-1133
Representative: Bob Lutz
Business Description: Fast Food



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐
Size: 1,500 gallon
Drains Included: Sinks and floor drains
Maintenance: **Vacuum Truck** ☒ Manual ☐ Frequency: 3 months
Name of Service Vendor: SRC Pumping
Cost per Service: \$350
Copy of Invoice Provided: Yes **No**
Condition of Unit: New
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin:
Frequency of Service: As needed
Cost of Service They are paid for oil on an exchange for new oil

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Solid waste. No disposal

Dish Washing (Plate Scraping): Solid waste

Customer Disposal: Solid waste

Additional Notes on Back of Page: Oil goes to RTI. Turbo will work.

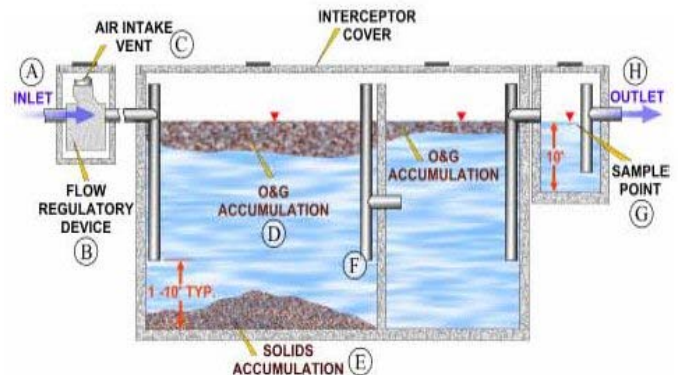


City of Manteca FOG Program Survey

Survey # 81

Facility Information

Facility Name: McDonalds
Location: 1236 W Yosemite
Business Address: Same
Telephone: (209) 239-3379
Representative: Bob Lutz
Business Description: Fast Food



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐
Size: 1,500 gallon
Drains Included: Sinks and floor drains
Maintenance: **Vacuum Truck** ☒ Manual ☐ Frequency: 3 months
Name of Service Vendor: SRC Pumping
Cost per Service: \$350
Copy of Invoice Provided: Yes **No**
Condition of Unit: New
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin:
Frequency of Service: As needed
Cost of Service They are paid for oil on an exchange for new oil

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Solid waste. No disposal

Dish Washing (Plate Scraping): Solid waste

Customer Disposal: Solid waste

Additional Notes on Back of Page: Oil goes to RTI. Turbo will work.

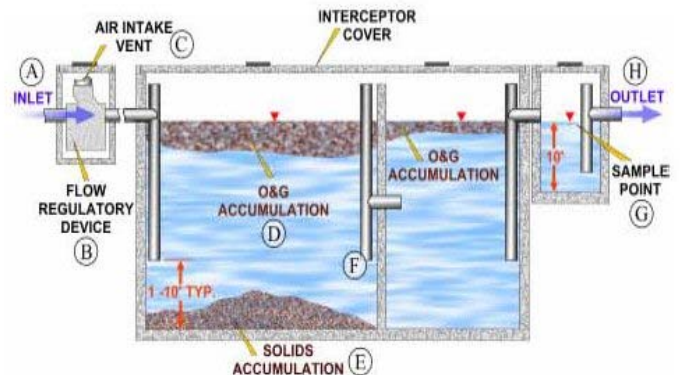


City of Manteca FOG Program Survey

Survey # 82

Facility Information

Facility Name: McDonalds
Location: 1137 W Lathrop
Business Address: Same
Telephone: (209) 649-0950
Representative: Bob Lutz
Business Description: Fast Food



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐
Size: 1,500 gallon
Drains Included: Sinks and floor drains
Maintenance: **Vacuum Truck** ☐ Manual ☐ Frequency: 3 months
Name of Service Vendor: SRC Pumping
Cost per Service: \$350
Copy of Invoice Provided: Yes **No**
Condition of Unit: New
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin:
Frequency of Service: As needed
Cost of Service They are paid for oil on an exchange for new oil

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Solid waste. No disposal

Dish Washing (Plate Scraping): Solid waste

Customer Disposal: Solid waste

Additional Notes on Back of Page: Oil goes to RTI. Turbo will work.



City of Manteca FOG Program Survey

Survey # 83

Facility Information

Facility Name: McFall School

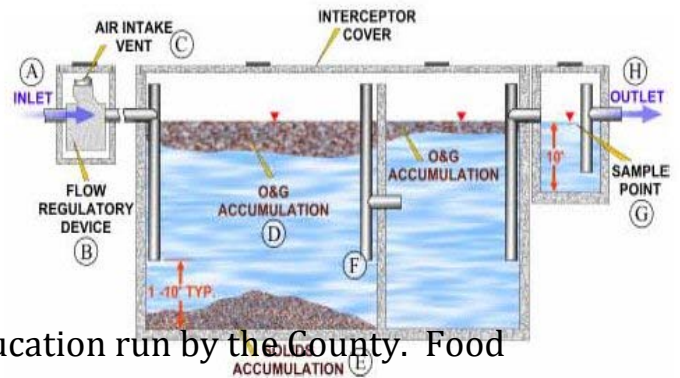
Location: 1810 Hoyt Lane

Business Address: Same

Telephone: (209) 858-0720

Representative: Stephanie Huff

Business Description: School Special Education run by the County. Food is contracted to the School District.



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency: Never

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes ☐ No ☐

Condition of Unit:

Visible Flow Regulating Device: Yes ☐ No ☐

Is There a Rendering Bin: Yes ☐ **No** ☒

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Has a disposal. Styrofoam trays are recycled. They would be interested in a food program. About 50 pounds of food a day. They have a goal to compost all fruit and vegetables. There is a farm run by students.

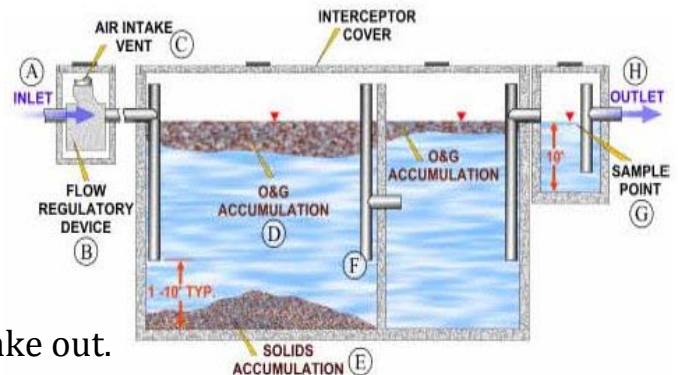


City of Manteca
FOG Program Survey

Survey # 84

Facility Information

Facility Name: Milano Pizza
Location: 347 N Main
Business Address: Same
Telephone: (209) 825-2222
Representative: Mustfa
Business Description: Pizza mostly for take out.



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes **No**

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Pizza oven only. Turbo will work.

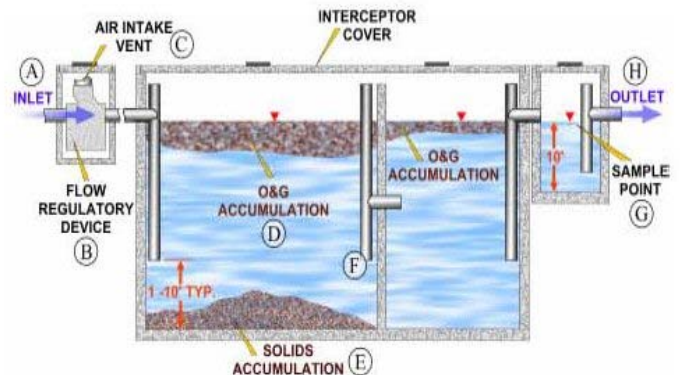


City of Manteca
FOG Program Survey

Survey # 85

Facility Information

Facility Name: Mom's Thai Hut
Location: 439 N Main
Business Address: Same
Telephone: (209) 665-7890
Representative: Fon
Business Description: Thai restaurant



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: Standard

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work

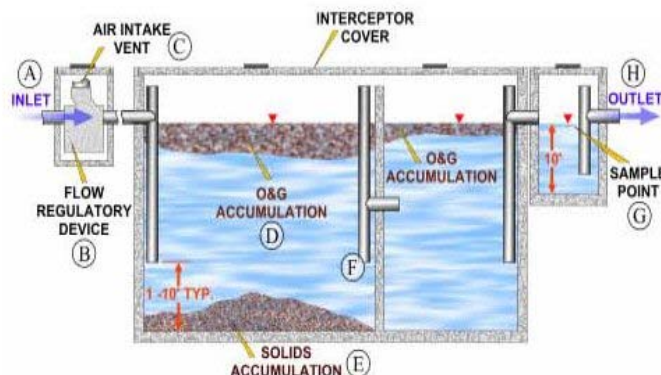


City of Manteca
FOG Program Survey

Survey # 86

Facility Information

Facility Name: Mountain Mikes
Location: 1120 N Main St.
Business Address: Same
Telephone: (209) 823-1166
Representative: Jamie
Business Description: Pizza and Solid



FOG Control Device

Under Sink ☐ **In Floor** ☐ Interceptor ☐ Other ☐ None ☐

Size:

Drains Included: Sink

Maintenance: Vacuum Truck ☐ **Manual** ☐ Frequency: 2 time a week

Name of Service Vendor:

Cost per Service: In house

Copy of Invoice Provided: Yes No

Condition of Unit: Old

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: Standard

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: 1/3 of waste is food. Turbo will work.

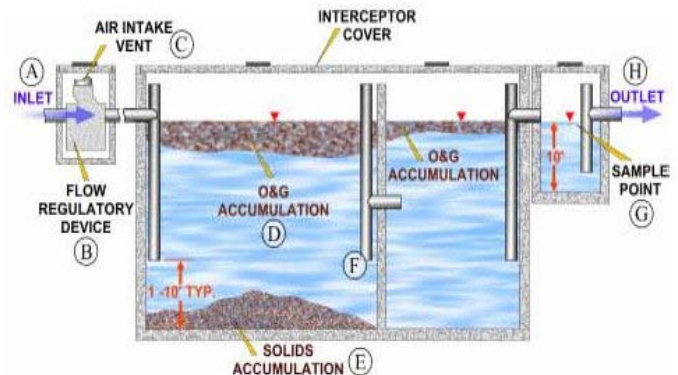


City of Manteca
FOG Program Survey

Survey # 87

Facility Information

Facility Name: Mr. Biggs Deli
Location: 137 N Main
Business Address: Same
Telephone: (209) 275-3658
Representative: Janelle
Business Description: Deli and BBQ



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☒

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes ☐ No ☐

Condition of Unit:

Visible Flow Regulating Device: Yes ☐ No ☐

Is There a Rendering Bin: Yes ☐ No ☒

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work. Owner estimates 25% food waste. No fryer, disposable plates, no disposal

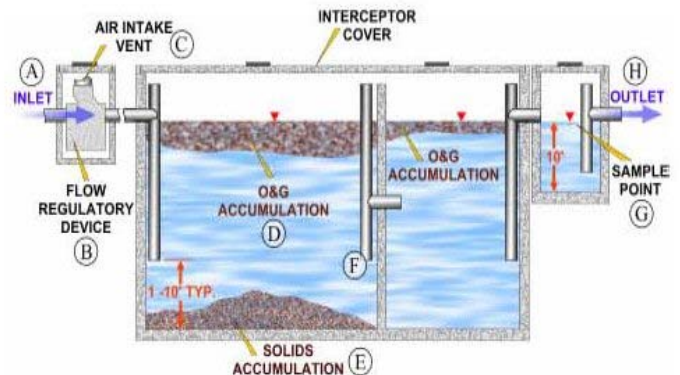


City of Manteca
FOG Program Survey

Survey # 88

Facility Information

Facility Name: Mr. Pickel
Location: 1456 Hulsey Way
Business Address: Same
Telephone: (209) 825-7553
Representative: Carlos (owner)
Business Description:



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency: Never

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes **No**

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Most of the food waste the owner takes home to his farm and feeds his dogs and pigs. The site was a Hawaiian BBQ so it has a interceptor, but it is not maintained.

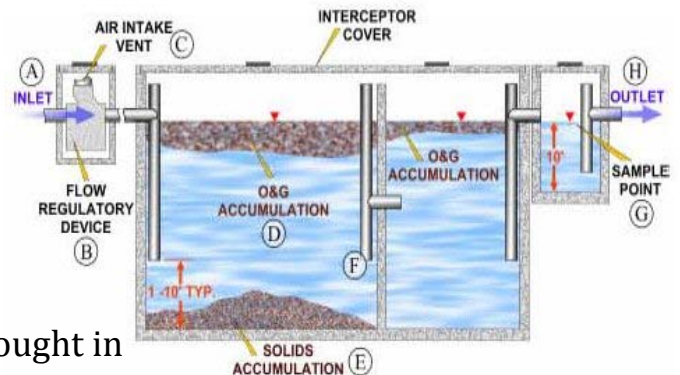


City of Manteca
FOG Program Survey

Survey # 89

Facility Information

Facility Name: Neil Hafley
Location: 849 Northgate
Business Address: Same
Telephone: (209) 858-0720
Representative: Stephanie Huff
Business Description: School Food is brought in



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency: Never

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes **No**

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Has a disposal. Styrofoam trays are recycled. They would be interested in a food program. About 50 pounds of food a day. They have a goal to compost all fruit and vegetables. There is a farm run by students.

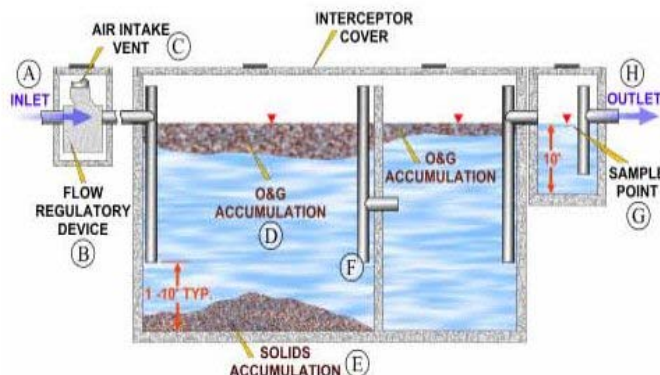


City of Manteca
FOG Program Survey

Survey # 90

Facility Information

Facility Name: New China Restaurant
Location: 1457 W Yosemite
Business Address: Same
Telephone: (209) 825-1518
Representative: Ben Yeung
Business Description: Chinese and Sushi



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐

Size: 1,200

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency: 6 months

Name of Service Vendor: Sisk (209) 667-1415

Cost per Service: \$220

Copy of Invoice Provided: Yes ☐ **No** ☒ **Saw Contract**

Condition of Unit: Ok

Visible Flow Regulating Device: Yes ☐ **No** ☒

Is There a Rendering Bin: Yes ☐ **No** ☒

Size of Rendering Bin: Standard

Frequency of Service: As needed

Cost of Service Paid 10 cents per # or 75 cents per gallon

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work



Interceptor behind restaurant

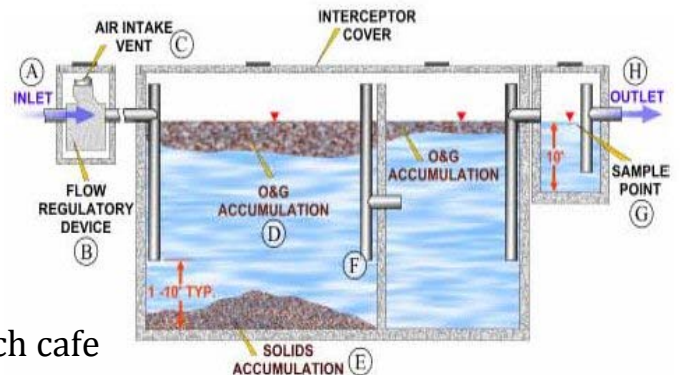


City of Manteca
FOG Program Survey

Survey # 91

Facility Information

Facility Name: Nic's Place
Location: 160 W Center
Business Address: Same
Telephone: (209) 824-9890
Representative: Nicole
Business Description: Breakfast and lunch cafe



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: Yes No

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: No fryer but they do pan fry. Oil and grease is put in trash. Turbo will work.

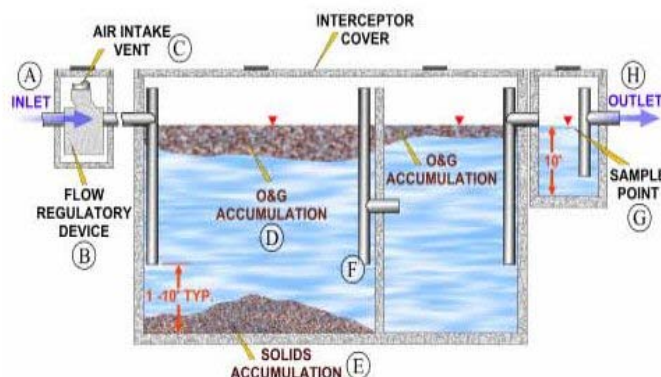


City of Manteca FOG Program Survey

Survey # 92

Facility Information

Facility Name: ONO Hawaiian BBQ
Location: 2152 Daniels St.
Business Address: Same
Telephone: (209) 239-9388
Representative: Ling
Business Description: Fast Food



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐
Size: 1500 gallon
Drains Included: Sinks and floor drains
Maintenance: **Vacuum Truck** ☒ Manual ☐ Frequency: 3 months
Name of Service Vendor:
Cost per Service:
Copy of Invoice Provided: Yes **No**
Condition of Unit:
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: Yes **No**
Size of Rendering Bin: Yes
Frequency of Service: weekly
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: Vegetable trimmings go in trash.
Raw food comes trimmed.



Used oil bin in kitchen.



City of Manteca
FOG Program Survey

Survey # 93

Facility Information

Facility Name: Pacos Taqueria

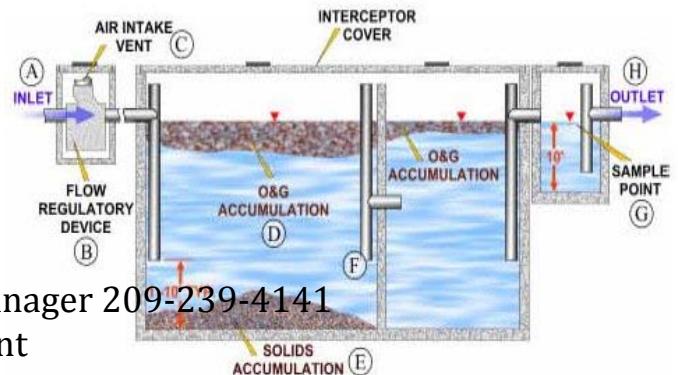
Location: 275 W Louise

Business Address: Same

Telephone: (209) 824-0634

Representative: Imelda, Ed Property Manager 209-239-4141

Business Description: Mexican Restaurant



FOG Control Device

Under Sink ___ In Floor ___ **Interceptor** ___ Other ___ None ___

Size: 1200

Drains Included: Sinks and Floors

Maintenance: **Vacuum Truck** ___ Manual ___ Frequency: Yearly

Name of Service Vendor: Premier Plumbing and Drain

Cost per Service: \$300 to \$600

Copy of Invoice Provided: Yes **No** Phone call with property manager

Condition of Unit: In Landscape. I&I probable

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: Standard

Frequency of Service: As needed

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: They use hard plate. Turbo will work. They said they have plugged drains so they are very careful.



Interceptor in Planter area

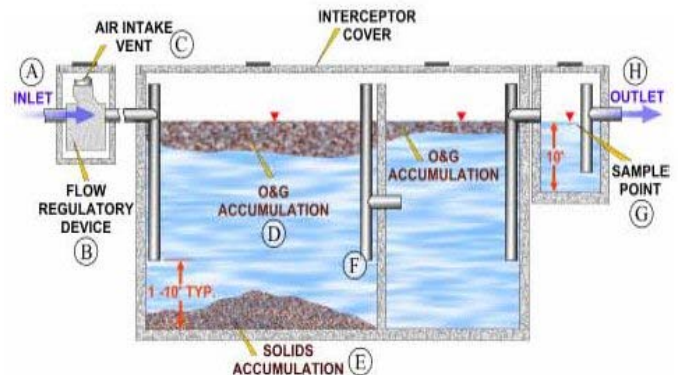


City of Manteca
FOG Program Survey

Survey # 94

Facility Information

Facility Name: Panda Express
Location: 1467 Hulsey Way
Business Address: Same
Telephone: (209) 824-8267
Representative: Jonathan
Business Description: Fast Food



FOG Control Device

Under Sink ___ In Floor ___ **Interceptor** ___ Other ___ None ___

Size: 1500

Drains Included: Floors and Sinks

Maintenance: **Vacuum Truck** ___ Manual ___ Frequency: 3 months

Name of Service Vendor: ETS Plumbing (559) 294-7782

Cost per Service: \$190

Copy of Invoice Provided: **Yes** No

Condition of Unit: ok

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: Standard

Frequency of Service: Monthly

Cost of Service Free

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work

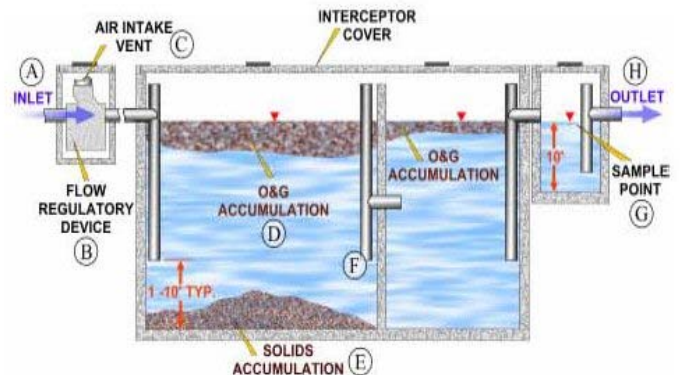


City of Manteca
FOG Program Survey

Survey # 95

Facility Information

Facility Name: Panda Express
Location: 2130 Daniels
Business Address: Same
Telephone: (209) 825-0384
Representative: Hong
Business Description: Fast Food



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐

Size: 1500

Drains Included: Sinks and floor drains

Maintenance: **Vacuum Truck** ☐ Manual ☐ Frequency: 3 months

Name of Service Vendor: ETS 888-456-1270

Cost per Service:

Copy of Invoice Provided: Yes **No**

Condition of Unit:

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: Standard

Frequency of Service: As needed

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: All oil goes to storage tank and is pumped. Turbo will work. Food is about 1/2 by weight.



Food waste is placed in bin next to fryer

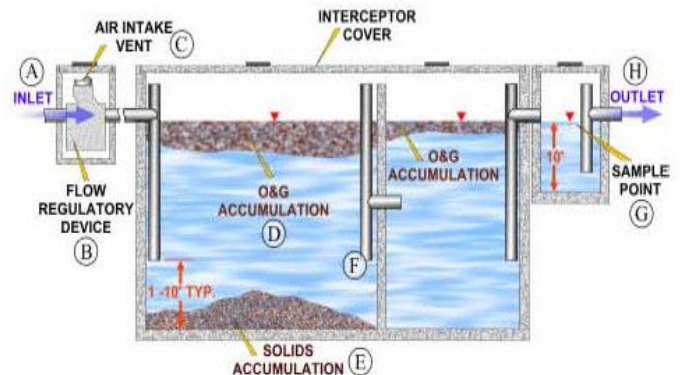


City of Manteca
FOG Program Survey

Survey # 96

Facility Information

Facility Name: Papa Joe's BBQ
Location: 211 E Yosemite
Business Address: Same
Telephone: (209) 221-1919
Representative: Shaen
Business Description: BBQ Restaurant



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: Standard

Frequency of Service: not known

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work.



Used oil storage behind the cannon

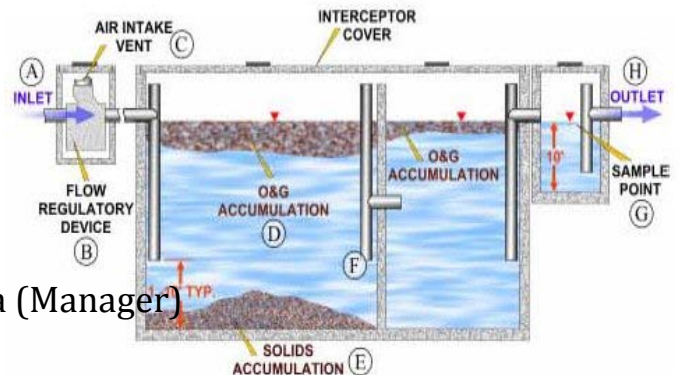


City of Manteca
FOG Program Survey

Survey # 97

Facility Information

Facility Name: Papa John's
Location: 1248 W Lathrop
Business Address: Same
Telephone: (209)
Representative: Magdi (owner) Victoria (Manager)
Business Description: Take out pizza



FOG Control Device

Under Sink ☐ **In Floor** ☒ Interceptor ☐ Other ☐ None ☐
Size: 30 gallon
Drains Included:
Maintenance: **Vacuum Truck** ☒ Manual ☐ Frequency: See notes
Name of Service Vendor:
Cost per Service:
Copy of Invoice Provided: Yes **No**
Condition of Unit:
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: Yes **No**
Size of Rendering Bin:
Frequency of Service:
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: New owners, the trap has not been cleaned since new owner took over in August. Last pumping was reported to be June 17th. Turbo will work.



Under the sink grease trap

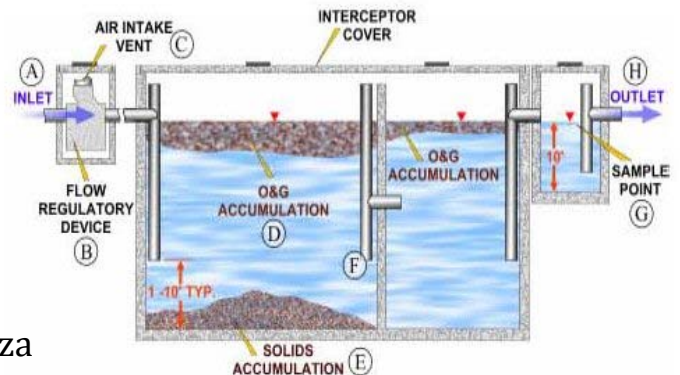


City of Manteca
FOG Program Survey

Survey # 98

Facility Information

Facility Name: Papa Murphy's
Location: 552 N Main
Business Address: Same
Telephone: (209) 239-1717
Representative: Becky
Business Description: Take and bake pizza



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency: Never

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit: They can't open the lid

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes No

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work.

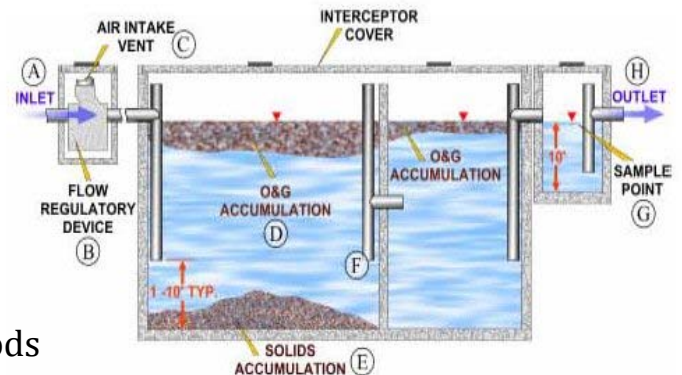


City of Manteca
FOG Program Survey

Survey # 99

Facility Information

Facility Name: Pho Saigon
Location: 1315 Historical Plaza Way
Business Address: Same
Telephone: (209) 825-8889
Representative: Wayne
Business Description: Soup and fried foods



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency: Never

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: 55 gallon drum

Frequency of Service: When needed

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: They say the interceptor is serviced once a year but they have only been there since January so they have never serviced it. The company that gets the oil can be contacted at 209-634-3093. This is all a little flaky. They say the trash is about 50% food.

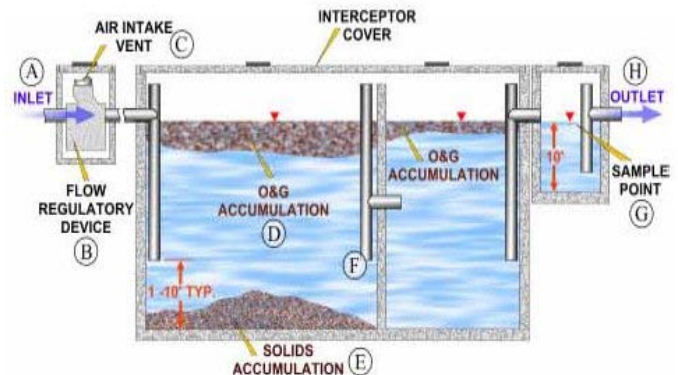


City of Manteca
FOG Program Survey

Survey # 100

Facility Information

Facility Name: Pizza and Pints
Location: 449 N Main
Business Address: Same
Telephone: (209) 815-9597
Representative: Roxan
Business Description: Pizza



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes **No**

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: No frying, only pizza and salad.
Turbo will work. Only oven.

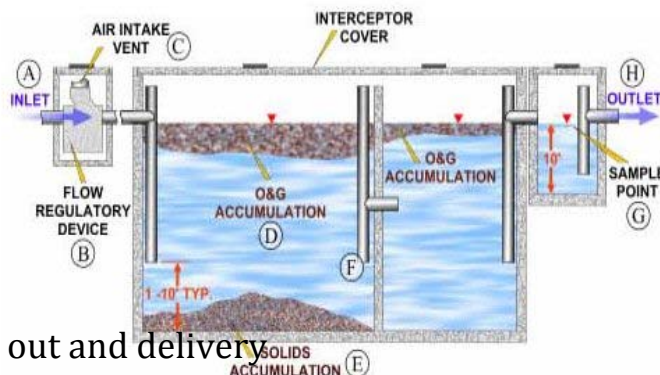


City of Manteca
FOG Program Survey

Survey # 101

Facility Information

Facility Name: Pizza Guys
Location: 520 E Yosemite
Business Address: Same
Telephone: (209) 239-5555
Representative: Oudom
Business Description: Pizza cooked, take out and delivery



FOG Control Device

Under Sink ___ **In Floor** ___ Interceptor ___ Other ___ None ___
Size: 25 gallon
Drains Included:
Maintenance: **Vacuum Truck** ___ Manual ___ Frequency: 1 time a year
or when it plugs
Name of Service Vendor:
Cost per Service: \$250
Copy of Invoice Provided: Yes **No**
Condition of Unit: Good but small
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: Yes **No**
Size of Rendering Bin:
Frequency of Service:
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: Very little food waste. Turbo will work



Small interceptor inside kitchen

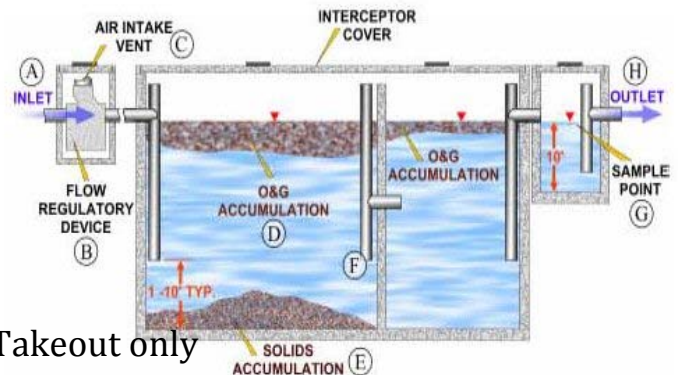


City of Manteca
FOG Program Survey

Survey # 102

Facility Information

Facility Name: Pizza Hut
Location: 920 N Main St.
Business Address: Same
Telephone: (209) 825-5588
Representative: Rosy
Business Description: Pizza and wings. Takeout only



FOG Control Device

Under Sink ___ **In Floor** ___ Interceptor ___ Other ___ None ___

Size:

Drains Included: Sink only

Maintenance: Vacuum Truck ___ Manual ___ Frequency: Did not know

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: Standard

Frequency of Service: Monthly

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: No recycle, very little food waste.
Food comes precut.

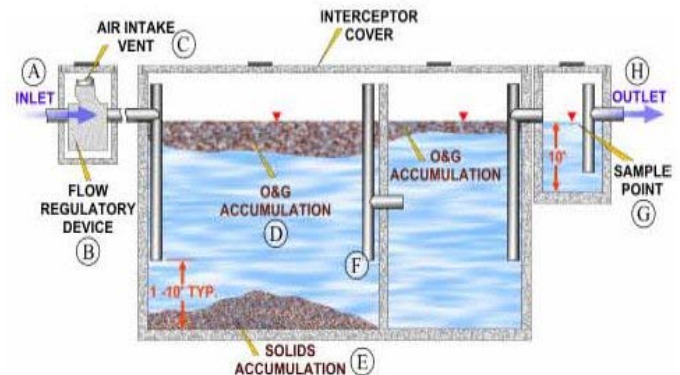


City of Manteca
FOG Program Survey

Survey # 103

Facility Information

Facility Name: Prestige Senior Living
Location: 1130 Empire Ave
Business Address: Same
Telephone: (209) 239-4531
Representative: Steven
Business Description: Senior Housing



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐
Size: 1200 gallon
Drains Included: Kitchen floors and sinks
Maintenance: **Vacuum Truck** ☐ Manual ☐ Frequency: 6 Months
Name of Service Vendor: Sisk 209-667-1451
Cost per Service: \$180
Copy of Invoice Provided: **Yes** No
Condition of Unit: ok
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin: Standard
Frequency of Service: As needed
Cost of Service Free

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: They have two disposals, one on the prep sink and one on the wash sink. The wash sink has a strainer. Turbo will not work.



Prep and wash sinks with disposals



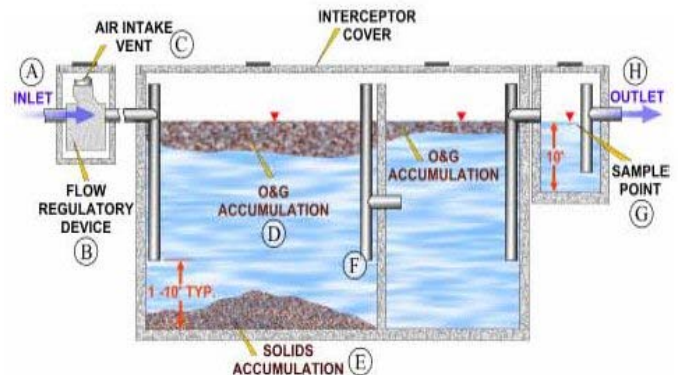


City of Manteca
FOG Program Survey

Survey # 104

Facility Information

Facility Name: Quiznos
Location: 127 Spreckles
Business Address: Same
Telephone: (209) 923-4099
Representative: Kuljinder
Business Description:



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes **No**

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work. They recycle
OCC. They estimate 5% food waste

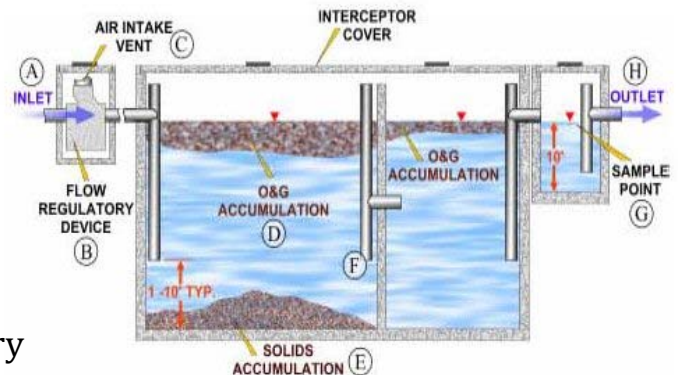


City of Manteca
FOG Program Survey

Survey # 105

Facility Information

Facility Name: Raley's
Location: 1280 W Lathrop
Business Address: Same
Telephone: (209) 825-0242
Representative: Aaron
Business Description: Full service grocery



FOG Control Device

Under Sink ___ In Floor ___ **Interceptor** ___ Other ___ None ___
Size: 1500 gallon
Drains Included: No one knows
Maintenance: **Vacuum Truck** ___ Manual ___ Frequency: 3 Months
Name of Service Vendor: SRC
Cost per Service: \$330
Copy of Invoice Provided: **Yes** No
Condition of Unit: Ok
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin: Special sealed tank inside building
Frequency of Service: The tank has telemetry to vendor
Cost of Service Raley's pays, they don't know why

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: Produce scrap is sent back to warehouse. Meat goes to rendering. They recycle OCC. Turbo would not work



New and used oil storage, with telemetry



City of Manteca
FOG Program Survey

Survey # 107

Facility Information

Facility Name: Round Table Pizza

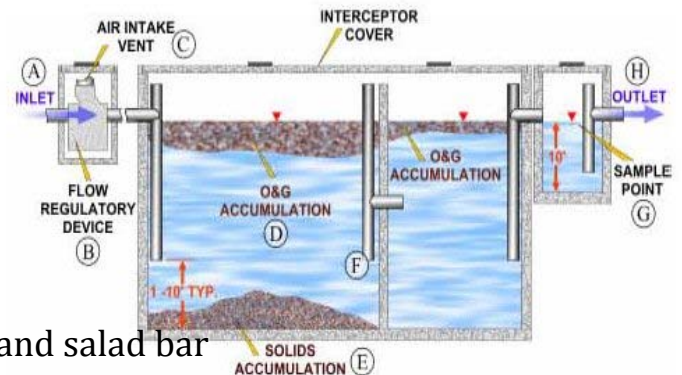
Location: 2120 Daniels

Business Address: Same

Telephone: (209) 824-7500

Representative: Lori

Business Description: Full service pizza and salad bar



FOG Control Device

Under Sink ___ In Floor ___ **Interceptor** ___ Other ___ None ___

Size: 1500 gallon

Drains Included: Sinks and floor drains

Maintenance: Vacuum Truck ___ Manual ___ Frequency: Never

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: Yes **No**

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Solid waste

Dish Washing (Plate Scraping): Solid waste

Customer Disposal: Solid waste

Additional Notes on Back of Page: No disposal. Turbo will work.

About 1/2 of trash is food waste.

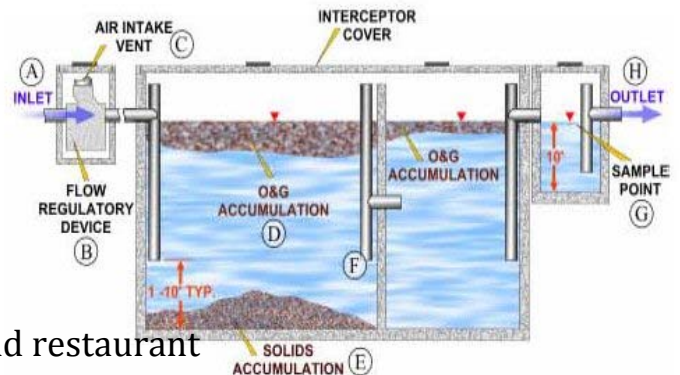


City of Manteca
FOG Program Survey

Survey # 106

Facility Information

Facility Name: Red Robin
Location: 873 Lifestyle
Business Address: Same
Telephone: (209) 823-8000
Representative: Carry and Patrick
Business Description: Full service bar and restaurant



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐
Size: 1500 gallon
Drains Included: sinks and floor drains
Maintenance: **Vacuum Truck** ☒ Manual ☐ Frequency: 45 days
Name of Service Vendor: Once upon a time
Cost per Service: \$300
Copy of Invoice Provided: **Yes** No
Condition of Unit: New
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: Yes No
Size of Rendering Bin:
Frequency of Service:
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: No disposal, Very dirty back area.
Food about 1/2 of weight. Turbo will work. They have a compactor.



Red Robin has recycling and a compactor



Wash area for trash bins

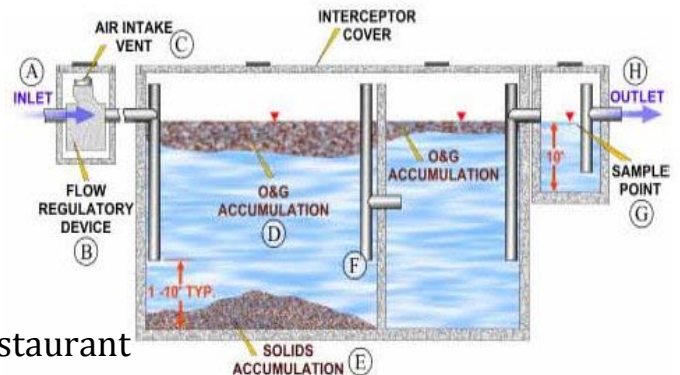


City of Manteca
FOG Program Survey

Survey # 108

Facility Information

Facility Name: Round Table Pizza
Location: 253 Spreckles Ave
Business Address: Same
Telephone: (209) 239-8100
Representative: Jose
Business Description: Pizza and salad restaurant



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐

Size: 1500

Drains Included: Floor and sinks

Maintenance: **Vacuum Truck** ☐ Manual ☐ Frequency: 3 times a year

Name of Service Vendor: Pioneer Liquid Transport

Cost per Service: \$342.50

Copy of Invoice Provided: **Yes** No

Condition of Unit: ok

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: Yes **No**

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: They use hard plates. Turbo will work

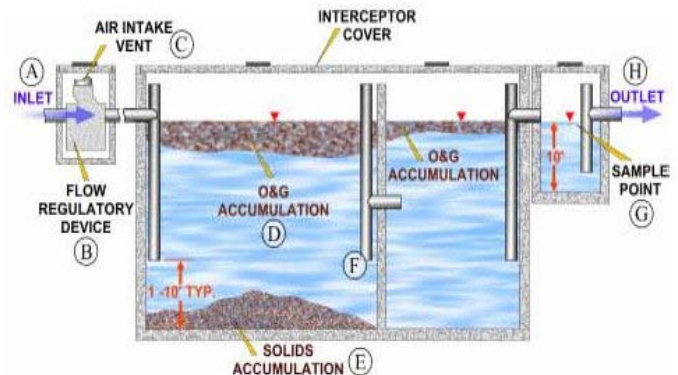


City of Manteca
FOG Program Survey

Survey # 109

Facility Information

Facility Name: Safeway
Location: 1187 S. Main
Business Address: Same
Telephone: (209)
Representative: Dave (manager)
Business Description: Super Store



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐
Size: 1500
Drains Included: They have no idea
Maintenance: **Vacuum Truck** ☐ Manual ☐ Frequency: 3 months
Name of Service Vendor: Liquid Environmental Solutions, 866-694-7327
Cost per Service: At corporate office
Copy of Invoice Provided: **Yes** No
Condition of Unit: Newer
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: Yes **No**
Size of Rendering Bin:
Frequency of Service:
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Sent to composter
Dish Washing (Plate Scraping): N/A
Customer Disposal: Trash

Additional Notes on Back of Page: They have a compost program for food waste. Each department puts food on a pallet that is then sent back to the main warehouse. I found a trap on the north side of the building

that they do not know about. The one that gets serviced is on the west side.



Produce trimmings boxed for shipping back to warehouse

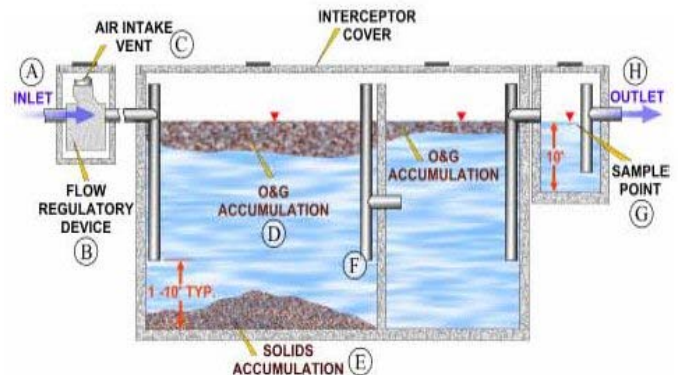


City of Manteca
FOG Program Survey

Survey # 110

Facility Information

Facility Name: Sakana Japanese Bistro
Location: 1460 W Yosemite
Business Address: Same
Telephone: (209) 239-3288
Representative: Iven
Business Description: Sushi Restaurant



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐
Size: 1,500
Drains Included: Floors and sinks
Maintenance: **Vacuum Truck** ☐ Manual ☐ Frequency: Yearly
Name of Service Vendor: SRC
Cost per Service:\$345
Copy of Invoice Provided: **Yes** No
Condition of Unit: Ok but in planter. Lid on regulator my be missing.
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin: Standard
Frequency of Service: As needed Biotane
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: Property manager takes care of pumping. Susan at 209-599-1800 Ext 22. Turbo will work.



Interceptor in the landscaping



City of Manteca
FOG Program Survey

Survey # 111

Facility Information

Facility Name: Savemart Supermarket

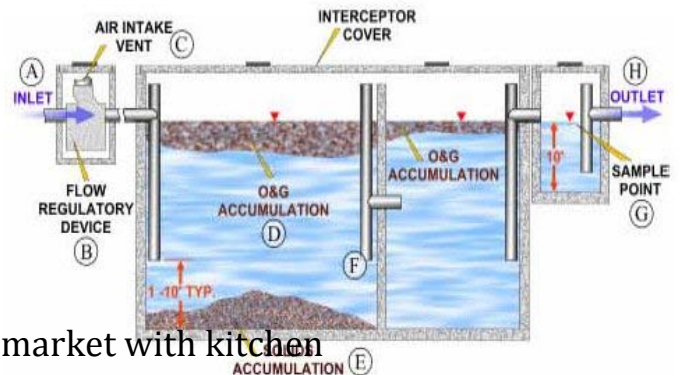
Location: 1172 N Main St.

Business Address: Same

Telephone: (209) 239-2267

Representative: Sixto Rodriquez

Business Description: Full service super market with kitchen



FOG Control Device

Under Sink ___ **In Floor** ___ Interceptor ___ Other ___ None ___

Size: 100 gallon

Drains Included:

Maintenance: **Vacuum Truck** ___ Manual ___ Frequency: 3 months

Name of Service Vendor: SRC

Cost per Service:

Copy of Invoice Provided: Yes **No**

Condition of Unit: Old

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: Fat from butcher and oil

Frequency of Service: Twice a week

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Produce and all food waste take to warehouse for composting.

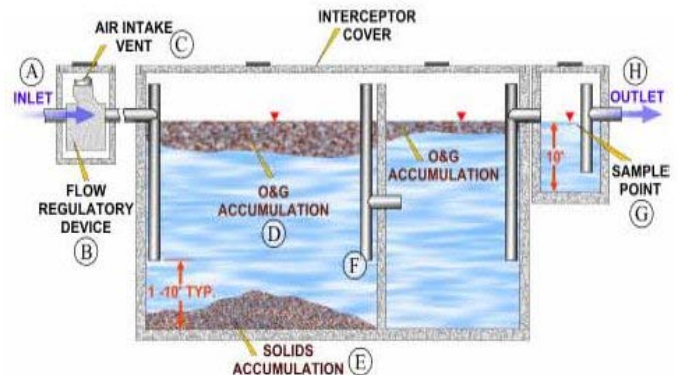


City of Manteca
FOG Program Survey

Survey # 112

Facility Information

Facility Name: Savemart Supermarket
Location: 1431 W Yosemite
Business Address: Same
Telephone: (209) 823-1768
Representative: Anthony
Business Description: Super Store



FOG Control Device

Under Sink ___ In Floor ___ **Interceptor** ___ Other ___ None ___

Size: 1500

Drains Included: They do not know

Maintenance: **Vacuum Truck** ___ Manual ___ Frequency: 3 months

Name of Service Vendor: SRC

Cost per Service: \$330

Copy of Invoice Provided: **Yes** No

Condition of Unit: Ok

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: Standard

Frequency of Service: Twice a week

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: They compost most food

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Meat scraps are picked up twice a week. No fryer. Little food waste. Turbo will work.

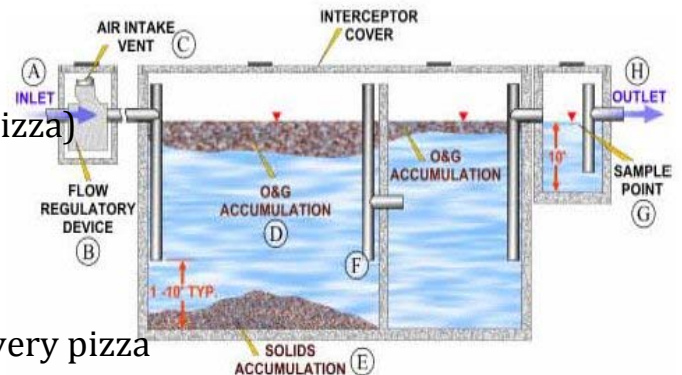


City of Manteca
FOG Program Survey

Survey # 113

Facility Information

Facility Name: Happy Pizza (was Sicily Pizza)
Location: 1166 E Yosemite
Business Address: Same
Telephone: (209)
Representative: Prect
Business Description: Take out and delivery pizza



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes **No**

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: They estimate 10% food waste.

Turbo will work

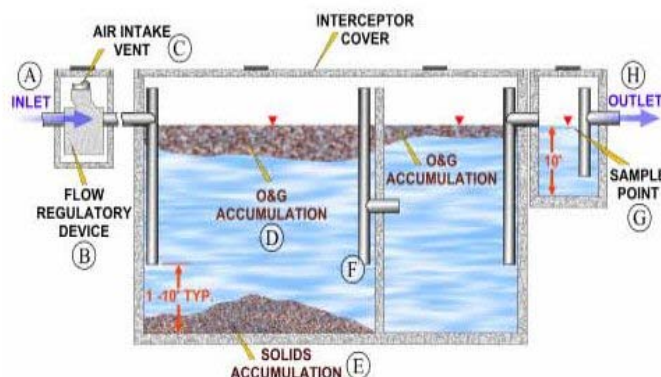


City of Manteca
FOG Program Survey

Survey # 114

Facility Information

Facility Name: Sierra High School
Location: 1700 Thomas Street
Business Address: Same
Telephone: (209) 858-0720
Representative: Stephanie Huff
Business Description: School



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency: Never

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes **No**

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Has a disposal. Styrofoam trays are recycled. They would be interested in a food program. About 50 pounds of food a day. They have a goal to compost all fruit and vegetables. There is a farm run by students.

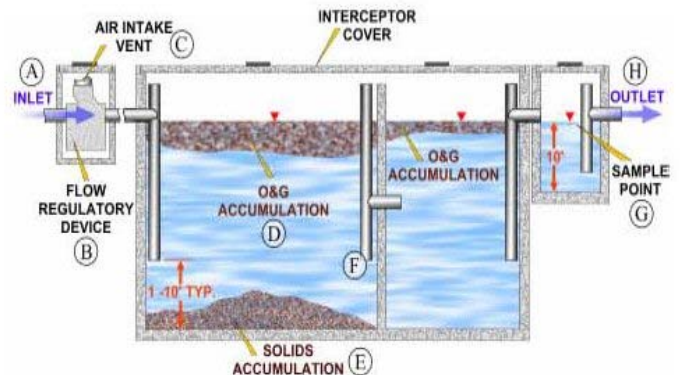


City of Manteca
FOG Program Survey

Survey # 115

Facility Information

Facility Name: Silver Chop Stick
Location: 293W Louise
Business Address: Same
Telephone: (209) 824-8474
Representative: Yen
Business Description: Chinese Takeout



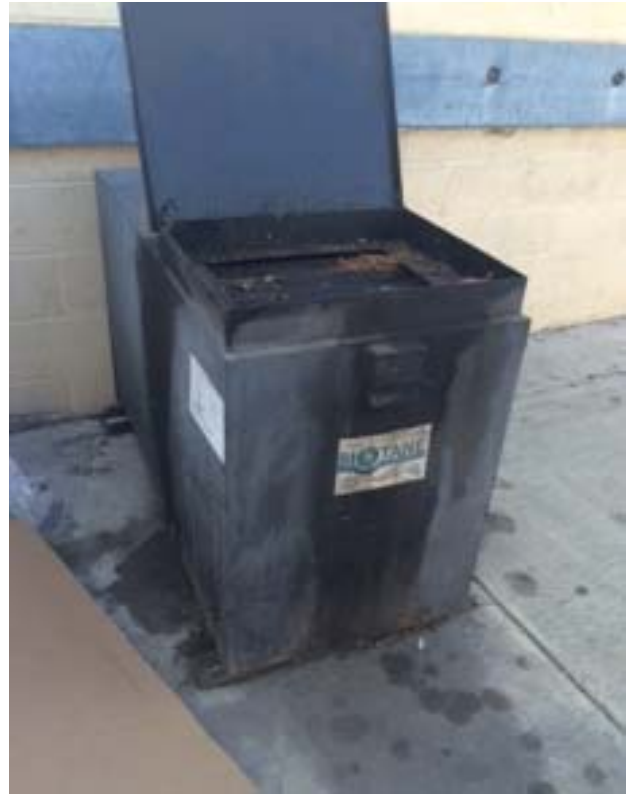
FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐
Size: 1200
Drains Included: Floors and sinks
Maintenance: **Vacuum Truck** ☒ Manual ☐ Frequency: Yearly or as needed
Name of Service Vendor: Premium Plumbing and Drain
Cost per Service:
Copy of Invoice Provided: Yes **No** **Property manager by phone**
Condition of Unit: In landscape, probable I&I
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin: Standard
Frequency of Service: As needed
Cost of Service Free

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: Ed is the property manager, (209) 239-4141 Turbo will work.



Interceptor in planter area



City of Manteca
FOG Program Survey

Survey # 116

Facility Information

Facility Name: Stella Brockman School

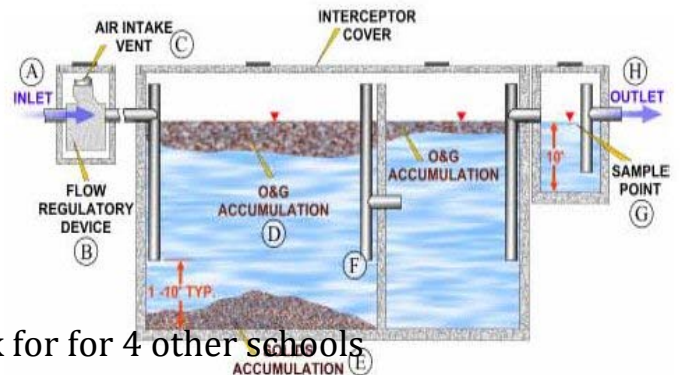
Location: 763 Silverado Drive

Business Address: Same

Telephone: (209) 858-0720

Representative: Stephanie Huff

Business Description: School. They cook for for 4 other schools



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency: Never

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes **No**

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Has a disposal. Styrofoam trays are recycled. They would be interested in a food program. About 50 pounds of food a day. They have a goal to compost all fruit and vegetables. There is a farm run by students.

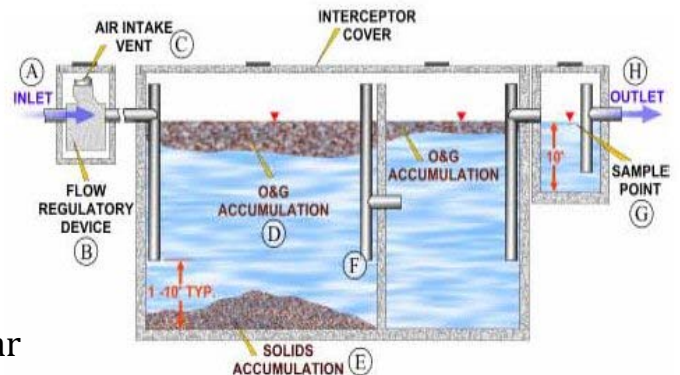


City of Manteca
FOG Program Survey

Survey # 117

Facility Information

Facility Name: Straw Hat Pizza
Location: 1238 N Main St.
Business Address:
Telephone: (209) 825-8744
Representative: Tory
Business Description: Pizza and Salad Bar



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes **No**

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume) No disposal

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Small glass bottles for wine. Turbo will work if glass is removed

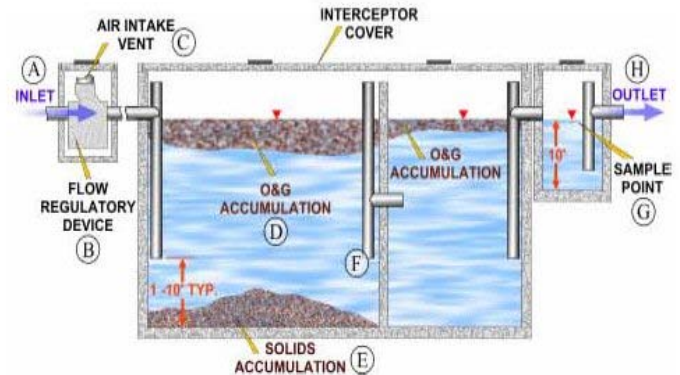


City of Manteca
FOG Program Survey

Survey # 118

Facility Information

Facility Name: Strings
Location: 1125 S Main
Business Address: Same
Telephone: (209) 823-9777
Representative: Walley
Business Description: Pasta and Salad



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes ☐ No ☐

Condition of Unit:

Visible Flow Regulating Device: Yes ☐ No ☐

Is There a Rendering Bin: Yes ☐ No ☒

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Waste is about 50% food. All food is boiled or baked. Turbo will work.

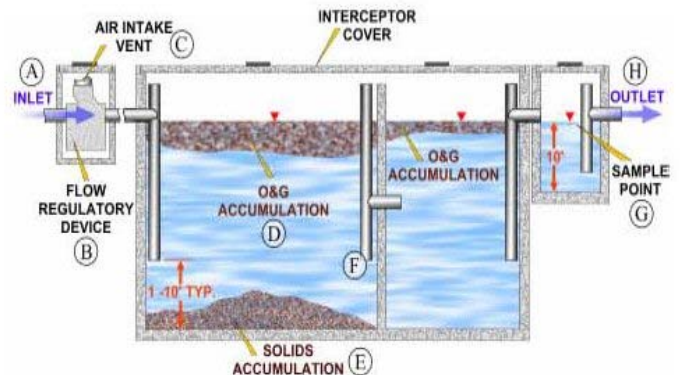


City of Manteca
FOG Program Survey

Survey # 119

Facility Information

Facility Name: Subway
Location: 1172 E Yosemite
Business Address: Same
Telephone: (209) 825-4292
Representative: Nayeli
Business Description: Fast Food



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes **No**

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: They estimate 10% food waste.

Turbo will work.

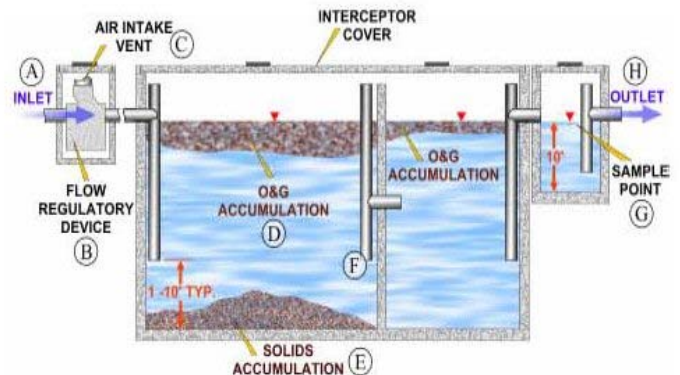


City of Manteca
FOG Program Survey

Survey # 120

Facility Information

Facility Name: Subway
Location: 1186 N Main St.
Business Address: Same
Telephone: (209) 239-3233
Representative: Hardeep
Business Description: Fast Food



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes **No**

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work

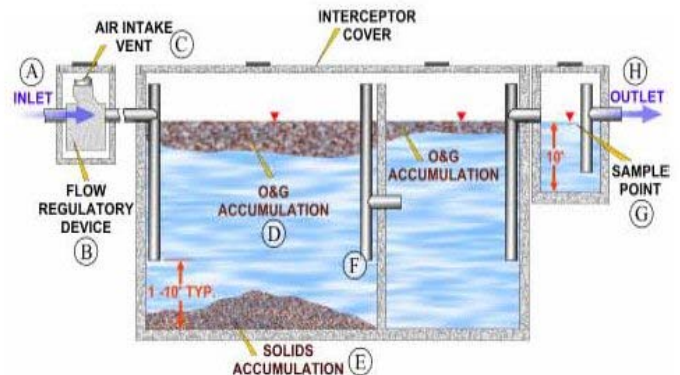


City of Manteca
FOG Program Survey

Survey # 121

Facility Information

Facility Name: Subway
Location: 1231 W Yosemite
Business Address: Same
Telephone: (209) 825-4292
Representative: Gurpreet
Business Description: Fast Food



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes **No**

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: They estimate 10% food waste.

Turbo will work.

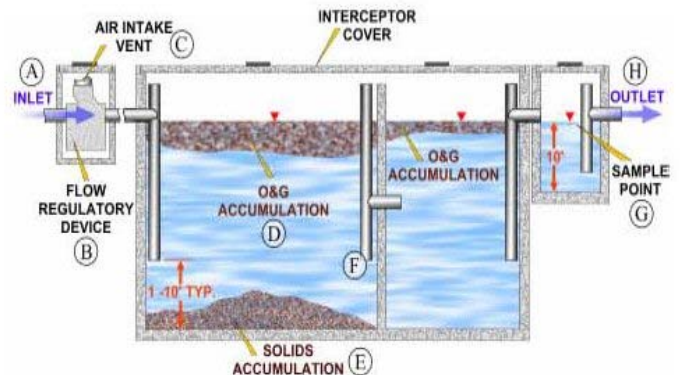


City of Manteca
FOG Program Survey

Survey # 122

Facility Information

Facility Name: Subway
Location: 2126 Daniels St.
Business Address: Same
Telephone: (209) 825-0900
Representative: Sukhwant
Business Description: Fast Food



FOG Control Device

Under Sink ___ **In Floor** ___ Interceptor ___ Other ___ None ___
Size: 30 gallon
Drains Included: Sinks and floor drains
Maintenance: Vacuum Truck ___ **Manual** ___ Frequency: Yearly
Name of Service Vendor: ?
Cost per Service: ?
Copy of Invoice Provided: Yes **No**
Condition of Unit: New
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: Yes **No**
Size of Rendering Bin:
Frequency of Service:
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Solid waste
Dish Washing (Plate Scraping): Solid waste
Customer Disposal: Solid waste

Additional Notes on Back of Page: Turbo will work. Food is about half.



This Subway location is the only one with a grease trap.

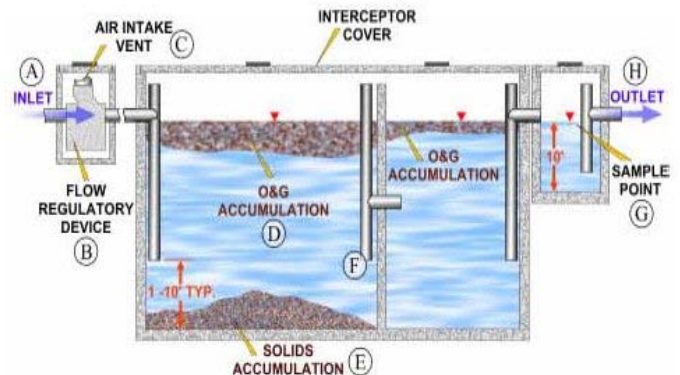


City of Manteca
FOG Program Survey

Survey # 123

Facility Information

Facility Name: Subway
Location: 878 Lifestyle
Business Address: Same
Telephone: (209) 825-2999
Representative: Leah
Business Description: Fast food



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes ☐ No ☐

Condition of Unit:

Visible Flow Regulating Device: Yes ☐ No ☐

Is There a Rendering Bin: Yes ☐ No ☒

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Solid waste

Dish Washing (Plate Scraping): Very little, meat comes ready to go.

Vegetables are trimmed and then solid waste.

Customer Disposal: Solid waste

Additional Notes on Back of Page: Turbo will work. Food is about half
by weight



City of Manteca
FOG Program Survey

Survey # 124

Facility Information

Facility Name: Sunny Valley Smoked Meats

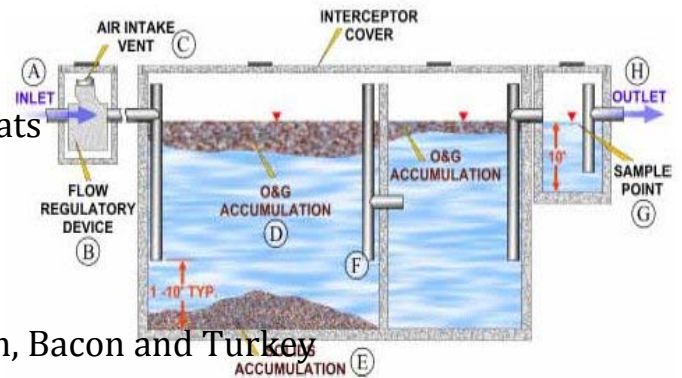
Location: 2475 W Yosemite

Business Address: Same

Telephone: (209) 825-0288

Representative: Reggie Randolph

Business Description: Meat smoker, Ham, Bacon and Turkey



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐

Size: 6,000 gallon

Drains Included: Drippings from oven

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency: 1 or 2 times a month

Name of Service Vendor: SRC

Cost per Service: \$1,250

Copy of Invoice Provided: **Yes** No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes **No**

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Tallow

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: All trimming go to tallow. They recycle OCC and wood. Turbo will not work well.

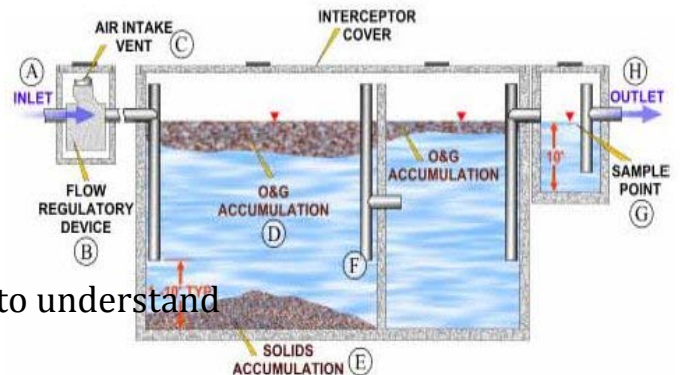


City of Manteca
FOG Program Survey

Survey # 125

Facility Information

Facility Name: Super Buffet
Location: 1405 E Yosemite
Business Address: Same
Telephone: (209) 825-8998
Representative: Owner on phone. Hard to understand
Business Description:



FOG Control Device

Under Sink ___ In Floor ___ **Interceptor** ___ Other ___ None ___

Size: 1000

Drains Included:

Maintenance: **Vacuum Truck** ___ Manual ___ Frequency: 1 time in 4 years

Name of Service Vendor: They paid with cash. See note

Cost per Service: \$315

Copy of Invoice Provided: **Yes** No **See notes**

Condition of Unit: Old

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: Standard

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: The receipt was fake. The company phone was 465-7472. This is a place to follow up on. Turbo will work.



Interceptor on East side of building

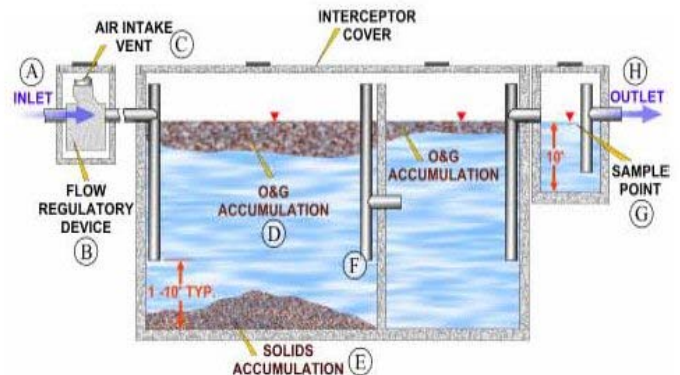


City of Manteca
FOG Program Survey

Survey # 126

Facility Information

Facility Name: Taco Bell
Location: 421 E Yosemite
Business Address: Same
Telephone: (209) 239-2102
Representative: Norla
Business Description: Fast Food



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐
Size: 1500 gallon
Drains Included:
Maintenance: **Vacuum Truck** ☒ Manual ☐ Frequency: 3 Months
Name of Service Vendor: SRC
Cost per Service:
Copy of Invoice Provided: Yes **No**
Condition of Unit:
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin:
Frequency of Service:
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: Manager says 50% food. Turbo will work

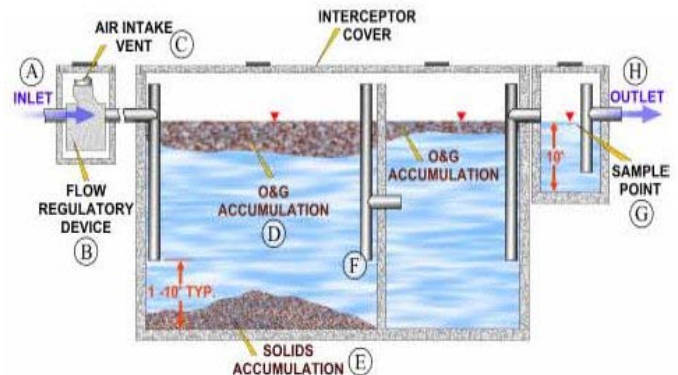


City of Manteca
FOG Program Survey

Survey # 127

Facility Information

Facility Name: Taco Bell
Location: 201 Northgate Dt.
Business Address: Same
Telephone: (209) 239-2102
Representative: Antonette
Business Description: Fast Food



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐
Size: 1,500 Gallon
Drains Included: Floors and sinks
Maintenance: **Vacuum Truck** ☒ Manual ☐ Frequency: 3 Months
Name of Service Vendor: SRC
Cost per Service:
Copy of Invoice Provided: Yes **No**
Condition of Unit: New
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin: Standard
Frequency of Service: Twice a week
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work



Interceptor in landscaping

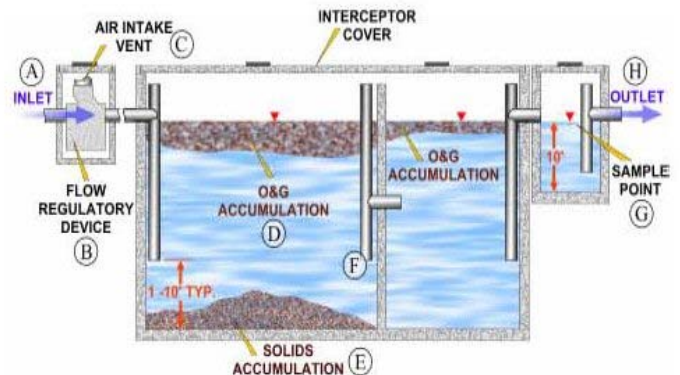


City of Manteca
FOG Program Survey

Survey # 128

Facility Information

Facility Name: Taqueria Nayarit
Location: 1124 W Yosemite
Business Address: Same
Telephone: (209) 825-8637
Representative:
Business Description: Closed



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ None ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes No

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Business closed

STOP WORK ORDER



CITY OF MANTECA

BUILDING SAFETY DIVISION

(209) 456-8500

Pursuant to CBC Section 115, CPC 103.4.3, CMC 114.5, and/or MMC 15.20.130 It is hereby ordered that all work cease immediately at the location listed due to violation(s) of the California Building, Plumbing, Mechanical, and/or Electrical Code(s).

Submitter: _____ <u>CE - 100-101</u> Officer, Architect, R. S. Davis _____ _____ <u>DN</u> Inspector City of Manteca, CA Project Address	Permittee: _____ <u>Removal of Permit, without</u> <u>R. S. Davis</u> _____ _____ <u>DN</u> City of Manteca Project Address

**IT IS UNLAWFUL FOR ANY
UNAUTHORIZED PERSON TO
REMOVE THIS SIGN**

Stop work order on building

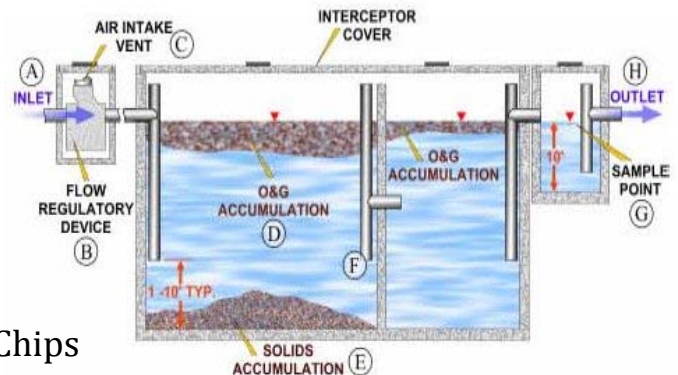


City of Manteca
FOG Program Survey

Survey # 129

Facility Information

Facility Name: The Codfather
Location: 290 N Main
Business Address: Same
Telephone: (209) 624-3329
Representative: Owner
Business Description: Fast food, Fish & Chips



FOG Control Device

Under Sink ___ In Floor ___ Interceptor ___ Other ___ None ___

Size: 30 gallon

Drains Included: sinks only

Maintenance: Vacuum Truck ___ **Manual** ___ Frequency: Big dipper

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No N/A

Condition of Unit: ok

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: Standard

Frequency of Service: As needed

Cost of Service Free

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work



The under sink Big Dipper



City of Manteca
FOG Program Survey

Survey # 130

Facility Information

Facility Name: The Pub

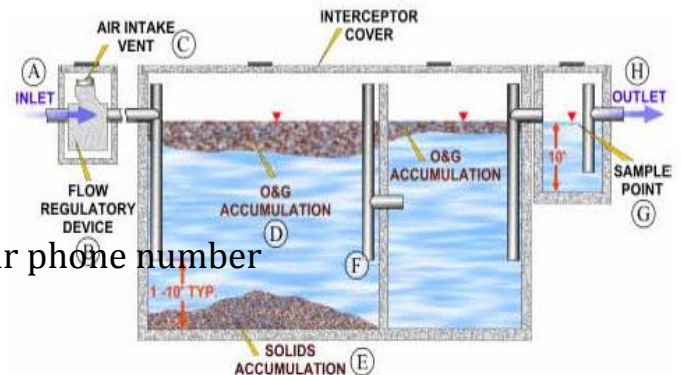
Location: 1305 N Main

Business Address: Same

Telephone: (209) They do not know their phone number

Representative: Aracelia

Business Description: Bar only, no food



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ None ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes No

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: None

Dish Washing (Plate Scraping): None

Customer Disposal: Trash

Additional Notes on Back of Page: Bar only

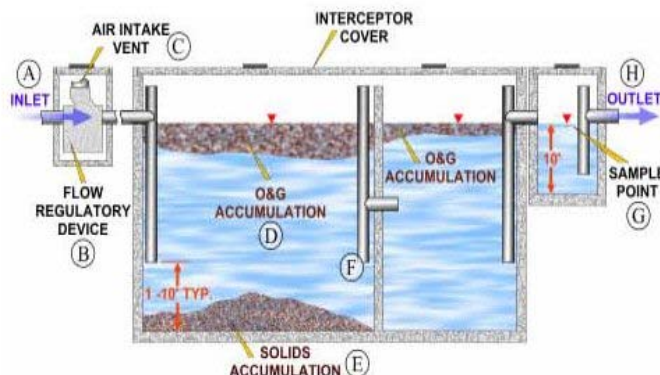


City of Manteca
FOG Program Survey

Survey # 131

Facility Information

Facility Name: Togo's Eatery
Location: 1115 S Main
Business Address: Same
Telephone: (209) 239-8646
Representative: Marlo
Business Description: Fast Food



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes **No**

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Some trimmings to solid waste.

Turbo will work.

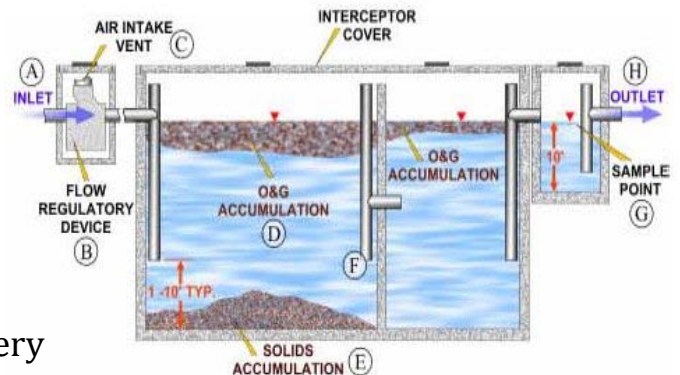


City of Manteca
FOG Program Survey

Survey # 132

Facility Information

Facility Name: Tony's and Mrs. K's Cafe
Location: 1195 E Yosemite
Business Address: Same
Telephone: (209) 239-1405
Representative: Artemis
Business Description: Car wash and bakery



FOG Control Device

Under Sink ☐ **In Floor** ☒ Interceptor ☐ Other ☐ None ☐
Size: 35 gallon
Drains Included:
Maintenance: **Vacuum Truck** ☒ Manual ☐ Frequency: 1 time a year
Name of Service Vendor:
Cost per Service:
Copy of Invoice Provided: Yes ☐ No ☒
Condition of Unit: new
Visible Flow Regulating Device: Yes ☐ **No** ☒
Is There a Rendering Bin: Yes ☐ **No** ☒
Size of Rendering Bin:
Frequency of Service:
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work with waste



Small in the ground grease trap

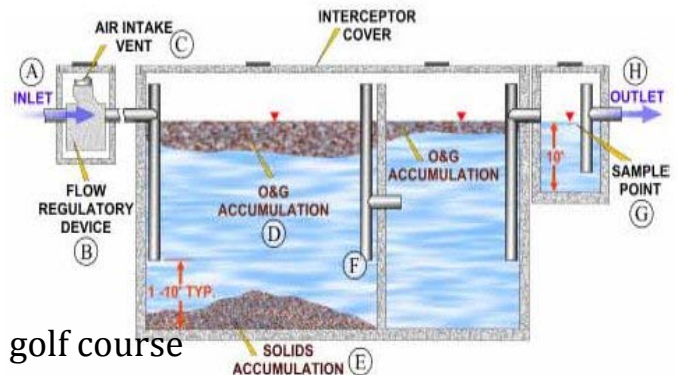


City of Manteca
FOG Program Survey

Survey # 133

Facility Information

Facility Name: Uncle Frank's Grill
Location: 305 N Union
Business Address: Same
Telephone: (209) 825-2501
Representative: Manager
Business Description: Part of city owned golf course



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐
Size: 1500
Drains Included: Sinks and floors
Maintenance: Vacuum Truck ☐ Manual ☐ Frequency: 3 times per year
Name of Service Vendor: HP Commodities
Cost per Service: \$345
Copy of Invoice Provided: **Yes** No
Condition of Unit: ok
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin: 140 gallon
Frequency of Service: As needed
Cost of Service They are paid

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will not work. They said the missed a pumping and the interceptor plugged. There is a disposal for both the prep and wash sinks.

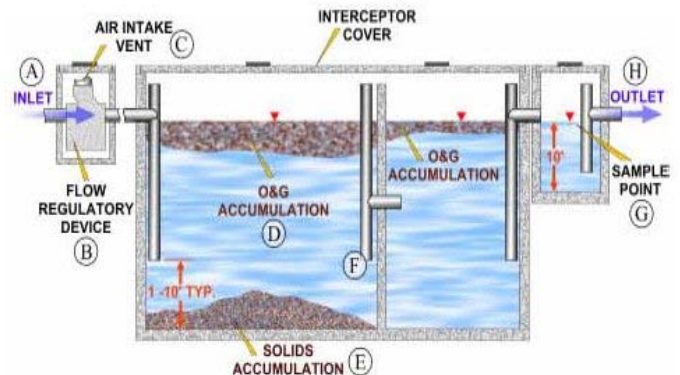


City of Manteca
FOG Program Survey

Survey # 134

Facility Information

Facility Name: Village Sandwich Shoppe
Location: 123 W Yosemite
Business Address: Same
Telephone: (209) 823-0567
Representative: Tim
Business Description: Luch restaurant



FOG Control Device

Under Sink ☐ In Floor ☐ Interceptor ☐ Other ☐ **None** ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes **No**

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Cold food only. 20% food. Turbo will work

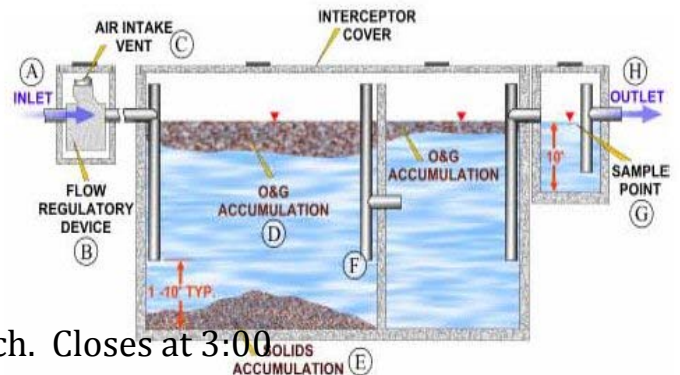


City of Manteca
FOG Program Survey

Survey # 135

Facility Information

Facility Name: Waffle Shop
Location: 1021 N Main
Business Address: Same
Telephone: (209) 239-4399
Representative: Billy
Business Description: Breakfast and lunch. Closes at 3:00



FOG Control Device

Under Sink ___ **In Floor** ___ Interceptor ___ Other ___ None ___
Size: 40 Gallon
Drains Included: 1 sink
Maintenance: Vacuum Truck ___ **Manual** ___ Frequency: As needed
Name of Service Vendor: Sisk
Cost per Service:
Copy of Invoice Provided: **Yes** No
Condition of Unit: Very small and old. Under sized
Visible Flow Regulating Device: Yes No
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin: Standard
Frequency of Service: As needed
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: They were cleaning the trap when I was there. The floor drains were backed up. Turbo would NOT work.



Small grease trap under sink. At the time of the picture the box was open for cleaning.

Sisk Recycling Company 4508 South Commons Road Torrance, CA 90503 (202) 687-1451		Manifest - Inedible Kitchen Grease Transport Generator Information	
Date: 9-26-14	Time: 12:10	Manifest Number: 0173	
Generator: Waffle Shop			
Generator Address: 1021 Alameda, Montrea, Ca			
Size (Gals): 45 Gals	Quantity: 8	Quantity (Gals): 40	Type of WFO: ☒ Used Cooking Oil ☐ Industrial/Prep Grease
Volume Capacity (Gals): 1-200 Gals	Transfer Date (9/26/14)	Generator Representative Name (Print):	
SISK RECYCLING COMPANY		Generator Representative Signature:	
Driver Signature: DTH			

Pumping invoice

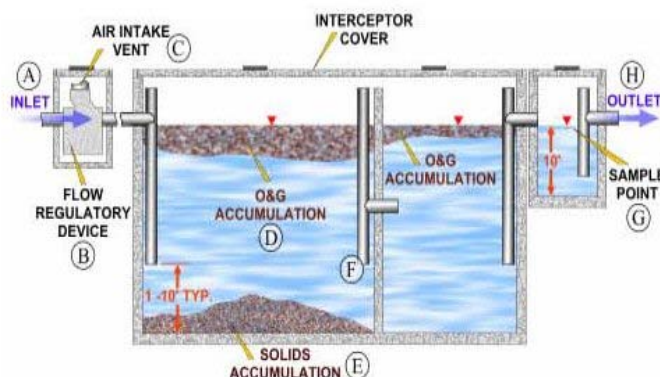


City of Manteca
FOG Program Survey

Survey # 136

Facility Information

Facility Name: Wal-Mart
Location: 1205 S Main
Business Address: Same
Telephone: (209) 824-2000
Representative: Bhupinder
Business Description: Super Store



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐
Size: 1501 gallon
Drains Included: Deli floor and sinks
Maintenance: Vacuum Truck ☐ Manual ☐ Frequency: 3 to 4 times a year.
Name of Service Vendor: Liquid Environmental Solutions 866-694-7327
Cost per Service:
Copy of Invoice Provided: Yes **No**
Condition of Unit:
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin:
Frequency of Service: Standard
Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: McDonalds is separate. They have a composter for food waste. Composter is Quest 877-321-1811



City of Manteca
FOG Program Survey

Survey # 137

Facility Information

Facility Name: Walter Woodard

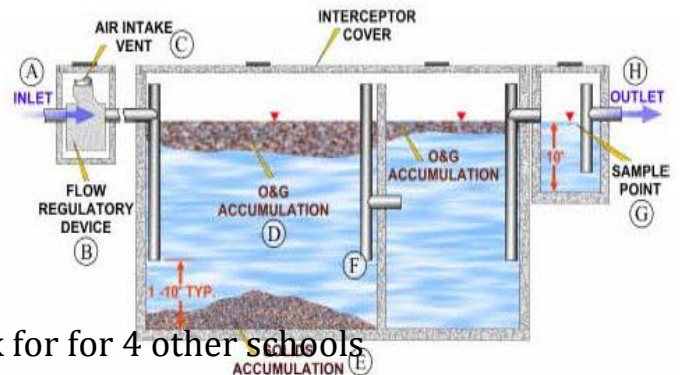
Location: 575 Tannehill Drive

Business Address: Same

Telephone: (209) 858-0720

Representative: Stephanie Huff

Business Description: School. They cook for for 4 other schools



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐

Size:

Drains Included:

Maintenance: Vacuum Truck ☐ Manual ☐ Frequency: Never

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes **No**

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Has a disposal. Styrofoam trays are recycled. They would be interested in a food program. About 50 pounds of food a day. They have a goal to compost all fruit and vegetables. There is a farm run by students.

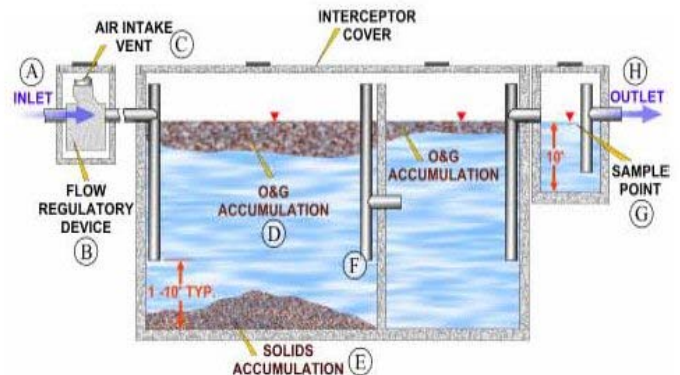


City of Manteca
FOG Program Survey

Survey # 138

Facility Information

Facility Name: Webers BBQ
Location: 825 Mellon Ave.
Business Address: Same
Telephone: (209) 823-4227
Representative: Karisa (Mrs. Webber)
Business Description: BBQ Restaurant



FOG Control Device

Under Sink ☐ In Floor ☐ **Interceptor** ☒ Other ☐ None ☐
Size: About 1,000 gallon
Drains Included: Floors and sinks
Maintenance: **Vacuum Truck** ☒ Manual ☐ Frequency: Last time 2010
Name of Service Vendor: None
Cost per Service:
Copy of Invoice Provided: Yes **No**
Condition of Unit: Ok
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No Biotane
Size of Rendering Bin:
Frequency of Service: As needed
Cost of Service Free

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work

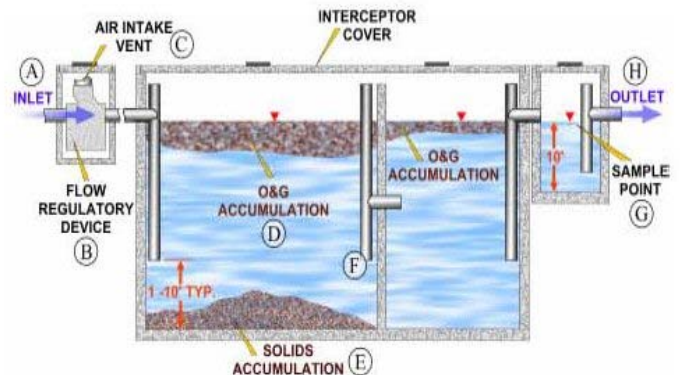


City of Manteca
FOG Program Survey

Survey # 139

Facility Information

Facility Name: Weinerschnitzel
Location: 1200 W Yosemite
Business Address: Same
Telephone: (209) 239-7756
Representative: Nabil
Business Description: Fast Food



FOG Control Device

Under Sink ___ In Floor ___ **Interceptor** ___ Other ___ None ___
Size: 500 Gallon
Drains Included: Owner does not know
Maintenance: **Vacuum Truck** ___ Manual ___ Frequency: Owner does not know
Name of Service Vendor: HP Commodities
Cost per Service: Owner says free with oil pickup
Copy of Invoice Provided: Yes **No**
Condition of Unit: Sulfide damage
Visible Flow Regulating Device: Yes **No**
Is There a Rendering Bin: **Yes** No
Size of Rendering Bin: Standard
Frequency of Service: As needed
Cost of Service Free

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash
Dish Washing (Plate Scraping): Trash
Customer Disposal: Trash

Additional Notes on Back of Page: Only one lid on the trap. See hand written notes. Turbo will work.

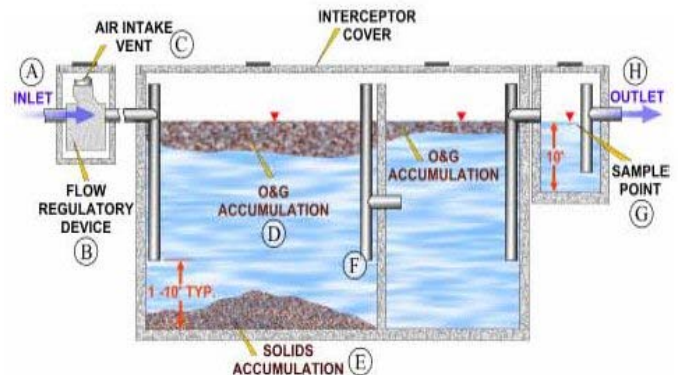


City of Manteca
FOG Program Survey

Survey # 140

Facility Information

Facility Name: Wendy's
Location: 1630 E Yosemite
Business Address: Same
Telephone: (209) 239-2617
Representative: Elizabeth
Business Description: Fast Food



FOG Control Device

Under Sink ___ In Floor ___ **Interceptor** ___ Other ___ None ___

Size: 1500

Drains Included: Floors and sinks

Maintenance: **Vacuum Truck** ___ Manual ___ Frequency: 3 months

Name of Service Vendor: SRC Pumping 800-772-8727

Cost per Service: \$300

Copy of Invoice Provided: **Yes** No

Condition of Unit: ok

Visible Flow Regulating Device: Yes **No**

Is There a Rendering Bin: **Yes** No

Size of Rendering Bin: Large plastic indoor. Pumps through wall

Frequency of Service: As needed

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: Trash

Additional Notes on Back of Page: Turbo will work



Used oil storage

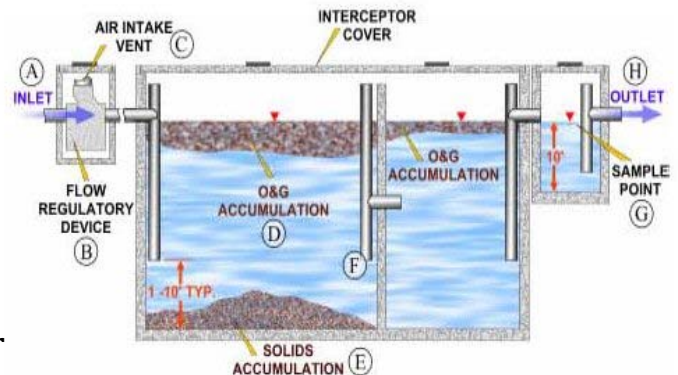


City of Manteca
FOG Program Survey

Survey # 141

Facility Information

Facility Name: Zen Bakery
Location: 1316 Dupont Ct.
Business Address: Same
Telephone: (209) 239-8262
Representative: Becky Moresson
Business Description: Commercial Baker



FOG Control Device

Under Sink ☐ **In Floor** ☐ Interceptor ☐ Other ☐ None ☐

Size: ?

Drains Included: Floor drain and triple sink

Maintenance: **Vacuum Truck** ☐ Manual ☐ Frequency: Unknown

Name of Service Vendor: Brennin Discount Plumber

Cost per Service: \$130

Copy of Invoice Provided: Yes ☐ No ☐

Condition of Unit: Ok

Visible Flow Regulating Device: Yes ☐ No ☒

Is There a Rendering Bin: Yes ☐ No ☒

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste: Trash

Dish Washing (Plate Scraping): Trash

Customer Disposal: None

Additional Notes on Back of Page: They put old oil in containers and someone comes and gets it. Turbo will work. The plumber said he never cleaned the trap.



Under the sink trap

APPENDIX –B

BLANK SURVEY FORM



City of Manteca
FOG Program Survey

Survey # ____

Facility Information

Facility Name:

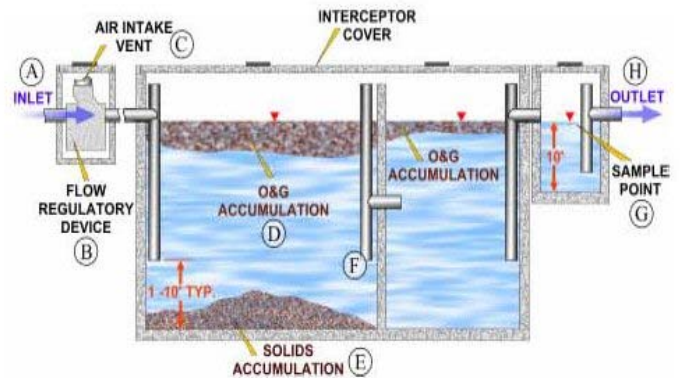
Location:

Business Address:

Telephone: (209)

Representative:

Business Description:



FOG Control Device

Under Sink ____ In Floor ____ Interceptor ____ Other ____ None ____

Size:

Drains Included:

Maintenance: Vacuum Truck ____ Manual ____ Frequency:

Name of Service Vendor:

Cost per Service:

Copy of Invoice Provided: Yes No

Condition of Unit:

Visible Flow Regulating Device: Yes No

Is There a Rendering Bin: Yes No

Size of Rendering Bin:

Frequency of Service:

Cost of Service

Food Waste (Practice and Volume)

Kitchen Preparation Waste:

Dish Washing (Plate Scraping):

Customer Disposal:

Additional Notes on Back of Page:

APPENDIX – C

SAMPLE CITY ISSUED LETTERS



CITY OF MANTECA

PUBLIC WORKS DEPARTMENT

12 September 2014

Aki's Grocery & Food-to-go
368 N Main Street
Manteca CA 95336

Subject: Fats, Oils and Grease Monitoring Program

Dear Manteca Business,

Soon the City of Manteca will be commencing a survey to determine how businesses are managing the Fats, Oils and Grease (FOG) they produce. In addition, we will be estimating the volume of food waste being produced. We are conducting this free survey to assist you in reducing your chances of generating a sanitary sewer system overflow. As you know, sanitary sewer system overflows are both environmentally and financially costly.

In the next few weeks our consultant, Herwit Engineering, will contact you at your place of business. Our consultant will have a letter of introduction from the City. Please be prepared to show them your FOG control system (grease trap) and any records you may have regarding servicing of the system (when and by what company it is serviced).

The Manteca Municipal Code, Section 13.20.030, Authority and Responsibility allows for the City or its representative to collect the requested information. Again, this service is free and is intended to reduce your business' liability due to an unintended sanitary sewer spill. In addition, the City is considering diverting food waste from the landfill to a City-owned digester that produces methane gas.

We look forward to meeting with you.

Sincerely,

John Clymo
Deputy Director, Utility Services
Public Works
City of Manteca

Cc: Larry Buckle, P.E.

1001 W. CENTER ST., SUITE E • MANTECA, CA 95337 • (209) 456-8400 • FAX (209) 923-8940
www.ci.manteca.ca.us

Printed on Recycled Paper



CITY OF MANTECA

PUBLIC WORKS DEPARTMENT

Manteca Business
Hand Delivery

Subject: Letter of Introduction

Dear Business Owner,

The City is currently conducting a Fats, Oils, and Grease (FOG) survey. Recently your business was mailed a letter from the City saying that a representative from the City would be visiting your place of business to collect information on your FOG control program. This letter serves as a letter of introduction and authorization for the person from International Engineering Services, Inc. (IES), to collect this information.

The **Manteca Municipal Code, Section 13.20.030 Authority and Responsibility** allows for the City or its representative to collect the requested information. This service is provided by the City and is intended to reduce your business' liability due to unintended sanitary sewer spills. In addition, the City is considering a food waste collection program, with the possibility of producing methane gas from the food waste collected.

Thank you for taking the time to provide the requested information. If you have any questions, please feel free to contact the City of Manteca, Department of Public Works, at (209) 456-8400.

Sincerely,

City of Manteca

Detailed Gas Utilization Economic Analysis

Manteca Gas Utilization Economic Analysis						
	Existing Biosolids Only					
	BioCNG 50 No Heat Recover at Digesters	BioCNG 100 No Heat Recover at Digesters	BioCNG 100 With Heat Recover at Digesters	2 x 250 kW Ingersoll Rand Gas Turbine NG&DG	Existing 400 kW Waukesha Engine NG&DG	New 600 kW MWM Engine NG&DG
Income and Diesel Fuel Offsets						
Diesel Fuel Cost (\$/gal) (1)	\$ 3.18	\$ 3.18	\$ 3.18	\$ 3.18	\$ 3.18	\$ 3.18
Natural Gas Cost per \$/Therm (HHV) (2,3)	\$ 0.61	\$ 0.61	\$ 0.61	\$ 0.65	\$ 0.65	\$ 0.65
Minimum Average Plant Electric Load (kW) (4)				750	750	750
Size of Prime Mover (kW)				500	400	592
Size of CNG System (DGE/Day) (14)	250	367	367			
Digester Gas Elec. Eff. (HHV 620 BTU/hr)				26.1%	31.6%	41.0%
Natural Gas Elec. Eff. (HHV 1,000 BTU/hr)				26.1%	31.6%	41.0%
Digester Gas Available (scfd)	48,485	48,485	68,270	107,741	107,741	107,741
Digester Gas Available (scfm)	33.7	33.7	47.4	74.8	74.8	74.8
Digester Gas Available HHV (Therms/hr) (5)	10.9	10.9	15.3	27.8	27.8	27.8
Digester Gas Prime Mover Power Output (kW)				212.7	257.5	334.2
Natural Gas Prime Mover Power Output (kW)				287.3	142.5	257.8
Natural Gas Heat Input HHV (Therms/hr)	3.5	10.2	5.8	37.6	15.4	21.5
Digester Gas Compressor Power (kW)				22.0	15.0	15.0
Digester Gas Conditioning Power (kW) (9)	54	54	54	19.0	19.0	19.0
Hot Water Pumps (kW)			4	2.0	2.0	2.0
Natural Gas Compressor Power (kW)	27	45	45	18.2	5.1	7.1
Total All Ancillary Losses (kW)	81.0	99.0	103.0	61.2	41.1	43.1
Net Cogen Power Output (kW)				438.8	358.9	548.9
Standby Capacity for PG&E				439	359	549
Percentage of Total Energy from Digester Gas	76%	52%	73%	43%	64%	56%
Average Plant Electric Cost per kW (6)	\$ 0.1220	\$ 0.1220	\$ 0.1220	\$ 0.1220	\$ 0.1220	\$ 0.1220
Cost of Energy Sold to PG&E				\$ 0.1220	\$ 0.1220	\$ 0.1220
BIOCNG/Cogen Availability	95%	95%	95%	95%	95%	95%
Prime Mover Heat Recovery (% of Input Energy)				34.9%	60.0%	42.0%
Heat Available to Plant From Cogen (Therms/hr)	-	-	-	22.8	25.9	20.7
Heat Available to Plant From Cogen (BTUs/hr)	-	-	-	2,283,209	2,593,671	2,070,989
Peak Month Heating Demand at Plant (BTU/hr)	1,438,753	1,438,753	1,134,369	1,438,753	1,438,753	1,438,753
Average Heating Demand at Plant (BTU/hr)	1,224,591	1,224,591	1,019,640	1,224,591	1,224,591	1,224,591
Reduction in Diesel Fuel for Trucks (gal/yr)	91,250	133,955	133,955			
Additional NG Purchased (Therms/yr)	35,241	94,173	57,168	312,810	128,115	178,725
Total Annual Electric Reduction on PG&E Service (kW-hr)				3,652,055	2,987,014	4,568,170
Total Annual Electrical Export to PG&E (kW-hr)				-	-	-
Offset Energy Cost From PG&E				\$ 445,690	\$ 364,530	\$ 557,492
Total Annual Electricity Sales to PG&E				\$ -	\$ -	\$ -
Total Electricity Offsets and Sales				\$ 445,690	\$ 364,530	\$ 557,492
Standby Charges to PG&E (7)				\$ 11,280	\$ 9,226	\$ 14,110
Net Electrical Revenue (\$/yr)	\$ -	\$ -	\$ -	\$ 434,410	\$ 355,304	\$ 543,382
Reduction in Fuel Cost When Converted to NG (\$/yr)	\$ 290,175	\$ 425,977	\$ 425,977	\$ -	\$ -	\$ -
RIN Credits @ \$1.65/RIN (RIN =77,000 BTU LHV)	\$ 184,096	\$ 184,096	\$ 259,221			
Total Net Income/Offset Cost (\$/yr)	\$ 474,271	\$ 610,073	\$ 685,197	\$ 434,410	\$ 355,304	\$ 543,382
Annual Costs						
Natural Gas Purchased (Therms/yr)	35,241	94,173	57,168	312,810	128,115	178,725
Natural Gas Fuel Cost (\$/yr)	\$ 21,497	\$ 57,446	\$ 34,872	\$ 203,327	\$ 83,275	\$ 116,171
Electrical Costs (\$/yr)	\$ 83,707	\$ 102,950	\$ 107,012	\$ -	\$ -	\$ -
Yearly Warranty and Service Contract Prime Mover (\$/kW-hr)(13)				\$ 0.011	\$ 0.040	\$ 0.040
Yearly Warranty and Service Contract Prime Mover (\$/yr)				\$ 45,771	\$ 133,152	\$ 197,065
Yearly Warranty and Service Contract Gas Conditioning				\$ -	\$ -	\$ -
Gas Conditioning Sulfur Media Replacement (8,9)	\$ 98,155	\$ 98,155	\$ 98,155	\$ 98,155	\$ 98,155	\$ 98,155
Gas Conditioning Siloxane Media Replacement	\$ 4,848	\$ 4,848	\$ 6,827	\$ 10,774	\$ 10,774	\$ 10,774
Gas Conditioning Miscellaneous Maintenance	\$ 4,500	\$ 4,500	\$ 4,500	\$ 4,500	\$ 4,500	\$ 4,500
BioCNG Maintenance	\$ 4,500	\$ 4,500	\$ 4,500	\$ -	\$ -	\$ -
Subtotal Operations Costs	\$ 217,207	\$ 272,399	\$ 255,866	\$ 362,526	\$ 329,856	\$ 426,665
Net Offset Revenue per Year	\$ 257,064	\$ 337,674	\$ 429,331	\$ 71,884	\$ 25,448	\$ 116,717
Project Costs (10, 11)						
Total On Site Construction Cost	\$ 3,437,575	\$3,937,575	\$2,962,000	\$ 3,087,000	\$ 1,958,000	\$ 2,908,000
PG&E Natural Gas Upgrades	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Digester Heat Recovery System	\$ -	\$ -	\$ 265,000	\$ -	\$ -	\$ -
Project Design and Construction Management			\$ 414,680	\$ 432,180	\$ 274,120	\$ 407,120
Total Project Costs	\$ 3,437,575	\$3,937,575	\$3,641,680	\$ 3,519,180	\$ 2,232,120	\$ 3,315,120
CNG Vehicle Upgrade Costs On New Truck Purchase	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
CNG Station Rebates						
SJVAPCD CNG Truck Rebates (\$10K/vehicle x 5 trucks)	\$ -	\$ -	\$ -			

Manteca Gas Utilization Economic Analysis

		Existing Biosolids Only					
		BioCNG 50 No Heat Recover at Digesters	BioCNG 100 No Heat Recover at Digesters	BioCNG 100 With Heat Recover at Digesters	2 x 250 kW Ingersoll Rand Gas Turbine NG&DG	Existing 400 kW Waukesha Engine NG&DG	New 600 kW MWM Engine NG&DG
PG&E Self Generation Rebate Non-Renewable Portion (\$2.08/W)					Expires 2015	Expires 2015	Expires 2015
Total Project Costs After Rebate		\$ 3,437,575	\$3,937,575	\$3,641,680	\$ 3,519,180	\$ 2,232,120	\$ 3,315,120
Simple Payback Years		13.37	11.66	8.48	48.96	87.71	28.40
Available Financing							
Period (years)	15						
Interest Rate (%)	3.50%						
Yearly Payment		(\$298,468)	(\$341,880)	(\$316,189)	(\$305,553)	(\$193,804)	(\$287,836)
Yearly Savings Fuel & Electricity		\$ 257,064	\$ 337,674	\$ 429,331	\$ 71,884	\$ 25,448	\$ 116,717
Net Savings		(\$41,403)	(\$4,206)	\$113,142	(\$233,669)	(\$168,356)	(\$171,118)
Notes:		1) Cost of diesel based on West Cost average of Clean Cities Alternative Fuels Price Report, October 2014 and April 2016. 2) Cost of natural gas for vehicle fueling based on PG&E Natural Gas Vehicle Schedule 1 Projected for 2015 3) Cost of natural gas for cogeneration based on U.S Energy Administration Industrial Rate for 2014 plus PG&E Electrical Generation Transportation Tariff for 2015 4) Historic average power demand ranges from 750 kW up to 950 kW 5) Digester Gas Heating Value for BioCNG reduce by 13% to account for losses in CNG process 6) Average year around electric charge base don PG&E E20P Rate Schedule January 2015 7) PG&E has a capacity standby charge for cogeneration systems. 8) Sulfur Treatment is still required for the Boiler Operation per SJVUPACD Rule 4307 by July 2015. Siloxane treatment is only required on the portion going to BioCNG 9) BioCNG 50 system still has full gas conditioning to treat sulfur for boiler so no reduction from BioCNG 100 system. 10) Low Pressure gas holder is part of Digester Project and not included in these costs. 11) WQCF flare to be used. Cost of flare system is not included in these costs. 12) Costs for receiving and processing food waste and FOG are separately covered as self supported programs through tip fees and processing fees and are not included in this analysis. 13) Costs obtained from CAT for new 600 kW MWM Engine assumed similar for existing 400 kW engine option. 14) Yearly existing diesel usage for solid waste trucks was 134,105 gallons in 2014 or 367 gallons per day. This is used for Existing and near term conditions. For future Food Waste conditions, it is assumed additional vehicles will be converted to CNG to the capacity of the system at 500 DGE per day.					

Manteca Gas Utilization Economic Analysis

	Biosolids with FOG					
	BioCNG 50 No Heat Recover at Digesters	BioCNG 100 No Heat Recover at Digesters	BioCNG 100 With Heat Recover at Digesters	2 x 250 kW Ingersoll Rand Gas Turbine NG&DG	Existing 400 kW Waukesha Engine NG&DG	New 600 kW MWM Engine NG&DG
Income and Diesel Fuel Offsets						
Diesel Fuel Cost (\$/gal) (1)	\$ 3.18	\$ 3.18	\$ 3.18	\$ 3.18	\$ 3.18	\$ 3.18
Natural Gas Cost per \$/Therm (HHV) (2,3)	\$ 0.61	\$ 0.61	\$ 0.61	\$ 0.65	\$ 0.65	\$ 0.65
Minimum Average Plant Electric Load (kW) (4)				750	750	750
Size of Prime Mover (kW)				500	400	592
Size of CNG System (DGE/Day) (14)	250	367	367			
Digester Gas Elec. Eff. (HHV 620 BTU/hr)				26.1%	31.6%	41.0%
Natural Gas Elec. Eff. (HHV 1,000 BTU/hr)				26.1%	31.6%	41.0%
Digester Gas Available (scfd)	76,752	76,752	95,889	133,551	133,551	133,551
Digester Gas Available (scfm)	53.3	53.3	66.6	92.7	92.7	92.7
Digester Gas Available HHV (Therms/hr) (5)	17.3	17.3	21.6	34.5	34.5	34.5
Digester Gas Prime Mover Power Output (kW)				263.7	319.2	414.2
Natural Gas Prime Mover Power Output (kW)				236.3	80.8	177.8
Natural Gas Heat Input HHV (Therms/hr)	0.0	3.9	0.0	30.9	8.7	14.8
Digester Gas Compressor Power (kW)				22.0	15.0	15.0
Digester Gas Conditioning Power (kW) (9)	54	54	54	19.0	19.0	19.0
Hot Water Pumps (kW)			4	2.0	2.0	2.0
Natural Gas Compressor Power (kW)	27	45	45	12.0	2.3	3.9
Total All Ancillary Losses (kW)	81.0	99.0	103.0	55.0	38.3	39.9
Net Cogen Power Output (kW)				445.0	361.7	552.1
Standby Capacity for PG&E				445	362	552
Percentage of Total Energy from Digester Gas	100%	82%	100%	53%	80%	70%
Average Plant Electric Cost per kW (6)	\$ 0.1220	\$ 0.1220	\$ 0.1220	\$ 0.1220	\$ 0.1220	\$ 0.1220
Cost of Energy Sold to PG&E				\$ 0.1220	\$ 0.1220	\$ 0.1220
BIOCNG/Cogen Availability	95%	95%	95%	95%	95%	95%
Prime Mover Heat Recovery (% of Input Energy)				34.9%	60.0%	42.0%
Heat Available to Plant From Cogen (Therms/hr)	-	-	-	22.8	25.9	20.7
Heat Available to Plant From Cogen (BTUs/hr)	-	-	-	2,283,209	2,593,671	2,070,989
Peak Month Heating Demand at Plant (BTU/hr)	1,438,753	1,438,753	1,134,369	1,438,753	1,438,753	1,438,753
Average Heating Demand at Plant (BTU/hr)	1,224,591	1,224,591	1,019,640	1,224,591	1,224,591	1,224,591
Reduction in Diesel Fuel for Trucks (gal/yr)	91,250	133,955	133,955			
Additional NG Purchased (Therms/yr)	7,556	41,303	9,439	257,323	72,628	123,237
Total Annual Electric Reduction on PG&E Service (kW-hr)				3,702,879	3,009,911	4,594,288
Total Annual Electrical Export to PG&E (kW-hr)				-	-	-
Offset Energy Cost From PG&E				\$ 451,893	\$ 367,324	\$ 560,679
Total Annual Electricity Sales to PG&E				\$ -	\$ -	\$ -
Total Electricity Offsets and Sales				\$ 451,893	\$ 367,324	\$ 560,679
Standby Charges to PG&E (7)				\$ 11,437	\$ 9,297	\$ 14,190
Net Electrical Revenue (\$/yr)	\$ -	\$ -	\$ -	\$ 440,456	\$ 358,028	\$ 546,489
Reduction in Fuel Cost When Converted to NG (\$/yr)	\$ 290,175	\$ 425,977	\$ 425,977	\$ -	\$ -	\$ -
RIN Credits @ \$1.65/RIN (RIN =77,000 BTU LHV)	\$ 291,427	\$ 291,427	\$ 364,090			
Total Net Income/Offset Cost (\$/yr)	\$ 581,602	\$ 717,404	\$ 790,067	\$ 440,456	\$ 358,028	\$ 546,489
Annual Costs						
Natural Gas Purchased (Therms/yr)	7,556	41,303	9,439	257,323	72,628	123,237
Natural Gas Fuel Cost (\$/yr)	\$ 4,609	\$ 25,195	\$ 5,758	\$ 167,260	\$ 47,208	\$ 80,104
Electrical Costs (\$/yr)	\$ 83,707	\$ 102,950	\$ 107,012	\$ -	\$ -	\$ -
Yearly Warranty and Service Contract Prime Mover (\$/kW-hr)(13)				\$ 0.011	\$ 0.040	\$ 0.040
Yearly Warranty and Service Contract Prime Mover (\$/yr)				\$ 45,771	\$ 133,152	\$ 197,065
Yearly Warranty and Service Contract Gas Conditioning				\$ -	\$ -	\$ -
Gas Conditioning Sulfur Media Replacement (8,9)	\$ 98,155	\$ 98,155	\$ 98,155	\$ 98,155	\$ 98,155	\$ 98,155
Gas Conditioning Siloxane Media Replacement	\$ 4,848	\$ 4,848	\$ 6,827	\$ 10,774	\$ 10,774	\$ 10,774
Gas Conditioning Miscellaneous Maintenance	\$ 4,500	\$ 4,500	\$ 4,500	\$ 4,500	\$ 4,500	\$ 4,500
BioCNG Maintenance	\$ 4,500	\$ 4,500	\$ 4,500	\$ -	\$ -	\$ -
Subtotal Operations Costs	\$ 200,319	\$ 240,148	\$ 226,752	\$ 326,460	\$ 293,789	\$ 390,598
Net Offset Revenue per Year	\$ 381,283	\$ 477,255	\$ 563,314	\$ 113,996	\$ 64,239	\$ 155,891
Project Costs (10, 11)						
Total On Site Construction Cost	\$ 3,437,575	\$3,937,575	\$ 2,962,000	\$ 3,087,000	\$ 1,958,000	\$ 2,908,000
PG&E Natural Gas Upgrades	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Digester Heat Recovery System	\$ -	\$ -	\$ 265,000	\$ -	\$ -	\$ -
Project Design and Construction Management			\$ 414,680	\$ 432,180	\$ 274,120	\$ 407,120
Total Project Costs	\$ 3,437,575	\$3,937,575	\$ 3,641,680	\$ 3,519,180	\$ 2,232,120	\$ 3,315,120
CNG Vehicle Upgrade Costs On New Truck Purchase	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
CNG Station Rebates						
SJVAPCD CNG Truck Rebates (\$10K/vehicle x 5 trucks)	\$ -	\$ -	\$ -			

Manteca Gas Utilization Economic Analysis

		Biosolids with FOG					
		BioCNG 50 No Heat Recover at Digesters	BioCNG 100 No Heat Recover at Digesters	BioCNG 100 With Heat Recover at Digesters	2 x 250 kW Ingersoll Rand Gas Turbine NG&DG	Existing 400 kW Waukesha Engine NG&DG	New 600 kW MWM Engine NG&DG
PG&E Self Generation Rebate Non-Renewable Portion (\$2.08/W)					Expires 2015	Expires 2015	Expires 2015
Total Project Costs After Rebate		\$ 3,437,575	\$3,937,575	\$ 3,641,680	\$ 3,519,180	\$ 2,232,120	\$ 3,315,120
Simple Payback Years		9.02	8.25	6.46	30.87	34.75	21.27
Available Financing							
Period (years)	15						
Interest Rate (%)	3.50%						
Yearly Payment		(\$298,468)	(\$341,880)	(\$316,189)	(\$305,553)	(\$193,804)	(\$287,836)
Yearly Savings Fuel & Electricity		\$ 381,283	\$ 477,255	\$ 563,314	\$ 113,996	\$ 64,239	\$ 155,891
Net Savings		\$82,815	\$135,375	\$247,125	(\$191,557)	(\$129,565)	(\$131,945)
Notes:							
1) Cost of diesel based on West Cost average of Clean Cities Alternative Fuels Price Report, October 2014 and April 2016.							
2) Cost of natural gas for vehicle fueling based on PG&E Natural Gas Vehicle Schedule 1 Projected for 2015							
3) Cost of natural gas for cogeneration based on U.S Energy Administration Industrial Rate for 2014 plus PG&E Electrical Generation Transportation Tariff for 2015							
4) Historic average power demand ranges from 750 kW up to 950 kW							
5) Digester Gas Heating Value for BioCNG reduce by 13% to account for losses in CNG process							
6) Average year around electric charge base don PG&E E20P Rate Schedule January 2015							
7) PG&E has a capacity standby charge for cogeneration systems.							
8) Sulfur Treatment is still required for the Boiler Operation per SJVUPACD Rule 4307 by July 2015. Siloxane treatment is only required on the portion going to BioCNG							
9) BioCNG 50 system still has full gas conditioning to treat sulfur for boiler so no reduction from BioCNG 100 system.							
10) Low Pressure gas holder is part of Digester Project and not included in these costs.							
11) WQCF flare to be used. Cost of flare system is not included in these costs.							
12) Costs for receiving and processing food waste and FOG are separately covered as self supported programs through tip fees and processing fees and are not included in this analysis.							
13) Costs obtained from CAT for new 600 kW MWM Engine assumed similar for existing 400 kW engine option.							
14) Yearly existing diesel usage for solid waste trucks was 134,105 gallons in 2014 or 367 gallons per day. This is used for Existing and near term conditions. For future Food Waste conditions, it is assumed additional vehicles will be converted to CNG to the capacity of the system at 500 DGE per day.							

Manteca Gas Utilization Economic Analysis						
	Biosolids with FOG With Food Phase 1					
	BioCNG 50 No Heat Recover at Digesters	BioCNG 100 No Heat Recover at Digesters	BioCNG 100 With Heat Recover at Digesters	2 x 250 kW Ingersoll Rand Gas Turbine NG&DG	Existing 400 kW Waukesha Engine NG&DG	New 600 kW MWM Engine NG&DG
Income and Diesel Fuel Offsets	Increase in Gas Production		17,951	cfd		
Diesel Fuel Cost (\$/gal) (1)	\$ 3.18	\$ 3.18	\$ 3.18	\$ 3.18	\$ 3.18	\$ 3.18
Natural Gas Cost per \$/Therm (HHV) (2,3)	\$ 0.61	\$ 0.61	\$ 0.61	\$ 0.65	\$ 0.65	\$ 0.65
Minimum Average Plant Electric Load (kW) (4)				750	750	750
Size of Prime Mover (kW)				500	400	592
Size of CNG System (DGE/Day) (14)	250	500	500			
Digester Gas Elec. Eff. (HHV 620 BTU/hr)				26.1%	31.6%	41.0%
Natural Gas Elec. Eff. (HHV 1,000 BTU/hr)				26.1%	31.6%	41.0%
Digester Gas Available (scfd)	94,703	94,703	113,840	151,502	151,502	151,502
Digester Gas Available (scfm)	65.8	65.8	79.1	105.2	105.2	105.2
Digester Gas Available HHV (Therms/hr) (5)	21.3	21.3	25.6	39.1	39.1	39.1
Digester Gas Prime Mover Power Output (kW)				299.1	362.2	469.9
Natural Gas Prime Mover Power Output (kW)				200.9	37.8	122.1
Natural Gas Heat Input HHV (Therms/hr)	0.0	7.5	3.2	26.3	4.1	10.2
Digester Gas Compressor Power (kW)				22.0	15.0	15.0
Digester Gas Conditioning Power (kW) (9)	54	54	54	19.0	19.0	19.0
Hot Water Pumps (kW)			4	2.0	2.0	2.0
Natural Gas Compressor Power (kW)	27	45	45	9.0	1.0	2.4
Total All Ancillary Losses (kW)	81.0	99.0	103.0	52.0	37.0	38.4
Net Cogen Power Output (kW)				448.0	363.0	553.6
Standby Capacity for PG&E				448	363	554
Percentage of Total Energy from Digester Gas	100%	74%	89%	60%	91%	79%
Average Plant Electric Cost per kW (6)	\$ 0.1220	\$ 0.1220	\$ 0.1220	\$ 0.1220	\$ 0.1220	\$ 0.1220
Cost of Energy Sold to PG&E				\$ 0.1220	\$ 0.1220	\$ 0.1220
BIOCNG/Cogen Availability	95%	95%	95%	95%	95%	95%
Prime Mover Heat Recovery (% of Input Energy)				34.9%	60.0%	42.0%
Heat Available to Plant From Cogen (Therms/hr)	-	-	-	22.8	25.9	20.7
Heat Available to Plant From Cogen (BTUs/hr)	-	-	-	2,283,209	2,593,671	2,070,989
Peak Month Heating Demand at Plant (BTU/hr)	1,438,753	1,438,753	1,134,369	1,438,753	1,438,753	1,438,753
Average Heating Demand at Plant (BTU/hr)	1,224,591	1,224,591	1,019,640	1,224,591	1,224,591	1,224,591
Reduction in Diesel Fuel for Trucks (gal/yr)	91,250	182,500	182,500			
Additional NG Purchased (Therms/yr)	9,323	74,720	38,927	218,731	34,036	84,645
Total Annual Electric Reduction on PG&E Service (kW-hr)				3,728,017	3,021,236	4,607,207
Total Annual Electrical Export to PG&E (kW-hr)				-	-	-
Offset Energy Cost From PG&E				\$ 454,961	\$ 368,706	\$ 562,256
Total Annual Electricity Sales to PG&E				\$ -	\$ -	\$ -
Total Electricity Offsets and Sales				\$ 454,961	\$ 368,706	\$ 562,256
Standby Charges to PG&E (7)				\$ 11,515	\$ 9,332	\$ 14,230
Net Electrical Revenue (\$/yr)	\$ -	\$ -	\$ -	\$ 443,446	\$ 359,375	\$ 548,025
Reduction in Fuel Cost When Converted to NG (\$/yr)	\$ 290,175	\$ 580,350	\$ 580,350	\$ -	\$ -	\$ -
RIN Credits @ \$1.65/RIN (RIN =77,000 BTU LHV)	\$ 359,586	\$ 359,586	\$ 432,249			
Total Net Income/Offset Cost (\$/yr)	\$ 649,761	\$ 939,936	\$ 1,012,599	\$ 443,446	\$ 359,375	\$ 548,025
Annual Costs						
Natural Gas Purchased (Therms/yr)	9,323	74,720	38,927	218,731	34,036	84,645
Natural Gas Fuel Cost (\$/yr)	\$ 5,687	\$ 45,579	\$ 23,746	\$ 142,175	\$ 22,123	\$ 55,019
Electrical Costs (\$/yr)	\$ 83,707	\$ 102,950	\$ 107,012	\$ -	\$ -	\$ -
Yearly Warranty and Service Contract Prime Mover (\$/kW-hr)(13)				\$ 0.011	\$ 0.040	\$ 0.040
Yearly Warranty and Service Contract Prime Mover (\$/yr)				\$ 45,771	\$ 133,152	\$ 197,065
Yearly Warranty and Service Contract Gas Conditioning				\$ -	\$ -	\$ -
Gas Conditioning Sulfur Media Replacement (8,9)	\$ 98,155	\$ 98,155	\$ 98,155	\$ 98,155	\$ 98,155	\$ 98,155
Gas Conditioning Siloxane Media Replacement	\$ 4,848	\$ 4,848	\$ 6,827	\$ 10,774	\$ 10,774	\$ 10,774
Gas Conditioning Miscellaneous Maintenance	\$ 4,500	\$ 4,500	\$ 4,500	\$ 4,500	\$ 4,500	\$ 4,500
BioCNG Maintenance	\$ 4,500	\$ 4,500	\$ 4,500	\$ -	\$ -	\$ -
Subtotal Operations Costs	\$ 201,397	\$ 260,533	\$ 244,740	\$ 301,375	\$ 268,704	\$ 365,513
Net Offset Revenue per Year	\$ 448,364	\$ 679,404	\$ 767,860	\$ 142,071	\$ 90,671	\$ 182,512
Project Costs (10, 11)						
Total On Site Construction Cost	\$ 3,437,575	\$ 3,937,575	\$ 2,962,000	\$ 3,087,000	\$ 1,958,000	\$ 2,908,000
PG&E Natural Gas Upgrades	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Digester Heat Recovery System	\$ -	\$ -	\$ 265,000	\$ -	\$ -	\$ -
Project Design and Construction Management			\$ 414,680	\$ 432,180	\$ 274,120	\$ 407,120
Total Project Costs	\$ 3,437,575	\$ 3,937,575	\$ 3,641,680	\$ 3,519,180	\$ 2,232,120	\$ 3,315,120
CNG Vehicle Upgrade Costs On New Truck Purchase	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
CNG Station Rebates						
SJVAPCD CNG Truck Rebates (\$10K/vehicle x 5 trucks)	\$ -	\$ -	\$ -			

Manteca Gas Utilization Economic Analysis

		Biosolids with FOG With Food Phase 1					
		BioCNG 50 No Heat Recover at Digesters	BioCNG 100 No Heat Recover at Digesters	BioCNG 100 With Heat Recover at Digesters	2 x 250 kW Ingersoll Rand Gas Turbine NG&DG	Existing 400 kW Waukesha Engine NG&DG	New 600 kW MWM Engine NG&DG
PG&E Self Generation Rebate Non-Renewable Portion (\$2.08/W)					Expires 2015	Expires 2015	Expires 2015
Total Project Costs After Rebate		\$ 3,437,575	\$ 3,937,575	\$3,641,680	\$ 3,519,180	\$ 2,232,120	\$ 3,315,120
Simple Payback Years		7.67	5.80	4.74	24.77	24.62	18.16
Available Financing							
Period (years)	15						
Interest Rate (%)	3.50%						
Yearly Payment		(\$298,468)	(\$341,880)	(\$316,189)	(\$305,553)	(\$193,804)	(\$287,836)
Yearly Savings Fuel & Electricity		\$ 448,364	\$ 679,404	\$ 767,860	\$ 142,071	\$ 90,671	\$ 182,512
Net Savings		\$149,897	\$337,524	\$451,671	(\$163,482)	(\$103,133)	(\$105,323)
Notes:							
1) Cost of diesel based on West Cost average of Clean Cities Alternative Fuels Price Report, October 2014 and April 2016.							
2) Cost of natural gas for vehicle fueling based on PG&E Natural Gas Vehicle Schedule 1 Projected for 2015							
3) Cost of natural gas for cogeneration based on U.S Energy Administration Industrial Rate for 2014 plus PG&E Electrical Generation Transportation Tariff for 2015							
4) Historic average power demand ranges from 750 kW up to 950 kW							
5) Digester Gas Heating Value for BioCNG reduce by 13% to account for losses in CNG process							
6) Average year around electric charge base don PG&E E20P Rate Schedule January 2015							
7) PG&E has a capacity standby charge for cogeneration systems.							
8) Sulfur Treatment is still required for the Boiler Operation per SJVUPACD Rule 4307 by July 2015. Siloxane treatment is only required on the portion going to BioCNG							
9) BioCNG 50 system still has full gas conditioning to treat sulfur for boiler so no reduction from BioCNG 100 system.							
10) Low Pressure gas holder is part of Digester Project and not included in these costs.							
11) WQCF flare to be used. Cost of flare system is not included in these costs.							
12) Costs for receiving and processing food waste and FOG are separately covered as self supported programs through tip fees and processing fees and are not included in this analysis.							
13) Costs obtained from CAT for new 600 kW MWM Engine assumed similar for existing 400 kW engine option.							
14) Yearly existing diesel usage for solid waste trucks was 134,105 gallons in 2014 or 367 gallons per day. This is used for Existing and near term conditions. For future Food Waste conditions, it is assumed additional vehicles will be converted to CNG to the capacity of the system at 500 DGE per day.							

Manteca Gas Utilization Economic Analysis

	Biosolids with FOG With Food Phase 2					
	BioCNG 50 No Heat Recover at Digesters	BioCNG 100 No Heat Recover at Digesters	BioCNG 100 With Heat Recover at Digesters	2 x 250 kW Ingersoll Rand Gas Turbine NG&DG	Existing 400 kW Waukesha Engine NG&DG	New 600 kW MWM Engine NG&DG
Income and Diesel Fuel Offsets	Increase in Gas Production		17,143	cfd		
Diesel Fuel Cost (\$/gal) (1)	\$ 3.18	\$ 3.18	\$ 3.18	\$ 3.18	\$ 3.18	\$ 3.18
Natural Gas Cost per \$/Therm (HHV) (2,3)	\$ 0.61	\$ 0.61	\$ 0.61	\$ 0.65	\$ 0.65	\$ 0.65
Minimum Average Plant Electric Load (kW) (4)				750	750	750
Size of Prime Mover (kW)				500	400	592
Size of CNG System (DGE/Day) (14)	250	500	500			
Digester Gas Elec. Eff. (HHV 620 BTU/hr)				26.1%	31.6%	41.0%
Natural Gas Elec. Eff. (HHV 1,000 BTU/hr)				26.1%	31.6%	41.0%
Digester Gas Available (scfd)	112,654	112,654	131,791	169,453	169,453	169,453
Digester Gas Available (scfm)	78.2	78.2	91.5	117.7	117.7	117.7
Digester Gas Available HHV (Therms/hr) (5)	25.3	25.3	29.6	43.8	43.8	43.8
Digester Gas Prime Mover Power Output (kW)				334.6	400.0	525.6
Natural Gas Prime Mover Power Output (kW)				165.4	0.0	66.4
Natural Gas Heat Input HHV (Therms/hr)	0.0	3.4	0.0	21.6	0.0	5.5
Digester Gas Compressor Power (kW)				22.0	15.0	15.0
Digester Gas Conditioning Power (kW) (9)	54	54	54	19.0	19.0	19.0
Hot Water Pumps (kW)			4	2.0	2.0	2.0
Natural Gas Compressor Power (kW)	27	45	45	6.6	0.0	1.2
Total All Ancillary Losses (kW)	81.0	99.0	103.0	49.6	36.0	37.2
Net Cogen Power Output (kW)				450.4	364.0	554.8
Standby Capacity for PG&E				450	364	555
Percentage of Total Energy from Digester Gas	100%	88%	100%	67%	100%	89%
Average Plant Electric Cost per kW (6)	\$ 0.1220	\$ 0.1220	\$ 0.1220	\$ 0.1220	\$ 0.1220	\$ 0.1220
Cost of Energy Sold to PG&E				\$ 0.1220	\$ 0.1220	\$ 0.1220
BIOCNG/Cogen Availability	95%	95%	95%	95%	95%	95%
Prime Mover Heat Recovery (% of Input Energy)				34.9%	60.0%	42.0%
Heat Available to Plant From Cogen (Therms/hr)	-	-	-	22.8	26.3	20.7
Heat Available to Plant From Cogen (BTUs/hr)	-	-	-	2,283,209	2,626,522	2,070,989
Peak Month Heating Demand at Plant (BTU/hr)	1,438,753	1,438,753	1,134,369	1,438,753	1,438,753	1,438,753
Average Heating Demand at Plant (BTU/hr)	1,224,591	1,224,591	1,019,640	1,224,591	1,224,591	1,224,591
Reduction in Diesel Fuel for Trucks (gal/yr)	91,250	182,500	182,500			
Additional NG Purchased (Therms/yr)	11,090	41,145	12,974	180,139	-	46,053
Total Annual Electric Reduction on PG&E Service (kW-hr)				3,747,829	3,029,208	4,617,388
Total Annual Electrical Export to PG&E (kW-hr)				-	-	-
Offset Energy Cost From PG&E				\$ 457,379	\$ 369,679	\$ 563,498
Total Annual Electricity Sales to PG&E				\$ -	\$ -	\$ -
Total Electricity Offsets and Sales				\$ 457,379	\$ 369,679	\$ 563,498
Standby Charges to PG&E (7)				\$ 11,576	\$ 9,356	\$ 14,262
Net Electrical Revenue (\$/yr)	\$ -	\$ -	\$ -	\$ 445,803	\$ 360,323	\$ 549,236
Reduction in Fuel Cost When Converted to NG (\$/yr)	\$ 290,175	\$ 580,350	\$ 580,350	\$ -	\$ -	\$ -
RIN Credits @ \$1.65/RIN (RIN =77,000 BTU LHV)	\$ 427,746	\$ 427,746	\$ 500,409			
Total Net Income/Offset Cost (\$/yr)	\$ 717,921	\$ 1,008,096	\$ 1,080,759	\$ 445,803	\$ 360,323	\$ 549,236
Annual Costs						
Natural Gas Purchased (Therms/yr)	11,090	41,145	12,974	180,139	-	46,053
Natural Gas Fuel Cost (\$/yr)	\$ 6,765	\$ 25,099	\$ 7,914	\$ 117,090	\$ -	\$ 29,935
Electrical Costs (\$/yr)	\$ 83,707	\$ 102,950	\$ 107,012	\$ -	\$ -	\$ -
Yearly Warranty and Service Contract Prime Mover (\$/kW-hr)(13)				\$ 0.011	\$ 0.040	\$ 0.040
Yearly Warranty and Service Contract Prime Mover (\$/yr)				\$ 45,771	\$ 133,152	\$ 197,065
Yearly Warranty and Service Contract Gas Conditioning				\$ -	\$ -	\$ -
Gas Conditioning Sulfur Media Replacement (8,9)	\$ 98,155	\$ 98,155	\$ 98,155	\$ 98,155	\$ 98,155	\$ 98,155
Gas Conditioning Siloxane Media Replacement	\$ 4,848	\$ 4,848	\$ 6,827	\$ 10,774	\$ 10,774	\$ 10,774
Gas Conditioning Miscellaneous Maintenance	\$ 4,500	\$ 4,500	\$ 4,500	\$ 4,500	\$ 4,500	\$ 4,500
BioCNG Maintenance	\$ 4,500	\$ 4,500	\$ 4,500	\$ -	\$ -	\$ -
Subtotal Operations Costs	\$ 202,475	\$ 240,052	\$ 228,908	\$ 276,290	\$ 246,581	\$ 340,428
Net Offset Revenue per Year	\$ 515,446	\$ 768,044	\$ 851,851	\$ 169,513	\$ 113,742	\$ 208,808
Project Costs (10, 11)						
Total On Site Construction Cost	\$ 3,437,575	\$ 3,937,575	\$ 2,962,000	\$ 3,087,000	\$ 1,958,000	\$ 2,908,000
PG&E Natural Gas Upgrades	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Digester Heat Recovery System	\$ -	\$ -	\$ 265,000	\$ -	\$ -	\$ -
Project Design and Construction Management			\$ 414,680	\$ 432,180	\$ 274,120	\$ 407,120
Total Project Costs	\$ 3,437,575	\$ 3,937,575	\$ 3,641,680	\$ 3,519,180	\$ 2,232,120	\$ 3,315,120
CNG Vehicle Upgrade Costs On New Truck Purchase	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
CNG Station Rebates						
SJVAPCD CNG Truck Rebates (\$10K/vehicle x 5 trucks)	\$ -	\$ -	\$ -			

Manteca Gas Utilization Economic Analysis

Biosolids with FOG With Food Phase 2						
	BioCNG 50 No Heat Recover at Digesters	BioCNG 100 No Heat Recover at Digesters	BioCNG 100 With Heat Recover at Digesters	2 x 250 kW Ingersoll Rand Gas Turbine NG&DG	Existing 400 kW Waukesha Engine NG&DG	New 600 kW MWM Engine NG&DG
PG&E Self Generation Rebate Non-Renewable Portion (\$2.08/W)				Expires 2015	Expires 2015	Expires 2015
Total Project Costs After Rebate	\$ 3,437,575	\$ 3,937,575	\$ 3,641,680	\$ 3,519,180	\$ 2,232,120	\$ 3,315,120
Simple Payback Years	6.67	5.13	4.28	20.76	19.62	15.88
Available Financing						
Period (years)	15					
Interest Rate (%)	3.50%					
Yearly Payment	(\$298,468)	(\$341,880)	(\$316,189)	(\$305,553)	(\$193,804)	(\$287,836)
Yearly Savings Fuel & Electricity	\$ 515,446	\$ 768,044	\$ 851,851	\$ 169,513	\$ 113,742	\$ 208,808
Net Savings	\$216,979	\$426,164	\$535,662	(\$136,040)	(\$80,062)	(\$79,027)
Notes:						
1) Cost of diesel based on West Cost average of Clean Cities Alternative Fuels Price Report, October 2014 and April 2016.						
2) Cost of natural gas for vehicle fueling based on PG&E Natural Gas Vehicle Schedule 1 Projected for 2015						
3) Cost of natural gas for cogeneration based on U.S Energy Administration Industrial Rate for 2014 plus PG&E Electrical Generation Transportation Tariff for 2015						
4) Historic average power demand ranges from 750 kW up to 950 kW						
5) Digester Gas Heating Value for BioCNG reduce by 13% to account for losses in CNG process						
6) Average year around electric charge base don PG&E E20P Rate Schedule January 2015						
7) PG&E has a capacity standby charge for cogeneration systems.						
8) Sulfur Treatment is still required for the Boiler Operation per SJVUPACD Rule 4307 by July 2015. Siloxane treatment is only required on the portion going to BioCNG						
9) BioCNG 50 system still has full gas conditioning to treat sulfur for boiler so no reduction from BioCNG 100 system.						
10) Low Pressure gas holder is part of Digester Project and not included in these costs.						
11) WQCF flare to be used. Cost of flare system is not included in these costs.						
12) Costs for receiving and processing food waste and FOG are separately covered as self supported programs through tip fees and processing fees and are not included in this analysis.						
13) Costs obtained from CAT for new 600 kW MWM Engine assumed similar for existing 400 kW engine option.						
14) Yearly existing diesel usage for solid waste trucks was 134,105 gallons in 2014 or 367 gallons per day. This is used for Existing and near term conditions. For future Food Waste conditions, it is assumed additional vehicles will be converted to CNG to the capacity of the system at 500 DGE per day.						

HERWIT ENGINEERING - ESTIMATE OF MOST PROBABLE CONSTRUCTION COST

PROJECT:

JOB NUMBER:

ENR FOR ESTIMATE :

MAJOR ELEMENT NUMBER: 17

MAJOR ELEMENT: BioCNG 100

ITEM NO.	DIV	DESCRIPTION	QUANT	UNIT	UNIT PRICE	SPEC ADJ	ADJ	TOTAL
	2	SITE WORK						
		BIOCNG						
		EXCAVATION	0	CY	8.0		1	
		ABC (ROADWAYS)	0	CY	45.0		1	
		BACKFILL	0	CY	10.0		1	
		PLANTING	0	SF	4.0		1	
		SLOW FILL PARKING AND OFF-SITE IMPROVEMENTS						
		CNG FENCING	0	LF	30.0		1	
	3	CONCRETE						
		EQUIPMENT PADS	10	CY	1,100		1	11,000
	11	EQUIPMENT						
		BioCNG EQUIPMENT						
		BioCNG 100	1	EA	600,000		1	600,000
		Enclosure	1	EA	110,000		1	110,000
		SALES TAX	1	EA	58,575	8.25%	1	58,575
		INSTALL	1	EA	230,573		1	230,573
		FILL STATION EQUIPMENT						
		SLOW FILL COMP ANGI NG50	1	EA	85,000		1	85,000
		DRYER	1	EA	45,000		1	45,000
		SLOW FILL STATION	1	EA	5,100		1	5,100
		FAST FILL STATION	2	EA	39,000		1	78,000
		LOW PRESSURE STORAGE 120 P	1	EA	40,000		1	40,000
		HIGH PRESSURE STORAGE 4500	4	EA	85,000		1	340,000
		HARDWARE AND PIPING	1	EA	0		1	0
		SALES TAX	1	EA	48,931	8.25%	1	48,931
		INSTALL	1	EA	192,609		1	192,609
	15	MISCELLANEOUS MECHANICAL (NOT INCLUDED WITH CNG INSTALL)						
	15	VALVES	10	EA	500		1	5,000
	15	LOW PRESSURE DG GAS PIPING	200	LF	80		1	16,000
	15	HIGH PRESSURE NG FROM Yoser	0	LF	80			
	15	FAST FILL GAS PIPING	75	LF	80		1	6,000

		15	BACKUP GAS FLARE		1	EA	75,000		1	75,000
		16	MISCELLANEOUS ELECTRICAL (NOT INCLUDED WITH CNG INSTALL)							
		16	NEW ELECTRICAL SERVICE		665	LF	250		1	166,250
		16	ELECTRICAL INSTALL		1	EA	100,000		1	100,000
		17	MISCELLANEOUS INSTRUMENTATION (NOT INCLUDED WITH CNG INSTALL)							
		17	CONDUIT AND WIRE		0	LF	5			
		17	SCADA AND CUMMUNICATIONS		0	EA	10,000			
MAJOR ELEMENT NUMBER 17 SUBTOTAL BioCNG 100										2,213,000
ESTIMATING CONTINGENCY @ 15%										332,000
SUBTOTAL (INCLUDING ESTIMATING CONTINGENCY)										2,545,000

Project Design and Construction Management \$ 356,300

CNG Civil Improvements Included With Digester Project \$ 1,036,275

Total Project Cost \$ 3,937,575

HERWIT ENGINEERING - ESTIMATE OF MOST PROBABLE CONSTRUCTION COST

PROJECT:

JOB NUMBER:

ENR FOR ESTIMATE :

MAJOR ELEMENT NUMBER: 1

MAJOR ELEMENT: 400 KW WAUKESHA NG AND DG

ITEM NO.	DIV	DESCRIPTION	QUANT	UNIT	UNIT PRICE	SPEC ADJ	ADJ	TOTAL
	2	SITE WORK						
		EXCAVATION	1,000	CY	8		1	8,000
		ABC (ROADWAYS)	125	CY	45		1	5,625
		BACKFILL	100	CY	10		1	1,000
		PLANTING	2,000	SF	4		1	8,000
	3	CONCRETE						
		FOR COGEN, INCLUDED IN INSTALLED COST						
		GAS CONDITIONING PAD	6	CY	1,100		1	6,600
	11	EQUIPMENT						
		PRIME MOVER EQUIPMENT						
		PRIME MOVER REHAB	1	EA	250,000		1	250,000
		HARDWARE	1	EA	50,000		1	50,000
		SALES TAX	1	EA	24,750	8.25%	1	24,750
		INSTALL	1	EA	0		1	0
		GAS CONDITIONING EQUIPMENT						
		SKID	1	EA	700,000		1	700,000
		HARDWARE AND PIPING	1	EA	15,000		1	15,000
		SALES TAX	1	EA	58,988	8.25%	1	58,988
		INSTALL	1	EA	357,500		1	357,500
	15	MISCELLANEOUS MECHANICAL (NOT INCLUDED WITH PRIME MOVER INSTALL)						
	15	HW PIPING	400	LF	60		1	24,000
	15	VALVES	10	EA	500		1	5,000
	15	GAS PIPING	200	LF	80		1	16,000
	16	MISCELLANEOUS ELECTRICAL (NOT INCLUDED WITH PRIME MOVER INSTALL)						
	16	DUCT BANK	250	LF	150		1	37,500
	16	MCC MODS	1	EA	10,000		1	10,000
	16	GAS CINDITIONING SYSTEM	1	EA	113,149		1	113,149
	17	MISCELLANEOUS INSTRUMENTATION (NOT INCLUDED WITH PRIME MOVER INSTALL)						
	17	CONDUIT AND WIRE	400	LF	5		1	2,000

	17	SCADA AND CUMMUNICATIONS						1	EA	10,000		1	10,000
MAJOR ELEMENT NUMBEF 1										SUBTOT1400 KW WAUKESHA NG AND DG			1,703,000
										ESTIMATING CONTINGENCY @ 15%			255,000
										SUBTOTAL (INCLUDING ESTIMATING CONTINGENCY)			1,958,000

HERWIT ENGINEERING - ESTIMATE OF MOST PROBABLE CONSTRUCTION COST

PROJECT:

JOB NUMBER:

ENR FOR ESTIMATE :

MAJOR ELEMENT NUMBER: 1

MAJOR ELEMENT: 600 kW COGEN FACILITY NG AND DG

ITEM NO.	DIV	DESCRIPTION	QUANT	UNIT	UNIT PRICE	SPEC ADJ	ADJ	TOTAL
	2	SITE WORK						
		EXCAVATION	1,000	CY	8		1	8,000
		ABC (ROADWAYS)	125	CY	45		1	5,625
		BACKFILL	100	CY	10		1	1,000
		PLANTING	2,000	SF	4		1	8,000
	3	CONCRETE						
		FOR COGEN, INCLUDED IN INSTALLED COST						
		GAS CONDITIONING PAD	6	CY	1,100		1	6,600
	11	EQUIPMENT						
		PRIME MOVER EQUIPMENT						
		PRIME MOVER	1	EA	597,000		1	597,000
		ENCLOSURE AND HARDWARE	1	EA	130,000		1	130,000
		SALES TAX	1	EA	59,978	8.25%	1	59,978
		INSTALL	1	EA	363,500		1	363,500
		GAS CONDITIONING EQUIPMENT						
		SKID	1	EA	700,000		1	700,000
		HARDWARE AND PIPING	1	EA	15,000		1	15,000
		SALES TAX	1	EA	58,988	8.25%	1	58,988
		INSTALL	1	EA	357,500		1	357,500
	15	MISCELLANEOUS MECHANICAL (NOT INCLUDED WITH PRIME MOVER INSTALL)						
	15	HW PIPING	400	LF	60		1	24,000
	15	VALVES	10	EA	500		1	5,000
	15	GAS PIPING	200	LF	80		1	16,000
	16	MISCELLANEOUS ELECTRICAL (NOT INCLUDED WITH PRIME MOVER INSTALL)						
	16	DUCT BANK	250	LF	150		1	37,500
	16	MCC MODS	1	EA	10,000		1	10,000
	16	GAS CINDITIONING SYSTEM	1	EA	113,149		1	113,149
	17	MISCELLANEOUS INSTRUMENTATION (NOT INCLUDED WITH PRIME MOVER INSTALL)						
	17	CONDUIT AND WIRE	400	LF	5		1	2,000

	17	SCADA AND CUMMUNICATIONS						1	EA	10,000		1	10,000
MAJOR ELEMENT NUMBEF 1 SUBTOT1600 kW COGEN FACILITY NG AND DG													2,529,000
ESTIMATING CONTINGENCY @ 15%													379,000
SUBTOTAL (INCLUDING ESTIMATING CONTINGENCY)													2,908,000

HERWIT ENGINEERING - ESTIMATE OF MOST PROBABLE CONSTRUCTION COST

PROJECT:

JOB NUMBER:

ENR FOR ESTIMATE :

MAJOR ELEMENT NUMBER: 1

MAJOR ELEMENT: 500 KW GAS TURBINE COGEN FACILITY NG AND DG

ITEM NO.	DIV	DESCRIPTION	QUANT	UNIT	UNIT PRICE	SPEC ADJ	ADJ	TOTAL
	2	SITE WORK						
		EXCAVATION	1,000	CY	8		1	8,000
		ABC (ROADWAYS)	125	CY	45		1	5,625
		BACKFILL	100	CY	10		1	1,000
		PLANTING	2,000	SF	4		1	8,000
	3	CONCRETE						
		FOR COGEN, INCLUDED IN INSTALLED COST						
		GAS CONDITIONING PAD	6	CY	1,100		1	6,600
	11	EQUIPMENT						
		PRIME MOVER EQUIPMENT						
		PRIME MOVER (250 Kw EA)	2	EA	450,380		1	900,761
		HARDWARE	1	EA	91,200		1	91,200
		SALES TAX	1	EA	44,680	8.25%	1	44,680
		INSTALL	1	EA	268,800		1	268,800
		GAS CONDITIONING EQUIPMENT						
		SKID	1	EA	700,000		1	700,000
		HARDWARE AND PIPING	1	EA	15,000		1	15,000
		SALES TAX	1	EA	58,988	8.25%	1	58,988
		INSTALL	1	EA	357,500		1	357,500
	15	MISCELLANEOUS MECHANICAL (NOT INCLUDED WITH PRIME MOVER INSTALL)						
	15	HW PIPING	400	LF	60		1	24,000
	15	VALVES	10	EA	500		1	5,000
	15	GAS PIPING	200	LF	80		1	16,000
	16	MISCELLANEOUS ELECTRICAL (NOT INCLUDED WITH PRIME MOVER INSTALL)						
	16	DUCT BANK	250	LF	150		1	37,500
	16	MCC MODS	1	EA	10,000		1	10,000
	16	GAS CINDITIONING SYSTEM	1	EA	113,149		1	113,149
	17	MISCELLANEOUS INSTRUMENTATION (NOT INCLUDED WITH PRIME MOVER INSTALL)						
	17	CONDUIT AND WIRE	400	LF	5		1	2,000

	17	SCADA AND CUMMUNICATIONS						1	EA	10,000		1	10,000
MAJOR ELEMENT NUMBER 1 SUBTOTAL 500 KW GAS TURBINE COGEN FACILITY NG AND D													2,684,000
ESTIMATING CONTINGENCY @ 15% 403,000													
SUBTOTAL (INCLUDING ESTIMATING CONTINGENCY) 3,087,000													

**California State Water Resources Control Board,
Order 2006-0003-DWQ**

**STATE WATER RESOURCES CONTROL BOARD
ORDER NO. 2006-0003-DWQ**

**STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS
FOR
SANITARY SEWER SYSTEMS**

The State Water Resources Control Board, hereinafter referred to as "State Water Board", finds that:

1. All federal and state agencies, municipalities, counties, districts, and other public entities that own or operate sanitary sewer systems greater than one mile in length that collect and/or convey untreated or partially treated wastewater to a publicly owned treatment facility in the State of California are required to comply with the terms of this Order. Such entities are hereinafter referred to as "Enrollees".
2. Sanitary sewer overflows (SSOs) are overflows from sanitary sewer systems of domestic wastewater, as well as industrial and commercial wastewater, depending on the pattern of land uses in the area served by the sanitary sewer system. SSOs often contain high levels of suspended solids, pathogenic organisms, toxic pollutants, nutrients, oxygen-demanding organic compounds, oil and grease and other pollutants. SSOs may cause a public nuisance, particularly when raw untreated wastewater is discharged to areas with high public exposure, such as streets or surface waters used for drinking, fishing, or body contact recreation. SSOs may pollute surface or ground waters, threaten public health, adversely affect aquatic life, and impair the recreational use and aesthetic enjoyment of surface waters.
3. Sanitary sewer systems experience periodic failures resulting in discharges that may affect waters of the state. There are many factors (including factors related to geology, design, construction methods and materials, age of the system, population growth, and system operation and maintenance), which affect the likelihood of an SSO. A proactive approach that requires Enrollees to ensure a system-wide operation, maintenance, and management plan is in place will reduce the number and frequency of SSOs within the state. This approach will in turn decrease the risk to human health and the environment caused by SSOs.
4. Major causes of SSOs include: grease blockages, root blockages, sewer line flood damage, manhole structure failures, vandalism, pump station mechanical failures, power outages, excessive storm or ground water inflow/infiltration, debris blockages, sanitary sewer system age and construction material failures, lack of proper operation and maintenance, insufficient capacity and contractor-caused damages. Many SSOs are preventable with adequate and appropriate facilities, source control measures and operation and maintenance of the sanitary sewer system.

SEWER SYSTEM MANAGEMENT PLANS

5. To facilitate proper funding and management of sanitary sewer systems, each Enrollee must develop and implement a system-specific Sewer System Management Plan (SSMP). To be effective, SSMPs must include provisions to provide proper and efficient management, operation, and maintenance of sanitary sewer systems, while taking into consideration risk management and cost benefit analysis. Additionally, an SSMP must contain a spill response plan that establishes standard procedures for immediate response to an SSO in a manner designed to minimize water quality impacts and potential nuisance conditions.
6. Many local public agencies in California have already developed SSMPs and implemented measures to reduce SSOs. These entities can build upon their existing efforts to establish a comprehensive SSMP consistent with this Order. Others, however, still require technical assistance and, in some cases, funding to improve sanitary sewer system operation and maintenance in order to reduce SSOs.
7. SSMP certification by technically qualified and experienced persons can provide a useful and cost-effective means for ensuring that SSMPs are developed and implemented appropriately.
8. It is the State Water Board's intent to gather additional information on the causes and sources of SSOs to augment existing information and to determine the full extent of SSOs and consequent public health and/or environmental impacts occurring in the State.
9. Both uniform SSO reporting and a centralized statewide electronic database are needed to collect information to allow the State Water Board and Regional Water Quality Control Boards (Regional Water Boards) to effectively analyze the extent of SSOs statewide and their potential impacts on beneficial uses and public health. The monitoring and reporting program required by this Order and the attached Monitoring and Reporting Program No. 2006-0003-DWQ, are necessary to assure compliance with these waste discharge requirements (WDRs).
10. Information regarding SSOs must be provided to Regional Water Boards and other regulatory agencies in a timely manner and be made available to the public in a complete, concise, and timely fashion.
11. Some Regional Water Boards have issued WDRs or WDRs that serve as National Pollution Discharge Elimination System (NPDES) permits to sanitary sewer system owners/operators within their jurisdictions. This Order establishes minimum requirements to prevent SSOs. Although it is the State Water Board's intent that this Order be the primary regulatory mechanism for sanitary sewer systems statewide, Regional Water Boards may issue more stringent or more

prescriptive WDRs for sanitary sewer systems. Upon issuance or reissuance of a Regional Water Board's WDRs for a system subject to this Order, the Regional Water Board shall coordinate its requirements with stated requirements within this Order, to identify requirements that are more stringent, to remove requirements that are less stringent than this Order, and to provide consistency in reporting.

REGULATORY CONSIDERATIONS

12. California Water Code section 13263 provides that the State Water Board may prescribe general WDRs for a category of discharges if the State Water Board finds or determines that:

- The discharges are produced by the same or similar operations;
- The discharges involve the same or similar types of waste;
- The discharges require the same or similar treatment standards; and
- The discharges are more appropriately regulated under general discharge requirements than individual discharge requirements.

This Order establishes requirements for a class of operations, facilities, and discharges that are similar throughout the state.

13. The issuance of general WDRs to the Enrollees will:

- a) Reduce the administrative burden of issuing individual WDRs to each Enrollee;
- b) Provide for a unified statewide approach for the reporting and database tracking of SSOs;
- c) Establish consistent and uniform requirements for SSMP development and implementation;
- d) Provide statewide consistency in reporting; and
- e) Facilitate consistent enforcement for violations.

14. The beneficial uses of surface waters that can be impaired by SSOs include, but are not limited to, aquatic life, drinking water supply, body contact and non-contact recreation, and aesthetics. The beneficial uses of ground water that can be impaired include, but are not limited to, drinking water and agricultural supply. Surface and ground waters throughout the state support these uses to varying degrees.

15. The implementation of requirements set forth in this Order will ensure the reasonable protection of past, present, and probable future beneficial uses of water and the prevention of nuisance. The requirements implement the water quality control plans (Basin Plans) for each region and take into account the environmental characteristics of hydrographic units within the state. Additionally, the State Water Board has considered water quality conditions that could reasonably be achieved through the coordinated control of all factors that affect

water quality in the area, costs associated with compliance with these requirements, the need for developing housing within California, and the need to develop and use recycled water.

16. The Federal Clean Water Act largely prohibits any discharge of pollutants from a point source to waters of the United States except as authorized under an NPDES permit. In general, any point source discharge of sewage effluent to waters of the United States must comply with technology-based, secondary treatment standards, at a minimum, and any more stringent requirements necessary to meet applicable water quality standards and other requirements. Hence, the unpermitted discharge of wastewater from a sanitary sewer system to waters of the United States is illegal under the Clean Water Act. In addition, many Basin Plans adopted by the Regional Water Boards contain discharge prohibitions that apply to the discharge of untreated or partially treated wastewater. Finally, the California Water Code generally prohibits the discharge of waste to land prior to the filing of any required report of waste discharge and the subsequent issuance of either WDRs or a waiver of WDRs.
17. California Water Code section 13263 requires a water board to, after any necessary hearing, prescribe requirements as to the nature of any proposed discharge, existing discharge, or material change in an existing discharge. The requirements shall, among other things, take into consideration the need to prevent nuisance.
18. California Water Code section 13050, subdivision (m), defines nuisance as anything which meets all of the following requirements:
 - a. Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.
 - b. Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.
 - c. Occurs during, or as a result of, the treatment or disposal of wastes.
19. This Order is consistent with State Water Board Resolution No. 68-16 (Statement of Policy with Respect to Maintaining High Quality of Waters in California) in that the Order imposes conditions to prevent impacts to water quality, does not allow the degradation of water quality, will not unreasonably affect beneficial uses of water, and will not result in water quality less than prescribed in State Water Board or Regional Water Board plans and policies.
20. The action to adopt this General Order is exempt from the California Environmental Quality Act (Public Resources Code §21000 et seq.) because it is an action taken by a regulatory agency to assure the protection of the environment and the regulatory process involves procedures for protection of the environment. (Cal. Code Regs., tit. 14, §15308). In addition, the action to adopt

this Order is exempt from CEQA pursuant to Cal.Code Regs., title 14, §15301 to the extent that it applies to existing sanitary sewer collection systems that constitute “existing facilities” as that term is used in Section 15301, and §15302, to the extent that it results in the repair or replacement of existing systems involving negligible or no expansion of capacity.

21. The Fact Sheet, which is incorporated by reference in the Order, contains supplemental information that was also considered in establishing these requirements.
22. The State Water Board has notified all affected public agencies and all known interested persons of the intent to prescribe general WDRs that require Enrollees to develop SSMPs and to report all SSOs.
23. The State Water Board conducted a public hearing on February 8, 2006, to receive oral and written comments on the draft order. The State Water Board received and considered, at its May 2, 2006, meeting, additional public comments on substantial changes made to the proposed general WDRs following the February 8, 2006, public hearing. The State Water Board has considered all comments pertaining to the proposed general WDRs.

IT IS HEREBY ORDERED, that pursuant to California Water Code section 13263, the Enrollees, their agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted hereunder, shall comply with the following:

A. DEFINITIONS

1. **Sanitary sewer overflow (SSO)** - Any overflow, spill, release, discharge or diversion of untreated or partially treated wastewater from a sanitary sewer system. SSOs include:
 - (i) Overflows or releases of untreated or partially treated wastewater that reach waters of the United States;
 - (ii) Overflows or releases of untreated or partially treated wastewater that do not reach waters of the United States; and
 - (iii) Wastewater backups into buildings and on private property that are caused by blockages or flow conditions within the publicly owned portion of a sanitary sewer system.
2. **Sanitary sewer system** – Any system of pipes, pump stations, sewer lines, or other conveyances, upstream of a wastewater treatment plant headworks used to collect and convey wastewater to the publicly owned treatment facility. Temporary storage and conveyance facilities (such as vaults, temporary piping, construction trenches, wet wells, impoundments, tanks, etc.) are considered to be part of the sanitary sewer system, and discharges into these temporary storage facilities are not considered to be SSOs.

For purposes of this Order, sanitary sewer systems include only those systems owned by public agencies that are comprised of more than one mile of pipes or sewer lines.

3. **Enrollee** - A federal or state agency, municipality, county, district, and other public entity that owns or operates a sanitary sewer system, as defined in the general WDRs, and that has submitted a complete and approved application for coverage under this Order.
4. **SSO Reporting System** – Online spill reporting system that is hosted, controlled, and maintained by the State Water Board. The web address for this site is <http://ciwqs.waterboards.ca.gov>. This online database is maintained on a secure site and is controlled by unique usernames and passwords.
5. **Untreated or partially treated wastewater** – Any volume of waste discharged from the sanitary sewer system upstream of a wastewater treatment plant headworks.
6. **Satellite collection system** – The portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility to which the sanitary sewer system is tributary.
7. **Nuisance** - California Water Code section 13050, subdivision (m), defines nuisance as anything which meets all of the following requirements:
 - a. Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.
 - b. Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.
 - c. Occurs during, or as a result of, the treatment or disposal of wastes.

B. APPLICATION REQUIREMENTS

1. **Deadlines for Application** – All public agencies that currently own or operate sanitary sewer systems within the State of California must apply for coverage under the general WDRs within six (6) months of the date of adoption of the general WDRs. Additionally, public agencies that acquire or assume responsibility for operating sanitary sewer systems after the date of adoption of this Order must apply for coverage under the general WDRs at least three (3) months prior to operation of those facilities.
2. **Applications under the general WDRs** – In order to apply for coverage pursuant to the general WDRs, a legally authorized representative for each agency must submit a complete application package. Within sixty (60) days of adoption of the general WDRs, State Water Board staff will send specific instructions on how to

apply for coverage under the general WDRs to all known public agencies that own sanitary sewer systems. Agencies that do not receive notice may obtain applications and instructions online on the Water Board's website.

3. Coverage under the general WDRs – Permit coverage will be in effect once a complete application package has been submitted and approved by the State Water Board's Division of Water Quality.

C. PROHIBITIONS

1. Any SSO that results in a discharge of untreated or partially treated wastewater to waters of the United States is prohibited.
2. Any SSO that results in a discharge of untreated or partially treated wastewater that creates a nuisance as defined in California Water Code Section 13050(m) is prohibited.

D. PROVISIONS

1. The Enrollee must comply with all conditions of this Order. Any noncompliance with this Order constitutes a violation of the California Water Code and is grounds for enforcement action.
2. It is the intent of the State Water Board that sanitary sewer systems be regulated in a manner consistent with the general WDRs. Nothing in the general WDRs shall be:
 - (i) Interpreted or applied in a manner inconsistent with the Federal Clean Water Act, or supersede a more specific or more stringent state or federal requirement in an existing permit, regulation, or administrative/judicial order or Consent Decree;
 - (ii) Interpreted or applied to authorize an SSO that is illegal under either the Clean Water Act, an applicable Basin Plan prohibition or water quality standard, or the California Water Code;
 - (iii) Interpreted or applied to prohibit a Regional Water Board from issuing an individual NPDES permit or WDR, superseding this general WDR, for a sanitary sewer system, authorized under the Clean Water Act or California Water Code; or
 - (iv) Interpreted or applied to supersede any more specific or more stringent WDRs or enforcement order issued by a Regional Water Board.
3. The Enrollee shall take all feasible steps to eliminate SSOs. In the event that an SSO does occur, the Enrollee shall take all feasible steps to contain and mitigate the impacts of an SSO.
4. In the event of an SSO, the Enrollee shall take all feasible steps to prevent untreated or partially treated wastewater from discharging from storm drains into

flood control channels or waters of the United States by blocking the storm drainage system and by removing the wastewater from the storm drains.

5. All SSOs must be reported in accordance with Section G of the general WDRs.
6. In any enforcement action, the State and/or Regional Water Boards will consider the appropriate factors under the duly adopted State Water Board Enforcement Policy. And, consistent with the Enforcement Policy, the State and/or Regional Water Boards must consider the Enrollee's efforts to contain, control, and mitigate SSOs when considering the California Water Code Section 13327 factors. In assessing these factors, the State and/or Regional Water Boards will also consider whether:
 - (i) The Enrollee has complied with the requirements of this Order, including requirements for reporting and developing and implementing a SSMP;
 - (ii) The Enrollee can identify the cause or likely cause of the discharge event;
 - (iii) There were no feasible alternatives to the discharge, such as temporary storage or retention of untreated wastewater, reduction of inflow and infiltration, use of adequate backup equipment, collecting and hauling of untreated wastewater to a treatment facility, or an increase in the capacity of the system as necessary to contain the design storm event identified in the SSMP. It is inappropriate to consider the lack of feasible alternatives, if the Enrollee does not implement a periodic or continuing process to identify and correct problems.
 - (iv) The discharge was exceptional, unintentional, temporary, and caused by factors beyond the reasonable control of the Enrollee;
 - (v) The discharge could have been prevented by the exercise of reasonable control described in a certified SSMP for:
 - Proper management, operation and maintenance;
 - Adequate treatment facilities, sanitary sewer system facilities, and/or components with an appropriate design capacity, to reasonably prevent SSOs (e.g., adequately enlarging treatment or collection facilities to accommodate growth, infiltration and inflow (I/I), etc.);
 - Preventive maintenance (including cleaning and fats, oils, and grease (FOG) control);
 - Installation of adequate backup equipment; and
 - Inflow and infiltration prevention and control to the extent practicable.
 - (vi) The sanitary sewer system design capacity is appropriate to reasonably prevent SSOs.

- (vii) The Enrollee took all reasonable steps to stop and mitigate the impact of the discharge as soon as possible.
7. When a sanitary sewer overflow occurs, the Enrollee shall take all feasible steps and necessary remedial actions to 1) control or limit the volume of untreated or partially treated wastewater discharged, 2) terminate the discharge, and 3) recover as much of the wastewater discharged as possible for proper disposal, including any wash down water.

The Enrollee shall implement all remedial actions to the extent they may be applicable to the discharge and not inconsistent with an emergency response plan, including the following:

- (i) Interception and rerouting of untreated or partially treated wastewater flows around the wastewater line failure;
 - (ii) Vacuum truck recovery of sanitary sewer overflows and wash down water;
 - (iii) Cleanup of debris at the overflow site;
 - (iv) System modifications to prevent another SSO at the same location;
 - (v) Adequate sampling to determine the nature and impact of the release; and
 - (vi) Adequate public notification to protect the public from exposure to the SSO.
8. The Enrollee shall properly, manage, operate, and maintain all parts of the sanitary sewer system owned or operated by the Enrollee, and shall ensure that the system operators (including employees, contractors, or other agents) are adequately trained and possess adequate knowledge, skills, and abilities.
9. The Enrollee shall allocate adequate resources for the operation, maintenance, and repair of its sanitary sewer system, by establishing a proper rate structure, accounting mechanisms, and auditing procedures to ensure an adequate measure of revenues and expenditures. These procedures must be in compliance with applicable laws and regulations and comply with generally acceptable accounting practices.
10. The Enrollee shall provide adequate capacity to convey base flows and peak flows, including flows related to wet weather events. Capacity shall meet or exceed the design criteria as defined in the Enrollee's System Evaluation and Capacity Assurance Plan for all parts of the sanitary sewer system owned or operated by the Enrollee.
11. The Enrollee shall develop and implement a written Sewer System Management Plan (SSMP) and make it available to the State and/or Regional Water Board upon request. A copy of this document must be publicly available at the Enrollee's office and/or available on the Internet. This SSMP must be approved by the Enrollee's governing board at a public meeting.

12. In accordance with the California Business and Professions Code sections 6735, 7835, and 7835.1, all engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. Specific elements of the SSMP that require professional evaluation and judgments shall be prepared by or under the direction of appropriately qualified professionals, and shall bear the professional(s)' signature and stamp.
13. The mandatory elements of the SSMP are specified below. However, if the Enrollee believes that any element of this section is not appropriate or applicable to the Enrollee's sanitary sewer system, the SSMP program does not need to address that element. The Enrollee must justify why that element is not applicable. The SSMP must be approved by the deadlines listed in the SSMP Time Schedule below.

Sewer System Management Plan (SSMP)

- (i) **Goal:** The goal of the SSMP is to provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system. This will help reduce and prevent SSOs, as well as mitigate any SSOs that do occur.
- (ii) **Organization:** The SSMP must identify:
 - (a) The name of the responsible or authorized representative as described in Section J of this Order.
 - (b) The names and telephone numbers for management, administrative, and maintenance positions responsible for implementing specific measures in the SSMP program. The SSMP must identify lines of authority through an organization chart or similar document with a narrative explanation; and
 - (c) The chain of communication for reporting SSOs, from receipt of a complaint or other information, including the person responsible for reporting SSOs to the State and Regional Water Board and other agencies if applicable (such as County Health Officer, County Environmental Health Agency, Regional Water Board, and/or State Office of Emergency Services (OES)).
- (iii) **Legal Authority:** Each Enrollee must demonstrate, through sanitary sewer system use ordinances, service agreements, or other legally binding procedures, that it possesses the necessary legal authority to:
 - (a) Prevent illicit discharges into its sanitary sewer system (examples may include I/I, stormwater, chemical dumping, unauthorized debris and cut roots, etc.);

- (b) Require that sewers and connections be properly designed and constructed;
 - (c) Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the Public Agency;
 - (d) Limit the discharge of fats, oils, and grease and other debris that may cause blockages, and
 - (e) Enforce any violation of its sewer ordinances.
- (iv) **Operation and Maintenance Program.** The SSMP must include those elements listed below that are appropriate and applicable to the Enrollee's system:
- (a) Maintain an up-to-date map of the sanitary sewer system, showing all gravity line segments and manholes, pumping facilities, pressure pipes and valves, and applicable stormwater conveyance facilities;
 - (b) Describe routine preventive operation and maintenance activities by staff and contractors, including a system for scheduling regular maintenance and cleaning of the sanitary sewer system with more frequent cleaning and maintenance targeted at known problem areas. The Preventative Maintenance (PM) program should have a system to document scheduled and conducted activities, such as work orders;
 - (c) Develop a rehabilitation and replacement plan to identify and prioritize system deficiencies and implement short-term and long-term rehabilitation actions to address each deficiency. The program should include regular visual and TV inspections of manholes and sewer pipes, and a system for ranking the condition of sewer pipes and scheduling rehabilitation. Rehabilitation and replacement should focus on sewer pipes that are at risk of collapse or prone to more frequent blockages due to pipe defects. Finally, the rehabilitation and replacement plan should include a capital improvement plan that addresses proper management and protection of the infrastructure assets. The plan shall include a time schedule for implementing the short- and long-term plans plus a schedule for developing the funds needed for the capital improvement plan;
 - (d) Provide training on a regular basis for staff in sanitary sewer system operations and maintenance, and require contractors to be appropriately trained; and

- (e) Provide equipment and replacement part inventories, including identification of critical replacement parts.

(v) **Design and Performance Provisions:**

- (a) Design and construction standards and specifications for the installation of new sanitary sewer systems, pump stations and other appurtenances; and for the rehabilitation and repair of existing sanitary sewer systems; and
- (b) Procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects.

(vi) **Overflow Emergency Response Plan** - Each Enrollee shall develop and implement an overflow emergency response plan that identifies measures to protect public health and the environment. At a minimum, this plan must include the following:

- (a) Proper notification procedures so that the primary responders and regulatory agencies are informed of all SSOs in a timely manner;
- (b) A program to ensure an appropriate response to all overflows;
- (c) Procedures to ensure prompt notification to appropriate regulatory agencies and other potentially affected entities (e.g. health agencies, Regional Water Boards, water suppliers, etc.) of all SSOs that potentially affect public health or reach the waters of the State in accordance with the MRP. All SSOs shall be reported in accordance with this MRP, the California Water Code, other State Law, and other applicable Regional Water Board WDRs or NPDES permit requirements. The SSMP should identify the officials who will receive immediate notification;
- (d) Procedures to ensure that appropriate staff and contractor personnel are aware of and follow the Emergency Response Plan and are appropriately trained;
- (e) Procedures to address emergency operations, such as traffic and crowd control and other necessary response activities; and
- (f) A program to ensure that all reasonable steps are taken to contain and prevent the discharge of untreated and partially treated wastewater to waters of the United States and to minimize or correct any adverse impact on the environment resulting from the SSOs, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the discharge.

(vii) **FOG Control Program:** Each Enrollee shall evaluate its service area to determine whether a FOG control program is needed. If an Enrollee determines that a FOG program is not needed, the Enrollee must provide justification for why it is not needed. If FOG is found to be a problem, the Enrollee must prepare and implement a FOG source control program to reduce the amount of these substances discharged to the sanitary sewer system. This plan shall include the following as appropriate:

- (a) An implementation plan and schedule for a public education outreach program that promotes proper disposal of FOG;
- (b) A plan and schedule for the disposal of FOG generated within the sanitary sewer system service area. This may include a list of acceptable disposal facilities and/or additional facilities needed to adequately dispose of FOG generated within a sanitary sewer system service area;
- (c) The legal authority to prohibit discharges to the system and identify measures to prevent SSOs and blockages caused by FOG;
- (d) Requirements to install grease removal devices (such as traps or interceptors), design standards for the removal devices, maintenance requirements, BMP requirements, record keeping and reporting requirements;
- (e) Authority to inspect grease producing facilities, enforcement authorities, and whether the Enrollee has sufficient staff to inspect and enforce the FOG ordinance;
- (f) An identification of sanitary sewer system sections subject to FOG blockages and establishment of a cleaning maintenance schedule for each section; and
- (g) Development and implementation of source control measures for all sources of FOG discharged to the sanitary sewer system for each section identified in (f) above.

(viii) **System Evaluation and Capacity Assurance Plan:** The Enrollee shall prepare and implement a capital improvement plan (CIP) that will provide hydraulic capacity of key sanitary sewer system elements for dry weather peak flow conditions, as well as the appropriate design storm or wet weather event. At a minimum, the plan must include:

- (a) **Evaluation:** Actions needed to evaluate those portions of the sanitary sewer system that are experiencing or contributing to an SSO discharge caused by hydraulic deficiency. The evaluation must provide estimates of peak flows (including flows from SSOs

that escape from the system) associated with conditions similar to those causing overflow events, estimates of the capacity of key system components, hydraulic deficiencies (including components of the system with limiting capacity) and the major sources that contribute to the peak flows associated with overflow events;

- (b) **Design Criteria:** Where design criteria do not exist or are deficient, undertake the evaluation identified in (a) above to establish appropriate design criteria; and
 - (c) **Capacity Enhancement Measures:** The steps needed to establish a short- and long-term CIP to address identified hydraulic deficiencies, including prioritization, alternatives analysis, and schedules. The CIP may include increases in pipe size, I/I reduction programs, increases and redundancy in pumping capacity, and storage facilities. The CIP shall include an implementation schedule and shall identify sources of funding.
 - (d) **Schedule:** The Enrollee shall develop a schedule of completion dates for all portions of the capital improvement program developed in (a)-(c) above. This schedule shall be reviewed and updated consistent with the SSMP review and update requirements as described in Section D. 14.
- (ix) **Monitoring, Measurement, and Program Modifications:** The Enrollee shall:
- (a) Maintain relevant information that can be used to establish and prioritize appropriate SSMP activities;
 - (b) Monitor the implementation and, where appropriate, measure the effectiveness of each element of the SSMP;
 - (c) Assess the success of the preventative maintenance program;
 - (d) Update program elements, as appropriate, based on monitoring or performance evaluations; and
 - (e) Identify and illustrate SSO trends, including: frequency, location, and volume.
- (x) **SSMP Program Audits** - As part of the SSMP, the Enrollee shall conduct periodic internal audits, appropriate to the size of the system and the number of SSOs. At a minimum, these audits must occur every two years and a report must be prepared and kept on file. This audit shall focus on evaluating the effectiveness of the SSMP and the

Enrollee's compliance with the SSMP requirements identified in this subsection (D.13), including identification of any deficiencies in the SSMP and steps to correct them.

- (xi) **Communication Program** – The Enrollee shall communicate on a regular basis with the public on the development, implementation, and performance of its SSMP. The communication system shall provide the public the opportunity to provide input to the Enrollee as the program is developed and implemented.

The Enrollee shall also create a plan of communication with systems that are tributary and/or satellite to the Enrollee's sanitary sewer system.

14. Both the SSMP and the Enrollee's program to implement the SSMP must be certified by the Enrollee to be in compliance with the requirements set forth above and must be presented to the Enrollee's governing board for approval at a public meeting. The Enrollee shall certify that the SSMP, and subparts thereof, are in compliance with the general WDRs within the time frames identified in the time schedule provided in subsection D.15, below.

In order to complete this certification, the Enrollee's authorized representative must complete the certification portion in the Online SSO Database Questionnaire by checking the appropriate milestone box, printing and signing the automated form, and sending the form to:

State Water Resources Control Board
Division of Water Quality
Attn: SSO Program Manager
P.O. Box 100
Sacramento, CA 95812

The SSMP must be updated every five (5) years, and must include any significant program changes. Re-certification by the governing board of the Enrollee is required in accordance with D.14 when significant updates to the SSMP are made. To complete the re-certification process, the Enrollee shall enter the data in the Online SSO Database and mail the form to the State Water Board, as described above.

15. The Enrollee shall comply with these requirements according to the following schedule. This time schedule does not supersede existing requirements or time schedules associated with other permits or regulatory requirements.

Sewer System Management Plan Time Schedule

<u>Task and Associated Section</u>	Completion Date			
	Population > 100,000	Population between 100,000 and 10,000	Population between 10,000 and 2,500	Population < 2,500
Application for Permit Coverage Section C	6 months after WDRs Adoption			
Reporting Program Section G	6 months after WDRs Adoption ¹			
SSMP Development Plan and Schedule No specific Section	9 months after WDRs Adoption ²	12 months after WDRs Adoption ²	15 months after WDRs Adoption ²	18 months after WDRs Adoption ²
Goals and Organization Structure Section D 13 (i) & (ii)	12 months after WDRs Adoption ²		18 months after WDRs Adoption ²	
Overflow Emergency Response Program Section D 13 (vi)	24 months after WDRs Adoption ²	30 months after WDRs Adoption ²	36 months after WDRs Adoption ²	39 months after WDRs Adoption ²
Legal Authority Section D 13 (iii)				
Operation and Maintenance Program Section D 13 (iv)				
Grease Control Program Section D 13 (vii)				
Design and Performance Section D 13 (v)	36 months after WDRs Adoption	39 months after WDRs Adoption	48 months after WDRs Adoption	51 months after WDRs Adoption
System Evaluation and Capacity Assurance Plan Section D 13 (viii)				
Final SSMP, incorporating all of the SSMP requirements Section D 13				

1. In the event that by July 1, 2006 the Executive Director is able to execute a memorandum of agreement (MOA) with the California Water Environment Association (CWEA) or discharger representatives outlining a strategy and time schedule for CWEA or another entity to provide statewide training on the adopted monitoring program, SSO database electronic reporting, and SSMP development, consistent with this Order, then the schedule of Reporting Program Section G shall be replaced with the following schedule:

Reporting Program Section G	
Regional Boards 4, 8, and 9	8 months after WDRs Adoption
Regional Boards 1, 2, and 3	12 months after WDRs Adoption
Regional Boards 5, 6, and 7	16 months after WDRs Adoption

If this MOU is not executed by July 1, 2006, the reporting program time schedule will remain six (6) months for all regions and agency size categories.

2. In the event that the Executive Director executes the MOA identified in note 1 by July 1, 2006, then the deadline for this task shall be extended by six (6) months. The time schedule identified in the MOA must be consistent with the extended time schedule provided by this note. If the MOA is not executed by July 1, 2006, the six (6) month time extension will not be granted.

E. WDRs and SSMP AVAILABILITY

1. A copy of the general WDRs and the certified SSMP shall be maintained at appropriate locations (such as the Enrollee's offices, facilities, and/or Internet homepage) and shall be available to sanitary sewer system operating and maintenance personnel at all times.

F. ENTRY AND INSPECTION

1. The Enrollee shall allow the State or Regional Water Boards or their authorized representative, upon presentation of credentials and other documents as may be required by law, to:
 - a. Enter upon the Enrollee's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order;
 - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order;

- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order; and
- d. Sample or monitor at reasonable times, for the purposes of assuring compliance with this Order or as otherwise authorized by the California Water Code, any substances or parameters at any location.

G. GENERAL MONITORING AND REPORTING REQUIREMENTS

1. The Enrollee shall furnish to the State or Regional Water Board, within a reasonable time, any information that the State or Regional Water Board may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order. The Enrollee shall also furnish to the Executive Director of the State Water Board or Executive Officer of the applicable Regional Water Board, upon request, copies of records required to be kept by this Order.
2. The Enrollee shall comply with the attached Monitoring and Reporting Program No. 2006-0003 and future revisions thereto, as specified by the Executive Director. Monitoring results shall be reported at the intervals specified in Monitoring and Reporting Program No. 2006-0003. Unless superseded by a specific enforcement Order for a specific Enrollee, these reporting requirements are intended to replace other mandatory routine written reports associated with SSOs.
3. All Enrollees must obtain SSO Database accounts and receive a "Username" and "Password" by registering through the California Integrated Water Quality System (CIWQS). These accounts will allow controlled and secure entry into the SSO Database. Additionally, within 30 days of receiving an account and prior to recording spills into the SSO Database, all Enrollees must complete the "Collection System Questionnaire", which collects pertinent information regarding a Enrollee's collection system. The "Collection System Questionnaire" must be updated at least every 12 months.
4. Pursuant to Health and Safety Code section 5411.5, any person who, without regard to intent or negligence, causes or permits any untreated wastewater or other waste to be discharged in or on any waters of the State, or discharged in or deposited where it is, or probably will be, discharged in or on any surface waters of the State, as soon as that person has knowledge of the discharge, shall immediately notify the local health officer of the discharge. Discharges of untreated or partially treated wastewater to storm drains and drainage channels, whether man-made or natural or concrete-lined, shall be reported as required above.

Any SSO greater than 1,000 gallons discharged in or on any waters of the State, or discharged in or deposited where it is, or probably will be, discharged in or on any surface waters of the State shall also be reported to the Office of Emergency Services pursuant to California Water Code section 13271.

H. CHANGE IN OWNERSHIP

1. This Order is not transferable to any person or party, except after notice to the Executive Director. The Enrollee shall submit this notice in writing at least 30 days in advance of any proposed transfer. The notice must include a written agreement between the existing and new Enrollee containing a specific date for the transfer of this Order's responsibility and coverage between the existing Enrollee and the new Enrollee. This agreement shall include an acknowledgement that the existing Enrollee is liable for violations up to the transfer date and that the new Enrollee is liable from the transfer date forward.

I. INCOMPLETE REPORTS

1. If an Enrollee becomes aware that it failed to submit any relevant facts in any report required under this Order, the Enrollee shall promptly submit such facts or information by formally amending the report in the Online SSO Database.

J. REPORT DECLARATION

1. All applications, reports, or information shall be signed and certified as follows:
 - (i) All reports required by this Order and other information required by the State or Regional Water Board shall be signed and certified by a person designated, for a municipality, state, federal or other public agency, as either a principal executive officer or ranking elected official, or by a duly authorized representative of that person, as described in paragraph (ii) of this provision. (For purposes of electronic reporting, an electronic signature and accompanying certification, which is in compliance with the Online SSO database procedures, meet this certification requirement.)
 - (ii) An individual is a duly authorized representative only if:
 - (a) The authorization is made in writing by a person described in paragraph (i) of this provision; and
 - (b) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity.

K. CIVIL MONETARY REMEDIES FOR DISCHARGE VIOLATIONS

1. The California Water Code provides various enforcement options, including civil monetary remedies, for violations of this Order.
2. The California Water Code also provides that any person failing or refusing to furnish technical or monitoring program reports, as required under this Order, or

falsifying any information provided in the technical or monitoring reports is subject to civil monetary penalties.

L. SEVERABILITY

1. The provisions of this Order are severable, and if any provision of this Order, or the application of any provision of this Order to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this Order, shall not be affected thereby.
2. This order does not convey any property rights of any sort or any exclusive privileges. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, nor protect the Enrollee from liability under federal, state or local laws, nor create a vested right for the Enrollee to continue the waste discharge.

CERTIFICATION

The undersigned Clerk to the State Water Board does hereby certify that the foregoing is a full, true, and correct copy of general WDRs duly and regularly adopted at a meeting of the State Water Resources Control Board held on May 2, 2006.

AYE: Tam M. Doduc
Gerald D. Secundy

NO: Arthur G. Baggett

ABSENT: None

ABSTAIN: None



Song Her
Clerk to the Board

AB1826

Assembly Bill No. 1826

CHAPTER 727

An act to add Chapter 12.9 (commencing with Section 42649.8) to Part 3 of Division 30 of the Public Resources Code, relating to solid waste.

[Approved by Governor September 28, 2014. Filed with
Secretary of State September 28, 2014.]

LEGISLATIVE COUNSEL'S DIGEST

AB 1826, Chesbro. Solid waste: organic waste.

(1) The California Integrated Waste Management Act of 1989, which is administered by the Department of Resources Recycling and Recovery, establishes an integrated waste management program that requires each county and city and county to prepare and submit to the department a countywide integrated waste management plan. The act requires a business, which is defined as a commercial or public entity, that generates more than 4 cubic yards of commercial solid waste per week or is a multifamily residential dwelling of 5 units or more, to arrange for recycling services. Existing law also requires jurisdictions to implement a commercial solid waste recycling program meeting specified elements.

This bill would, commencing April 1, 2016, require a business that generates a specified amount of organic waste per week to arrange for recycling services for that organic waste in a specified manner. The bill would decrease the amount of organic waste under which a business would be subject to those requirements from 8 cubic yards or more to 4 cubic yards or more on January 1, 2017. The bill would also require a business that generates 4 cubic yards or more of commercial solid waste per week, on and after January 1, 2019, to arrange for organic waste recycling services and, if the department makes a specified determination, would decrease that amount to 2 cubic yards, on or after January 1, 2020.

This bill would require the contract or work agreement between a business and a gardening or landscaping service to require the organic waste generated by those services to comply with the requirements of this act.

This bill would require each jurisdiction, on and after January 1, 2016, to implement an organic waste recycling program to divert organic waste from the businesses subject to this act, except as specified with regard to rural jurisdictions, thereby imposing a state-mandated local program by imposing new duties on local governmental agencies. The bill would require each jurisdiction to report to the department on its progress in implementing the organic waste recycling program, and the department would be required to review whether a jurisdiction is in compliance with this act.

This bill would authorize a local governmental agency to charge and collect a fee from an organic waste generator to recover the local governmental agency's costs incurred in complying with this act.

This bill would require the department to identify and recommend actions to address permitting and siting challenges and to encourage the continued viability of the state's organic waste processing and recycling infrastructure, in partnership with the California Environmental Protection Agency and other specified state and regional agencies. The bill also would require the department to cooperate with local jurisdictions and industry to provide assistance for increasing the feasibility of organic waste recycling and to identify certain state financing mechanisms and state funding incentives and post this information on its Internet Web site.

(2) The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that no reimbursement is required by this act for a specified reason.

The people of the State of California do enact as follows:

SECTION 1. Chapter 12.9 (commencing with Section 42649.8) is added to Part 3 of Division 30 of the Public Resources Code, to read:

CHAPTER 12.9. RECYCLING OF ORGANIC WASTE

42649.8. For purposes of this chapter, the following terms shall apply:

(a) "Business" means a commercial or public entity, including, but not limited to, a firm, partnership, proprietorship, joint stock company, corporation, or association that is organized as a for-profit or nonprofit entity, or a multifamily residential dwelling.

(b) "Commercial waste generator" means a business subject to subdivision (a) of Section 42649.2.

(c) "Organic waste" means food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed in with food waste.

(d) "Organic waste generator" means a business subject to subdivision (a) of Section 42649.81.

(e) "Rural jurisdiction" means a jurisdiction that is located entirely within one or more rural counties, or a regional agency comprised of jurisdictions that are located within one or more rural counties.

(f) "Rural county" means a county that has a total population of less than 70,000 persons.

(g) "Self-hauler" means a business that hauls its own waste rather than contracting for that service and "self-haul" means to act as a self-hauler.

42649.81. (a) (1) On and after April 1, 2016, a business that generates eight cubic yards or more of organic waste per week shall arrange for

recycling services specifically for organic waste in the manner specified in subdivision (b).

(2) On and after January 1, 2017, a business that generates four cubic yards or more of organic waste per week shall arrange for recycling services specifically for organic waste in the manner specified in subdivision (b).

(3) On and after January 1, 2019, a business that generates four cubic yards or more of commercial solid waste, as defined in Section 42649.1, per week, shall arrange for recycling services specifically for organic waste in the manner specified in subdivision (b).

(4) On or after January 1, 2020, if the department determines that statewide disposal of organic waste has not been reduced to 50 percent of the level of disposal during 2014, a business that generates two cubic yards or more per week of commercial solid waste shall arrange for the organic waste recycling services specified in paragraph (3), unless the department determines that this requirement will not result in significant additional reductions of organics disposal.

(5) A business located in a rural jurisdiction that is exempted pursuant to paragraph (2) of subdivision (a) of Section 42649.82 is not subject to this chapter.

(b) A business subject to subdivision (a) shall take at least one of the following actions:

(1) Source separate organic waste from other waste and subscribe to a basic level of organic waste recycling service that includes collection and recycling of organic waste.

(2) Recycle its organic waste onsite or self-haul its own organic waste for recycling.

(3) Subscribe to an organic waste recycling service that may include mixed waste processing that specifically recycles organic waste.

(4) Make other arrangements consistent with paragraph (3) of subdivision (b) of Section 42649.84.

(c) A business that is a property owner may require a lessee or tenant of that property to source separate their organic waste to aid in compliance with this section.

(d) A business generating organic waste shall arrange for the recycling services required by this section in a manner that is consistent with state and local laws and requirements, including a local ordinance or local jurisdiction's franchise agreement, applicable to the collection, handling, or recycling of solid and organic waste.

(e) When arranging for gardening or landscaping services, the contract or work agreement between a business subject to this section and a gardening or landscaping service shall require that the organic waste generated by those services be managed in compliance with this chapter.

(f) (1) A multifamily residential dwelling that consists of fewer than five units is not a business for purposes of this chapter.

(2) A business that is a multifamily dwelling is not required to arrange for the organic waste recycling services specified in subdivision (b) for food waste that is generated by the business.

(g) If separate organic waste collection and recycling services are not offered through a local ordinance or local jurisdiction's franchise agreement, a business generating organic waste may arrange for separate organic waste collection and recycling services, until the local ordinance or local jurisdiction's franchise agreement includes organic waste recycling services.

42649.82. (a) (1) In addition to the requirements of Section 42649.3, on and after January 1, 2016, each jurisdiction shall implement an organic waste recycling program that is appropriate for that jurisdiction and designed specifically to divert organic waste generated by businesses subject to Section 42649.81, whether or not the jurisdiction has met the requirements of Section 41780.

(2) (A) A county board of supervisors of a rural county may adopt a resolution, as prescribed in this paragraph, to make the rural county exempt from the requirements of this section. If a rural jurisdiction is a city, the city council may adopt a resolution, as prescribed in this paragraph, to make the rural jurisdiction exempt from this section. If a rural jurisdiction is a regional agency comprised of jurisdictions that are located entirely within one or more rural counties, the board of the regional agency may adopt a resolution, as prescribed in this paragraph, to make the rural jurisdiction is exempt from the requirements of this section.

(B) A resolution adopted pursuant to subparagraph (A) shall include findings as to the purpose of and need for the exemption.

(C) A resolution to exempt a rural jurisdiction pursuant to subparagraph (A) shall be submitted to the department at least six months before the operative date of the exemption.

(D) On or after January 1, 2020, if the department determines that statewide disposal of organic waste has not been reduced to 50 percent of the level of disposal during the 2014 calendar year, all exemptions authorized by this paragraph shall terminate unless the department determines that applying this chapter to rural jurisdictions will not result in significant additional reductions of disposal of organic waste.

(b) If a jurisdiction, as of January 1, 2016, has in place an organic waste recycling program that meets the requirements of this section, it is not required to implement a new or expanded organic waste recycling program.

(c) The organic waste recycling program required by this section shall be directed at organic waste generators and may include, but is not limited to, one or more of the following:

(1) Implementing a mandatory commercial organic waste recycling policy or ordinance that addresses organic waste recycling.

(2) Requiring a mandatory commercial organic waste recycling program through a franchise contract or agreement.

(3) Requiring organic waste to go through a source separated or mixed processing system that diverts material from disposal.

(d) (1) The organic waste recycling program shall do all of the following:

(A) Identify all of the following:

(i) Existing organic waste recycling facilities within a reasonable vicinity and the capacities available for materials to be accepted at each facility.

(ii) Existing solid waste and organic waste recycling facilities within the jurisdiction that may be suitable for potential expansion or colocation of organic waste processing or recycling facilities.

(iii) Efforts of which the jurisdiction is aware that are underway to develop new private or public regional organic waste recycling facilities that may serve some or all of the organic waste recycling needs of the commercial waste generators within the jurisdiction subject to this chapter, and the anticipated timeframe for completion of those facilities.

(iv) Closed or abandoned sites that might be available for new organic waste recycling facilities.

(v) Other nondisposal opportunities and markets.

(vi) Appropriate zoning and permit requirements for the location of new organic waste recycling facilities.

(vii) Incentives available, if any, for developing new organic waste recycling facilities within the jurisdiction.

(B) Identify barriers to siting new or expanded compostable materials handling operations, as defined in paragraph (12) of subdivision (a) of Section 17852 of the Title 14 of the California Code of Regulations, and specify a plan to remedy those barriers that are within the control of the local jurisdiction.

(C) Provide for the education of, outreach to, and monitoring of, businesses. The program shall require the jurisdiction to notify a business if the business is not in compliance with Section 42649.81.

(2) For purposes of subparagraph (A) of paragraph (1), an “organic waste recycling facility” shall include compostable materials handling operations, as defined in paragraph (12) of subdivision (a) of Section 17852 of Title 14 of the California Code of Regulations, and may include other facilities that recycle organic waste.

(e) The organic waste recycling program may include any one or more of the following:

(1) Enforcement provisions that are consistent with the jurisdiction’s authority, including a structure for fines and penalties.

(2) Certification requirements for self-haulers.

(3) Exemptions, on a case-by-case basis, from the requirements of Section 42649.81 that are deemed appropriate by the jurisdiction for any of the following reasons:

(A) Lack of sufficient space in multifamily complexes or businesses to provide additional organic material recycling bins.

(B) The current implementation by a business of actions that result in the recycling of a significant portion of its organic waste.

(C) The business or group of businesses does not generate at least one-half of a cubic yard of organic waste per week.

(D) Limited-term exemptions for extraordinary and unforeseen events.

(E) (i) The business or group of businesses does not generate at least one cubic yard of organic waste per week, if the local jurisdiction provides the department with information that explains the need for this higher exemption than that authorized by subparagraph (C).

(ii) The information described in clause (i) shall be provided to the department with the information provided pursuant to subdivision (f).

(iii) This subparagraph shall not be operative on or after January 1, 2020, if the department, pursuant to paragraph (4) of subdivision (a) of Section 42649.81, determines that statewide disposal of organic waste has not been reduced to 50 percent of the level of disposal during the 2014 calendar year.

(f) (1) Each jurisdiction shall provide the department with information on the number of regulated businesses that generate organic waste and, if available, the number that are recycling organic waste. The jurisdiction shall include this information as part of the annual report required pursuant to Section 41821.

(2) On and after August 1, 2017, in addition to the information required by paragraph (1), each jurisdiction shall report to the department on the progress achieved in implementing its organic waste recycling program, including education, outreach, identification, and monitoring, on its rationale for allowing exemptions, and, if applicable, on enforcement efforts. The jurisdiction shall include this information as part of the annual report required pursuant to Section 41821.

(g) (1) The department shall review a jurisdiction's compliance with this section as part of the department's review required by Section 41825.

(2) The department also may review whether a jurisdiction is in compliance with this section at any time that the department receives information that a jurisdiction has not implemented, or is not making a good faith effort to implement, an organic waste recycling program.

(h) During a review pursuant to subdivision (g), the department shall determine whether the jurisdiction has made a good faith effort to implement its selected organic waste recycling program. For purposes of this section, "good faith effort" means all reasonable and feasible efforts by a jurisdiction to implement its organic waste recycling program. During its review, the department may include, but is not limited to, consideration of the following factors in its evaluation of a jurisdiction's good faith effort:

(1) The extent to which businesses have complied with Section 42649.81, including information on the amount of disposal that is being diverted from the businesses, if available, and on the number of businesses that are complying with Section 42649.81.

(2) The recovery rate of the organic waste from the material recovery facilities that are utilized by the businesses, all information, methods, and calculations, and any additional performance data, as requested by the department from the material recovery facilities pursuant to Section 18809.4 of Title 14 of the California Code of Regulations.

(3) The extent to which the jurisdiction is conducting education and outreach to businesses.

(4) The extent to which the jurisdiction is monitoring businesses and notifying those businesses that are not in compliance.

(5) The appropriateness of exemptions allowed by the jurisdiction.

(6) The availability of markets for collected organic waste recyclables.

(7) Budgetary constraints.

(8) In the case of a rural jurisdiction, the effects of small geographic size, low population density, or distance to markets.

(9) The availability, or lack thereof, of sufficient organic waste processing infrastructure, organic waste recycling facilities, and other nondisposal opportunities and markets.

(10) The extent to which the jurisdiction has taken steps that are under its control to remove barriers to siting and expanding organic waste recycling facilities.

42649.83. (a) If a jurisdiction adds or expands an organic waste recycling program to meet the requirements of Section 42649.82, the jurisdiction shall not be required to revise its source reduction and recycling element or obtain the department's approval pursuant to Article 1 (commencing with Section 41800) of Chapter 7 of Part 2.

(b) If an addition or expansion of a jurisdiction's organic waste recycling program is necessary, the jurisdiction shall include this information in the annual report required pursuant to Section 41821.

42649.84. (a) This chapter does not limit the authority of a local governmental agency to adopt, implement, or enforce a local organic waste recycling requirement, or a condition imposed upon a self-hauler, that is more stringent or comprehensive than the requirements of this chapter.

(b) This chapter does not modify, limit, or abrogate in any manner any of the following:

(1) A franchise granted or extended by a city, county, city and county, or other local governmental agency.

(2) A contract, license, or permit to collect solid waste previously granted or extended by a city, county, city or county, or other local governmental agency.

(3) The existing right of a business to sell or donate its recyclable organic waste materials.

(c) Notwithstanding any other requirement of this chapter, nothing in this chapter modifies, limits, or abrogates the authority of a local jurisdiction with respect to land use, zoning, or facility siting decisions by or within that local jurisdiction.

42649.85. A local governmental agency may charge and collect a fee from an organic waste generator to recover the local governmental agency's costs incurred in complying with this chapter.

42649.86. (a) The department shall identify and recommend actions to address, with regard to both state agencies and the federal government, the permitting and siting challenges associated with composting and anaerobic digestion, and to encourage the continued viability of the state's organic waste processing and recycling infrastructure, in partnership with the California Environmental Protection Agency and other state and regional agencies. These other state and regional agencies shall include, but are not limited to, the State Air Resources Board, the State Energy Resources Conservation and Development Commission, the Public Utilities Commission, the Department of Food and Agriculture, the State Water

Resources Control Board, California regional water quality control boards, and air pollution control and air quality management districts.

(b) The department shall cooperate with local governmental agencies and industry to provide assistance for increasing the feasibility of organic recycling by promoting processing opportunities and the development of new infrastructure of sufficient capacity to meet the needs of generators, and developing sufficient end-use markets throughout the state for the quantity of organic waste required to be diverted.

(c) The department shall identify and post on its Internet Web site state financing mechanisms and state funding incentives that are available for in-state development of organic waste infrastructure to help the state achieve its greenhouse gas reduction goals and waste reduction goals.

SEC. 2. No reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution because a local agency or school district has the authority to levy service charges, fees, or assessments sufficient to pay for the program or level of service mandated by this act, within the meaning of Section 17556 of the Government Code.

FOG Monitoring Program Forms



City of Manteca FOG Program Requirements for Food Service Establishments

- **Complete and submit “FOG Program Registration.”**
- **Ensure grease trap is functioning properly and submit “Grease Trap Certification.”** (The certification may be mailed with your initial “FOG Pump Out Report.”)
- **Grease trap must be cleaned under the following conditions...**
 - A minimum of every 90 days.
 - When the grease and solids in the trap exceed 25% of the trap depth.
- **“Pump Out Report” must be filled out completely and accurately.**
- **“Pump Out Report “must be received by the City within 72 hours of cleaning.**
- **Retain maintenance records onsite for a minimum of three years.**
- **The FOG Generator is responsible for any FOG discharge into the sanitary sewer or storm water system.**

For more information about the City of Manteca FOG Program please contact us at (209) 456-8400



City of Manteca FOG Program Registration

Property Owner: _____

Mailing Address: _____

Primary contact: _____

Phone Number: _____

Secondary Contact: _____

Phone Number _____

List all properties owned that have the potential to discharge FOG

Physical Address: _____

Name of business(es) _____

Physical Address: _____

Name of business(es) _____

Physical Address: _____

Name of business(es) _____

Physical Address: _____

Name of business(es) _____

(May attach additional pages)



FOG Reduction Program, Grease Trap Certification Form

_____(_____)_____
Facility Name Phone Number

Address Manteca, CA

Business License Number

Plumber

I _____ of _____
Print Name Print Company / CA Contractor #

Certify that the above listed facility has _____ grease interceptor(s) and/or
_____ grease trap(s). I have examined these fixtures and have found them to
be in good working condition and functioning properly, including, where appropriate,
proper installation of flow restrictors. I have also identified that all FOG producing
drains are plumbed to flow through the grease control device identified.

Owner Certification

I _____ certify to the best of my knowledge the
Print Name of Owner/Manager
above statements to be true and correct.

Signature /Date of Owner/Manager

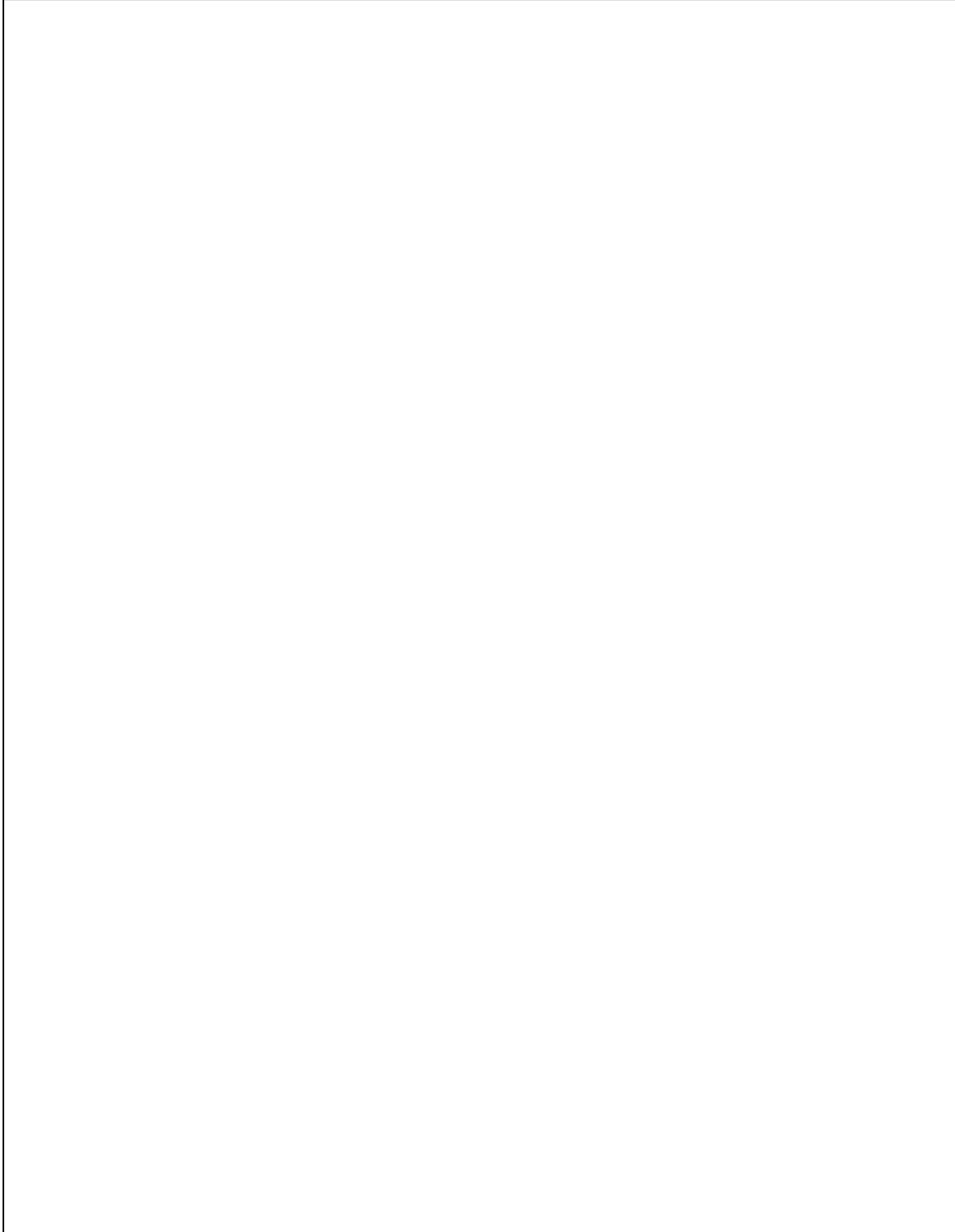
Complete and mail this form to:

City of Manteca
Department of Public Works
FOG Compliance Program
1001 W Center Street
Manteca, CA 95337

For Official Use Only

Account Number _____

Facility Diagram (Draw the location of all plumbing fixtures and grease traps/interceptors for this establishment. Identify trap/interceptor type and volume. Clearly identify all fixtures that do and do not flow through grease traps/interceptors. Identify the names of all business served)

A large, empty rectangular box with a thin black border, intended for drawing the facility diagram. It occupies the majority of the page below the instructions.

Facility Grease Trap Service Schedule

Mail to:
City of Manteca
Department of Public Works
FOG Compliance Program
FOG Pump-Out Report
1001 W Center Street
Manteca, CA 95337

1. Facility Information

Facility Name: _____ Account # _____

Location Address: _____ Manteca, CA

Telephone: _____

2. Service Schedule

Date:

Time:

[illegible]

At the specified dates and times the lid must be removed from the grease trap and servicing of grease trap will begin (not before, not after). The lid is not to be closed until all solids have been removed and properly stored. The City must receive no less than one week advanced notice of any change in this schedule.



Facility Grease Trap Service Log

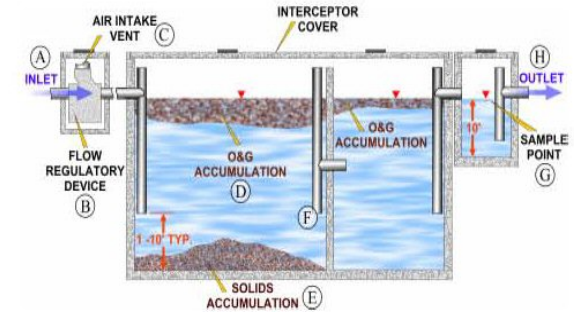
Mail to:
City of Manteca,
Department of Public Works
FOG Pump-Out Report
1001 W Center Street
Manteca, CA 95337

1. Facility Information

Facility Name: _____ Account # _____

Location Address: _____ Manteca, CA

Telephone: _____



Date of Service				
Inches of Grease				
Inches of Water				
Inches of Solids				
Print Name of Servicer				
Signature of Servicer				

Date of Service				
Inches of Grease				
Inches of Water				
Inches of Solids				
Print Name of Servicer				
Signature of Servicer				

This form must be mailed to the above address every time the City of Manteca septic hauler removes solids from the premises.



City of Manteca FOG Pump-Out Report

Mail to:
City of Manteca
Department of Public Works
FOG Compliance Program
FOG Pump-Out Report
1001 W Center Street
Manteca, CA 95337

1. Facility Information

Facility Name: _____ Account # _____

Location Address: _____ Manteca, CA 95337

Telephone: _____

Hauler Manifest: _____

2. DESCRIPTION OF INTERCEPTOR CONDITION

1. Depth of Grease: _____ inches

2. Depth of Water : _____ inches

3. Depth of Solids: _____ inches

4. Pump-Out Method (completely darken appropriate circle as shown ●)

○ Vacuum Truck (proceed to question 5) ○ Manual (proceed to question 6)

5. Vacuum Truck Pump-Out Method ○ Complete Pump ○ Pump & Return

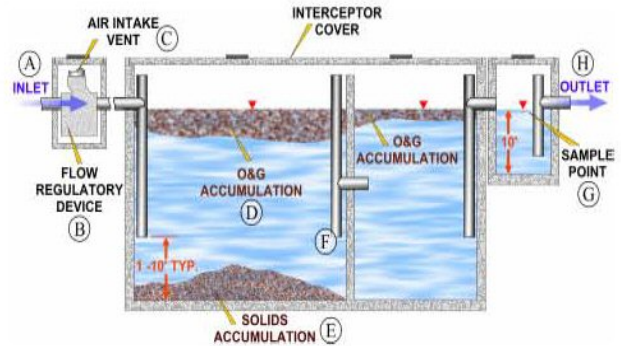
6. Gallons Transported: _____ Gallons

7. Grease Trap Condition: ○ Fully Functional (proceed to section 3)

○ In need of Repair (proceed to question 8) ○ Could Not Observe (proceed to section 3)

8. Facility Manager Notified of Grease Trap Condition: ○ Yes

9. Additional Comments: ○ Yes (On back of Page)



3. Certification

I hereby certify that all information provided herein is true and correct to the best of my knowledge and belief, respectively and that interceptor servicing this establishment is cleaned of residual fats, oils, grease and other solid materials.

Print Name of Waste Hauling Company (if applicable)

Print Name and Signature of Person Performing Maintenance

Date

Complete form and mail to the above address within 72 hours of completion of pump-out. Failure to comply with FOG requirements may result in unannounced follow-up inspection of the facility and inspection fees as appropriate.