Level 1 Validation Certificate

WSO

This document verifies that the Level 1 Validation process was completed. The session details and audit review outcomes are included here.

This certificate is required for submission – alongside the Level 1 validated water audit software file – to the California Department of Water Resources.

Call Date: 10/9/2019

Water Supplier

Supplier Name:	City of Manhattan Beach
Supplier Participants:	Shawn Igoe, Mark Wood

Validator

Validator:	Colin Stief Water Systems Optimization
Validator Qualifications:	Water Audit Validator Certificate from the AWWA California Nevada Section

Key Audit Metrics

Data Validity Score:	62	
ILI:	0.07	
Real Loss:	0.84	gal / conn / day
Apparent Loss:	7.71	gal / conn / day
Non-Revenue Water as Percent of Cost of Operating System:	1.9%	

Certification Statement by Validator

This water loss audit report has been Level 1 validated per the requirements of California Code of Regulations Title 23, Division 2, Chapter 7 and the California Water Code Section 10608.34.

All recommendations on volume derivation and Data Validity Grades were incorporated into the water audit. ☒

Level 1 Validation – Water Supplier Confirmation

This document confirms participation in and endorsement of the Level 1 Validation as completed.

This acknowledgement is required for submission – alongside your Level 1 validated water audit software file – to the California Department of Water Resources.

Water Supplier Name:	City of Manhattan Beach
Water Supplier Public Water System ID:	1910083
Water Audit Period:	July 1, 2018 to June 30, 2019

Water Audit & Water Loss Improvement Steps

Steps taken in the audit period timeframe to increase data source accuracy, reduce real losses, and/or reduce apparent losses, as informed by the water audit.

Better record keeping along with water meter testing for wells. Increased data collection on water main breaks and damages.

Certification Statement by Water Supplier Executive:

This water loss audit report meets the requirements of California Code of Regulations Title 23, Division 2, Chapter 7 and the California Water Code Section 10608.34 and has been prepared in accordance with the method adopted by the American Water Works Association, as contained in their manual, *Water Audits and Loss Control Programs, Manual M36, Fourth Edition* and in the Free Water Audit Software version 5.

Executive Name (print):	Shawn Igoe
Executive Position:	Utilities Division Manager
Signature:	
Date	10/31/19

Level 1 Validation Summary Notes

This document includes detailed notes about utility practices as reviewed during third-party level-one water audit validation.

This document is not a required submission to the California Department of Water Resources. It is meant to provide background and documentation of the validation process.

Call Information

Utility	Validator
Utility Name: City of Manhattan Beach	Validator: Colin Stief, Water Systems Optimization
Utility Participants: Shawn Igoe, Mark Wood	Validator Qualifications: Water Audit Validator Certificate from the AWWA California Nevada Section
Call Date: 10/9/2019	

Validation Call Notes

Audit Input	Grade	Audit Input Notes	Data Validity Grade Notes
Volume from Own Sources	7	Source Meter Profile: Two groundwater wells, each with their own meter. Well 11a has had water quality challenges, resulting in infrequent use. Derivation: Manual reads from production meters as archived. Comments: Input derivation from supporting documents confirmed. Exclusion of non-potable volumes confirmed.	Approximate Percent of Volume Metered: 100% Approximate Percent Tested and/or Calibrated: 100% Calibration Frequency: None. Volumetric Testing Frequency: Annual. Volumetric Testing Method: Pitot-Tube Comments: DVG of 7 because 100% metered, annual testing of both wells, and documentation provided. Limited with no annual electronic calibration.
Volume from Own Sources Master Meter and Supply Error Adjustment	3	Derivation: Test results were within margins of error, so no adjustment was applied. Change in Storage Considered: No. Comments: Total storage capacity in distribution system is less than 10 MG.	Source Meter Read Method: Manual. Source Meter Read Frequency: Daily. Data Review Practices: Operators look at numbers weekly Real-Time Storage Level Monitoring: Yes. Comments: DVG of 3 because of daily manual reads and weekly data review. Limited with non-automatic/electronic reads and by not incorporating net change in storage.
Water Imported	7	Import Meter Profile: One import connection with MET. Derivation: Totalization of volumes per redundant meter reads by utility. Comments: In the future, Manhattan Beach may want to compare their two redundant meter reads to MET connection to ensure meter is performing as expected. Input derivation from supporting documents confirmed. Exclusion of non-potable volumes confirmed.	Approximate Percent of Volume Metered: 100% Approximate Percent Tested and/or Calibrated: 100% Calibration Frequency: Semi-annual. Volumetric Testing Frequency: None. Volumetric Testing Method: n/a. Comments: DVG of 7 because 100% metered, semi-annual electronic calibration, and documentation provided. Limited with no annual volumetric testing.

Water Imported Master Meter and Supply Error Adjustment	7	Derivation: Calibration results were within margins of error, so no adjustment water applied. Comments: No additional comments.	Import Meter Read Method: Manual and automatic logging. Import Meter Read Frequency: Continuous. Data Review Practices: Operators look at numbers weekly. Comments: DVG of 7 because of access to continuous SCADA reads and monthly data review. Limited by frequency of data review.
Water Exported	n/a	Export Meter Profile: Three emergency connections with two neighboring agencies (El Segundo and Cal Water). Confirmed no water was exported in FY 2017-18. Comments: Input derivation from supporting documents confirmed. Exclusion of non-potable volumes confirmed. Exclusion from BMAC input confirmed.	Approximate Percent of Volume Metered: 100% Approximate Percent Tested and/or Calibrated: n/a Calibration Frequency: n/a Volumetric Testing Frequency: n/a Volumetric Testing Method: n/a Comments: n/a
Water Exported Master Meter and Supply Error Adjustment	n/a	Derivation: n/a Comments: n/a	Export Meter Read Method: n/a Export Meter Read Frequency: n/a Data Review Practices: n/a Comments: n/a
Billed Metered Authorized Consumption	5	Derivation: Query from billing system. Customer Meter Profile: Read Frequency: Bi-monthly. Reading Technology: Manual. Manhattan Beach completed two small AMI pilots. They are also transitioning from Tyler Eden to Tyler Munis billing software. Age Profile: 50% of meters are less than 10 years old, the remaining 50% was installed no earlier than 2000. Comments: Lag-time correction is not employed in input derivation. Input derivation from supporting documents confirmed. Exclusion of non-potable volumes confirmed.	Approximate Percent Metered: 100% Small Meter Testing Practices: Reactive - complaint based or flagged-consumption testing only. Number of Small Meters Tested: Unknown but small quantity Large Meter Testing Practices: Reactive - complaint based or flagged-consumption testing only. Number of Large Meters Tested: Unknown but small quantity General Replacement Practices: Upon failure only. Replacement program is currently on hold due to AMI pilot. Prior to pilot, Manhattan Beach replaced over 1,000 meters per year. Billing Data Review: Standard billing QC, plus review of volumes by use type each billing cycle. Comments: DVG of 5 because 100% metered, replacement of meters on failure, and "very limited" testing program based on customer complaints or system flags.
Billed Unmetered Authorized Consumption	n/a	Profile: n/a Derivation: n/a Comments: n/a	Policy for Metering Exemptions: n/a Comments: n/a
Unbilled Metered Authorized Consumption	7	Profile: Construction meters for City projects Derivation: Direct from meter readings when project is complete. Meter reads only occur at the end of project thus, some volumes may not be captured for the audit period.	Policy for Billing Exemptions: Limited to own facilities. Comments: DVG of 7 because of as-needed reads.

Unbilled Unmetered Authorized Consumption	5	Profile: Annual Recurring, Dead End Flushing, Filtering Program, Full Flow Tests. Fire department usage is not included. Comments: Volume was calculated from flow rate and duration estimates of flushing volumes. Manhattan Beach uses a NO-DES truck for flushing operations.	Comments: Default grade applied.
Unauthorized Consumption	5	Comments: Default input applied.	Comments: Default grade applied.
Customer Metering Inaccuracies	3	Derivation: Rudimentary estimate. Comments: Used same inaccuracy from FY 2017-18 audit. *See BMAC comments regarding meter testing & replacement activities	Customer Meter Testing: Limited (upon request AND consumption flag only). Customer Meter Replacement: Limited (upon failure only). Comments: DVG of 3 because of "very limited" testing program based on customer complaints or system flags, replacement of limited number of meters, and rudimentary estimate of input.
Systematic Data Handling Errors	5	Comments: Default input applied.	Comments: Default grade applied.
Length of Mains	8	Derivation: Totaled from GIS based map. Hydrant Laterals Included: Yes. Comments: No additional comments.	Map Format: Digital. Asset Management Systems: In place but separate from GIS system, currently in process of integrating asset management with GIS Map Update Process: Accomplished through normal work order processes. Comments: DVG of 8 because of implementation of GIS and asset management system. Limited with no specific effort to randomly field validate (with documentation).
Number of Service Connections	8	Derivation: Standard report run from billing system. Basis for Query: Meter ID - non-premise based. Comments: No additional comments.	Field Validation: Accomplished through normal meter reading processes. Estimate of Error: 2%. Comments: DVG of 8 because of computerized records and estimate of error < 2%.
Average Operating Pressure	7	How Pressure is Maintained: The system has 2 pressure zones, one large and one small zone serving approximately 100 customers. Pressure is maintained by an elevated storage tank with PRVs stepping down pressure. A booster pump station supplies pressure to the small pressure zone. Pressure Range: 50-102 psi Derivation: Referenced 2010 Master Plan based on static reads and telemetry data. Comments: Dedicated pressure monitoring station.	Pressure Data Collection: Hydrant pressures taken during routine system flushing and/or hydrant testing. Real-Time Monitoring: Full-scale - telemetry or pressure logging (including seasonal variations) in place beyond the boundary points in all zones representing full pressure profile. Hydraulic Model: None currently in place. Comments: DVG of 7 because of full-scale telemetry/SCADA pressure data. Limited with calculation of average operating pressure not based on telemetry data.

Annual Operating Cost	9	Derivation: From official financial reports. Comments: Confirmed costs limited to water only, and water debt service included. Large reservoir project not included in total ($23 million), but all other CIP projects included (~$1.5 million)	Auditing Practices: Annually by a third-party CPA. Comments: DVG of 9 because all costs included and annual financial audit. Limited by not including the single reservoir project, but Manhatten Beach agreed this will provided for a more consistent audit.
Customer Retail Unit Cost	9	Rate Structure: Tiered structure with different rates for meter sizes Derivation: Total consumptive revenue divided by Billed Metered Authorized Consumption. Sewer charges are based on water meter readings. Sewer revenues are not incorporated into calculation. Comments: Calculation includes fixed fees. Recommended to exclude these fees for next year's audit.	M36 Review: Input calculations have not been reviewed by an M36 water loss expert. Comments: DVG of 9 because input calculated as weighted average of all rate classes.
Variable Production Cost	5	Primary Costs: Import supply only. Secondary Costs: None currently included. Comments: No additional comments.	M36 Review: Primary costs only. Input calculations have not been reviewed by an M36 water loss expert. Comments: DVG of 5 because all primary costs included.

Infrastructure & Water Loss Management Practices:

Infrastructure age profile: Varies from 2 years-old to 80 years-old with majority of pipe being installed in 1950s.

Infrastructure replacement policy (current, historic): Currently, none but, 2 years-ago and in future years, Manhattan Beach plans to spend $1.5 million per year on infrastructure.

Estimated main failures/year: 6 Estimated service failures/year: 1

Extent of proactive leakage management: None

Other water loss management comments: No additional comments.