

FACILITY CONDITION ASSESSMENT & ENERGY AUDIT



**BUREAU
VERITAS**

prepared for

City of Glendora
116 East Foothill Boulevard
Glendora, California 91741
Michael Sledd



Sierra Madre Avenue Water Yard
1051 East Sierra Madre Avenue
Glendora, California 91741

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BV PROJECT #:

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DATE OF REPORT:

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ON SITE DATE:

November 9, 2023

Bureau Veritas

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1. Executive Summary

Campus Overview and Assessment Details

General Information	
Property Type	Water Yard
Number of Buildings	Three
Main Address	1051 East Sierra Madre Avenue, Glendora, California 91741
Site Developed	1916
Current Occupants	City of Glendora
Date(s) of Visit	November 9, 2023
Management Point of Contact	City of Glendora, Ryan Hacecky, Facilities Maintenance Supervisor 626.672.6306 rhacecky@cityofglendora.org
On-site Point of Contact (POC)	Ron Nichka
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AssetCalc Link	Full dataset for this assessment can be found at: https://www.assetcalc.net/

Campus Findings and Deficiencies

Historical Summary

The Sierra Madre Avenue Water Yard property was originally constructed in 1916. The Warehouse was one of the original buildings at the property. The Chemical Building was estimated to have been built in 2004, and the Water Department Office was built in 2009.

Architectural

The roofs on the Chemical Building and Water Department Office appear to be original. There is some minor roof edge deterioration on the Chemical Building that are recommended for repair. Some roof leaks have occurred in the Water Department Office causing a few ceiling leaks in the office area. The roof leaks are reportedly repaired as they occur. Roof leaks have been an on-going problem at the Warehouse causing wood ceiling damage in various location in the garage. Repair of the roof leaks and damaged wood ceiling is recommended. Isolated locations of exterior concrete wall cracking was observed on the Chemical Building and Warehouse. The exterior walls on the Water Department Office are in good condition with little to no areas of deterioration. According to the point of contact, there are no issues with building movement or settlement at the property. However, due to the age of the buildings, routine maintenance checks on the foundation are recommended.

The interior finishes are replaced on an as needed basis. Typical lifecycle based replacements for the interior and exterior finishes are budgeted and anticipated during the reserve term.

Mechanical, Electrical, Plumbing and Fire (MEPF)

HVAC components at the Warehouse involve a split system and suspended unit heater. The point of contact reported inadequate heating in the building. A cost allowance to upgrade the HVAC system at the Warehouse has been included in the online capital planning database. Heating and cooling at the Water Department Office are provided by rooftop mounted packaged units. The rooftop units are original and in adequate working condition. There is no HVAC system at the Chemical Building.

The electrical system at the Chemical Building and Water Department Offices are controlled by switchboards that are likely original. The electrical wiring at the Warehouse is reportedly outdated and recommended for replacement. LED lighting was installed at the Warehouse within the past year.

Domestic hot water is supplied by storage tank water heaters at the Warehouse and Water Department Office. Typical commercial plumbing fixtures are utilized in the restrooms. There is no plumbing system at the Chemical Building.

Fire suppression at the Water Department Office consists of a fire sprinkler system. Fire extinguishers are used at the other buildings.

Site

The site consists of the asphalt and concrete paved lots, the ancillary buildings that house the water facility's booster pumps, and the reservoir structures. Asphalt and concrete pavement cracking was observed in the rear lot of the property. Crack sealing is recommended during the reserve term. Exterior building mounted lights were installed within the last year. Site lighting appears to be adequate for the facility's needs.

Recommended Additional Studies

No additional studies recommended at this time.

Facility Condition Index (FCI)

One of the major goals of the FCA is to calculate each building's Facility Condition Index (FCI), which provides a theoretical objective indication of a building's overall condition. By definition, the FCI is defined as the ratio of the cost of current needs divided by current replacement value (CRV) of the facility. The chart below presents the industry standard ranges and cut-off points.

FCI Ranges and Description	
0 – 5%	In new or well-maintained condition, with little or no visual evidence of wear or deficiencies.
5 – 10%	Subjected to wear but is still in a serviceable and functioning condition.
10 – 30%	Subjected to hard or long-term wear. Nearing the end of its useful or serviceable life.
30% and above	Has reached the end of its useful or serviceable life. Renewal is now necessary.

The deficiencies and lifecycle needs identified in this assessment provide the basis for a portfolio-wide capital improvement funding strategy. In addition to the current FCI, extended FCI's have been developed to provide owners the intelligence needed to plan and budget for the "keep-up costs" for their facilities. As such the 3-year, 5-year, and 10-year FCI's are calculated by dividing the anticipated needs of those respective time periods by current replacement value. As a final point, the FCI's ultimately provide more value when used to relatively compare facilities across a portfolio instead of being over-analyzed and scrutinized as stand-alone values. The table below summarizes the individual findings for this FCA:

Facility (year built)	Cost/SF	Total SF	Replacement Value	Current	3-Year	5-Year	10-Year
Sierra Madre Avenue Water Yard / Chemical Building (2004)	\$700	700	\$490,000	0.3%	0.8%	1.8%	2.6%
Sierra Madre Avenue Water Yard / Warehouse (1916)	\$375	2,400	\$900,000	0.0%	14.4%	19.3%	23.9%
Sierra Madre Avenue Water Yard / Water Department Office (2009)	\$700	5,950	\$4,165,000	0.0%	0.2%	1.9%	7.5%

The vertical bars below represent the year-by-year needs identified for the site. The orange line in the graph below forecasts what would happen to the FCI (left Y axis) over time, assuming zero capital expenditures over the next ten years. The dollar amounts allocated for each year (blue bars) are associated with the values along the right Y axis.

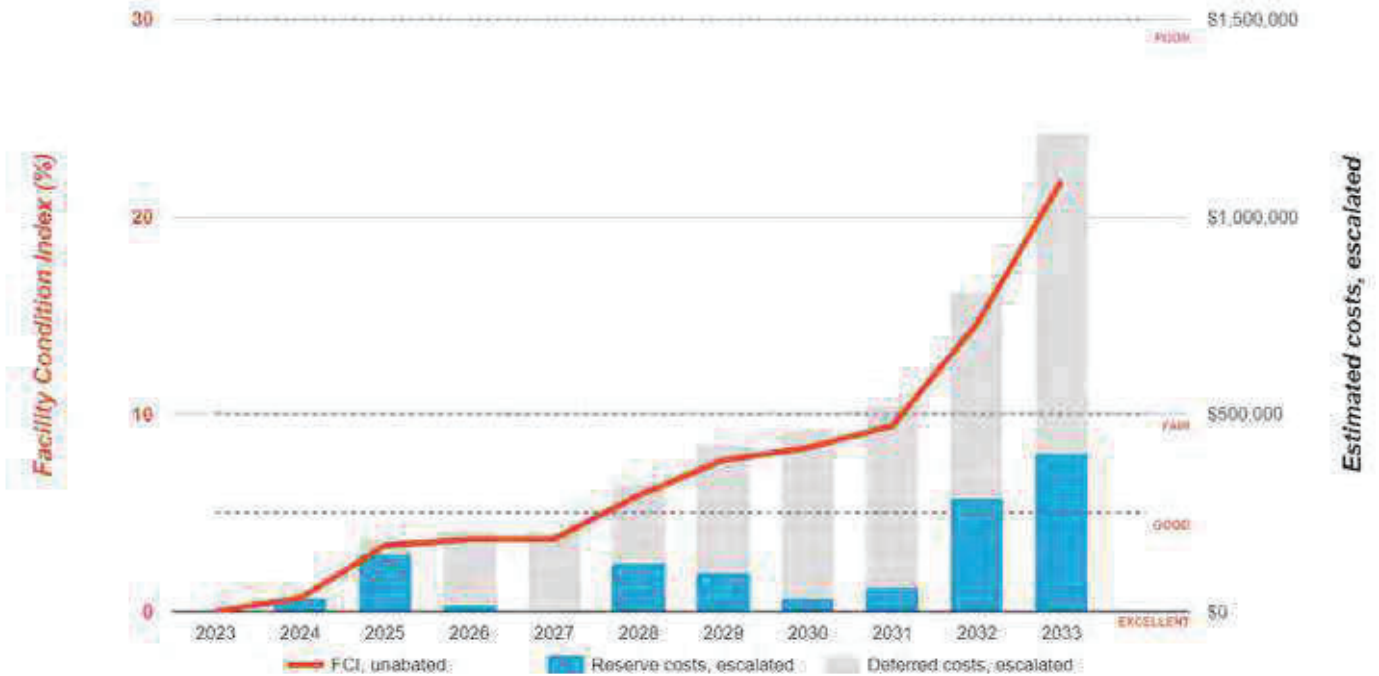
Needs by Year with Unaddressed FCI Over Time

FCI Analysis: Sierra Madre Avenue Water Yard

Replacement Value: \$5,555,000

Inflation Rate: 3.0%

Average Needs per Year: \$110,200



Immediate Needs

Facility/Building	Total Items	Total Cost
Sierra Madre Avenue Water Yard / Chemical Building	1	\$1,600
Total	1	\$1,600

Chemical Building

ID	Location	Location Description	UF Code	Description	Condition	Plan Type	Cost
7045812	Sierra Madre Avenue Water Yard / Chemical Building	Building Exterior	B3010	Roofing, any type, Repairs per Man-Day, Repair	Poor	Performance/Integrity	\$1,600
Total (1 items)							\$1,600



Key Findings



Roofing in Poor Condition.

Any Type, Repairs per Man-Day
Sierra Madre Avenue Water Yard Chemical Building - Building Exterior

Uniformat Code: B3010
Recommendation: **Repair in 2023**

Priority Score: **88.9**

Plan Type:
Performance/Integrity

Cost Estimate: \$1,600

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Roof edges along overhead door side are deteriorating likely from weather - AssetCALC ID: 7045812



Exterior Walls in Poor Condition.

Concrete
Sierra Madre Avenue Water Yard Chemical Building - Building Exterior

Uniformat Code: B2010
Recommendation: **Replace in 2025**

Priority Score: **88.7**

Plan Type:
Performance/Integrity

Cost Estimate: \$2,200

\$\$\$\$

Wall cracking along rear wall - AssetCALC ID: 7045799



Roofing in Poor Condition.

Built-Up
Sierra Madre Avenue Water Yard Warehouse Roof

Uniformat Code: B3010
Recommendation: **Replace in 2025**

Priority Score: **88.7**

Plan Type:
Performance/Integrity

Cost Estimate: \$50,000

\$\$\$\$

Roof leaks have caused extensive interior wood damage - AssetCALC ID: 7045835



Exterior Walls in Poor Condition.

Concrete
Sierra Madre Avenue Water Yard Warehouse Building Exterior

Uniformat Code: B2010
Recommendation: **Replace in 2025**

Priority Score: **88.7**

Plan Type:
Performance/Integrity

Cost Estimate: \$8,600

\$\$\$\$

Concrete wall cracking along front and left elevations - AssetCALC ID: 7045832





Exterior Walls in Poor Condition.

Concrete
Sierra Madre Avenue Water Yard Site
Reservoir Pump Housing

Uniformat Code: B2010
Recommendation: **Replace in 2025**

Priority Score: **88.7**

Plan Type:
Performance/Integrity

Cost Estimate: \$2,200

\$\$\$\$

Concrete cracking observed on rear wall - AssetCALC ID: 7165005



Parking Lots in Poor Condition.

Pavement, Concrete
Sierra Madre Avenue Water Yard Site

Uniformat Code: G2020
Recommendation: **Replace in 2025**

Priority Score: **84.7**

Plan Type:
Performance/Integrity

Cost Estimate: \$1,600

\$\$\$\$

Concrete pavement cracking in rear lot - AssetCALC ID: 7045814



Parking Lots in Poor Condition.

Pavement, Asphalt
Sierra Madre Avenue Water Yard Site Rear Lot

Uniformat Code: G2020
Recommendation: **Seal and Stripe in 2025**

Priority Score: **84.7**

Plan Type:
Performance/Integrity

Cost Estimate: \$28,100

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Areas of cracking observed throughout - AssetCALC ID: 7045796



Motor Control Center in Poor Condition.

With Main Breaker
Sierra Madre Avenue Water Yard Well #13E

Uniformat Code: D5020
Recommendation: **Replace in 2024**

Priority Score: **81.8**

Plan Type:
Performance/Integrity

Cost Estimate: \$22,300

\$\$\$\$

Breaker is currently not working and needs repair/replacement - AssetCALC ID: 7165014





Ceiling Finishes in Poor Condition.

Wood Paneling
Sierra Madre Avenue Water Yard Warehouse Area

Uniformat Code: C2050
Recommendation: **Replace in 2024**

Priority Score: **81.8**

Plan Type:
Performance/Integrity

Cost Estimate: \$12,500

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Many areas of ceiling leak damage observed in garage storage area - AssetCALC ID: 7045818



Electrical System in Poor Condition.

Full System Renovation/Upgrade, Low Density/Complexity
Sierra Madre Avenue Water Yard Warehouse Throughout Building

Uniformat Code: D5020
Recommendation: **Replace in 2025**

Priority Score: **81.7**

Plan Type:
Performance/Integrity

Cost Estimate: \$46,400

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Reportedly outdated according to POC - AssetCALC ID: 7045819

HVAC System

Full System Renovation/Upgrade, Low Complexity
Sierra Madre Avenue Water Yard Warehouse

Uniformat Code: D3050
Recommendation: **Replace in 2028**

Priority Score: **54.5**

Plan Type:
Retrofit/Adaptation

Cost Estimate: \$15,600

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The POC reported that there is inadequate heating at the Warehouse. - AssetCALC ID: 7153264



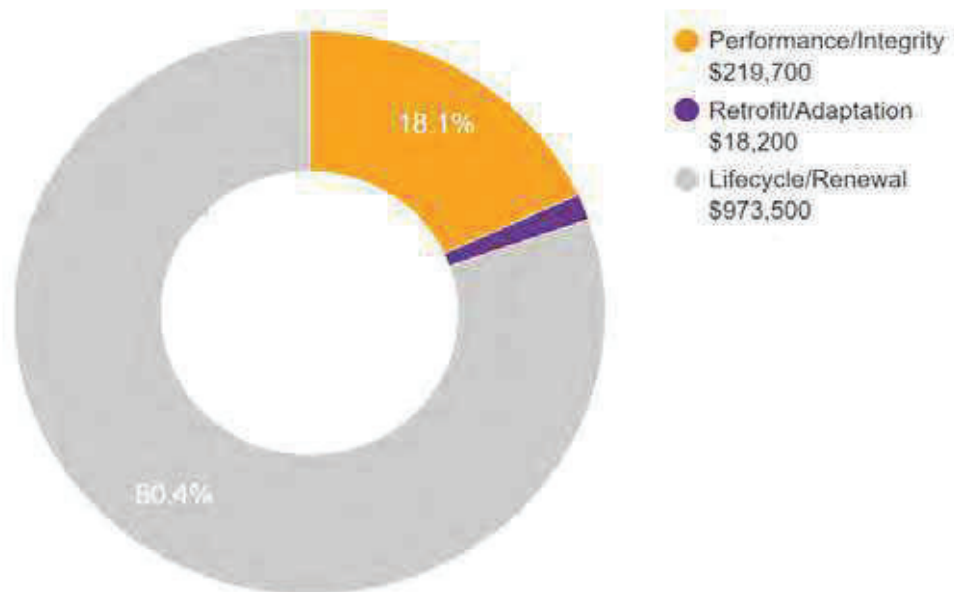
Plan Types

Each line item in the cost database is assigned a Plan Type, which is the primary reason or rationale for the recommended replacement, repair, or other corrective action. This is the “why” part of the equation. A cost or line item may commonly have more than one applicable Plan Type; however, only one Plan Type will be assigned based on the “best” fit, typically the one with the greatest significance.

Plan Type Descriptions

Safety	■ An observed or reported unsafe condition that if left unaddressed could result in injury; a system or component that presents potential liability risk.
Performance/Integrity	■ Component or system has failed, is almost failing, performs unreliably, does not perform as intended, and/or poses risk to overall system stability.
Accessibility	■ Does not meet ADA, UFAS, and/or other handicap accessibility requirements.
Environmental	■ Improvements to air or water quality, including removal of hazardous materials from the building or site.
Retrofit/Adaptation	■ Components, systems, or spaces recommended for upgrades in in order to meet current standards, facility usage, or client/occupant needs.
Lifecycle/Renewal	■ Any component or system that is not currently deficient or problematic but for which future replacement or repair is anticipated and budgeted.

Plan Type Distribution (by Cost)



10-YEAR TOTAL: \$1,211,400

2. Chemical Building



Chemical Building: Systems Summary

Address	1051 East Sierra Madre Avenue; Glendora, California 91741	
Constructed/Renovated	2004	
Building Size	700 square feet	
Number of Stories	One	
<i>System</i>	<i>Description</i>	<i>Condition</i>
Structure	Masonry bearing walls and wood framed roof	Good
Façade	Concrete integral to superstructure	Fair
Roof	Gable construction with asphalt shingles	Fair
Interiors	Walls: Unfinished Floors: Unfinished Ceilings: Unfinished	--
Elevators	None	--
Plumbing	None	--
HVAC	None	--

Chemical Building: Systems Summary

Fire Suppression	Fire extinguishers only	Fair
Electrical	Source & Distribution: Main switchboard with copper wiring Interior Lighting: LED Emergency: none	Fair
Fire Alarm	Smoke detectors	Fair
Equipment/Special	None	--
Accessibility	Presently it does not appear an accessibility study is needed for this property.	
Key Issues and Findings	Roof edge damage, exterior concrete wall cracking	

Chemical Building: Systems Expenditure Forecast

System	Immediate	Short Term (1-2 yr)	Near Term (3-5 yr)	Med Term (6-10 yr)	Long Term (11-20 yr)	TOTAL
Facade	-	\$2,300	-	-	\$7,400	\$9,700
Roofing	\$1,600	-	\$4,700	-	\$5,400	\$11,700
HVAC	-	-	-	\$1,400	-	\$1,400
Electrical	-	-	-	\$2,900	-	\$2,900
Site Utilities	-	-	-	-	\$3,100	\$3,100
TOTALS (3% inflation)	\$1,600	\$2,300	\$4,700	\$4,300	\$15,900	\$28,800

*Totals have been rounded to the nearest \$100.

The orange line in the graph below forecasts what would happen to the FCI (left axis) over time, assuming zero capital expenditures. The capital expenditures for each year (blue bars) are associated with the dollar amounts along the right Y axis.

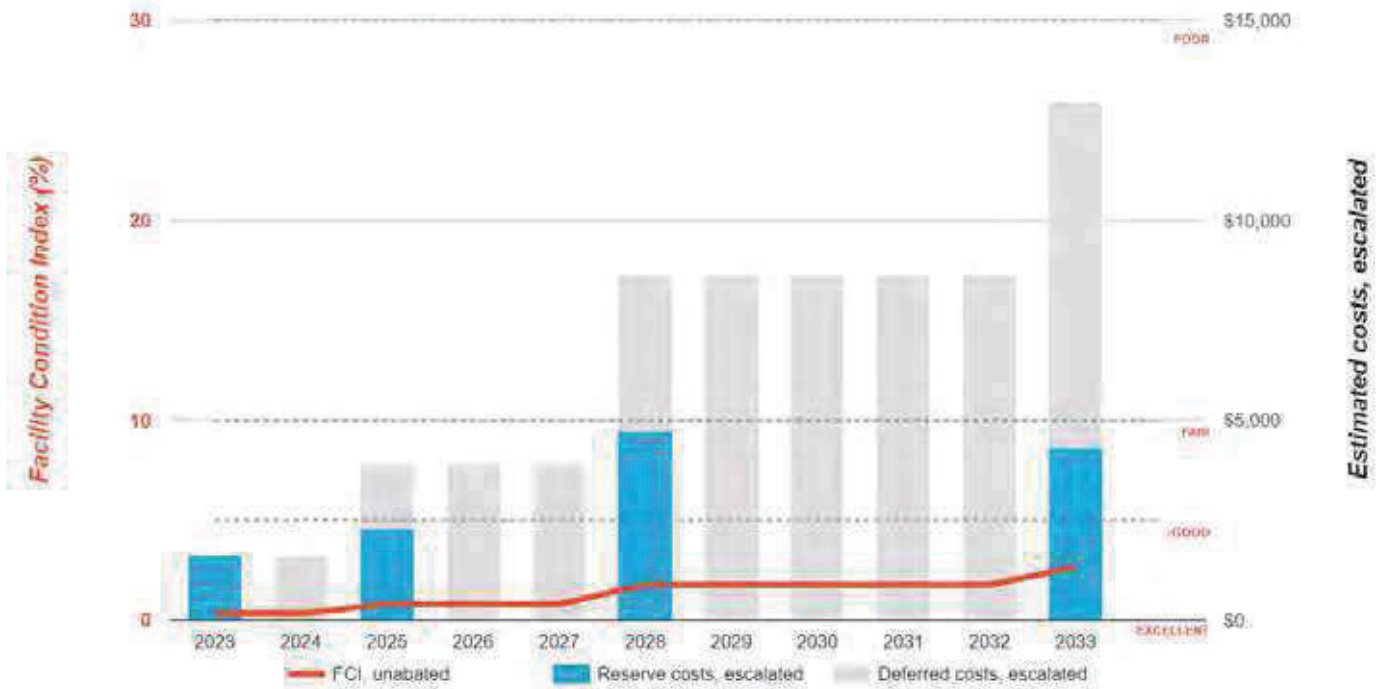
Needs by Year with Unaddressed FCI Over Time

FCI Analysis: Sierra Madre Avenue Water Yard Chemical Building

Replacement Value: \$490,000

Inflation Rate: 3.0%

Average Needs per Year: \$1,200



3. Warehouse



Warehouse: Systems Summary

Address	1051 East Sierra Madre Avenue; Glendora, California 91741	
Constructed/Renovated	1916	
Building Size	2,400 square feet	
Number of Stories	One	
<i>System</i>	<i>Description</i>	<i>Condition</i>
Structure	Masonry bearing walls with wood framed roof	Good
Façade	Exposed CMU and pre-cast concrete wall siding	Fair
Roof	Flat construction with built-up finish	Poor
Interiors	Walls: Painted drywall and CMU Floors: Carpet, vinyl sheeting Ceilings: Suspended ACT, fiberglass	Fair
Elevators	None	--
Plumbing	Copper supply and cast iron waste and venting Electric water heater Toilets and sinks in all restrooms	Fair
HVAC	Individual split system Supplemental components: suspended gas unit heater	Fair

Warehouse: Systems Summary

Fire Suppression	Fire extinguishers	Fair
Electrical	Source and Distribution: Main panel with copper wiring Interior Lighting: LED Emergency: none	Fair
Fire Alarm	Smoke detectors only	Fair
Equipment/Special	None	--
Accessibility	Presently it does not appear an accessibility study is needed for this property.	
Key Issues and Findings	Roof leaks, interior wood damage, exterior concrete cracking, outdated electrical system	

Warehouse: Systems Expenditure Forecast

System	Immediate	Short Term (1-2 yr)	Near Term (3-5 yr)	Med Term (6-10 yr)	Long Term (11-20 yr)	TOTAL
Facade	-	\$9,200	\$17,100	-	\$58,600	\$84,800
Roofing	-	\$53,000	-	-	-	\$53,000
Interiors	-	\$12,900	\$9,500	\$1,300	\$20,700	\$44,400
Plumbing	-	-	\$900	\$14,500	\$23,900	\$39,400
HVAC	-	-	\$21,900	\$14,000	\$16,200	\$52,200
Electrical	-	\$49,200	-	-	\$30,700	\$80,000
Equipment & Furnishings	-	-	-	\$11,900	-	\$11,900
Site Utilities	-	-	-	-	\$4,700	\$4,700
TOTALS (3% inflation)	-	\$124,300	\$49,500	\$41,800	\$154,900	\$370,500

*Totals have been rounded to the nearest \$100.

The orange line in the graph below forecasts what would happen to the FCI (left axis) over time, assuming zero capital expenditures. The capital expenditures for each year (blue bars) are associated with the dollar amounts along the right Y axis.

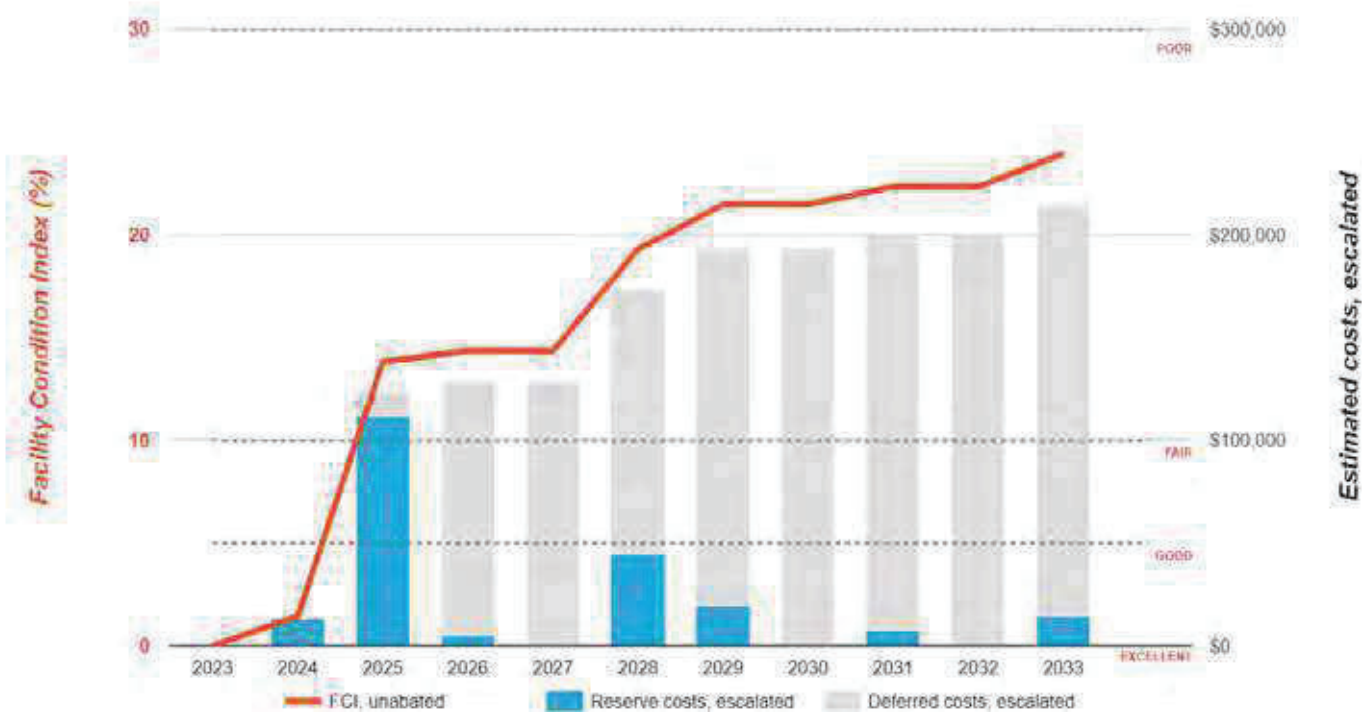
Needs by Year with Unaddressed FCI Over Time

FCI Analysis: Sierra Madre Avenue Water Yard Warehouse

Replacement Value: \$900,000

Inflation Rate: 3.0%

Average Needs per Year: \$19,600



4. Water Department Office



Water Department Office: Systems Summary

Address	1051 East Sierra Madre Avenue; Glendora, California 91471	
Constructed/Renovated	2009	
Building Size	5,950 square feet	
Number of Stories	One	
<i>System</i>	<i>Description</i>	<i>Condition</i>
Structure	Concrete tilt-up bearing walls with wood roof deck supported by wood joists and concrete slab-on grade foundation	Good
Façade	Metal panels with vinyl windows	Good
Roof	Primary: Gable construction with metal finish Secondary: Gable construction with clay/concrete tiles	Good
Interiors	Walls: Painted drywall, ceramic tile Floors: Carpet, sealed concrete Ceilings: Painted drywall, suspended ACT	Fair
Elevators	None	--
Plumbing	Copper supply and cast iron waste and venting Gas water heater Toilets, urinals, and sinks in all restrooms	Fair
HVAC	Individual rooftop packaged units Supplementary components: ductless split system	Fair

Water Department Office: Systems Summary

Fire Suppression	Wet-pipe sprinkler system; hydrants, fire extinguishers	Fair
Electrical	Source and Distribution: Main switchboard with copper wiring Interior Lighting: T-8, CFL Emergency: none	Good
Fire Alarm	Alarm panel, smoke detectors, alarms, strobes, pull stations, back-up emergency lights, and exit signs	Fair
Equipment/Special	None	--
Accessibility	Presently it does not appear an accessibility study is needed for this property.	
Key Issues and Findings	No key issues observed	

Water Department Office: Systems Expenditure Forecast

System	Immediate	Short Term (1-2 yr)	Near Term (3-5 yr)	Med Term (6-10 yr)	Long Term (11-20 yr)	TOTAL
Facade	-	-	-	-	\$54,200	\$54,200
Roofing	-	-	-	-	-	-
Interiors	-	-	\$69,500	\$30,000	\$125,500	\$225,000
Plumbing	-	-	-	\$4,800	\$64,200	\$69,000
HVAC	-	-	\$7,800	\$80,300	\$69,000	\$157,100
Fire Protection	-	-	-	-	\$13,100	\$13,100
Electrical	-	-	-	\$53,500	\$38,200	\$91,700
Fire Alarm & Electronic Systems	-	-	-	\$64,000	-	\$64,000
Equipment & Furnishings	-	-	\$2,600	-	\$3,500	\$6,100
Site Utilities	-	-	-	-	\$18,800	\$18,800
TOTALS (3% inflation)	-	-	\$79,900	\$232,500	\$386,400	\$698,800

*Totals have been rounded to the nearest \$100.

The orange line in the graph below forecasts what would happen to the FCI (left axis) over time, assuming zero capital expenditures. The capital expenditures for each year (blue bars) are associated with the dollar amounts along the right Y axis.

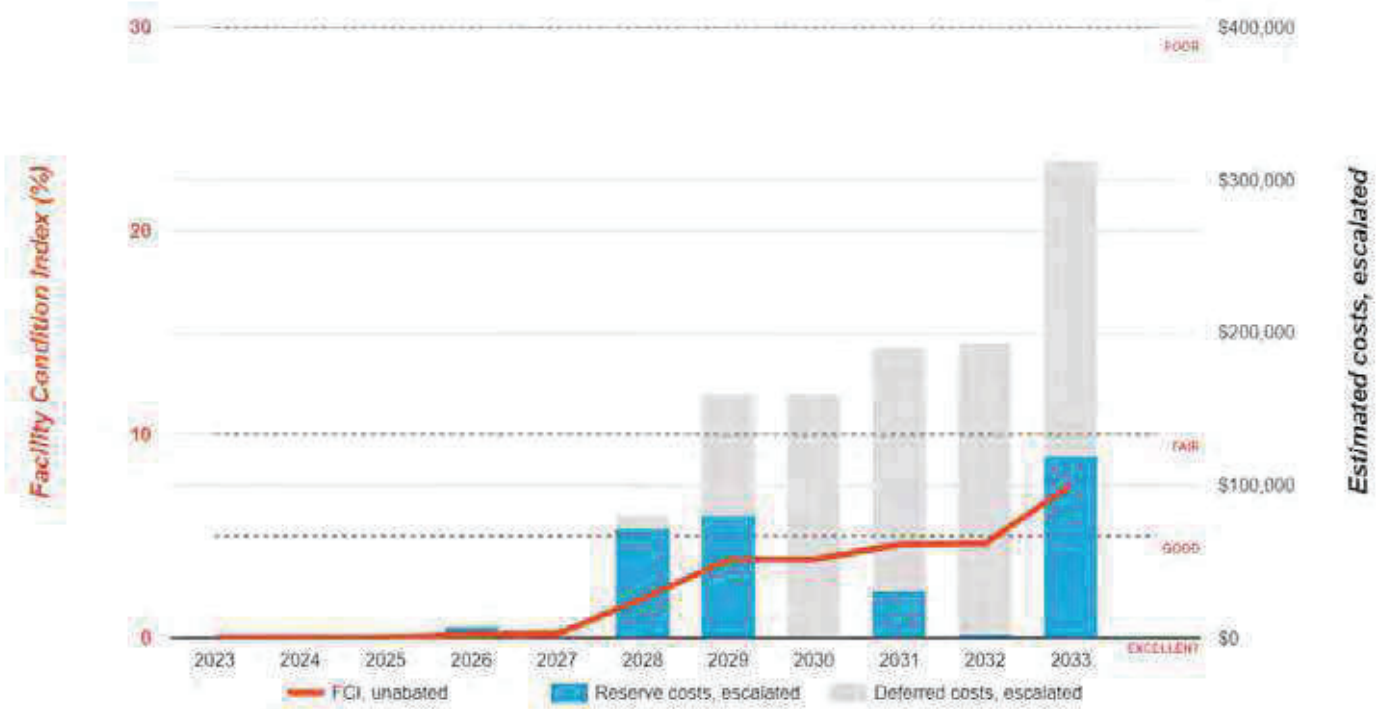
Needs by Year with Unaddressed FCI Over Time

FCI Analysis: Sierra Madre Avenue Water Yard Water Department Office

Replacement Value: \$4,165,000

Inflation Rate: 3.0%

Average Needs per Year: \$28,500



5. Site Summary



Site Information		
<i>System</i>	<i>Description</i>	<i>Condition</i>
Lot Size	4.40 acres (estimated)	
Parking Spaces	44 total spaces all in open lots; two of which are accessible	
Pavement/Flatwork	Asphalt lots with areas of concrete and concrete sidewalks and curbs	Fair
Site Development	Building-mounted signage, CMU wall, chain link, and metal tube fencing Limited picnic tables	Fair
Landscaping and Topography	Limited landscaping features Irrigation present Low to moderate site slopes throughout	Fair
Utilities	Municipal water and sewer Local utility-provided electric and natural gas	Good
Site Lighting	Building-mounted: LED	Good
Ancillary Structures	Booster Pump Housing, Reservoir Pump Housing, Well #13E, Reservoir Structures	Fair
Accessibility	Presently it does not appear an accessibility study is needed for the exterior site areas. See Appendix C.	
Key Issues and Findings	Asphalt pavement cracking, concrete pavement cracking	

Site: Systems Expenditure Forecast

System	Immediate	Short Term (1-2 yr)	Near Term (3-5 yr)	Med Term (6-10 yr)	Long Term (11-20 yr)	TOTAL
Structure	-	-	-	-	-	-
Facade	-	\$2,300	\$1,300	-	\$1,800	\$5,400
Roofing	-	-	-	-	\$25,500	\$25,500
Electrical	-	-	-	\$227,900	\$346,000	\$573,900
Fire Alarm & Electronic Systems	-	-	-	\$17,000	-	\$17,000
Special Construction & Demo	-	-	-	-	\$324,500	\$324,500
Site Development	-	-	-	\$34,600	\$11,800	\$46,400
Site Utilities	-	-	-	-	\$14,100	\$14,100
Site Pavement	-	\$31,500	\$5,900	\$326,700	\$170,400	\$534,500
TOTALS (3% inflation)	-	\$33,800	\$7,200	\$606,200	\$894,100	\$1,541,300

*Totals have been rounded to the nearest \$100.

6. Property Space Use and Observed Areas

Areas Observed

The interior spaces were observed in order to gain a clear understanding of the property's overall condition. Other areas accessed included the site within the property boundaries and the exterior of the property.

Key Spaces Not Observed

All key areas of the property were accessible and observed.

7. ADA Accessibility

Generally, Title II of the Americans with Disabilities Act (ADA) prohibits discrimination by entities to access and use of “areas of public accommodations” and “public facilities” on the basis of disability. Regardless of their age, these areas and facilities must be maintained and operated to comply with the Americans with Disabilities Act Accessibility Guidelines (ADAAG).

A public entity (i.e., city governments) shall operate each service, program, or activity so that the service, program, or activity, when viewed in its entirety, is readily accessible to and usable by individuals with disabilities.

However, this does not:

1. Necessarily require a public entity to make each of its existing facilities accessible to and usable by individuals with disabilities.
2. Require a public entity to take any action that would threaten or destroy the historic significance of an historic property; or
3. Require a public entity to take any action that it can demonstrate would result in a fundamental alteration in the nature of a service, program, or activity or in undue financial and administrative burdens. In those circumstances where personnel of the public entity believe that the proposed action would fundamentally alter the service, program, or activity or would result in undue financial and administrative burdens, a public entity has the burden of proving that compliance with 35.150(a) of this part would result in such alteration or burdens. The decision that compliance would result in such alteration or burdens must be made by the head of a public entity or his or her designee after considering all resources available for use in the funding and operation of the service, program, or activity, and must be accompanied by a written statement of the reasons for reaching that conclusion. If an action would result in such an alteration or such burdens, a public entity shall take any other action that would not result in such an alteration or such burdens but would nevertheless ensure that individuals with disabilities receive the benefits or services provided by the public entity.

Removal of barriers to accessibility should be addressed from a liability standpoint in order to comply with federal law, but the barriers may or may not be building code violations. The Americans with Disabilities Act Accessibility Guidelines are part of the ADA federal civil rights law pertaining to the disabled and are not a construction code. State and local jurisdictions have adopted the ADA Guidelines or have adopted other standards for accessibility as part of their construction codes.

During the FCA, Bureau Veritas performed a limited high-level accessibility review of the facility non-specific to any local regulations or codes. The scope of the visual observation was limited to the same areas observed while performing the FCA and the categories set forth in the checklists that are included in the appendix. It is understood by the Client that the limited observations described herein do not comprise a full ADA Compliance Survey, and that such a survey is beyond the scope of this particular assessment. A full measured ADA survey would be required to identify any and all specific potential accessibility issues. Additional clarifications of this limited survey:

- This survey was visual in nature and actual measurements were not taken to verify compliance
- Only a representative sample of areas was observed
- Two overview photos were taken for each subsection regardless of perceived compliance or non-compliance
- Itemized costs for individual non-compliant items are not included in the dataset
- For any “none” boxes checked or reference to “no issues” identified, that alone does not guarantee full compliance

The facility was originally constructed in 1916. The facility has not since been substantially renovated.

During the interview process with the client representatives, no complaints or pending litigation associated with potential accessibility issues was reported. The facility was substantially renovated in 2004 and 2009 and some accessibility improvements appear to have been implemented at that time.

No detailed follow-up accessibility study is currently recommended since no major or moderate issues were identified at the subject site. Reference the appendix for specific data, photos, and tables or checklists associated with this limited accessibility survey.

8. Purpose and Scope

Purpose

Bureau Veritas was retained by the client to render an opinion as to the Property's current general physical condition on the day of the site visit.

Based on the observations, interviews and document review outlined below, this report identifies significant deferred maintenance issues, existing deficiencies, and material code violations of record, which affect the Property's use. Opinions are rendered as to its structural integrity, building system condition and the Property's overall condition. The report also notes building systems or components that have realized or exceeded their typical expected useful lives.

The physical condition of building systems and related components are typically defined as being in one of five condition ratings. For the purposes of this report, the following definitions are used:

Condition Ratings	
Excellent	New or very close to new; component or system typically has been installed within the past year, sound and performing its function. Eventual repair or replacement will be required when the component or system either reaches the end of its useful life or fails in service.
Good	Satisfactory as-is. Component or system is sound and performing its function, typically within the first third of its lifecycle. However, it may show minor signs of normal wear and tear. Repair or replacement will be required when the component or system either reaches the end of its useful life or fails in service.
Fair	Showing signs of wear and use but still satisfactory as-is, typically near the median of its estimated useful life. The component or system is performing adequately at this time but may exhibit some signs of wear, deferred maintenance, or evidence of previous repairs. Repair or replacement will be required due to the component or system's condition and/or its estimated remaining useful life.
Poor	Component or system is significantly aged, flawed, functioning intermittently or unreliably; displays obvious signs of deferred maintenance; shows evidence of previous repair or workmanship not in compliance with commonly accepted standards; has become obsolete; or exhibits an inherent deficiency. The present condition could contribute to or cause the deterioration of contiguous elements or systems. Either full component replacement is needed, or repairs are required to restore to good condition, prevent premature failure, and/or prolong useful life.
Failed	Component or system has ceased functioning or performing as intended. Replacement, repair, or other significant corrective action is recommended or required.
Not Applicable	Assigning a condition does not apply or make logical sense, most commonly due to the item in question not being present.

Scope

The standard scope of the Facility Condition Assessment includes the following:

- Visit the Property to evaluate the general condition of the building and site improvements, review available construction documents in order to familiarize ourselves with, and be able to comment on, the in-place construction systems, life safety, mechanical, electrical, and plumbing systems, and the general built environment.
- Identify those components that are exhibiting deferred maintenance issues and provide cost estimates for Immediate Costs and Replacement Reserves based on observed conditions, maintenance history and industry standard useful life estimates. This will include the review of documented capital improvements completed within the last five-year period and work currently contracted for, if applicable.
- Provide a full description of the Property with descriptions of in-place systems and commentary on observed conditions.
- Provide a high-level categorical general statement regarding the subject Property's compliance to Title III of the Americans with Disabilities Act. This will not constitute a full ADA survey but will help identify exposure to issues and the need for further review.
- Obtain background and historical information about the facility from a building engineer, property manager, maintenance staff, or other knowledgeable source. The preferred methodology is to have the client representative or building occupant complete a Pre-Survey Questionnaire (PSQ) in advance of the site visit. Common alternatives include a verbal interview just prior to or during the walk-through portion of the assessment.
- Review maintenance records and procedures with the in-place maintenance personnel.
- Observe a representative sample of the interior spaces/units, including vacant spaces/units, to gain a clear understanding of the property's overall condition. Other areas to be observed include the exterior of the property, the roofs, interior common areas, and the significant mechanical, electrical and elevator equipment rooms.
- Provide recommendations for additional studies, if required, with related budgetary information.
- Provide an Executive Summary at the beginning of this report, which highlights key findings and includes a Facility Condition Index as a basis for comparing the relative conditions of the buildings within the portfolio.

9. Opinions of Probable Costs

Cost estimates are attached throughout this report, with the Replacement Reserves in the appendix.

These estimates are based on Invoice or Bid Document/s provided either by the Owner/facility and construction costs developed by construction resources such as *R.S. Means*, *CBRE Whitestone*, and *Marshall & Swift*, Bureau Veritas's experience with past costs for similar properties, city cost indexes, and assumptions regarding future economic conditions.

Opinions of probable costs should only be construed as preliminary, order of magnitude budgets. Actual costs most probably will vary from the consultant's opinions of probable costs depending on such matters as type and design of suggested remedy, quality of materials and installation, manufacturer and type of equipment or system selected, field conditions, whether a physical deficiency is repaired or replaced in whole, phasing or bundling of the work (if applicable), quality of contractor, quality of project management exercised, market conditions, use of subcontractors, and whether competitive pricing is solicited, etc. Certain opinions of probable costs cannot be developed within the scope of this guide without further study. Opinions of probable cost for further study should be included in the FCA.

Methodology

Based upon site observations, research, and judgment, along with referencing Expected Useful Life (EUL) tables from various industry sources, Bureau Veritas opines as to when a system or component will most probably necessitate replacement. Accurate historical replacement records, if provided, are typically the best source of information. Exposure to the elements, initial quality and installation, extent of use, the quality and amount of preventive maintenance exercised, etc., are all factors that impact the effective age of a system or component. As a result, a system or component may have an effective age that is greater or less than its actual chronological age. The Remaining Useful Life (RUL) of a component or system equals the EUL less its *effective age*, whether explicitly or implicitly stated. Projections of Remaining Useful Life (RUL) are based primarily on age and condition with the presumption of continued use and maintenance of the Property similar to the observed and reported past use and maintenance practices, in conjunction with the professional judgment of Bureau Veritas's assessors. Significant changes in occupants and/or usage may affect the service life of some systems or components.

Where quantities could not be or were not derived from an actual construction document take-off or facility walk-through, and/or where systemic costs are more applicable or provide more intrinsic value, budgetary square foot and gross square foot costs are used. Estimated costs are based on professional judgment and the probable or actual extent of the observed defect, inclusive of the cost to design, procure, construct and manage the corrections.

Definitions

Immediate Needs

Immediate Needs are line items that require immediate action as a result of: (1) material existing or potential unsafe conditions, (2) failed or imminent failure of mission critical building systems or components, or (3) conditions that, if not addressed, have the potential to result in, or contribute to, critical element or system failure within one year or will most probably result in a significant escalation of its remedial cost.

For database and reporting purposes the line items with RUL=0, and commonly associated with *Safety* or *Performance/Integrity* Plan Types, are considered Immediate Needs.

Replacement Reserves

Cost line items traditionally called Replacement Reserves (equivalently referred to as Lifecycle/Renewals) are for recurring probable renewals or expenditures, which are not classified as operation or maintenance expenses. The replacement reserves should be budgeted for in advance on an annual basis. Replacement Reserves are reasonably predictable both in terms of frequency and cost. However, Replacement Reserves may also include components or systems that have an indeterminable life but, nonetheless, have a potential for failure within an estimated time period.

Replacement Reserves generally exclude systems or components that are estimated to expire after the reserve term and are not considered material to the structural and mechanical integrity of the subject property. Furthermore, systems and components that are not deemed to have a material effect on the use of the Property are also excluded. Costs that are caused by acts of God, accidents, or other occurrences that are typically covered by insurance, rather than reserved for, are also excluded.

Replacement costs are solicited from ownership/property management, Bureau Veritas's discussions with service companies, manufacturers' representatives, and previous experience in preparing such schedules for other similar facilities. Costs for work performed by the ownership's or property management's maintenance staff are also considered.

Bureau Veritas's reserve methodology involves identification and quantification of those systems or components requiring capital reserve funds within the assessment period. The assessment period is defined as the effective age plus the reserve term. Additional information concerning the system's or component's respective replacement costs (in today's dollars), typical expected useful lives, and remaining useful lives were estimated so that a funding schedule could be prepared. The Replacement Reserves Schedule presupposes that all required remedial work has been performed or that monies for remediation have been budgeted for items defined as Immediate Needs.

For the purposes of 'bucketizing' the System Expenditure Forecasts in this report, the Replacement Reserves have been subdivided and grouped as follows: Short Term (years 1-3), Near Term (years 4-5), Medium Term (years 6-10), and Long Term (years 11-20).

Key Findings

In an effort to highlight the most significant cost items and not be overwhelmed by the Replacement Reserves report in its totality, a subsection of Key Findings is included within the Executive Summary section of this report. Key Findings typically include repairs or replacements of deficient items within the first five-year window, as well as the most significant high-dollar line items that fall anywhere within the ten-year term. Note that while there is some subjectivity associated with identifying the Key Findings, the Immediate Needs are always included as a subset.

Exceedingly Aged

A fairly common scenario encountered during the assessment process, and a frequent source of debate, occurs when classifying and describing "very old" systems or components that are still functioning adequately and do not appear nor were reported to be in any way deficient. To help provide some additional intelligence on these items, such components will be tagged in the database as Exceedingly Aged. This designation will be reserved for mechanical or electrical systems or components that have aged well beyond their industry standard lifecycles, typically at least 15 years beyond and/or twice their Estimated Useful Life (EUL). In tandem with this designation, these items will be assigned a Remaining Useful Life (RUL) not less than two years but not greater than 1/3 of their standard EUL. As such the recommended replacement time for these components will reside outside the typical Short Term window but will not be pushed 'irresponsibly' (too far) into the future.

10. Energy Audit

The purpose of this Energy Audit is to provide Sierra Madre Avenue Water Yard with a baseline of energy usage, the relative energy efficiency of the facility, and specific recommendations for Energy Conservation Measures. Information obtained from these analyses may be used to support a future application to an Energy Conservation Program, Federal and Utility grants towards energy conservation, as well as support performance contracting, justify a municipal bond-funded improvement program, or as a basis for replacement of equipment or systems

The energy audit consisted of an onsite visual assessment to determine current conditions, itemize the energy consuming equipment (i.e. Boilers, Make-Up Air Units, DWH equipment); review lighting systems both exterior and interior; and review efficiency of all such equipment. The study also included interviews and consultation with operational and maintenance personnel. The following is a summary of the tasks and reporting that make up the Energy Audit portion of the report.

The following is a summary of the tasks and reporting that make up the Energy Audit portion of the report.

Energy and Water Using Equipment

- Bureau Veritas has surveyed the common areas, offices, maintenance facilities and mechanical rooms to document utility-related equipment, including heating systems, cooling systems, air handling systems and lighting systems.

Building Envelope

- Bureau Veritas has reviewed the characteristics and conditions of the building envelope, checking insulation values and conditions. This review also includes an inspection of the condition of walls, windows, doors, roof areas, insulation and special use areas. Where we anticipated significant losses, we utilized infrared thermographs to analyze heat loss across the envelope.

Recommendations for Energy Savings Opportunities

- Based on the information gathered during the on-site assessment, the utility rates, as well as recent consumption data and engineering analysis, Bureau Veritas has identified opportunities to save energy and provide probable construction costs, projected energy/utility savings and provide a simple payback analysis.

Analysis of Energy Consumption

- Based on the information gathered during the on-site assessment and a, Bureau Veritas has conducted an analysis of the energy usage of all equipment, and identified which equipment is using the most energy and what equipment upgrades may be necessary. As a result, equipment upgrades, or replacements are identified that may provide a reasonable return on the investment and improve maintenance reliability.

Energy Audit Process

- Interviewing staff and review plans and past upgrades
- Performing an energy audit for each use type
- Performing a preliminary evaluation of the utility system
- Analyzing findings, utilizing ECM cost-benefit worksheets
- Making preliminary recommendations for system energy improvements and measures
- Estimating initial cost and changes in operating and maintenance costs based on implementation of energy efficiency measures
- Ranking recommended cost measures, based on the criticality of the project and the largest payback

11. Historical Energy and Water Performance Metrics

Utility Data Tabulation Methodology

The baseline utility consumption data for the proper has been developed by aggregating the consumption from one electric meter, one gas meter, and one water meter.

Data Limitation:

No assumptions were made in tabulation of the utility data for the purposes of the audit.

The cost associated with the utility consumption at the building was not made available to Bureau Veritas at the time of report compilation. As a result, Bureau Veritas has modeled the approximate rate based on the utility company published tariff for commercial institutions. Bureau Veritas will update the report on receipt of the actual data from the client.

Utilities Metering at Glance	
Number of electric meters observed	One
Number of gas meters observed	One
Number of domestic water meter observed	One

Average Utility Rates		
Electricity	Natural Gas	Water and Sewer
\$0.30/kWh	\$2.24/therm	\$8.36/CCF

Electricity

Note: No utility data was received by Bureau Veritas from the housing authority at the time of report compilation. As a result, Bureau Veritas has used the electric rate from other properties within the same geographical region having similar construction layout and usage patterns. Bureau Veritas will update the report on receipt of the actual data from the housing authority.

Natural Gas

Note: No utility data was received by Bureau Veritas from the housing authority at the time of report compilation. As a result, Bureau Veritas has used the natural gas rate from other properties within the same geographical region having similar construction layout and usage patterns. Bureau Veritas will update the report on receipt of the actual data.

Water and Sewer

The City of Glendora satisfies the water and sewer requirements of the facility.

Note: No water and sewer utility data was received by Bureau Veritas from the client at the time of report compilation. As a result, Bureau Veritas has used a rate from other properties within the same geographical region having similar construction layout and usage patterns. Bureau Veritas will update the report on receipt of the actual data.

End Use Energy Distribution

Note: No utility data was received by Bureau Veritas from the client at the time of report compilation. As a result, Bureau Veritas will complete end use energy distribution on receipt of the actual data from the client.

Energy Star Portfolio Manager Facility Summary

Bureau Veritas uses the Portfolio Manager tool developed by the Federal Environmental Protection Agency to track relative energy uses of buildings by property type. This tool allows the input of a facility's historic utility data to be compared with normalized data of a large database of its peer facilities.

Note: No utility data was received by Bureau Veritas from the client at the time of report compilation. As a result, Bureau Veritas will complete energy benchmarking on receipt of the actual data from the client.

12. Energy Conservation Measures

Bureau Veritas has conducted an Energy Audit on Sierra Madre Avenue Water Yard. The study included a review of the building's construction features, historical energy and water consumption and costs, review of the building envelope, HVAC equipment, heat distribution systems, lighting, and the building's operational and maintenance practices.

Bureau Veritas has evaluated five Energy Conservation Measures (ECMs) for this property. The savings for each measure are calculated using standard engineering methods followed in the industry, and detailed calculations for ECM are provided in Appendix H for reference. A 10% discount in energy savings was applied to account for the interactive effects amongst the ECMs. In addition to the consideration of the interactive effects, Bureau Veritas has applied a 15% contingency to the implementation costs to account for potential cost overruns during the implementation of the ECMs.

The following table summarizes the recommended ECMs in terms of description, investment cost, energy consumption reduction, and cost savings.

Recommended Non-Renewable Energy Conservation Measures: Financial Impact	
Total Projected Initial ECM Investment	\$5,073 <i>(In Current Dollars)</i>
Estimated Annual Cost Savings Related to ECMs	\$2,963 <i>(In Current Dollars)</i>
Net Effective ECM Payback	1.71 years

Key Metrics to Benchmark the Subject Property's Energy Usage Profile

- **Building Site Energy Use Intensity** - The sum of the total site energy use in thousands of Btu per unit of gross building area. Site energy accounts for all energy consumed at the building location only not the energy consumed during generation and transmission of the energy to the site.
- **Building Source Energy Use Intensity** – The sum of the total source energy use in thousands of Btu per unit of gross building area. Source energy is the energy consumed during generation and transmission in supplying the energy to your site.
- **Building Cost Intensity** - This metric is the sum of all energy use costs in dollars per unit of gross building area.
- **Greenhouse Gas Emissions** - Although there are numerous gases that are classified as contributors to the total for Greenhouse Emissions, the scope of this energy audit focuses on carbon dioxide (CO₂). Carbon dioxide enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and also as a result of other chemical reactions (e.g., manufacture of cement).

Energy Conservation Measures Screening:

Bureau Veritas screens ECMs using two financial methodologies. ECMs which are considered financially viable must meet both criteria.

1. **Simple Payback Period** –The number of years required for the cumulative value of energy or water cost savings less future non-fuel or non-water costs to equal the investment costs of the building energy or water system, without consideration of discount rates. ECMs with a payback period greater than the Expected Useful Life (EUL) of the project are not typically recommended, as the cost of the project will not be recovered during the lifespan of the equipment. These ECMs are recommended for implementation during future system replacement. At that time, replacement may be evaluated based on the premium cost of installing energy efficient equipment.

$$\text{Simple Payback} = \frac{\text{Initial Cost}}{\text{Annual Savings}}$$

2. Savings-to-Investment Ratio (SIR) – The savings-to-investment ratio is the ratio of the present value savings to the present value costs of an energy or water conservation measure. The numerator of the ratio is the present value over the estimated useful life (EUL) of net savings in energy or water and non-fuel or non-water operation and maintenance costs attributable to the proposed energy or water conservation measure. The denominator of the ratio is the present value of the net increase in investment and replacement costs less salvage value attributable to the proposed energy or water conservation measure. It is recommended that energy efficiency recommendations should be based on a calculated SIR, with larger SIRs receiving a higher priority. A project is typically only recommended if SIR is greater than or equal to 1.0, unless other factors outweigh the financial benefit.

$$SIR = \frac{\text{Present Value (Annual Savings, } i\%, \text{ EUL)}}{\text{Initial Cost}}$$

Bureau Veritas has identified five Energy Conservation Measures (ECMs) for this property.

List of Recommended Energy Conservation Measures For Sierra Madre Avenue Water Yard																			
ECM ID	Description of ECM	Location	Labor Cost (\$)	Material Cost (\$)	Projected Initial Investment (\$)	Utility Company Incentive (\$)	Net Projected Initial Investment (\$)	Estimated Annual Energy & Water Savings			Total Energy Savings (kWh/yr)	Total Green House Gas Savings (tCO ₂ e/yr)	Estimated Utility Cost Savings (\$)	Estimated Annual O&M Savings (\$)	Total Estimated Annual Cost Savings (\$)	Simple Payback (Yrs.)	S.I.R.	Life Cycle Savings (\$)	Expected Useful Life (EUL) (Yrs.)
								Natural Gas (Therms)	Electricity (kWh)	Domestic Water Reduction (kGal)									
1	Title Install Timers On Exhaust Fans Attic Bldg (1x) (1x) on (1x) Rooftop Exhaust Fans	Location: Water Department Office	\$171	\$169	\$341	\$0	\$341	39	949	0	0	0	\$0	\$371	0.02	12.99	\$4,086	10.00	
2	Title Install Low Flow Faucet Aerators Replace 2x 1.5GPM rated kitchen aerators with GPM WaterSense certified aerators Replace 6x 1.5GPM rated bathroom aerators with 0.5GPM WaterSense certified aerators	Location: Restrooms and Break Room	\$85	\$88	\$173	\$0	\$173	50	0	0	10	0	\$0	\$201	0.06	9.92	\$1,540	10.00	
3	Title Upgrade Building Lighting to LED and Install Automatic Lighting Controls Attic Bldg: Replace CFL (43x) Linear Fluorescent (33x) ; Attic Bldg: Replace CFL (43x) Linear Fluorescent (33x) ;	Location: Building Interior and Office Sierra Madre Avenue Water Yard	\$1,128	\$1,521	\$2,648	\$0	\$2,648	0	6,794	4	0	0	\$185	\$2,213	1.20	8.98	\$2,768	10.00	
4	Title Retrofit Flush Tank Toilets to Dual Flush Attic Bldg: Retrofit 2x 1.6GPF Toilets to dual flush	Location: Warehouse	\$229	\$48	\$277	\$0	\$277	0	0	0	16	0	\$0	\$134	2.08	7.17	\$1,710	20.00	
5	Title Install Low Flow Tankless Restroom Fixtures Attic Bldg: Retrofit 6x 1.28 GPF Toilets with dual flush flush valves	Location: Water Department Office	\$273	\$400	\$673	\$0	\$673	0	0	0	45	0	\$0	\$374	2.00	4.59	\$3,491	10.00	
Totals for Net Low Cost Items			\$1,068	\$705	\$1,773	\$0	\$1,773	90	949	0	0	71	\$185	\$1,079	1.43				
Totals For Capital Cost			\$1,128	\$1,521	\$2,648	\$0	\$2,648	0	6,794	4	4	0	\$185	\$2,213	1.20				
Retrieval Savings Discount @ 10%								-9	-774	0	0	-7	-\$19	-\$329					
Total Contingency Expenses @ 15%					\$82		\$82												
Total for Improvements					\$3,073	\$0	\$3,073	81	6,889	4	4	64	\$2,280	\$187	\$2,963	1.71			



13. Operations & Maintenance Plan

The quality of the maintenance and the operation of the facility's energy systems have a direct effect on its overall energy efficiency. Energy-efficiency needs to be a consideration when implementing facility modifications, equipment replacements, and general corrective actions. The following is a list of activities that should be performed as part of the routine maintenance program for the property.

Building Envelope

- ✓ Ensure that the building envelope has proper caulking and weather stripping.
- ✓ Patch holes in the building envelope with foam insulation and fire rated caulk around combustion vents
- ✓ Inspect building vents semiannually for bird infestation
- ✓ Inspect windows monthly for damaged panes and failed thermal seals
- ✓ Repair and adjust automatic door closing mechanisms as needed.

Heating and Cooling

- ✓ All preventive maintenance should be performed on all furnaces and boilers, which would include cleaning of burners and heat exchanger tubes.
- ✓ Ensure that the combustion vents exhaust outside the conditioned space and the vent dampers are functional
- ✓ Ensure that the control valves are functioning properly before start of every season
- ✗ Ensure steam traps are functional before start of each heating season
- ✗ Ensure use of chemical treatment for boiler make up water
- ✗ Ensure boiler outside temperature re-set is set to 55F
- ✗ Ensure use of chemical treatment for Cooling tower water to prevent corrosion
- ✓ Ensure the duct work in unconditioned space is un-compromised and well insulated
- ✓ Duct cleaning is recommended every 10 years. This should include sealing of ducts using products similar to 'aero-seal'
- ✓ Ensure use of economizer mode is functional and used
- ✓ Ensure that the outside air dampers actuators are operating correctly
- ✗ Ensure air coils in the AHU and FCA's are pressure washed annually
- ✓ Return vents should remain un-obstructed and be located centrally
- ✓ Temperature settings reduced in unoccupied areas and set points seasonally adjusted.
- ✓ Evaporator coils and condenser coils should be regularly cleaned to improve heat transfer
- ✓ Refrigerant pipes should be insulated with a minimum of ¾" thick Elastomeric Rubber Pipe Insulation
- ✓ Ensure refrigerant pressure is maintained in the condensers
- ✓ Change air filters on return vents seasonally. Use only filters with 'Minimum Efficiency Rating Value'(MERV) of 8

Central Domestic Hot Water Heater

- ✓ Never place gas fired water heaters adjacent to return vents so as to prevent flame roll outs
- ✓ Ensure the circulation system is on timer to reduce the losses through re-circulation
- ✓ Ensure all hot water pipes are insulated with fiberglass insulation at all times
- ✓ Replacement water heater should have Energy Factor (EF)>0.9
- ✓ Tank-type water heaters flushed annually.

Lighting Improvements

- ✓ Utilize bi-level lighting controls in stairwells and hallways.
- ✓ Use LED replacement lamps
- ✓ Clean lighting fixture reflective surfaces and translucent covers.
- ✓ Ensure that timers and/or photocells are operating correctly on exterior lighting
- ✓ Use occupancy sensors for offices and other rooms with infrequent occupancy

Existing Equipment and Replacements

- ✓ Ensure that refrigerator and freezer doors close and seal correctly
- ✓ Ensure kitchen and bathroom exhaust outside the building and the internal damper operates properly
- ✓ Ensure that bathroom vents exhaust out
- ✓ Office/computer equipment either in the “sleep” or “off” mode when not used

Key

✘	Maintenance Measure is Not Applicable For the Given Facility
✓	Maintenance Measure is Applicable For the Given Facility

14. Certification

The City of Glendora (the Client) retained Bureau Veritas to perform this Facility Condition Assessment in connection with its continued operation of Sierra Madre Avenue Water Yard, 1051 East Sierra Madre Avenue, Glendora, California 91741, the "Property". It is our understanding that the primary interest of the Client is to locate and evaluate materials and building system defects that might significantly affect the value of the property and to determine if the present Property has conditions that will have a significant impact on its continued operations.

The conclusions and recommendations presented in this report are based on the brief review of the plans and records made available to our Project Manager during the site visit, interviews of available property management personnel and maintenance contractors familiar with the Property, appropriate inquiry of municipal authorities, our Project Manager's walk-through observations during the site visit, and our experience with similar properties.

No testing, exploratory probing, dismantling or operating of equipment or in-depth studies were performed unless specifically required under the *Purpose and Scope* section of this report. This assessment did not include engineering calculations to determine the adequacy of the Property's original design or existing systems. Although walk-through observations were performed, not all areas may have been observed (see Section 1 for specific details). There may be defects in the Property, which were in areas not observed or readily accessible, may not have been visible, or were not disclosed by management personnel when questioned. The report describes property conditions at the time that the observations and research were conducted.

This report has been prepared for and is exclusively for the use and benefit of the Client identified on the cover page of this report. The purpose for which this report shall be used shall be limited to the use as stated in the contract between the client and Bureau Veritas.

This report, or any of the information contained therein, is not for the use or benefit of, nor may it be relied upon by any other person or entity, for any purpose without the advance written consent of Bureau Veritas. Any reuse or distribution without such consent shall be at the client's or recipient's sole risk, without liability to Bureau Veritas.

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15. Appendices

- Appendix A: Photographic Record
- Appendix B: Site Plan
- Appendix C: Pre-Survey Questionnaire
- Appendix D: Accessibility Review and Photos
- Appendix E: Component Condition Report
- Appendix F: Replacement Reserves
- Appendix G: Equipment Inventory List
- Appendix H: Energy Conservation Measures Calculations
- Appendix I: Lighting System Schedule
- Appendix J: Energy Audit Glossary of Terms

Appendix A:

Photographic Record

Photographic Overview



1 - CHEMICAL BUILDING FRONT ELEVATION



2 - CHEMICAL BUILDING LEFT ELEVATION



3 - CHEMICAL BUILDING REAR ELEVATION



4 - CHEMICAL BUILDING RIGHT ELEVATION



5 - WAREHOUSE BUILDING FRONT ELEVATION



6 - WAREHOUSE BUILDING LEFT ELEVATION

Photographic Overview



7 - WAREHOUSE BUILDING REAR ELEVATION



8 - WAREHOUSE BUILDING RIGHT ELEVATION



9 - WATER DEPARTMENT OFFICE FRONT ELEVATION



10 - WATER DEPARTMENT OFFICE LEFT ELEVATION



11 - WATER DEPARTMENT OFFICE REAR ELEVATION



12 - WATER DEPARTMENT OFFICE RIGHT ELEVATION

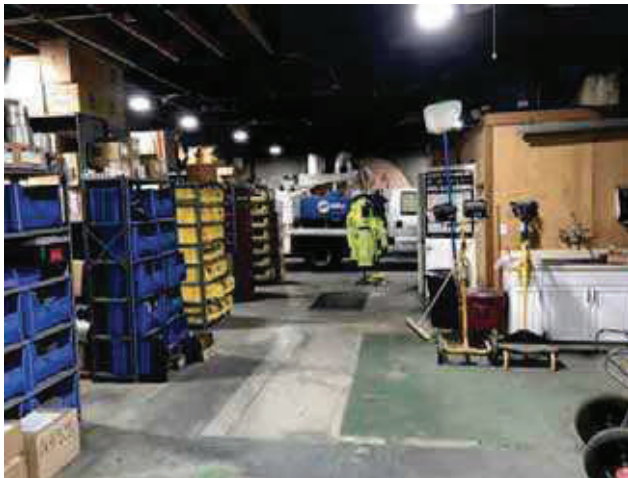
Photographic Overview



13 - WATER DEPARTMENT METAL ROOFING



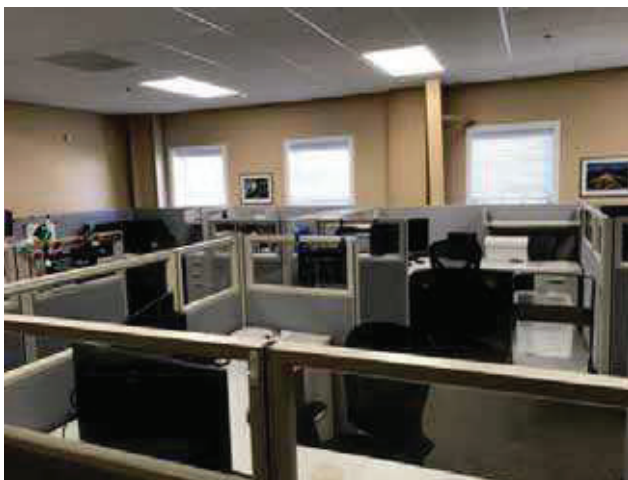
14 - CHEMICAL BUILDING INTERIOR AREA



15 - WAREHOUSE BUILDING INTERIOR AREA



16 - STORAGE AND MAINTENANCE ROOM



17 - WATER DEPARTMENT OPEN OFFICE



18 - BREAK ROOM AND KITCHEN

Photographic Overview



19 - WATER DEPARTMENT CONFERENCE ROOM



20 - LOCKER ROOM AND RESTROOM



21 - STORAGE TANK WATER HEATER



22 - ROOF MOUNTED PACKAGED UNIT



23 - ROOF MOUNTED EXHAUST FAN



24 - MAIN BUILDING ELECTRICAL SWITCHBOARD

Photographic Overview



25 - MAIN ELECTRICAL DISTRIBUTION PANEL



26 - STEP DOWN SECONDARY TRANSFORMER



27 - FIRE ALARM CONTROL PANEL



28 - ASPHALT PAVED PARKING LOT



29 - BOOSTER PUMP HOUSING AREA



30 - WATER RESERVOIR CONCRETE STRUCTURE

Appendix B:

Site Plan

Site Plan



**BUREAU
VERITAS**

Project Number

158691.23R000-005.379

Source

Google

Project Name

Sierra Madre Avenue Water Yard

On-Site Date

November 9, 2023



Appendix C:

Pre-Survey Questionnaire

BV FACILITY CONDITION ASSESSMENT: PRE-SURVEY QUESTIONNAIRE

Building / Facility Name: Sierra Madre Avenue Water Yard

Name of person completing form: Ron Nichka

Title / Association w/ property: Water Production Supervisor

Length of time associated w/ property: 24 years

Date Completed: November 9, 2023

Phone Number: 626.852.4838

Method of Completion: INTERVIEW - verbally completed during interview

Directions: Please answer all questions to the best of your knowledge and in good faith. Please provide additional details in the Comments column, or backup documentation for any **Yes** responses.

Data Overview		Response		
1	Year(s) constructed	Constructed 0	Renovated 0	Water department office is estimated 11 years old
2	Building size in SF	SF		
3	Major Renovation/Rehabilitation		Year	Additional Detail
		Facade		
		Roof		
		Interiors		
		HVAC		
		Electrical		
		Site Pavement		
		Accessibility		
4	List other significant capital improvements (focus on recent years; provide approximate date).	None		
5	List any major capital expenditures planned/requested for the next few years. Have they been budgeted?			
6	Describe any on-going extremely problematic, historically chronic, or immediate facility needs.	Roof leaks in warehouse and office		

Mark the column corresponding to the appropriate response. Please provide additional details in the Comments column, or backup documentation for any **Yes** responses. (**NA** indicates "Not Applicable", **Unk** indicates "Unknown")

Question		Response				Comments
		Yes	No	Unk	NA	
7	Are there any problems with foundations or structures, like excessive settlement?		X			
8	Are there any wall, window, basement or roof leaks?	X				
9	Has any part of the facility ever contained visible suspect mold growth, or have there been any indoor air quality complaints?		X			
10	Are your elevators unreliable, with frequent service calls?				X	
11	Are there any plumbing leaks, water pressure, or clogging/backup issues?		X			
12	Have there been any leaks or pressure problems with natural gas, HVAC piping, or steam service?		X			
13	Are any areas of the facility inadequately heated, cooled or ventilated? Poorly insulated areas?	X				Warehouse
14	Is the electrical service outdated, undersized, or problematic?	X				Outdated in warehouse
15	Are there any problems or inadequacies with exterior lighting?		X			Just put in building mounted lights within last year
16	Is site/parking drainage inadequate, with excessive ponding or other problems?		X			
17	Are there any other unresolved construction defects or significant issues/hazards at the property that have not yet been identified above?		X			
18	ADA: Has an accessibility study been previously performed? If so, when?	X				
19	ADA: Have any ADA improvements been made to the property since original construction? Describe.		X			
20	ADA: Has building management reported any accessibility-based complaints or litigation?		X			Typically no public come in
21	Are any areas of the property leased to outside occupants?		X			



Signature of Assessor



Signature of POC

Appendix D: Accessibility Review and Photos

Visual Checklist - 2010 ADA Standards for Accessible Design

Property Name: Sierra Madre Avenue Water Yard

BV Project Number: 158691.23R000-005.379

Abbreviated Accessibility Checklist

Facility History and Interview

Question		Yes	No	Unk	Comments
1	Has an accessibility study been previously performed? If so, when?	X			
2	Have any ADA improvements been made to the property since original construction? Describe.		X		
3	Has building management reported any accessibility-based complaints or litigation?		X		Typically no public come in

Abbreviated Accessibility Checklist

Parking



OVERVIEW OF ACCESSIBLE PARKING AREA



SECOND AREA OF ACCESSIBLE PARKING

Question		Yes	No	NA	Comments
1	Does the required number of standard ADA designated spaces appear to be provided ?	✗			
2	Does the required number of van-accessible designated spaces appear to be provided ?	✗			
3	Are accessible spaces on the shortest accessible route to an accessible building entrance ?	✗			
4	Does parking signage include the International Symbol of Accessibility ?	✗			
5	Does each accessible space have an adjacent access aisle ?	✗			
6	Do parking spaces and access aisles appear to be relatively level and without obstruction ?	✗			

Abbreviated Accessibility Checklist

Exterior Accessible Route



ACCESSIBLE RAMP



CURB CUT

Question		Yes	No	NA	Comments
1	Is an accessible route present from public transportation stops and municipal sidewalks on or immediately adjacent to the property ?	✗			
2	Does a minimum of one accessible route appear to connect all public areas on the exterior, such as parking and other outdoor amenities, to accessible building entrances ?	✗			
3	Are curb ramps present at transitions through raised curbs on all accessible routes?	✗			
4	Do curb ramps appear to have compliant slopes for all components ?	✗			
5	Do ramp runs on an accessible route appear to have compliant slopes ?	✗			
6	Do ramp runs on an accessible route appear to have a compliant rise and width ?	✗			

7	Do ramps on an accessible route appear to have compliant end and intermediate landings ?	X			
8	Do ramps and stairs on an accessible route appear to have compliant handrails?	X			
9	For stairways that are open underneath, are permanent barriers present that prevent or discourage access?			X	

Abbreviated Accessibility Checklist

Building Entrances



ACCESSIBLE ENTRANCE



DOOR HARDWARE

Question		Yes	No	NA	Comments
1	Do a sufficient number of accessible entrances appear to be provided ?	X			
2	If the main entrance is not accessible, is an alternate accessible entrance provided?			X	
3	Is signage provided indicating the location of alternate accessible entrances ?			X	
4	Do doors at accessible entrances appear to have compliant maneuvering clearance area on each side ?	X			
5	Do doors at accessible entrances appear to have compliant hardware ?	X			
6	Do doors at accessible entrances appear to have a compliant clear opening width ?	X			

7	Do pairs of accessible entrance doors in series appear to have the minimum clear space between them ?			X	
8	Do thresholds at accessible entrances appear to have a compliant height ?	X			

Abbreviated Accessibility Checklist

Interior Accessible Route



ACCESSIBLE INTERIOR PATH



DOOR HARDWARE

Question		Yes	No	NA	Comments
1	Does an accessible route appear to connect all public areas inside the building ?	✗			
2	Do accessible routes appear free of obstructions and/or protruding objects ?	✗			
3	Do ramps on accessible routes appear to have compliant slopes ?			✗	
4	Do ramp runs on an accessible route appear to have a compliant rise and width ?			✗	
5	Do ramps on accessible routes appear to have compliant end and intermediate landings ?			✗	
6	Do ramps on accessible routes appear to have compliant handrails ?			✗	

7	Are accessible areas of refuge and the accessible means of egress to those areas identified with accessible signage ?			X	
8	Do public transaction areas have an accessible, lowered service counter section ?			X	
9	Do public telephones appear mounted with an accessible height and location ?			X	
10	Do doors at interior accessible routes appear to have compliant maneuvering clearance area on each side ?	X			
11	Do doors at interior accessible routes appear to have compliant hardware ?	X			
12	Do non-fire hinged, sliding, or folding doors on interior accessible routes appear to have compliant opening force ?	X			
13	Do doors on interior accessible routes appear to have a compliant clear opening width ?	X			

Abbreviated Accessibility Checklist

Public Restrooms



TOILET STALL OVERVIEW



SINK, FAUCET HANDLES AND ACCESSORIES

Question		Yes	No	NA	Comments
1	Do publicly accessible toilet rooms appear to have a minimum compliant floor area ?	✗			
2	Does the lavatory appear to be mounted at a compliant height and with compliant knee area ?	✗			
3	Does the lavatory faucet have compliant handles ?	✗			
4	Is the plumbing piping under lavatories configured to protect against contact ?		✗		
5	Are grab bars provided at compliant locations around the toilet ?	✗			
6	Do toilet stall doors appear to provide the minimum compliant clear width ?	✗			

7	Do toilet stalls appear to provide the minimum compliant clear floor area ?	X			
8	Where more than one urinal is present in a multi-user restroom, does minimum one urinal appear to be mounted at a compliant height and with compliant approach width ?	X			
9	Do accessories and mirrors appear to be mounted at a compliant height ?	X			

Abbreviated Accessibility Checklist

Kitchens/Kitchenettes



KITCHEN OVERVIEW



OVEN WITH CONTROLS

Question		Yes	No	NA	Comments
1	Do kitchens/kitchenettes appear to have a minimum compliant path of travel or area of maneuverability ?	✗			Not accessible to public
2	Are the appliances centered for a parallel or forward approach with adequate clear floor space ?	✗			
3	Is there an accessible countertop/preparation space of proper width and height ?		✗		
4	Is there an accessible sink space of proper width and height ?		✗		
5	Does the sink faucet have compliant handles ?	✗			
6	Is the plumbing piping under the sink configured to protect against contact ?	✗			

7	Are the cooktop/range controls front-mounted (or in a location that does not require reaching across the burners) ?	✘			
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Appendix E:

Component Condition Report

Component Condition Report | Sierra Madre Avenue Water Yard / Site

UF L3 Code	Location	Condition	Asset/Component/Repair	Quantity	RUL	ID
Structure						
B1010	Reservoir 1	Good	Building Structure	36,000 SF	50	7165666
B1010	Reservoir 2	Good	Building Structure	36,000 SF	50	7165666
Facade						
B2010	Reservoir Pump Housing	Poor	Exterior Walls, Concrete	50 SF	2	7165005
B2010	Reservoir Pump Housing	Fair	Exterior Walls, any painted surface, Prep & Paint	260 SF	5	7165000
Roofing						
B3010	Reservoir Pump Housing	Fair	Roofing, Metal	730 SF	20	7165009
Electrical						
D5010	Booster Housing	Fair	Safety Switch, 600 Volts, 600 Amps	1	15	7165001
D5010	Booster Housing	Fair	Generator, Diesel	1	10	7164992
D5020	Booster Housing	Fair	Switchboard, 120/208 V	1	15	7165003
D5020	Reservoir Pump Housing	Fair	Motor Control Center, w/ Main Breaker	1	15	7165004
D5020	Reservoir Pump Housing	Fair	Motor Control Center, w/ Main Breaker	1	15	7165002
D5020	Booster Housing	Fair	Motor Control Center, w/ Main Breaker	1	10	7164998
D5020	Booster Housing	Fair	Switchboard, 277/480 V	1	20	7164996
D5040	Reservoir Pump Housing	Good	Standard Fixture w/ Lamp, LED, Basic, 11 W	8	19	7164997
D5040	Booster Housing	Good	Standard Fixture w/ Lamp, LED, Basic, 11 W	18	19	7165007
Fire Alarm & Electronic Systems						
D7010	Site	Fair	Vehicular Access Devices, Gate w/ Controller	1	8	7045604
Special Construction & Demo						
F1020	Booster Housing	Fair	Shed/Gazebo/Shade Structure, Wood or Metal-Framed, Standard	2,800 SF	15	7164993
Pedestrian Plazas & Walkways						
G2020	Rear Lot	Poor	Parking Lots, Pavement, Asphalt, Seal & Stripe	42,000 SF	2	7045796

Component Condition Report | Sierra Madre Avenue Water Yard / Site

UF L3 Code	Location	Condition	Asset/Component/Repair	Quantity	RUL	ID
G2020	Front Lot	Fair	Parking Lots, Pavement, Asphalt, Mill & Overlay	8,000 SF	16	7152898
G2020	Front Lot	Fair	Parking Lots, Pavement, Asphalt, Seal & Stripe	8,000 SF	3	7152899
G2020	Rear Lot	Fair	Parking Lots, Pavement, Asphalt, Mill & Overlay	42,000 SF	9	7045803
G2020	Site	Poor	Parking Lots, Pavement, Concrete	120 SF	2	7045814

Sitework

G2060	Site	Fair	Picnic Table, Wood/Composite/Fiberglass	1	10	7045800
G2060	Booster Pump Housing	Fair	Fences & Gates, Fence, Chain Link 6'	120 LF	20	7045795
G2060	Site	Fair	Dumpster Enclosure, Gates, Wood/Metal, Replace/Install	1	10	7045823
G2060	Reservoir Pump Housing	Fair	Fences & Gates, Fence, Chain Link 6'	90 LF	20	7165661
G2060	Site	Fair	Fences & Gates, Fence, Metal Tube 6'	180 LF	21	7045808
G2060	Site	Fair	Fences & Gates, Fence, Chain Link 6'	1,200 LF	21	7045802
G2060	Site	Fair	Retaining Wall, Concrete Masonry Unit (CMU)	600 SF	25	7045811
G2080	Site	Fair	Irrigation System, Drip System, Replace/Install	5,000 SF	10	7045797
G4050	Reservoir Pump Housing	Good	Exterior Fixture w/ Lamp, any type, w/ LED Replacement	6	19	7164999
G4050	Booster Housing	Good	Exterior Fixture w/ Lamp, any type, w/ LED Replacement	3	19	7165006

Component Condition Report | Sierra Madre Avenue Water Yard / Chemical Building

UF L3 Code	Location	Condition	Asset/Component/Repair	Quantity	RUL	ID
B2010	Building Exterior	Poor	Exterior Walls, Concrete	50 SF	2	7045799
B2050	Building Exterior	Fair	Overhead/Dock Door, Steel, 12'x12' (144 SF)	1	15	7045806
B2050	Building Exterior	Fair	Exterior Door, Steel, Standard	1	21	7045794

Roofing

B3010	Building Exterior	Poor	Roofing, any type, Repairs per Man-Day, Repair	1	0	7045812
B3010	Roof	Fair	Roofing, Asphalt Shingle, 20-Year Standard	720 SF	5	7045801

Component Condition Report | Sierra Madre Avenue Water Yard / Chemical Building

UF L3 Code	Location	Condition	Asset/Component/Repair	Quantity	RUL	ID
B3060	Roof	Fair	Roof Skylight, per unit, up to 20 SF	2	11	7045805
HVAC						
D3060		Fair	Exhaust Fan, Propeller, 0.25 HP Motor	1	10	7045810
Electrical						
D5020		Fair	Electrical System, Full System Renovation/Upgrade, Low Density/Complexity	700 SF	21	7045813
D5020		Fair	Switchboard, 277/480 V	1	21	7045809
D5040	Throughout	Fair	Interior Lighting System, Full Upgrade, Low Density & Standard Fixtures	700 SF	10	7045807
Sitework						
G4050	Building exterior	Good	Exterior Fixture w/ Lamp, any type, w/ LED Replacement	2	19	7045798

Component Condition Report | Sierra Madre Avenue Water Yard / Warehouse

UF L3 Code	Location	Condition	Asset/Component/Repair	Quantity	RUL	ID
Facade						
B2010	Building Exterior	Poor	Exterior Walls, Concrete	200 SF	2	7045832
B2010	Building Exterior	Fair	Exterior Walls, any painted surface, Prep & Paint	3,300 SF	5	7045817
B2050	Building Exterior	Fair	Overhead/Dock Door, Steel, 20'x14' (280 SF)	2	12	7045831
B2050	Building Exterior	Fair	Exterior Door, Steel, Standard	1	18	7045820
B2050	Building Exterior	Fair	Overhead/Dock Door, Steel, 12'x12' (144 SF)	1	15	7045810
Roofing						
B3010	Roof	Poor	Roofing, Built-Up	2,400 SF	2	7045835
Interiors						
C1030	Throughout building	Fair	Interior Door, Wood, Solid-Core	2	20	7045833
C1070	Maintenance Office	Fair	Suspended Ceilings, Acoustical Tile (ACT)	400 SF	13	7045837
C2010	Throughout building	Fair	Wall Finishes, any surface, Prep & Paint	1,800 SF	5	7045838
C2030	Maintenance Office	Fair	Flooring, Carpet, Commercial Standard	400 SF	3	7045829

Component Condition Report | Sierra Madre Avenue Water Yard / Warehouse

UF L3 Code	Location	Condition	Asset/Component/Repair	Quantity	RUL	ID
C2030	Restrooms	Fair	Flooring, Vinyl Sheeting	100 SF	8	7045825
C2050	Warehouse Area	Poor	Ceiling Finishes, Wood Paneling	600 SF	1	7045818
C2050	Restrooms	Fair	Ceiling Finishes, Plastic Fiberglass-Reinforced	100 SF	15	7045821
Plumbing						
D2010	Warehouse Area	Fair	Sink/Lavatory, Vanity Top, Stainless Steel	1	12	7045834
D2010	Restrooms	Fair	Toilet, Residential Water Closet	2	15	7045828
D2010	Restrooms	Fair	Water Heater, Electric, Residential	1	5	7045830
D2010	Restrooms	Fair	Sink/Lavatory, Wall-Hung, Enameled Steel	2	15	7045827
D2010		Fair	Backflow Preventer, Domestic Water	1	15	7045840
D2010	Throughout	Fair	Plumbing System, Supply & Sanitary, Very Low Density (excludes fixtures)	2,400 SF	15	7152901
D2060	Warehouse Area	Fair	Air Compressor, Tank-Style	1	10	7045841
HVAC						
D3020	Warehouse Area	Fair	Unit Heater, Natural Gas	1	6	7045822
D3030	Building exterior	Fair	Air Conditioner, Window/Thru-Wall	1	5	7045830
D3030	Roof	Fair	Split System, Condensing Unit/Heat Pump	1	8	7045815
D3050	Throughout	Fair	HVAC System, Ductwork, Low Density	2,400 SF	15	7152903
D3050	Warehouse	NA	HVAC System, Full System Renovation/Upgrade, Low Complexity	750 SF	5	7153264
Electrical						
D5020	Throughout building	Poor	Electrical System, Full System Renovation/Upgrade, Low Density/Complexity	2,400 SF	2	7045819
D5020	Warehouse Area	Fair	Distribution Panel, 120/240 V, Residential Style	1	15	7045839
D5040	Throughout	Good	Interior Lighting System, Full Upgrade, Medium Density & Standard Fixtures	2,400 SF	19	7152900
Equipment & Furnishings						
E1030	Kitchen	Fair	Foodservice Equipment, Ice maker, Freestanding	1	6	7045820
Sitework						
G4050	Building exterior	Good	Exterior Fixture w/ Lamp, any type, w/ LED Replacement	3	19	7045824

Component Condition Report | Sierra Madre Avenue Water Yard / Water Department Office

UF L3 Code	Location	Condition	Asset/Component/Repair	Quantity	RUL	ID
Facade						
B2010	Building Exterior	Good	Exterior Walls, Metal/Insulated Sandwich Panels	4,950 SF	31	7045863
B2020	Building Exterior	Fair	Window, Vinyl-Clad Double-Glazed, up to 15 SF	29	16	7045857
B2050	Building Exterior	Fair	Exterior Door, Aluminum-Framed & Glazed, Standard Swing	2	16	7045883
B2050	Building Exterior	Fair	Exterior Door, Steel, Standard	4	20	7045862
Roofing						
B3010	Roof	Good	Roofing, Metal	5,500 SF	26	7045849
B3010	Roof	Good	Roofing, Clay/Concrete Tile	450 SF	36	7045858
Interiors						
C1030	Throughout building	Good	Interior Door, Wood, Solid-Core	22	26	7045854
C1070	Throughout building	Fair	Suspended Ceilings, Acoustical Tile (ACT)	4,450 SF	11	7045845
C1090	Locker Room	Fair	Lockers, Steel-Baked Enamel, 12" W x 15" D x 72" H	30	10	7045864
C2010		Fair	Wall Finishes, any surface, Prep & Paint	8,925 SF	5	7045873
C2010	Restrooms	Good	Wall Finishes, Ceramic Tile	1,200 SF	26	7045868
C2030	Throughout building	Fair	Flooring, any surface, w/ Paint or Sealant, Prep & Paint	3,450 SF	5	7045855
C2030	Throughout building	Fair	Flooring, Carpet, Commercial Standard	2,500 SF	5	7045880
C2050	Throughout building	Fair	Ceiling Finishes, any flat surface, Prep & Paint	1,500 SF	5	7045887
Plumbing						
D2010	Utility closet	Fair	Sink/Lavatory, Service Sink, Floor	1	21	7045846
D2010	Throughout	Good	Plumbing System, Supply & Sanitary, Medium Density (excludes fixtures)	5,950 SF	26	7152806
D2010	Restrooms	Fair	Shower, Ceramic Tile	2	16	7045867
D2010	Restrooms	Fair	Urinal, Standard	1	16	7045877
D2010	Throughout building	Fair	Sink/Lavatory, Vanity Top, Stainless Steel	2	16	7045885
D2010	Restrooms	Fair	Sink/Lavatory, Wall-Hung, Enameled Steel	7	16	7045874
D2010	Women's Locker Room	Fair	Water Heater, Gas, Residential	1	9	7045871

Component Condition Report | Sierra Madre Avenue Water Yard / Water Department Office

UF L3 Code	Location	Condition	Asset/Component/Repair	Quantity	RUL	ID
D2010	Restrooms	Fair	Toilet, Commercial Water Closet	5	16	7045878
D2010	Throughout building	Fair	Drinking Fountain, Wall-Mounted, Single-Level	1	8	7045890
HVAC						
D3030	Roof	Fair	Split System Ductless, Single Zone	1	3	7045888
D3050	Throughout building	Fair	HVAC System, Ductwork, Medium Density	5,950	SF	16
D3050	Roof	Fair	Packaged Unit, RTU, Pad or Roof-Mounted	1	6	7045848
D3050	Roof	Fair	Packaged Unit, RTU, Pad or Roof-Mounted	1	6	7045859
D3050	Roof	Fair	Packaged Unit, RTU, Pad or Roof-Mounted	1	6	7045866
D3050	Roof	Fair	Packaged Unit, RTU, Pad or Roof-Mounted	1	6	7045860
D3060	Roof	Fair	Exhaust Fan, Roof or Wall-Mounted, 10" Damper	1	6	7045886
Fire Protection						
D4010	Throughout building	Fair	Fire Suppression System, Existing Sprinkler Heads, by SF	5,950	SF	11
Electrical						
D5020	Building exterior	Fair	Secondary Transformer, Dry, Stepdown	1	16	7045889
D5020	Building exterior	Good	Switchboard, 277/480 V	1	26	7045850
D5020	Throughout	Good	Electrical System, Full System Renovation/Upgrade, Medium Density/Complexity	5,950	SF	26
D5040	Throughout	Fair	Interior Lighting System, Full Upgrade, Medium Density & Standard Fixtures	5,950	SF	10
Fire Alarm & Electronic Systems						
D7050	Throughout building	Fair	Fire Alarm System, Full System Upgrade, Standard Addressable, Upgrade/Install	5,950	SF	10
D7050	FACP Room	Fair	Fire Alarm Panel, Fully Addressable	1	8	7045891
Equipment & Furnishings						
E1040	Break Room	Fair	Healthcare Equipment, Defibrillator (AED), Cabinet-Mounted	1	5	7045851
Sitework						
G4050	Building exterior	Good	Exterior Fixture w/ Lamp, any type, w/ LED Replacement	12	19	7045844

Component Condition Report | Sierra Madre Avenue Water Yard / Well #13E

UF L3 Code	Location	Condition	Asset/Component/Repair	Quantity	RUL	ID
Electrical						
D5020	Well	Poor	Motor Control Center, w/ Main Breaker	1	1	7165014
Special Construction & Demo						
F1020	Roof	Fair	Shed/Gazebo/Shade Structure, Wood or Metal-Framed, Basic/Minimal	170 SF	15	7165013
Sitework						
G2060	Well	Fair	Fences & Gates, Fence, Chain Link 6'	80 LF	20	7165227
G2060	Well	Fair	Retaining Wall, Concrete Masonry Unit (CMU)	140 SF	20	7165229

Appendix F: Replacement Reserves

Replacement Reserves Report

1/9/2024

Location	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	Total Escalated Estimate	
Sierra Madre Avenue Water Yard / Chemical Building																									
B2010 Building Exterior	50	48	2	50	SF	\$29.00	\$43.14	\$2,157																	\$2,157
B2050 Building Exterior	30	15	15	1	EA	\$3,200.00	\$4,760.64	\$4,761								\$4,761									\$4,761
B3010 Roof	20	15	5	720	SF	\$3.90	\$5.65	\$4,070																	\$4,070
B3060 Roof	0	0	0	0	EA	\$1,100.00	\$1,636.47	\$1,636																	\$1,636
D0040 Chemical Building	30	19	11	2	EA	\$1,300.00	\$1,934.01	\$3,868				\$3,868													\$3,868
D0440 Throughout	20	10	10	1	EA	\$700.00	\$1,041.39	\$1,041				\$1,041													\$1,041
G4500 Building exterior	20	1	19	2	EA	\$600.00	\$892.62	\$1,785																	\$1,785
Totals, Unescalated																									
Totals, Escalated (3.0% Inflation, compounded annually)																									
Sierra Madre Avenue Water Yard / Country Club Booster Station 22E, 23E & 26E																									
B2010 Reservoir Pump Housing	10	5	5	260	SF	\$3.00	\$4.46	\$1,160																	\$1,160
B3010 Reservoir Pump Housing	50	48	2	50	SF	\$29.00	\$43.14	\$2,157																	\$2,157
D5010 Booster Housing	25	15	10	1	EA	\$66,000.00	\$127,942.20	\$127,942				\$127,942													\$127,942
D5020 Booster Housing	30	15	15	1	EA	\$3,135.00	\$4,663.94	\$4,664																	\$4,664
D5020 Booster Housing	40	20	20	1	EA	\$62,000.00	\$77,360.40	\$77,360																	\$77,360
D5020 Reservoir Pump Housing	30	15	15	1	EA	\$28,000.00	\$41,655.60	\$41,656																	\$41,656
D5020 Reservoir Pump Housing	30	15	15	1	EA	\$15,000.00	\$22,315.50	\$22,316																	\$22,316
D5020 Reservoir Pump Housing	30	15	15	1	EA	\$15,000.00	\$22,315.50	\$22,316																	\$22,316
D5040 Reservoir Pump Housing	20	1	19	8	EA	\$200.00	\$297.54	\$5,396																	\$5,396
D7010 Site	15	7	8	1	EA	\$9,000.00	\$13,369.30	\$13,369																	\$13,369
G1020 Site	30	15	15	2600	SF	\$50.00	\$74.39	\$208,278																	\$208,278
G2020 Rear Lot	5	3	2	42000	SF	\$0.45	\$0.67	\$28,118																	\$28,118
G2020 Front Lot	5	2	3	8000	SF	\$0.45	\$0.67	\$28,118																	\$28,118
G2020 Rear Lot	25	16	9	42000	SF	\$3.50	\$5.21	\$218,692																	\$218,692
G2020 Front Lot	25	9	16	8000	SF	\$3.50	\$5.21	\$21,656																	\$21,656
G2060 Site	20	10	10	1	EA	\$900.00	\$992.62	\$993																	\$993
G2060 Reservoir Pump Housing	40	20	20	120	LF	\$21.00	\$31.24	\$3,749																	\$3,749
G2060 Reservoir Pump Housing	40	20	20	90	LF	\$21.00	\$31.24	\$2,812																	\$2,812

Sierra Madre Avenue Water Yard / Englewood Boosters #11E & 12E

Location	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	Total Escalated Estimate	
B2010 Building Exterior	50	48	2	50	SF	\$29.00	\$43.14	\$2,157																	\$2,157
B2050 Building Exterior	30	15	15	1	EA	\$3,200.00	\$4,760.64	\$4,761								\$4,761									\$4,761
B3010 Roof	20	15	5	720	SF	\$3.90	\$5.65	\$4,070																	\$4,070
B3060 Roof	0	0	0	0	EA	\$1,100.00	\$1,636.47	\$1,636																	\$1,636
D0040 Chemical Building	30	19	11	2	EA	\$1,300.00	\$1,934.01	\$3,868				\$3,868													\$3,868
D0440 Throughout	20	10	10	1	EA	\$700.00	\$1,041.39	\$1,041				\$1,041													\$1,041
G4500 Building exterior	20	1	19	2	EA	\$600.00	\$892.62	\$1,785																	\$1,785
Totals, Unescalated																									
Totals, Escalated (3.0% Inflation, compounded annually)																									
Sierra Madre Avenue Water Yard / Country Club Booster Station 22E, 23E & 26E																									
B2010 Reservoir Pump Housing	10	5	5	260	SF	\$3.00	\$4.46	\$1,160																	\$1,160
B3010 Reservoir Pump Housing	50	48	2	50	SF	\$29.00	\$43.14	\$2,157																	\$2,157
D5010 Booster Housing	25	15	10	1	EA	\$66,000.00	\$127,942.20	\$127,942				\$127,942													\$127,942
D5020 Booster Housing	30	15	15	1	EA	\$3,135.00	\$4,663.94	\$4,664																	\$4,664
D5020 Booster Housing	40	20	20	1	EA	\$62,000.00	\$77,360.40	\$77,360																	\$77,360
D5020 Reservoir Pump Housing	30	15	15	1	EA	\$28,000.00	\$41,655.60	\$41,656																	\$41,656
D5020 Reservoir Pump Housing	30	15	15	1	EA	\$15,000.00	\$22,315.50	\$22,316																	\$22,316
D5020 Reservoir Pump Housing	30	15	15	1	EA	\$15,000.00	\$22,315.50	\$22,316																	\$22,316
D5040 Reservoir Pump Housing	20	1	19	8	EA	\$200.00	\$297.54	\$5,396																	\$5,396
D7010 Site	15	7	8	1	EA	\$9,000.00	\$13,369.30	\$13,369																	\$13,369
G1020 Site	30	15	15	2600	SF	\$50.00	\$74.39	\$208,278																	\$208,278
G2020 Rear Lot	5	3	2	42000	SF	\$0.45	\$0.67	\$28,118																	\$28,118
G2020 Front Lot	5	2	3	8000	SF	\$0.45	\$0.67	\$28,118																	\$28,118
G2020 Rear Lot	25	16	9	42000	SF	\$3.50	\$5.21	\$218,692																	\$218,692
G2020 Front Lot	25	9	16	8000	SF	\$3.50	\$5.21	\$21,656																	\$21,656
G2060 Site	20	10	10	1	EA	\$900.00	\$992.62	\$993																	\$993
G2060 Reservoir Pump Housing	40	20	20	120	LF	\$21.00	\$31.24	\$3,749																	\$3,749
G2060 Reservoir Pump Housing	40	20	20	90	LF	\$21.00	\$31.24	\$2,812																	\$2,812

Sierra Madre Avenue Water Yard / Englewood Boosters #11E & 12E

Location	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	Total Escalated Estimate	
B2010 Building Exterior	50	48	2	50	SF	\$29.00	\$43.14	\$2,157																	\$2,157
B2050 Building Exterior	30	15	15	1	EA	\$3,200.00	\$4,760.64	\$4,761								\$4,761									\$4,761
B3010 Roof	20	15	5	720	SF	\$3.90	\$5.65	\$4,070																	\$4,070
B3060 Roof	0	0	0	0	EA	\$1,100.00	\$1,636.47	\$1,636																	\$1,636
D0040 Chemical Building	30	19	11	2	EA	\$1,300.00	\$1,934.01	\$3,868				\$													

Appendix G: Equipment Inventory List

D20 Plumbing

Index	ID	UFCode	Component Description	Attributes	Capacity	Building	Location Detail	Manufacturer	Model	Serial	Dataplate Yr	Barcode	Qty
1	7045836	D2010	Water Heater	Electric, Residential	Inaccessible GAL	Sierra Madre Avenue Water Yard / Warehouse	Restrooms	Inaccessible	Inaccessible	Inaccessible			
2	7045871	D2010	Water Heater	Gas, Residential	50 GAL	Sierra Madre Avenue Water Yard / Water Department Office	Women's Locker Room	A. O. Smith	G6N-UT5040NV 400	1747108305411	2017	002363	
3	7045840	D2010	Backflow Preventer	Domestic Water	1 IN	Sierra Madre Avenue Water Yard / Warehouse							
4	7045841	D2060	Air Compressor	Tank-Style	.75 HP	Sierra Madre Avenue Water Yard / Warehouse	Warehouse Area	Ingersoll Rand	No dataplate	CBV670628		002494	

D30 HVAC

Index	ID	UFCode	Component Description	Attributes	Capacity	Building	Location Detail	Manufacturer	Model	Serial	Dataplate Yr	Barcode	Qty
1	7045822	D3020	Unit Heater	Natural Gas	Inaccessible MBH	Sierra Madre Avenue Water Yard / Warehouse	Warehouse Area	Inaccessible	Inaccessible	Inaccessible			
2	7045830	D3030	Air Conditioner	Window/Thru-Wall	1 TON	Sierra Madre Avenue Water Yard / Warehouse	Building exterior	No dataplate	No dataplate	No dataplate		002336	
3	7045815	D3030	Split System	Condensing Unit/Heat Pump	2 TON	Sierra Madre Avenue Water Yard / Warehouse	Roof	Inaccessible	Inaccessible	Inaccessible			
4	7045888	D3030	Split System Ductless	Single Zone	1.5 TON	Sierra Madre Avenue Water Yard / Water Department Office	Roof	Sanyo	C1872	01105 93	2009	002348	

5	7045848	D3050	Packaged Unit	RTU, Pad or Roof-Mounted	5 TON	Sierra Madre Avenue Water Yard / Water Department Office	Roof	Carrier	48TCLA06A2A5A0ACAA0	3339620336	2009	002317	
6	7045859	D3050	Packaged Unit	RTU, Pad or Roof-Mounted	5 TON	Sierra Madre Avenue Water Yard / Water Department Office	Roof	Carrier	48TCLA06A2A5A0A0A0	3309G20299	2009	002475	
7	7045866	D3050	Packaged Unit	RTU, Pad or Roof-Mounted	5 TON	Sierra Madre Avenue Water Yard / Water Department Office	Roof	Carrier	48TCLA06A2A5A0A0A0	3309G20335	2009	002408	
8	7045860	D3050	Packaged Unit	RTU, Pad or Roof-Mounted	5 TON	Sierra Madre Avenue Water Yard / Water Department Office	Roof	Carrier	48TCLA06A2A5A0A0A0	3309G60105	2009	002305	
9	7045810	D3060	Exhaust Fan	Propeller, 0.25 HP Motor	2000 CFM	Sierra Madre Avenue Water Yard / Chemical Building		Inaccessible	Inaccessible	Inaccessible			
10	7045886	D3060	Exhaust Fan	Roof or Wall-Mounted, 10" Damper	500 CFM	Sierra Madre Avenue Water Yard / Water Department Office	Roof	Greenheck	G-10 1-AX-00	11900262 09 10	2009	002476	
D50 Electrical													
Index	ID	UFCode	Component Description	Attributes	Capacity	Building	Location Detail	Manufacturer	Model	Serial	Dateplate Yr	Barcode	Qty
1	7164992	D5010	Generator	Diesel	300 KW	Sierra Madre Avenue Water Yard / Site	Booster Housing	Caterpillar	3406	No dateplate		000088	
2	7045889	D5020	Secondary Transformer	Dry, Stepdown	112.5 KVA	Sierra Madre Avenue Water Yard / Water Department Office		MGM Transformer Company	HT112A3B2SH	112YS-1208-1-9	2009	002364	
3	7165003	D5020	Switchboard	120/208 V	800 AMP	Sierra Madre Avenue Water Yard / Site	Booster Housing	Illegible	Illegible	Illegible		000008	

4	7045850	D5020	Switchboard	277/480 V	800 AMP	Sierra Madre Avenue Water Yard / Water Department Office	Building exterior	Eaton Cutler-Hammer	No dataplate	2009	002362		
5	7045809	D5020	Switchboard	277/480 V	1200 AMP	Sierra Madre Avenue Water Yard / Chemical Building	Square D	3R	No dataplate	2004	002304		
6	7164996	D5020	Switchboard	277/480 V	1000 AMP	Sierra Madre Avenue Water Yard / Site	Booster Housing	Square D	No dataplate		000100		
7	7045839	D5020	Distribution Panel	120/240 V, Residential Style	100 AMP	Sierra Madre Avenue Water Yard / Warehouse	Warehouse Area	Square D	No dataplate		002403		
8	7165004	D5020	Motor Control Center	w/ Main Breaker	800 AMP	Sierra Madre Avenue Water Yard / Site	Reservoir Pump Housing	Square D	No dataplate		000122		
9	7165002	D5020	Motor Control Center	w/ Main Breaker	800 AMP	Sierra Madre Avenue Water Yard / Site	Reservoir Pump Housing	Square D	No dataplate		000010		
10	7165014	D5020	Motor Control Center	w/ Main Breaker	800 AMP	Sierra Madre Avenue Water Yard / Well #13E	Well	Keller Equipment Company	No dataplate		000142		
11	7164998	D5020	Motor Control Center	w/ Main Breaker	1200 AMP	Sierra Madre Avenue Water Yard / Site	Booster Housing	Square D	No dataplate		000039		
D70 Electronic Safety & Security													
Index	ID	UFCode	Component Description	Attributes	Capacity	Building	Location Detail	Manufacturer	Model	Serial	Dataplate Yr	Barcode	Qty
1	7045891	D7050	Fire Alarm Panel	Fully Addressable		Sierra Madre Avenue Water Yard / Water Department Office	FACP Room	Honeywell	No dataplate	No dataplate		002361	
E10 Equipment													
Index	ID	UFCode	Component Description	Attributes	Capacity	Building	Location Detail	Manufacturer	Model	Serial	Dataplate Yr	Barcode	Qty
1	7045820	E1030	Foodservice Equipment	Icemaker, Freestanding		Sierra Madre Avenue Water Yard / Warehouse	Kitchen	Scotsman	N0422A-1A	14061320012732	2014	002495	

Sierra Madre
Avenue Water
Yard / Water
Department
Office

Defibrillator (AED),
Cabinet-Mounted

**Healthcare
Equipment**

E1040

7045851

2

Mechanical Inventory - Sierra Madre Avenue Water Yard										
Equipment Location	Equipment	Capacity	Quantity	Asset Tag	Year	Make	Model	Serial		
Inaccessible	Water Heater	Inaccessible GAL	1	No tag found	Unknown	Inaccessible	Inaccessible	Inaccessible		
A. O. Smith	Water Heater	50 GAL	1	No tag found	2017	A. O. Smith	G6N-UT5040NV 400	1747108305411		
Ingersoll Rand	Air Compressor	.75 HP	1	No tag found	Unknown	Ingersoll Rand	No dataplate	CBV670628		
Inaccessible	Unit Heater	Inaccessible MB	1	No tag found	Unknown	Inaccessible	Inaccessible	Inaccessible		
No dataplate	Air Conditioner	1 TON	1	No tag found	Unknown	No dataplate	No dataplate	No dataplate		
Inaccessible	Split System	2 TON	1	No tag found	Unknown	Inaccessible	Inaccessible	Inaccessible		
Sanyo	Split System Ductless	1.5 TON	1	No tag found	2009	Sanyo	C1872	01105 93		
Carrier	Packaged Unit	5 TON	1	No tag found	2009	Carrier	48TCLA06A2A5A0A0AC	3339620336		
Carrier	Packaged Unit	5 TON	1	No tag found	2009	Carrier	48TCLA06A2A5A0A0AC	3309G20299		
Carrier	Packaged Unit	5 TON	1	No tag found	2009	Carrier	48TCLA06A2A5A0A0AC	3309G20335		
Carrier	Packaged Unit	5 TON	1	No tag found	2009	Carrier	48TCLA06A2A5A0A0AC	3309G60105		

Appendix H:

Energy Conservation Measures Calculations

UIC	Install Timers On Exhaust Fans			
EAC7A	Location: Water Department Office			
Attributes:	Install (1x) timer(s) on (1x) Rooftop Exhaust Fans			
Type of Exhaust Fan:	Rooftop Exhaust Fans			
EXISTING CONDITION				
No. of Timers to Be Installed:	1	Qty	HP of Individual Fan Motor:	0.50 HP
No. of Exhaust Fans:	1		Total kW:	0.37 kW
Existing Daily Hours of Operation/Exhaust Fan:	9.00	Hrs/Day	Annual kWh For All Fans:	1,225 kWh
PROPOSED CONDITION				
New Daily Hours With Timers/Exhaust Fan:	5.00	Hrs/Day	New Annual kWh For All Fans:	681 kWh
Type of Heating Fuel:	Natural Gas		Is The Property Cooled?	Yes
Only For Apt. Bathroom Exhaust Fans			Only For Roof Top Exhaust Fans- Commerical Spaces	
CFM for Individual Bathroom Exhaust Fans (For bathrooms<100Sqft)	90	CFM	No. of Water Closets In Building	7
Total Exhaust CFM From All Fans	90	CFM	No. of Urinals In Building	1
Annual Heating Energy Savings	0	kbtu	Annual Heating Energy Savings	2,955 kbtu
Annual Cooling Energy Savings	0	kbtu	Annual Cooling Energy Savings	3,897 kbtu
Energy & Cost Savings				
Estimated Annual Heating Plant Efficiency	75.51	%	Estimated Annual Cooling Plant Efficiency	9.64 EER
Annual Heating Energy Savings	39	Therms	Annual Cooling Energy Savings	404 kWh
Annual Electric Fan Motor Savings	545	kWh		
COST ANALYSIS				
Electric Rate:	\$0.30	\$/kWh	Total Annual Electric Savings	949 kWh
Material Cost For Timers:	\$169	\$	Total Annual Non Electric Savings	39 Therms
Total Cost for Installing Timers	\$341	\$	Annual Cost savings:	\$371
Simple Payback:	0.92	Yrs		
Type of Recommendation	No/Low Cost ECM Recommendation			

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ECM DESCRIPTION:

Exhaust fans are generally used in areas with high concentrations of pollutants generated from occupants' activities. These exhaust requirements are rarely continuous, and the fans should operate only as needed. Continuous operations of bathroom exhaust fans results in exhausting conditioned air out. This causes low pressures in the conditioned space, which is filled up by infiltrated air from unconditioned spaces. Air infiltration leads to increase loads on heating and cooling system increasing the energy consumed to condition the space. In addition to this the fan motor is also consumes energy to operate, though insignificant as compared to the HVAC losses.

In case of the residential properties with individual exhaust fans in the bathrooms, BV recommends installing timer switches on each bathroom fan to control the fan operations. Bathroom fans are essential to exhaust out the excess humidity and odor control. The timer switch will limit the operation time to 20 mins.

In case of central exhaust systems that have roof top or side wall mounted exhaust fans, BV recommends a single electronic timer control to restrict the exhaust fan operations to typical building occupancy hours +/- 2 hrs. A single electronic timer would be able to control all the exhaust fans.

Summary:

Initial Investment:	\$341	Simple Payback:	0.92	Years
Energy Cost Savings:	\$371			

UIC	Install Low Flow Faucet Aerators	
EAP2-b	Location: Restrooms and Break Room	
Attributes:	Replace 2x 1.5GPM rated kitchen aerators with 1GPM WaterSense certified aerators Replace 9x 1.5GPM rated bathroom aerators with 0.5GPM WaterSense certified aerators	
Property Type:	<input type="text" value="Commercial"/>	Estimated No. of Operational Weeks <input type="text" value="52"/>
		Number of Occupied Days/Week (Max 7) <input type="text" value="5"/>
KITCHEN FAUCETS		BATHROOM FAUCETS
Number of Occupants Affected By Retrofit	<input type="text" value="60"/>	Number of Occupants Affected by Retrofit <input type="text" value="60"/>
Do You Want To Replace Kitchen Faucets Aerators	<input type="text" value="Yes"/> (Select)	Do You Want To Replace Bathroom Faucets Aerators <input type="text" value="Yes"/> (Select)
Total Number of Faucet Aerators To Be Replaced	<input type="text" value="2"/>	Total Number of Faucet Aerators To Be Replaced <input type="text" value="9"/>
Total Number of Faucets To Be Replaced:	<input type="text" value="0"/>	Total Number of Faucets To Be Replaced: <input type="text" value="0"/>
GPM of Existing Faucet Aerators	<input type="text" value="1.5"/> GPM	GPM of Existing Faucet Aerators <input type="text" value="1.5"/> GPM
GPM of Proposed Faucet Aerator	<input type="text" value="1"/> GPM	GPM of Proposed Faucet Aerator <input type="text" value="0.5"/> GPM
Estimated Number of Uses Per Day	<input type="text" value="4"/>	Estimated Number of Uses Per Day <input type="text" value="5"/>
Annual Water Savings From Installing Low Flow Aerators:	<input type="text" value="10.48"/> kGal	
WATER & ENERGY SAVING CALCULATION		COST SAVING CALCULATION
Select Type of Water Heater Fuel:	<input type="text" value="Natural Gas"/> (Select)	Property Location in United States <input type="text" value="Southern Localities"/>
Energy Factor of Domestic Hot Water Heater:	<input type="text" value="0.53"/> EF	Heating Fuel Tariff <input type="text" value="\$2.24"/> \$/Therm
Hot Water Discharge Temperature at Faucet	<input type="text" value="106.00"/> °F	Water Tariff (\$/1000 Gal) <input type="text" value="\$8.36"/> \$/kGal
Equivalent Heating Fuel Savings:	<input type="text" value="50"/> Therms	Annual Cost Savings In Form of Water <input type="text" value="\$88"/> \$
<small>Savings Discounted by 15% to Account For Cold Water Use</small>		
Annual Water Savings	<input type="text" value="10.48"/> kGal	Annual Energy Savings From Water Heater <input type="text" value="\$113"/> \$
COST BENEFIT ANALYSIS		
Estimated Material Cost	<input type="text" value="\$88"/>	Estimated Labor Cost <input type="text" value="\$85"/>
Estimated Total Annual Cost Savings	<input type="text" value="\$201"/> \$\$	Estimated Total Installation Cost <input type="text" value="\$173"/> \$\$
Simple Payback Period	<input type="text" value="0.86"/> Years	<i>Type of Recommendation</i> <input type="text" value="No/Low Cost ECM Recommendation"/>

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ECM EXPLANATION:

By reducing the flow of water coming from the restroom faucets, aerators can generate energy savings at low cost and with easy installation. The savings generated would be in the form of reduced water and sewer costs and at the same time aerators would save energy by reducing the demand for hot water. The average faucet has a flow rate of about 2 to 4 GPM. Adding a screw-in faucet aerator reduces the flow to 0.5 to 1.5 GPM in the bathroom and 2.2 GPM in the kitchen. In addition to saving energy and water, the "foamier" water that comes from faucet aerators wets objects better than water from a faucet with no aerator, which tends to bounce off the object rather than thoroughly wetting it.

BV recommends replacing the proposed faucet aerators with new low flow aerators as mentioned above. The proposed ECM shall also result in an annual energy saving in form of reduction in water heating bills.

Summary:

Initial Investment: \$173 Estimated Annual Cost Savings: \$201 Simple Payback Period (Yrs): 0.86

UIC	Upgrade Building Lighting to LED and Install Automatic Lighting Controls
EAL10	Location: Building Interior and Exterior - Sierra Madre Avenue Water Yard
Attributes:	Replace CFL (43x) ;Linear Fluorescent (33x) ;

	No. of ECMS	No. of Fixtures	No. of Lamps	KWh Saved	Energy Cost Saving	O & M Savings
Upgrade Lighting to LED	15	76	133	6,794	\$2,038.23	\$185.44

Existing Technology	Sub-Technology	No. of ECMS	No. of Fixtures	No. of Lamps	KWh Saved	Energy Cost Saving	O & M Savings
CFL	CFL - 2 Pin	0	0	0	0	\$0	\$0
CFL	CFL - 4 Pin	5	39	39	2,259	\$678	\$82
CFL	CFL - Screw-in	1	4	4	280	\$84	\$6
Circuline	T9	0	0	0	0	\$0	\$0
Incan/H/MR	H	0	0	0	0	\$0	\$0
Incan/H/MR	Incan	0	0	0	0	\$0	\$0
Incan/H/MR	MR	0	0	0	0	\$0	\$0
HID	HPS	0	0	0	0	\$0	\$0
HID	MH	0	0	0	0	\$0	\$0
HID	MV	0	0	0	0	\$0	\$0
HID	QL	0	0	0	0	\$0	\$0
Linear Fluorescent	T8	9	33	33	4,256	\$1,277	\$97
Linear Fluorescent	T12	0	0	0	0	\$0	\$0
Linear Fluorescent	T8 U	0	0	0	0	\$0	\$0
Linear Fluorescent	T12 U	0	0	0	0	\$0	\$0
Linear Fluorescent	T5	0	0	0	0	\$0	\$0
Linear Fluorescent	T6	0	0	0	0	\$0	\$0
Linear Fluorescent	T10	0	0	0	0	\$0	\$0

Proposed Controls	No. of Controls	Location	No. of Controls
Photo Sensor	0	Ceiling Mounted	0
Wall Mounted	9		

Initial Investment	Amount	Equipment Rentals	Amount
Material Cost	\$1,520.64	Scissor Lift 26' - Interior Spaces	\$0.00
Labor Cost	\$1,127.58	Bucket Truck - Exterior Spaces	\$0.00
Local Electric Rate:	\$0.30 /kWh	Estimated Annual Energy Savings:	6,794
Hourly Labor Rate For Electrician:	\$72.05	Estimated Demand Savings:	4
Budgeted Initial Investment:	\$2,648	Estimated Annual Energy Cost Savings:	\$2,038
Estimated Return on Investment:	1.19 Years	Estimated Annual O&M Cost Savings:	\$185
(Including O&M Savings)		Estimated Annual Cost Savings:	\$2,224

UIC	Retrofit Flush Tank Toilets to Dual Flush					
EAP3	Location: Warehouse					
Attribute:	Retrofit 2x 1.6GPF toilets to dual-flush					
EXISTING CONDITION						
Total Occupants:	60					
Number of Water Closets To Be Replaced	2					
Number of Occupied Days Per Week (Max 7)	5					
Number of Occupied Weeks/Year (Max 52)	52					
Estimated Restroom Usage/Individual/Day <small>5.05 flushes/person/day@American Water Works Association (AWWA)</small>	4	(Select)				
PROPOSED RETROFIT/REPLACEMENT						
Existing Gallons Per Flush Ratings For Water Closet Flushes	1.60 GPF					
Replace or Retrofit Toilets With Dual Flush Toilets	Retrofit					
Replace Proposed Toilet	-					
GPF of Proposed New Low Flow Water Closet Fixture*	- GPF					
Retrofit Dual Flush - Retrofit Setup Valve for Flush Tank Toilet	<small>Solid Waste (20%)</small> 1.60	GPF				
<small>*(Federal Law Requires All Flushes Not To Exceed 1.6 GPF)</small>	<small>Liquid Waste (80%)</small> 1.28	GPF				
Water & Cost Saving Calculations						
Water Savings By The Use of Low Flow Water Closet Flush Valves/Day	61.44 gal					
Total Annual Water Savings in gallons	15.97 kgal					
Cost Savings Calculations						
Enter Water Tariff Rate (\$/1000Gal)	\$8.36 \$					
Estimated Cost Savings From Water	\$134 \$					
Estimated Cost of Retrofit						
Estimated Total Cost For Retrofit	<table border="1"> <tr> <td>Material</td> <td>\$48</td> </tr> <tr> <td>Labor</td> <td>\$229</td> </tr> </table>	Material	\$48	Labor	\$229	Total \$277 \$
Material	\$48					
Labor	\$229					
Simple Pay Back Period	2.08 Yrs					
Type of Recommendation	No/Low Cost ECM Recommendation					

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ECM EXPLANATION:

The highest water utilization at any home/office occurs in the restrooms. It is estimated that on an average a normal human being uses the restroom at least four times a day. Keeping with the global water conservation objectives, federal law prohibits use of any new water closet flushes over 1.6 GPF.

Existing toilets can be retrofitted with pressure-assisted flush technology to reduce the flush rate to 1.0 GPF or less. Though water efficient these toilets make considerable amount of noise as this involves release of pressurized air during the course of flushing. Thus making them unpopular among residential properties.

Thus BV recommends replacing the existing high flow toilets with new low flow 1.28GPF rated flush tank toilets, which are comparatively more water efficient at the same time considerably quieter as compared to the pressure assisted technology retrofitted toilets.

Summary:

Initial Investment:	\$277	Simple Payback:	2.08	Years
Annual Cost Savings:	\$134			

UIC		Install Low Flow Tankless Restroom Fixtures	
EAP4	Location: Water Department Office		
Attribute:	Retrofit 5x; 1.28 GPF toilets with dual-flush flush vales		
ECM FOR DETERMINING WATER SAVINGS IN COMMERCIAL PROPERTIES			
Number of Males	30		
Number of Females	30		
Number of Occupied Days Per Week (Max 7)		5	
Number of Occupied Weeks/Year (Max 52)		52	
Number of Urinals To Be Retrofitted		0	
Number of Water Closets To Be Retrofitted		5	
No. of Water Closets With Separate Flush Tank <small>(Typical Residential Type)</small>		0	
Estimated Restroom Usage/Individual/Day <small>Default is 4 Uses/Day For Residential/Office</small>	4	(Select)	
Urinal Water Savings			
Do you want to make any changes to the Urinals?	No		
Estimated Existing Use of Urinal/Day/Man	80%		
Existing Gallons Per Flush Ratings For Urinal Flushes	0.00	GPF	
Proposed Urinal	-		
GPF of Proposed Urinal Flush Valve**	0.000	GPF	
<small>**[1992 EpACT Energy Act Mandates 1.0GPF Max on Urinals]</small>			
Water Closet Water Savings			
Tankless Water Closets			
Do you want to make any changes to the Water Closets?	Yes		
Existing Gallons Per Flush Ratings For Water Closet Flushes	1.28	GPF	
Are The Existing Water Closet Being Replaced? <small>(If No, Then Only The Flush Valve Would Be Replaced With Dual Flush Retrofit Kit)</small>	No		
No. of Tankless Water Closets	5		
GPF of Proposed Dual Flush- Water Closet Valve*	1.28	GPF	
<small>*Federal Law Requires All Flushes Not To Exceed 1.6 GPF</small>	0.38	GPF	
	<small>Solid Waste (20%)</small>		
	<small>Liquid Waste (80%)</small>		
Estimated Annual Water Savings From Male Users	22.36	kGal	
Estimated Annual Water Savings From Female Users	22.36	kGal	
Water & Cost Saving Calculations			
Water Savings Calculation			
Water Savings By The Use of Low Flow Water Closet Flush Valves/Yr	44.73	kGal	
Water Savings By The Use of Low Flow Urinal Flush Valves/ Yr	0.00	kGal	
Total Annual Water Savings in kGal	44.73	kGal	
Cost Savings Calculations			
Enter Water Tariff Rate (\$/1000Gal)	\$8.36		
Estimated Cost Savings From Water	\$374		
Estimated Cost of Retrofit			
Material Cost for Low Flow Urinal(s)	\$0		
Labor Cost for Installing New Urinal(s)	\$0		
Material Cost For Replacing Existing Flush Valves With Low Flow - Dual Flush Valves	\$400		
Labor Cost For Water Closet <small>(Up For Liquid Waste And Down For Solid Waste)</small>	\$573		
Estimated Total Cost For Retrofit	\$973		
Simple Pay Back Period	2.60	Yrs	
Type of Recommendation	No/Low Cost ECM Recommendation		

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ECM EXPLANATION:

The highest water utilization at any home/office occurs in the restrooms. It is estimated that on an average a normal human being uses the restroom at least four times a day. Keeping with the global water conservation objectives, federal law prohibits use of any new water closet flushes over 1.6 GPF. At the same time the '1992 EpACT mandates all new Urinals to have a maximum 1.0 GPF flush valves on urinals.

BV recommends replacing all urinals above 1.0 GPF with a new 0.5 GPF or lesser urinals. At the same time BV also recommends replacing all the water closets having a GPF rating of 1.6 and over with low flow water closet fixtures equipped with dual flush valves.

In case the property doesn't wish to replace the entire water closet fixtures, BV recommends retrofitting all the tankless water closet flush fixtures with new dual flush fixtures that would result in a 30% water savings per flush for liquid wastes, while retaining the same flush rate for solid wastes.

SUMMARY:

Initial Investment: \$973 Simple Payback Period: 2.60 Yrs
Annual Cost Savings: \$374

Appendix I: Lighting System Schedule



Lighting Schedule - Existing

Line No.	Interior/ Exterior	Space Type	Room No.	LU X	Control Quantity	Existing Control	Lamp Details			Fixture Details				Existing Consumption				
							Technology	Sub-Technology	Lamp Type	Total Lamps	Fixture Type	Linear Fluorescent Fixture Lens	Fixture Mounting	Fixture Quantity	24x7 Fixture Count	Fixture Height	Annual Hours	Existing Annual kWh
1	Interior	Restroom - Female	Locker Rooms	-	4	Light Switch	CFL	CFL - 4 Pin	CFL26	10	Can - Recessed Vertical 6"	None	Recessed	10	No	≥9	4,368	1,136
2	Interior	Restroom - Female	Locker Rooms	-	4	Light Switch	CFL	CFL - Screw-in	CFL26	4	Score Vertical	Translucent White	Recessed	4	No	≥9	4,368	454
3	Interior	Restroom - Female	Locker Rooms	-	4	Light Switch	Linear Fluorescent	T8	4' 32W T8	4	Troffer - Recessed Indirect 2'x4'	Prism	Recessed	2	No	≥9	4,368	559
4	Interior	Break Room	Break Room	-	1	Light Switch	Linear Fluorescent	T8	4' 32W T8	15	Troffer - Recessed Indirect 2'x4'	Prism	Recessed	5	No	≥9	3,120	1,498
5	Interior	Office-Support Staff	Office	-	3	Light Switch	Linear Fluorescent	T8	4' 32W T8	6	Troffer - Recessed Indirect 2'x4'	Prism	Recessed	3	No	≥9	3,120	599
6	Interior	Circulation-Hallway	Hallway	-	1	Light Switch	CFL	CFL - 4 Pin	CFL26	15	Can - Recessed Vertical 6"	None	Recessed	15	No	≥9	3,120	1,217
7	Interior	Office-Support Staff	Office	-	1	Light Switch	Linear Fluorescent	T8	4' 32W T8	6	Troffer - Recessed Indirect 2'x4'	Prism	Recessed	2	No	≥9	3,120	599
8	Interior	Office-Support Staff	Office	-	1	Light Switch	Linear Fluorescent	T8	4' 32W T8	2	Troffer - Recessed Indirect 2'x4'	Prism	Recessed	1	No	≥9	3,120	200
9	Interior	Circulation-Hallway	Hallway	-	1	Light Switch	CFL	CFL - 4 Pin	CFL32	6	Can - Recessed Vertical 6"	None	Recessed	6	No	≥9	3,120	599
10	Interior	Utility	Closet	-	1	Light Switch	Linear Fluorescent	T8	4' 32W T8	2	Troffer - Recessed Indirect 2'x4'	Prism	Recessed	1	No	≥9	2,080	133
11	Interior	Office-Support Staff	Open Office	-	1	Light Switch	Linear Fluorescent	T8	4' 32W T8	4	Troffer - Recessed Indirect 2'x4'	Prism	Recessed	2	No	≥9	3,120	399
12	Interior	Office-Support Staff	Open Office	-	1	Light Switch	Linear Fluorescent	T8	4' 32W T8	39	Troffer - Recessed Indirect 2'x4'	Prism	Recessed	13	No	≥9	3,120	3,894
13	Interior	Office-Support Staff	Open Office	-	1	Light Switch	CFL	CFL - 4 Pin	CFL26	4	Can - Recessed Vertical 6"	None	Recessed	4	No	≥9	3,120	324
14	Interior	Office-Support Staff	Office	-	1	Light Switch	Linear Fluorescent	T8	4' 32W T8	12	Troffer - Recessed Indirect 2'x4'	Prism	Recessed	4	No	≥9	3,120	1,198
15	Interior	Office-Support Staff	Office	-	1	Light Switch	CFL	CFL - 4 Pin	CFL26	4	Can - Recessed Vertical 6"	None	Recessed	4	No	≥9	3,120	324
										76			49,504			13,134		



Lighting Solutions - Proposed

Line No.	Building Name	Interior/Exterior	Space Type	Room No.	Exig. Cont. Q'ty	Fixture Details			Existing Consumption			Proposed Post Retrofit			Annual Savings From LED Retrofit						
						Sub-Technology	Technology	Lamp-Fixture	Fixture Quantity	Total Lamps	Fixture Height	Annual Hours	Existing Annual kWh	KW Reduction		ECM	ECM Type	Recommended Sensor	LED Lamp Retrofit	Annual Hours of Operation	Proposed Annual kWh
1	Sierra Madre Avenue Water Yard	Interior	Restroom - Female	Locker Rooms	Light	4	CFL	CFL - 4 Pin, CFL26	4	10	2.9	4,368	1,136	0.36	ECM	RB - Replace Bulb	Retain Existing Controls	4 Pin LED	4,368	437	699
2	Sierra Madre Avenue Water Yard	Interior	Restroom - Female	Locker Rooms	Light	4	CFL	CFL - 4 Pin, CFL26	4	4	2.9	4,368	568	0.18	ECM	RB - Replace Bulb	Retain Existing Controls	4 Pin LED	4,368	275	262
3	Sierra Madre Avenue Water Yard	Interior	Break Room	Break Room	Light	4	Linear Fluorescent	4 32W T8, T8/Officer - Recessed Indirect 12"x4"	2	4	4	3,120	1,458	0.48	ECM	RB - Replace Bulb	Retain Existing Controls	4 17W LED T8	3,120	786	702
4	Sierra Madre Avenue Water Yard	Interior	Office - Support Staff	Office	Light	3	Linear Fluorescent	4 32W T8, T8/Officer - Recessed Indirect 12"x4"	3	15	5.9	3,120	989	0.39	ECM	RB - Replace Bulb	Retain Existing Controls	4 17W LED T8	3,120	318	281
5	Sierra Madre Avenue Water Yard	Interior	Office - Support Staff	Office	Light	1	Linear Fluorescent	CFL - 4 Pin, CFL26	15	15	2.9	3,120	1,217	0.39	ECM	RB - Replace Bulb	Wall Mounted	4 Pin LED	3,120	468	749
6	Sierra Madre Avenue Water Yard	Interior	Office - Support Staff	Office	Light	1	Linear Fluorescent	4 32W T8, T8/Officer - Recessed Indirect 12"x4"	2	6	2.9	3,120	989	0.39	ECM	RB - Replace Bulb	Wall Mounted	4 17W LED T8	3,120	318	281
7	Sierra Madre Avenue Water Yard	Interior	Office - Support Staff	Office	Light	1	Linear Fluorescent	4 32W T8, T8/Officer - Recessed Indirect 12"x4"	2	6	2.9	3,120	989	0.39	ECM	RB - Replace Bulb	Wall Mounted	4 17W LED T8	3,120	318	281
8	Sierra Madre Avenue Water Yard	Interior	Circulation-Hallway	Hallway	Light	1	CFL	CFL - 4 Pin, CFL32	6	6	2.9	3,120	989	0.39	ECM	RB - Replace Bulb	Wall Mounted	4 Pin LED	3,120	187	412
9	Sierra Madre Avenue Water Yard	Interior	Office - Support Staff	Office	Light	1	Linear Fluorescent	4 32W T8, T8/Officer - Recessed Indirect 12"x4"	1	2	2.9	2,080	133	0.06	ECM	RB - Replace Bulb	Retain Existing Controls	4 17W LED T8	2,080	71	62
10	Sierra Madre Avenue Water Yard	Interior	Office - Support Staff	Office	Light	1	Linear Fluorescent	4 32W T8, T8/Officer - Recessed Indirect 12"x4"	2	4	2.9	3,120	389	0.13	ECM	RB - Replace Bulb	Retain Existing Controls	4 17W LED T8	3,120	212	187
11	Sierra Madre Avenue Water Yard	Interior	Office - Support Staff	Office	Light	1	Linear Fluorescent	4 32W T8, T8/Officer - Recessed Indirect 12"x4"	13	39	2.9	3,120	3,894	1.25	ECM	RB - Replace Bulb	Retain Existing Controls	4 17W LED T8	3,120	2,089	1,285
12	Sierra Madre Avenue Water Yard	Interior	Office - Support Staff	Office	Light	1	Linear Fluorescent	4 32W T8, T8/Officer - Recessed Indirect 12"x4"	4	12	2.9	3,120	1,198	0.38	ECM	RB - Replace Bulb	Retain Existing Controls	4 17W LED T8	3,120	636	562
13	Sierra Madre Avenue Water Yard	Interior	Office - Support Staff	Office	Light	1	Linear Fluorescent	CFL - 4 Pin	4	4	2.9	3,120	324	0.10	ECM	RB - Replace Bulb	Wall Mounted	4 Pin LED	3,120	125	202
14	Sierra Madre Avenue Water Yard	Interior	Office - Support Staff	Office	Light	1	CFL	CFL - 4 Pin, CFL26	4	4	2.9	3,120	324	0.10	ECM	RB - Replace Bulb	Wall Mounted	4 Pin LED	3,120	125	202
15	Sierra Madre Avenue Water Yard	Interior	Office - Support Staff	Office	Light	1	CFL	CFL - 4 Pin, CFL26	4	4	2.9	3,120	324	0.10	ECM	RB - Replace Bulb	Wall Mounted	4 Pin LED	3,120	125	202
Totals															6,339	6,794					

Appendix J:

Energy Audit Glossary of Terms

Glossary of Terms and Acronyms

ECM – Energy Conservation Measures are projects recommended to reduce energy consumption. These can be No/Low cost items implemented as part of routine maintenance or Capital Cost items to be implemented as a capital improvement project.

Initial Investment – The estimated cost of implementing an ECM project. Estimates typically are based on R.S. Means Construction cost data and Industry Standards.

Annual Energy Savings – The reduction in energy consumption attributable to the implementation of a particular ECM. These savings values do not include the interactive effects of other ECMs.

Cost Savings – The expected reduction in utility or energy costs achieved through the corresponding reduction in energy consumption by implementation of an ECM.

Simple Payback Period – The number of years required for the cumulative value of energy or water cost savings less future non-fuel or non-water costs to equal the investment costs of the building energy or water system, without consideration of discount rates.

EUL – Expected Useful Life is the estimated lifespan of a typical piece of equipment based on industry accepted standards.

RUL – Remaining Useful Life is the EUL minus the effective age of the equipment and reflects the estimated number of operating years remaining for the item.

SIR - The savings-to-investment ratio is the ratio of the present value savings to the present value costs of an energy or water conservation measure. The numerator of the ratio is the present value of net savings in energy or water and non-fuel or non-water operation and maintenance costs attributable to the proposed energy or water conservation measure. The denominator of the ratio is the present value of the net increase in investment and replacement costs less salvage value attributable to the proposed energy or water conservation measure. It is recommended that energy-efficiency recommendations be based on a calculated SIR, with larger SIRs receiving a higher priority. A project typically is recommended only if the SIR is greater than or equal to 1.0, unless other factors outweigh the financial benefit.

Life Cycle Cost - The sum of the present values of (a) Investment costs, less salvage values at the end of the study period; (b) Non-fuel operation and maintenance costs; (c) Replacement costs less salvage costs of replaced building systems; and (d) Energy and/or water costs.

Life Cycle Savings – The sum of the estimated annual cost savings over the EUL of the recommended ECM, expressed in present value dollars.

Building Site Energy Use Intensity - The sum of the total site energy use in thousands of Btu per unit of gross building area. Site energy accounts for all energy consumed at the building location only not the energy consumed during generation and transmission of the energy to the site.

Building Source Energy Use Intensity – The sum of the total source energy use in thousands of Btu per unit of gross building area. Source energy is the energy consumed during generation and transmission in supplying the energy to your site.

Building Cost Intensity - This metric is the sum of all energy use costs in dollars per unit of gross building area.

Greenhouse Gas Emissions - Although there are numerous gases that are classified as contributors to the total for Greenhouse Emissions, the scope of this energy audit focuses on carbon dioxide (CO₂). Carbon dioxide enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and also as a result of other chemical reactions (e.g., manufacture of cement).