Lahaina WWRF Process Study
Phase 1 Report: Review of Existing Information and Alternatives Screening

PREPARED FOR: County of Maui, Department of Public Works & Environmental Management, Wastewater Reclamation Division

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Executive Summary

This study is composed of two study phases. Phase 1 involves review of existing facilities and information, setup and calibration of a steady-state process model, and preliminary screening of various process alternatives. Phase 2, to be completed later, further analyzes the selected alternatives. The primary driver of this study relates to capacity issues. The current regulatory rated capacity of the plant is 9 mgd, and is allocated between the 1975 and the 1985 plants. The current 1985 plant capacity rating is based on operation as a plug flow process with an anoxic selector. A steady-state process model (Pro2D) was created to model the existing processes at the Lahaina Wastewater Reclamation Facility (WWRF) to help determine and evaluate optimization measures. A plant data-sampling plan was created to help in the calibration of the model.

True capacity of the Lahaina WWRF was identified as a major objective of this process study. To determine the overall capacity individual unit process capacity was determined. This was accomplished through the use of design criteria and from the model, which was used to establish the capacity of the secondary system (aeration basins, blowers, and secondary clarifiers). Exhibit ES-1 summarizes the individual unit process capacity based on equivalent average dry-weather flow. Installed (all units operating) and firm (one unit out of service) capacities were determined.

Exhibit ES-1.
Lahaina WWRF Current (2003) Capacity Estimate Summary by Unit Process

Plant	Component	Equivalent ADWF - Installed (mgd)	Equivalent ADWF – Firm (mgd)
1975	Transfer PS	3.0	1.5
	Aeration Basin	4.0	4.0
	Aerators	1.1	1.1
	Secondary Clarifiers - ADW SOR	4.8	2.4
	Secondary Clarifiers - PWW SOR	5.6	2.8
	Secondary Clarifiers - ADW SLR	4.0	2.0
1985	Screening	12.2	8.9
	Grit Basins	6.6	3.3
	Aeration Basin	6.0	6.0
	Aeration Blowers	14.4	10.1
	Secondary Clarifiers - ADW SOR	8.4	5.3
	Secondary Clarifiers - PWW SOR	8.0	4.9
	Secondary Clarifiers - ADW SLR	6.0	4.0
	Disinfection – ADW	5.0	1.4
	Disinfection – PWW	4.7	1.4
	Effluent Filters – ADW	8.7	7.6
	Effluent Filters – PWW	8.8	7.1
1985 Pipe	PI Pipe to Headworks	11.2	11.2
Common	Influent Structure	32.6	16.3

Legend:
ADW = Average dry-weather flow
PWW = Peak wet-weather flow
SOR = Surface-overflow rate
SLR = Solids-loading rate
Notes:
For details regarding the design criteria used to develop process capacities see table, *Lahaina WWRF Process Study; Existing Capacity*, in Appendix B.

Alternatives to maximize the capacity of the Lahaina WWRF were developed in close consultation with the County of Maui. In developing and analyzing these alternatives several assumptions were made. Major assumptions were as follows:

- An underground-injection-control (UIC) permit may be obtained in the future up to 12 mgd; undeground injection (UI) is considered the primary means of effluent disposal.

- Advanced secondary treatment to meet an effluent total nitrogen (TN) limit, which is required for UI, will be provided to the entire plant flow based on the fact that UI is considered the primary means of effluent disposal.
- The mass load limit for TN will not increase in the future.

Eight alternatives for future plant improvements were originally identified. Through a screening process based on weighted scores and a variety of evaluation criteria, six alternatives were selected for further evaluation. Alternatives selected for further evaluation include:

- Alternative 1 – Status quo (represents no major process changes)
- Alternative 2 – Operational improvements only
- Alternative 3 – Restore 1975 plant to original design
- Alternative 4 – Retrofit MBRs in portion of 1975 plant and provide nitrogen (N)-removal flexibility
- Alternative 5 – Use 1975 plant with modifications to provide parallel n-removal
- Alternative 7 – Demolish 1975 plant and provide capital improvements to 1985 plant

IFAS was viewed as a viable treatment process option to achieve the desired capacity. However, because more economical modifications to the secondary system can provide the desired future capacity, IFAS was not carried forward in the analysis.

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1 Background

The Lahaina Wastewater Reclamation Facility (WWRF) is one of three wastewater treatment and reclamation facilities owned and operated on the island of Maui by the County of Maui, Department of Public Works and Waste Management, Wastewater Reclamation Division. A process evaluation of this facility was conducted to develop a long-term process and capacity improvement "roadmap" and to achieve other objectives, as described below. The evaluation was conducted in two major phases. Phase 1 involved reviewing existing facilities and information, setting up and calibrating a steady-state process model, and preliminarily screening various process alternatives. Phase 2 involved detailed development and evaluation of screened alternatives, including process and equipment sizing, hydraulic profiling, capital and operational cost estimation, and an analysis of non-cost factors. A preferred alternative was identified based on the Phase 2 evaluation.

This technical memorandum (TM) describes Phase 1 of the process study. Phase 2 is described in a separate TM.

1.1 Process Study Drivers and Objectives

The major drivers and objectives of the process study were identified through multiple interactive discussions with County staff.

- The primary driver relates to capacity issues. The current regulatory-rated capacity of the plant is 9 million gallons per day (mgd) and is allocated between the 1975 and the 1985 plants. Thus, the rated capacity relies on a portion of that capacity being provided by the old 1975 facilities. However, the 1975 facilities have not been in service for several years and may require significant repairs, upgrades, or improvements before they can be placed back in service. This portion of the capacity may therefore not be readily available if and when needed. This capacity must be preserved or reclaimed in order to avoid derating the plant. However, restoring the 1975 facilities to their original design may no longer be the optimal solution. The combined effect of factors such as the age and condition of the 1975 facilities and recent technology advances may mean that other options can more cost-effectively restore or possibly expand the original 1975 plant capacity.

  Likewise, various limitations such as equipment capacities and hydraulics have prevented the 1985 plant from fully realizing its rated capacity. The current 1985 plant capacity rating is based on operation as a plug-flow process with an anoxic selector. However, the plant design allows a high degree of operational flexibility. Several options are therefore available to enhance the 1985 plant capacity as well. The County's desire to explore and evaluate such options, with the intent to identify the optimal capacity expansion solution, is one of the major drivers for this study.

- A second driver for this study is population and service area growth. No formal planning document currently exists for the County's wastewater treatment facilities. However, the growth trends and projections for the plant's service area are documented by the Hawaii Housing Finance and Development Corporation (HFDC). These projections form the basis of the plant's current 9-mgd capacity rating. However, the County now faces critical decisions regarding accommodating rapid growth in the form of new developments, which may or may not have been included in the HFDC projections. One such decision is whether the plant capacity currently reserved for infill-related growth can be made available to accommodate new development. The decision will likely impact the buildout capacity required and whether such capacity can be provided at the existing Lahaina WWRF site without the need for additional satellite or onsite treatment facilities. The county currently anticipates that a buildout capacity of about 12 mgd will be required to accommodate new development over the next 25 years.

The following major objectives were identified based on the drivers described above:

- Determine the true capacity of the plant with the existing facilities and under current operating conditions, taking into account factors and components that can limit capacity such as effluent quality requirements, hydraulic elements, process and equipment sizing, reuse demand, groundwater disposal limitations, and biosolids processing. To accomplish this, capacities of individual plant components must be determined separately.
- Evaluate alternatives to provide required ultimate buildout plant capacity through operational modifications as well as physical modifications and/or capital improvements, including options for reclaiming or replacing the currently idle capacity of the 1975 plant. Perform separate evaluations based on two different target buildout capacities: 9 mgd and 12 mgd.

1.2 Existing Facilities and Operation

The Lahaina WWRF consists of two major treatment process trains, generally referred to as the "1985 Plant" and the "1975 Plant" based on the approximate dates of construction. The 1975 Plant comprises the "original" activated sludge and related facilities, most of which are currently not in service. Major facilities added in the 1985 plant upgrade include a new oxidation ditch and two new secondary clarifiers. Further expansion and modifications were implemented in the early to mid 1990s, including additional aeration volume, a third secondary clarifier, effluent filters, and ultraviolet (UV) disinfection.

Brief descriptions of existing facilities relevant to this process study are provided in the following sections.

1.2.1 Influent Structure and Headworks

The influent structure and headworks are suspected hydraulic "bottlenecks" that will likely limit the plant's peak-flow capacity unless they are expanded or modified. A single bar screen is currently installed and must be frequently bypassed for repair or maintenance,

resulting in the need for use of the manual rack and manual raking of screenings. The existing grit-removal units provide adequate performance but may also be future hydraulic bottlenecks.

No samples are currently collected for pretreated effluent (PTE). The transfer pump station discharging to the 1975 aeration-basin influent channel is currently inactive. The capacity of this pump station may become a hydraulic bottleneck that could hamper retrofitting the 1975 plant for increased capacity.

1.2.2 Secondary Treatment – 1985 Plant (and Later)

Under current operation, the activated-sludge secondary process is operated in a "plug-flow dual anoxic mode" without any internal mixed-liquor recycle (MLR). Aeration is provided by a diffused-air system consisting of blowers and diffusers. Capability to implement MLR is planned for the future but does not currently exist.

The flexible aeration basin (FAB) receives PTE and return-activated sludge (RAS) from the secondary clarifiers. The FAB's two zones (F-1 and F-2) are served by separate air headers with separate flow control and measurement. Both zones are currently operated under "anoxic" conditions, with aeration provided only for mixing purposes. No separate mixing equipment is currently installed. The FAB constitutes the first anoxic zone of the dual anoxic system.

The conventional aeration basin (CAB) receives mixed liquor from the FAB and is divided into a total of 6 zones, each served by a separate air header with separate flow control and measurement. Zones C-1, C-2A, C-2B, and C-3 are aerobic. Zone C-4 constitutes the second anoxic zone of the dual anoxic system, with mixing provided by a low air-flow rate and with no separate mixing equipment. Zone C-5 is the second aerobic, or the reaeration, zone. Pumps for pumping waste mixed liquor (WML) directly out of the CAB are installed but are not normally in operation.

The FAB and CAB provide a high degree of flexibility to operate in several different process modes to accomplish various process objectives. These modes are described in detail in the August 1995 Operations and Maintenance (O&M) Manual. Internal profiling of the FAB and CAB zones is limited to once a day dissolved oxygen (DO) monitoring in 10 locations within the 8 zones (2 FAB and 6 CAB). No other zone parameters are currently monitored. However, selected additional parameters were measured during a targeted special sampling campaign. The campaign as well as the detailed sampling plan are described in Section 2 of this TM.

1.2.3 Chlorination and Filtration – 1985 Plant

An effluent flow meter is present at the influent end of the 1985 chlorine contact chambers. The signal from this meter is used for proportional control of RAS flow, but the chlorine dose to secondary effluent is currently not flow-paced.

From the filter influent box, a base flow of approximately 2 mgd is withdrawn via a pipe at the bottom of the box and routed to Filters 1, 2, and 3, which are dedicated to producing R1 effluent for reuse. The filtered effluent from these filters is routed to UV disinfection and

then to a clearwell, from which it is pumped to offsite reuse storage. Flow in excess of the reuse flow is routed to the remaining filters and then to disposal via injection wells.

1.2.4 Biosolids – 1975/1985 Plant

WAS from the secondary process is routed to three (3) centrifuges that run 8 to 12 hours each day. Dewatered sludge from the plant is sent to offsite composting.

The DAF thickener is currently not in service because of operational issues. The DAF unit has historically provided good performance, and plant staff would like to reactivate the thickening process to reduce the hydraulic loading on the centrifuges and/or to reduce the hours of staffed operation. The storage provided by the TWAS tank also allows continuous wasting from the secondary system.

1.2.5 1975 Plant

The components of the 1975 plant currently in use are the chlorine building, the filter backwash surge basin and associated pump station, the reuse effluent pumps and associated clearwell, the electrical system and generator, the process water pumps, and the injection wells. The condition of the components currently out of service varies: the conditions of concrete strutures range from good to medium, and the conditions of equipment range from medium to unusable.

2 Sampling and Data Analysis

To help accomplish the objectives identified for this process study, a steady-state process model was used to simulate the performance of the Lahaina WWRF. The model was calibrated to customize model parameters to conditions specific to the Lahaina WWRF. The process of calibration involves adjusting one or more of the model parameters such that the model inputs and outputs both match the actual measured performance data. A targeted sampling and analysis campaign was planned and implemented to provide the data for calibration. The sampling and analysis campaign as well as the data resulting from it are described in this section.

2.1 Sampling Plan and Data Acquisition

A sampling plan was prepared to serve as a guide for plant staff during the model calibration sampling campaign. The plan identified specific flow streams to be sampled, the frequency of sampling, the type of sampling (such as grab, composite, or continuous), and the specific parameters to be measured/analyzed in each flow stream.

The sampling plan was reviewed in detail by County and plant staff and revised based on several sets of review comments. To clarify sampling locations and resolve other sampling and data collection issues, a "sampling walkthrough" of the Lahaina WWRF was conducted on December 5, 2002. The sampling walkthrough consisted of sequentially (headworks to effluent) walking through the plant with a process-flow diagram (PFD) and confirming sampling locations and of clarifying other operational, sampling, monitoring, and process-control issues. The final sampling plan is summarized in a tabular format in Exhibit 1. Clarifying notes and details relating to specific aspects of the plan are described in the following section.

2.1.1 Sampling Plan Details

All plant recycles including the filter backwash (FRW), the sludge-dewatering centrate (CNT), and the plant/floor drains are returned to the influent structure and discharge to the same box as the two raw-influent wastewater forcemains. Because of this configuration, there is no opportunity at the plant to obtain an influent wastewater sample without recycles. The current plant influent (PI) sample is collected immediately upstream of the bar screen and includes all plant recycles. The sampling plan therefore included reduced-frequency (once per week) sampling of the influent wastewater separately at the two pump stations discharging to the two forcemains—Napili and Lahaina. The two main recycles, FRW and CNT, were also sampled at the plant on a matching schedule to provide concurrent information.

The ML sample is currently taken from the secondary clarifier-influent splitter box. In addition to this sample, the sampling plan included internal profiling of the FAB and CAB zones by analyzing specific parameters at specific locations as indicated in the tabular plan summary.

Three separate RAS samples are currently taken for each of the secondary clarifiers 3, 4, and 5. Clarifiers 3 and 4 have sloped bottoms with rapid sludge return (RSR) mechanisms that deliver sludge to a center well within the clarifier, while clarifier 5 has a flat bottom with a sludge collection header directly connected to the RAS pumps. Each clarifier has independent RAS pumping and separate magnetic flow meters and sampling ports on the individual discharge lines. Because there is no access to the combined RAS header that takes the sludge to the FAB, the individual RAS sampling was continued through the test-sampling period.

A single WAS pump draws from the sludge hoppers in clarifiers 3 and 4. WAS-flow measurement and sampling was done in the discharge line from this pump. No WAS was drawn from clarifier 5.

The secondary effluent (SE) sample is currently collected as a grab sample from the effluent-filter influent box. Although this location is downstream of chlorination and the chlorine-contact chambers, sampling at this location was continued because there is no easy access to the combined secondary effluent from all three clarifiers before chlorination. The only parameters currently measured for the SE sample are pH, turbidity, TSS, and VSS. The sampling plan recommended an expanded set of analyses for this sample as shown in the table.

The final effluent/filtered water (FE/FW) going to the injection wells is currently sampled for TP, TKN, ammonia-N, nitrate-nitrite-N, turbidity, TSS and BOD. The sampling plan recommended some additional parameters. The portion of the FW intended for R1 reuse is sent to UV disinfection, and a separate FE sample is taken downstream of UV disinfection, solely to measure coliform concentrations to monitor disinfection performance. No coliform sampling was included in the sampling plan because it was not required for model calibration.

Exhibit 1. Lahaina WWRF Process Study: Sampling Plan for Process Model Calibration

SAMPLE LOCATION	Flow	Total CBOD5	Soluble CBOD5	Total COD	Soluble COD	TSS	VSS	TKN	Soluble TKN	NH_3-N	Nitrate-Nitrite-N	DO	pH	Temp	Alkalinity
Lahaina P.S. #1 (LHI)	1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W
Napili P.S. #1 (NPI)	1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W
Centrate (CNT)	1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W				
Filter Backwash (FRW)	1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W	Grab 1W				
Combined plant influent with recycles (PI)	7W	Comp 3W	Comp 3W	Comp 3W	Comp 3W	Comp 7W	Comp 7W	Comp 3W	Comp 3W	Comp 3W	Comp 3W	Grab 7W	Grab 7W	Grab 7W	Comp 3W
FAB (effluent end of zone F-2)										Grab 3W	Grab 3W				
CAB1 (effluent end of zone C-3)										Grab 3W	Grab 3W				
CAB2 (effluent end of zone C-4)										Grab 3W	Grab 3W				
Aeration Basin ML (clarifier splitter box) (ML)						Grab 7W	Grab 7W	Grab 3W	Grab 3W	Grab 3W	Grab 3W	Grab 7W	Grab 7W	Grab 7W	
RAS Clarifier #3 (RAS3)	7W					Grab 7W	Grab 7W				Grab 3W				
RAS Clarifier #4 (RAS4)	7W					Grab 7W	Grab 7W				Grab 3W				
RAS Clarifier #5 (RAS5)	7W					Grab 7W	Grab 7W				Grab 3W				
WAS (WAS)	7W					Grab 7W	Grab 7W								
Secondary Effluent (Filter Influent) (SE/FI)		Comp 3W	Comp 3W	Comp 3W	Comp 3W	Comp 7W	Comp 7W	Comp 3W	Comp 3W	Comp 3W	Comp 3W		Grab 7W		Grab 7W
Final Effluent (FE/FW)		Comp 3W	Comp 3W	Comp 3W	Comp 3W	Comp 7W	Comp 7W	Comp 3W	Comp 3W	Comp 3W	Comp 3W		Grab 7W		Grab 7W
Dewatered Sludge Cake (DWS)	7W					Grab 7W	Grab 7W								

Notes:
1. In addition to the above, the air-flow rates (scfm), the grab DO values, and pH for each of the 2/4 zones in the FAB and the 6 zones in the CAB are recorded daily (7W).

Legend:
Comp: 24-hour flow-proportional composite
nW: n times per week

2.2 Data Compilation and Analysis

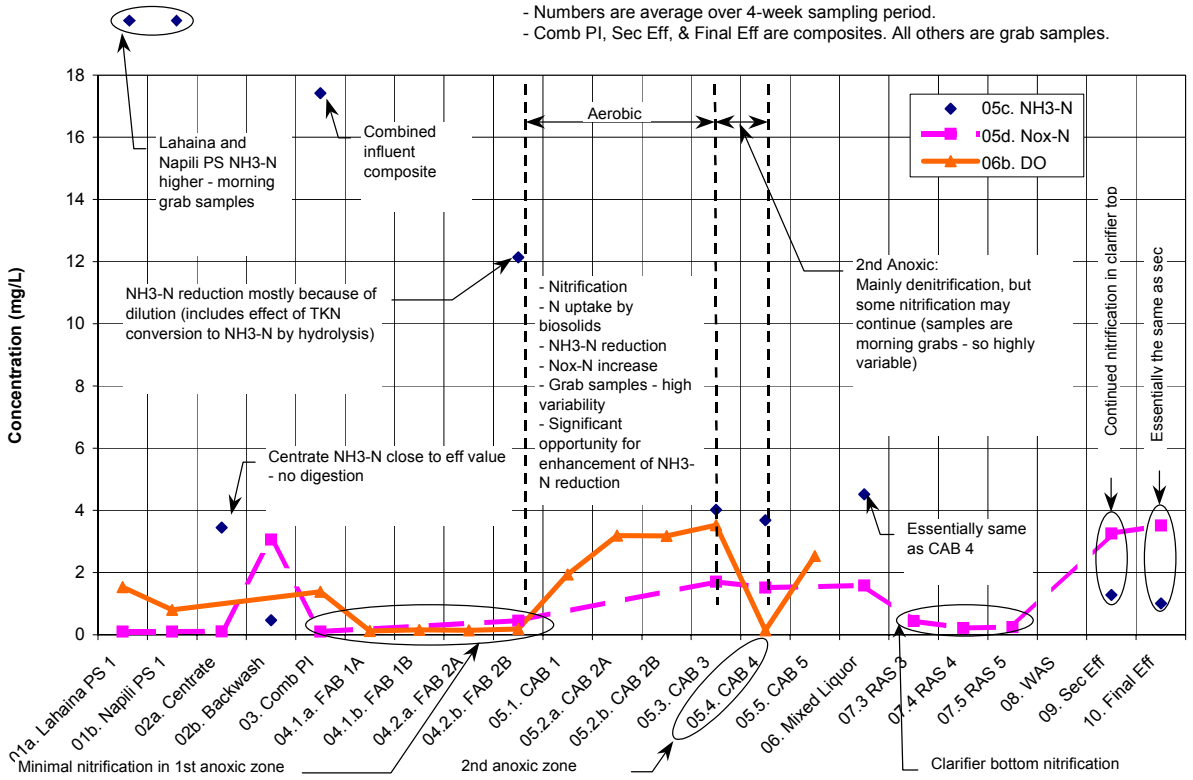
The Lahaina WWRF staff implemented the sampling plan described above for a four-week period starting February 2, 2003, and ending March 1, 2003. The raw data was entered into a Microsoft Excel spreadsheet in a database format that lends itself to easy manipulation and analysis. The data was reviewed for consistency. Suspected typographical or transcription errors were discussed with plant and County staff. Many of the inconsistencies were resolved and corrected, and the rest were flagged for reference.

The primary objective of the sampling campaign was to provide current plant operating data to be used in calibration of the process model. To provide a single value for each variable to be used in model calibration, the individual values measured over the four-week period were averaged. The dataset was found to be highly consistent. The "average absolute deviation from the average" for most variables was under 10 percent of the average value. This indicates stable process operation and consistently reliable sampling and analysis techniques. The few exceptions were instantaneous measurements of variables such as in-basin DOs and nitrogen components, which tend to fluctuate significantly within short periods of time. A high variability in the instantaneous measurements of these variables is expected and is not indicative of instability. The average values were therefore considered to be adequately representative of the four-week period and were used in model calibration.

The entire original raw dataset, together with data manipulations, analyses, and charting performed in connection with this study, is included in Appendix A.

A profile of DO, ammonia-N, and nitrite+nitrate-N through the entire plant was prepared based on the above data, and is of special significance because it offers several insights into operational details and identifies opportunities for improvement. This profile, along with several notes and observations, is presented in Exhibit 2. Because the data is based on grab samples and can fluctuate significantly over time, the profile does not necessarily represent average conditions and should only be used as an indication of general overall trends and in-basin interactions.

Exhibit 2. Lahaina WWRF DO and N Profiles Through the Plant



3 Model Setup and Calibration

The setup and calibration of CH2M HILL's spreadsheet-based process model Pro2D is described in this section. Results of the calibration analysis, the model fit, and a discussion of some of the model variances is also presented.

3.1 Pro2D Model Overview and Setup

Pro2D is a steady-state spreadsheet-based "whole-plant" wastewater process model developed by CH2M HILL. In addition to providing a complete mass balance around the entire plant, including the effect of recycles, the model provides in-depth kinetic and stoichiometric simulation and analysis of many variations of the biological activated sludge process, including advance nutrient removal and step feed configurations. The biological model is based on the Activated Sludge Model 2d (ASM2d) developed by an international activated-sludge task group under the auspices of the International Water Association (IWA).

The model's graphical process-flow diagram (PFD) interface was used to configure the model to simulate the flow configuration of the Lahaina WWRF. Basic plant component information such as unit process sizing (volumes, areas) was then entered into the model. This provided a model that was customized to simulate the specific flow configuration and unit process sizing of the Lahaina WWRF, and was ready to be calibrated.

3.2 Calibration Dataset

The dataset used for model calibration is described in detail in Section 2.2 Data Compilation and Analysis.

3.3 Calibration Process and Results

The influent flow and loadings as well as operational parameters and conditions (such as SRT and RAS flow rate) from the calibration dataset were entered into the model. The model was first run with all parameters at their default values. The resulting model output was compared with actual measured performance data from the calibration set. Specific model parameters were then sequentially adjusted and the model was rerun in each case, until the model output matched the actual data as closely as possible.

The results of the calibration exercise are tabulated in Exhibit 3. For each relevant process variable, the table shows the actual measured data, the final model result, and the percent variance; as well as the model parameter that was changed, if any, to achieve the closest possible model fit. For parameters that were changed, the default parameter value, as well as the final calibrated value, is also shown. Brief comments are provided for larger-than-expected variances.

Exhibit 3. Lahaina WWRF Process Study - Model Calibration Results

Parameter	Actual Data (Feb2 - Mar1 2003 Avg)	Model Result	Variance (%)	Comments	Parameter Changed	Model Default Value	Calibrated Model Value
Influent							
Influent Flow (mgd)	8.19	8.19	0%				
Influent BOD (lb/d)	10,472	10,472	0%				
Influent TSS (lb/d)	13,377	13,377	0%				
Influent VSS (lb/d)	11,642	11,643	0%				
Influent TKN (lb/d)	2,174	2,174	0%				
Influent NH3-N (lb/d)	1,312	1,312	0%				
Influent Alkalinity (mg/L)	167	167	0%				
TCOD/TCBOD5	2.62	2.62	0%		Sol NBCOD/ TCOD in K&S	0.05	0.15
SCBOD5/TCBOD5	0.36	0.37	2%		NBVSS/ TSS in K&S	0.40	0.30
Part CBOD5 (lb/d)	3,415	3,365	-1%		NBVSS/ TSS in K&S	0.400	0.300
Sol CBOD5 (lb/d)	1,942	1,980	2%		NBVSS/ TSS in K&S	0.400	0.300
Part COD (lb/d)	8,476	8,439	0%				
Sol COD (lb/d)	5,573	5,579	0%		Sol NBCOD/ TCOD in K&S	0.05	0.15
COD/VSS	1.42	1.42	0%				
N/VSS	0.055	0.055	0%		N/VSS in K&S	0.030	0.055
Part Org N (lb/d)	328	327	0%		N/VSS in K&S	0.030	0.055
Sol Org N (lb/d)	113	113	1%		N/VSS in K&S	0.030	0.055
1985 Plant							
Flow (mgd)	4.2	4.2	0%				
Average Aerobic DO (mg/L)	2.9	2.9	0%				
Bio Process Temp (C)	26.9	26.9	0%				
SRT (days)	11.3	11.3	0%				
RAS Flow (% of Inf)	102%	102%	0%				
RAS TSS (mg/L)	4,893	5,511	***13%***	Diurnal variations and/or inaccurate RAS flow measurement			
MLR Flow (% of Inf)	0%						
MLSS (mg/L)	2,811	2,858	2%				
MLVSS (mg/L)	2,328	2,455	5%				
Aeration Power (HP)							
WAS Flow (gpd)	84,286	84,078	0%				
WAS TSS (mg/L)	9,000	9,000	0%				
WAS TSS (lb/d)	6,330	6,309	0%		Y_H in K&S	0.63	0.63
Dewatered Sludge TSS (lb/d	6,639	5,673	***-15%***	Actual data inconsistent with WAS numbers			

The table shows excellent model fit (match between actual data and model result) for a majority of the most significant variables. Most of the variances shown in the table are 2 percent or less, and all but two are 5 percent or less. The two significant parameters with variances exceeding 10 percent are RAS TSS concentration (model overestimates by 13 percent) and daily dewatered sludge mass (model underestimates by 15 percent).

It is speculated that the discrepancy in the RAS TSS concentration may be because of inaccurate RAS flow measurement and/or significant diurnal variations. The measured RAS flow of 102 percent of influent flow is unusually high. Typical RAS flows range between 25 to 75 percent of influent flow. Plant staff indicated that the RAS flow rate was maintained at a high value-to-control-clarifier sludge-blanket depth. The sludge-blanket depth can vary over a 24-hour diurnal cycle, in response to the variation in plant flow. It is possible that the time selected for sampling RAS TSS coincided with a low sludge-blanket depth and dilute RAS. This could explain the lower measured RAS TSS concentrations compared to model

predictions. As a second possibility, it is not uncommon for RAS flow meters to drift out of calibration faster than the recalibration frequency can compensate. If this is the case, and assuming that the RAS TSS concentration measurement is accurate, the actual RAS rate would be even higher than the 102 percent of influent flow reported. For purposes of this study, accepting the RAS flow as accurate and noting that the measured RAS TSS concentration may not be representative appears to be a reasonable reconciliation. This is also consistent with other variables such as SRT and MLSS, which show excellent agreement between measured data and model results.

A similar reconciliation was made for the daily dewatered-sludge mass. According to the measured data, dewatered-sludge mass exceeds WAS production, which is inconsistent with mass balance. No adjustments to model parameters were therefore made based on this information.

Based on this analysis, the calibrated model represented in Exhibit 3 may be considered to be reasonably representative of actual conditions and performance specific to the Lahaina WWRF. This model was therefore used for further evaluations in this process study.

4 Current Plant Capacity

Determination of the true current capacity of the Lahaina WWRF was identified as a major objective of this process study. This section presents a review of significant regulatory and other criteria and factors that affect capacity, and an estimate of the current capacity for each major unit process at the plant, developed in part using the calibrated model described in previous sections.

4.1 Significant Sizing/Capacity Criteria

The Lahaina WWRF is currently regulated by the U.S. Environmental Protection Agency (EPA) as well as the State of Hawaii through two separate underground-injection-control (UIC) permits. The current permits have an effluent total nitrogen (TN) limit of 10 mg/L. The injection wells were originally permitted for 6.3 mgd and were subsequently rerated to match the current plant capacity rating of 9 mgd.

A variable portion of the plant effluent is currently treated to R-1 standards and pumped offsite for irrigation reuse. This portion of the effluent is regulated by the Hawaii State Department of Health (HDOH) in accordance with the published *Guidelines for the Treatment and Use of Recycled Water, May 15, 2002.* An average of approximately 2 mgd of effluent is currently treated to R-1 level using UV disinfection and reused. Most of the current reuse occurs on golf courses and highway landscaping. Studies are currently underway to expand reuse to plantations and other agricultural uses. However, the reuse ordinance requires such users to pay only the avoided cost of potable water, which is inadequate to cover the additional cost of producing R-1 water. Expanding R-1 use to such users therefore has a significant cost impact to the County. Further, many of the plantations are in the process of being replaced by new developments. Therefore, it is not anticipated that there will be a significant increase in the demand for R-1 water in the future.

Currently, there are no chlorine-contact-time requirements for either underground injection or reuse. Underground injection requires a residual of 0.1 mg/L. There are no residual requirements for reuse.

Potential future regulatory changes may include:

- UV disinfection may not be an acceptable process for producing R-1 water.
- May need changes to sludge processing to continue composting. County is evaluating a proposal for plasma incineration as an alternative to composting.
- Disinfection requirements (such as chlorine residual) for UIC may be deleted.

4.2 Capacity Estimates

Based on some of the considerations discussed above, as well as on established sizing and design criteria, the current capacity of the existing facilities at the Lahaina WWRF was estimated by individual unit process. The details of the design criteria used, the capacity estimation procedure, and the resulting capacity estimates are briefly described below.

- As seen in Exhibit 4, all capacities have been shown in equivalent average dry-weather (ADW) flows. This is because permitting is typically based on this flow condition.
- *Installed* capacity refers to the resultant capacity when all units (duty and standby) of a process are in service. It represents the maximum capacity, based on the design criteria of that process.
- *Firm* capacity represents the capacity of the process when the standby unit is out of service. Firm capacity implies capacity available with reliability and redundancy requirements satisfied.
- Equivalent (Eq) average dry-weather flow (ADWF), Installed = Equivalent average dry-weather flow. Determined by multiplying the installed capacity of the process by the ratio of the average dry-weather and peak wet-weather flows to the 1985 plant, as estimated in the 1995 plant expansion (taken from the 1995 Brown and Caldwell design criteria sheet G10).
- Equivalent (Eq) ADWF, Firm = Equivalent average dry-weather flow. Determined by multiplying the firm capacity of the process by the ratio of the average dry-weather and peak wet-weather flows to the 1985 plant, as estimated in the 1995 plant expansion (taken from the 1995 Brown and Caldwell design criteria sheet G10).

Capacity of secondary clarifiers is controlled either hydraulically (surface overflow rates) or by solids loading (solids loading rate). Secondary clarifier capacity for both surface-overflow rate (SOR) and solids-loading rate (SLR) design criteria are shown in Exhibit 4. Capacities were equated to ADWF because this represents typical permit flow conditions. A summary of the individual-unit process-capacity estimates is shown in Exhibit 4. The table provides an indication of available redundancy by listing estimates for the installed as well as the firm capacities. In order to estimate the overall true capacity, approximate estimates of the hydraulic capacity of suspected “bottlenecks” were also calculated. Firm capacities are based on the standby unit (typically the largest unit) of each unit process out of service.

Exhibit 4. Lahaina WWRF Current (2003) Capacity Estimate Summary by Unit Process

Plant	Component	Equivalent ADWF - Installed (mgd)	Equivalent ADWF – Firm (mgd)
1975	1. Transfer PS	3.0	1.5
	4. Aeration Basin	4.0	4.0
	4A. Aerators	1.1	1.1
	5A. Secondary Clarifiers - ADW SOR	4.8	2.4
	5B. Secondary Clarifiers - PWW SOR	5.6	2.8
	5C. Secondary Clarifiers - ADW SLR	4.0	2.0
1985	2. Screening	12.2	8.9
	3. Grit Basins	6.6	3.3
	4. Aeration Basin	6.0	6.0
	4A. Aeration Blowers	14.4	10.1
	5A. Secondary Clarifiers - ADW SOR	8.4	5.3
	5B. Secondary Clarifiers - PWW SOR	8.0	4.9
	5C. Secondary Clarifiers - ADW SLR	6.0	4.0
	6A. Disinfection - ADW	5.0	1.4
	6B. Disinfection - PWW	4.7	1.4
	7A. Effluent Filters – ADW	8.7	7.6
	7B. Effluent Filters – PWW	8.8	7.1
1985 Pipe	1. PI Pipe to Headworks	11.2	11.2
Common	1. Influent Structure	32.6	16.3

Legend:
ADW = Average dry-weather flow
PWW = Peak wet-weather flow
SOR = Surface-overflow rate
SLR = Solids-loading rate
Notes:
For details regarding the design criteria used to develop process capacities see Table, *Lahaina WWRF Process Study; Existing Capacity*, in Appendix B.

Exhibit 4 shows that the capacity of the 1975 plant is limited by the oxygen-transfer capacity of the aerators, which is calculated to be equivalent to an ADWF of approximately 1.1 mgd. Plant staff indicated that ADWFs up to about 3 mgd and hydraulic peaks up to 7 mgd have been treated through the 1975 plant in the past. This is consistent with the capacities shown in Exhibit 4, except for the aerator oxygen transfer capacity limitation. The next capacity limiting component is the transfer pump station, which has an estimated ADWF capacity of 2.99 mgd. The aerators may not have had limited capacity in the past because of lower organic loadings, lower process DO targets, and/or higher-than-typical alpha values or transfer efficiencies. Plant staff also indicated that the 1975 aeration basin inlet channel may have been a hydraulic bottleneck.

For the 1985 plant, disinfection appears to be the capacity limiting process. Between the disinfection processes, UV and chlorine, UV is limiting. However, since UV disinfection is

required only for R-1 reuse, it does not limit the overall capacity of the plant. Reuse is an optional advanced treatment process at the Lahaina WWRF, driven by reuse water demand. In the absence of reuse, the entire effluent may be routed to underground injection without UV disinfection treatment.

Exhibit 4 does not evaluate hydraulic capacity limitations in detail—these will be considered in Phase 2 during detailed hydraulic evaluation of screened alternatives. However, the most significant known hydraulic bottleneck, according to the plant staff, results from an 8-inch-deep notch cut in the side of the bar-screen channel. The notch was not part of the intended design but was introduced during construction to resolve unforeseen equipment configuration conflicts. The presence of this notch essentially reduces the top of wall and the depth of the channel by 8 inches, thus introducing a significant hydraulic restriction.
A second significant hydraulic limitation exists in the influent box that receives raw wastewater via the Napili and Lahaina forcemains. During high flows, wastewater has been known to flow over the top of the wall from the box. The lids have been sealed and bolted down to reduce the impact of this limitation.

5 Alternatives Development and Screening

In close consultation with the County, alternatives to maximize the capacity of the Lahaina WWRF were brainstormed, conceptualized, and screened in a stepwise process.
A brainstorming session was first conducted with County staff to generate a wide range of concepts and ideas with no attempt made to evaluate them at this stage. Fact sheets summarizing the concepts for the generated alternatives were then developed. The fact sheets included a general discussion of the concepts, benefits, and limitations of each alternative, along with a flow schematic or sketch illustrating key features of the alternative. The fact sheets were used as the basis for preliminary screening of the alternatives and to identify alternatives for more detailed evaluation.

5.1 Significant Assumptions

The following significant assumptions were made in the brainstorming, concept development, and screening of alternatives:

- An UIC permit for greater than the currently permitted design flow limit of 9 mgd may be obtained in the future if necessary, up to a potential ultimate buildout flow of 12 mgd. Reuse demand, in contrast, is unpredictable and not likely to grow significantly. UI will therefore be considered to be the primary means of effluent disposal. The existing reuse-quality effluent production capacity at the plant will be maintained but not expanded. Reuse will occur according to demand, up to the maximum available plant capacity. Assume that reuse will generate no additional revenue for the County.
- Advanced secondary treatment to meet an effluent TN limit is required for UI but is not required for irrigation reuse. However, since UI is the primary disposal mode, advanced treatment for nitrogen removal will be provided to the entire plant flow.
- The current effluent TN limit for UI is 10 mg/L, corresponding to the current permitted design flow of 9 mgd. The effluent TN mass load limit under these conditions is 751 lb/d. From the research and interviews conducted as part of this analysis a mass-load-limit increase is not pending and will remain the same for at least the near future. If a design flow higher than 9 mgd is permitted, the TN concentration limit will decrease so as to maintain a mass limit of 751 lb/d.
- Consider two separate scenarios with ultimate buildout design capacities of 9 and 12 mgd, respectively.
- The entire plant flow will continue to require suspended solids/turbidity removal equivalent to or better than that provided by deep-bed granular media filtration (existing sand-filtration process).

5.2 Brainstorming

An informal, semi-structured brainstorming session was conducted with broad participation of County and plant staff. The intent of this exercise was to identify issues and generate a broad range of creative ideas, options, and strategies. Minimal constraints were imposed at this stage. The ideas and options generated were documented and used as the basis for developing overall alternatives for subsequent evaluation.

Many issues and ideas were generated in this process, some of which are not relevant to this particular study. For completeness of documentation and future reference, however, all items discussed were recorded and have been included in Appendix C.

5.3 Preliminary Alternatives Development

The brainstorming exercise generated a total of eight (8) overall alternatives for preliminary consideration, including the "Status Quo" alternative. The components of each alternative in terms of unit process modifications were summarized in a spreadsheet, which is attached as an electronic deliverable in a subsequent section below. The spreadsheet is intended to serve as a tool to document and track the alternative evaluation process from start to finish, including the preliminary alternatives development, preliminary screening, detailed development of screened alternatives, and final evaluation to determine the preferred alternative. This tool will therefore continue to be used in Phase 2.

In preparation for preliminary screening, a fact sheet was developed for each alternative. The fact sheets are included in Appendix D, and provide a general description; an estimate of potential capacity, benefits, limitations, and other relevant information; and a process-flow schematic. The fact sheets were used as the basis for preliminary screening of the alternatives, described in the following section.

5.4 Alternatives Screening

Based on the fact sheets and a set of screening/evaluation criteria developed in consultation with County and plant staff, the preliminary alternatives were screened to select those to be developed and evaluated in further detail in Phase 2. The screening procedure involved development of a matrix of the alternatives and the screening criteria. Copies of this matrix were provided to County and plant staff, along with instructions related to a weighting and scoring system. Each respondent first assigned weight (1 to 5, 5 being the highest weight) to each criterion, and then assigned a score (-,0,+, corresponding to negative, neutral, and positive impact, respectively) to each alternative for each criterion. The weights and scores from individual respondents were averaged and used to calculate a total weighted score for each alternative. The total score is representative of the overall impact or desirability of a given alternative. A more positive score indicates a more desirable alternative. Documentation for the entire procedure, including alternative development, screening criteria, individual respondent weights and scores, averaged weights and scores, and calculation of overall scores is included in Appendix E.

6 Recommended Alternatives for Further Evaluation

Based on the alternatives development and screening procedure described in the previous section, a total of six (6) alternatives with the highest scores were selected for further evaluation. The following alternatives will be carried forward to the more detailed Phase 2 development and evaluation:

- Alternative 1: Status Quo (Score Rank 5)
- Alternative 2: Operational Improvements Only (Score Rank 4)
- Alternative 3: Restore 1975 Plant to Original Design (Score Rank 6)
- Alternative 4: Retrofit MBRs in Portion of 1975 Plant—Provide N-removal flexibility (Score Rank 1)
- Alternative 5: Use 1975 Plant with Modifications to Provide Parallel Nitrogen Removal (Score Rank 3)
- Alternative 7: Demolish 1975 Plant, Capital Improvements to 1985 Plant (Score Rank 2)

Appendix A: Lahaina WWRF Process Study – Calibration Data

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Wed Feb 5		01a. Lahaina PS 1	01. Flow	mgd	3.82	Inst		475
Wed Feb 12		01a. Lahaina PS 1	01. Flow	mgd	3.85	Inst		1581
Wed Feb 19		01a. Lahaina PS 1	01. Flow	mgd	4.36	Inst		2687
Wed Feb 26		01a. Lahaina PS 1	01. Flow	mgd	3.7	Inst		3793
Wed Feb 5		01a. Lahaina PS 1	02a. TCBOD5	mg/L	150	Grab		476
Wed Feb 12		01a. Lahaina PS 1	02a. TCBOD5	mg/L	170	Grab		1582
Wed Feb 19		01a. Lahaina PS 1	02a. TCBOD5	mg/L	123	Grab		2688
Wed Feb 26		01a. Lahaina PS 1	02a. TCBOD5	mg/L	115	Grab		3794
Wed Feb 5		01a. Lahaina PS 1	02b. SCBOD5	mg/L	30	Grab		477
Wed Feb 12		01a. Lahaina PS 1	02b. SCBOD5	mg/L	69	Grab		1583
Wed Feb 19		01a. Lahaina PS 1	02b. SCBOD5	mg/L	44	Grab		2689
Wed Feb 26		01a. Lahaina PS 1	02b. SCBOD5	mg/L	28	Grab		3795
Wed Feb 5		01a. Lahaina PS 1	03a. TCOD	mg/L	199	Grab		478
Wed Feb 12		01a. Lahaina PS 1	03a. TCOD	mg/L	415	Grab		1584
Wed Feb 19		01a. Lahaina PS 1	03a. TCOD	mg/L	222	Grab		2690
Wed Feb 26		01a. Lahaina PS 1	03a. TCOD	mg/L	239	Grab		3796
Wed Feb 5		01a. Lahaina PS 1	03b. SCOD	mg/L	133	Grab		479
Wed Feb 12		01a. Lahaina PS 1	03b. SCOD	mg/L	136	Grab		1585
Wed Feb 19		01a. Lahaina PS 1	03b. SCOD	mg/L	157	Grab		2691
Wed Feb 26		01a. Lahaina PS 1	03b. SCOD	mg/L	151	Grab		3797
Wed Feb 5		01a. Lahaina PS 1	04a. TSS	mg/L	80.5	Grab		480
Wed Feb 12		01a. Lahaina PS 1	04a. TSS	mg/L	182	Grab		1586
Wed Feb 19		01a. Lahaina PS 1	04a. TSS	mg/L	174	Grab		2692
Wed Feb 26		01a. Lahaina PS 1	04a. TSS	mg/L	123	Grab		3798
Wed Feb 5		01a. Lahaina PS 1	04b. VSS	mg/L	69	Grab		481
Wed Feb 12		01a. Lahaina PS 1	04b. VSS	mg/L	158	Grab		1587
Wed Feb 19		01a. Lahaina PS 1	04b. VSS	mg/L	148	Grab		2693
Wed Feb 26		01a. Lahaina PS 1	04b. VSS	mg/L	105	Grab		3799
Wed Feb 5		01a. Lahaina PS 1	05a. TKN	mg/L	39.5	Grab		482
Wed Feb 12		01a. Lahaina PS 1	05a. TKN	mg/L	45	Grab		1588
Wed Feb 19		01a. Lahaina PS 1	05a. TKN	mg/L	38.2	Grab		2694
Wed Feb 26		01a. Lahaina PS 1	05a. TKN	mg/L	32.1	Grab		3800
Wed Feb 5		01a. Lahaina PS 1	05b. Sol TKN	mg/L	32.4	Grab		483
Wed Feb 12		01a. Lahaina PS 1	05b. Sol TKN	mg/L	37.6	Grab		1589
Wed Feb 19		01a. Lahaina PS 1	05b. Sol TKN	mg/L	33.5	Grab		2695
Wed Feb 26		01a. Lahaina PS 1	05b. Sol TKN	mg/L	26.3	Grab		3801
Wed Feb 5		01a. Lahaina PS 1	05c. NH3-N	mg/L	26.1	Grab		484
Wed Feb 12		01a. Lahaina PS 1	05c. NH3-N	mg/L	33.4	Grab		1590
Wed Feb 19		01a. Lahaina PS 1	05c. NH3-N	mg/L	31.3	Grab		2696
Wed Feb 26		01a. Lahaina PS 1	05c. NH3-N	mg/L	24	Grab		3802
Wed Feb 5		01a. Lahaina PS 1	05d. Nox-N	mg/L	0.1	Grab	Reported as <0.1	485
Wed Feb 12		01a. Lahaina PS 1	05d. Nox-N	mg/L	0.1	Grab	Reported as <0.1	1591
Wed Feb 19		01a. Lahaina PS 1	05d. Nox-N	mg/L	0.1	Grab	Reported as <0.1	2697
Wed Feb 26		01a. Lahaina PS 1	05d. Nox-N	mg/L	0.1	Grab	Reported as <0.1	3803
Wed Feb 12		01a. Lahaina PS 1	06b. DO	mg/L	1.8	Inst		1592
Wed Feb 19		01a. Lahaina PS 1	06b. DO	mg/L	2	Inst		2698
Wed Feb 26		01a. Lahaina PS 1	06b. DO	mg/L	0.8	Inst		3804
Wed Feb 12		01a. Lahaina PS 1	07a. pH	SU	7.5	Inst		1593
Wed Feb 19		01a. Lahaina PS 1	07a. pH	SU	7.7	Inst		2699
Wed Feb 5		01a. Lahaina PS 1	07b. Alk	mg/L	221	Grab		489
Wed Feb 12		01a. Lahaina PS 1	07b. Alk	mg/L	224	Grab		1595
Wed Feb 19		01a. Lahaina PS 1	07b. Alk	mg/L	222	Grab		2701
Wed Feb 26		01a. Lahaina PS 1	07b. Alk	mg/L	186	Grab		3807
Wed Feb 12		01a. Lahaina PS 1	08. Temp	C	26.6	Inst		1594
Wed Feb 19		01a. Lahaina PS 1	08. Temp	C	26.7	Inst		2700

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Wed Feb 26		01a. Lahaina PS 1	08. Temp	C	26.6	Inst		3806
Wed Feb 5		01b. Napili PS 1	01. Flow	mgd	2.47	Inst		490
Wed Feb 12		01b. Napili PS 1	01. Flow	mgd	2.54	Inst		1596
Wed Feb 19		01b. Napili PS 1	01. Flow	mgd	2.55	Inst		2702
Wed Feb 26		01b. Napili PS 1	01. Flow	mgd	2.58	Inst		3808
Wed Feb 5		01b. Napili PS 1	02a. TCBOD5	mg/L	250	Grab		491
Wed Feb 12		01b. Napili PS 1	02a. TCBOD5	mg/L	129	Grab		1597
Wed Feb 19		01b. Napili PS 1	02a. TCBOD5	mg/L	121	Grab		2703
Wed Feb 26		01b. Napili PS 1	02a. TCBOD5	mg/L	140	Grab		3809
Wed Feb 5		01b. Napili PS 1	02b. SCBOD5	mg/L	47	Grab		492
Wed Feb 12		01b. Napili PS 1	02b. SCBOD5	mg/L	84	Grab		1598
Wed Feb 19		01b. Napili PS 1	02b. SCBOD5	mg/L	73	Grab		2704
Wed Feb 26		01b. Napili PS 1	02b. SCBOD5	mg/L	101	Grab		3810
Wed Feb 5		01b. Napili PS 1	03a. TCOD	mg/L	271	Grab		493
Wed Feb 12		01b. Napili PS 1	03a. TCOD	mg/L	214	Grab		1599
Wed Feb 19		01b. Napili PS 1	03a. TCOD	mg/L	157	Grab		2705
Wed Feb 26		01b. Napili PS 1	03a. TCOD	mg/L	244	Grab		3811
Wed Feb 5		01b. Napili PS 1	03b. SCOD	mg/L	141	Grab		494
Wed Feb 12		01b. Napili PS 1	03b. SCOD	mg/L	106	Grab		1600
Wed Feb 19		01b. Napili PS 1	03b. SCOD	mg/L	165	Grab		2706
Wed Feb 26		01b. Napili PS 1	03b. SCOD	mg/L	208	Grab		3812
Wed Feb 5		01b. Napili PS 1	04a. TSS	mg/L	108	Grab		495
Wed Feb 12		01b. Napili PS 1	04a. TSS	mg/L	40	Grab		1601
Wed Feb 19		01b. Napili PS 1	04a. TSS	mg/L	30	Grab		2707
Wed Feb 26		01b. Napili PS 1	04a. TSS	mg/L	35	Grab		3813
Wed Feb 5		01b. Napili PS 1	04b. VSS	mg/L	93	Grab		496
Wed Feb 12		01b. Napili PS 1	04b. VSS	mg/L	33	Grab		1602
Wed Feb 19		01b. Napili PS 1	04b. VSS	mg/L	18	Grab		2708
Wed Feb 26		01b. Napili PS 1	04b. VSS	mg/L	28	Grab		3814
Wed Feb 5		01b. Napili PS 1	05a. TKN	mg/L	54.4	Grab		497
Wed Feb 12		01b. Napili PS 1	05a. TKN	mg/L	46.8	Grab		1603
Wed Feb 19		01b. Napili PS 1	05a. TKN	mg/L	34.9	Grab		2709
Wed Feb 26		01b. Napili PS 1	05a. TKN	mg/L	38.2	Grab		3815
Wed Feb 5		01b. Napili PS 1	05b. Sol TKN	mg/L	47.9	Grab		498
Wed Feb 12		01b. Napili PS 1	05b. Sol TKN	mg/L	40.7	Grab		1604
Wed Feb 19		01b. Napili PS 1	05b. Sol TKN	mg/L	32	Grab		2710
Wed Feb 26		01b. Napili PS 1	05b. Sol TKN	mg/L	28	Grab		3816
Wed Feb 5		01b. Napili PS 1	05c. NH3-N	mg/L	43	Grab		499
Wed Feb 12		01b. Napili PS 1	05c. NH3-N	mg/L	35.9	Grab		1605
Wed Feb 19		01b. Napili PS 1	05c. NH3-N	mg/L	29.5	Grab		2711
Wed Feb 26		01b. Napili PS 1	05c. NH3-N	mg/L	23.1	Grab		3817
Wed Feb 5		01b. Napili PS 1	05d. Nox-N	mg/L	0.1	Grab	Reported as <0.1	500
Wed Feb 12		01b. Napili PS 1	05d. Nox-N	mg/L	0.1	Grab	Reported as <0.1	1606
Wed Feb 19		01b. Napili PS 1	05d. Nox-N	mg/L	0.1	Grab	Reported as <0.1	2712
Wed Feb 26		01b. Napili PS 1	05d. Nox-N	mg/L	0.1	Grab	Reported as <0.1	3818
Wed Feb 12		01b. Napili PS 1	06b. DO	mg/L	1.3	Inst		1607
Wed Feb 19		01b. Napili PS 1	06b. DO	mg/L	0.3	Inst		2713
Wed Feb 26		01b. Napili PS 1	06b. DO	mg/L	0.8	Inst		3819
Wed Feb 12		01b. Napili PS 1	07a. pH	SU	7.2	Inst		1608
Wed Feb 19		01b. Napili PS 1	07a. pH	SU	7.1	Inst		2714
Wed Feb 5		01b. Napili PS 1	07b. Alk	mg/L	222	Grab		504
Wed Feb 12		01b. Napili PS 1	07b. Alk	mg/L	186	Grab		1610
Wed Feb 19		01b. Napili PS 1	07b. Alk	mg/L	174	Grab		2716
Wed Feb 26		01b. Napili PS 1	07b. Alk	mg/L	164	Grab		3822
Wed Feb 12		01b. Napili PS 1	08. Temp	C	25.4	Inst		1609

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Wed Feb 19		01b. Napili PS 1	08. Temp	C	25	Inst		2715
Wed Feb 26		01b. Napili PS 1	08. Temp	C	25.4	Inst		3821
Wed Feb 5		02a. Centrate	01. Flow	mgd	0.074	Avg		505
Wed Feb 12		02a. Centrate	01. Flow	mgd	0.0713	Avg	Changed from 4.37, which was 95% of combined inf flow, to 95% of WAS flow	1611
Wed Feb 19		02a. Centrate	01. Flow	mgd	0.077	Avg	Changed from 4.6, which was 95% of combined inf flow, to 95% of WAS flow	2717
Wed Feb 26		02a. Centrate	01. Flow	mgd	0.1	Avg		3823
Wed Feb 5		02a. Centrate	02a. TCBOD5	mg/L	150	Grab		506
Wed Feb 12		02a. Centrate	02a. TCBOD5	mg/L	605	Grab		1612
Wed Feb 19		02a. Centrate	02a. TCBOD5	mg/L	56.7	Grab		2718
Wed Feb 26		02a. Centrate	02a. TCBOD5	mg/L	100	Grab		3824
Wed Feb 5		02a. Centrate	02b. SCBOD5	mg/L	11.7	Grab		507
Wed Feb 12		02a. Centrate	02b. SCBOD5	mg/L	23.8	Grab		1613
Wed Feb 19		02a. Centrate	02b. SCBOD5	mg/L	12	Grab		2719
Wed Feb 26		02a. Centrate	02b. SCBOD5	mg/L	7	Grab		3825
Wed Feb 5		02a. Centrate	03a. TCOD	mg/L	484	Grab		508
Wed Feb 12		02a. Centrate	03a. TCOD	mg/L	453	Grab	Assumed original value of 4530 was a typo	1614
Wed Feb 19		02a. Centrate	03a. TCOD	mg/L	308	Grab		2720
Wed Feb 26		02a. Centrate	03a. TCOD	mg/L	538	Grab		3826
Wed Feb 5		02a. Centrate	03b. SCOD	mg/L	110	Grab		509
Wed Feb 12		02a. Centrate	03b. SCOD	mg/L	325	Grab		1615
Wed Feb 19		02a. Centrate	03b. SCOD	mg/L	46.2	Grab		2721
Wed Feb 26		02a. Centrate	03b. SCOD	mg/L	53.8	Grab		3827
Wed Feb 5		02a. Centrate	04a. TSS	mg/L	1330	Grab		510
Wed Feb 12		02a. Centrate	04a. TSS	mg/L	3970	Grab		1616
Wed Feb 19		02a. Centrate	04a. TSS	mg/L	188	Grab		2722
Wed Feb 26		02a. Centrate	04a. TSS	mg/L	394	Grab		3828
Wed Feb 5		02a. Centrate	04b. VSS	mg/L	1170	Grab		511
Wed Feb 12		02a. Centrate	04b. VSS	mg/L	3260	Grab		1617
Wed Feb 19		02a. Centrate	04b. VSS	mg/L	170	Grab		2723
Wed Feb 26		02a. Centrate	04b. VSS	mg/L	348	Grab		3829
Wed Feb 5		02a. Centrate	05a. TKN	mg/L	10.5	Grab		512
Wed Feb 12		02a. Centrate	05a. TKN	mg/L	15.5	Grab		1618
Wed Feb 19		02a. Centrate	05a. TKN	mg/L	17.3	Grab		2724
Wed Feb 26		02a. Centrate	05a. TKN	mg/L	31	Grab		3830
Wed Feb 5		02a. Centrate	05b. Sol TKN	mg/L	7.45	Grab		513
Wed Feb 12		02a. Centrate	05b. Sol TKN	mg/L	10.4	Grab		1619
Wed Feb 19		02a. Centrate	05b. Sol TKN	mg/L	2.29	Grab		2725
Wed Feb 26		02a. Centrate	05b. Sol TKN	mg/L	2.63	Grab		3831
Wed Feb 5		02a. Centrate	05c. NH3-N	mg/L	3.58	Grab		514
Wed Feb 12		02a. Centrate	05c. NH3-N	mg/L	7.93	Grab		1620
Wed Feb 19		02a. Centrate	05c. NH3-N	mg/L	0.89	Grab		2726
Wed Feb 26		02a. Centrate	05c. NH3-N	mg/L	1.4	Grab		3832
Wed Feb 5		02a. Centrate	05d. Nox-N	mg/L	0.1	Grab	Reported as <0.1	515
Wed Feb 12		02a. Centrate	05d. Nox-N	mg/L	0.12	Grab		1621
Wed Feb 19		02a. Centrate	05d. Nox-N	mg/L	0.1	Grab	Reported as <0.1	2727
Wed Feb 26		02a. Centrate	05d. Nox-N	mg/L	0.1	Grab	Reported as <0.1	3833
Wed Feb 5		02b. Backwash	01. Flow	mgd	0.852	Avg		516
Wed Feb 12		02b. Backwash	01. Flow	mgd	0.852	Avg		1622
Wed Feb 19		02b. Backwash	01. Flow	mgd	0.852	Avg		2728
Wed Feb 26		02b. Backwash	01. Flow	mgd	0.852	Avg		3834

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Wed Feb 5		02b. Backwash	02a. TCBOD5	mg/L	3.2	Grab		517
Wed Feb 12		02b. Backwash	02a. TCBOD5	mg/L	5.7	Grab		1623
Wed Feb 19		02b. Backwash	02a. TCBOD5	mg/L	15.5	Grab		2729
Wed Feb 26		02b. Backwash	02a. TCBOD5	mg/L	15.3	Grab		3835
Wed Feb 5		02b. Backwash	02b. SCBOD5	mg/L	1	Grab	Reported as <1.0	518
Wed Feb 12		02b. Backwash	02b. SCBOD5	mg/L	1.9	Grab		1624
Wed Feb 19		02b. Backwash	02b. SCBOD5	mg/L	3.2	Grab		2730
Wed Feb 26		02b. Backwash	02b. SCBOD5	mg/L	2.8	Grab		3836
Wed Feb 5		02b. Backwash	03a. TCOD	mg/L	65.4	Grab		519
Wed Feb 12		02b. Backwash	03a. TCOD	mg/L	62.9	Grab		1625
Wed Feb 19		02b. Backwash	03a. TCOD	mg/L	148	Grab		2731
Wed Feb 26		02b. Backwash	03a. TCOD	mg/L	154	Grab		3837
Wed Feb 5		02b. Backwash	03b. SCOD	mg/L	39.2	Grab		520
Wed Feb 12		02b. Backwash	03b. SCOD	mg/L	30.2	Grab		1626
Wed Feb 19		02b. Backwash	03b. SCOD	mg/L	46.2	Grab		2732
Wed Feb 26		02b. Backwash	03b. SCOD	mg/L	53.8	Grab		3838
Wed Feb 5		02b. Backwash	04a. TSS	mg/L	22	Grab		521
Wed Feb 12		02b. Backwash	04a. TSS	mg/L	92	Grab		1627
Wed Feb 19		02b. Backwash	04a. TSS	mg/L	37	Grab		2733
Wed Feb 26		02b. Backwash	04a. TSS	mg/L	154	Grab		3839
Wed Feb 5		02b. Backwash	04b. VSS	mg/L	17.5	Grab		522
Wed Feb 12		02b. Backwash	04b. VSS	mg/L	70	Grab		1628
Wed Feb 19		02b. Backwash	04b. VSS	mg/L	30	Grab		2734
Wed Feb 26		02b. Backwash	04b. VSS	mg/L	114	Grab		3840
Wed Feb 5		02b. Backwash	05a. TKN	mg/L	2.09	Grab		523
Wed Feb 12		02b. Backwash	05a. TKN	mg/L	2.98	Grab		1629
Wed Feb 19		02b. Backwash	05a. TKN	mg/L	27.9	Grab	Check this number	2735
Wed Feb 26		02b. Backwash	05a. TKN	mg/L	8.93	Grab	Check this number	3841
Wed Feb 5		02b. Backwash	05b. Sol TKN	mg/L	1.04	Grab		524
Wed Feb 12		02b. Backwash	05b. Sol TKN	mg/L	0.95	Grab		1630
Wed Feb 19		02b. Backwash	05b. Sol TKN	mg/L	1.95	Grab		2736
Wed Feb 26		02b. Backwash	05b. Sol TKN	mg/L	1.12	Grab		3842
Wed Feb 5		02b. Backwash	05c. NH3-N	mg/L	0.3	Grab		525
Wed Feb 12		02b. Backwash	05c. NH3-N	mg/L	0.28	Grab		1631
Wed Feb 19		02b. Backwash	05c. NH3-N	mg/L	1	Grab		2737
Wed Feb 26		02b. Backwash	05c. NH3-N	mg/L	0.28	Grab		3843
Wed Feb 5		02b. Backwash	05d. Nox-N	mg/L	2.84	Grab		526
Wed Feb 12		02b. Backwash	05d. Nox-N	mg/L	3.22	Grab		1632
Wed Feb 19		02b. Backwash	05d. Nox-N	mg/L	2.23	Grab		2738
Wed Feb 26		02b. Backwash	05d. Nox-N	mg/L	3.95	Grab		3844
Sun Feb 2		03. Comb Pl	01. Flow	mgd	4.6	Avg		53
Mon Feb 3		03. Comb Pl	01. Flow	mgd	4.4	Avg		211
Tue Feb 4		03. Comb Pl	01. Flow	mgd	4.7	Avg		369
Wed Feb 5		03. Comb Pl	01. Flow	mgd	4.4	Avg		527
Thu Feb 6		03. Comb Pl	01. Flow	mgd	4.5	Avg		685
Fri Feb 7		03. Comb Pl	01. Flow	mgd	4.4	Avg		843
Sat Feb 8		03. Comb Pl	01. Flow	mgd	4.4	Avg		1001
Sun Feb 9		03. Comb Pl	01. Flow	mgd	4.4	Avg		1159
Mon Feb 10		03. Comb Pl	01. Flow	mgd	4.6	Avg		1317
Tue Feb 11		03. Comb Pl	01. Flow	mgd	4.5	Avg		1475
Wed Feb 12		03. Comb Pl	01. Flow	mgd	4.6	Avg		1633
Thu Feb 13		03. Comb Pl	01. Flow	mgd	4.6	Avg		1791
Fri Feb 14		03. Comb Pl	01. Flow	mgd	4.8	Avg		1949
Sat Feb 15		03. Comb Pl	01. Flow	mgd	5.4	Avg		2107
Sun Feb 16		03. Comb Pl	01. Flow	mgd	4.9	Avg		2265

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Mon Feb 17		03. Comb Pl	01. Flow	mgd	5.1	Avg		2423
Tue Feb 18		03. Comb Pl	01. Flow	mgd	4.9	Avg		2581
Wed Feb 19		03. Comb Pl	01. Flow	mgd	4.8	Avg		2739
Thu Feb 20		03. Comb Pl	01. Flow	mgd	4.8	Avg		2897
Fri Feb 21		03. Comb Pl	01. Flow	mgd	4.8	Avg		3055
Sat Feb 22		03. Comb Pl	01. Flow	mgd	4.8	Avg		3213
Sun Feb 23		03. Comb Pl	01. Flow	mgd	4.7	Avg		3371
Mon Feb 24		03. Comb Pl	01. Flow	mgd	4.8	Avg		3529
Tue Feb 25		03. Comb Pl	01. Flow	mgd	4.5	Avg		3687
Wed Feb 26		03. Comb Pl	01. Flow	mgd	4.5	Avg		3845
Thu Feb 27		03. Comb Pl	01. Flow	mgd	4.4	Avg		4003
Fri Feb 28		03. Comb Pl	01. Flow	mgd	4.5	Avg		4161
Sat Mar 1		03. Comb Pl	01. Flow	mgd	4.5	Avg		4319
Mon Feb 3		03. Comb Pl	02a. TCBOD5	mg/L	110	Comp		212
Wed Feb 5		03. Comb Pl	02a. TCBOD5	mg/L	110	Comp		528
Fri Feb 7		03. Comb Pl	02a. TCBOD5	mg/L	113	Comp		844
Mon Feb 10		03. Comb Pl	02a. TCBOD5	mg/L	155	Comp		1318
Wed Feb 12		03. Comb Pl	02a. TCBOD5	mg/L	166	Comp		1634
Fri Feb 14		03. Comb Pl	02a. TCBOD5	mg/L	148	Comp	Changed from 52.5	1950
Mon Feb 17		03. Comb Pl	02a. TCBOD5	mg/L	138	Comp		2424
Wed Feb 19		03. Comb Pl	02a. TCBOD5	mg/L	146	Comp		2740
Fri Feb 21		03. Comb Pl	02a. TCBOD5	mg/L	124	Comp		3056
Mon Feb 24		03. Comb Pl	02a. TCBOD5	mg/L	142	Comp		3530
Wed Feb 26		03. Comb Pl	02a. TCBOD5	mg/L	161	Comp		3846
Fri Feb 28		03. Comb Pl	02a. TCBOD5	mg/L	160	Comp		4162
Mon Feb 3		03. Comb Pl	02b. SCBOD5	mg/L	53.3	Comp		213
Wed Feb 5		03. Comb Pl	02b. SCBOD5	mg/L	38	Comp		529
Fri Feb 7		03. Comb Pl	02b. SCBOD5	mg/L	46.7	Comp		845
Mon Feb 10		03. Comb Pl	02b. SCBOD5	mg/L	63.8	Comp		1319
Wed Feb 12		03. Comb Pl	02b. SCBOD5	mg/L	56	Comp		1635
Fri Feb 14		03. Comb Pl	02b. SCBOD5	mg/L	52.5	Comp	Changed from 28	1951
Mon Feb 17		03. Comb Pl	02b. SCBOD5	mg/L	38.7	Comp		2425
Wed Feb 19		03. Comb Pl	02b. SCBOD5	mg/L	47.8	Comp		2741
Fri Feb 21		03. Comb Pl	02b. SCBOD5	mg/L	49.4	Comp		3057
Mon Feb 24		03. Comb Pl	02b. SCBOD5	mg/L	66.4	Comp		3531
Wed Feb 26		03. Comb Pl	02b. SCBOD5	mg/L	46.2	Comp		3847
Fri Feb 28		03. Comb Pl	02b. SCBOD5	mg/L	45.8	Comp		4163
Mon Feb 3		03. Comb Pl	03a. TCOD	mg/L	337	Comp		214
Wed Feb 5		03. Comb Pl	03a. TCOD	mg/L	398	Comp		530
Fri Feb 7		03. Comb Pl	03a. TCOD	mg/L	327	Comp		846
Mon Feb 10		03. Comb Pl	03a. TCOD	mg/L	352	Comp		1320
Wed Feb 12		03. Comb Pl	03a. TCOD	mg/L	352	Comp		1636
Fri Feb 14		03. Comb Pl	03a. TCOD	mg/L	642	Comp	Check this number	1952
Mon Feb 17		03. Comb Pl	03a. TCOD	mg/L	453	Comp		2426
Wed Feb 19		03. Comb Pl	03a. TCOD	mg/L	462	Comp		2742
Fri Feb 21		03. Comb Pl	03a. TCOD	mg/L	385	Comp		3058
Mon Feb 24		03. Comb Pl	03a. TCOD	mg/L	282	Comp		3532
Wed Feb 26		03. Comb Pl	03a. TCOD	mg/L	321	Comp		3848
Fri Feb 28		03. Comb Pl	03a. TCOD	mg/L	277	Comp		4164
Mon Feb 3		03. Comb Pl	03b. SCOD	mg/L	133	Comp		215
Wed Feb 5		03. Comb Pl	03b. SCOD	mg/L	202	Comp		531
Fri Feb 7		03. Comb Pl	03b. SCOD	mg/L	69.2	Comp	Check this number	847
Mon Feb 10		03. Comb Pl	03b. SCOD	mg/L	136	Comp		1321
Wed Feb 12		03. Comb Pl	03b. SCOD	mg/L	128	Comp		1637
Fri Feb 14		03. Comb Pl	03b. SCOD	mg/L	174	Comp		1953

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Mon Feb 17		03. Comb Pl	03b. SCOD	mg/L	166	Comp		2427
Wed Feb 19		03. Comb Pl	03b. SCOD	mg/L	177	Comp		2743
Fri Feb 21		03. Comb Pl	03b. SCOD	mg/L	162	Comp		3059
Mon Feb 24		03. Comb Pl	03b. SCOD	mg/L	162	Comp		3533
Wed Feb 26		03. Comb Pl	03b. SCOD	mg/L	123	Comp		3849
Fri Feb 28		03. Comb Pl	03b. SCOD	mg/L	151	Comp		4165
Sun Feb 2		03. Comb Pl	04a. TSS	mg/L	136	Comp		58
Mon Feb 3		03. Comb Pl	04a. TSS	mg/L	146	Comp		216
Tue Feb 4		03. Comb Pl	04a. TSS	mg/L	126	Comp		374
Wed Feb 5		03. Comb Pl	04a. TSS	mg/L	144	Comp		532
Thu Feb 6		03. Comb Pl	04a. TSS	mg/L	372	Comp		690
Fri Feb 7		03. Comb Pl	04a. TSS	mg/L	148	Comp		848
Sat Feb 8		03. Comb Pl	04a. TSS	mg/L	152	Comp		1006
Sun Feb 9		03. Comb Pl	04a. TSS	mg/L	172	Comp		1164
Mon Feb 10		03. Comb Pl	04a. TSS	mg/L	222	Comp		1322
Tue Feb 11		03. Comb Pl	04a. TSS	mg/L	158	Comp		1480
Wed Feb 12		03. Comb Pl	04a. TSS	mg/L	254	Comp		1638
Thu Feb 13		03. Comb Pl	04a. TSS	mg/L	404	Comp		1796
Fri Feb 14		03. Comb Pl	04a. TSS	mg/L	192	Comp		1954
Sat Feb 15		03. Comb Pl	04a. TSS	mg/L	168	Comp		2112
Sun Feb 16		03. Comb Pl	04a. TSS	mg/L	152	Comp		2270
Mon Feb 17		03. Comb Pl	04a. TSS	mg/L	262	Comp		2428
Tue Feb 18		03. Comb Pl	04a. TSS	mg/L	162	Comp		2586
Wed Feb 19		03. Comb Pl	04a. TSS	mg/L	174	Comp		2744
Thu Feb 20		03. Comb Pl	04a. TSS	mg/L	180	Comp		2902
Fri Feb 21		03. Comb Pl	04a. TSS	mg/L	280	Comp		3060
Sat Feb 22		03. Comb Pl	04a. TSS	mg/L	214	Comp		3218
Sun Feb 23		03. Comb Pl	04a. TSS	mg/L	198	Comp		3376
Mon Feb 24		03. Comb Pl	04a. TSS	mg/L	148	Comp		3534
Tue Feb 25		03. Comb Pl	04a. TSS	mg/L	154	Comp		3692
Wed Feb 26		03. Comb Pl	04a. TSS	mg/L	172	Comp		3850
Thu Feb 27		03. Comb Pl	04a. TSS	mg/L	160	Comp		4008
Fri Feb 28		03. Comb Pl	04a. TSS	mg/L	158	Comp		4166
Sat Mar 1		03. Comb Pl	04a. TSS	mg/L	192	Comp		4324
Sun Feb 2		03. Comb Pl	04b. VSS	mg/L	118	Comp		59
Mon Feb 3		03. Comb Pl	04b. VSS	mg/L	134	Comp		217
Tue Feb 4		03. Comb Pl	04b. VSS	mg/L	108	Comp		375
Wed Feb 5		03. Comb Pl	04b. VSS	mg/L	118	Comp		533
Thu Feb 6		03. Comb Pl	04b. VSS	mg/L	326	Comp		691
Fri Feb 7		03. Comb Pl	04b. VSS	mg/L	110	Comp		849
Sat Feb 8		03. Comb Pl	04b. VSS	mg/L	130	Comp		1007
Sun Feb 9		03. Comb Pl	04b. VSS	mg/L	144	Comp		1165
Mon Feb 10		03. Comb Pl	04b. VSS	mg/L	192	Comp		1323
Tue Feb 11		03. Comb Pl	04b. VSS	mg/L	138	Comp		1481
Wed Feb 12		03. Comb Pl	04b. VSS	mg/L	218	Comp		1639
Thu Feb 13		03. Comb Pl	04b. VSS	mg/L	364	Comp		1797
Fri Feb 14		03. Comb Pl	04b. VSS	mg/L	160	Comp		1955
Sat Feb 15		03. Comb Pl	04b. VSS	mg/L	142	Comp		2113
Sun Feb 16		03. Comb Pl	04b. VSS	mg/L	128	Comp		2271
Mon Feb 17		03. Comb Pl	04b. VSS	mg/L	230	Comp		2429
Tue Feb 18		03. Comb Pl	04b. VSS	mg/L	140	Comp		2587
Wed Feb 19		03. Comb Pl	04b. VSS	mg/L	158	Comp		2745
Thu Feb 20		03. Comb Pl	04b. VSS	mg/L	146	Comp		2903
Fri Feb 21		03. Comb Pl	04b. VSS	mg/L	246	Comp		3061
Sat Feb 22		03. Comb Pl	04b. VSS	mg/L	194	Comp		3219

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Sun Feb 23		03. Comb Pl	04b. VSS	mg/L	168	Comp		3377
Mon Feb 24		03. Comb Pl	04b. VSS	mg/L	124	Comp		3535
Tue Feb 25		03. Comb Pl	04b. VSS	mg/L	134	Comp		3693
Wed Feb 26		03. Comb Pl	04b. VSS	mg/L	144	Comp		3851
Thu Feb 27		03. Comb Pl	04b. VSS	mg/L	140	Comp		4009
Fri Feb 28		03. Comb Pl	04b. VSS	mg/L	136	Comp		4167
Sat Mar 1		03. Comb Pl	04b. VSS	mg/L	168	Comp		4325
Mon Feb 3		03. Comb Pl	05a. TKN	mg/L	26.7	Comp		218
Wed Feb 5		03. Comb Pl	05a. TKN	mg/L	29	Comp		534
Fri Feb 7		03. Comb Pl	05a. TKN	mg/L	32.8	Comp		850
Mon Feb 10		03. Comb Pl	05a. TKN	mg/L	29.8	Comp		1324
Wed Feb 12		03. Comb Pl	05a. TKN	mg/L	27.4	Comp		1640
Fri Feb 14		03. Comb Pl	05a. TKN	mg/L	28	Comp		1956
Mon Feb 17		03. Comb Pl	05a. TKN	mg/L	27.4	Comp		2430
Wed Feb 19		03. Comb Pl	05a. TKN	mg/L	48.3	Comp		2746
Fri Feb 21		03. Comb Pl	05a. TKN	mg/L	26.5	Comp		3062
Mon Feb 24		03. Comb Pl	05a. TKN	mg/L	27.6	Comp		3536
Wed Feb 26		03. Comb Pl	05a. TKN	mg/L	27.6	Comp		3852
Fri Feb 28		03. Comb Pl	05a. TKN	mg/L	24.8	Comp		4168
Mon Feb 3		03. Comb Pl	05b. Sol TKN	mg/L	23	Comp		219
Wed Feb 5		03. Comb Pl	05b. Sol TKN	mg/L	22.1	Comp		535
Fri Feb 7		03. Comb Pl	05b. Sol TKN	mg/L	23.4	Comp		851
Mon Feb 10		03. Comb Pl	05b. Sol TKN	mg/L	22	Comp		1325
Wed Feb 12		03. Comb Pl	05b. Sol TKN	mg/L	21.8	Comp		1641
Fri Feb 14		03. Comb Pl	05b. Sol TKN	mg/L	21.2	Comp		1957
Mon Feb 17		03. Comb Pl	05b. Sol TKN	mg/L	21.1	Comp		2431
Wed Feb 19		03. Comb Pl	05b. Sol TKN	mg/L	25.9	Comp		2747
Fri Feb 21		03. Comb Pl	05b. Sol TKN	mg/L	12	Comp		3063
Mon Feb 24		03. Comb Pl	05b. Sol TKN	mg/L	11.5	Comp		3537
Wed Feb 26		03. Comb Pl	05b. Sol TKN	mg/L	21.4	Comp		3853
Fri Feb 28		03. Comb Pl	05b. Sol TKN	mg/L	19.2	Comp		4169
Mon Feb 3		03. Comb Pl	05c. NH3-N	mg/L	20.1	Comp		220
Wed Feb 5		03. Comb Pl	05c. NH3-N	mg/L	20.6	Comp		536
Fri Feb 7		03. Comb Pl	05c. NH3-N	mg/L	19.7	Comp		852
Mon Feb 10		03. Comb Pl	05c. NH3-N	mg/L	18.6	Comp		1326
Wed Feb 12		03. Comb Pl	05c. NH3-N	mg/L	18.5	Comp		1642
Fri Feb 14		03. Comb Pl	05c. NH3-N	mg/L	18.1	Comp		1958
Mon Feb 17		03. Comb Pl	05c. NH3-N	mg/L	18.5	Comp		2432
Wed Feb 19		03. Comb Pl	05c. NH3-N	mg/L	22.2	Comp		2748
Fri Feb 21		03. Comb Pl	05c. NH3-N	mg/L	8.82	Comp		3064
Mon Feb 24		03. Comb Pl	05c. NH3-N	mg/L	8.49	Comp		3538
Wed Feb 26		03. Comb Pl	05c. NH3-N	mg/L	18.8	Comp		3854
Fri Feb 28		03. Comb Pl	05c. NH3-N	mg/L	16.6	Comp		4170
Mon Feb 3		03. Comb Pl	05d. Nox-N	mg/L	0.1	Comp	Reported as <0.1	221
Wed Feb 5		03. Comb Pl	05d. Nox-N	mg/L	0.1	Comp	Reported as <0.1	537
Fri Feb 7		03. Comb Pl	05d. Nox-N	mg/L	0.1	Comp	Reported as <0.1	853
Mon Feb 10		03. Comb Pl	05d. Nox-N	mg/L	0.1	Comp	Reported as <0.1	1327
Wed Feb 12		03. Comb Pl	05d. Nox-N	mg/L	0.1	Comp	Reported as <0.1	1643
Fri Feb 14		03. Comb Pl	05d. Nox-N	mg/L	0.1	Comp	Reported as <0.1	1959
Mon Feb 17		03. Comb Pl	05d. Nox-N	mg/L	0.1	Comp	Reported as <0.1	2433
Wed Feb 19		03. Comb Pl	05d. Nox-N	mg/L	0.1	Comp	Reported as <0.1	2749
Fri Feb 21		03. Comb Pl	05d. Nox-N	mg/L	0.1	Comp	Reported as <0.1	3065
Mon Feb 24		03. Comb Pl	05d. Nox-N	mg/L	0.1	Comp	Reported as <0.1	3539
Wed Feb 26		03. Comb Pl	05d. Nox-N	mg/L	0.1	Comp	Reported as <0.1	3855
Fri Feb 28		03. Comb Pl	05d. Nox-N	mg/L	0.1	Comp	Reported as <0.1	4171

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Sun Feb 2		03. Comb Pl	06b. DO	mg/L	2.08	Inst		64
Mon Feb 3		03. Comb Pl	06b. DO	mg/L	1.6	Inst		222
Tue Feb 4		03. Comb Pl	06b. DO	mg/L	1.59	Inst		380
Wed Feb 5		03. Comb Pl	06b. DO	mg/L	1.73	Inst		538
Thu Feb 6		03. Comb Pl	06b. DO	mg/L	1.78	Inst		696
Fri Feb 7		03. Comb Pl	06b. DO	mg/L	1.75	Inst		854
Sat Feb 8		03. Comb Pl	06b. DO	mg/L	1.6	Inst		1012
Sun Feb 9		03. Comb Pl	06b. DO	mg/L	1.68	Inst		1170
Mon Feb 10		03. Comb Pl	06b. DO	mg/L	1.31	Inst		1328
Tue Feb 11		03. Comb Pl	06b. DO	mg/L	1.22	Inst		1486
Wed Feb 12		03. Comb Pl	06b. DO	mg/L	1.37	Inst		1644
Thu Feb 13		03. Comb Pl	06b. DO	mg/L	1.09	Inst		1802
Fri Feb 14		03. Comb Pl	06b. DO	mg/L	1.69	Inst		1960
Sat Feb 15		03. Comb Pl	06b. DO	mg/L	1.3	Inst		2118
Sun Feb 16		03. Comb Pl	06b. DO	mg/L	1.31	Inst		2276
Mon Feb 17		03. Comb Pl	06b. DO	mg/L	1.03	Inst		2434
Tue Feb 18		03. Comb Pl	06b. DO	mg/L	1.38	Inst		2592
Wed Feb 19		03. Comb Pl	06b. DO	mg/L	1.29	Inst		2750
Thu Feb 20		03. Comb Pl	06b. DO	mg/L	1.23	Inst		2908
Fri Feb 21		03. Comb Pl	06b. DO	mg/L	1.23	Inst		3066
Sat Feb 22		03. Comb Pl	06b. DO	mg/L	0.95	Inst		3224
Sun Feb 23		03. Comb Pl	06b. DO	mg/L	0.88	Inst		3382
Mon Feb 24		03. Comb Pl	06b. DO	mg/L	0.83	Inst		3540
Tue Feb 25		03. Comb Pl	06b. DO	mg/L	1.05	Inst		3698
Wed Feb 26		03. Comb Pl	06b. DO	mg/L	1.62	Inst		3856
Thu Feb 27		03. Comb Pl	06b. DO	mg/L	1.23	Inst		4014
Fri Feb 28		03. Comb Pl	06b. DO	mg/L	1.45	Inst		4172
Sat Mar 1		03. Comb Pl	06b. DO	mg/L	1.37	Inst		4330
Sun Feb 2		03. Comb Pl	07a. pH	SU	7.7	Inst		65
Mon Feb 3		03. Comb Pl	07a. pH	SU	6.98	Inst		223
Tue Feb 4		03. Comb Pl	07a. pH	SU	7.05	Inst		381
Wed Feb 5		03. Comb Pl	07a. pH	SU	6.97	Inst		539
Thu Feb 6		03. Comb Pl	07a. pH	SU	7.84	Inst		697
Fri Feb 7		03. Comb Pl	07a. pH	SU	7.75	Inst		855
Sat Feb 8		03. Comb Pl	07a. pH	SU	7	Inst		1013
Sun Feb 9		03. Comb Pl	07a. pH	SU	7.04	Inst		1171
Mon Feb 10		03. Comb Pl	07a. pH	SU	7.91	Inst		1329
Tue Feb 11		03. Comb Pl	07a. pH	SU	7.08	Inst		1487
Wed Feb 12		03. Comb Pl	07a. pH	SU	7.96	Inst		1645
Thu Feb 13		03. Comb Pl	07a. pH	SU	7.02	Inst		1803
Fri Feb 14		03. Comb Pl	07a. pH	SU	7.58	Inst		1961
Sat Feb 15		03. Comb Pl	07a. pH	SU	7.2	Inst		2119
Sun Feb 16		03. Comb Pl	07a. pH	SU	7.55	Inst		2277
Mon Feb 17		03. Comb Pl	07a. pH	SU	7.55	Inst		2435
Tue Feb 18		03. Comb Pl	07a. pH	SU	7.28	Inst		2593
Wed Feb 19		03. Comb Pl	07a. pH	SU	7.69	Inst		2751
Thu Feb 20		03. Comb Pl	07a. pH	SU	7.62	Inst		2909
Fri Feb 21		03. Comb Pl	07a. pH	SU	7.59	Inst		3067
Sat Feb 22		03. Comb Pl	07a. pH	SU	7.4	Inst		3225
Sun Feb 23		03. Comb Pl	07a. pH	SU	7.51	Inst		3383
Mon Feb 24		03. Comb Pl	07a. pH	SU	7.34	Inst		3541
Tue Feb 25		03. Comb Pl	07a. pH	SU	7.34	Inst		3699
Wed Feb 26		03. Comb Pl	07a. pH	SU	7.41	Inst		3857
Thu Feb 27		03. Comb Pl	07a. pH	SU	7.47	Inst		4015
Fri Feb 28		03. Comb Pl	07a. pH	SU	7.1	Inst		4173

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Sat Mar 1		03. Comb Pl	07a. pH	SU	7	Inst		4331
Mon Feb 3		03. Comb Pl	07b. Alk	mg/L	159	Comp		225
Wed Feb 5		03. Comb Pl	07b. Alk	mg/L	160	Comp		541
Thu Feb 6		03. Comb Pl	07b. Alk	mg/L	170	Comp		699
Fri Feb 7		03. Comb Pl	07b. Alk	mg/L	174	Comp		857
Sat Feb 8		03. Comb Pl	07b. Alk	mg/L	167	Comp		1015
Sun Feb 9		03. Comb Pl	07b. Alk	mg/L	187	Comp		1173
Mon Feb 10		03. Comb Pl	07b. Alk	mg/L	183	Comp		1331
Tue Feb 11		03. Comb Pl	07b. Alk	mg/L	183	Comp		1489
Wed Feb 12		03. Comb Pl	07b. Alk	mg/L	164	Comp		1647
Thu Feb 13		03. Comb Pl	07b. Alk	mg/L	169	Comp		1805
Fri Feb 14		03. Comb Pl	07b. Alk	mg/L	166	Comp		1963
Sat Feb 15		03. Comb Pl	07b. Alk	mg/L	162	Comp		2121
Sun Feb 16		03. Comb Pl	07b. Alk	mg/L	172	Comp		2279
Mon Feb 17		03. Comb Pl	07b. Alk	mg/L	166	Comp		2437
Tue Feb 18		03. Comb Pl	07b. Alk	mg/L	169	Comp		2595
Wed Feb 19		03. Comb Pl	07b. Alk	mg/L	165	Comp		2753
Thu Feb 20		03. Comb Pl	07b. Alk	mg/L	165	Comp		2911
Fri Feb 21		03. Comb Pl	07b. Alk	mg/L	161	Comp		3069
Sat Feb 22		03. Comb Pl	07b. Alk	mg/L	162	Comp		3227
Sun Feb 23		03. Comb Pl	07b. Alk	mg/L	166	Comp		3385
Mon Feb 24		03. Comb Pl	07b. Alk	mg/L	165	Comp		3543
Tue Feb 25		03. Comb Pl	07b. Alk	mg/L	160	Comp		3701
Wed Feb 26		03. Comb Pl	07b. Alk	mg/L	166	Comp		3859
Thu Feb 27		03. Comb Pl	07b. Alk	mg/L	160	Comp		4017
Fri Feb 28		03. Comb Pl	07b. Alk	mg/L	157	Comp		4175
Sat Mar 1		03. Comb Pl	07b. Alk	mg/L	158	Comp		4333
Sun Feb 2		03. Comb Pl	08. Temp	C	26.5	Inst		66
Mon Feb 3		03. Comb Pl	08. Temp	C	27	Inst		224
Tue Feb 4		03. Comb Pl	08. Temp	C	27	Inst		382
Wed Feb 5		03. Comb Pl	08. Temp	C	26.8	Inst		540
Thu Feb 6		03. Comb Pl	08. Temp	C	26.4	Inst		698
Fri Feb 7		03. Comb Pl	08. Temp	C	26.5	Inst		856
Sat Feb 8		03. Comb Pl	08. Temp	C	26.4	Inst		1014
Sun Feb 9		03. Comb Pl	08. Temp	C	26.7	Inst		1172
Mon Feb 10		03. Comb Pl	08. Temp	C	26.8	Inst		1330
Tue Feb 11		03. Comb Pl	08. Temp	C	26.9	Inst		1488
Wed Feb 12		03. Comb Pl	08. Temp	C	26.9	Inst		1646
Thu Feb 13		03. Comb Pl	08. Temp	C	27.1	Inst		1804
Fri Feb 14		03. Comb Pl	08. Temp	C	26.9	Inst		1962
Sat Feb 15		03. Comb Pl	08. Temp	C	26.3	Inst		2120
Sun Feb 16		03. Comb Pl	08. Temp	C	26.7	Inst		2278
Mon Feb 17		03. Comb Pl	08. Temp	C	26.7	Inst		2436
Tue Feb 18		03. Comb Pl	08. Temp	C	27	Inst		2594
Wed Feb 19		03. Comb Pl	08. Temp	C	26.8	Inst		2752
Thu Feb 20		03. Comb Pl	08. Temp	C	26.9	Inst		2910
Fri Feb 21		03. Comb Pl	08. Temp	C	26.6	Inst		3068
Sat Feb 22		03. Comb Pl	08. Temp	C	27	Inst		3226
Sun Feb 23		03. Comb Pl	08. Temp	C	27.1	Inst		3384
Mon Feb 24		03. Comb Pl	08. Temp	C	26.9	Inst		3542
Tue Feb 25		03. Comb Pl	08. Temp	C	26.7	Inst		3700
Wed Feb 26		03. Comb Pl	08. Temp	C	26.7	Inst		3858
Thu Feb 27		03. Comb Pl	08. Temp	C	27	Inst		4016
Fri Feb 28		03. Comb Pl	08. Temp	C	26.7	Inst		4174
Sat Mar 1		03. Comb Pl	08. Temp	C	26.8	Inst		4332

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Sun Feb 2		04.1.a. FAB 1A	06b. DO	mg/L	0.05	Inst		68
Mon Feb 3		04.1.a. FAB 1A	06b. DO	mg/L	0.08	Inst		226
Tue Feb 4		04.1.a. FAB 1A	06b. DO	mg/L	0.08	Inst		384
Wed Feb 5		04.1.a. FAB 1A	06b. DO	mg/L	0.07	Inst		542
Thu Feb 6		04.1.a. FAB 1A	06b. DO	mg/L	0.04	Inst		700
Fri Feb 7		04.1.a. FAB 1A	06b. DO	mg/L	0.08	Inst		858
Sat Feb 8		04.1.a. FAB 1A	06b. DO	mg/L	0.08	Inst		1016
Sun Feb 9		04.1.a. FAB 1A	06b. DO	mg/L	0.07	Inst		1174
Mon Feb 10		04.1.a. FAB 1A	06b. DO	mg/L	0.12	Inst		1332
Tue Feb 11		04.1.a. FAB 1A	06b. DO	mg/L	0.11	Inst		1490
Wed Feb 12		04.1.a. FAB 1A	06b. DO	mg/L	0.54	Inst		1648
Thu Feb 13		04.1.a. FAB 1A	06b. DO	mg/L	0.13	Inst		1806
Fri Feb 14		04.1.a. FAB 1A	06b. DO	mg/L	0.25	Inst		1964
Sat Feb 15		04.1.a. FAB 1A	06b. DO	mg/L	0.07	Inst		2122
Sun Feb 16		04.1.a. FAB 1A	06b. DO	mg/L	0.07	Inst		2280
Mon Feb 17		04.1.a. FAB 1A	06b. DO	mg/L	0.17	Inst		2438
Tue Feb 18		04.1.a. FAB 1A	06b. DO	mg/L	0.33	Inst		2596
Wed Feb 19		04.1.a. FAB 1A	06b. DO	mg/L	0.09	Inst		2754
Thu Feb 20		04.1.a. FAB 1A	06b. DO	mg/L	0.1	Inst		2912
Fri Feb 21		04.1.a. FAB 1A	06b. DO	mg/L	0.1	Inst		3070
Sat Feb 22		04.1.a. FAB 1A	06b. DO	mg/L	0.15	Inst		3228
Sun Feb 23		04.1.a. FAB 1A	06b. DO	mg/L	0.07	Inst		3386
Mon Feb 24		04.1.a. FAB 1A	06b. DO	mg/L	0.1	Inst		3544
Tue Feb 25		04.1.a. FAB 1A	06b. DO	mg/L	0.09	Inst		3702
Wed Feb 26		04.1.a. FAB 1A	06b. DO	mg/L	0.12	Inst		3860
Thu Feb 27		04.1.a. FAB 1A	06b. DO	mg/L	0.06	Inst		4018
Fri Feb 28		04.1.a. FAB 1A	06b. DO	mg/L	0.1	Inst		4176
Sat Mar 1		04.1.a. FAB 1A	06b. DO	mg/L	0.08	Inst		4334
Sun Feb 2		04.1.a. FAB 1A	07a. pH	SU	6.95	Inst		69
Mon Feb 3		04.1.a. FAB 1A	07a. pH	SU	6.98	Inst		227
Tue Feb 4		04.1.a. FAB 1A	07a. pH	SU	6.91	Inst		385
Wed Feb 5		04.1.a. FAB 1A	07a. pH	SU	6.93	Inst		543
Thu Feb 6		04.1.a. FAB 1A	07a. pH	SU	7.11	Inst		701
Fri Feb 7		04.1.a. FAB 1A	07a. pH	SU	7.21	Inst		859
Sat Feb 8		04.1.a. FAB 1A	07a. pH	SU	7.18	Inst		1017
Sun Feb 9		04.1.a. FAB 1A	07a. pH	SU	6.96	Inst		1175
Mon Feb 10		04.1.a. FAB 1A	07a. pH	SU	6.99	Inst		1333
Tue Feb 11		04.1.a. FAB 1A	07a. pH	SU	7.07	Inst		1491
Wed Feb 12		04.1.a. FAB 1A	07a. pH	SU	7.07	Inst		1649
Thu Feb 13		04.1.a. FAB 1A	07a. pH	SU	7.01	Inst		1807
Fri Feb 14		04.1.a. FAB 1A	07a. pH	SU	7.16	Inst		1965
Sat Feb 15		04.1.a. FAB 1A	07a. pH	SU	7.43	Inst		2123
Sun Feb 16		04.1.a. FAB 1A	07a. pH	SU	6.79	Inst		2281
Mon Feb 17		04.1.a. FAB 1A	07a. pH	SU	6.72	Inst		2439
Tue Feb 18		04.1.a. FAB 1A	07a. pH	SU	6.77	Inst		2597
Wed Feb 19		04.1.a. FAB 1A	07a. pH	SU	6.85	Inst		2755
Thu Feb 20		04.1.a. FAB 1A	07a. pH	SU	6.65	Inst		2913
Fri Feb 21		04.1.a. FAB 1A	07a. pH	SU	6.58	Inst		3071
Sat Feb 22		04.1.a. FAB 1A	07a. pH	SU	6.65	Inst		3229
Sun Feb 23		04.1.a. FAB 1A	07a. pH	SU	6.89	Inst		3387
Mon Feb 24		04.1.a. FAB 1A	07a. pH	SU	6.75	Inst		3545
Tue Feb 25		04.1.a. FAB 1A	07a. pH	SU	6.84	Inst		3703
Wed Feb 26		04.1.a. FAB 1A	07a. pH	SU	6.78	Inst		3861
Thu Feb 27		04.1.a. FAB 1A	07a. pH	SU	6.74	Inst		4019
Fri Feb 28		04.1.a. FAB 1A	07a. pH	SU	6.75	Inst		4177

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Sat Mar 1		04.1.a. FAB 1A	07a. pH	SU	6.78	Inst		4335
Sun Feb 2		04.1.a. FAB 1A	08. Temp	C	26.8	Inst		70
Mon Feb 3		04.1.a. FAB 1A	08. Temp	C	26.8	Inst		228
Tue Feb 4		04.1.a. FAB 1A	08. Temp	C	26.9	Inst		386
Wed Feb 5		04.1.a. FAB 1A	08. Temp	C	26.9	Inst		544
Thu Feb 6		04.1.a. FAB 1A	08. Temp	C	27	Inst		702
Fri Feb 7		04.1.a. FAB 1A	08. Temp	C	26.7	Inst		860
Sat Feb 8		04.1.a. FAB 1A	08. Temp	C	26.4	Inst		1018
Sun Feb 9		04.1.a. FAB 1A	08. Temp	C	26.5	Inst		1176
Mon Feb 10		04.1.a. FAB 1A	08. Temp	C	26.4	Inst		1334
Tue Feb 11		04.1.a. FAB 1A	08. Temp	C	26.4	Inst		1492
Wed Feb 12		04.1.a. FAB 1A	08. Temp	C	26.9	Inst		1650
Thu Feb 13		04.1.a. FAB 1A	08. Temp	C	26.9	Inst		1808
Fri Feb 14		04.1.a. FAB 1A	08. Temp	C	26.4	Inst		1966
Sat Feb 15		04.1.a. FAB 1A	08. Temp	C	26	Inst		2124
Sun Feb 16		04.1.a. FAB 1A	08. Temp	C	26.4	Inst		2282
Mon Feb 17		04.1.a. FAB 1A	08. Temp	C	26.2	Inst		2440
Tue Feb 18		04.1.a. FAB 1A	08. Temp	C	26.3	Inst		2598
Wed Feb 19		04.1.a. FAB 1A	08. Temp	C	26.5	Inst		2756
Thu Feb 20		04.1.a. FAB 1A	08. Temp	C	26.7	Inst		2914
Fri Feb 21		04.1.a. FAB 1A	08. Temp	C	26.8	Inst		3072
Sat Feb 22		04.1.a. FAB 1A	08. Temp	C	26.9	Inst		3230
Sun Feb 23		04.1.a. FAB 1A	08. Temp	C	27.1	Inst		3388
Mon Feb 24		04.1.a. FAB 1A	08. Temp	C	26.9	Inst		3546
Tue Feb 25		04.1.a. FAB 1A	08. Temp	C	26.8	Inst		3704
Wed Feb 26		04.1.a. FAB 1A	08. Temp	C	26.8	Inst		3862
Thu Feb 27		04.1.a. FAB 1A	08. Temp	C	27	Inst		4020
Fri Feb 28		04.1.a. FAB 1A	08. Temp	C	26.9	Inst		4178
Sat Mar 1		04.1.a. FAB 1A	08. Temp	C	26.8	Inst		4336
Sun Feb 2		04.1.b. FAB 1B	06a. Air Flow	scfm	155	Inst		71
Mon Feb 3		04.1.b. FAB 1B	06a. Air Flow	scfm	164	Inst		229
Tue Feb 4		04.1.b. FAB 1B	06a. Air Flow	scfm	150	Inst		387
Wed Feb 5		04.1.b. FAB 1B	06a. Air Flow	scfm	145	Inst		545
Thu Feb 6		04.1.b. FAB 1B	06a. Air Flow	scfm	145	Inst		703
Fri Feb 7		04.1.b. FAB 1B	06a. Air Flow	scfm	168	Inst		861
Sat Feb 8		04.1.b. FAB 1B	06a. Air Flow	scfm	165	Inst		1019
Sun Feb 9		04.1.b. FAB 1B	06a. Air Flow	scfm	165	Inst		1177
Mon Feb 10		04.1.b. FAB 1B	06a. Air Flow	scfm	153	Inst		1335
Tue Feb 11		04.1.b. FAB 1B	06a. Air Flow	scfm	154	Inst		1493
Wed Feb 12		04.1.b. FAB 1B	06a. Air Flow	scfm	157	Inst		1651
Thu Feb 13		04.1.b. FAB 1B	06a. Air Flow	scfm	151	Inst		1809
Fri Feb 14		04.1.b. FAB 1B	06a. Air Flow	scfm	157	Inst		1967
Sat Feb 15		04.1.b. FAB 1B	06a. Air Flow	scfm	152	Inst		2125
Sun Feb 16		04.1.b. FAB 1B	06a. Air Flow	scfm	149	Inst		2283
Mon Feb 17		04.1.b. FAB 1B	06a. Air Flow	scfm	145	Inst		2441
Tue Feb 18		04.1.b. FAB 1B	06a. Air Flow	scfm	150	Inst		2599
Wed Feb 19		04.1.b. FAB 1B	06a. Air Flow	scfm	146	Inst		2757
Thu Feb 20		04.1.b. FAB 1B	06a. Air Flow	scfm	144	Inst		2915
Fri Feb 21		04.1.b. FAB 1B	06a. Air Flow	scfm	131	Inst		3073
Sat Feb 22		04.1.b. FAB 1B	06a. Air Flow	scfm	130	Inst		3231
Sun Feb 23		04.1.b. FAB 1B	06a. Air Flow	scfm	131	Inst		3389
Mon Feb 24		04.1.b. FAB 1B	06a. Air Flow	scfm	127	Inst		3547
Tue Feb 25		04.1.b. FAB 1B	06a. Air Flow	scfm	133	Inst		3705
Wed Feb 26		04.1.b. FAB 1B	06a. Air Flow	scfm	128	Inst		3863
Thu Feb 27		04.1.b. FAB 1B	06a. Air Flow	scfm	133	Inst		4021

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Fri Feb 28		04.1.b. FAB 1B	06a. Air Flow	scfm	134	Inst		4179
Sat Mar 1		04.1.b. FAB 1B	06a. Air Flow	scfm	131	Inst		4337
Sun Feb 2		04.1.b. FAB 1B	06b. DO	mg/L	0.05	Inst		72
Mon Feb 3		04.1.b. FAB 1B	06b. DO	mg/L	0.09	Inst		230
Tue Feb 4		04.1.b. FAB 1B	06b. DO	mg/L	0.07	Inst		388
Wed Feb 5		04.1.b. FAB 1B	06b. DO	mg/L	0.09	Inst		546
Thu Feb 6		04.1.b. FAB 1B	06b. DO	mg/L	0.08	Inst		704
Fri Feb 7		04.1.b. FAB 1B	06b. DO	mg/L	0.06	Inst		862
Sat Feb 8		04.1.b. FAB 1B	06b. DO	mg/L	0.07	Inst		1020
Sun Feb 9		04.1.b. FAB 1B	06b. DO	mg/L	0.09	Inst		1178
Mon Feb 10		04.1.b. FAB 1B	06b. DO	mg/L	0.19	Inst		1336
Tue Feb 11		04.1.b. FAB 1B	06b. DO	mg/L	0.12	Inst		1494
Wed Feb 12		04.1.b. FAB 1B	06b. DO	mg/L	0.54	Inst		1652
Thu Feb 13		04.1.b. FAB 1B	06b. DO	mg/L	0.15	Inst		1810
Fri Feb 14		04.1.b. FAB 1B	06b. DO	mg/L	0.28	Inst		1968
Sat Feb 15		04.1.b. FAB 1B	06b. DO	mg/L	0.06	Inst		2126
Sun Feb 16		04.1.b. FAB 1B	06b. DO	mg/L	0.08	Inst		2284
Mon Feb 17		04.1.b. FAB 1B	06b. DO	mg/L	0.2	Inst		2442
Tue Feb 18		04.1.b. FAB 1B	06b. DO	mg/L	0.25	Inst		2600
Wed Feb 19		04.1.b. FAB 1B	06b. DO	mg/L	0.14	Inst		2758
Thu Feb 20		04.1.b. FAB 1B	06b. DO	mg/L	0.11	Inst		2916
Fri Feb 21		04.1.b. FAB 1B	06b. DO	mg/L	0.1	Inst		3074
Sat Feb 22		04.1.b. FAB 1B	06b. DO	mg/L	0.16	Inst		3232
Sun Feb 23		04.1.b. FAB 1B	06b. DO	mg/L	0.08	Inst		3390
Mon Feb 24		04.1.b. FAB 1B	06b. DO	mg/L	0.9	Inst		3548
Tue Feb 25		04.1.b. FAB 1B	06b. DO	mg/L	0.07	Inst		3706
Wed Feb 26		04.1.b. FAB 1B	06b. DO	mg/L	0.12	Inst		3864
Thu Feb 27		04.1.b. FAB 1B	06b. DO	mg/L	0.04	Inst		4022
Fri Feb 28		04.1.b. FAB 1B	06b. DO	mg/L	0.07	Inst		4180
Sat Mar 1		04.1.b. FAB 1B	06b. DO	mg/L	0.07	Inst		4338
Sun Feb 2		04.1.b. FAB 1B	07a. pH	SU	7.08	Inst		73
Mon Feb 3		04.1.b. FAB 1B	07a. pH	SU	6.98	Inst		231
Tue Feb 4		04.1.b. FAB 1B	07a. pH	SU	7.15	Inst		389
Wed Feb 5		04.1.b. FAB 1B	07a. pH	SU	6.96	Inst		547
Thu Feb 6		04.1.b. FAB 1B	07a. pH	SU	7.2	Inst		705
Fri Feb 7		04.1.b. FAB 1B	07a. pH	SU	7.22	Inst		863
Sat Feb 8		04.1.b. FAB 1B	07a. pH	SU	7.29	Inst		1021
Sun Feb 9		04.1.b. FAB 1B	07a. pH	SU	6.94	Inst		1179
Mon Feb 10		04.1.b. FAB 1B	07a. pH	SU	6.99	Inst		1337
Tue Feb 11		04.1.b. FAB 1B	07a. pH	SU	7.23	Inst		1495
Wed Feb 12		04.1.b. FAB 1B	07a. pH	SU	7.07	Inst		1653
Thu Feb 13		04.1.b. FAB 1B	07a. pH	SU	7.01	Inst		1811
Fri Feb 14		04.1.b. FAB 1B	07a. pH	SU	7.14	Inst		1969
Sat Feb 15		04.1.b. FAB 1B	07a. pH	SU	7.31	Inst		2127
Sun Feb 16		04.1.b. FAB 1B	07a. pH	SU	6.76	Inst		2285
Mon Feb 17		04.1.b. FAB 1B	07a. pH	SU	6.66	Inst		2443
Tue Feb 18		04.1.b. FAB 1B	07a. pH	SU	6.72	Inst		2601
Wed Feb 19		04.1.b. FAB 1B	07a. pH	SU	6.91	Inst		2759
Thu Feb 20		04.1.b. FAB 1B	07a. pH	SU	6.61	Inst		2917
Fri Feb 21		04.1.b. FAB 1B	07a. pH	SU	6.57	Inst		3075
Sat Feb 22		04.1.b. FAB 1B	07a. pH	SU	6.67	Inst		3233
Sun Feb 23		04.1.b. FAB 1B	07a. pH	SU	6.76	Inst		3391
Mon Feb 24		04.1.b. FAB 1B	07a. pH	SU	6.76	Inst		3549
Tue Feb 25		04.1.b. FAB 1B	07a. pH	SU	6.85	Inst		3707
Wed Feb 26		04.1.b. FAB 1B	07a. pH	SU	6.77	Inst		3865

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Thu Feb 27		04.1.b. FAB 1B	07a. pH	SU	6.71	Inst		4023
Fri Feb 28		04.1.b. FAB 1B	07a. pH	SU	6.83	Inst		4181
Sat Mar 1		04.1.b. FAB 1B	07a. pH	SU	6.76	Inst		4339
Sun Feb 2		04.1.b. FAB 1B	08. Temp	C	26.8	Inst		74
Mon Feb 3		04.1.b. FAB 1B	08. Temp	C	26.7	Inst		232
Tue Feb 4		04.1.b. FAB 1B	08. Temp	C	26.9	Inst		390
Wed Feb 5		04.1.b. FAB 1B	08. Temp	C	26.8	Inst		548
Thu Feb 6		04.1.b. FAB 1B	08. Temp	C	27	Inst		706
Fri Feb 7		04.1.b. FAB 1B	08. Temp	C	26.7	Inst		864
Sat Feb 8		04.1.b. FAB 1B	08. Temp	C	26.3	Inst		1022
Sun Feb 9		04.1.b. FAB 1B	08. Temp	C	26.4	Inst		1180
Mon Feb 10		04.1.b. FAB 1B	08. Temp	C	26.3	Inst		1338
Tue Feb 11		04.1.b. FAB 1B	08. Temp	C	26.3	Inst		1496
Wed Feb 12		04.1.b. FAB 1B	08. Temp	C	26.5	Inst		1654
Thu Feb 13		04.1.b. FAB 1B	08. Temp	C	26.9	Inst		1812
Fri Feb 14		04.1.b. FAB 1B	08. Temp	C	26.4	Inst		1970
Sat Feb 15		04.1.b. FAB 1B	08. Temp	C	26	Inst		2128
Sun Feb 16		04.1.b. FAB 1B	08. Temp	C	26.3	Inst		2286
Mon Feb 17		04.1.b. FAB 1B	08. Temp	C	26.2	Inst		2444
Tue Feb 18		04.1.b. FAB 1B	08. Temp	C	26.2	Inst		2602
Wed Feb 19		04.1.b. FAB 1B	08. Temp	C	26.4	Inst		2760
Thu Feb 20		04.1.b. FAB 1B	08. Temp	C	26.7	Inst		2918
Fri Feb 21		04.1.b. FAB 1B	08. Temp	C	26.8	Inst		3076
Sat Feb 22		04.1.b. FAB 1B	08. Temp	C	27	Inst		3234
Sun Feb 23		04.1.b. FAB 1B	08. Temp	C	26.9	Inst		3392
Mon Feb 24		04.1.b. FAB 1B	08. Temp	C	27	Inst		3550
Tue Feb 25		04.1.b. FAB 1B	08. Temp	C	26.7	Inst		3708
Wed Feb 26		04.1.b. FAB 1B	08. Temp	C	26.8	Inst		3866
Thu Feb 27		04.1.b. FAB 1B	08. Temp	C	27	Inst		4024
Fri Feb 28		04.1.b. FAB 1B	08. Temp	C	26.9	Inst		4182
Sat Mar 1		04.1.b. FAB 1B	08. Temp	C	26.8	Inst		4340
Sun Feb 2		04.2.a. FAB 2A	06b. DO	mg/L	0.09	Inst		75
Mon Feb 3		04.2.a. FAB 2A	06b. DO	mg/L	0.11	Inst		233
Tue Feb 4		04.2.a. FAB 2A	06b. DO	mg/L	0.11	Inst		391
Wed Feb 5		04.2.a. FAB 2A	06b. DO	mg/L	0.1	Inst		549
Thu Feb 6		04.2.a. FAB 2A	06b. DO	mg/L	0.06	Inst		707
Fri Feb 7		04.2.a. FAB 2A	06b. DO	mg/L	0.07	Inst		865
Sat Feb 8		04.2.a. FAB 2A	06b. DO	mg/L	0.11	Inst		1023
Sun Feb 9		04.2.a. FAB 2A	06b. DO	mg/L	0.07	Inst		1181
Mon Feb 10		04.2.a. FAB 2A	06b. DO	mg/L	0.14	Inst		1339
Tue Feb 11		04.2.a. FAB 2A	06b. DO	mg/L	0.13	Inst		1497
Wed Feb 12		04.2.a. FAB 2A	06b. DO	mg/L	0.66	Inst		1655
Thu Feb 13		04.2.a. FAB 2A	06b. DO	mg/L	0.12	Inst		1813
Fri Feb 14		04.2.a. FAB 2A	06b. DO	mg/L	0.45	Inst		1971
Sat Feb 15		04.2.a. FAB 2A	06b. DO	mg/L	0.07	Inst		2129
Sun Feb 16		04.2.a. FAB 2A	06b. DO	mg/L	0.06	Inst		2287
Mon Feb 17		04.2.a. FAB 2A	06b. DO	mg/L	0.19	Inst		2445
Tue Feb 18		04.2.a. FAB 2A	06b. DO	mg/L	0.47	Inst		2603
Wed Feb 19		04.2.a. FAB 2A	06b. DO	mg/L	0.08	Inst		2761
Thu Feb 20		04.2.a. FAB 2A	06b. DO	mg/L	0.09	Inst		2919
Fri Feb 21		04.2.a. FAB 2A	06b. DO	mg/L	0.09	Inst		3077
Sat Feb 22		04.2.a. FAB 2A	06b. DO	mg/L	0.14	Inst		3235
Sun Feb 23		04.2.a. FAB 2A	06b. DO	mg/L	0.08	Inst		3393
Mon Feb 24		04.2.a. FAB 2A	06b. DO	mg/L	0.08	Inst		3551
Tue Feb 25		04.2.a. FAB 2A	06b. DO	mg/L	0.11	Inst		3709

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Wed Feb 26		04.2.a. FAB 2A	06b. DO	mg/L	0.09	Inst		3867
Thu Feb 27		04.2.a. FAB 2A	06b. DO	mg/L	0.05	Inst		4025
Fri Feb 28		04.2.a. FAB 2A	06b. DO	mg/L	0.09	Inst		4183
Sat Mar 1		04.2.a. FAB 2A	06b. DO	mg/L	0.07	Inst		4341
Sun Feb 2		04.2.a. FAB 2A	07a. pH	SU	6.95	Inst		76
Mon Feb 3		04.2.a. FAB 2A	07a. pH	SU	6.96	Inst		234
Tue Feb 4		04.2.a. FAB 2A	07a. pH	SU	6.91	Inst		392
Wed Feb 5		04.2.a. FAB 2A	07a. pH	SU	6.68	Inst		550
Thu Feb 6		04.2.a. FAB 2A	07a. pH	SU	7.03	Inst		708
Fri Feb 7		04.2.a. FAB 2A	07a. pH	SU	7.02	Inst		866
Sat Feb 8		04.2.a. FAB 2A	07a. pH	SU	6.97	Inst		1024
Sun Feb 9		04.2.a. FAB 2A	07a. pH	SU	6.94	Inst		1182
Mon Feb 10		04.2.a. FAB 2A	07a. pH	SU	6.99	Inst		1340
Tue Feb 11		04.2.a. FAB 2A	07a. pH	SU	7.07	Inst		1498
Wed Feb 12		04.2.a. FAB 2A	07a. pH	SU	7.07	Inst		1656
Thu Feb 13		04.2.a. FAB 2A	07a. pH	SU	7.02	Inst		1814
Fri Feb 14		04.2.a. FAB 2A	07a. pH	SU	7.08	Inst		1972
Sat Feb 15		04.2.a. FAB 2A	07a. pH	SU	7.59	Inst		2130
Sun Feb 16		04.2.a. FAB 2A	07a. pH	SU	6.7	Inst		2288
Mon Feb 17		04.2.a. FAB 2A	07a. pH	SU	6.66	Inst		2446
Tue Feb 18		04.2.a. FAB 2A	07a. pH	SU	6.62	Inst		2604
Wed Feb 19		04.2.a. FAB 2A	07a. pH	SU	6.81	Inst		2762
Thu Feb 20		04.2.a. FAB 2A	07a. pH	SU	6.48	Inst		2920
Fri Feb 21		04.2.a. FAB 2A	07a. pH	SU	6.5	Inst		3078
Sat Feb 22		04.2.a. FAB 2A	07a. pH	SU	6.58	Inst		3236
Sun Feb 23		04.2.a. FAB 2A	07a. pH	SU	6.71	Inst		3394
Mon Feb 24		04.2.a. FAB 2A	07a. pH	SU	6.71	Inst		3552
Tue Feb 25		04.2.a. FAB 2A	07a. pH	SU	6.79	Inst		3710
Wed Feb 26		04.2.a. FAB 2A	07a. pH	SU	6.62	Inst		3868
Thu Feb 27		04.2.a. FAB 2A	07a. pH	SU	6.8	Inst		4026
Fri Feb 28		04.2.a. FAB 2A	07a. pH	SU	6.72	Inst		4184
Sat Mar 1		04.2.a. FAB 2A	07a. pH	SU	6.71	Inst		4342
Sun Feb 2		04.2.a. FAB 2A	08. Temp	C	26.8	Inst		77
Mon Feb 3		04.2.a. FAB 2A	08. Temp	C	26.8	Inst		235
Tue Feb 4		04.2.a. FAB 2A	08. Temp	C	27	Inst		393
Wed Feb 5		04.2.a. FAB 2A	08. Temp	C	26.9	Inst		551
Thu Feb 6		04.2.a. FAB 2A	08. Temp	C	27	Inst		709
Fri Feb 7		04.2.a. FAB 2A	08. Temp	C	26.8	Inst		867
Sat Feb 8		04.2.a. FAB 2A	08. Temp	C	26.2	Inst		1025
Sun Feb 9		04.2.a. FAB 2A	08. Temp	C	26.4	Inst		1183
Mon Feb 10		04.2.a. FAB 2A	08. Temp	C	26.4	Inst		1341
Tue Feb 11		04.2.a. FAB 2A	08. Temp	C	26.3	Inst		1499
Wed Feb 12		04.2.a. FAB 2A	08. Temp	C	26.6	Inst		1657
Thu Feb 13		04.2.a. FAB 2A	08. Temp	C	27	Inst		1815
Fri Feb 14		04.2.a. FAB 2A	08. Temp	C	26.4	Inst		1973
Sat Feb 15		04.2.a. FAB 2A	08. Temp	C	26	Inst		2131
Sun Feb 16		04.2.a. FAB 2A	08. Temp	C	26.2	Inst		2289
Mon Feb 17		04.2.a. FAB 2A	08. Temp	C	26.1	Inst		2447
Tue Feb 18		04.2.a. FAB 2A	08. Temp	C	26.1	Inst		2605
Wed Feb 19		04.2.a. FAB 2A	08. Temp	C	26.4	Inst		2763
Thu Feb 20		04.2.a. FAB 2A	08. Temp	C	26.5	Inst		2921
Fri Feb 21		04.2.a. FAB 2A	08. Temp	C	26.9	Inst		3079
Sat Feb 22		04.2.a. FAB 2A	08. Temp	C	26.9	Inst		3237
Sun Feb 23		04.2.a. FAB 2A	08. Temp	C	26.9	Inst		3395
Mon Feb 24		04.2.a. FAB 2A	08. Temp	C	26.9	Inst		3553

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Tue Feb 25		04.2.a. FAB 2A	08. Temp	C	26.7	Inst		3711
Wed Feb 26		04.2.a. FAB 2A	08. Temp	C	26.9	Inst		3869
Thu Feb 27		04.2.a. FAB 2A	08. Temp	C	27	Inst		4027
Fri Feb 28		04.2.a. FAB 2A	08. Temp	C	27	Inst		4185
Sat Mar 1		04.2.a. FAB 2A	08. Temp	C	26.8	Inst		4343
Mon Feb 3		04.2.b. FAB 2B	05c. NH3-N	mg/L	16.7	Grab		240
Wed Feb 5		04.2.b. FAB 2B	05c. NH3-N	mg/L	13.1	Grab		556
Fri Feb 7		04.2.b. FAB 2B	05c. NH3-N	mg/L	7.75	Grab		872
Mon Feb 10		04.2.b. FAB 2B	05c. NH3-N	mg/L	7	Grab		1346
Wed Feb 12		04.2.b. FAB 2B	05c. NH3-N	mg/L	15.6	Grab		1662
Fri Feb 14		04.2.b. FAB 2B	05c. NH3-N	mg/L	11.8	Grab		1978
Mon Feb 17		04.2.b. FAB 2B	05c. NH3-N	mg/L	8.65	Grab		2452
Wed Feb 19		04.2.b. FAB 2B	05c. NH3-N	mg/L	9.83	Grab		2768
Fri Feb 21		04.2.b. FAB 2B	05c. NH3-N	mg/L	15	Grab		3084
Mon Feb 24		04.2.b. FAB 2B	05c. NH3-N	mg/L	12.1	Grab		3558
Wed Feb 26		04.2.b. FAB 2B	05c. NH3-N	mg/L	19.3	Grab		3874
Fri Feb 28		04.2.b. FAB 2B	05c. NH3-N	mg/L	8.82	Grab		4190
Mon Feb 3		04.2.b. FAB 2B	05d. Nox-N	mg/L	1.21	Grab		241
Wed Feb 5		04.2.b. FAB 2B	05d. Nox-N	mg/L	1.06	Grab		557
Fri Feb 7		04.2.b. FAB 2B	05d. Nox-N	mg/L	0.99	Grab		873
Mon Feb 10		04.2.b. FAB 2B	05d. Nox-N	mg/L	0.85	Grab		1347
Wed Feb 12		04.2.b. FAB 2B	05d. Nox-N	mg/L	0.59	Grab		1663
Fri Feb 14		04.2.b. FAB 2B	05d. Nox-N	mg/L	0.1	Grab	Reported as <0.1	1979
Mon Feb 17		04.2.b. FAB 2B	05d. Nox-N	mg/L	0.1	Grab	Reported as <0.1	2453
Wed Feb 19		04.2.b. FAB 2B	05d. Nox-N	mg/L	0.1	Grab	Reported as <0.1	2769
Fri Feb 21		04.2.b. FAB 2B	05d. Nox-N	mg/L	0.12	Grab		3085
Mon Feb 24		04.2.b. FAB 2B	05d. Nox-N	mg/L	0.1	Grab	Reported as <0.1	3559
Wed Feb 26		04.2.b. FAB 2B	05d. Nox-N	mg/L	0.1	Grab	Reported as <0.1	3875
Fri Feb 28		04.2.b. FAB 2B	05d. Nox-N	mg/L	0.14	Grab		4191
Sun Feb 2		04.2.b. FAB 2B	06a. Air Flow	scfm	134	Inst		78
Mon Feb 3		04.2.b. FAB 2B	06a. Air Flow	scfm	159	Inst		236
Tue Feb 4		04.2.b. FAB 2B	06a. Air Flow	scfm	142	Inst		394
Wed Feb 5		04.2.b. FAB 2B	06a. Air Flow	scfm	140	Inst		552
Thu Feb 6		04.2.b. FAB 2B	06a. Air Flow	scfm	122	Inst		710
Fri Feb 7		04.2.b. FAB 2B	06a. Air Flow	scfm	164	Inst		868
Sat Feb 8		04.2.b. FAB 2B	06a. Air Flow	scfm	151	Inst		1026
Sun Feb 9		04.2.b. FAB 2B	06a. Air Flow	scfm	170	Inst		1184
Mon Feb 10		04.2.b. FAB 2B	06a. Air Flow	scfm	154	Inst		1342
Tue Feb 11		04.2.b. FAB 2B	06a. Air Flow	scfm	140	Inst		1500
Wed Feb 12		04.2.b. FAB 2B	06a. Air Flow	scfm	140	Inst		1658
Thu Feb 13		04.2.b. FAB 2B	06a. Air Flow	scfm	142	Inst		1816
Fri Feb 14		04.2.b. FAB 2B	06a. Air Flow	scfm	135	Inst		1974
Sat Feb 15		04.2.b. FAB 2B	06a. Air Flow	scfm	111	Inst		2132
Sun Feb 16		04.2.b. FAB 2B	06a. Air Flow	scfm	113	Inst		2290
Mon Feb 17		04.2.b. FAB 2B	06a. Air Flow	scfm	106	Inst		2448
Tue Feb 18		04.2.b. FAB 2B	06a. Air Flow	scfm	112	Inst		2606
Wed Feb 19		04.2.b. FAB 2B	06a. Air Flow	scfm	104	Inst		2764
Thu Feb 20		04.2.b. FAB 2B	06a. Air Flow	scfm	109	Inst		2922
Fri Feb 21		04.2.b. FAB 2B	06a. Air Flow	scfm	111	Inst		3080
Sat Feb 22		04.2.b. FAB 2B	06a. Air Flow	scfm	105	Inst		3238
Sun Feb 23		04.2.b. FAB 2B	06a. Air Flow	scfm	108	Inst		3396
Mon Feb 24		04.2.b. FAB 2B	06a. Air Flow	scfm	93	Inst		3554
Tue Feb 25		04.2.b. FAB 2B	06a. Air Flow	scfm	120	Inst		3712
Wed Feb 26		04.2.b. FAB 2B	06a. Air Flow	scfm	101	Inst		3870
Thu Feb 27		04.2.b. FAB 2B	06a. Air Flow	scfm	112	Inst		4028

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Fri Feb 28		04.2.b. FAB 2B	06a. Air Flow	scfm	120	Inst		4186
Sat Mar 1		04.2.b. FAB 2B	06a. Air Flow	scfm	92	Inst		4344
Sun Feb 2		04.2.b. FAB 2B	06b. DO	mg/L	0.09	Inst		79
Mon Feb 3		04.2.b. FAB 2B	06b. DO	mg/L	0.23	Inst		237
Tue Feb 4		04.2.b. FAB 2B	06b. DO	mg/L	0.23	Inst		395
Wed Feb 5		04.2.b. FAB 2B	06b. DO	mg/L	0.16	Inst		553
Thu Feb 6		04.2.b. FAB 2B	06b. DO	mg/L	0.06	Inst		711
Fri Feb 7		04.2.b. FAB 2B	06b. DO	mg/L	0.05	Inst		869
Sat Feb 8		04.2.b. FAB 2B	06b. DO	mg/L	0.07	Inst		1027
Sun Feb 9		04.2.b. FAB 2B	06b. DO	mg/L	0.06	Inst		1185
Mon Feb 10		04.2.b. FAB 2B	06b. DO	mg/L	0.3	Inst		1343
Tue Feb 11		04.2.b. FAB 2B	06b. DO	mg/L	0.17	Inst		1501
Wed Feb 12		04.2.b. FAB 2B	06b. DO	mg/L	0.34	Inst		1659
Thu Feb 13		04.2.b. FAB 2B	06b. DO	mg/L	0.12	Inst		1817
Fri Feb 14		04.2.b. FAB 2B	06b. DO	mg/L	0.36	Inst		1975
Sat Feb 15		04.2.b. FAB 2B	06b. DO	mg/L	0.06	Inst		2133
Sun Feb 16		04.2.b. FAB 2B	06b. DO	mg/L	0.07	Inst		2291
Mon Feb 17		04.2.b. FAB 2B	06b. DO	mg/L	0.24	Inst		2449
Tue Feb 18		04.2.b. FAB 2B	06b. DO	mg/L	0.51	Inst		2607
Wed Feb 19		04.2.b. FAB 2B	06b. DO	mg/L	0.1	Inst		2765
Thu Feb 20		04.2.b. FAB 2B	06b. DO	mg/L	0.08	Inst		2923
Fri Feb 21		04.2.b. FAB 2B	06b. DO	mg/L	0.9	Inst		3081
Sat Feb 22		04.2.b. FAB 2B	06b. DO	mg/L	0.23	Inst		3239
Sun Feb 23		04.2.b. FAB 2B	06b. DO	mg/L	0.08	Inst		3397
Mon Feb 24		04.2.b. FAB 2B	06b. DO	mg/L	0.08	Inst		3555
Tue Feb 25		04.2.b. FAB 2B	06b. DO	mg/L	0.12	Inst		3713
Wed Feb 26		04.2.b. FAB 2B	06b. DO	mg/L	0.17	Inst		3871
Thu Feb 27		04.2.b. FAB 2B	06b. DO	mg/L	0.07	Inst		4029
Fri Feb 28		04.2.b. FAB 2B	06b. DO	mg/L	0.08	Inst		4187
Sat Mar 1		04.2.b. FAB 2B	06b. DO	mg/L	0.06	Inst		4345
Sun Feb 2		04.2.b. FAB 2B	07a. pH	SU	6.91	Inst		80
Mon Feb 3		04.2.b. FAB 2B	07a. pH	SU	6.99	Inst		238
Tue Feb 4		04.2.b. FAB 2B	07a. pH	SU	6.96	Inst		396
Wed Feb 5		04.2.b. FAB 2B	07a. pH	SU	6.97	Inst		554
Thu Feb 6		04.2.b. FAB 2B	07a. pH	SU	7.04	Inst		712
Fri Feb 7		04.2.b. FAB 2B	07a. pH	SU	6.97	Inst		870
Sat Feb 8		04.2.b. FAB 2B	07a. pH	SU	7.05	Inst		1028
Sun Feb 9		04.2.b. FAB 2B	07a. pH	SU	6.94	Inst		1186
Mon Feb 10		04.2.b. FAB 2B	07a. pH	SU	6.99	Inst		1344
Tue Feb 11		04.2.b. FAB 2B	07a. pH	SU	7.08	Inst		1502
Wed Feb 12		04.2.b. FAB 2B	07a. pH	SU	7.11	Inst		1660
Thu Feb 13		04.2.b. FAB 2B	07a. pH	SU	7.02	Inst		1818
Fri Feb 14		04.2.b. FAB 2B	07a. pH	SU	7.08	Inst		1976
Sat Feb 15		04.2.b. FAB 2B	07a. pH	SU	7.31	Inst		2134
Sun Feb 16		04.2.b. FAB 2B	07a. pH	SU	6.67	Inst		2292
Mon Feb 17		04.2.b. FAB 2B	07a. pH	SU	6.45	Inst		2450
Tue Feb 18		04.2.b. FAB 2B	07a. pH	SU	6.6	Inst		2608
Wed Feb 19		04.2.b. FAB 2B	07a. pH	SU	6.75	Inst		2766
Thu Feb 20		04.2.b. FAB 2B	07a. pH	SU	6.45	Inst		2924
Fri Feb 21		04.2.b. FAB 2B	07a. pH	SU	6.49	Inst		3082
Sat Feb 22		04.2.b. FAB 2B	07a. pH	SU	6.56	Inst		3240
Sun Feb 23		04.2.b. FAB 2B	07a. pH	SU	6.69	Inst		3398
Mon Feb 24		04.2.b. FAB 2B	07a. pH	SU	6.61	Inst		3556
Tue Feb 25		04.2.b. FAB 2B	07a. pH	SU	6.7	Inst		3714
Wed Feb 26		04.2.b. FAB 2B	07a. pH	SU	6.57	Inst		3872

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Thu Feb 27		04.2.b. FAB 2B	07a. pH	SU	6.68	Inst		4030
Fri Feb 28		04.2.b. FAB 2B	07a. pH	SU	6.69	Inst		4188
Sat Mar 1		04.2.b. FAB 2B	07a. pH	SU	6.64	Inst		4346
Sun Feb 2		04.2.b. FAB 2B	08. Temp	C	26.9	Inst		81
Mon Feb 3		04.2.b. FAB 2B	08. Temp	C	26.9	Inst		239
Tue Feb 4		04.2.b. FAB 2B	08. Temp	C	27.1	Inst		397
Wed Feb 5		04.2.b. FAB 2B	08. Temp	C	27	Inst		555
Thu Feb 6		04.2.b. FAB 2B	08. Temp	C	27	Inst		713
Fri Feb 7		04.2.b. FAB 2B	08. Temp	C	26.8	Inst		871
Sat Feb 8		04.2.b. FAB 2B	08. Temp	C	26.2	Inst		1029
Sun Feb 9		04.2.b. FAB 2B	08. Temp	C	26.4	Inst		1187
Mon Feb 10		04.2.b. FAB 2B	08. Temp	C	26.3	Inst		1345
Tue Feb 11		04.2.b. FAB 2B	08. Temp	C	26.4	Inst		1503
Wed Feb 12		04.2.b. FAB 2B	08. Temp	C	26.7	Inst		1661
Thu Feb 13		04.2.b. FAB 2B	08. Temp	C	27	Inst		1819
Fri Feb 14		04.2.b. FAB 2B	08. Temp	C	26.3	Inst		1977
Sat Feb 15		04.2.b. FAB 2B	08. Temp	C	26.1	Inst		2135
Sun Feb 16		04.2.b. FAB 2B	08. Temp	C	26.1	Inst		2293
Mon Feb 17		04.2.b. FAB 2B	08. Temp	C	26.1	Inst		2451
Tue Feb 18		04.2.b. FAB 2B	08. Temp	C	26.1	Inst		2609
Wed Feb 19		04.2.b. FAB 2B	08. Temp	C	26.4	Inst		2767
Thu Feb 20		04.2.b. FAB 2B	08. Temp	C	26.5	Inst		2925
Fri Feb 21		04.2.b. FAB 2B	08. Temp	C	26.9	Inst		3083
Sat Feb 22		04.2.b. FAB 2B	08. Temp	C	26.9	Inst		3241
Sun Feb 23		04.2.b. FAB 2B	08. Temp	C	26.9	Inst		3399
Mon Feb 24		04.2.b. FAB 2B	08. Temp	C	26.9	Inst		3557
Tue Feb 25		04.2.b. FAB 2B	08. Temp	C	26.9	Inst		3715
Wed Feb 26		04.2.b. FAB 2B	08. Temp	C	26.8	Inst		3873
Thu Feb 27		04.2.b. FAB 2B	08. Temp	C	27	Inst		4031
Fri Feb 28		04.2.b. FAB 2B	08. Temp	C	27	Inst		4189
Sat Mar 1		04.2.b. FAB 2B	08. Temp	C	26.8	Inst		4347
Sun Feb 2		05.1. CAB 1	06a. Air Flow	scfm	1477	Inst		84
Mon Feb 3		05.1. CAB 1	06a. Air Flow	scfm	1477	Inst		242
Tue Feb 4		05.1. CAB 1	06a. Air Flow	scfm	1476	Inst		400
Wed Feb 5		05.1. CAB 1	06a. Air Flow	scfm	1477	Inst		558
Thu Feb 6		05.1. CAB 1	06a. Air Flow	scfm	1477	Inst		716
Fri Feb 7		05.1. CAB 1	06a. Air Flow	scfm	1477	Inst		874
Sat Feb 8		05.1. CAB 1	06a. Air Flow	scfm	1476	Inst		1032
Sun Feb 9		05.1. CAB 1	06a. Air Flow	scfm	1476	Inst		1190
Mon Feb 10		05.1. CAB 1	06a. Air Flow	scfm	1476	Inst		1348
Tue Feb 11		05.1. CAB 1	06a. Air Flow	scfm	1477	Inst		1506
Wed Feb 12		05.1. CAB 1	06a. Air Flow	scfm	1476	Inst		1664
Thu Feb 13		05.1. CAB 1	06a. Air Flow	scfm	1476	Inst		1822
Fri Feb 14		05.1. CAB 1	06a. Air Flow	scfm	1476	Inst		1980
Sat Feb 15		05.1. CAB 1	06a. Air Flow	scfm	1477	Inst		2138
Sun Feb 16		05.1. CAB 1	06a. Air Flow	scfm	1476	Inst		2296
Mon Feb 17		05.1. CAB 1	06a. Air Flow	scfm	1476	Inst		2454
Tue Feb 18		05.1. CAB 1	06a. Air Flow	scfm	1477	Inst		2612
Wed Feb 19		05.1. CAB 1	06a. Air Flow	scfm	1476	Inst		2770
Thu Feb 20		05.1. CAB 1	06a. Air Flow	scfm	1477	Inst		2928
Fri Feb 21		05.1. CAB 1	06a. Air Flow	scfm	1476	Inst		3086
Sat Feb 22		05.1. CAB 1	06a. Air Flow	scfm	1478	Inst		3244
Sun Feb 23		05.1. CAB 1	06a. Air Flow	scfm	1477	Inst		3402
Mon Feb 24		05.1. CAB 1	06a. Air Flow	scfm	1476	Inst		3560
Tue Feb 25		05.1. CAB 1	06a. Air Flow	scfm	1477	Inst		3718

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Wed Feb 26		05.1. CAB 1	06a. Air Flow	scfm	1476	Inst		3876
Thu Feb 27		05.1. CAB 1	06a. Air Flow	scfm	1477	Inst		4034
Fri Feb 28		05.1. CAB 1	06a. Air Flow	scfm	1476	Inst		4192
Sat Mar 1		05.1. CAB 1	06a. Air Flow	scfm	1477	Inst		4350
Sun Feb 2		05.1. CAB 1	06b. DO	mg/L	2.3	Inst		85
Mon Feb 3		05.1. CAB 1	06b. DO	mg/L	2.27	Inst		243
Tue Feb 4		05.1. CAB 1	06b. DO	mg/L	3.52	Inst		401
Wed Feb 5		05.1. CAB 1	06b. DO	mg/L	2.82	Inst		559
Thu Feb 6		05.1. CAB 1	06b. DO	mg/L	2.03	Inst		717
Fri Feb 7		05.1. CAB 1	06b. DO	mg/L	2.34	Inst		875
Sat Feb 8		05.1. CAB 1	06b. DO	mg/L	2.45	Inst		1033
Sun Feb 9		05.1. CAB 1	06b. DO	mg/L	2.11	Inst		1191
Mon Feb 10		05.1. CAB 1	06b. DO	mg/L	2.32	Inst		1349
Tue Feb 11		05.1. CAB 1	06b. DO	mg/L	2.33	Inst		1507
Wed Feb 12		05.1. CAB 1	06b. DO	mg/L	2.84	Inst		1665
Thu Feb 13		05.1. CAB 1	06b. DO	mg/L	2.27	Inst		1823
Fri Feb 14		05.1. CAB 1	06b. DO	mg/L	2.65	Inst		1981
Sat Feb 15		05.1. CAB 1	06b. DO	mg/L	1.67	Inst		2139
Sun Feb 16		05.1. CAB 1	06b. DO	mg/L	1.68	Inst		2297
Mon Feb 17		05.1. CAB 1	06b. DO	mg/L	2.16	Inst		2455
Tue Feb 18		05.1. CAB 1	06b. DO	mg/L	1.81	Inst		2613
Wed Feb 19		05.1. CAB 1	06b. DO	mg/L	1.1	Inst		2771
Thu Feb 20		05.1. CAB 1	06b. DO	mg/L	1.28	Inst		2929
Fri Feb 21		05.1. CAB 1	06b. DO	mg/L	1.28	Inst		3087
Sat Feb 22		05.1. CAB 1	06b. DO	mg/L	1.12	Inst		3245
Sun Feb 23		05.1. CAB 1	06b. DO	mg/L	0.93	Inst		3403
Mon Feb 24		05.1. CAB 1	06b. DO	mg/L	2.15	Inst		3561
Tue Feb 25		05.1. CAB 1	06b. DO	mg/L	1.09	Inst		3719
Wed Feb 26		05.1. CAB 1	06b. DO	mg/L	1.3	Inst		3877
Thu Feb 27		05.1. CAB 1	06b. DO	mg/L	1.03	Inst		4035
Fri Feb 28		05.1. CAB 1	06b. DO	mg/L	1.69	Inst		4193
Sat Mar 1		05.1. CAB 1	06b. DO	mg/L	1.62	Inst		4351
Sun Feb 2		05.1. CAB 1	07a. pH	SU	6.96	Inst		86
Mon Feb 3		05.1. CAB 1	07a. pH	SU	6.98	Inst		244
Tue Feb 4		05.1. CAB 1	07a. pH	SU	7.02	Inst		402
Wed Feb 5		05.1. CAB 1	07a. pH	SU	6.97	Inst		560
Thu Feb 6		05.1. CAB 1	07a. pH	SU	7.16	Inst		718
Fri Feb 7		05.1. CAB 1	07a. pH	SU	6.96	Inst		876
Sat Feb 8		05.1. CAB 1	07a. pH	SU	6.96	Inst		1034
Sun Feb 9		05.1. CAB 1	07a. pH	SU	6.93	Inst		1192
Mon Feb 10		05.1. CAB 1	07a. pH	SU	7.18	Inst		1350
Tue Feb 11		05.1. CAB 1	07a. pH	SU	7.17	Inst		1508
Wed Feb 12		05.1. CAB 1	07a. pH	SU	7.17	Inst		1666
Thu Feb 13		05.1. CAB 1	07a. pH	SU	7.15	Inst		1824
Fri Feb 14		05.1. CAB 1	07a. pH	SU	7.22	Inst		1982
Sat Feb 15		05.1. CAB 1	07a. pH	SU	7.76	Inst		2140
Sun Feb 16		05.1. CAB 1	07a. pH	SU	6.69	Inst		2298
Mon Feb 17		05.1. CAB 1	07a. pH	SU	6.69	Inst		2456
Tue Feb 18		05.1. CAB 1	07a. pH	SU	6.5	Inst		2614
Wed Feb 19		05.1. CAB 1	07a. pH	SU	6.6	Inst		2772
Thu Feb 20		05.1. CAB 1	07a. pH	SU	6.47	Inst		2930
Fri Feb 21		05.1. CAB 1	07a. pH	SU	6.51	Inst		3088
Sat Feb 22		05.1. CAB 1	07a. pH	SU	6.6	Inst		3246
Sun Feb 23		05.1. CAB 1	07a. pH	SU	6.6	Inst		3404
Mon Feb 24		05.1. CAB 1	07a. pH	SU	6.6	Inst		3562

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Tue Feb 25		05.1. CAB 1	07a. pH	SU	6.46	Inst		3720
Wed Feb 26		05.1. CAB 1	07a. pH	SU	6.52	Inst		3878
Thu Feb 27		05.1. CAB 1	07a. pH	SU	6.59	Inst		4036
Fri Feb 28		05.1. CAB 1	07a. pH	SU	6.62	Inst		4194
Sat Mar 1		05.1. CAB 1	07a. pH	SU	6.6	Inst		4352
Sun Feb 2		05.1. CAB 1	08. Temp	C	26.9	Inst		87
Mon Feb 3		05.1. CAB 1	08. Temp	C	27	Inst		245
Tue Feb 4		05.1. CAB 1	08. Temp	C	27.1	Inst		403
Wed Feb 5		05.1. CAB 1	08. Temp	C	27.1	Inst		561
Thu Feb 6		05.1. CAB 1	08. Temp	C	27.1	Inst		719
Fri Feb 7		05.1. CAB 1	08. Temp	C	26.8	Inst		877
Sat Feb 8		05.1. CAB 1	08. Temp	C	26.3	Inst		1035
Sun Feb 9		05.1. CAB 1	08. Temp	C	26.6	Inst		1193
Mon Feb 10		05.1. CAB 1	08. Temp	C	26.6	Inst		1351
Tue Feb 11		05.1. CAB 1	08. Temp	C	26.4	Inst		1509
Wed Feb 12		05.1. CAB 1	08. Temp	C	26.7	Inst		1667
Thu Feb 13		05.1. CAB 1	08. Temp	C	27.1	Inst		1825
Fri Feb 14		05.1. CAB 1	08. Temp	C	26.7	Inst		1983
Sat Feb 15		05.1. CAB 1	08. Temp	C	26	Inst		2141
Sun Feb 16		05.1. CAB 1	08. Temp	C	26.2	Inst		2299
Mon Feb 17		05.1. CAB 1	08. Temp	C	26.1	Inst		2457
Tue Feb 18		05.1. CAB 1	08. Temp	C	26.5	Inst		2615
Wed Feb 19		05.1. CAB 1	08. Temp	C	26.4	Inst		2773
Thu Feb 20		05.1. CAB 1	08. Temp	C	26.6	Inst		2931
Fri Feb 21		05.1. CAB 1	08. Temp	C	27	Inst		3089
Sat Feb 22		05.1. CAB 1	08. Temp	C	26.9	Inst		3247
Sun Feb 23		05.1. CAB 1	08. Temp	C	27	Inst		3405
Mon Feb 24		05.1. CAB 1	08. Temp	C	26.9	Inst		3563
Tue Feb 25		05.1. CAB 1	08. Temp	C	27.1	Inst		3721
Wed Feb 26		05.1. CAB 1	08. Temp	C	27.1	Inst		3879
Thu Feb 27		05.1. CAB 1	08. Temp	C	27.1	Inst		4037
Fri Feb 28		05.1. CAB 1	08. Temp	C	27.1	Inst		4195
Sat Mar 1		05.1. CAB 1	08. Temp	C	26.9	Inst		4353
Sun Feb 2		05.2.a. CAB 2A	06a. Air Flow	scfm	803	Inst		88
Mon Feb 3		05.2.a. CAB 2A	06a. Air Flow	scfm	859	Inst		246
Tue Feb 4		05.2.a. CAB 2A	06a. Air Flow	scfm	868	Inst		404
Wed Feb 5		05.2.a. CAB 2A	06a. Air Flow	scfm	863	Inst		562
Thu Feb 6		05.2.a. CAB 2A	06a. Air Flow	scfm	848	Inst		720
Fri Feb 7		05.2.a. CAB 2A	06a. Air Flow	scfm	869	Inst		878
Sat Feb 8		05.2.a. CAB 2A	06a. Air Flow	scfm	872	Inst		1036
Sun Feb 9		05.2.a. CAB 2A	06a. Air Flow	scfm	870	Inst		1194
Mon Feb 10		05.2.a. CAB 2A	06a. Air Flow	scfm	855	Inst		1352
Tue Feb 11		05.2.a. CAB 2A	06a. Air Flow	scfm	862	Inst		1510
Wed Feb 12		05.2.a. CAB 2A	06a. Air Flow	scfm	864	Inst		1668
Thu Feb 13		05.2.a. CAB 2A	06a. Air Flow	scfm	861	Inst		1826
Fri Feb 14		05.2.a. CAB 2A	06a. Air Flow	scfm	866	Inst		1984
Sat Feb 15		05.2.a. CAB 2A	06a. Air Flow	scfm	914	Inst		2142
Sun Feb 16		05.2.a. CAB 2A	06a. Air Flow	scfm	899	Inst		2300
Mon Feb 17		05.2.a. CAB 2A	06a. Air Flow	scfm	906	Inst		2458
Tue Feb 18		05.2.a. CAB 2A	06a. Air Flow	scfm	906	Inst		2616
Wed Feb 19		05.2.a. CAB 2A	06a. Air Flow	scfm	904	Inst		2774
Thu Feb 20		05.2.a. CAB 2A	06a. Air Flow	scfm	890	Inst		2932
Fri Feb 21		05.2.a. CAB 2A	06a. Air Flow	scfm	892	Inst		3090
Sat Feb 22		05.2.a. CAB 2A	06a. Air Flow	scfm	903	Inst		3248
Sun Feb 23		05.2.a. CAB 2A	06a. Air Flow	scfm	913	Inst		3406

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Mon Feb 24		05.2.a. CAB 2A	06a. Air Flow	scfm	906	Inst		3564
Tue Feb 25		05.2.a. CAB 2A	06a. Air Flow	scfm	1122	Inst		3722
Wed Feb 26		05.2.a. CAB 2A	06a. Air Flow	scfm	1116	Inst		3880
Thu Feb 27		05.2.a. CAB 2A	06a. Air Flow	scfm	1117	Inst		4038
Fri Feb 28		05.2.a. CAB 2A	06a. Air Flow	scfm	1101	Inst		4196
Sat Mar 1		05.2.a. CAB 2A	06a. Air Flow	scfm	1105	Inst		4354
Sun Feb 2		05.2.a. CAB 2A	06b. DO	mg/L	5.24	Inst		89
Mon Feb 3		05.2.a. CAB 2A	06b. DO	mg/L	4.49	Inst		247
Tue Feb 4		05.2.a. CAB 2A	06b. DO	mg/L	4.1	Inst		405
Wed Feb 5		05.2.a. CAB 2A	06b. DO	mg/L	4.28	Inst		563
Thu Feb 6		05.2.a. CAB 2A	06b. DO	mg/L	3.53	Inst		721
Fri Feb 7		05.2.a. CAB 2A	06b. DO	mg/L	2.91	Inst		879
Sat Feb 8		05.2.a. CAB 2A	06b. DO	mg/L	4.24	Inst		1037
Sun Feb 9		05.2.a. CAB 2A	06b. DO	mg/L	4.23	Inst		1195
Mon Feb 10		05.2.a. CAB 2A	06b. DO	mg/L	4.27	Inst		1353
Tue Feb 11		05.2.a. CAB 2A	06b. DO	mg/L	4.57	Inst		1511
Wed Feb 12		05.2.a. CAB 2A	06b. DO	mg/L	4.87	Inst		1669
Thu Feb 13		05.2.a. CAB 2A	06b. DO	mg/L	4.22	Inst		1827
Fri Feb 14		05.2.a. CAB 2A	06b. DO	mg/L	3.06	Inst		1985
Sat Feb 15		05.2.a. CAB 2A	06b. DO	mg/L	2.51	Inst		2143
Sun Feb 16		05.2.a. CAB 2A	06b. DO	mg/L	2.02	Inst		2301
Mon Feb 17		05.2.a. CAB 2A	06b. DO	mg/L	2.86	Inst		2459
Tue Feb 18		05.2.a. CAB 2A	06b. DO	mg/L	3.07	Inst		2617
Wed Feb 19		05.2.a. CAB 2A	06b. DO	mg/L	1.67	Inst		2775
Thu Feb 20		05.2.a. CAB 2A	06b. DO	mg/L	0.79	Inst		2933
Fri Feb 21		05.2.a. CAB 2A	06b. DO	mg/L	0.62	Inst		3091
Sat Feb 22		05.2.a. CAB 2A	06b. DO	mg/L	2.41	Inst		3249
Sun Feb 23		05.2.a. CAB 2A	06b. DO	mg/L	1.27	Inst		3407
Mon Feb 24		05.2.a. CAB 2A	06b. DO	mg/L	0.81	Inst		3565
Tue Feb 25		05.2.a. CAB 2A	06b. DO	mg/L	3.2	Inst		3723
Wed Feb 26		05.2.a. CAB 2A	06b. DO	mg/L	3.37	Inst		3881
Thu Feb 27		05.2.a. CAB 2A	06b. DO	mg/L	2.39	Inst		4039
Fri Feb 28		05.2.a. CAB 2A	06b. DO	mg/L	4.08	Inst		4197
Sat Mar 1		05.2.a. CAB 2A	06b. DO	mg/L	4.17	Inst		4355
Sun Feb 2		05.2.a. CAB 2A	07a. pH	SU	6.96	Inst		90
Mon Feb 3		05.2.a. CAB 2A	07a. pH	SU	6.98	Inst		248
Tue Feb 4		05.2.a. CAB 2A	07a. pH	SU	7.12	Inst		406
Wed Feb 5		05.2.a. CAB 2A	07a. pH	SU	6.97	Inst		564
Thu Feb 6		05.2.a. CAB 2A	07a. pH	SU	7.05	Inst		722
Fri Feb 7		05.2.a. CAB 2A	07a. pH	SU	6.86	Inst		880
Sat Feb 8		05.2.a. CAB 2A	07a. pH	SU	6.86	Inst		1038
Sun Feb 9		05.2.a. CAB 2A	07a. pH	SU	6.94	Inst		1196
Mon Feb 10		05.2.a. CAB 2A	07a. pH	SU	7.22	Inst		1354
Tue Feb 11		05.2.a. CAB 2A	07a. pH	SU	7.22	Inst		1512
Wed Feb 12		05.2.a. CAB 2A	07a. pH	SU	7.18	Inst		1670
Thu Feb 13		05.2.a. CAB 2A	07a. pH	SU	7.01	Inst		1828
Fri Feb 14		05.2.a. CAB 2A	07a. pH	SU	7.26	Inst		1986
Sun Feb 16		05.2.a. CAB 2A	07a. pH	SU	6.46	Inst		2302
Mon Feb 17		05.2.a. CAB 2A	07a. pH	SU	6.54	Inst		2460
Tue Feb 18		05.2.a. CAB 2A	07a. pH	SU	6.75	Inst		2618
Wed Feb 19		05.2.a. CAB 2A	07a. pH	SU	6.46	Inst		2776
Thu Feb 20		05.2.a. CAB 2A	07a. pH	SU	6.34	Inst		2934
Fri Feb 21		05.2.a. CAB 2A	07a. pH	SU	6.43	Inst		3092
Sat Feb 22		05.2.a. CAB 2A	07a. pH	SU	6.51	Inst		3250
Sun Feb 23		05.2.a. CAB 2A	07a. pH	SU	6.62	Inst		3408

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Mon Feb 24		05.2.a. CAB 2A	07a. pH	SU	6.6	Inst		3566
Tue Feb 25		05.2.a. CAB 2A	07a. pH	SU	6.5	Inst		3724
Wed Feb 26		05.2.a. CAB 2A	07a. pH	SU	6.64	Inst		3882
Thu Feb 27		05.2.a. CAB 2A	07a. pH	SU	6.6	Inst		4040
Fri Feb 28		05.2.a. CAB 2A	07a. pH	SU	6.59	Inst		4198
Sat Mar 1		05.2.a. CAB 2A	07a. pH	SU	6.58	Inst		4356
Sun Feb 2		05.2.a. CAB 2A	08. Temp	C	27	Inst		91
Mon Feb 3		05.2.a. CAB 2A	08. Temp	C	27.1	Inst		249
Tue Feb 4		05.2.a. CAB 2A	08. Temp	C	27.2	Inst		407
Wed Feb 5		05.2.a. CAB 2A	08. Temp	C	27.2	Inst		565
Thu Feb 6		05.2.a. CAB 2A	08. Temp	C	27.2	Inst		723
Fri Feb 7		05.2.a. CAB 2A	08. Temp	C	26.9	Inst		881
Sat Feb 8		05.2.a. CAB 2A	08. Temp	C	26.4	Inst		1039
Sun Feb 9		05.2.a. CAB 2A	08. Temp	C	26.6	Inst		1197
Mon Feb 10		05.2.a. CAB 2A	08. Temp	C	26.6	Inst		1355
Tue Feb 11		05.2.a. CAB 2A	08. Temp	C	26.5	Inst		1513
Wed Feb 12		05.2.a. CAB 2A	08. Temp	C	26.9	Inst		1671
Thu Feb 13		05.2.a. CAB 2A	08. Temp	C	27.2	Inst		1829
Fri Feb 14		05.2.a. CAB 2A	08. Temp	C	26.6	Inst		1987
Sat Feb 15		05.2.a. CAB 2A	08. Temp	C	26	Inst		2145
Sun Feb 16		05.2.a. CAB 2A	08. Temp	C	26.3	Inst		2303
Mon Feb 17		05.2.a. CAB 2A	08. Temp	C	26.3	Inst		2461
Tue Feb 18		05.2.a. CAB 2A	08. Temp	C	26.4	Inst		2619
Wed Feb 19		05.2.a. CAB 2A	08. Temp	C	26.5	Inst		2777
Thu Feb 20		05.2.a. CAB 2A	08. Temp	C	26.6	Inst		2935
Fri Feb 21		05.2.a. CAB 2A	08. Temp	C	27.1	Inst		3093
Sat Feb 22		05.2.a. CAB 2A	08. Temp	C	27	Inst		3251
Sun Feb 23		05.2.a. CAB 2A	08. Temp	C	27	Inst		3409
Mon Feb 24		05.2.a. CAB 2A	08. Temp	C	27	Inst		3567
Tue Feb 25		05.2.a. CAB 2A	08. Temp	C	26.9	Inst		3725
Wed Feb 26		05.2.a. CAB 2A	08. Temp	C	27	Inst		3883
Thu Feb 27		05.2.a. CAB 2A	08. Temp	C	27.2	Inst		4041
Fri Feb 28		05.2.a. CAB 2A	08. Temp	C	27.2	Inst		4199
Sat Mar 1		05.2.a. CAB 2A	08. Temp	C	26.9	Inst		4357
Sun Feb 2		05.2.b. CAB 2B	06a. Air Flow	scfm	803	Inst		92
Mon Feb 3		05.2.b. CAB 2B	06a. Air Flow	scfm	757	Inst		250
Tue Feb 4		05.2.b. CAB 2B	06a. Air Flow	scfm	760	Inst		408
Wed Feb 5		05.2.b. CAB 2B	06a. Air Flow	scfm	749	Inst		566
Thu Feb 6		05.2.b. CAB 2B	06a. Air Flow	scfm	737	Inst		724
Fri Feb 7		05.2.b. CAB 2B	06a. Air Flow	scfm	755	Inst		882
Sat Feb 8		05.2.b. CAB 2B	06a. Air Flow	scfm	757	Inst		1040
Sun Feb 9		05.2.b. CAB 2B	06a. Air Flow	scfm	761	Inst		1198
Mon Feb 10		05.2.b. CAB 2B	06a. Air Flow	scfm	751	Inst		1356
Tue Feb 11		05.2.b. CAB 2B	06a. Air Flow	scfm	747	Inst		1514
Wed Feb 12		05.2.b. CAB 2B	06a. Air Flow	scfm	745	Inst		1672
Thu Feb 13		05.2.b. CAB 2B	06a. Air Flow	scfm	747	Inst		1830
Fri Feb 14		05.2.b. CAB 2B	06a. Air Flow	scfm	753	Inst		1988
Sat Feb 15		05.2.b. CAB 2B	06a. Air Flow	scfm	780	Inst		2146
Sun Feb 16		05.2.b. CAB 2B	06a. Air Flow	scfm	778	Inst		2304
Mon Feb 17		05.2.b. CAB 2B	06a. Air Flow	scfm	771	Inst		2462
Tue Feb 18		05.2.b. CAB 2B	06a. Air Flow	scfm	769	Inst		2620
Wed Feb 19		05.2.b. CAB 2B	06a. Air Flow	scfm	767	Inst		2778
Thu Feb 20		05.2.b. CAB 2B	06a. Air Flow	scfm	757	Inst		2936
Fri Feb 21		05.2.b. CAB 2B	06a. Air Flow	scfm	762	Inst		3094
Sat Feb 22		05.2.b. CAB 2B	06a. Air Flow	scfm	772	Inst		3252

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Sun Feb 23		05.2.b. CAB 2B	06a. Air Flow	scfm	772	Inst		3410
Mon Feb 24		05.2.b. CAB 2B	06a. Air Flow	scfm	768	Inst		3568
Tue Feb 25		05.2.b. CAB 2B	06a. Air Flow	scfm	888	Inst		3726
Wed Feb 26		05.2.b. CAB 2B	06a. Air Flow	scfm	871	Inst		3884
Thu Feb 27		05.2.b. CAB 2B	06a. Air Flow	scfm	883	Inst		4042
Fri Feb 28		05.2.b. CAB 2B	06a. Air Flow	scfm	862	Inst		4200
Sat Mar 1		05.2.b. CAB 2B	06a. Air Flow	scfm	879	Inst		4358
Sun Feb 2		05.2.b. CAB 2B	06b. DO	mg/L	3.97	Inst		93
Mon Feb 3		05.2.b. CAB 2B	06b. DO	mg/L	4.08	Inst		251
Tue Feb 4		05.2.b. CAB 2B	06b. DO	mg/L	4.18	Inst		409
Wed Feb 5		05.2.b. CAB 2B	06b. DO	mg/L	4.35	Inst		567
Thu Feb 6		05.2.b. CAB 2B	06b. DO	mg/L	3.76	Inst		725
Fri Feb 7		05.2.b. CAB 2B	06b. DO	mg/L	3.7	Inst		883
Sat Feb 8		05.2.b. CAB 2B	06b. DO	mg/L	4.21	Inst		1041
Sun Feb 9		05.2.b. CAB 2B	06b. DO	mg/L	4.34	Inst		1199
Mon Feb 10		05.2.b. CAB 2B	06b. DO	mg/L	4.75	Inst		1357
Tue Feb 11		05.2.b. CAB 2B	06b. DO	mg/L	4.18	Inst		1515
Wed Feb 12		05.2.b. CAB 2B	06b. DO	mg/L	3.98	Inst		1673
Thu Feb 13		05.2.b. CAB 2B	06b. DO	mg/L	3.43	Inst		1831
Fri Feb 14		05.2.b. CAB 2B	06b. DO	mg/L	2.96	Inst		1989
Sat Feb 15		05.2.b. CAB 2B	06b. DO	mg/L	2.91	Inst		2147
Sun Feb 16		05.2.b. CAB 2B	06b. DO	mg/L	2.79	Inst		2305
Mon Feb 17		05.2.b. CAB 2B	06b. DO	mg/L	2.8	Inst		2463
Tue Feb 18		05.2.b. CAB 2B	06b. DO	mg/L	4.03	Inst		2621
Wed Feb 19		05.2.b. CAB 2B	06b. DO	mg/L	1.66	Inst		2779
Thu Feb 20		05.2.b. CAB 2B	06b. DO	mg/L	0.71	Inst		2937
Fri Feb 21		05.2.b. CAB 2B	06b. DO	mg/L	0.69	Inst		3095
Sat Feb 22		05.2.b. CAB 2B	06b. DO	mg/L	0.59	Inst		3253
Sun Feb 23		05.2.b. CAB 2B	06b. DO	mg/L	1.98	Inst		3411
Mon Feb 24		05.2.b. CAB 2B	06b. DO	mg/L	0.7	Inst		3569
Tue Feb 25		05.2.b. CAB 2B	06b. DO	mg/L	2.91	Inst		3727
Wed Feb 26		05.2.b. CAB 2B	06b. DO	mg/L	3.34	Inst		3885
Thu Feb 27		05.2.b. CAB 2B	06b. DO	mg/L	3.24	Inst		4043
Fri Feb 28		05.2.b. CAB 2B	06b. DO	mg/L	4.09	Inst		4201
Sat Mar 1		05.2.b. CAB 2B	06b. DO	mg/L	4.59	Inst		4359
Sun Feb 2		05.2.b. CAB 2B	07a. pH	SU	7.1	Inst		94
Mon Feb 3		05.2.b. CAB 2B	07a. pH	SU	6.98	Inst		252
Tue Feb 4		05.2.b. CAB 2B	07a. pH	SU	7.11	Inst		410
Wed Feb 5		05.2.b. CAB 2B	07a. pH	SU	6.97	Inst		568
Thu Feb 6		05.2.b. CAB 2B	07a. pH	SU	7.1	Inst		726
Fri Feb 7		05.2.b. CAB 2B	07a. pH	SU	7.1	Inst		884
Sat Feb 8		05.2.b. CAB 2B	07a. pH	SU	6.98	Inst		1042
Sun Feb 9		05.2.b. CAB 2B	07a. pH	SU	6.94	Inst		1200
Mon Feb 10		05.2.b. CAB 2B	07a. pH	SU	7.22	Inst		1358
Tue Feb 11		05.2.b. CAB 2B	07a. pH	SU	7.28	Inst		1516
Wed Feb 12		05.2.b. CAB 2B	07a. pH	SU	7.18	Inst		1674
Thu Feb 13		05.2.b. CAB 2B	07a. pH	SU	7.17	Inst		1832
Fri Feb 14		05.2.b. CAB 2B	07a. pH	SU	7.24	Inst		1990
Sat Feb 15		05.2.b. CAB 2B	07a. pH	SU	7.73	Inst		2148
Sun Feb 16		05.2.b. CAB 2B	07a. pH	SU	6.5	Inst		2306
Mon Feb 17		05.2.b. CAB 2B	07a. pH	SU	6.59	Inst		2464
Tue Feb 18		05.2.b. CAB 2B	07a. pH	SU	6.71	Inst		2622
Wed Feb 19		05.2.b. CAB 2B	07a. pH	SU	6.4	Inst		2780
Thu Feb 20		05.2.b. CAB 2B	07a. pH	SU	6.32	Inst		2938
Fri Feb 21		05.2.b. CAB 2B	07a. pH	SU	6.4	Inst		3096

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Sat Feb 22		05.2.b. CAB 2B	07a. pH	SU	6.55	Inst		3254
Sun Feb 23		05.2.b. CAB 2B	07a. pH	SU	6.61	Inst		3412
Mon Feb 24		05.2.b. CAB 2B	07a. pH	SU	6.5	Inst		3570
Tue Feb 25		05.2.b. CAB 2B	07a. pH	SU	6.52	Inst		3728
Wed Feb 26		05.2.b. CAB 2B	07a. pH	SU	6.62	Inst		3886
Thu Feb 27		05.2.b. CAB 2B	07a. pH	SU	6.58	Inst		4044
Fri Feb 28		05.2.b. CAB 2B	07a. pH	SU	6.58	Inst		4202
Sat Mar 1		05.2.b. CAB 2B	07a. pH	SU	6.56	Inst		4360
Sun Feb 2		05.2.b. CAB 2B	08. Temp	C	26.8	Inst		95
Mon Feb 3		05.2.b. CAB 2B	08. Temp	C	27.1	Inst		253
Tue Feb 4		05.2.b. CAB 2B	08. Temp	C	27.2	Inst		411
Wed Feb 5		05.2.b. CAB 2B	08. Temp	C	27.2	Inst		569
Thu Feb 6		05.2.b. CAB 2B	08. Temp	C	27.2	Inst		727
Fri Feb 7		05.2.b. CAB 2B	08. Temp	C	26.9	Inst		885
Sat Feb 8		05.2.b. CAB 2B	08. Temp	C	26.4	Inst		1043
Sun Feb 9		05.2.b. CAB 2B	08. Temp	C	26.6	Inst		1201
Mon Feb 10		05.2.b. CAB 2B	08. Temp	C	26.6	Inst		1359
Tue Feb 11		05.2.b. CAB 2B	08. Temp	C	26.5	Inst		1517
Wed Feb 12		05.2.b. CAB 2B	08. Temp	C	26.9	Inst		1675
Thu Feb 13		05.2.b. CAB 2B	08. Temp	C	27.2	Inst		1833
Fri Feb 14		05.2.b. CAB 2B	08. Temp	C	26.6	Inst		1991
Sat Feb 15		05.2.b. CAB 2B	08. Temp	C	26	Inst		2149
Sun Feb 16		05.2.b. CAB 2B	08. Temp	C	26.3	Inst		2307
Mon Feb 17		05.2.b. CAB 2B	08. Temp	C	26.4	Inst		2465
Tue Feb 18		05.2.b. CAB 2B	08. Temp	C	26.4	Inst		2623
Wed Feb 19		05.2.b. CAB 2B	08. Temp	C	26.5	Inst		2781
Thu Feb 20		05.2.b. CAB 2B	08. Temp	C	26.7	Inst		2939
Fri Feb 21		05.2.b. CAB 2B	08. Temp	C	27.1	Inst		3097
Sat Feb 22		05.2.b. CAB 2B	08. Temp	C	27	Inst		3255
Sun Feb 23		05.2.b. CAB 2B	08. Temp	C	27	Inst		3413
Mon Feb 24		05.2.b. CAB 2B	08. Temp	C	27	Inst		3571
Tue Feb 25		05.2.b. CAB 2B	08. Temp	C	27	Inst		3729
Wed Feb 26		05.2.b. CAB 2B	08. Temp	C	27	Inst		3887
Thu Feb 27		05.2.b. CAB 2B	08. Temp	C	27.2	Inst		4045
Fri Feb 28		05.2.b. CAB 2B	08. Temp	C	27.2	Inst		4203
Sat Mar 1		05.2.b. CAB 2B	08. Temp	C	26.9	Inst		4361
Mon Feb 3		05.3. CAB 3	05c. NH3-N	mg/L	2.21	Grab		258
Wed Feb 5		05.3. CAB 3	05c. NH3-N	mg/L	1.79	Grab		574
Fri Feb 7		05.3. CAB 3	05c. NH3-N	mg/L	1.94	Grab		890
Mon Feb 10		05.3. CAB 3	05c. NH3-N	mg/L	1.34	Grab		1364
Wed Feb 12		05.3. CAB 3	05c. NH3-N	mg/L	0.89	Grab		1680
Fri Feb 14		05.3. CAB 3	05c. NH3-N	mg/L	4.02	Grab		1996
Mon Feb 17		05.3. CAB 3	05c. NH3-N	mg/L	5.58	Grab		2470
Wed Feb 19		05.3. CAB 3	05c. NH3-N	mg/L	8.82	Grab		2786
Fri Feb 21		05.3. CAB 3	05c. NH3-N	mg/L	4.08	Grab		3102
Mon Feb 24		05.3. CAB 3	05c. NH3-N	mg/L	8.32	Grab		3576
Wed Feb 26		05.3. CAB 3	05c. NH3-N	mg/L	7.54	Grab		3892
Fri Feb 28		05.3. CAB 3	05c. NH3-N	mg/L	1.67	Grab		4208
Mon Feb 3		05.3. CAB 3	05d. Nox-N	mg/L	2.95	Grab		259
Wed Feb 5		05.3. CAB 3	05d. Nox-N	mg/L	1.64	Grab		575
Fri Feb 7		05.3. CAB 3	05d. Nox-N	mg/L	1.03	Grab		891
Mon Feb 10		05.3. CAB 3	05d. Nox-N	mg/L	1.96	Grab		1365
Wed Feb 12		05.3. CAB 3	05d. Nox-N	mg/L	1.93	Grab		1681
Fri Feb 14		05.3. CAB 3	05d. Nox-N	mg/L	1.31	Grab		1997
Mon Feb 17		05.3. CAB 3	05d. Nox-N	mg/L	1.11	Grab		2471

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Wed Feb 19		05.3. CAB 3	05d. Nox-N	mg/L	1.63	Grab		2787
Fri Feb 21		05.3. CAB 3	05d. Nox-N	mg/L	2.03	Grab		3103
Mon Feb 24		05.3. CAB 3	05d. Nox-N	mg/L	1.34	Grab		3577
Wed Feb 26		05.3. CAB 3	05d. Nox-N	mg/L	1.97	Grab		3893
Fri Feb 28		05.3. CAB 3	05d. Nox-N	mg/L	1.6	Grab		4209
Sun Feb 2		05.3. CAB 3	06a. Air Flow	scfm	602	Inst		96
Mon Feb 3		05.3. CAB 3	06a. Air Flow	scfm	607	Inst		254
Tue Feb 4		05.3. CAB 3	06a. Air Flow	scfm	586	Inst		412
Wed Feb 5		05.3. CAB 3	06a. Air Flow	scfm	595	Inst		570
Thu Feb 6		05.3. CAB 3	06a. Air Flow	scfm	589	Inst		728
Fri Feb 7		05.3. CAB 3	06a. Air Flow	scfm	613	Inst		886
Sat Feb 8		05.3. CAB 3	06a. Air Flow	scfm	604	Inst		1044
Sun Feb 9		05.3. CAB 3	06a. Air Flow	scfm	605	Inst		1202
Mon Feb 10		05.3. CAB 3	06a. Air Flow	scfm	598	Inst		1360
Tue Feb 11		05.3. CAB 3	06a. Air Flow	scfm	606	Inst		1518
Wed Feb 12		05.3. CAB 3	06a. Air Flow	scfm	595	Inst		1676
Thu Feb 13		05.3. CAB 3	06a. Air Flow	scfm	290	Inst		1834
Fri Feb 14		05.3. CAB 3	06a. Air Flow	scfm	596	Inst		1992
Sat Feb 15		05.3. CAB 3	06a. Air Flow	scfm	619	Inst		2150
Sun Feb 16		05.3. CAB 3	06a. Air Flow	scfm	613	Inst		2308
Mon Feb 17		05.3. CAB 3	06a. Air Flow	scfm	618	Inst		2466
Tue Feb 18		05.3. CAB 3	06a. Air Flow	scfm	622	Inst		2624
Wed Feb 19		05.3. CAB 3	06a. Air Flow	scfm	614	Inst		2782
Thu Feb 20		05.3. CAB 3	06a. Air Flow	scfm	600	Inst		2940
Fri Feb 21		05.3. CAB 3	06a. Air Flow	scfm	612	Inst		3098
Sat Feb 22		05.3. CAB 3	06a. Air Flow	scfm	615	Inst		3256
Sun Feb 23		05.3. CAB 3	06a. Air Flow	scfm	608	Inst		3414
Mon Feb 24		05.3. CAB 3	06a. Air Flow	scfm	608	Inst		3572
Tue Feb 25		05.3. CAB 3	06a. Air Flow	scfm	616	Inst		3730
Wed Feb 26		05.3. CAB 3	06a. Air Flow	scfm	606	Inst		3888
Thu Feb 27		05.3. CAB 3	06a. Air Flow	scfm	609	Inst		4046
Fri Feb 28		05.3. CAB 3	06a. Air Flow	scfm	607	Inst		4204
Sat Mar 1		05.3. CAB 3	06a. Air Flow	scfm	604	Inst		4362
Sun Feb 2		05.3. CAB 3	06b. DO	mg/L	3.95	Inst		97
Mon Feb 3		05.3. CAB 3	06b. DO	mg/L	3.91	Inst		255
Tue Feb 4		05.3. CAB 3	06b. DO	mg/L	4.29	Inst		413
Wed Feb 5		05.3. CAB 3	06b. DO	mg/L	4.21	Inst		571
Thu Feb 6		05.3. CAB 3	06b. DO	mg/L	3.44	Inst		729
Fri Feb 7		05.3. CAB 3	06b. DO	mg/L	3.6	Inst		887
Sat Feb 8		05.3. CAB 3	06b. DO	mg/L	4.08	Inst		1045
Sun Feb 9		05.3. CAB 3	06b. DO	mg/L	3.78	Inst		1203
Mon Feb 10		05.3. CAB 3	06b. DO	mg/L	4.71	Inst		1361
Tue Feb 11		05.3. CAB 3	06b. DO	mg/L	3.71	Inst		1519
Wed Feb 12		05.3. CAB 3	06b. DO	mg/L	3.98	Inst		1677
Thu Feb 13		05.3. CAB 3	06b. DO	mg/L	3.52	Inst		1835
Fri Feb 14		05.3. CAB 3	06b. DO	mg/L	3.61	Inst		1993
Sat Feb 15		05.3. CAB 3	06b. DO	mg/L	3.84	Inst		2151
Sun Feb 16		05.3. CAB 3	06b. DO	mg/L	3.48	Inst		2309
Mon Feb 17		05.3. CAB 3	06b. DO	mg/L	3.57	Inst		2467
Tue Feb 18		05.3. CAB 3	06b. DO	mg/L	3.94	Inst		2625
Wed Feb 19		05.3. CAB 3	06b. DO	mg/L	3.17	Inst		2783
Thu Feb 20		05.3. CAB 3	06b. DO	mg/L	2.58	Inst		2941
Fri Feb 21		05.3. CAB 3	06b. DO	mg/L	1.97	Inst		3099
Sat Feb 22		05.3. CAB 3	06b. DO	mg/L	2	Inst		3257
Sun Feb 23		05.3. CAB 3	06b. DO	mg/L	3.09	Inst		3415

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Mon Feb 24		05.3. CAB 3	06b. DO	mg/L	2.8	Inst		3573
Tue Feb 25		05.3. CAB 3	06b. DO	mg/L	3.25	Inst		3731
Wed Feb 26		05.3. CAB 3	06b. DO	mg/L	3.38	Inst		3889
Thu Feb 27		05.3. CAB 3	06b. DO	mg/L	3.11	Inst		4047
Fri Feb 28		05.3. CAB 3	06b. DO	mg/L	3.79	Inst		4205
Sat Mar 1		05.3. CAB 3	06b. DO	mg/L	3.78	Inst		4363
Sun Feb 2		05.3. CAB 3	07a. pH	SU	6.95	Inst		98
Mon Feb 3		05.3. CAB 3	07a. pH	SU	6.98	Inst		256
Tue Feb 4		05.3. CAB 3	07a. pH	SU	7.2	Inst		414
Wed Feb 5		05.3. CAB 3	07a. pH	SU	7.18	Inst		572
Thu Feb 6		05.3. CAB 3	07a. pH	SU	7.24	Inst		730
Fri Feb 7		05.3. CAB 3	07a. pH	SU	7.17	Inst		888
Sat Feb 8		05.3. CAB 3	07a. pH	SU	6.95	Inst		1046
Sun Feb 9		05.3. CAB 3	07a. pH	SU	6.94	Inst		1204
Mon Feb 10		05.3. CAB 3	07a. pH	SU	7.3	Inst		1362
Tue Feb 11		05.3. CAB 3	07a. pH	SU	7.28	Inst		1520
Wed Feb 12		05.3. CAB 3	07a. pH	SU	7.18	Inst		1678
Thu Feb 13		05.3. CAB 3	07a. pH	SU	7.23	Inst		1836
Fri Feb 14		05.3. CAB 3	07a. pH	SU	7.28	Inst		1994
Sat Feb 15		05.3. CAB 3	07a. pH	SU	7.67	Inst		2152
Sun Feb 16		05.3. CAB 3	07a. pH	SU	6.5	Inst		2310
Mon Feb 17		05.3. CAB 3	07a. pH	SU	6.66	Inst		2468
Tue Feb 18		05.3. CAB 3	07a. pH	SU	6.76	Inst		2626
Wed Feb 19		05.3. CAB 3	07a. pH	SU	6.45	Inst		2784
Thu Feb 20		05.3. CAB 3	07a. pH	SU	6.36	Inst		2942
Fri Feb 21		05.3. CAB 3	07a. pH	SU	6.4	Inst		3100
Sat Feb 22		05.3. CAB 3	07a. pH	SU	6.57	Inst		3258
Sun Feb 23		05.3. CAB 3	07a. pH	SU	6.61	Inst		3416
Mon Feb 24		05.3. CAB 3	07a. pH	SU	6.77	Inst		3574
Tue Feb 25		05.3. CAB 3	07a. pH	SU	6.56	Inst		3732
Wed Feb 26		05.3. CAB 3	07a. pH	SU	6.59	Inst		3890
Thu Feb 27		05.3. CAB 3	07a. pH	SU	6.7	Inst		4048
Fri Feb 28		05.3. CAB 3	07a. pH	SU	6.62	Inst		4206
Sat Mar 1		05.3. CAB 3	07a. pH	SU	6.59	Inst		4364
Sun Feb 2		05.3. CAB 3	08. Temp	C	27.1	Inst		99
Mon Feb 3		05.3. CAB 3	08. Temp	C	27.1	Inst		257
Tue Feb 4		05.3. CAB 3	08. Temp	C	27.2	Inst		415
Wed Feb 5		05.3. CAB 3	08. Temp	C	27.3	Inst		573
Thu Feb 6		05.3. CAB 3	08. Temp	C	27.3	Inst		731
Fri Feb 7		05.3. CAB 3	08. Temp	C	27	Inst		889
Sat Feb 8		05.3. CAB 3	08. Temp	C	26.5	Inst		1047
Sun Feb 9		05.3. CAB 3	08. Temp	C	26.7	Inst		1205
Mon Feb 10		05.3. CAB 3	08. Temp	C	26.6	Inst		1363
Tue Feb 11		05.3. CAB 3	08. Temp	C	26.6	Inst		1521
Wed Feb 12		05.3. CAB 3	08. Temp	C	26.9	Inst		1679
Thu Feb 13		05.3. CAB 3	08. Temp	C	27.2	Inst		1837
Fri Feb 14		05.3. CAB 3	08. Temp	C	26.4	Inst		1995
Sat Feb 15		05.3. CAB 3	08. Temp	C	26	Inst		2153
Sun Feb 16		05.3. CAB 3	08. Temp	C	26.4	Inst		2311
Mon Feb 17		05.3. CAB 3	08. Temp	C	26.3	Inst		2469
Tue Feb 18		05.3. CAB 3	08. Temp	C	26.5	Inst		2627
Wed Feb 19		05.3. CAB 3	08. Temp	C	26.6	Inst		2785
Thu Feb 20		05.3. CAB 3	08. Temp	C	26.8	Inst		2943
Fri Feb 21		05.3. CAB 3	08. Temp	C	27.2	Inst		3101
Sat Feb 22		05.3. CAB 3	08. Temp	C	27.1	Inst		3259

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Sun Feb 23		05.3. CAB 3	08. Temp	C	27.1	Inst		3417
Mon Feb 24		05.3. CAB 3	08. Temp	C	27	Inst		3575
Tue Feb 25		05.3. CAB 3	08. Temp	C	27	Inst		3733
Wed Feb 26		05.3. CAB 3	08. Temp	C	27.1	Inst		3891
Thu Feb 27		05.3. CAB 3	08. Temp	C	27.2	Inst		4049
Fri Feb 28		05.3. CAB 3	08. Temp	C	27.2	Inst		4207
Sat Mar 1		05.3. CAB 3	08. Temp	C	26.9	Inst		4365
Mon Feb 3		05.4. CAB 4	05c. NH3-N	mg/L	2.09	Grab		264
Wed Feb 5		05.4. CAB 4	05c. NH3-N	mg/L	2.09	Grab		580
Fri Feb 7		05.4. CAB 4	05c. NH3-N	mg/L	1.79	Grab		896
Mon Feb 10		05.4. CAB 4	05c. NH3-N	mg/L	1.04	Grab		1370
Wed Feb 12		05.4. CAB 4	05c. NH3-N	mg/L	0.6	Grab		1686
Fri Feb 14		05.4. CAB 4	05c. NH3-N	mg/L	4.13	Grab		2002
Mon Feb 17		05.4. CAB 4	05c. NH3-N	mg/L	8.37	Grab		2476
Wed Feb 19		05.4. CAB 4	05c. NH3-N	mg/L	4.8	Grab		2792
Fri Feb 21		05.4. CAB 4	05c. NH3-N	mg/L	3.96	Grab		3108
Mon Feb 24		05.4. CAB 4	05c. NH3-N	mg/L	3.8	Grab		3582
Wed Feb 26		05.4. CAB 4	05c. NH3-N	mg/L	8.04	Grab		3898
Fri Feb 28		05.4. CAB 4	05c. NH3-N	mg/L	3.46	Grab		4214
Mon Feb 3		05.4. CAB 4	05d. Nox-N	mg/L	2.46	Grab		265
Wed Feb 5		05.4. CAB 4	05d. Nox-N	mg/L	1.71	Grab		581
Fri Feb 7		05.4. CAB 4	05d. Nox-N	mg/L	1	Grab		897
Mon Feb 10		05.4. CAB 4	05d. Nox-N	mg/L	1.5	Grab		1371
Wed Feb 12		05.4. CAB 4	05d. Nox-N	mg/L	1.28	Grab		1687
Fri Feb 14		05.4. CAB 4	05d. Nox-N	mg/L	1.33	Grab		2003
Mon Feb 17		05.4. CAB 4	05d. Nox-N	mg/L	0.84	Grab		2477
Wed Feb 19		05.4. CAB 4	05d. Nox-N	mg/L	1.35	Grab		2793
Fri Feb 21		05.4. CAB 4	05d. Nox-N	mg/L	1.6	Grab		3109
Mon Feb 24		05.4. CAB 4	05d. Nox-N	mg/L	1.42	Grab		3583
Wed Feb 26		05.4. CAB 4	05d. Nox-N	mg/L	1.96	Grab		3899
Fri Feb 28		05.4. CAB 4	05d. Nox-N	mg/L	1.74	Grab		4215
Sun Feb 2		05.4. CAB 4	06a. Air Flow	scfm	205	Inst		102
Mon Feb 3		05.4. CAB 4	06a. Air Flow	scfm	232	Inst		260
Tue Feb 4		05.4. CAB 4	06a. Air Flow	scfm	218	Inst		418
Wed Feb 5		05.4. CAB 4	06a. Air Flow	scfm	215	Inst		576
Thu Feb 6		05.4. CAB 4	06a. Air Flow	scfm	195	Inst		734
Fri Feb 7		05.4. CAB 4	06a. Air Flow	scfm	218	Inst		892
Sat Feb 8		05.4. CAB 4	06a. Air Flow	scfm	227	Inst		1050
Sun Feb 9		05.4. CAB 4	06a. Air Flow	scfm	217	Inst		1208
Mon Feb 10		05.4. CAB 4	06a. Air Flow	scfm	204	Inst		1366
Tue Feb 11		05.4. CAB 4	06a. Air Flow	scfm	210	Inst		1524
Wed Feb 12		05.4. CAB 4	06a. Air Flow	scfm	202	Inst		1682
Thu Feb 13		05.4. CAB 4	06a. Air Flow	scfm	208	Inst		1840
Fri Feb 14		05.4. CAB 4	06a. Air Flow	scfm	204	Inst		1998
Sat Feb 15		05.4. CAB 4	06a. Air Flow	scfm	200	Inst		2156
Sun Feb 16		05.4. CAB 4	06a. Air Flow	scfm	201	Inst		2314
Mon Feb 17		05.4. CAB 4	06a. Air Flow	scfm	191	Inst		2472
Tue Feb 18		05.4. CAB 4	06a. Air Flow	scfm	189	Inst		2630
Wed Feb 19		05.4. CAB 4	06a. Air Flow	scfm	179	Inst		2788
Thu Feb 20		05.4. CAB 4	06a. Air Flow	scfm	178	Inst		2946
Fri Feb 21		05.4. CAB 4	06a. Air Flow	scfm	231	Inst		3104
Sat Feb 22		05.4. CAB 4	06a. Air Flow	scfm	227	Inst		3262
Sun Feb 23		05.4. CAB 4	06a. Air Flow	scfm	224	Inst		3420
Mon Feb 24		05.4. CAB 4	06a. Air Flow	scfm	216	Inst		3578
Tue Feb 25		05.4. CAB 4	06a. Air Flow	scfm	240	Inst		3736

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Wed Feb 26		05.4. CAB 4	06a. Air Flow	scfm	237	Inst		3894
Thu Feb 27		05.4. CAB 4	06a. Air Flow	scfm	256	Inst		4052
Fri Feb 28		05.4. CAB 4	06a. Air Flow	scfm	211	Inst		4210
Sat Mar 1		05.4. CAB 4	06a. Air Flow	scfm	227	Inst		4368
Sun Feb 2		05.4. CAB 4	06b. DO	mg/L	0.16	Inst		103
Mon Feb 3		05.4. CAB 4	06b. DO	mg/L	0.16	Inst		261
Tue Feb 4		05.4. CAB 4	06b. DO	mg/L	0.11	Inst		419
Wed Feb 5		05.4. CAB 4	06b. DO	mg/L	0.14	Inst		577
Thu Feb 6		05.4. CAB 4	06b. DO	mg/L	0.08	Inst		735
Fri Feb 7		05.4. CAB 4	06b. DO	mg/L	0.08	Inst		893
Sat Feb 8		05.4. CAB 4	06b. DO	mg/L	0.13	Inst		1051
Sun Feb 9		05.4. CAB 4	06b. DO	mg/L	0.11	Inst		1209
Mon Feb 10		05.4. CAB 4	06b. DO	mg/L	0.16	Inst		1367
Tue Feb 11		05.4. CAB 4	06b. DO	mg/L	0.13	Inst		1525
Wed Feb 12		05.4. CAB 4	06b. DO	mg/L	0.34	Inst		1683
Thu Feb 13		05.4. CAB 4	06b. DO	mg/L	0.15	Inst		1841
Fri Feb 14		05.4. CAB 4	06b. DO	mg/L	0.29	Inst		1999
Sat Feb 15		05.4. CAB 4	06b. DO	mg/L	0.12	Inst		2157
Sun Feb 16		05.4. CAB 4	06b. DO	mg/L	0.13	Inst		2315
Mon Feb 17		05.4. CAB 4	06b. DO	mg/L	0.2	Inst		2473
Tue Feb 18		05.4. CAB 4	06b. DO	mg/L	0.21	Inst		2631
Wed Feb 19		05.4. CAB 4	06b. DO	mg/L	0.13	Inst		2789
Thu Feb 20		05.4. CAB 4	06b. DO	mg/L	0.09	Inst		2947
Fri Feb 21		05.4. CAB 4	06b. DO	mg/L	0.09	Inst		3105
Sat Feb 22		05.4. CAB 4	06b. DO	mg/L	0.2	Inst		3263
Sun Feb 23		05.4. CAB 4	06b. DO	mg/L	0.12	Inst		3421
Mon Feb 24		05.4. CAB 4	06b. DO	mg/L	0.1	Inst		3579
Tue Feb 25		05.4. CAB 4	06b. DO	mg/L	0.09	Inst		3737
Wed Feb 26		05.4. CAB 4	06b. DO	mg/L	0.2	Inst		3895
Thu Feb 27		05.4. CAB 4	06b. DO	mg/L	0.08	Inst		4053
Fri Feb 28		05.4. CAB 4	06b. DO	mg/L	0.13	Inst		4211
Sat Mar 1		05.4. CAB 4	06b. DO	mg/L	0.08	Inst		4369
Sun Feb 2		05.4. CAB 4	07a. pH	SU	7.14	Inst		104
Mon Feb 3		05.4. CAB 4	07a. pH	SU	7.15	Inst		262
Tue Feb 4		05.4. CAB 4	07a. pH	SU	6.92	Inst		420
Wed Feb 5		05.4. CAB 4	07a. pH	SU	7.05	Inst		578
Thu Feb 6		05.4. CAB 4	07a. pH	SU	7.1	Inst		736
Fri Feb 7		05.4. CAB 4	07a. pH	SU	7.24	Inst		894
Sat Feb 8		05.4. CAB 4	07a. pH	SU	6.92	Inst		1052
Sun Feb 9		05.4. CAB 4	07a. pH	SU	6.97	Inst		1210
Mon Feb 10		05.4. CAB 4	07a. pH	SU	7.19	Inst		1368
Tue Feb 11		05.4. CAB 4	07a. pH	SU	7.07	Inst		1526
Wed Feb 12		05.4. CAB 4	07a. pH	SU	7.17	Inst		1684
Thu Feb 13		05.4. CAB 4	07a. pH	SU	7.2	Inst		1842
Fri Feb 14		05.4. CAB 4	07a. pH	SU	7.16	Inst		2000
Sun Feb 16		05.4. CAB 4	07a. pH	SU	6.46	Inst		2316
Mon Feb 17		05.4. CAB 4	07a. pH	SU	6.79	Inst		2474
Tue Feb 18		05.4. CAB 4	07a. pH	SU	6.6	Inst		2632
Wed Feb 19		05.4. CAB 4	07a. pH	SU	6.56	Inst		2790
Thu Feb 20		05.4. CAB 4	07a. pH	SU	6.4	Inst		2948
Fri Feb 21		05.4. CAB 4	07a. pH	SU	6.42	Inst		3106
Sat Feb 22		05.4. CAB 4	07a. pH	SU	6.44	Inst		3264
Sun Feb 23		05.4. CAB 4	07a. pH	SU	6.59	Inst		3422
Mon Feb 24		05.4. CAB 4	07a. pH	SU	6.51	Inst		3580
Tue Feb 25		05.4. CAB 4	07a. pH	SU	6.57	Inst		3738

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Wed Feb 26		05.4. CAB 4	07a. pH	SU	6.62	Inst		3896
Thu Feb 27		05.4. CAB 4	07a. pH	SU	6.6	Inst		4054
Fri Feb 28		05.4. CAB 4	07a. pH	SU	6.62	Inst		4212
Sat Mar 1		05.4. CAB 4	07a. pH	SU	6.58	Inst		4370
Sun Feb 2		05.4. CAB 4	08. Temp	C	27	Inst		105
Mon Feb 3		05.4. CAB 4	08. Temp	C	27.2	Inst		263
Tue Feb 4		05.4. CAB 4	08. Temp	C	27.3	Inst		421
Wed Feb 5		05.4. CAB 4	08. Temp	C	27.3	Inst		579
Thu Feb 6		05.4. CAB 4	08. Temp	C	27.3	Inst		737
Fri Feb 7		05.4. CAB 4	08. Temp	C	27	Inst		895
Sat Feb 8		05.4. CAB 4	08. Temp	C	26.5	Inst		1053
Sun Feb 9		05.4. CAB 4	08. Temp	C	26.7	Inst		1211
Mon Feb 10		05.4. CAB 4	08. Temp	C	26.7	Inst		1369
Tue Feb 11		05.4. CAB 4	08. Temp	C	26.6	Inst		1527
Wed Feb 12		05.4. CAB 4	08. Temp	C	27	Inst		1685
Thu Feb 13		05.4. CAB 4	08. Temp	C	27.3	Inst		1843
Fri Feb 14		05.4. CAB 4	08. Temp	C	26.9	Inst		2001
Sat Feb 15		05.4. CAB 4	08. Temp	C	26.6	Inst		2159
Sun Feb 16		05.4. CAB 4	08. Temp	C	26.4	Inst		2317
Mon Feb 17		05.4. CAB 4	08. Temp	C	26.3	Inst		2475
Tue Feb 18		05.4. CAB 4	08. Temp	C	26.5	Inst		2633
Wed Feb 19		05.4. CAB 4	08. Temp	C	26.6	Inst		2791
Thu Feb 20		05.4. CAB 4	08. Temp	C	26.9	Inst		2949
Fri Feb 21		05.4. CAB 4	08. Temp	C	27.3	Inst		3107
Sat Feb 22		05.4. CAB 4	08. Temp	C	27.2	Inst		3265
Sun Feb 23		05.4. CAB 4	08. Temp	C	27.1	Inst		3423
Mon Feb 24		05.4. CAB 4	08. Temp	C	27.1	Inst		3581
Tue Feb 25		05.4. CAB 4	08. Temp	C	27.1	Inst		3739
Wed Feb 26		05.4. CAB 4	08. Temp	C	27.2	Inst		3897
Thu Feb 27		05.4. CAB 4	08. Temp	C	27.3	Inst		4055
Fri Feb 28		05.4. CAB 4	08. Temp	C	27.3	Inst		4213
Sat Mar 1		05.4. CAB 4	08. Temp	C	27	Inst		4371
Sun Feb 2		05.5. CAB 5	06a. Air Flow	scfm	592	Inst		4425
Mon Feb 3		05.5. CAB 5	06a. Air Flow	scfm	591	Inst		4429
Tue Feb 4		05.5. CAB 5	06a. Air Flow	scfm	593	Inst		4433
Wed Feb 5		05.5. CAB 5	06a. Air Flow	scfm	589	Inst		4437
Thu Feb 6		05.5. CAB 5	06a. Air Flow	scfm	573	Inst		4441
Fri Feb 7		05.5. CAB 5	06a. Air Flow	scfm	591	Inst		4445
Sat Feb 8		05.5. CAB 5	06a. Air Flow	scfm	590	Inst		4449
Sun Feb 9		05.5. CAB 5	06a. Air Flow	scfm	590	Inst		4453
Mon Feb 10		05.5. CAB 5	06a. Air Flow	scfm	588	Inst		4457
Tue Feb 11		05.5. CAB 5	06a. Air Flow	scfm	586	Inst		4461
Wed Feb 12		05.5. CAB 5	06a. Air Flow	scfm	587	Inst		4465
Thu Feb 13		05.5. CAB 5	06a. Air Flow	scfm	586	Inst		4469
Fri Feb 14		05.5. CAB 5	06a. Air Flow	scfm	587	Inst		4473
Sat Feb 15		05.5. CAB 5	06a. Air Flow	scfm	583	Inst		4477
Sun Feb 16		05.5. CAB 5	06a. Air Flow	scfm	578	Inst		4481
Mon Feb 17		05.5. CAB 5	06a. Air Flow	scfm	584	Inst		4485
Tue Feb 18		05.5. CAB 5	06a. Air Flow	scfm	581	Inst		4489
Wed Feb 19		05.5. CAB 5	06a. Air Flow	scfm	580	Inst		4493
Thu Feb 20		05.5. CAB 5	06a. Air Flow	scfm	565	Inst		4497
Fri Feb 21		05.5. CAB 5	06a. Air Flow	scfm	570	Inst		4501
Sat Feb 22		05.5. CAB 5	06a. Air Flow	scfm	571	Inst		4505
Sun Feb 23		05.5. CAB 5	06a. Air Flow	scfm	574	Inst		4509
Mon Feb 24		05.5. CAB 5	06a. Air Flow	scfm	570	Inst		4513

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Tue Feb 25		05.5. CAB 5	06a. Air Flow	scfm	572	Inst		4517
Wed Feb 26		05.5. CAB 5	06a. Air Flow	scfm	563	Inst		4521
Thu Feb 27		05.5. CAB 5	06a. Air Flow	scfm	566	Inst		4525
Fri Feb 28		05.5. CAB 5	06a. Air Flow	scfm	556	Inst		4529
Sat Mar 1		05.5. CAB 5	06a. Air Flow	scfm	564	Inst		4533
Sun Feb 2		05.5. CAB 5	06b. DO	mg/L	2.65	Inst		4426
Mon Feb 3		05.5. CAB 5	06b. DO	mg/L	3.88	Inst		4430
Tue Feb 4		05.5. CAB 5	06b. DO	mg/L	3.45	Inst		4434
Wed Feb 5		05.5. CAB 5	06b. DO	mg/L	3.34	Inst		4438
Thu Feb 6		05.5. CAB 5	06b. DO	mg/L	2.47	Inst		4442
Fri Feb 7		05.5. CAB 5	06b. DO	mg/L	2.68	Inst		4446
Sat Feb 8		05.5. CAB 5	06b. DO	mg/L	3.3	Inst		4450
Sun Feb 9		05.5. CAB 5	06b. DO	mg/L	3.19	Inst		4454
Mon Feb 10		05.5. CAB 5	06b. DO	mg/L	2.86	Inst		4458
Tue Feb 11		05.5. CAB 5	06b. DO	mg/L	3.11	Inst		4462
Wed Feb 12		05.5. CAB 5	06b. DO	mg/L	2.84	Inst		4466
Thu Feb 13		05.5. CAB 5	06b. DO	mg/L	2.7	Inst		4470
Fri Feb 14		05.5. CAB 5	06b. DO	mg/L	2.59	Inst		4474
Sat Feb 15		05.5. CAB 5	06b. DO	mg/L	1.55	Inst		4478
Sun Feb 16		05.5. CAB 5	06b. DO	mg/L	2.22	Inst		4482
Mon Feb 17		05.5. CAB 5	06b. DO	mg/L	2.37	Inst		4486
Tue Feb 18		05.5. CAB 5	06b. DO	mg/L	2.48	Inst		4490
Wed Feb 19		05.5. CAB 5	06b. DO	mg/L	2.56	Inst		4494
Thu Feb 20		05.5. CAB 5	06b. DO	mg/L	2.1	Inst		4498
Fri Feb 21		05.5. CAB 5	06b. DO	mg/L	1.69	Inst		4502
Sat Feb 22		05.5. CAB 5	06b. DO	mg/L	1.69	Inst		4506
Sun Feb 23		05.5. CAB 5	06b. DO	mg/L	1.92	Inst		4510
Mon Feb 24		05.5. CAB 5	06b. DO	mg/L	2.63	Inst		4514
Tue Feb 25		05.5. CAB 5	06b. DO	mg/L	1.82	Inst		4518
Wed Feb 26		05.5. CAB 5	06b. DO	mg/L	1.86	Inst		4522
Thu Feb 27		05.5. CAB 5	06b. DO	mg/L	1.99	Inst		4526
Fri Feb 28		05.5. CAB 5	06b. DO	mg/L	2.31	Inst		4530
Sat Mar 1		05.5. CAB 5	06b. DO	mg/L	2.58	Inst		4534
Sun Feb 2		05.5. CAB 5	07a. pH	SU	6.96	Inst		4427
Mon Feb 3		05.5. CAB 5	07a. pH	SU	7.09	Inst		4431
Tue Feb 4		05.5. CAB 5	07a. pH	SU	6.98	Inst		4435
Wed Feb 5		05.5. CAB 5	07a. pH	SU	6.98	Inst		4439
Thu Feb 6		05.5. CAB 5	07a. pH	SU	7.16	Inst		4443
Fri Feb 7		05.5. CAB 5	07a. pH	SU	7.35	Inst		4447
Sat Feb 8		05.5. CAB 5	07a. pH	SU	6.97	Inst		4451
Sun Feb 9		05.5. CAB 5	07a. pH	SU	7	Inst		4455
Mon Feb 10		05.5. CAB 5	07a. pH	SU	6.99	Inst		4459
Tue Feb 11		05.5. CAB 5	07a. pH	SU	7.07	Inst		4463
Wed Feb 12		05.5. CAB 5	07a. pH	SU	7.17	Inst		4467
Thu Feb 13		05.5. CAB 5	07a. pH	SU	7.06	Inst		4471
Fri Feb 14		05.5. CAB 5	07a. pH	SU	7.22	Inst		4475
Sun Feb 16		05.5. CAB 5	07a. pH	SU	6.5	Inst		4483
Mon Feb 17		05.5. CAB 5	07a. pH	SU	6.6	Inst		4487
Tue Feb 18		05.5. CAB 5	07a. pH	SU	6.5	Inst		4491
Wed Feb 19		05.5. CAB 5	07a. pH	SU	6.5	Inst		4495
Thu Feb 20		05.5. CAB 5	07a. pH	SU	6.4	Inst		4499
Fri Feb 21		05.5. CAB 5	07a. pH	SU	6.4	Inst		4503
Sat Feb 22		05.5. CAB 5	07a. pH	SU	6.5	Inst		4507
Sun Feb 23		05.5. CAB 5	07a. pH	SU	6.6	Inst		4511
Mon Feb 24		05.5. CAB 5	07a. pH	SU	6.6	Inst		4515

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Tue Feb 25		05.5. CAB 5	07a. pH	SU	6.6	Inst		4519
Wed Feb 26		05.5. CAB 5	07a. pH	SU	6.6	Inst		4523
Thu Feb 27		05.5. CAB 5	07a. pH	SU	6.6	Inst		4527
Fri Feb 28		05.5. CAB 5	07a. pH	SU	6.6	Inst		4531
Sat Mar 1		05.5. CAB 5	07a. pH	SU	6.5	Inst		4535
Sun Feb 2		05.5. CAB 5	08. Temp	C	27.1	Inst		4428
Mon Feb 3		05.5. CAB 5	08. Temp	C	27.2	Inst		4432
Tue Feb 4		05.5. CAB 5	08. Temp	C	27.3	Inst		4436
Wed Feb 5		05.5. CAB 5	08. Temp	C	27.3	Inst		4440
Thu Feb 6		05.5. CAB 5	08. Temp	C	27.4	Inst		4444
Fri Feb 7		05.5. CAB 5	08. Temp	C	27.1	Inst		4448
Sat Feb 8		05.5. CAB 5	08. Temp	C	26.6	Inst		4452
Sun Feb 9		05.5. CAB 5	08. Temp	C	26.7	Inst		4456
Mon Feb 10		05.5. CAB 5	08. Temp	C	26.6	Inst		4460
Tue Feb 11		05.5. CAB 5	08. Temp	C	26.6	Inst		4464
Wed Feb 12		05.5. CAB 5	08. Temp	C	26.9	Inst		4468
Thu Feb 13		05.5. CAB 5	08. Temp	C	27.3	Inst		4472
Fri Feb 14		05.5. CAB 5	08. Temp	C	26.6	Inst		4476
Sat Feb 15		05.5. CAB 5	08. Temp	C	26	Inst		4480
Sun Feb 16		05.5. CAB 5	08. Temp	C	26.4	Inst		4484
Mon Feb 17		05.5. CAB 5	08. Temp	C	26.4	Inst		4488
Tue Feb 18		05.5. CAB 5	08. Temp	C	26.5	Inst		4492
Wed Feb 19		05.5. CAB 5	08. Temp	C	26.6	Inst		4496
Thu Feb 20		05.5. CAB 5	08. Temp	C	26.9	Inst		4500
Fri Feb 21		05.5. CAB 5	08. Temp	C	27.3	Inst		4504
Sat Feb 22		05.5. CAB 5	08. Temp	C	27.2	Inst		4508
Sun Feb 23		05.5. CAB 5	08. Temp	C	27.1	Inst		4512
Mon Feb 24		05.5. CAB 5	08. Temp	C	27.1	Inst		4516
Tue Feb 25		05.5. CAB 5	08. Temp	C	27.1	Inst		4520
Wed Feb 26		05.5. CAB 5	08. Temp	C	27.2	Inst		4524
Thu Feb 27		05.5. CAB 5	08. Temp	C	27.3	Inst		4528
Fri Feb 28		05.5. CAB 5	08. Temp	C	27.3	Inst		4532
Sat Mar 1		05.5. CAB 5	08. Temp	C	27	Inst		4536
Sun Feb 2		06. Mixed Liquor	04a. TSS	mg/L	2390	Grab		108
Mon Feb 3		06. Mixed Liquor	04a. TSS	mg/L	2620	Grab		266
Tue Feb 4		06. Mixed Liquor	04a. TSS	mg/L	2680	Grab		424
Wed Feb 5		06. Mixed Liquor	04a. TSS	mg/L	2730	Grab		582
Thu Feb 6		06. Mixed Liquor	04a. TSS	mg/L	2620	Grab		740
Fri Feb 7		06. Mixed Liquor	04a. TSS	mg/L	2780	Grab		898
Sat Feb 8		06. Mixed Liquor	04a. TSS	mg/L	2820	Grab		1056
Sun Feb 9		06. Mixed Liquor	04a. TSS	mg/L	2370	Grab		1214
Mon Feb 10		06. Mixed Liquor	04a. TSS	mg/L	2830	Grab		1372
Tue Feb 11		06. Mixed Liquor	04a. TSS	mg/L	2550	Grab		1530
Wed Feb 12		06. Mixed Liquor	04a. TSS	mg/L	2650	Grab		1688
Thu Feb 13		06. Mixed Liquor	04a. TSS	mg/L	2590	Grab		1846
Fri Feb 14		06. Mixed Liquor	04a. TSS	mg/L	2380	Grab		2004
Sat Feb 15		06. Mixed Liquor	04a. TSS	mg/L	2780	Grab		2162
Sun Feb 16		06. Mixed Liquor	04a. TSS	mg/L	2840	Grab		2320
Mon Feb 17		06. Mixed Liquor	04a. TSS	mg/L	2820	Grab		2478
Tue Feb 18		06. Mixed Liquor	04a. TSS	mg/L	3040	Grab		2636
Wed Feb 19		06. Mixed Liquor	04a. TSS	mg/L	3160	Grab		2794
Thu Feb 20		06. Mixed Liquor	04a. TSS	mg/L	2950	Grab		2952
Fri Feb 21		06. Mixed Liquor	04a. TSS	mg/L	2950	Grab		3110
Sat Feb 22		06. Mixed Liquor	04a. TSS	mg/L	3140	Grab		3268
Sun Feb 23		06. Mixed Liquor	04a. TSS	mg/L	3260	Grab		3426

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Mon Feb 24		06. Mixed Liquor	04a. TSS	mg/L	3060	Grab		3584
Tue Feb 25		06. Mixed Liquor	04a. TSS	mg/L	2960	Grab		3742
Wed Feb 26		06. Mixed Liquor	04a. TSS	mg/L	3120	Grab		3900
Thu Feb 27		06. Mixed Liquor	04a. TSS	mg/L	2910	Grab		4058
Fri Feb 28		06. Mixed Liquor	04a. TSS	mg/L	2990	Grab		4216
Sat Mar 1		06. Mixed Liquor	04a. TSS	mg/L	2730	Grab		4374
Sun Feb 2		06. Mixed Liquor	04b. VSS	mg/L	1960	Grab		109
Mon Feb 3		06. Mixed Liquor	04b. VSS	mg/L	2190	Grab		267
Tue Feb 4		06. Mixed Liquor	04b. VSS	mg/L	2200	Grab		425
Wed Feb 5		06. Mixed Liquor	04b. VSS	mg/L	2230	Grab		583
Thu Feb 6		06. Mixed Liquor	04b. VSS	mg/L	2140	Grab		741
Fri Feb 7		06. Mixed Liquor	04b. VSS	mg/L	2260	Grab		899
Sat Feb 8		06. Mixed Liquor	04b. VSS	mg/L	2340	Grab		1057
Sun Feb 9		06. Mixed Liquor	04b. VSS	mg/L	1940	Grab		1215
Mon Feb 10		06. Mixed Liquor	04b. VSS	mg/L	2380	Grab		1373
Tue Feb 11		06. Mixed Liquor	04b. VSS	mg/L	2100	Grab		1531
Wed Feb 12		06. Mixed Liquor	04b. VSS	mg/L	2240	Grab		1689
Thu Feb 13		06. Mixed Liquor	04b. VSS	mg/L	2160	Grab		1847
Fri Feb 14		06. Mixed Liquor	04b. VSS	mg/L	1960	Grab		2005
Sat Feb 15		06. Mixed Liquor	04b. VSS	mg/L	2280	Grab		2163
Sun Feb 16		06. Mixed Liquor	04b. VSS	mg/L	2330	Grab		2321
Mon Feb 17		06. Mixed Liquor	04b. VSS	mg/L	2330	Grab		2479
Tue Feb 18		06. Mixed Liquor	04b. VSS	mg/L	2520	Grab		2637
Wed Feb 19		06. Mixed Liquor	04b. VSS	mg/L	2630	Grab		2795
Thu Feb 20		06. Mixed Liquor	04b. VSS	mg/L	2460	Grab		2953
Fri Feb 21		06. Mixed Liquor	04b. VSS	mg/L	2410	Grab		3111
Sat Feb 22		06. Mixed Liquor	04b. VSS	mg/L	2590	Grab		3269
Sun Feb 23		06. Mixed Liquor	04b. VSS	mg/L	2750	Grab		3427
Mon Feb 24		06. Mixed Liquor	04b. VSS	mg/L	2520	Grab		3585
Tue Feb 25		06. Mixed Liquor	04b. VSS	mg/L	2490	Grab		3743
Wed Feb 26		06. Mixed Liquor	04b. VSS	mg/L	2610	Grab		3901
Thu Feb 27		06. Mixed Liquor	04b. VSS	mg/L	2400	Grab		4059
Fri Feb 28		06. Mixed Liquor	04b. VSS	mg/L	2480	Grab		4217
Sat Mar 1		06. Mixed Liquor	04b. VSS	mg/L	2280	Grab		4375
Mon Feb 3		06. Mixed Liquor	05a. TKN	mg/L	170	Grab		268
Wed Feb 5		06. Mixed Liquor	05a. TKN	mg/L	162	Grab		584
Fri Feb 7		06. Mixed Liquor	05a. TKN	mg/L	173	Grab		900
Mon Feb 10		06. Mixed Liquor	05a. TKN	mg/L	185	Grab		1374
Wed Feb 12		06. Mixed Liquor	05a. TKN	mg/L	172	Grab		1690
Fri Feb 14		06. Mixed Liquor	05a. TKN	mg/L	175	Grab		2006
Mon Feb 17		06. Mixed Liquor	05a. TKN	mg/L	175	Grab		2480
Wed Feb 19		06. Mixed Liquor	05a. TKN	mg/L	125	Grab		2796
Fri Feb 21		06. Mixed Liquor	05a. TKN	mg/L	190	Grab		3112
Mon Feb 24		06. Mixed Liquor	05a. TKN	mg/L	209	Grab		3586
Wed Feb 26		06. Mixed Liquor	05a. TKN	mg/L	104	Grab		3902
Fri Feb 28		06. Mixed Liquor	05a. TKN	mg/L	201	Grab		4218
Mon Feb 3		06. Mixed Liquor	05b. Sol TKN	mg/L	3.47	Grab		269
Wed Feb 5		06. Mixed Liquor	05b. Sol TKN	mg/L	4.17	Grab		585
Fri Feb 7		06. Mixed Liquor	05b. Sol TKN	mg/L	4.92	Grab		901
Mon Feb 10		06. Mixed Liquor	05b. Sol TKN	mg/L	3.13	Grab		1375
Wed Feb 12		06. Mixed Liquor	05b. Sol TKN	mg/L	5.13	Grab		1691
Fri Feb 14		06. Mixed Liquor	05b. Sol TKN	mg/L	7.05	Grab		2007
Mon Feb 17		06. Mixed Liquor	05b. Sol TKN	mg/L	12.1	Grab		2481
Wed Feb 19		06. Mixed Liquor	05b. Sol TKN	mg/L	11.1	Grab		2797
Fri Feb 21		06. Mixed Liquor	05b. Sol TKN	mg/L	7.6	Grab		3113

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Mon Feb 24		06. Mixed Liquor	05b. Sol TKN	mg/L	20.1	Grab	Check this number	3587
Wed Feb 26		06. Mixed Liquor	05b. Sol TKN	mg/L	4.02	Grab		3903
Fri Feb 28		06. Mixed Liquor	05b. Sol TKN	mg/L	1.12	Grab		4219
Mon Feb 3		06. Mixed Liquor	05c. NH3-N	mg/L	2.37	Grab		270
Wed Feb 5		06. Mixed Liquor	05c. NH3-N	mg/L	2.09	Grab		586
Fri Feb 7		06. Mixed Liquor	05c. NH3-N	mg/L	3.28	Grab		902
Mon Feb 10		06. Mixed Liquor	05c. NH3-N	mg/L	1.64	Grab		1376
Wed Feb 12		06. Mixed Liquor	05c. NH3-N	mg/L	2.51	Grab		1692
Fri Feb 14		06. Mixed Liquor	05c. NH3-N	mg/L	4.47	Grab		2008
Mon Feb 17		06. Mixed Liquor	05c. NH3-N	mg/L	6.98	Grab		2482
Wed Feb 19		06. Mixed Liquor	05c. NH3-N	mg/L	6.92	Grab		2798
Fri Feb 21		06. Mixed Liquor	05c. NH3-N	mg/L	6.2	Grab		3114
Mon Feb 24		06. Mixed Liquor	05c. NH3-N	mg/L	14.6	Grab	Check this number	3588
Wed Feb 26		06. Mixed Liquor	05c. NH3-N	mg/L	2.57	Grab		3904
Fri Feb 28		06. Mixed Liquor	05c. NH3-N	mg/L	0.56	Grab		4220
Mon Feb 3		06. Mixed Liquor	05d. Nox-N	mg/L	3.2	Grab		271
Wed Feb 5		06. Mixed Liquor	05d. Nox-N	mg/L	1.96	Grab		587
Fri Feb 7		06. Mixed Liquor	05d. Nox-N	mg/L	1.23	Grab		903
Mon Feb 10		06. Mixed Liquor	05d. Nox-N	mg/L	2.25	Grab		1377
Wed Feb 12		06. Mixed Liquor	05d. Nox-N	mg/L	1.12	Grab		1693
Fri Feb 14		06. Mixed Liquor	05d. Nox-N	mg/L	1.51	Grab		2009
Mon Feb 17		06. Mixed Liquor	05d. Nox-N	mg/L	0.86	Grab		2483
Wed Feb 19		06. Mixed Liquor	05d. Nox-N	mg/L	1.03	Grab	Changed from 103	2799
Fri Feb 21		06. Mixed Liquor	05d. Nox-N	mg/L	1.48	Grab		3115
Mon Feb 24		06. Mixed Liquor	05d. Nox-N	mg/L	1.22	Grab		3589
Wed Feb 26		06. Mixed Liquor	05d. Nox-N	mg/L	1.99	Grab		3905
Fri Feb 28		06. Mixed Liquor	05d. Nox-N	mg/L	1.2	Grab		4221
Sun Feb 2		07.3 RAS 3	01. Flow	mgd	1.03	Avg		117
Mon Feb 3		07.3 RAS 3	01. Flow	mgd	0.98	Avg	Changed from 0.098	275
Tue Feb 4		07.3 RAS 3	01. Flow	mgd	0.982	Avg		433
Wed Feb 5		07.3 RAS 3	01. Flow	mgd	0.99	Avg		591
Thu Feb 6		07.3 RAS 3	01. Flow	mgd	0.998	Avg		749
Fri Feb 7		07.3 RAS 3	01. Flow	mgd	0.993	Avg		907
Sat Feb 8		07.3 RAS 3	01. Flow	mgd	0.965	Avg		1065
Sun Feb 9		07.3 RAS 3	01. Flow	mgd	0.961	Avg		1223
Mon Feb 10		07.3 RAS 3	01. Flow	mgd	0.974	Avg		1381
Tue Feb 11		07.3 RAS 3	01. Flow	mgd	0.969	Avg		1539
Wed Feb 12		07.3 RAS 3	01. Flow	mgd	0.979	Avg		1697
Thu Feb 13		07.3 RAS 3	01. Flow	mgd	0.978	Avg		1855
Fri Feb 14		07.3 RAS 3	01. Flow	mgd	1.01	Avg		2013
Sat Feb 15		07.3 RAS 3	01. Flow	mgd	1.02	Avg		2171
Sun Feb 16		07.3 RAS 3	01. Flow	mgd	0.99	Avg		2329
Mon Feb 17		07.3 RAS 3	01. Flow	mgd	0.99	Avg		2487
Tue Feb 18		07.3 RAS 3	01. Flow	mgd	0.96	Avg		2645
Wed Feb 19		07.3 RAS 3	01. Flow	mgd	1	Avg		2803
Thu Feb 20		07.3 RAS 3	01. Flow	mgd	1	Avg		2961
Fri Feb 21		07.3 RAS 3	01. Flow	mgd	1	Avg		3119
Sat Feb 22		07.3 RAS 3	01. Flow	mgd	1	Avg		3277
Sun Feb 23		07.3 RAS 3	01. Flow	mgd	1	Avg		3435
Mon Feb 24		07.3 RAS 3	01. Flow	mgd	1	Avg		3593
Tue Feb 25		07.3 RAS 3	01. Flow	mgd	1	Avg		3751
Wed Feb 26		07.3 RAS 3	01. Flow	mgd	1	Avg		3909
Thu Feb 27		07.3 RAS 3	01. Flow	mgd	1.1	Avg		4067
Fri Feb 28		07.3 RAS 3	01. Flow	mgd	1.1	Avg		4225
Sat Mar 1		07.3 RAS 3	01. Flow	mgd	1.1	Avg		4383

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Sun Feb 2	07.3	RAS 3	04a. TSS	mg/L	4150	Grab		118
Mon Feb 3	07.3	RAS 3	04a. TSS	mg/L	4530	Grab		276
Tue Feb 4	07.3	RAS 3	04a. TSS	mg/L	4450	Grab		434
Wed Feb 5	07.3	RAS 3	04a. TSS	mg/L	5050	Grab		592
Thu Feb 6	07.3	RAS 3	04a. TSS	mg/L	4820	Grab		750
Fri Feb 7	07.3	RAS 3	04a. TSS	mg/L	4520	Grab		908
Sat Feb 8	07.3	RAS 3	04a. TSS	mg/L	4780	Grab		1066
Sun Feb 9	07.3	RAS 3	04a. TSS	mg/L	3970	Grab		1224
Mon Feb 10	07.3	RAS 3	04a. TSS	mg/L	4580	Grab		1382
Tue Feb 11	07.3	RAS 3	04a. TSS	mg/L	4870	Grab		1540
Wed Feb 12	07.3	RAS 3	04a. TSS	mg/L	4700	Grab		1698
Thu Feb 13	07.3	RAS 3	04a. TSS	mg/L	4800	Grab		1856
Fri Feb 14	07.3	RAS 3	04a. TSS	mg/L	5420	Grab		2014
Sat Feb 15	07.3	RAS 3	04a. TSS	mg/L	5290	Grab		2172
Sun Feb 16	07.3	RAS 3	04a. TSS	mg/L	4860	Grab		2330
Mon Feb 17	07.3	RAS 3	04a. TSS	mg/L	4870	Grab		2488
Tue Feb 18	07.3	RAS 3	04a. TSS	mg/L	4980	Grab		2646
Wed Feb 19	07.3	RAS 3	04a. TSS	mg/L	5470	Grab		2804
Thu Feb 20	07.3	RAS 3	04a. TSS	mg/L	4960	Grab		2962
Fri Feb 21	07.3	RAS 3	04a. TSS	mg/L	4880	Grab		3120
Sat Feb 22	07.3	RAS 3	04a. TSS	mg/L	5060	Grab		3278
Sun Feb 23	07.3	RAS 3	04a. TSS	mg/L	4290	Grab		3436
Mon Feb 24	07.3	RAS 3	04a. TSS	mg/L	4750	Grab		3594
Tue Feb 25	07.3	RAS 3	04a. TSS	mg/L	4730	Grab		3752
Wed Feb 26	07.3	RAS 3	04a. TSS	mg/L	4510	Grab		3910
Thu Feb 27	07.3	RAS 3	04a. TSS	mg/L	4820	Grab		4068
Fri Feb 28	07.3	RAS 3	04a. TSS	mg/L	4590	Grab		4226
Sat Mar 1	07.3	RAS 3	04a. TSS	mg/L	4250	Grab		4384
Sun Feb 2	07.3	RAS 3	04b. VSS	mg/L	3370	Grab		119
Mon Feb 3	07.3	RAS 3	04b. VSS	mg/L	3700	Grab		277
Tue Feb 4	07.3	RAS 3	04b. VSS	mg/L	3600	Grab		435
Wed Feb 5	07.3	RAS 3	04b. VSS	mg/L	4170	Grab		593
Thu Feb 6	07.3	RAS 3	04b. VSS	mg/L	3930	Grab		751
Fri Feb 7	07.3	RAS 3	04b. VSS	mg/L	3690	Grab		909
Sat Feb 8	07.3	RAS 3	04b. VSS	mg/L	3870	Grab		1067
Sun Feb 9	07.3	RAS 3	04b. VSS	mg/L	3220	Grab		1225
Mon Feb 10	07.3	RAS 3	04b. VSS	mg/L	3780	Grab		1383
Tue Feb 11	07.3	RAS 3	04b. VSS	mg/L	3990	Grab		1541
Wed Feb 12	07.3	RAS 3	04b. VSS	mg/L	3920	Grab		1699
Thu Feb 13	07.3	RAS 3	04b. VSS	mg/L	3940	Grab		1857
Fri Feb 14	07.3	RAS 3	04b. VSS	mg/L	4440	Grab		2015
Sat Feb 15	07.3	RAS 3	04b. VSS	mg/L	4310	Grab		2173
Sun Feb 16	07.3	RAS 3	04b. VSS	mg/L	3950	Grab		2331
Mon Feb 17	07.3	RAS 3	04b. VSS	mg/L	3950	Grab		2489
Tue Feb 18	07.3	RAS 3	04b. VSS	mg/L	4070	Grab		2647
Wed Feb 19	07.3	RAS 3	04b. VSS	mg/L	4490	Grab		2805
Thu Feb 20	07.3	RAS 3	04b. VSS	mg/L	4090	Grab		2963
Fri Feb 21	07.3	RAS 3	04b. VSS	mg/L	4010	Grab		3121
Sat Feb 22	07.3	RAS 3	04b. VSS	mg/L	4120	Grab		3279
Sun Feb 23	07.3	RAS 3	04b. VSS	mg/L	3550	Grab		3437
Mon Feb 24	07.3	RAS 3	04b. VSS	mg/L	3900	Grab		3595
Tue Feb 25	07.3	RAS 3	04b. VSS	mg/L	3900	Grab		3753
Wed Feb 26	07.3	RAS 3	04b. VSS	mg/L	3690	Grab		3911
Thu Feb 27	07.3	RAS 3	04b. VSS	mg/L	3980	Grab		4069
Fri Feb 28	07.3	RAS 3	04b. VSS	mg/L	3770	Grab		4227

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Sat Mar 1		07.3 RAS 3	04b. VSS	mg/L	3540	Grab		4385
Mon Feb 3		07.3 RAS 3	05d. Nox-N	mg/L	0.88	Grab		278
Wed Feb 5		07.3 RAS 3	05d. Nox-N	mg/L	0.62	Grab		594
Fri Feb 7		07.3 RAS 3	05d. Nox-N	mg/L	0.63	Grab		910
Mon Feb 10		07.3 RAS 3	05d. Nox-N	mg/L	0.59	Grab		1384
Wed Feb 12		07.3 RAS 3	05d. Nox-N	mg/L	0.34	Grab		1700
Fri Feb 14		07.3 RAS 3	05d. Nox-N	mg/L	0.39	Grab		2016
Mon Feb 17		07.3 RAS 3	05d. Nox-N	mg/L	0.22	Grab		2490
Wed Feb 19		07.3 RAS 3	05d. Nox-N	mg/L	0.21	Grab		2806
Fri Feb 21		07.3 RAS 3	05d. Nox-N	mg/L	0.26	Grab		3122
Mon Feb 24		07.3 RAS 3	05d. Nox-N	mg/L	0.23	Grab		3596
Wed Feb 26		07.3 RAS 3	05d. Nox-N	mg/L	0.41	Grab		3912
Fri Feb 28		07.3 RAS 3	05d. Nox-N	mg/L	0.48	Grab		4228
Sun Feb 2		07.4 RAS 4	01. Flow	mgd	1.03	Avg		121
Mon Feb 3		07.4 RAS 4	01. Flow	mgd	0.98	Avg	Changed from 0.098	279
Tue Feb 4		07.4 RAS 4	01. Flow	mgd	0.989	Avg		437
Wed Feb 5		07.4 RAS 4	01. Flow	mgd	1	Avg		595
Thu Feb 6		07.4 RAS 4	01. Flow	mgd	1	Avg		753
Fri Feb 7		07.4 RAS 4	01. Flow	mgd	0.998	Avg		911
Sat Feb 8		07.4 RAS 4	01. Flow	mgd	0.97	Avg		1069
Sun Feb 9		07.4 RAS 4	01. Flow	mgd	0.971	Avg		1227
Mon Feb 10		07.4 RAS 4	01. Flow	mgd	0.971	Avg		1385
Tue Feb 11		07.4 RAS 4	01. Flow	mgd	0.974	Avg		1543
Wed Feb 12		07.4 RAS 4	01. Flow	mgd	0.983	Avg		1701
Thu Feb 13		07.4 RAS 4	01. Flow	mgd	0.997	Avg		1859
Fri Feb 14		07.4 RAS 4	01. Flow	mgd	1.02	Avg		2017
Sat Feb 15		07.4 RAS 4	01. Flow	mgd	1.02	Avg		2175
Sun Feb 16		07.4 RAS 4	01. Flow	mgd	0.98	Avg		2333
Mon Feb 17		07.4 RAS 4	01. Flow	mgd	1	Avg		2491
Tue Feb 18		07.4 RAS 4	01. Flow	mgd	0.99	Avg		2649
Wed Feb 19		07.4 RAS 4	01. Flow	mgd	1	Avg		2807
Thu Feb 20		07.4 RAS 4	01. Flow	mgd	1	Avg		2965
Fri Feb 21		07.4 RAS 4	01. Flow	mgd	1	Avg		3123
Sat Feb 22		07.4 RAS 4	01. Flow	mgd	1	Avg		3281
Sun Feb 23		07.4 RAS 4	01. Flow	mgd	1	Avg		3439
Mon Feb 24		07.4 RAS 4	01. Flow	mgd	1	Avg		3597
Tue Feb 25		07.4 RAS 4	01. Flow	mgd	1	Avg		3755
Wed Feb 26		07.4 RAS 4	01. Flow	mgd	1.1	Avg		3913
Thu Feb 27		07.4 RAS 4	01. Flow	mgd	1.1	Avg		4071
Fri Feb 28		07.4 RAS 4	01. Flow	mgd	1.1	Avg		4229
Sat Mar 1		07.4 RAS 4	01. Flow	mgd	1.1	Avg		4387
Sun Feb 2		07.4 RAS 4	04a. TSS	mg/L	4210	Grab		122
Mon Feb 3		07.4 RAS 4	04a. TSS	mg/L	4660	Grab		280
Tue Feb 4		07.4 RAS 4	04a. TSS	mg/L	4430	Grab		438
Wed Feb 5		07.4 RAS 4	04a. TSS	mg/L	5040	Grab		596
Thu Feb 6		07.4 RAS 4	04a. TSS	mg/L	4990	Grab		754
Fri Feb 7		07.4 RAS 4	04a. TSS	mg/L	4200	Grab		912
Sat Feb 8		07.4 RAS 4	04a. TSS	mg/L	4830	Grab		1070
Sun Feb 9		07.4 RAS 4	04a. TSS	mg/L	3770	Grab		1228
Mon Feb 10		07.4 RAS 4	04a. TSS	mg/L	4280	Grab		1386
Tue Feb 11		07.4 RAS 4	04a. TSS	mg/L	5060	Grab		1544
Wed Feb 12		07.4 RAS 4	04a. TSS	mg/L	4720	Grab		1702
Thu Feb 13		07.4 RAS 4	04a. TSS	mg/L	4820	Grab		1860
Fri Feb 14		07.4 RAS 4	04a. TSS	mg/L	5480	Grab		2018
Sat Feb 15		07.4 RAS 4	04a. TSS	mg/L	5780	Grab		2176

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Sun Feb 16	07.4	RAS 4	04a. TSS	mg/L	4540	Grab		2334
Mon Feb 17	07.4	RAS 4	04a. TSS	mg/L	5300	Grab		2492
Tue Feb 18	07.4	RAS 4	04a. TSS	mg/L	4930	Grab		2650
Wed Feb 19	07.4	RAS 4	04a. TSS	mg/L	5760	Grab		2808
Thu Feb 20	07.4	RAS 4	04a. TSS	mg/L	5110	Grab		2966
Fri Feb 21	07.4	RAS 4	04a. TSS	mg/L	5030	Grab		3124
Sat Feb 22	07.4	RAS 4	04a. TSS	mg/L	5300	Grab		3282
Sun Feb 23	07.4	RAS 4	04a. TSS	mg/L	4990	Grab		3440
Mon Feb 24	07.4	RAS 4	04a. TSS	mg/L	5050	Grab		3598
Tue Feb 25	07.4	RAS 4	04a. TSS	mg/L	5060	Grab		3756
Wed Feb 26	07.4	RAS 4	04a. TSS	mg/L	4670	Grab		3914
Thu Feb 27	07.4	RAS 4	04a. TSS	mg/L	4930	Grab		4072
Fri Feb 28	07.4	RAS 4	04a. TSS	mg/L	4840	Grab		4230
Sat Mar 1	07.4	RAS 4	04a. TSS	mg/L	4730	Grab		4388
Sun Feb 2	07.4	RAS 4	04b. VSS	mg/L	3440	Grab		123
Mon Feb 3	07.4	RAS 4	04b. VSS	mg/L	3800	Grab		281
Tue Feb 4	07.4	RAS 4	04b. VSS	mg/L	3610	Grab		439
Wed Feb 5	07.4	RAS 4	04b. VSS	mg/L	4120	Grab		597
Thu Feb 6	07.4	RAS 4	04b. VSS	mg/L	4060	Grab		755
Fri Feb 7	07.4	RAS 4	04b. VSS	mg/L	3450	Grab		913
Sat Feb 8	07.4	RAS 4	04b. VSS	mg/L	3940	Grab		1071
Sun Feb 9	07.4	RAS 4	04b. VSS	mg/L	3020	Grab		1229
Mon Feb 10	07.4	RAS 4	04b. VSS	mg/L	3550	Grab		1387
Tue Feb 11	07.4	RAS 4	04b. VSS	mg/L	4150	Grab		1545
Wed Feb 12	07.4	RAS 4	04b. VSS	mg/L	3910	Grab		1703
Thu Feb 13	07.4	RAS 4	04b. VSS	mg/L	3970	Grab		1861
Fri Feb 14	07.4	RAS 4	04b. VSS	mg/L	4480	Grab		2019
Sat Feb 15	07.4	RAS 4	04b. VSS	mg/L	4700	Grab		2177
Sun Feb 16	07.4	RAS 4	04b. VSS	mg/L	3690	Grab		2335
Mon Feb 17	07.4	RAS 4	04b. VSS	mg/L	4340	Grab		2493
Tue Feb 18	07.4	RAS 4	04b. VSS	mg/L	4020	Grab		2651
Wed Feb 19	07.4	RAS 4	04b. VSS	mg/L	4710	Grab		2809
Thu Feb 20	07.4	RAS 4	04b. VSS	mg/L	4230	Grab		2967
Fri Feb 21	07.4	RAS 4	04b. VSS	mg/L	4130	Grab		3125
Sat Feb 22	07.4	RAS 4	04b. VSS	mg/L	4330	Grab		3283
Sun Feb 23	07.4	RAS 4	04b. VSS	mg/L	4100	Grab		3441
Mon Feb 24	07.4	RAS 4	04b. VSS	mg/L	4160	Grab		3599
Tue Feb 25	07.4	RAS 4	04b. VSS	mg/L	4170	Grab		3757
Wed Feb 26	07.4	RAS 4	04b. VSS	mg/L	3840	Grab		3915
Thu Feb 27	07.4	RAS 4	04b. VSS	mg/L	4070	Grab		4073
Fri Feb 28	07.4	RAS 4	04b. VSS	mg/L	3970	Grab		4231
Sat Mar 1	07.4	RAS 4	04b. VSS	mg/L	3890	Grab		4389
Mon Feb 3	07.4	RAS 4	05d. Nox-N	mg/L	0.24	Grab		282
Wed Feb 5	07.4	RAS 4	05d. Nox-N	mg/L	0.3	Grab		598
Fri Feb 7	07.4	RAS 4	05d. Nox-N	mg/L	0.32	Grab		914
Mon Feb 10	07.4	RAS 4	05d. Nox-N	mg/L	0.38	Grab		1388
Wed Feb 12	07.4	RAS 4	05d. Nox-N	mg/L	0.14	Grab		1704
Fri Feb 14	07.4	RAS 4	05d. Nox-N	mg/L	0.18	Grab		2020
Mon Feb 17	07.4	RAS 4	05d. Nox-N	mg/L	0.1	Grab	Reported as <0.1	2494
Wed Feb 19	07.4	RAS 4	05d. Nox-N	mg/L	0.1	Grab	Reported as <0.1	2810
Fri Feb 21	07.4	RAS 4	05d. Nox-N	mg/L	0.1	Grab	Reported as <0.1	3126
Mon Feb 24	07.4	RAS 4	05d. Nox-N	mg/L	0.1	Grab	Reported as <0.1	3600
Wed Feb 26	07.4	RAS 4	05d. Nox-N	mg/L	0.33	Grab		3916
Fri Feb 28	07.4	RAS 4	05d. Nox-N	mg/L	0.31	Grab		4232
Sun Feb 2	07.5	RAS 5	01. Flow	mgd	2.3	Avg		125

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Mon Feb 3	07.5	RAS 5	01. Flow	mgd	2.25	Avg		283
Tue Feb 4	07.5	RAS 5	01. Flow	mgd	2.25	Avg		441
Wed Feb 5	07.5	RAS 5	01. Flow	mgd	2.2	Avg	Confirmed originally entered value of 202 mgd was a typo	599
Thu Feb 6	07.5	RAS 5	01. Flow	mgd	2.27	Avg		757
Fri Feb 7	07.5	RAS 5	01. Flow	mgd	2.26	Avg		915
Sat Feb 8	07.5	RAS 5	01. Flow	mgd	2.22	Avg		1073
Sun Feb 9	07.5	RAS 5	01. Flow	mgd	2.23	Avg		1231
Mon Feb 10	07.5	RAS 5	01. Flow	mgd	2.24	Avg		1389
Tue Feb 11	07.5	RAS 5	01. Flow	mgd	2.23	Avg		1547
Wed Feb 12	07.5	RAS 5	01. Flow	mgd	2.24	Avg		1705
Thu Feb 13	07.5	RAS 5	01. Flow	mgd	2.23	Avg		1863
Fri Feb 14	07.5	RAS 5	01. Flow	mgd	2.3	Avg		2021
Sat Feb 15	07.5	RAS 5	01. Flow	mgd	2.3	Avg		2179
Sun Feb 16	07.5	RAS 5	01. Flow	mgd	2.2	Avg		2337
Mon Feb 17	07.5	RAS 5	01. Flow	mgd	2.3	Avg		2495
Tue Feb 18	07.5	RAS 5	01. Flow	mgd	2.2	Avg		2653
Wed Feb 19	07.5	RAS 5	01. Flow	mgd	2.3	Avg		2811
Thu Feb 20	07.5	RAS 5	01. Flow	mgd	2.3	Avg		2969
Fri Feb 21	07.5	RAS 5	01. Flow	mgd	2.3	Avg		3127
Sat Feb 22	07.5	RAS 5	01. Flow	mgd	2.2	Avg		3285
Sun Feb 23	07.5	RAS 5	01. Flow	mgd	2.2	Avg		3443
Mon Feb 24	07.5	RAS 5	01. Flow	mgd	2.2	Avg		3601
Tue Feb 25	07.5	RAS 5	01. Flow	mgd	2.2	Avg		3759
Wed Feb 26	07.5	RAS 5	01. Flow	mgd	2.2	Avg		3917
Thu Feb 27	07.5	RAS 5	01. Flow	mgd	2.3	Avg		4075
Fri Feb 28	07.5	RAS 5	01. Flow	mgd	2.3	Avg		4233
Sat Mar 1	07.5	RAS 5	01. Flow	mgd	2.3	Avg		4391
Sun Feb 2	07.5	RAS 5	04a. TSS	mg/L	4550	Grab		126
Mon Feb 3	07.5	RAS 5	04a. TSS	mg/L	4630	Grab		284
Tue Feb 4	07.5	RAS 5	04a. TSS	mg/L	4830	Grab		442
Wed Feb 5	07.5	RAS 5	04a. TSS	mg/L	4610	Grab		600
Thu Feb 6	07.5	RAS 5	04a. TSS	mg/L	5420	Grab		758
Fri Feb 7	07.5	RAS 5	04a. TSS	mg/L	4400	Grab		916
Sat Feb 8	07.5	RAS 5	04a. TSS	mg/L	4640	Grab		1074
Sun Feb 9	07.5	RAS 5	04a. TSS	mg/L	4040	Grab		1232
Mon Feb 10	07.5	RAS 5	04a. TSS	mg/L	4170	Grab		1390
Tue Feb 11	07.5	RAS 5	04a. TSS	mg/L	4980	Grab		1548
Wed Feb 12	07.5	RAS 5	04a. TSS	mg/L	4700	Grab		1706
Thu Feb 13	07.5	RAS 5	04a. TSS	mg/L	4920	Grab		1864
Fri Feb 14	07.5	RAS 5	04a. TSS	mg/L	5570	Grab	Changed from 9420	2022
Sat Feb 15	07.5	RAS 5	04a. TSS	mg/L	5670	Grab		2180
Sun Feb 16	07.5	RAS 5	04a. TSS	mg/L	4850	Grab		2338
Mon Feb 17	07.5	RAS 5	04a. TSS	mg/L	5450	Grab		2496
Tue Feb 18	07.5	RAS 5	04a. TSS	mg/L	4990	Grab		2654
Wed Feb 19	07.5	RAS 5	04a. TSS	mg/L	5560	Grab		2812
Thu Feb 20	07.5	RAS 5	04a. TSS	mg/L	5180	Grab		2970
Fri Feb 21	07.5	RAS 5	04a. TSS	mg/L	5470	Grab		3128
Sat Feb 22	07.5	RAS 5	04a. TSS	mg/L	5460	Grab		3286
Sun Feb 23	07.5	RAS 5	04a. TSS	mg/L	5140	Grab		3444
Mon Feb 24	07.5	RAS 5	04a. TSS	mg/L	5110	Grab		3602
Tue Feb 25	07.5	RAS 5	04a. TSS	mg/L	4800	Grab		3760
Wed Feb 26	07.5	RAS 5	04a. TSS	mg/L	4920	Grab		3918
Thu Feb 27	07.5	RAS 5	04a. TSS	mg/L	5160	Grab		4076
Fri Feb 28	07.5	RAS 5	04a. TSS	mg/L	4840	Grab		4234

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Sat Mar 1		07.5 RAS 5	04a. TSS	mg/L	4980	Grab		4392
Sun Feb 2		07.5 RAS 5	04b. VSS	mg/L	3700	Grab		127
Mon Feb 3		07.5 RAS 5	04b. VSS	mg/L	3810	Grab		285
Tue Feb 4		07.5 RAS 5	04b. VSS	mg/L	3950	Grab		443
Wed Feb 5		07.5 RAS 5	04b. VSS	mg/L	3770	Grab		601
Thu Feb 6		07.5 RAS 5	04b. VSS	mg/L	4450	Grab		759
Fri Feb 7		07.5 RAS 5	04b. VSS	mg/L	3580	Grab		917
Sat Feb 8		07.5 RAS 5	04b. VSS	mg/L	3780	Grab		1075
Sun Feb 9		07.5 RAS 5	04b. VSS	mg/L	3260	Grab		1233
Mon Feb 10		07.5 RAS 5	04b. VSS	mg/L	3450	Grab		1391
Tue Feb 11		07.5 RAS 5	04b. VSS	mg/L	4060	Grab		1549
Wed Feb 12		07.5 RAS 5	04b. VSS	mg/L	3900	Grab		1707
Thu Feb 13		07.5 RAS 5	04b. VSS	mg/L	4040	Grab		1865
Fri Feb 14		07.5 RAS 5	04b. VSS	mg/L	4550	Grab	Changed from 7470	2023
Sat Feb 15		07.5 RAS 5	04b. VSS	mg/L	4650	Grab		2181
Sun Feb 16		07.5 RAS 5	04b. VSS	mg/L	3950	Grab		2339
Mon Feb 17		07.5 RAS 5	04b. VSS	mg/L	4400	Grab		2497
Tue Feb 18		07.5 RAS 5	04b. VSS	mg/L	4090	Grab		2655
Wed Feb 19		07.5 RAS 5	04b. VSS	mg/L	4560	Grab		2813
Thu Feb 20		07.5 RAS 5	04b. VSS	mg/L	4280	Grab		2971
Fri Feb 21		07.5 RAS 5	04b. VSS	mg/L	4490	Grab		3129
Sat Feb 22		07.5 RAS 5	04b. VSS	mg/L	4470	Grab		3287
Sun Feb 23		07.5 RAS 5	04b. VSS	mg/L	4230	Grab		3445
Mon Feb 24		07.5 RAS 5	04b. VSS	mg/L	4230	Grab		3603
Tue Feb 25		07.5 RAS 5	04b. VSS	mg/L	3960	Grab		3761
Wed Feb 26		07.5 RAS 5	04b. VSS	mg/L	4040	Grab		3919
Thu Feb 27		07.5 RAS 5	04b. VSS	mg/L	4250	Grab		4077
Fri Feb 28		07.5 RAS 5	04b. VSS	mg/L	3960	Grab		4235
Sat Mar 1		07.5 RAS 5	04b. VSS	mg/L	4160	Grab		4393
Mon Feb 3		07.5 RAS 5	05d. Nox-N	mg/L	0.31	Grab		286
Wed Feb 5		07.5 RAS 5	05d. Nox-N	mg/L	0.29	Grab		602
Fri Feb 7		07.5 RAS 5	05d. Nox-N	mg/L	0.33	Grab		918
Mon Feb 10		07.5 RAS 5	05d. Nox-N	mg/L	0.59	Grab		1392
Wed Feb 12		07.5 RAS 5	05d. Nox-N	mg/L	0.16	Grab		1708
Mon Feb 17		07.5 RAS 5	05d. Nox-N	mg/L	0.16	Grab		2498
Wed Feb 19		07.5 RAS 5	05d. Nox-N	mg/L	0.1	Grab	Reported as <0.1	2814
Fri Feb 21		07.5 RAS 5	05d. Nox-N	mg/L	0.1	Grab	Reported as <0.1	3130
Mon Feb 24		07.5 RAS 5	05d. Nox-N	mg/L	0.1	Grab	Reported as <0.1	3604
Wed Feb 26		07.5 RAS 5	05d. Nox-N	mg/L	0.35	Grab		3920
Fri Feb 28		07.5 RAS 5	05d. Nox-N	mg/L	0.2	Grab		4236
Sun Feb 2		08. WAS	01. Flow	mgd	0.062	Avg		129
Mon Feb 3		08. WAS	01. Flow	mgd	0.064	Avg		287
Tue Feb 4		08. WAS	01. Flow	mgd	0.074	Avg		445
Wed Feb 5		08. WAS	01. Flow	mgd	0.078	Avg		603
Thu Feb 6		08. WAS	01. Flow	mgd	0.078	Avg		761
Fri Feb 7		08. WAS	01. Flow	mgd	0.078	Avg		919
Sat Feb 8		08. WAS	01. Flow	mgd	0.073	Avg		1077
Sun Feb 9		08. WAS	01. Flow	mgd	0.067	Avg		1235
Mon Feb 10		08. WAS	01. Flow	mgd	0.078	Avg		1393
Tue Feb 11		08. WAS	01. Flow	mgd	0.075	Avg		1551
Wed Feb 12		08. WAS	01. Flow	mgd	0.075	Avg		1709
Thu Feb 13		08. WAS	01. Flow	mgd	0.075	Avg		1867
Fri Feb 14		08. WAS	01. Flow	mgd	0.071	Avg		2025
Sat Feb 15		08. WAS	01. Flow	mgd	0.074	Avg		2183
Sun Feb 16		08. WAS	01. Flow	mgd	0.075	Avg		2341

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Mon Feb 17		08. WAS	01. Flow	mgd	0.073	Avg		2499
Tue Feb 18		08. WAS	01. Flow	mgd	0.079	Avg		2657
Wed Feb 19		08. WAS	01. Flow	mgd	0.081	Avg		2815
Thu Feb 20		08. WAS	01. Flow	mgd	0.085	Avg		2973
Fri Feb 21		08. WAS	01. Flow	mgd	0.092	Avg		3131
Sat Feb 22		08. WAS	01. Flow	mgd	0.1	Avg		3289
Sun Feb 23		08. WAS	01. Flow	mgd	0.099	Avg		3447
Mon Feb 24		08. WAS	01. Flow	mgd	0.106	Avg		3605
Tue Feb 25		08. WAS	01. Flow	mgd	0.102	Avg		3763
Wed Feb 26		08. WAS	01. Flow	mgd	0.106	Avg		3921
Thu Feb 27		08. WAS	01. Flow	mgd	0.11	Avg		4079
Fri Feb 28		08. WAS	01. Flow	mgd	0.12	Avg		4237
Sat Mar 1		08. WAS	01. Flow	mgd	0.11	Avg		4395
Sun Feb 2		08. WAS	04a. TSS	mg/L	10930	Grab		130
Mon Feb 3		08. WAS	04a. TSS	mg/L	9210	Grab		288
Tue Feb 4		08. WAS	04a. TSS	mg/L	10480	Grab		446
Wed Feb 5		08. WAS	04a. TSS	mg/L	9150	Grab		604
Thu Feb 6		08. WAS	04a. TSS	mg/L	10090	Grab		762
Fri Feb 7		08. WAS	04a. TSS	mg/L	10390	Grab		920
Sat Feb 8		08. WAS	04a. TSS	mg/L	9870	Grab		1078
Sun Feb 9		08. WAS	04a. TSS	mg/L	10490	Grab		1236
Mon Feb 10		08. WAS	04a. TSS	mg/L	10110	Grab		1394
Tue Feb 11		08. WAS	04a. TSS	mg/L	9340	Grab		1552
Wed Feb 12		08. WAS	04a. TSS	mg/L	8960	Grab		1710
Thu Feb 13		08. WAS	04a. TSS	mg/L	9350	Grab		1868
Fri Feb 14		08. WAS	04a. TSS	mg/L	9420	Grab		2026
Sat Feb 15		08. WAS	04a. TSS	mg/L	10190	Grab		2184
Sun Feb 16		08. WAS	04a. TSS	mg/L	9180	Grab		2342
Mon Feb 17		08. WAS	04a. TSS	mg/L	8560	Grab		2500
Tue Feb 18		08. WAS	04a. TSS	mg/L	9030	Grab		2658
Wed Feb 19		08. WAS	04a. TSS	mg/L	9500	Grab		2816
Thu Feb 20		08. WAS	04a. TSS	mg/L	8610	Grab		2974
Fri Feb 21		08. WAS	04a. TSS	mg/L	7970	Grab		3132
Sat Feb 22		08. WAS	04a. TSS	mg/L	8400	Grab		3290
Sun Feb 23		08. WAS	04a. TSS	mg/L	8140	Grab		3448
Mon Feb 24		08. WAS	04a. TSS	mg/L	7290	Grab		3606
Tue Feb 25		08. WAS	04a. TSS	mg/L	7260	Grab		3764
Wed Feb 26		08. WAS	04a. TSS	mg/L	7480	Grab		3922
Thu Feb 27		08. WAS	04a. TSS	mg/L	7840	Grab		4080
Fri Feb 28		08. WAS	04a. TSS	mg/L	7520	Grab		4238
Sat Mar 1		08. WAS	04a. TSS	mg/L	7240	Grab		4396
Sun Feb 2		08. WAS	04b. VSS	mg/L	8350	Grab		131
Mon Feb 3		08. WAS	04b. VSS	mg/L	7470	Grab		289
Tue Feb 4		08. WAS	04b. VSS	mg/L	8490	Grab		447
Wed Feb 5		08. WAS	04b. VSS	mg/L	7430	Grab		605
Thu Feb 6		08. WAS	04b. VSS	mg/L	8240	Grab		763
Fri Feb 7		08. WAS	04b. VSS	mg/L	8430	Grab		921
Sat Feb 8		08. WAS	04b. VSS	mg/L	7990	Grab		1079
Sun Feb 9		08. WAS	04b. VSS	mg/L	8510	Grab		1237
Mon Feb 10		08. WAS	04b. VSS	mg/L	8220	Grab		1395
Tue Feb 11		08. WAS	04b. VSS	mg/L	7570	Grab		1553
Wed Feb 12		08. WAS	04b. VSS	mg/L	7320	Grab		1711
Thu Feb 13		08. WAS	04b. VSS	mg/L	7600	Grab		1869
Fri Feb 14		08. WAS	04b. VSS	mg/L	7470	Grab		2027
Sat Feb 15		08. WAS	04b. VSS	mg/L	8280	Grab		2185

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Sun Feb 16		08. WAS	04b. VSS	mg/L	7460	Grab		2343
Mon Feb 17		08. WAS	04b. VSS	mg/L	6920	Grab		2501
Tue Feb 18		08. WAS	04b. VSS	mg/L	7380	Grab		2659
Wed Feb 19		08. WAS	04b. VSS	mg/L	7770	Grab		2817
Thu Feb 20		08. WAS	04b. VSS	mg/L	7120	Grab		2975
Fri Feb 21		08. WAS	04b. VSS	mg/L	6560	Grab		3133
Sat Feb 22		08. WAS	04b. VSS	mg/L	6860	Grab		3291
Sun Feb 23		08. WAS	04b. VSS	mg/L	6700	Grab		3449
Mon Feb 24		08. WAS	04b. VSS	mg/L	5970	Grab		3607
Tue Feb 25		08. WAS	04b. VSS	mg/L	5930	Grab		3765
Wed Feb 26		08. WAS	04b. VSS	mg/L	6080	Grab		3923
Thu Feb 27		08. WAS	04b. VSS	mg/L	6430	Grab		4081
Fri Feb 28		08. WAS	04b. VSS	mg/L	6170	Grab		4239
Sat Mar 1		08. WAS	04b. VSS	mg/L	5970	Grab		4397
Mon Feb 3		09. Sec Eff	02a. TCBOD5	mg/L	1	Comp	Reported as <1.0	290
Wed Feb 5		09. Sec Eff	02a. TCBOD5	mg/L	3.6	Comp		606
Fri Feb 7		09. Sec Eff	02a. TCBOD5	mg/L	2	Comp		922
Mon Feb 10		09. Sec Eff	02a. TCBOD5	mg/L	2.3	Comp		1396
Wed Feb 12		09. Sec Eff	02a. TCBOD5	mg/L	2.3	Comp		1712
Fri Feb 14		09. Sec Eff	02a. TCBOD5	mg/L	2.2	Comp		2028
Mon Feb 17		09. Sec Eff	02a. TCBOD5	mg/L	1.6	Comp		2502
Wed Feb 19		09. Sec Eff	02a. TCBOD5	mg/L	1.4	Comp		2818
Fri Feb 21		09. Sec Eff	02a. TCBOD5	mg/L	1.6	Comp		3134
Mon Feb 24		09. Sec Eff	02a. TCBOD5	mg/L	1.6	Comp		3608
Wed Feb 26		09. Sec Eff	02a. TCBOD5	mg/L	2.3	Comp		3924
Fri Feb 28		09. Sec Eff	02a. TCBOD5	mg/L	1.3	Comp		4240
Mon Feb 3		09. Sec Eff	02b. SCBOD5	mg/L	1	Comp	Reported as <1.0	291
Wed Feb 5		09. Sec Eff	02b. SCBOD5	mg/L	1.3	Comp		607
Fri Feb 7		09. Sec Eff	02b. SCBOD5	mg/L	2	Comp		923
Mon Feb 10		09. Sec Eff	02b. SCBOD5	mg/L	1.8	Comp		1397
Wed Feb 12		09. Sec Eff	02b. SCBOD5	mg/L	1	Comp	Reported as <1.0	1713
Fri Feb 14		09. Sec Eff	02b. SCBOD5	mg/L	1.2	Comp		2029
Mon Feb 17		09. Sec Eff	02b. SCBOD5	mg/L	1	Comp		2503
Wed Feb 19		09. Sec Eff	02b. SCBOD5	mg/L	1	Comp	Reported as <1.0	2819
Fri Feb 21		09. Sec Eff	02b. SCBOD5	mg/L	1.1	Comp		3135
Mon Feb 24		09. Sec Eff	02b. SCBOD5	mg/L	1.1	Comp		3609
Wed Feb 26		09. Sec Eff	02b. SCBOD5	mg/L	1	Comp	Reported as <1.0	3925
Fri Feb 28		09. Sec Eff	02b. SCBOD5	mg/L	1	Comp	Reported as <1.0	4241
Mon Feb 3		09. Sec Eff	03a. TCOD	mg/L	30.8	Comp		292
Wed Feb 5		09. Sec Eff	03a. TCOD	mg/L	70.6	Comp		608
Fri Feb 7		09. Sec Eff	03a. TCOD	mg/L	30.2	Comp		924
Mon Feb 10		09. Sec Eff	03a. TCOD	mg/L	37.7	Comp		1398
Wed Feb 12		09. Sec Eff	03a. TCOD	mg/L	60.4	Comp		1714
Fri Feb 14		09. Sec Eff	03a. TCOD	mg/L	45.3	Comp		2030
Mon Feb 17		09. Sec Eff	03a. TCOD	mg/L	39.2	Comp		2504
Wed Feb 19		09. Sec Eff	03a. TCOD	mg/L	30.8	Comp		2820
Fri Feb 21		09. Sec Eff	03a. TCOD	mg/L	23.1	Comp		3136
Mon Feb 24		09. Sec Eff	03a. TCOD	mg/L	30.8	Comp		3610
Wed Feb 26		09. Sec Eff	03a. TCOD	mg/L	15.4	Comp		3926
Fri Feb 28		09. Sec Eff	03a. TCOD	mg/L	37.7	Comp		4242
Mon Feb 3		09. Sec Eff	03b. SCOD	mg/L	30.8	Comp		293
Wed Feb 5		09. Sec Eff	03b. SCOD	mg/L	53.8	Comp		609
Fri Feb 7		09. Sec Eff	03b. SCOD	mg/L	23.1	Comp		925
Mon Feb 10		09. Sec Eff	03b. SCOD	mg/L	30.2	Comp		1399
Wed Feb 12		09. Sec Eff	03b. SCOD	mg/L	52.8	Comp		1715

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Fri Feb 14		09. Sec Eff	03b. SCOD	mg/L	30.2	Comp		2031
Mon Feb 17		09. Sec Eff	03b. SCOD	mg/L	23.5	Comp		2505
Wed Feb 19		09. Sec Eff	03b. SCOD	mg/L	23.1	Comp		2821
Fri Feb 21		09. Sec Eff	03b. SCOD	mg/L	30.8	Comp		3137
Mon Feb 24		09. Sec Eff	03b. SCOD	mg/L	23.1	Comp		3611
Wed Feb 26		09. Sec Eff	03b. SCOD	mg/L	7.7	Comp		3927
Fri Feb 28		09. Sec Eff	03b. SCOD	mg/L	15.1	Comp		4243
Sun Feb 2		09. Sec Eff	04a. TSS	mg/L	4	Comp		136
Mon Feb 3		09. Sec Eff	04a. TSS	mg/L	4	Comp		294
Tue Feb 4		09. Sec Eff	04a. TSS	mg/L	2	Comp		452
Wed Feb 5		09. Sec Eff	04a. TSS	mg/L	3	Comp		610
Thu Feb 6		09. Sec Eff	04a. TSS	mg/L	3	Comp		768
Fri Feb 7		09. Sec Eff	04a. TSS	mg/L	4	Comp		926
Sat Feb 8		09. Sec Eff	04a. TSS	mg/L	3	Comp		1084
Sun Feb 9		09. Sec Eff	04a. TSS	mg/L	3	Comp		1242
Mon Feb 10		09. Sec Eff	04a. TSS	mg/L	4	Comp		1400
Tue Feb 11		09. Sec Eff	04a. TSS	mg/L	3	Comp		1558
Wed Feb 12		09. Sec Eff	04a. TSS	mg/L	4	Comp		1716
Thu Feb 13		09. Sec Eff	04a. TSS	mg/L	3	Comp		1874
Fri Feb 14		09. Sec Eff	04a. TSS	mg/L	4	Comp		2032
Sat Feb 15		09. Sec Eff	04a. TSS	mg/L	4	Comp		2190
Sun Feb 16		09. Sec Eff	04a. TSS	mg/L	3	Comp		2348
Mon Feb 17		09. Sec Eff	04a. TSS	mg/L	4	Comp		2506
Tue Feb 18		09. Sec Eff	04a. TSS	mg/L	4	Comp		2664
Wed Feb 19		09. Sec Eff	04a. TSS	mg/L	4	Comp		2822
Thu Feb 20		09. Sec Eff	04a. TSS	mg/L	3	Comp		2980
Fri Feb 21		09. Sec Eff	04a. TSS	mg/L	4	Comp		3138
Sat Feb 22		09. Sec Eff	04a. TSS	mg/L	3	Comp		3296
Sun Feb 23		09. Sec Eff	04a. TSS	mg/L	2	Comp		3454
Mon Feb 24		09. Sec Eff	04a. TSS	mg/L	3	Comp		3612
Tue Feb 25		09. Sec Eff	04a. TSS	mg/L	3	Comp		3770
Wed Feb 26		09. Sec Eff	04a. TSS	mg/L	3	Comp		3928
Thu Feb 27		09. Sec Eff	04a. TSS	mg/L	5	Comp		4086
Fri Feb 28		09. Sec Eff	04a. TSS	mg/L	2	Comp		4244
Sat Mar 1		09. Sec Eff	04a. TSS	mg/L	3	Comp		4402
Sun Feb 2		09. Sec Eff	04b. VSS	mg/L	3	Comp		137
Mon Feb 3		09. Sec Eff	04b. VSS	mg/L	3	Comp		295
Tue Feb 4		09. Sec Eff	04b. VSS	mg/L	1	Comp		453
Wed Feb 5		09. Sec Eff	04b. VSS	mg/L	3	Comp		611
Thu Feb 6		09. Sec Eff	04b. VSS	mg/L	2	Comp		769
Fri Feb 7		09. Sec Eff	04b. VSS	mg/L	3	Comp		927
Sat Feb 8		09. Sec Eff	04b. VSS	mg/L	3	Comp		1085
Sun Feb 9		09. Sec Eff	04b. VSS	mg/L	3	Comp		1243
Mon Feb 10		09. Sec Eff	04b. VSS	mg/L	3	Comp		1401
Tue Feb 11		09. Sec Eff	04b. VSS	mg/L	3	Comp		1559
Wed Feb 12		09. Sec Eff	04b. VSS	mg/L	4	Comp		1717
Thu Feb 13		09. Sec Eff	04b. VSS	mg/L	2	Comp		1875
Fri Feb 14		09. Sec Eff	04b. VSS	mg/L	3	Comp		2033
Sat Feb 15		09. Sec Eff	04b. VSS	mg/L	3	Comp		2191
Sun Feb 16		09. Sec Eff	04b. VSS	mg/L	2	Comp		2349
Mon Feb 17		09. Sec Eff	04b. VSS	mg/L	3	Comp		2507
Tue Feb 18		09. Sec Eff	04b. VSS	mg/L	3	Comp		2665
Wed Feb 19		09. Sec Eff	04b. VSS	mg/L	3	Comp		2823
Thu Feb 20		09. Sec Eff	04b. VSS	mg/L	3	Comp		2981
Fri Feb 21		09. Sec Eff	04b. VSS	mg/L	4	Comp		3139

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Sat Feb 22		09. Sec Eff	04b. VSS	mg/L	2	Comp		3297
Sun Feb 23		09. Sec Eff	04b. VSS	mg/L	2	Comp		3455
Mon Feb 24		09. Sec Eff	04b. VSS	mg/L	2	Comp		3613
Tue Feb 25		09. Sec Eff	04b. VSS	mg/L	2	Comp		3771
Wed Feb 26		09. Sec Eff	04b. VSS	mg/L	3	Comp		3929
Thu Feb 27		09. Sec Eff	04b. VSS	mg/L	5	Comp		4087
Fri Feb 28		09. Sec Eff	04b. VSS	mg/L	2	Comp		4245
Sat Mar 1		09. Sec Eff	04b. VSS	mg/L	2	Comp		4403
Mon Feb 3		09. Sec Eff	05a. TKN	mg/L	1.52	Comp		296
Wed Feb 5		09. Sec Eff	05a. TKN	mg/L	1.49	Comp		612
Fri Feb 7		09. Sec Eff	05a. TKN	mg/L	1.49	Comp		928
Mon Feb 10		09. Sec Eff	05a. TKN	mg/L	1.79	Comp		1402
Wed Feb 12		09. Sec Eff	05a. TKN	mg/L	1.62	Comp		1718
Fri Feb 14		09. Sec Eff	05a. TKN	mg/L	1.84	Comp		2034
Mon Feb 17		09. Sec Eff	05a. TKN	mg/L	2.29	Comp		2508
Wed Feb 19		09. Sec Eff	05a. TKN	mg/L	3.01	Comp		2824
Fri Feb 21		09. Sec Eff	05a. TKN	mg/L	3.35	Comp		3140
Mon Feb 24		09. Sec Eff	05a. TKN	mg/L	3.35	Comp		3614
Wed Feb 26		09. Sec Eff	05a. TKN	mg/L	1.79	Comp		3930
Fri Feb 28		09. Sec Eff	05a. TKN	mg/L	1.67	Comp		4246
Mon Feb 3		09. Sec Eff	05b. Sol TKN	mg/L	1.5	Comp		297
Wed Feb 5		09. Sec Eff	05b. Sol TKN	mg/L	1.34	Comp		613
Fri Feb 7		09. Sec Eff	05b. Sol TKN	mg/L	1.49	Comp		929
Mon Feb 10		09. Sec Eff	05b. Sol TKN	mg/L	1.48	Comp		1403
Wed Feb 12		09. Sec Eff	05b. Sol TKN	mg/L	1.39	Comp		1719
Fri Feb 14		09. Sec Eff	05b. Sol TKN	mg/L	1.62	Comp		2035
Mon Feb 17		09. Sec Eff	05b. Sol TKN	mg/L	2.29	Comp		2509
Wed Feb 19		09. Sec Eff	05b. Sol TKN	mg/L	2.9	Comp		2825
Fri Feb 21		09. Sec Eff	05b. Sol TKN	mg/L	3.35	Comp		3141
Mon Feb 24		09. Sec Eff	05b. Sol TKN	mg/L	3.07	Comp		3615
Wed Feb 26		09. Sec Eff	05b. Sol TKN	mg/L	1.79	Comp		3931
Fri Feb 28		09. Sec Eff	05b. Sol TKN	mg/L	1.73	Comp		4247
Mon Feb 3		09. Sec Eff	05c. NH3-N	mg/L	0.75	Comp		298
Wed Feb 5		09. Sec Eff	05c. NH3-N	mg/L	0.45	Comp		614
Fri Feb 7		09. Sec Eff	05c. NH3-N	mg/L	0.89	Comp		930
Mon Feb 10		09. Sec Eff	05c. NH3-N	mg/L	0.74	Comp		1404
Wed Feb 12		09. Sec Eff	05c. NH3-N	mg/L	0.78	Comp		1720
Fri Feb 14		09. Sec Eff	05c. NH3-N	mg/L	1.17	Comp		2036
Mon Feb 17		09. Sec Eff	05c. NH3-N	mg/L	1.56	Comp		2510
Wed Feb 19		09. Sec Eff	05c. NH3-N	mg/L	2.12	Comp		2826
Fri Feb 21		09. Sec Eff	05c. NH3-N	mg/L	2.62	Comp		3142
Mon Feb 24		09. Sec Eff	05c. NH3-N	mg/L	2.29	Comp		3616
Wed Feb 26		09. Sec Eff	05c. NH3-N	mg/L	0.95	Comp		3932
Fri Feb 28		09. Sec Eff	05c. NH3-N	mg/L	1	Comp		4248
Mon Feb 3		09. Sec Eff	05d. Nox-N	mg/L	5.4	Comp		299
Wed Feb 5		09. Sec Eff	05d. Nox-N	mg/L	4.98	Comp		615
Fri Feb 7		09. Sec Eff	05d. Nox-N	mg/L	4.67	Comp		931
Mon Feb 10		09. Sec Eff	05d. Nox-N	mg/L	3.72	Comp		1405
Wed Feb 12		09. Sec Eff	05d. Nox-N	mg/L	3.12	Comp		1721
Fri Feb 14		09. Sec Eff	05d. Nox-N	mg/L	2.59	Comp		2037
Mon Feb 17		09. Sec Eff	05d. Nox-N	mg/L	2.43	Comp		2511
Wed Feb 19		09. Sec Eff	05d. Nox-N	mg/L	2.05	Comp		2827
Fri Feb 21		09. Sec Eff	05d. Nox-N	mg/L	2.22	Comp		3143
Mon Feb 24		09. Sec Eff	05d. Nox-N	mg/L	1	Comp		3617
Wed Feb 26		09. Sec Eff	05d. Nox-N	mg/L	4.22	Comp		3933

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Fri Feb 28		09. Sec Eff	05d. Nox-N	mg/L	2.72	Comp		4249
Sun Feb 2		09. Sec Eff	07a. pH	SU	6.5	Inst		142
Mon Feb 3		09. Sec Eff	07a. pH	SU	6.6	Inst		300
Tue Feb 4		09. Sec Eff	07a. pH	SU	6.6	Inst		458
Wed Feb 5		09. Sec Eff	07a. pH	SU	6.6	Inst		616
Thu Feb 6		09. Sec Eff	07a. pH	SU	6.6	Inst		774
Fri Feb 7		09. Sec Eff	07a. pH	SU	6.5	Inst		932
Sat Feb 8		09. Sec Eff	07a. pH	SU	6.7	Inst		1090
Sun Feb 9		09. Sec Eff	07a. pH	SU	6.7	Inst		1248
Mon Feb 10		09. Sec Eff	07a. pH	SU	6.9	Inst		1406
Tue Feb 11		09. Sec Eff	07a. pH	SU	6.7	Inst		1564
Wed Feb 12		09. Sec Eff	07a. pH	SU	6.6	Inst		1722
Thu Feb 13		09. Sec Eff	07a. pH	SU	6.7	Inst		1880
Fri Feb 14		09. Sec Eff	07a. pH	SU	6.7	Inst		2038
Sat Feb 15		09. Sec Eff	07a. pH	SU	6.5	Inst		2196
Sun Feb 16		09. Sec Eff	07a. pH	SU	6.6	Inst		2354
Mon Feb 17		09. Sec Eff	07a. pH	SU	6.6	Inst		2512
Tue Feb 18		09. Sec Eff	07a. pH	SU	6.6	Inst		2670
Wed Feb 19		09. Sec Eff	07a. pH	SU	6.6	Inst		2828
Thu Feb 20		09. Sec Eff	07a. pH	SU	6.7	Inst		2986
Fri Feb 21		09. Sec Eff	07a. pH	SU	6.7	Inst		3144
Sat Feb 22		09. Sec Eff	07a. pH	SU	6.6	Inst		3302
Sun Feb 23		09. Sec Eff	07a. pH	SU	6.6	Inst		3460
Mon Feb 24		09. Sec Eff	07a. pH	SU	6.7	Inst		3618
Tue Feb 25		09. Sec Eff	07a. pH	SU	6.6	Inst		3776
Wed Feb 26		09. Sec Eff	07a. pH	SU	6.7	Inst		3934
Thu Feb 27		09. Sec Eff	07a. pH	SU	6.5	Inst		4092
Fri Feb 28		09. Sec Eff	07a. pH	SU	6.5	Inst		4250
Sat Mar 1		09. Sec Eff	07a. pH	SU	6.5	Inst		4408
Sun Feb 2		09. Sec Eff	07b. Alk	mg/L	77	Grab		143
Mon Feb 3		09. Sec Eff	07b. Alk	mg/L	83	Grab		301
Tue Feb 4		09. Sec Eff	07b. Alk	mg/L	80	Grab		459
Wed Feb 5		09. Sec Eff	07b. Alk	mg/L	81	Grab		617
Thu Feb 6		09. Sec Eff	07b. Alk	mg/L	85	Grab		775
Fri Feb 7		09. Sec Eff	07b. Alk	mg/L	85	Grab		933
Sat Feb 8		09. Sec Eff	07b. Alk	mg/L	82	Grab		1091
Sun Feb 9		09. Sec Eff	07b. Alk	mg/L	87	Grab		1249
Mon Feb 10		09. Sec Eff	07b. Alk	mg/L	90	Grab		1407
Tue Feb 11		09. Sec Eff	07b. Alk	mg/L	97	Grab		1565
Wed Feb 12		09. Sec Eff	07b. Alk	mg/L	85	Grab		1723
Thu Feb 13		09. Sec Eff	07b. Alk	mg/L	88	Grab		1881
Fri Feb 14		09. Sec Eff	07b. Alk	mg/L	88	Grab		2039
Sat Feb 15		09. Sec Eff	07b. Alk	mg/L	84	Grab		2197
Sun Feb 16		09. Sec Eff	07b. Alk	mg/L	93	Grab		2355
Mon Feb 17		09. Sec Eff	07b. Alk	mg/L	94	Grab		2513
Tue Feb 18		09. Sec Eff	07b. Alk	mg/L	102	Grab		2671
Wed Feb 19		09. Sec Eff	07b. Alk	mg/L	95	Grab		2829
Thu Feb 20		09. Sec Eff	07b. Alk	mg/L	100	Grab		2987
Fri Feb 21		09. Sec Eff	07b. Alk	mg/L	97	Grab		3145
Sat Feb 22		09. Sec Eff	07b. Alk	mg/L	94	Grab		3303
Sun Feb 23		09. Sec Eff	07b. Alk	mg/L	95	Grab		3461
Mon Feb 24		09. Sec Eff	07b. Alk	mg/L	98	Grab		3619
Tue Feb 25		09. Sec Eff	07b. Alk	mg/L	85	Grab		3777
Wed Feb 26		09. Sec Eff	07b. Alk	mg/L	103	Grab		3935
Thu Feb 27		09. Sec Eff	07b. Alk	mg/L	82	Grab		4093

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Fri Feb 28		09. Sec Eff	07b. Alk	mg/L	82	Grab		4251
Sat Mar 1		09. Sec Eff	07b. Alk	mg/L	76	Grab		4409
Mon Feb 3		10. Final Eff	02a. TCBOD5	mg/L	1	Comp	Reported as <1.0	302
Wed Feb 5		10. Final Eff	02a. TCBOD5	mg/L	1.6	Comp		618
Fri Feb 7		10. Final Eff	02a. TCBOD5	mg/L	2.2	Comp		934
Mon Feb 10		10. Final Eff	02a. TCBOD5	mg/L	1.7	Comp		1408
Wed Feb 12		10. Final Eff	02a. TCBOD5	mg/L	1.5	Comp		1724
Fri Feb 14		10. Final Eff	02a. TCBOD5	mg/L	1.8	Comp		2040
Mon Feb 17		10. Final Eff	02a. TCBOD5	mg/L	1.8	Comp		2514
Wed Feb 19		10. Final Eff	02a. TCBOD5	mg/L	2.5	Comp		2830
Fri Feb 21		10. Final Eff	02a. TCBOD5	mg/L	1.6	Comp		3146
Mon Feb 24		10. Final Eff	02a. TCBOD5	mg/L	1.8	Comp		3620
Wed Feb 26		10. Final Eff	02a. TCBOD5	mg/L	1.5	Comp		3936
Fri Feb 28		10. Final Eff	02a. TCBOD5	mg/L	1.9	Comp		4252
Mon Feb 3		10. Final Eff	02b. SCBOD5	mg/L	1	Comp	Reported as <1.0	303
Wed Feb 5		10. Final Eff	02b. SCBOD5	mg/L	1.2	Comp		619
Fri Feb 7		10. Final Eff	02b. SCBOD5	mg/L	1.4	Comp		935
Mon Feb 10		10. Final Eff	02b. SCBOD5	mg/L	1.3	Comp		1409
Wed Feb 12		10. Final Eff	02b. SCBOD5	mg/L	1	Comp	Reported as <1.0	1725
Fri Feb 14		10. Final Eff	02b. SCBOD5	mg/L	1.2	Comp		2041
Mon Feb 17		10. Final Eff	02b. SCBOD5	mg/L	1	Comp		2515
Wed Feb 19		10. Final Eff	02b. SCBOD5	mg/L	1.3	Comp		2831
Fri Feb 21		10. Final Eff	02b. SCBOD5	mg/L	1.3	Comp		3147
Mon Feb 24		10. Final Eff	02b. SCBOD5	mg/L	1	Comp	Reported as <1.0	3621
Wed Feb 26		10. Final Eff	02b. SCBOD5	mg/L	1	Comp	Reported as <1.0	3937
Fri Feb 28		10. Final Eff	02b. SCBOD5	mg/L	1	Comp	Reported as <1.0	4253
Mon Feb 3		10. Final Eff	03a. TCOD	mg/L	47.2	Comp		304
Wed Feb 5		10. Final Eff	03a. TCOD	mg/L	30.8	Comp		620
Fri Feb 7		10. Final Eff	03a. TCOD	mg/L	30.8	Comp		936
Mon Feb 10		10. Final Eff	03a. TCOD	mg/L	30.2	Comp		1410
Wed Feb 12		10. Final Eff	03a. TCOD	mg/L	52.8	Comp		1726
Fri Feb 14		10. Final Eff	03a. TCOD	mg/L	67.9	Comp		2042
Mon Feb 17		10. Final Eff	03a. TCOD	mg/L	54.9	Comp		2516
Wed Feb 19		10. Final Eff	03a. TCOD	mg/L	38.5	Comp		2832
Fri Feb 21		10. Final Eff	03a. TCOD	mg/L	46.2	Comp		3148
Mon Feb 24		10. Final Eff	03a. TCOD	mg/L	46.2	Comp		3622
Wed Feb 26		10. Final Eff	03a. TCOD	mg/L	38.5	Comp		3938
Fri Feb 28		10. Final Eff	03a. TCOD	mg/L	30.2	Comp		4254
Mon Feb 3		10. Final Eff	03b. SCOD	mg/L	23.1	Comp		305
Wed Feb 5		10. Final Eff	03b. SCOD	mg/L	39.2	Comp		621
Fri Feb 7		10. Final Eff	03b. SCOD	mg/L	22.6	Comp		937
Mon Feb 10		10. Final Eff	03b. SCOD	mg/L	30.2	Comp		1411
Wed Feb 12		10. Final Eff	03b. SCOD	mg/L	37.7	Comp		1727
Fri Feb 14		10. Final Eff	03b. SCOD	mg/L	30.2	Comp		2043
Mon Feb 17		10. Final Eff	03b. SCOD	mg/L	31.4	Comp		2517
Wed Feb 19		10. Final Eff	03b. SCOD	mg/L	15.4	Comp		2833
Fri Feb 21		10. Final Eff	03b. SCOD	mg/L	30.8	Comp		3149
Mon Feb 24		10. Final Eff	03b. SCOD	mg/L	15.4	Comp		3623
Wed Feb 26		10. Final Eff	03b. SCOD	mg/L	38.5	Comp		3939
Fri Feb 28		10. Final Eff	03b. SCOD	mg/L	30.2	Comp		4255
Sun Feb 2		10. Final Eff	04a. TSS	mg/L	2	Comp		148
Mon Feb 3		10. Final Eff	04a. TSS	mg/L	1	Comp		306
Tue Feb 4		10. Final Eff	04a. TSS	mg/L	1	Comp		464
Wed Feb 5		10. Final Eff	04a. TSS	mg/L	2	Comp		622
Thu Feb 6		10. Final Eff	04a. TSS	mg/L	1	Comp		780

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Fri Feb 7		10. Final Eff	04a. TSS	mg/L	1	Comp		938
Sat Feb 8		10. Final Eff	04a. TSS	mg/L	1	Comp		1096
Sun Feb 9		10. Final Eff	04a. TSS	mg/L	1	Comp		1254
Mon Feb 10		10. Final Eff	04a. TSS	mg/L	1	Comp		1412
Tue Feb 11		10. Final Eff	04a. TSS	mg/L	2	Comp		1570
Wed Feb 12		10. Final Eff	04a. TSS	mg/L	2	Comp		1728
Thu Feb 13		10. Final Eff	04a. TSS	mg/L	2	Comp		1886
Fri Feb 14		10. Final Eff	04a. TSS	mg/L	2	Comp		2044
Sat Feb 15		10. Final Eff	04a. TSS	mg/L	2	Comp		2202
Sun Feb 16		10. Final Eff	04a. TSS	mg/L	2	Comp		2360
Mon Feb 17		10. Final Eff	04a. TSS	mg/L	2	Comp		2518
Tue Feb 18		10. Final Eff	04a. TSS	mg/L	1	Comp		2676
Wed Feb 19		10. Final Eff	04a. TSS	mg/L	1	Comp		2834
Thu Feb 20		10. Final Eff	04a. TSS	mg/L	1	Comp		2992
Fri Feb 21		10. Final Eff	04a. TSS	mg/L	1	Comp		3150
Sat Feb 22		10. Final Eff	04a. TSS	mg/L	1	Comp		3308
Sun Feb 23		10. Final Eff	04a. TSS	mg/L	1	Comp		3466
Mon Feb 24		10. Final Eff	04a. TSS	mg/L	1	Comp		3624
Tue Feb 25		10. Final Eff	04a. TSS	mg/L	1	Comp		3782
Wed Feb 26		10. Final Eff	04a. TSS	mg/L	2	Comp		3940
Thu Feb 27		10. Final Eff	04a. TSS	mg/L	1	Comp		4098
Fri Feb 28		10. Final Eff	04a. TSS	mg/L	1	Comp		4256
Sat Mar 1		10. Final Eff	04a. TSS	mg/L	1	Comp		4414
Sun Feb 2		10. Final Eff	04b. VSS	mg/L	1	Comp		149
Mon Feb 3		10. Final Eff	04b. VSS	mg/L	1	Comp		307
Tue Feb 4		10. Final Eff	04b. VSS	mg/L	1	Comp	Reported as <1.0	465
Wed Feb 5		10. Final Eff	04b. VSS	mg/L	2	Comp		623
Thu Feb 6		10. Final Eff	04b. VSS	mg/L	1	Comp		781
Fri Feb 7		10. Final Eff	04b. VSS	mg/L	1	Comp	Reported as <1.0	939
Sat Feb 8		10. Final Eff	04b. VSS	mg/L	1	Comp		1097
Sun Feb 9		10. Final Eff	04b. VSS	mg/L	1	Comp	Reported as <1.0	1255
Mon Feb 10		10. Final Eff	04b. VSS	mg/L	1	Comp		1413
Tue Feb 11		10. Final Eff	04b. VSS	mg/L	1	Comp		1571
Wed Feb 12		10. Final Eff	04b. VSS	mg/L	2	Comp		1729
Thu Feb 13		10. Final Eff	04b. VSS	mg/L	1	Comp		1887
Fri Feb 14		10. Final Eff	04b. VSS	mg/L	1	Comp		2045
Sat Feb 15		10. Final Eff	04b. VSS	mg/L	1	Comp		2203
Sun Feb 16		10. Final Eff	04b. VSS	mg/L	1	Comp		2361
Mon Feb 17		10. Final Eff	04b. VSS	mg/L	1	Comp		2519
Tue Feb 18		10. Final Eff	04b. VSS	mg/L	1	Comp		2677
Wed Feb 19		10. Final Eff	04b. VSS	mg/L	1	Comp		2835
Thu Feb 20		10. Final Eff	04b. VSS	mg/L	1	Comp		2993
Fri Feb 21		10. Final Eff	04b. VSS	mg/L	1	Comp		3151
Sat Feb 22		10. Final Eff	04b. VSS	mg/L	1	Comp	Reported as <1.0	3309
Sun Feb 23		10. Final Eff	04b. VSS	mg/L	1	Comp		3467
Mon Feb 24		10. Final Eff	04b. VSS	mg/L	1	Comp		3625
Tue Feb 25		10. Final Eff	04b. VSS	mg/L	1	Comp		3783
Wed Feb 26		10. Final Eff	04b. VSS	mg/L	1	Comp		3941
Thu Feb 27		10. Final Eff	04b. VSS	mg/L	1	Comp		4099
Fri Feb 28		10. Final Eff	04b. VSS	mg/L	1	Comp		4257
Sat Mar 1		10. Final Eff	04b. VSS	mg/L	1	Comp	Reported as <1.0	4415
Mon Feb 3		10. Final Eff	05a. TKN	mg/L	1.21	Comp		308
Wed Feb 5		10. Final Eff	05a. TKN	mg/L	1.19	Comp		624
Fri Feb 7		10. Final Eff	05a. TKN	mg/L	1.34	Comp		940
Mon Feb 10		10. Final Eff	05a. TKN	mg/L	1.64	Comp		1414

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Wed Feb 12		10. Final Eff	05a. TKN	mg/L	1.51	Comp		1730
Fri Feb 14		10. Final Eff	05a. TKN	mg/L	1.45	Comp		2046
Mon Feb 17		10. Final Eff	05a. TKN	mg/L	2.34	Comp		2520
Wed Feb 19		10. Final Eff	05a. TKN	mg/L	2.46	Comp		2836
Fri Feb 21		10. Final Eff	05a. TKN	mg/L	2.57	Comp		3152
Mon Feb 24		10. Final Eff	05a. TKN	mg/L	2.34	Comp		3626
Wed Feb 26		10. Final Eff	05a. TKN	mg/L	1	Comp		3942
Fri Feb 28		10. Final Eff	05a. TKN	mg/L	1	Comp		4258
Mon Feb 3		10. Final Eff	05b. Sol TKN	mg/L	0.99	Comp		309
Wed Feb 5		10. Final Eff	05b. Sol TKN	mg/L	1.19	Comp		625
Fri Feb 7		10. Final Eff	05b. Sol TKN	mg/L	1.34	Comp		941
Mon Feb 10		10. Final Eff	05b. Sol TKN	mg/L	1.48	Comp		1415
Wed Feb 12		10. Final Eff	05b. Sol TKN	mg/L	1.29	Comp		1731
Fri Feb 14		10. Final Eff	05b. Sol TKN	mg/L	1.4	Comp		2047
Mon Feb 17		10. Final Eff	05b. Sol TKN	mg/L	2.01	Comp		2521
Wed Feb 19		10. Final Eff	05b. Sol TKN	mg/L	2.35	Comp		2837
Fri Feb 21		10. Final Eff	05b. Sol TKN	mg/L	2.45	Comp		3153
Mon Feb 24		10. Final Eff	05b. Sol TKN	mg/L	2.23	Comp		3627
Wed Feb 26		10. Final Eff	05b. Sol TKN	mg/L	1.23	Comp		3943
Fri Feb 28		10. Final Eff	05b. Sol TKN	mg/L	1.12	Comp		4259
Mon Feb 3		10. Final Eff	05c. NH3-N	mg/L	0.55	Comp		310
Wed Feb 5		10. Final Eff	05c. NH3-N	mg/L	0.89	Comp		626
Fri Feb 7		10. Final Eff	05c. NH3-N	mg/L	0.74	Comp		942
Mon Feb 10		10. Final Eff	05c. NH3-N	mg/L	0.74	Comp		1416
Wed Feb 12		10. Final Eff	05c. NH3-N	mg/L	0.73	Comp		1732
Fri Feb 14		10. Final Eff	05c. NH3-N	mg/L	0.84	Comp		2048
Mon Feb 17		10. Final Eff	05c. NH3-N	mg/L	1.56	Comp		2522
Wed Feb 19		10. Final Eff	05c. NH3-N	mg/L	1.79	Comp		2838
Fri Feb 21		10. Final Eff	05c. NH3-N	mg/L	1.84	Comp		3154
Mon Feb 24		10. Final Eff	05c. NH3-N	mg/L	1.56	Comp		3628
Wed Feb 26		10. Final Eff	05c. NH3-N	mg/L	0.45	Comp		3944
Fri Feb 28		10. Final Eff	05c. NH3-N	mg/L	0.39	Comp		4260
Mon Feb 3		10. Final Eff	05d. Nox-N	mg/L	6.24	Comp		311
Wed Feb 5		10. Final Eff	05d. Nox-N	mg/L	4.1	Comp		627
Fri Feb 7		10. Final Eff	05d. Nox-N	mg/L	4.32	Comp		943
Mon Feb 10		10. Final Eff	05d. Nox-N	mg/L	3.9	Comp		1417
Wed Feb 12		10. Final Eff	05d. Nox-N	mg/L	3.2	Comp		1733
Fri Feb 14		10. Final Eff	05d. Nox-N	mg/L	2.88	Comp		2049
Mon Feb 17		10. Final Eff	05d. Nox-N	mg/L	3.42	Comp		2523
Wed Feb 19		10. Final Eff	05d. Nox-N	mg/L	2.39	Comp		2839
Fri Feb 21		10. Final Eff	05d. Nox-N	mg/L	1.86	Comp		3155
Mon Feb 24		10. Final Eff	05d. Nox-N	mg/L	2.24	Comp		3629
Wed Feb 26		10. Final Eff	05d. Nox-N	mg/L	4.37	Comp		3945
Fri Feb 28		10. Final Eff	05d. Nox-N	mg/L	3.22	Comp		4261
Sun Feb 2		10. Final Eff	07a. pH	SU	6.6	Inst		154
Mon Feb 3		10. Final Eff	07a. pH	SU	6.9	Inst		312
Tue Feb 4		10. Final Eff	07a. pH	SU	6.7	Inst		470
Wed Feb 5		10. Final Eff	07a. pH	SU	6.7	Inst		628
Thu Feb 6		10. Final Eff	07a. pH	SU	6.7	Inst		786
Fri Feb 7		10. Final Eff	07a. pH	SU	6.7	Inst		944
Sat Feb 8		10. Final Eff	07a. pH	SU	7.2	Inst		1102
Sun Feb 9		10. Final Eff	07a. pH	SU	7	Inst		1260
Mon Feb 10		10. Final Eff	07a. pH	SU	7	Inst		1418
Tue Feb 11		10. Final Eff	07a. pH	SU	6.8	Inst		1576
Wed Feb 12		10. Final Eff	07a. pH	SU	6.8	Inst		1734

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Thu Feb 13		10. Final Eff	07a. pH	SU	6.8	Inst		1892
Fri Feb 14		10. Final Eff	07a. pH	SU	6.8	Inst		2050
Sat Feb 15		10. Final Eff	07a. pH	SU	6.7	Inst		2208
Sun Feb 16		10. Final Eff	07a. pH	SU	6.9	Inst		2366
Mon Feb 17		10. Final Eff	07a. pH	SU	6.6	Inst		2524
Tue Feb 18		10. Final Eff	07a. pH	SU	6.7	Inst		2682
Wed Feb 19		10. Final Eff	07a. pH	SU	6.7	Inst		2840
Thu Feb 20		10. Final Eff	07a. pH	SU	6.7	Inst		2998
Fri Feb 21		10. Final Eff	07a. pH	SU	6.7	Inst		3156
Sat Feb 22		10. Final Eff	07a. pH	SU	6.6	Inst		3314
Sun Feb 23		10. Final Eff	07a. pH	SU	6.7	Inst		3472
Mon Feb 24		10. Final Eff	07a. pH	SU	6.7	Inst		3630
Tue Feb 25		10. Final Eff	07a. pH	SU	6.7	Inst		3788
Wed Feb 26		10. Final Eff	07a. pH	SU	6.8	Inst		3946
Thu Feb 27		10. Final Eff	07a. pH	SU	6.6	Inst		4104
Fri Feb 28		10. Final Eff	07a. pH	SU	6.8	Inst		4262
Sat Mar 1		10. Final Eff	07a. pH	SU	6.7	Inst		4420
Sun Feb 2		10. Final Eff	07b. Alk	mg/L	80	Grab		155
Mon Feb 3		10. Final Eff	07b. Alk	mg/L	79	Grab		313
Tue Feb 4		10. Final Eff	07b. Alk	mg/L	75	Grab		471
Wed Feb 5		10. Final Eff	07b. Alk	mg/L	79	Grab		629
Thu Feb 6		10. Final Eff	07b. Alk	mg/L	81	Grab		787
Fri Feb 7		10. Final Eff	07b. Alk	mg/L	84	Grab		945
Sat Feb 8		10. Final Eff	07b. Alk	mg/L	82	Grab		1103
Sun Feb 9		10. Final Eff	07b. Alk	mg/L	84	Grab		1261
Mon Feb 10		10. Final Eff	07b. Alk	mg/L	87	Grab		1419
Tue Feb 11		10. Final Eff	07b. Alk	mg/L	96	Grab		1577
Wed Feb 12		10. Final Eff	07b. Alk	mg/L	84	Grab		1735
Thu Feb 13		10. Final Eff	07b. Alk	mg/L	82	Grab		1893
Fri Feb 14		10. Final Eff	07b. Alk	mg/L	88	Grab		2051
Sat Feb 15		10. Final Eff	07b. Alk	mg/L	80	Grab		2209
Sun Feb 16		10. Final Eff	07b. Alk	mg/L	88	Grab		2367
Mon Feb 17		10. Final Eff	07b. Alk	mg/L	93	Grab		2525
Tue Feb 18		10. Final Eff	07b. Alk	mg/L	101	Grab		2683
Wed Feb 19		10. Final Eff	07b. Alk	mg/L	90	Grab		2841
Thu Feb 20		10. Final Eff	07b. Alk	mg/L	88	Grab		2999
Fri Feb 21		10. Final Eff	07b. Alk	mg/L	92	Grab		3157
Sat Feb 22		10. Final Eff	07b. Alk	mg/L	87	Grab		3315
Sun Feb 23		10. Final Eff	07b. Alk	mg/L	89	Grab		3473
Mon Feb 24		10. Final Eff	07b. Alk	mg/L	92	Grab		3631
Tue Feb 25		10. Final Eff	07b. Alk	mg/L	80	Grab		3789
Wed Feb 26		10. Final Eff	07b. Alk	mg/L	95	Grab		3947
Thu Feb 27		10. Final Eff	07b. Alk	mg/L	80	Grab		4105
Fri Feb 28		10. Final Eff	07b. Alk	mg/L	79	Grab		4263
Sat Mar 1		10. Final Eff	07b. Alk	mg/L	72	Grab		4421
Sun Feb 2		11. DW Sludge	04a. TSS	mg/L	150000	Grab		157
Mon Feb 3		11. DW Sludge	04a. TSS	mg/L	160000	Grab		315
Tue Feb 4		11. DW Sludge	04a. TSS	mg/L	150000	Grab		473
Wed Feb 5		11. DW Sludge	04a. TSS	mg/L	140000	Grab		631
Thu Feb 6		11. DW Sludge	04a. TSS	mg/L	150000	Grab		789
Sat Feb 8		11. DW Sludge	04a. TSS	mg/L	160000	Grab		1105
Sun Feb 9		11. DW Sludge	04a. TSS	mg/L	150000	Grab		1263
Mon Feb 10		11. DW Sludge	04a. TSS	mg/L	140000	Grab		1421
Tue Feb 11		11. DW Sludge	04a. TSS	mg/L	150000	Grab		1579
Wed Feb 12		11. DW Sludge	04a. TSS	mg/L	150000	Grab		1737

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Thu Feb 13		11. DW Sludge	04a. TSS	mg/L	150000	Grab		1895
Fri Feb 14		11. DW Sludge	04a. TSS	mg/L	150000	Grab		2053
Sat Feb 15		11. DW Sludge	04a. TSS	mg/L	140000	Grab		2211
Sun Feb 16		11. DW Sludge	04a. TSS	mg/L	160000	Grab		2369
Mon Feb 17		11. DW Sludge	04a. TSS	mg/L	150000	Grab		2527
Tue Feb 18		11. DW Sludge	04a. TSS	mg/L	160000	Grab		2685
Wed Feb 19		11. DW Sludge	04a. TSS	mg/L	150000	Grab		2843
Thu Feb 20		11. DW Sludge	04a. TSS	mg/L	160000	Grab		3001
Fri Feb 21		11. DW Sludge	04a. TSS	mg/L	160000	Grab		3159
Sat Feb 22		11. DW Sludge	04a. TSS	mg/L	160000	Grab		3317
Sun Feb 23		11. DW Sludge	04a. TSS	mg/L	170000	Grab		3475
Mon Feb 24		11. DW Sludge	04a. TSS	mg/L	160000	Grab		3633
Tue Feb 25		11. DW Sludge	04a. TSS	mg/L	170000	Grab		3791
Wed Feb 26		11. DW Sludge	04a. TSS	mg/L	160000	Grab		3949
Thu Feb 27		11. DW Sludge	04a. TSS	mg/L	130000	Grab		4107
Fri Feb 28		11. DW Sludge	04a. TSS	mg/L	160000	Grab		4265
Sat Mar 1		11. DW Sludge	04a. TSS	mg/L	140000	Grab		4423
Sun Feb 2		11. DW Sludge	04c. VSS/TSS	%	78	Grab		158
Mon Feb 3		11. DW Sludge	04c. VSS/TSS	%	81	Grab		316
Tue Feb 4		11. DW Sludge	04c. VSS/TSS	%	78	Grab		474
Thu Feb 6		11. DW Sludge	04c. VSS/TSS	%	80	Grab		790
Sat Feb 8		11. DW Sludge	04c. VSS/TSS	%	82	Grab		1106
Sun Feb 9		11. DW Sludge	04c. VSS/TSS	%	82	Grab		1264
Mon Feb 10		11. DW Sludge	04c. VSS/TSS	%	82	Grab		1422
Tue Feb 11		11. DW Sludge	04c. VSS/TSS	%	82	Grab		1580
Wed Feb 12		11. DW Sludge	04c. VSS/TSS	%	82	Grab		1738
Thu Feb 13		11. DW Sludge	04c. VSS/TSS	%	82	Grab		1896
Fri Feb 14		11. DW Sludge	04c. VSS/TSS	%	82	Grab		2054
Sat Feb 15		11. DW Sludge	04c. VSS/TSS	%	83	Grab		2212
Sun Feb 16		11. DW Sludge	04c. VSS/TSS	%	82	Grab		2370
Mon Feb 17		11. DW Sludge	04c. VSS/TSS	%	84	Grab		2528
Tue Feb 18		11. DW Sludge	04c. VSS/TSS	%	82	Grab		2686
Wed Feb 19		11. DW Sludge	04c. VSS/TSS	%	82	Grab		2844
Thu Feb 20		11. DW Sludge	04c. VSS/TSS	%	82	Grab		3002
Fri Feb 21		11. DW Sludge	04c. VSS/TSS	%	81	Grab		3160
Sat Feb 22		11. DW Sludge	04c. VSS/TSS	%	82	Grab		3318
Sun Feb 23		11. DW Sludge	04c. VSS/TSS	%	82	Grab		3476
Mon Feb 24		11. DW Sludge	04c. VSS/TSS	%	82	Grab		3634
Tue Feb 25		11. DW Sludge	04c. VSS/TSS	%	86	Grab		3792
Wed Feb 26		11. DW Sludge	04c. VSS/TSS	%	81	Grab		3950
Thu Feb 27		11. DW Sludge	04c. VSS/TSS	%	84	Grab		4108
Fri Feb 28		11. DW Sludge	04c. VSS/TSS	%	82	Grab		4266
Sat Mar 1		11. DW Sludge	04c. VSS/TSS	%	83	Grab		4424
Sun Feb 2		11. DW Sludge	09. Wet Mass	WT/d	21.5	Avg		156
Mon Feb 3		11. DW Sludge	09. Wet Mass	WT/d	16.9	Avg		314
Tue Feb 4		11. DW Sludge	09. Wet Mass	WT/d	21.1	Avg		472
Wed Feb 5		11. DW Sludge	09. Wet Mass	WT/d	19.1	Avg		630
Thu Feb 6		11. DW Sludge	09. Wet Mass	WT/d	21.5	Avg		788
Sat Feb 8		11. DW Sludge	09. Wet Mass	WT/d	23.4	Avg		1104
Sun Feb 9		11. DW Sludge	09. Wet Mass	WT/d	23.4	Avg		1262
Mon Feb 10		11. DW Sludge	09. Wet Mass	WT/d	18.9	Avg		1420
Tue Feb 11		11. DW Sludge	09. Wet Mass	WT/d	26	Avg		1578
Wed Feb 12		11. DW Sludge	09. Wet Mass	WT/d	26	Avg		1736
Thu Feb 13		11. DW Sludge	09. Wet Mass	WT/d	25.2	Avg		1894
Fri Feb 14		11. DW Sludge	09. Wet Mass	WT/d	26.7	Avg		2052

Lahaina WWRF Process Study: Model Calibration Data

Date	Time	Location	Parameter	Units	Value	Type	Comments	Ori Seq
Sat Feb 15		11. DW Sludge	09. Wet Mass	WT/d	20.4	Avg		2210
Sun Feb 16		11. DW Sludge	09. Wet Mass	WT/d	22.5	Avg		2368
Mon Feb 17		11. DW Sludge	09. Wet Mass	WT/d	22.8	Avg		2526
Tue Feb 18		11. DW Sludge	09. Wet Mass	WT/d	17.8	Avg		2684
Wed Feb 19		11. DW Sludge	09. Wet Mass	WT/d	22.2	Avg		2842
Thu Feb 20		11. DW Sludge	09. Wet Mass	WT/d	24.8	Avg		3000
Fri Feb 21		11. DW Sludge	09. Wet Mass	WT/d	15.2	Avg		3158
Sat Feb 22		11. DW Sludge	09. Wet Mass	WT/d	19.4	Avg		3316
Sun Feb 23		11. DW Sludge	09. Wet Mass	WT/d	22.2	Avg		3474
Mon Feb 24		11. DW Sludge	09. Wet Mass	WT/d	17.8	Avg		3632
Tue Feb 25		11. DW Sludge	09. Wet Mass	WT/d	23.4	Avg		3790
Wed Feb 26		11. DW Sludge	09. Wet Mass	WT/d	21.2	Avg		3948
Thu Feb 27		11. DW Sludge	09. Wet Mass	WT/d	19.1	Avg		4106
Fri Feb 28		11. DW Sludge	09. Wet Mass	WT/d	23.4	Avg		4264
Sat Mar 1		11. DW Sludge	09. Wet Mass	WT/d	24	Avg		4422

Lahaina WWRF Process Study: Model Calibration Data - Mass Balance

Min	0.1098	0.0023	0.0034	0.0244	0.0314	0.0316	0.0293	0.0062	0.0033	0.0011	0.7333
Avg	**0.12**	**0.01**	**0.01**	**0.06**	**0.04**	**0.09**	**0.08**	**0.03**	**0.00**	**0.00**	**0.80**
Max	0.1195	0.0163	0.0072	0.0844	0.0402	0.1939	0.1741	0.0851	0.0072	0.004	0.8427
Avg Abs Dev	**3%**	**63%**	**32%**	**45%**	**8%**	**61%**	**59%**	**78%**	**30%**	**51%**	**4%**
Use for Calib	**0.10**	**0.01**	**0.01**	**0.06**	**0.04**	**0.09**	**0.08**	**0.03**	**0.00**	**0.00**	**0.80**

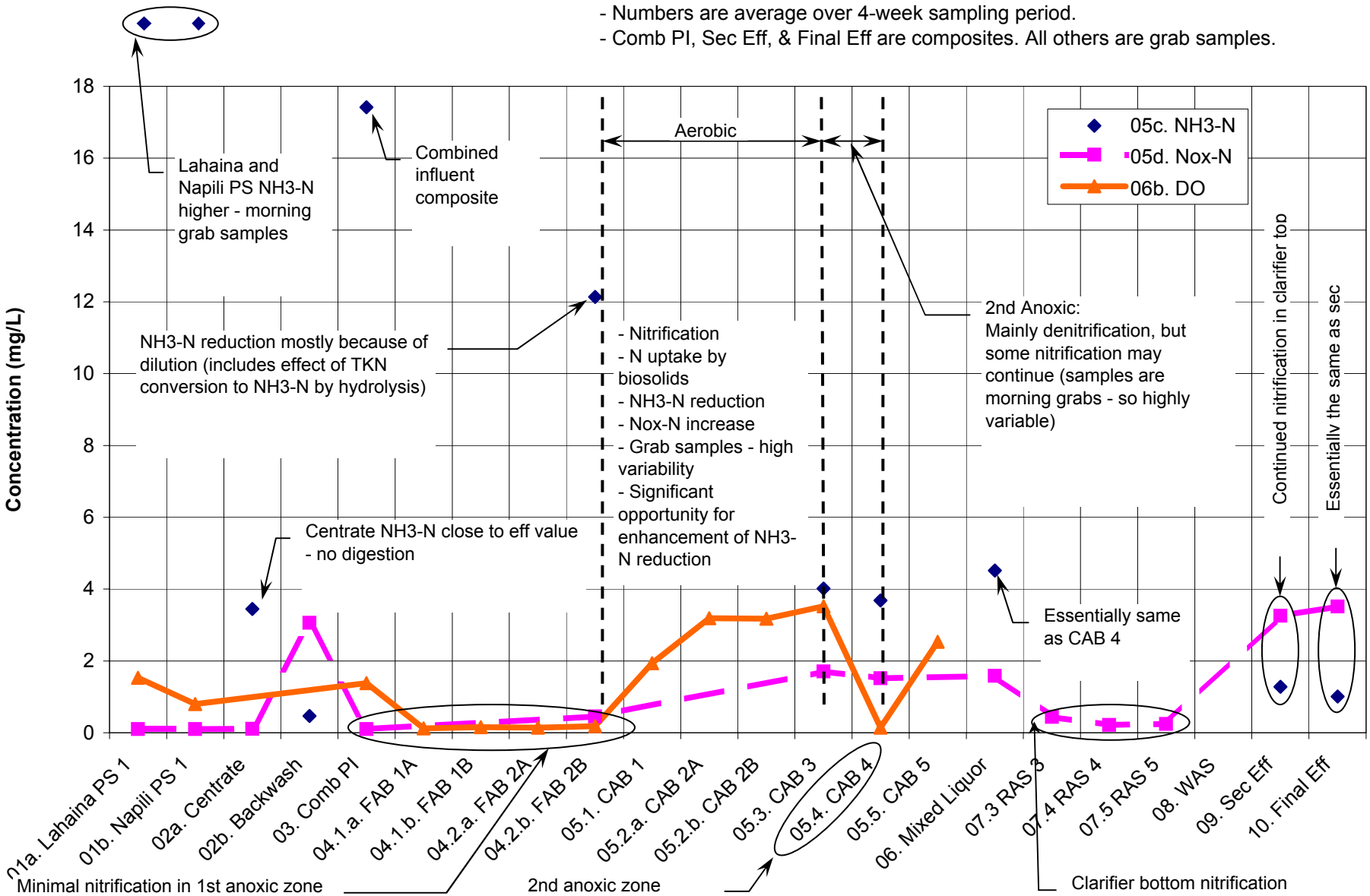
Filter Backwash as Percent of Total

	01. Flow	02a. TCBOD5	02b. SCBOD5	03a. TCOD	03b. SCOD	04a. TSS	04b. VSS	05a. TKN	05b. Sol TKN	05c. NH3-N	05d. Nox-N
	Inst	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Date	**mgd**	**lb/d**	**lb/d**	**lb/d**	**lb/d**	**lb/d**	**lb/d**	**lb/d**	**lb/d**	**lb/d**	**lb/d**
Sun Feb 2											
Mon Feb 3											
Tue Feb 4											
Wed Feb 5	12%	0%	0%	4%	4%	3%	3%	1%	0%	0%	79%
Thu Feb 6											
Fri Feb 7											
Sat Feb 8											
Sun Feb 9											
Mon Feb 10											
Tue Feb 11											
Wed Feb 12	12%	0%	0%	2%	3%	9%	8%	1%	0%	0%	81%
Thu Feb 13											
Fri Feb 14											
Sat Feb 15											
Sun Feb 16											
Mon Feb 17											
Tue Feb 18											
Wed Feb 19	11%	2%	1%	8%	3%	4%	4%	9%	1%	0%	73%
Thu Feb 20											
Fri Feb 21											
Sat Feb 22											
Sun Feb 23											
Mon Feb 24											
Tue Feb 25											
Wed Feb 26	12%	2%	1%	8%	4%	19%	17%	3%	1%	0%	84%
Thu Feb 27											
Fri Feb 28											
Sat Mar 1											

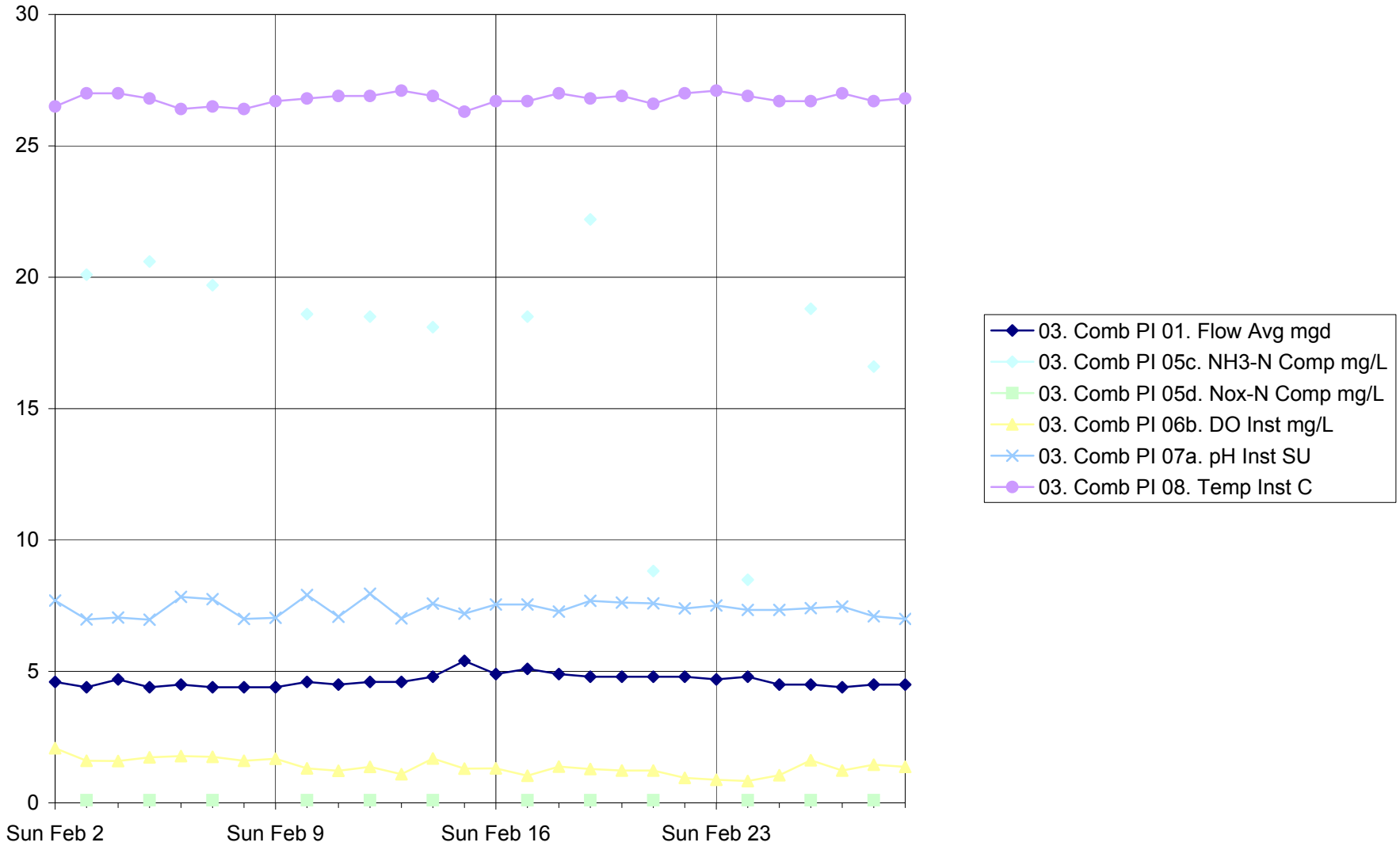
Lahaina W

Min	4.0	4,000	1,388	9,814	2,450	4,508	3,717	900	458	339	1	10.0
Avg	**4.2**	**5,356**	**1,942**	**14,050**	**5,573**	**6,842**	**5,955**	**1,112**	**783**	**671**	**1**	**11.3**
Max	4.9	6,310	2,646	24,263	7,151	14,148	12,860	1,870	1,032	887	1	13.3
Avg Abs Dev	**4%**	**14%**	**14%**	**22%**	**20%**	**25%**	**27%**	**12%**	**15%**	**17%**	**4%**	**7%**
Use for Calib	**4.2**	**5,356**	**1,942**	**14,050**	**5,573**	**6,842**	**5,955**	**1,112**	**783**	**671**	**1**	**11.3**

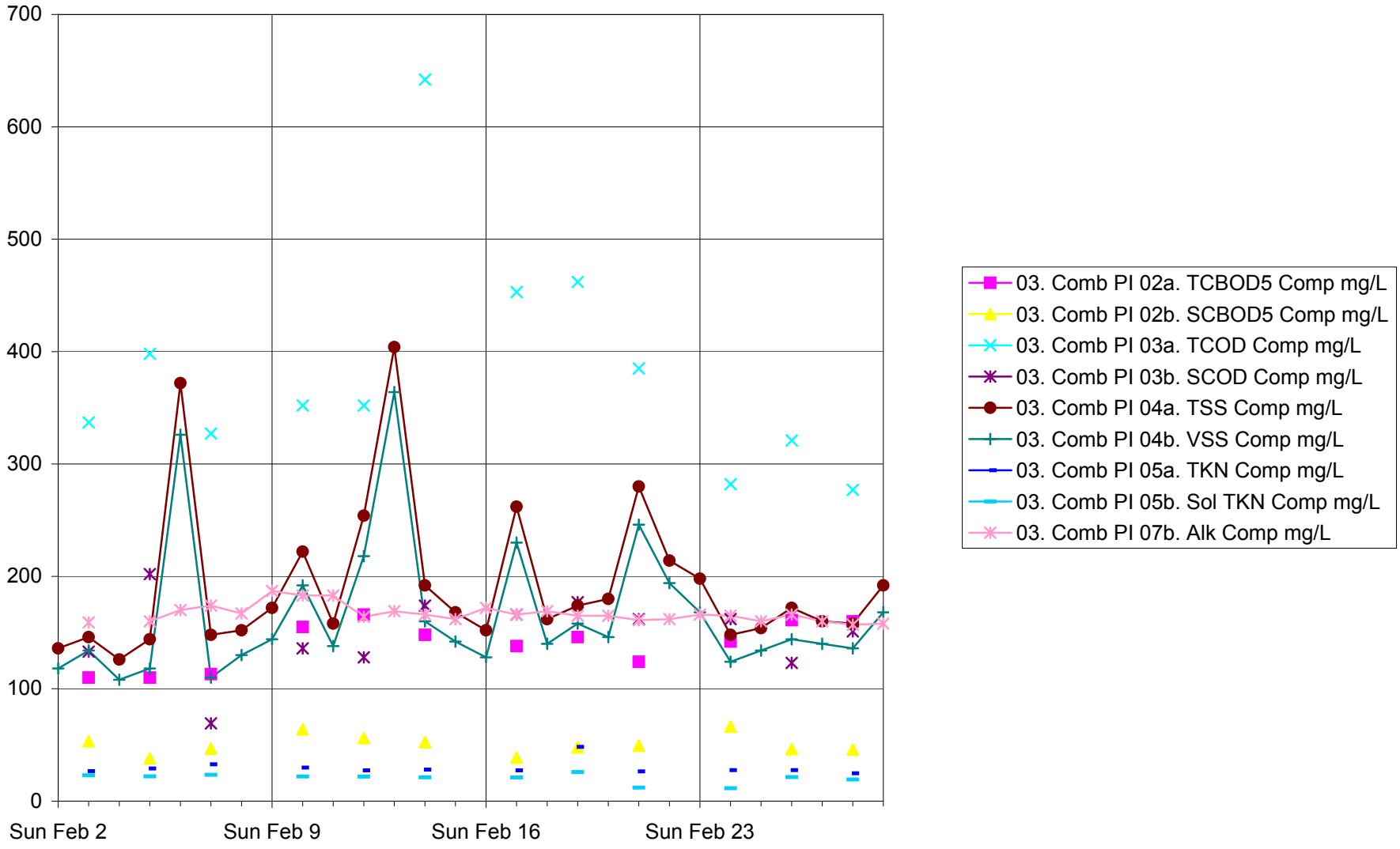
	Combined PI Less Estimated Recycles (Filter Backwash)											**Operating Parameters**
	01. Flow	02a. TCBOD 5	02b. SCBOD 5	03a. TCOD	03b. SCOD	04a. TSS	04b. VSS	05a. TKN	05b. Sol TKN	05c. NH3-N	05d. Nox-N	SRT
	Avg	Comp	Comp	Comp	Comp	Comp	Comp	Comp	Comp	Comp	Comp	
Date	**mgd**	**lb/d**	**lb/d**	**lb/d**	**lb/d**	**lb/d**	**lb/d**	**lb/d**	**lb/d**	**lb/d**	**lb/d**	**days**
Sun Feb 2	4.1					4,763	4,169					10.5
Mon Feb 3	4.0	4,000	1,947	11,675	4,708	4,891	4,529	948	840	737	1	13.2
Tue Feb 4	4.2					4,508	3,899					10.4
Wed Feb 5	4.0	4,000	1,388	13,788	7,151	4,824	3,988	1,029	807	755	1	11.4
Thu Feb 6	4.1					12,744	11,268					10.0
Fri Feb 7	4.0	4,109	1,706	11,328	2,450	4,958	3,717	1,164	855	722	1	10.2
Sat Feb 8	4.0					5,092	4,393					11.7
Sun Feb 9	4.0					5,761	4,866					10.1
Mon Feb 10	4.1	5,892	2,436	12,749	5,033	7,774	6,784	1,106	840	713	1	10.7
Tue Feb 11	4.1					5,413	4,770					10.9
Wed Feb 12	4.1	6,310	2,139	12,749	4,737	8,895	7,702	1,017	833	709	1	11.7
Thu Feb 13	4.1					14,148	12,860					11.0
Fri Feb 14	4.3	5,871	2,092	24,263	6,720	7,016	5,899	1,084	845	724	1	10.5
Sat Feb 15	4.9					6,906	5,890					10.9
Sun Feb 16	4.4					5,670	4,817					12.3
Mon Feb 17	4.6	5,816	1,639	18,190	6,811	10,172	9,009	1,127	894	786	1	13.3
Tue Feb 18	4.4					6,043	5,269					12.6
Wed Feb 19	4.3	5,791	1,905	17,460	6,836	6,358	5,825	1,870	1,032	887	1	12.2
Thu Feb 20	4.3					6,578	5,383					12.0
Fri Feb 21	4.3	4,919	1,969	14,550	6,256	10,232	9,069	1,026	478	353	1	11.9
Sat Feb 22	4.3					7,820	7,152					11.2
Sun Feb 23	4.2					7,085	6,065					12.2
Mon Feb 24	4.3	5,633	2,646	10,657	6,256	5,408	4,572	1,069	458	339	1	11.8
Tue Feb 25	4.1					5,276	4,631					12.0
Wed Feb 26	4.1	5,987	1,726	11,373	4,453	5,892	4,977	1,002	800	705	1	11.8
Thu Feb 27	4.0					5,359	4,731					10.0
Fri Feb 28	4.1	5,950	1,711	9,814	5,467	5,413	4,701	900	717	622	1	10.0
Sat Mar 1	4.1					6,578	5,807					10.3


- Numbers are average over 4-week sampling period.
- Comb PI, Sec Eff, & Final Eff are composites. All others are grab samples.
Concentration (mg/L)
18
16
14
12
10
8
6
4
2
0
05c. NH3-N
05d. Nox-N
06b. DO
Lahaina and Napili PS NH3-N higher - morning grab samples
Combined influent composite
Aerobic
NH3-N reduction mostly because of dilution (includes effect of TKN conversion to NH3-N by hydrolysis)
- Nitrification
- N uptake by biosolids
- NH3-N reduction
- Nox-N increase
- Grab samples - high variability
- Significant opportunity for enhancement of NH3-N reduction
2nd Anoxic: Mainly denitrification, but some nitrification may continue (samples are morning grabs - so highly variable)
Continued nitrification in clarifier top
Essentially the same as sec
Centrate NH3-N close to eff value - no digestion
Essentially same as CAB 4
01a. Lahaina PS 1
01b. Napili PS 1
02a. Centrate
02b. Backwash
03. Comb PI
04.1.a. FAB 1A
04.1.b. FAB 1B
04.2.a. FAB 2A
04.2.b. FAB 2B
05.1. CAB 1
05.2.a. CAB 2A
05.2.b. CAB 2B
05.3. CAB 3
05.4. CAB 4
05.5. CAB 5
06. Mixed Liquor
07.3 RAS 3
07.4 RAS 4
07.5 RAS 5
08. WAS
09. Sec Eff
10. Final Eff
Minimal nitrification in 1st anoxic zone
2nd anoxic zone
Clarifier bottom nitrification

Lahaina WWRF Calibration Data Trends



Lahaina WWRF Calibration Data Trends



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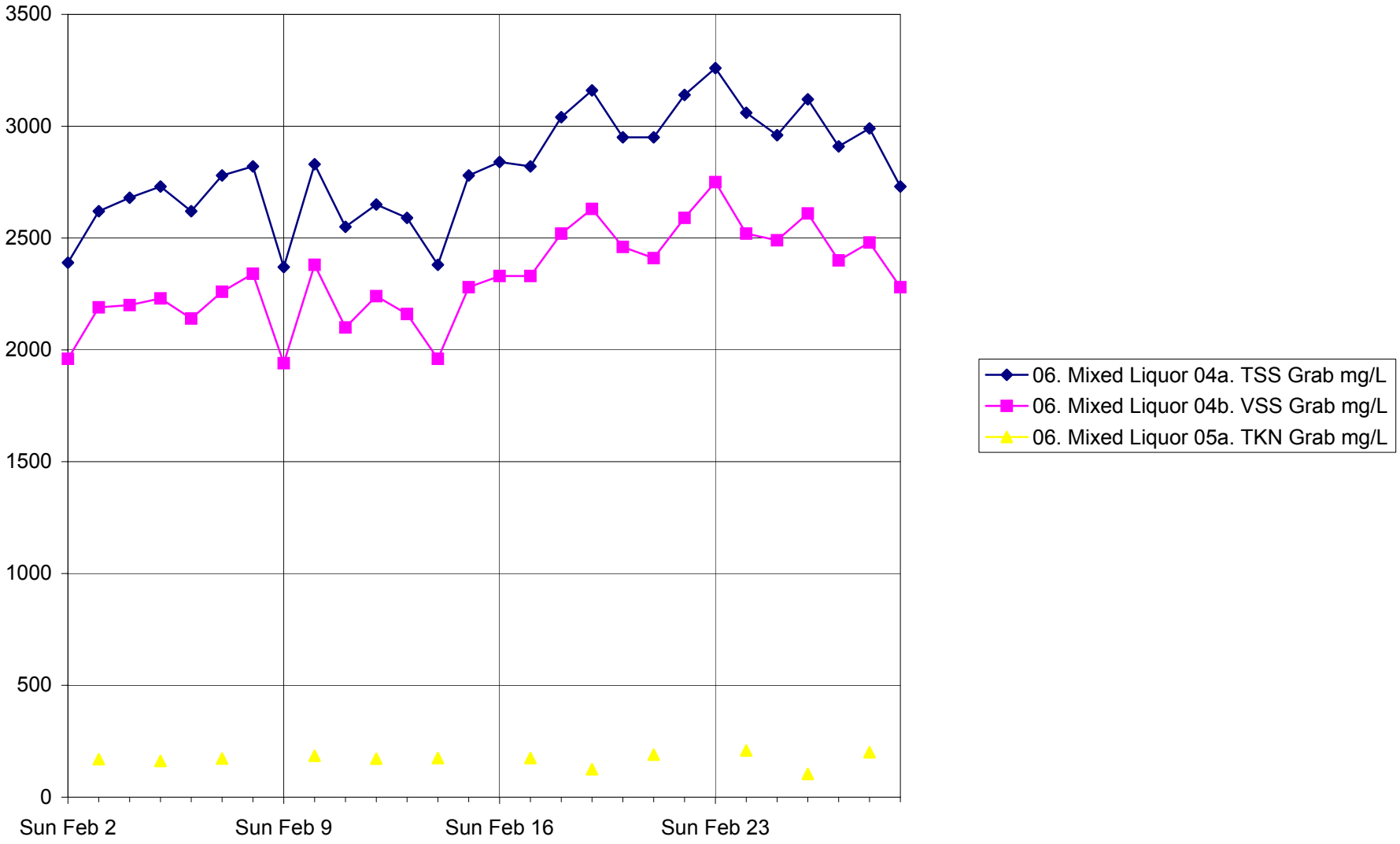

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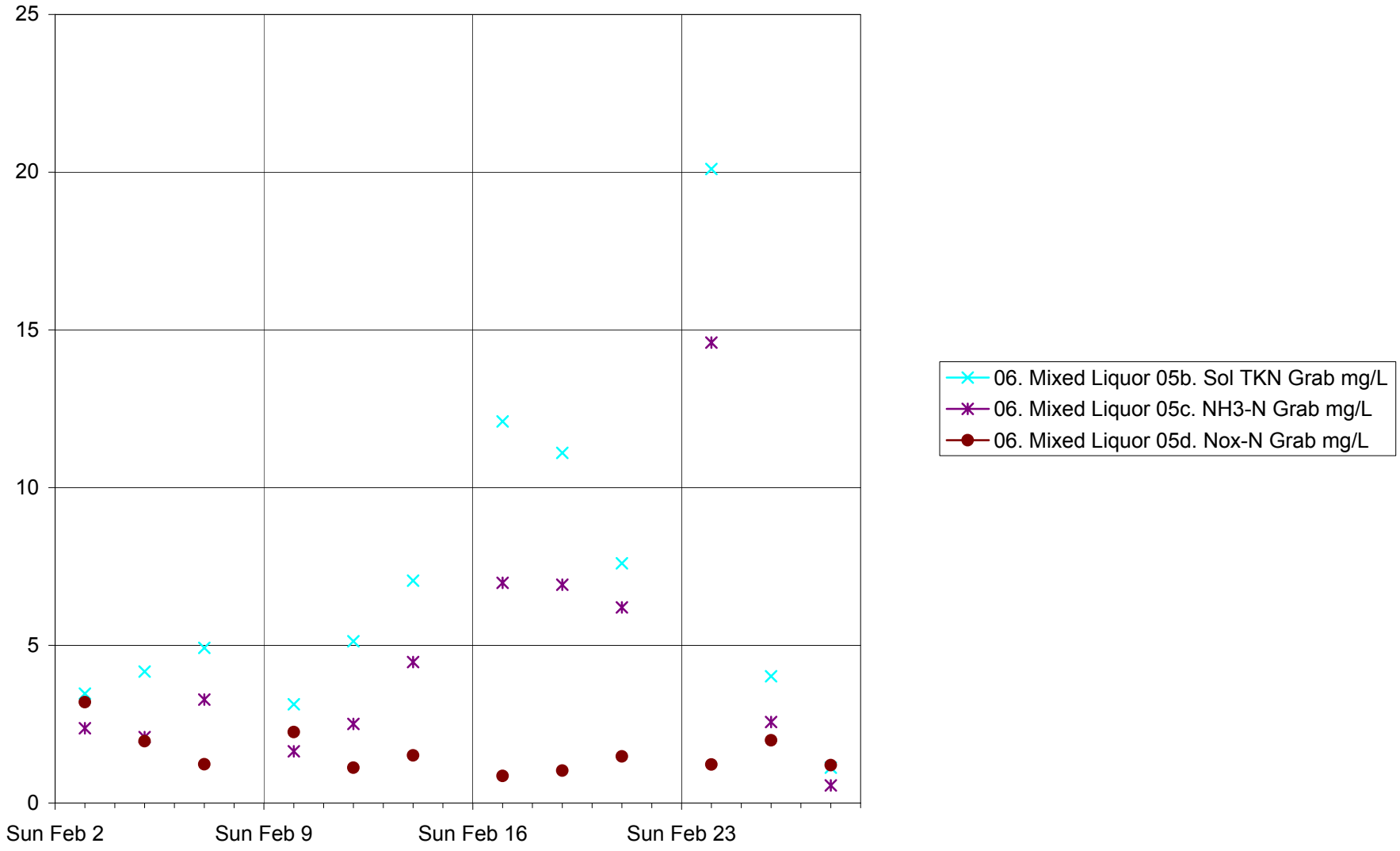

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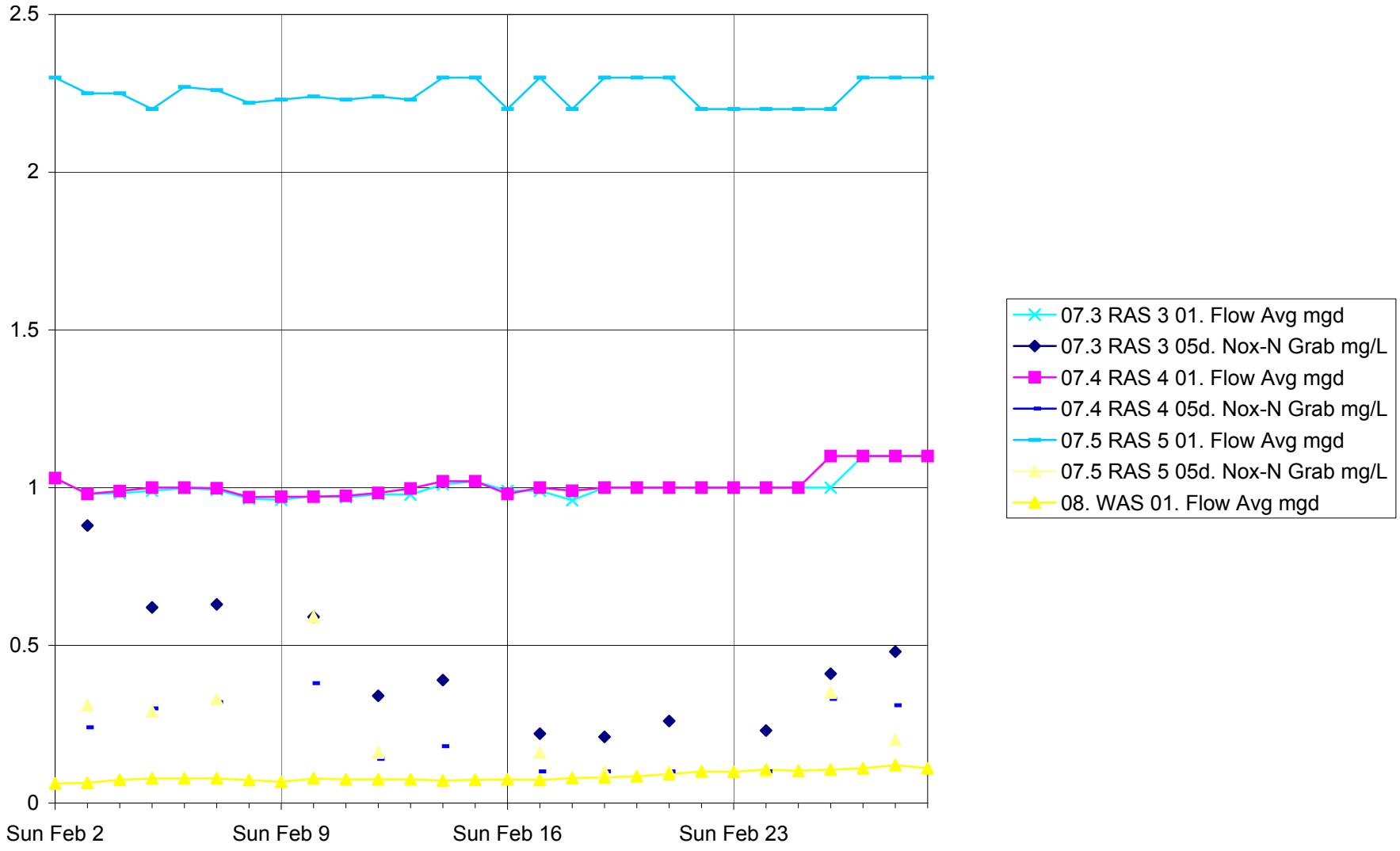
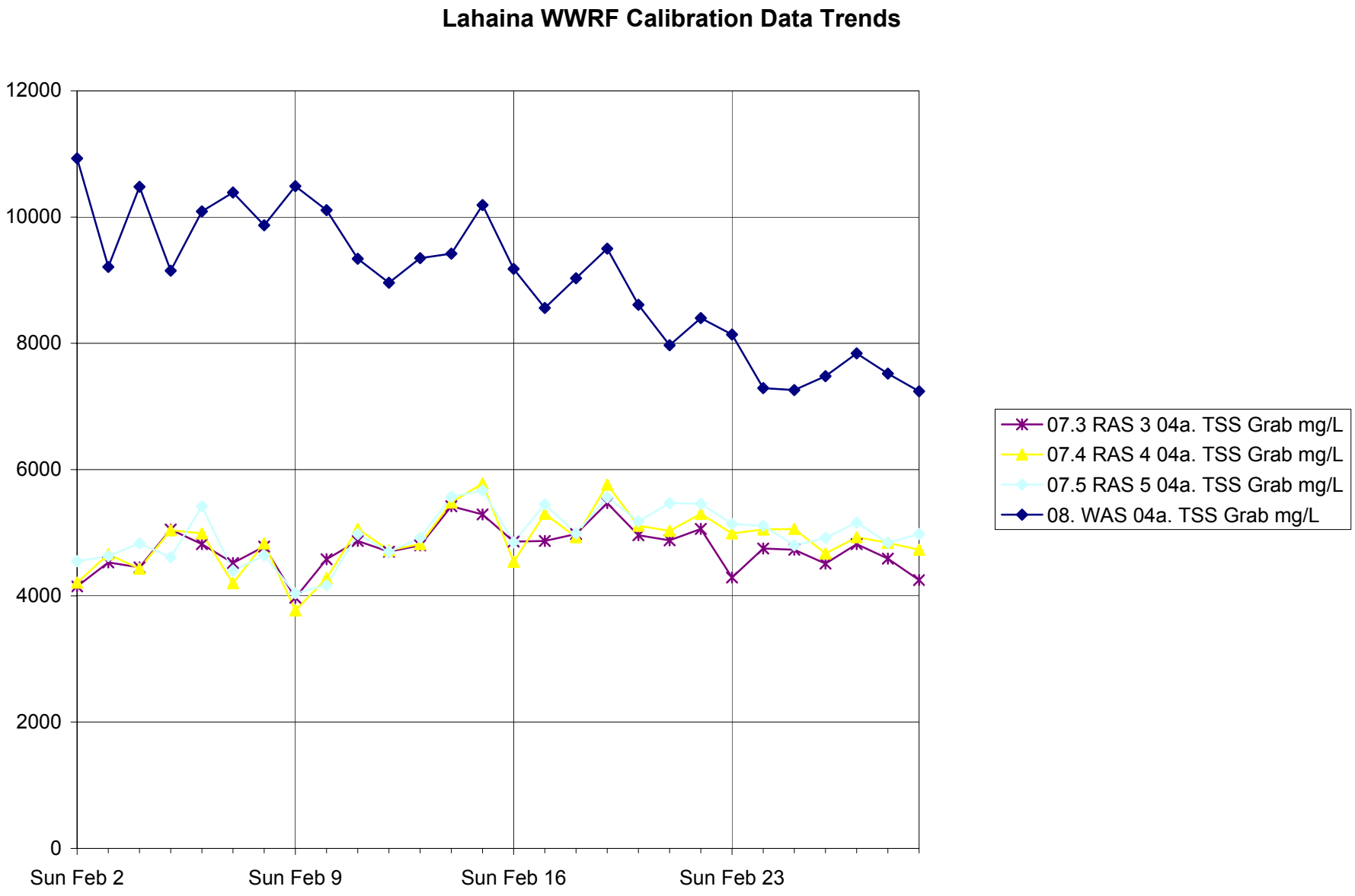
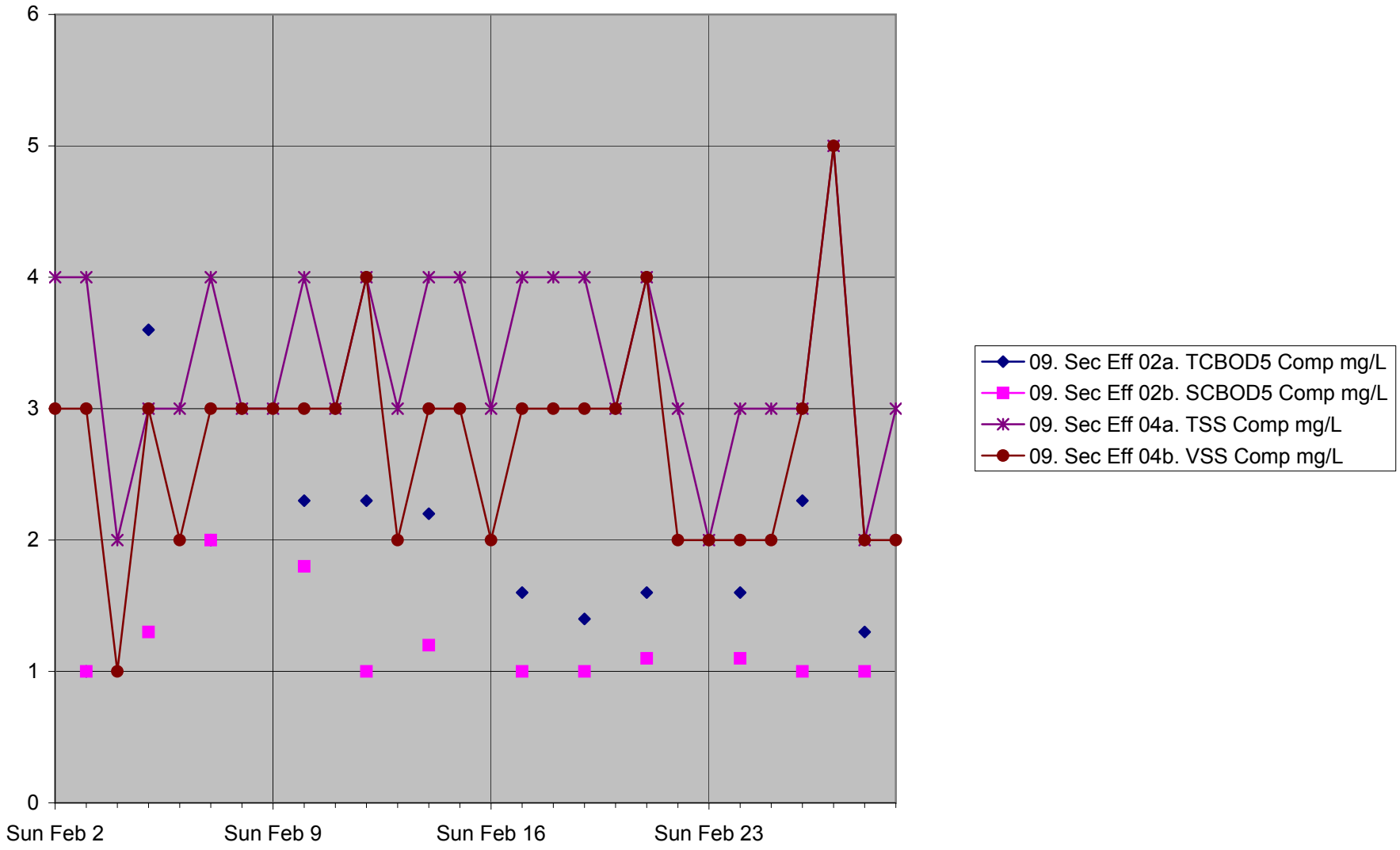



Lahaina WWRF Calibration Data Trends
12000
10000
8000
6000
4000
2000
0
Sun Feb 2
Sun Feb 9
Sun Feb 16
Sun Feb 23
07.3 RAS 3 04a. TSS Grab mg/L
07.4 RAS 4 04a. TSS Grab mg/L
07.5 RAS 5 04a. TSS Grab mg/L
08. WAS 04a. TSS Grab mg/L

Lahaina WWRF Calibration Data Trends



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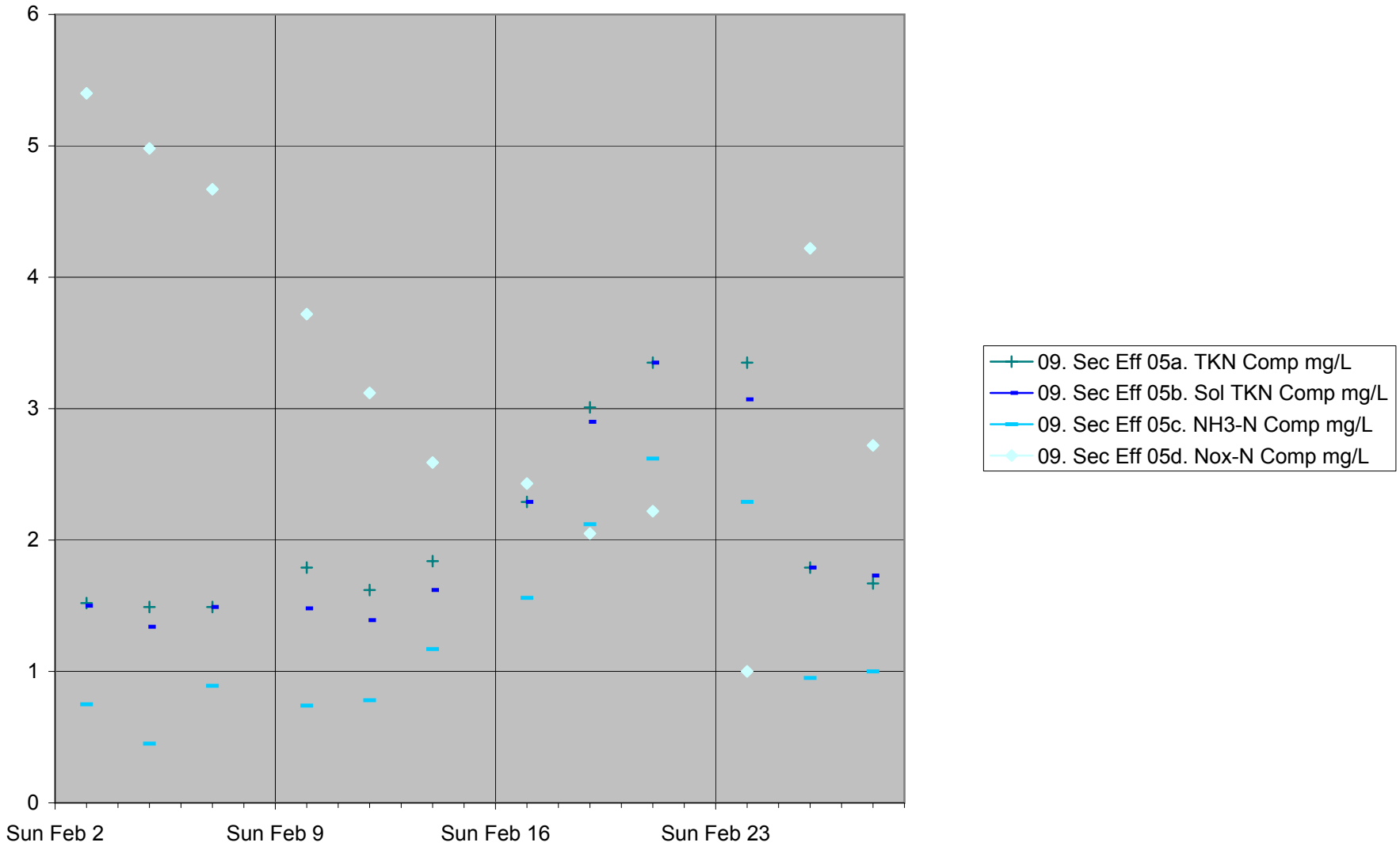

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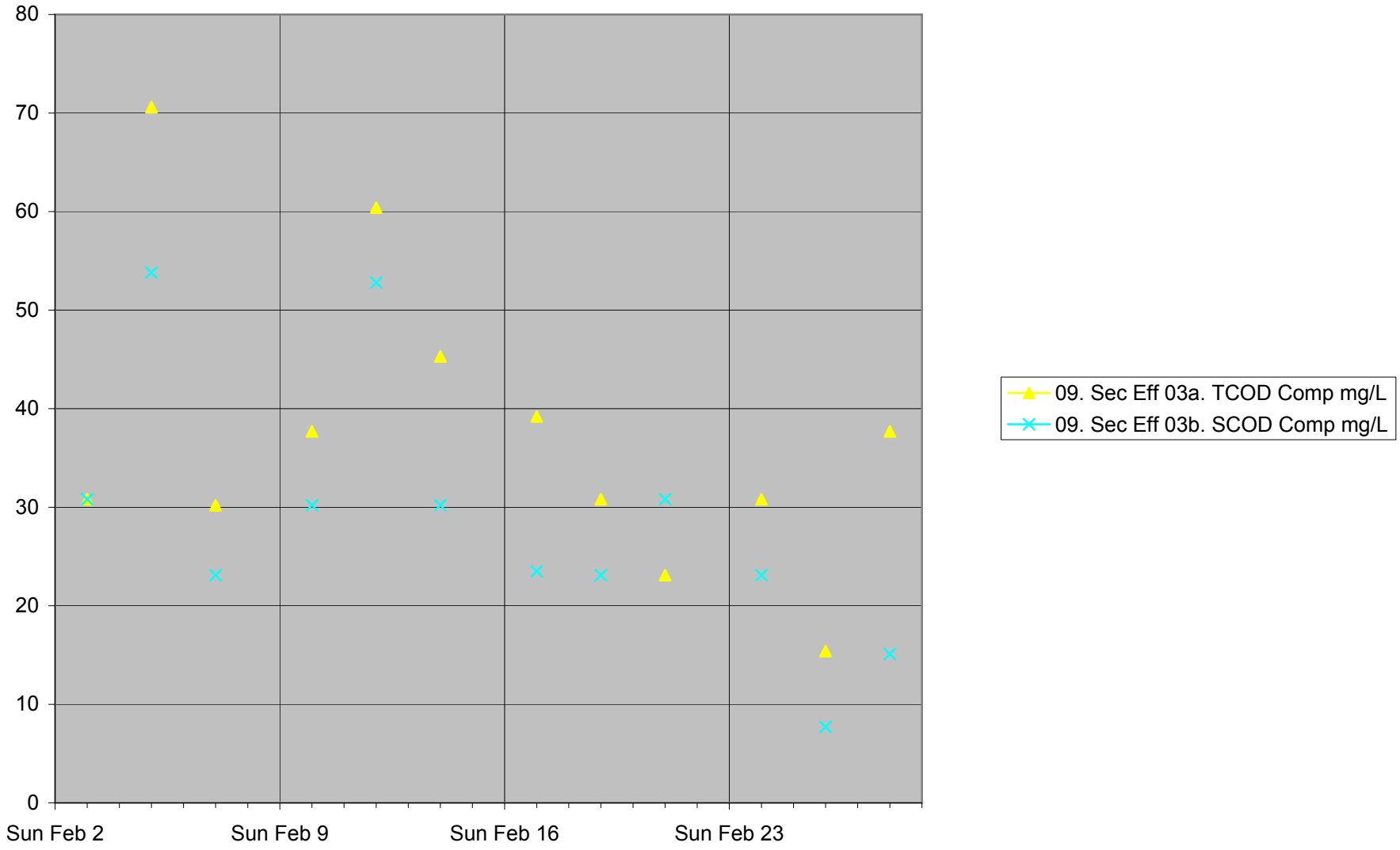

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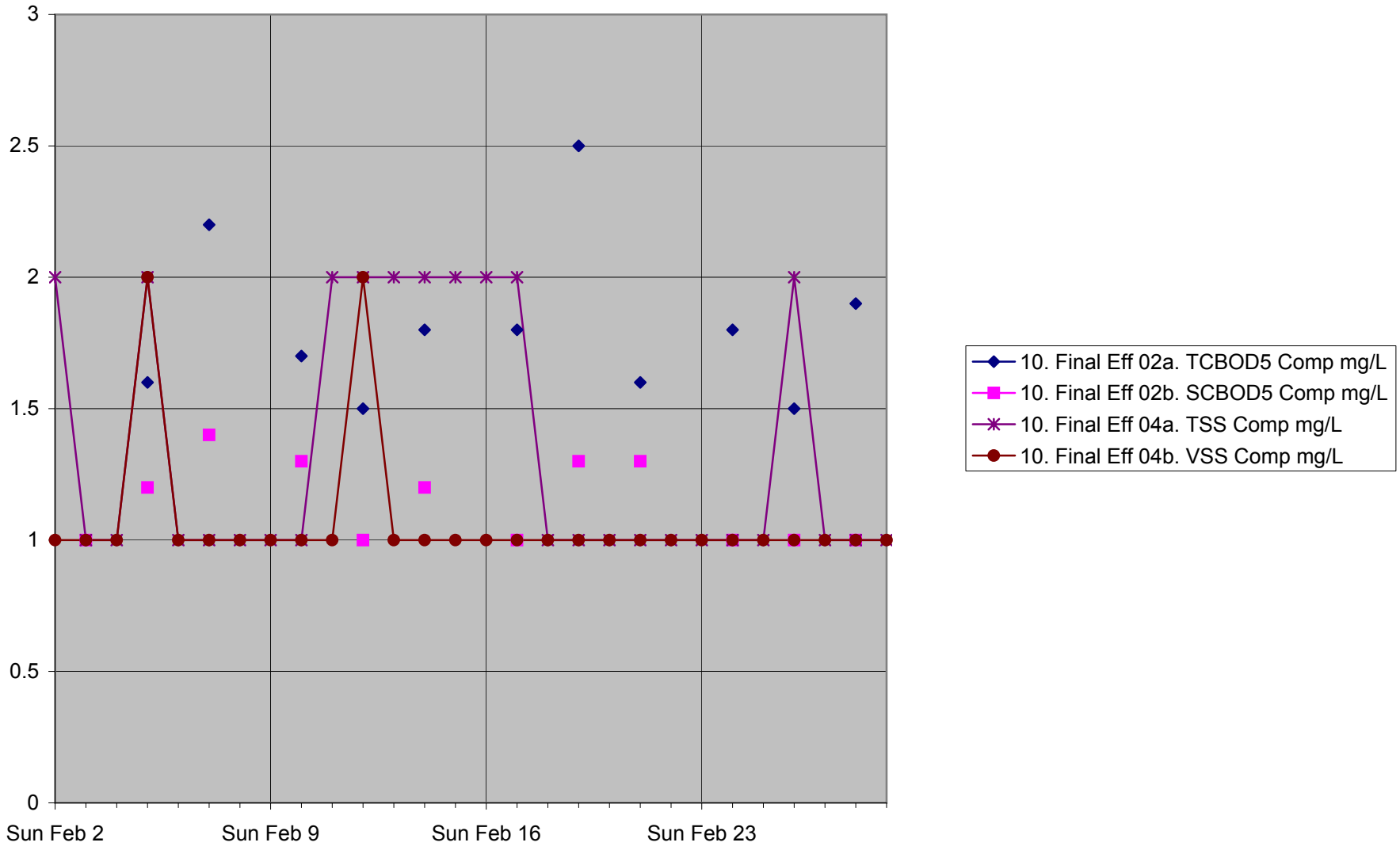

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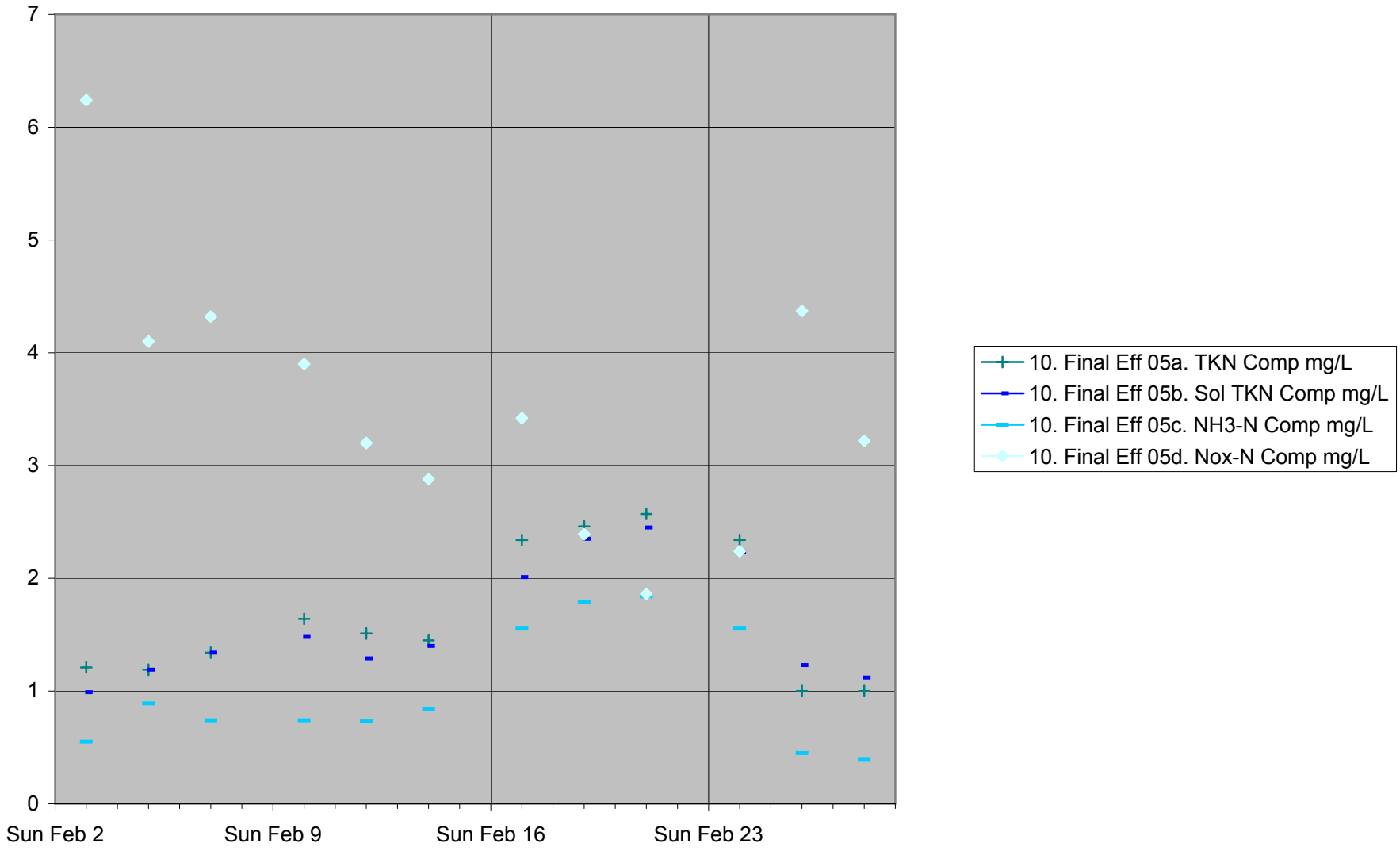
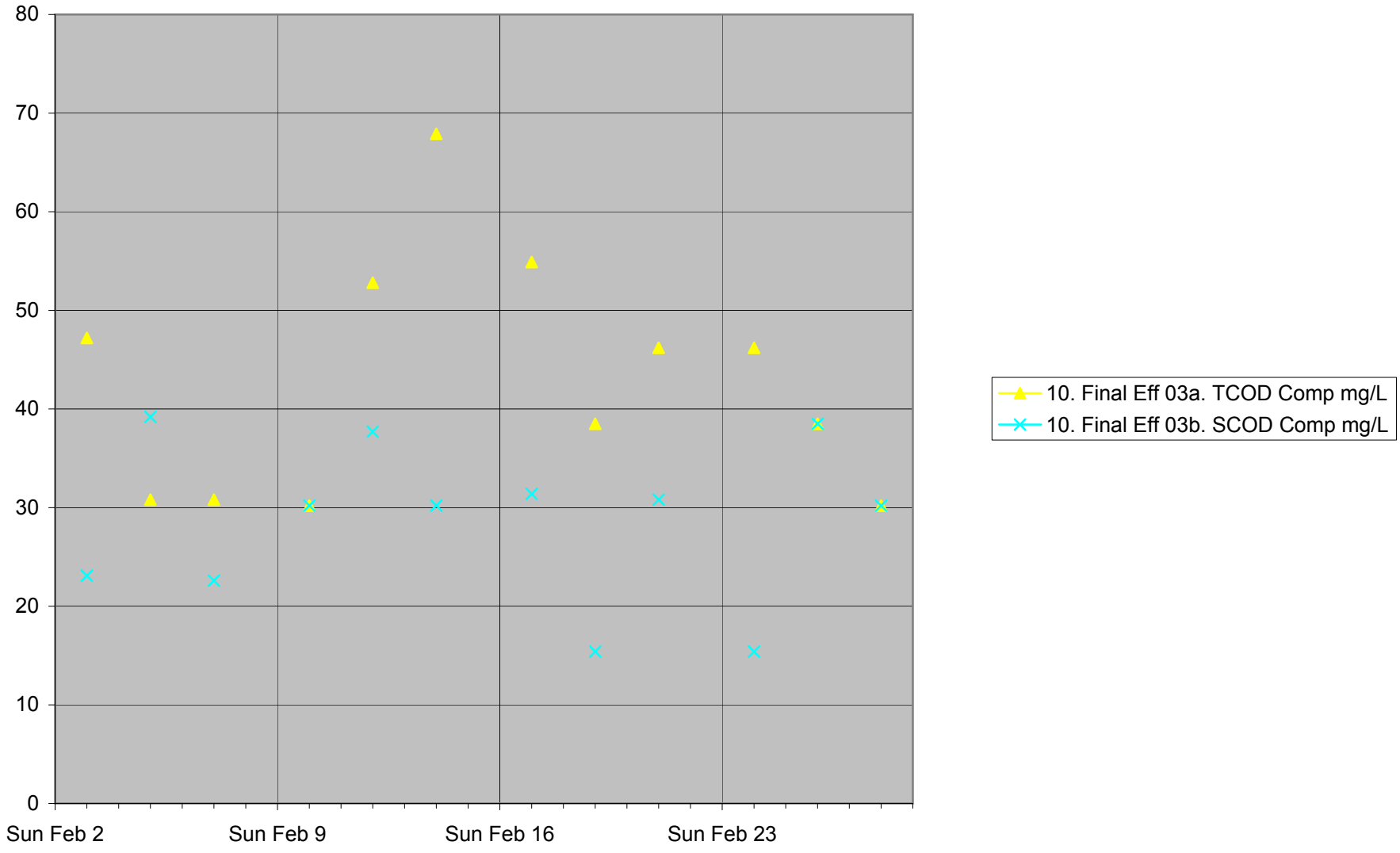
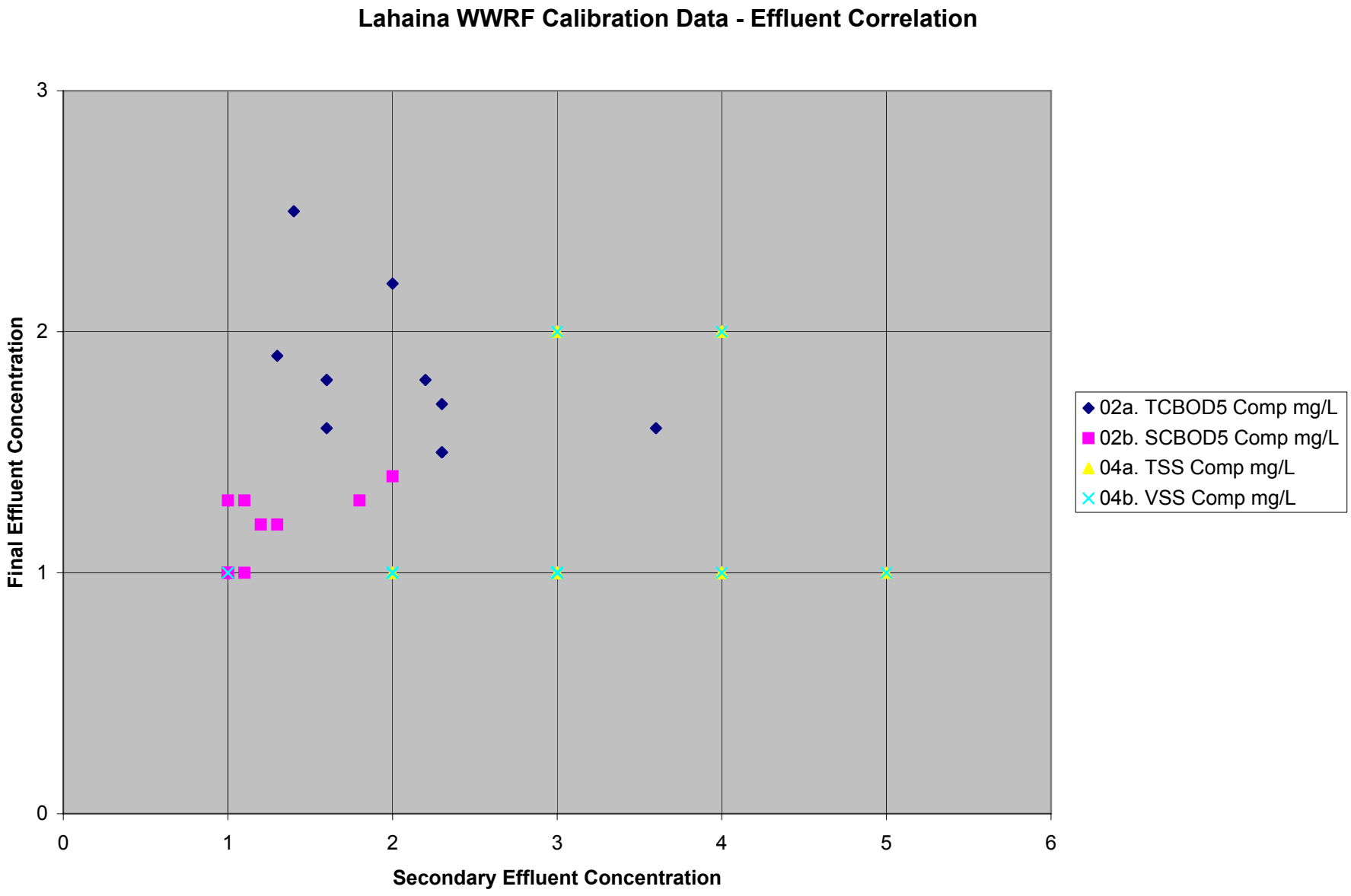
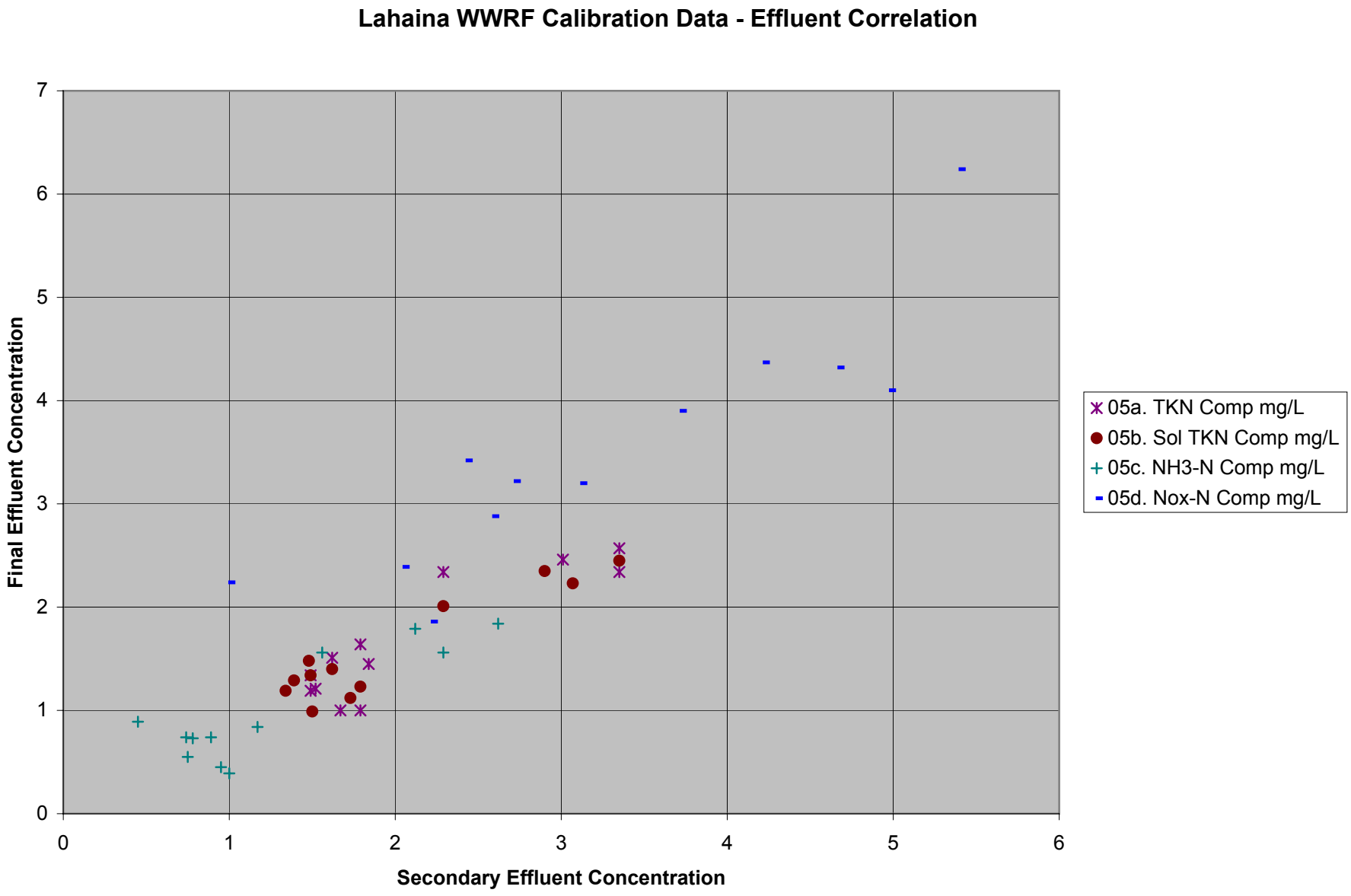
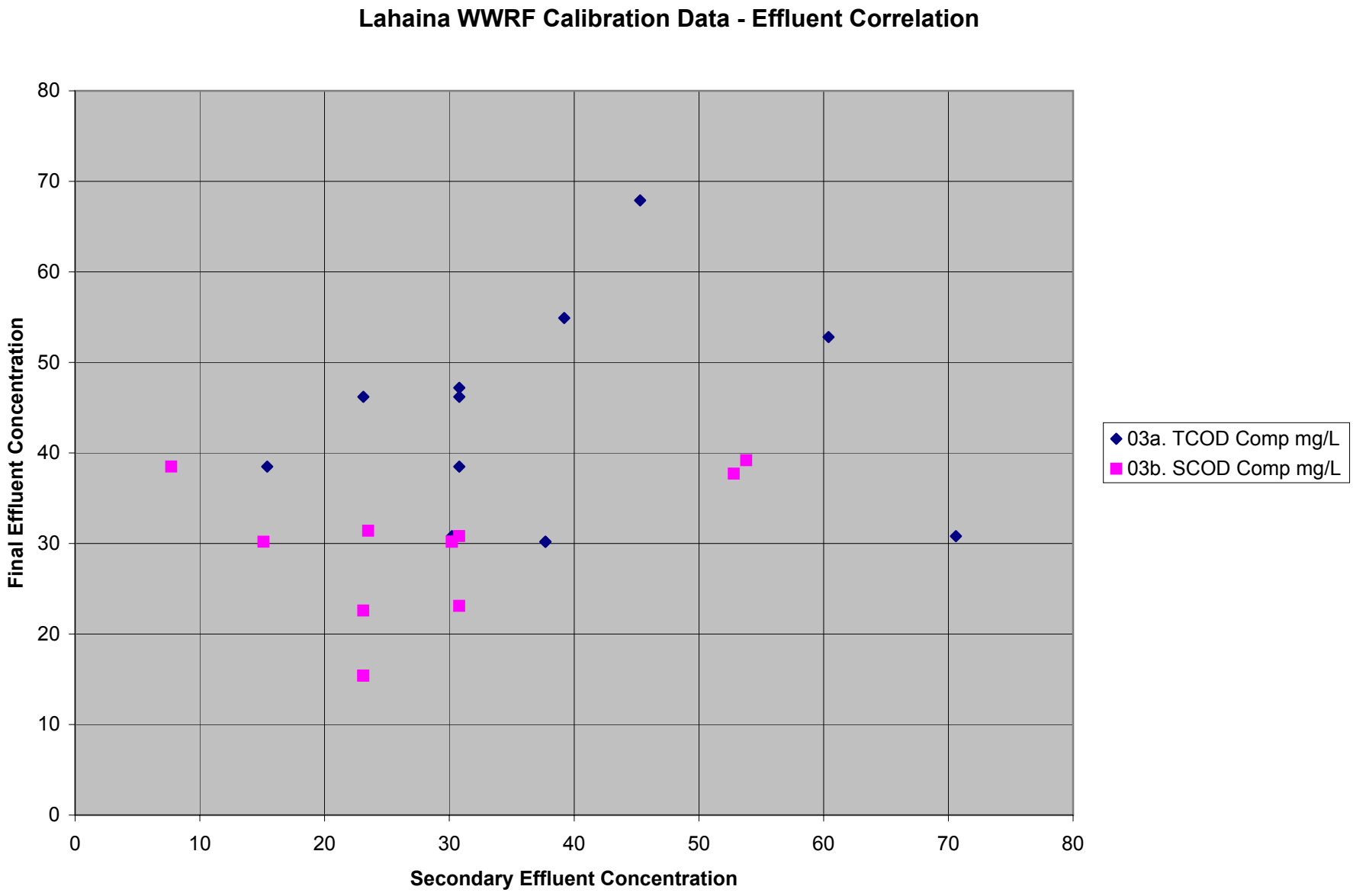


Lahaina WWRF Calibration Data Trends




Lahaina WWRF Calibration Data - Effluent Correlation
Final Effluent Concentration
Secondary Effluent Concentration
0
1
2
3
0
1
2
3
4
5
6
02a. TCBOD5 Comp mg/L
02b. SCBOD5 Comp mg/L
04a. TSS Comp mg/L
04b. VSS Comp mg/L


Lahaina WWRF Calibration Data - Effluent Correlation
Final Effluent Concentration
Secondary Effluent Concentration
0
1
2
3
4
5
6
7
05a. TKN Comp mg/L
05b. Sol TKN Comp mg/L
05c. NH3-N Comp mg/L
05d. Nox-N Comp mg/L


Lahaina WWRF Calibration Data - Effluent Correlation
Final Effluent Concentration
Secondary Effluent Concentration
0
10
20
30
40
50
60
70
80
03a. TCOD Comp mg/L
03b. SCOD Comp mg/L

Appendix B: Lahaina WWRF Process Study – Current Capacity

The following table details the components that exist at the Lahaina WWRF. The first column of the table shows the component being located in the 1975, 1985, or common between the two plants. Capacity of the components are based on ADW and PWW design criteria, which is represented by the *existing capacity* column. Because permitting is typically based on ADW conditions the existing capacity was converted to the equivalent ADW flow. This is described at the bottom of the table. The notes at the bottom of the table also describe the key headings of the table.

Lahaina WWRF Process Study: Existing Capacity

Plant	Component	Item	Duty (D) or Standby (S)	Item Size	Size Units	Applicable Criterion	Crit Units	Peaking Condition	Existing Capacity - Installed	Existing Capacity - Firm	Cap Units	Equiv. ADW Flow - Installed (mgd)	Equiv. ADW Flow - Firm (mgd)	Hydraulic Capacity (mgd)	Comments
Common	1. Influent Structure	North channel	S					PWW	35.0	0.0	mgd	16.3	0.0	35.0	May be a hydraulic bottleneck. Only one of two channels in use.
Common	1. Influent Structure	South channel	D					PWW	35.0	35.0	mgd	16.3	16.3	35.0	May be a hydraulic bottleneck. Only one of two channels in use.
1975	1. Tranfer PS	Transfer Pump 1	D	3.20	mgd			PWW	3.2	3.2	mgd	1.5	1.5		
1975	1. Tranfer PS	Transfer Pump 2	S	3.20	mgd			PWW	3.2	0.0	mgd	1.5	0.0		
1975	4. Aeration Basin	Aeration basin	D	1.02	MG			ADW	4.0	4.0	mgd	4.0	4.0		
1975	4a. Aerators	4 x Aerators	D	160	hp	2.25	lb/hp-hr SAE	ADW	1.1	1.1	mgd	1.1	1.1		
1975	5A. Secondary Clarifiers - ADW SOR	SC 1	D	4,000	sf	600	gpd/sf SOR	ADW	2.4	2.4	mgd	2.4	2.4		
1975	5A. Secondary Clarifiers - ADW SOR	SC 2	S	4,000	sf	600	gpd/sf SOR	ADW	2.4	0.0	mgd	2.4	0.0		
1975	5B. Secondary Clarifiers - PWW SOR	SC 1	D	4,000	sf	1,500	gpd/sf SOR	PWW	6.0	6.0	mgd	2.8	2.8		
1975	5B. Secondary Clarifiers - PWW SOR	SC 2	S	4,000	sf	1,500	gpd/sf SOR	PWW	6.0	0.0	mgd	2.8	0.0		
1975	5C. Secondary Clarifiers - ADW SLR	SC 1	D	4,000	sf	25	lb/d/sf SLR	ADW	2.0	2.0	mgd	2.0	2.0		
1975	5C. Secondary Clarifiers - ADW SLR	SC 2	S	4,000	sf	25	lb/d/sf SLR	ADW	2.0	0.0	mgd	2.0	0.0		
1975		1975 Chlorine CcontactChambers 1 and 2	D	0.15	MG	60	min HRT	ADW	3.6	3.6	mgd	3.6	3.6		
1975		1975 Chlorine CcontactChambers 1 and 2	D	0.15	MG	30	min HRT	PWW	7.2	7.2	mgd	3.3	3.3		
1985	2. Screening	Parkson AquaGuard Traveling Screen	D	3.00	ft wide			PWW	7.0	7.0	mgd	3.3	3.3		
1985	2. Screening	Mechanically raked Flo-Screen	D	3.00	ft wide			PWW	12.0	12.0	mgd	5.6	5.6		
1985	2. Screening	Manual bar screen	S					PWW	7.0	0.0	mgd	3.3	0.0		
1985	3. Grit Basins	Vortex grit basin	D	10.00	ft dia			PWW	7.0	7.0	mgd	3.3	3.3		
1985	3. Grit Basins	Vortex grit basins	S	10.00	ft dia			PWW	7.0	0.0	mgd	3.3	0.0		
1985	4. Aeration Basin	FAB and CAB	D	3.04	MG			ADW	6.0	6.0	mgd	6.0	6.0		
1985	4a. Aeration Blowers	Blower 1	D	2,150	scfm	28%	SOTE	ADW	1.6	1.6	mgd	1.6	1.6		

Lahaina WWRF Process Study: Existing Capacity

Plant	Component	Item	Duty (D) or Standby (S)	Item Size	Size Units	Applicable Criterion	Crit Units	Peaking Condition	Existing Capacity - Installed	Existing Capacity - Firm	Cap Units	Equiv. ADW Flow - Installed (mgd)	Equiv. ADW Flow - Firm (mgd)	Hydraulic Capacity (mgd)	Comments
1985	4a. Aeration Blowers	Blowers 2 and 3	D	11,600	scfm	28%	SOTE	ADW	8.5	8.5	mgd	8.5	8.5		
1985	4a. Aeration Blowers	Blower 4	S	5,800	scfm	28%	SOTE	ADW	4.3	0.0	mgd	4.3	0.0		
1985	5A. Secondary Clarifiers - ADW SOR	SC 3 and 4	D	8,836	sf	600	gpd/sf SOR	ADW	5.3	5.3	mgd	5.3	5.3		
1985	5A. Secondary Clarifiers - ADW SOR	SC 5	S	4,418	sf	700	gpd/sf SOR	ADW	3.1	0.0	mgd	3.1	0.0		
1985	5B. Secondary Clarifiers - PWW SOR	SC 3 and 4	D	8,836	sf	1,200	gpd/sf SOR	PWW	10.6	10.6	mgd	4.9	4.9		
1985	5B. Secondary Clarifiers - PWW SOR	SC 5	S	4,418	sf	1,500	gpd/sf SOR	PWW	6.6	0.0	mgd	3.1	0.0		
1985	5C. Secondary Clarifiers - ADW SLR	SC 3 and 4	D	8,836	sf	25	lb/d/sf SLR	ADW	4.0	4.0	mgd	4.0	4.0		
1985	5C. Secondary Clarifiers - ADW SLR	SC 5	S	4,418	sf	25	lb/d/sf SLR	ADW	2.0	0.0	mgd	2.0	0.0		
1985	6A. Disinfection - ADW	1985 Chlorine Contact Chambers 1 and 2	D	0.15	MG	60	min HRT	ADW	3.6	3.6	mgd	3.6	3.6		
1985	6A. Disinfection - ADW	UV Disinfection	D					ADW	1.4	1.4	mgd	1.4	1.4		
1985	6B. Disinfection - PWW	1985 Chlorine Contact Chambers 1 and 2	D	0.15	MG	30	min HRT	PWW	7.1	7.1	mgd	3.3	3.3		
1985	6B. Disinfection - PWW	UV Disinfection	D			120	mW-s/ cm^2	PWW	3.0	3.0	mgd	1.4	1.4		
1985	7A. Effluent Filters - ADW	Filter cells 1-7	D	2,100	sf	2.5	gpm/sf	ADW	7.6	7.6	mgd	7.6	7.6		
1985	7A. Effluent Filters - ADW	Filter cell 8	S	300	sf	2.5	gpm/sf	ADW	1.1	0.0	mgd	1.1	0.0		
1985	7B. Effluent Filters - PWW	Filter cells 1-7	D	2,100	sf	5	gpm/sf	PWW	15.1	15.1	mgd	7.1	7.1		
1985	7B. Effluent Filters - PWW	Filter cell 8	S	300	sf	5	gpm/sf	PWW	2.2	0.0	mgd	1.0	0.0		
1985 Pipe	1. PI Pipe to Headworks	Pipe	D	30.00	in, dia	7.5	fps	PWW	24.0	24.0	mgd	11.2	11.2	24.0	

Lahaina WWRF Process Study: Existing Capacity

Plant	Component	Item	Duty (D) or Standby (S)	Item Size	Size Units	Applicable Criterion	Crit Units	Peaking Condition	Existing Capacity - Installed	Existing Capacity - Firm	Cap Units	Equiv. ADW Flow - Installed (mgd)	Equiv. ADW Flow - Firm (mgd)	Hydraulic Capacity (mgd)	Comments

Notes:

ADW: Average Dry Weather (Typical Permitted Design Condition)
PWW: Peak Wet Weather (Instantaneous Peak Typically Represented by Peak Hour Condition)
Firm capacity implies capacity available with reliability and redundancy requirements satisfied
TBD: To Be Determined
Duty represents the primary unit that is typically on. Standby represents the unit that is typically offline.
Size and units = Size of the unit process.
Applicable Criterion and Units = The design criteria used to establish the capacity of the unit process.
Peaking Conditions = The peak flow/load conditions used for the unit process.
Existing Capacity, Installed = Unit process capacity with all units operating.
Existing Capacity, Firm = Unit process capacity will the Standby unit offline.
Equivalent (Eq) ADWF installed is determined by multiplying the installed existing capacity by the ratio of the existing ADW and PWW flows to the 1985 plant.
The ADW and PWW flows were taken from the design criteria sheets of the 1985 design drawings as 3.5 mgd (ADW) and 7.5 mgd (PWW).
Equivalent (Eq) ADWF firm is determined by multiplying the firm existing capacity by the ratio of the existing ADW and PWW flows to the 1985 plant.
The ADW and PWW flows were taken from the design criteria sheets of the 1985 design drawings as 3.5 mgd (ADW) and 7.5 mgd (PWW).

Appendix C: Brainstorming Session "Flip-Chart" Notes

The following issues, ideas, observations, and notes were discussed and recorded during the brainstorming session conducted on Tuesday April 22, 2003 as part of the preliminary alternatives development process for the Lahaina WWRF Process Study. Some of the items recorded here may not be relevant to this study but have been included for completeness and future reference. The items appear in the order in which they were discussed.

⇒ The step screen at the Kihei facility works well for influent screening.

⇒ Hydrogen sulfide corrosion problems in the headworks/screening building:

- MCC needs to be replaced
- A/C already replaced

⇒ If 1975 plant placed back in service, may need to consider new gravity pipe to this plant.

⇒ Membrane bioreactors are a possibility.

⇒ Retrofits are often cost more than similar new facilities.

⇒ Additional secondary clarifier for the 1985 plant will help.

⇒ Existing sand filters:

- The design and equipment were out of production and obsolete when the filters were installed.
- Replacement parts now need to be custom fabricated – significant maintenance issue.
- Plenum is confined space.
- May consider retrofitting with fabric disc filters.

⇒ Need to improve/expand grit removal:

- High grit load – beach resort area.
- Existing grit removal facilities are close to capacity.

⇒ A major limitation for reuse is available storage.

- Existing storage volume is 80,000 gallons. A 1 million gallon storage volume will accommodate day-to-day variations.
- Existing 80,000-gallon clearwell serves as storage for both in-plant utility water (UW) and offsite reuse water. UW does not need UV treatment – just needs filtration and

chlorination. Could provide separate storage for UW before UV treatment. This will make the entire 80,000-gallon volume available for reuse water storage.

⇒ Use 1975 aeration basins in series with 1985 aeration basins?

⇒ Use 1975 aeration basins and secondary clarifiers as reuse storage (1.75 MG)?

⇒ Reliability and redundancy considerations:

- Bypassing CAB may no longer be an option.
- Cannot get permit variances for maintenance tasks.
- Need to be able to take each aeration basin, secondary clarifier, and other units out of service for maintenance without affecting the effluent quality. Need to allow maintenance window of about 2 weeks.
- Eliminate alternatives involving series operation of 1975 and 1985 facilities based on reliability and redundancy considerations.
- Eliminate alternatives involving abandoning the 1975 plant without making capital capacity expansion/improvements to the 1985 plant based on reliability and redundancy considerations.

⇒ The 1985 headworks/screening building has many issues. County would not be averse to replacing it with a new facility.

⇒ Dewatered sludge solids content or quality did not seem to be significantly affected by DAF operation. Could indicate opportunities for optimizing DAF operation.

⇒ Possible alternative configuration:

- 1975 secondary clarifiers and chlorine contact chambers (CCCs) converted to reuse storage (about 1 MG).
- 1975 aeration basins converted to primary clarifiers.
- Primary sludge pumped to 1985 solids facility to blend with WAS.

⇒ Consider continuous DO signal-based feedback control of aeration blowers

⇒ Continuous wasting may provide better use of clarifiers. Could pump WAS to TWAS storage tank, continuously decant from this tank, and use tank as feed for centrifuges. Will likely need a second tank and will need to upsize WAS pipe and pump. Alternatively, could waste to 1975 aerobic digesters.

⇒ Aquaculture in 1975 plant tanks? This would involve raising fish in R-1 water and could generate revenue.

⇒ Wetlands treatment?

⇒ Demolish charcoal filter

⇒ Implement solar and/or wind power generation to reduce power cost? May mitigate the "energy hog" perception.

⇒ Odor is a big issue and strongly contra-indicates introduction of primary clarifiers.

⇒ Replace headworks influent pipe with a channel for "coarse" screening?

⇒ Filter influent needs "pre-screening" to prevent large debris from entering filters and blinding media. Retrofitted screen exists in open channel feeding UI filters. However, bottom conduit feeding R-1 reuse filters not accessible – therefore cannot currently provide pre-screening for R-1 filter influent.

⇒ Need to evaluate an alternative with O&M improvements only.

Appendix D: Alternative Fact Sheets

Alternative 1: Status Quo

Description

This is the "do nothing" alternative. No operational or capital improvements or modifications to the 1975 or 1985 plants.

Potential Capacity Estimate

4.7 mgd ADWF

Benefits

- No additional capital cost

Limitations

- Does not provide desired capacity

Other Information/Comments

- This is the baseline alternative – current condition

Alternative 2: Operational Improvements Only

Description

This alternative would use operational improvements without any major capital improvements. It includes only the 1985 plant and not the 1975 plant, as the 1975 plant has been sitting idle for several years and would need major capital improvements before it could be placed back in service. Major components of this alternative include:

- Move from plug flow to step-feed in the FAB (estimated increase in 1985 plant capacity of about 10 percent – to be confirmed with process modeling)
- Chemical addition for enhanced TSS/BOD removal (no significant increase in plant capacity)
- Process control and automation, for example feedback DO control (no increase in plant capacity)
- Provide 24 hours per day, 7 days per week staffing at plant (possibly better operational control, but no increase in capacity)

Potential Capacity Estimate

- Approximately 10 percent increase in 1985 plant capacity over current capacity – to be verified through process modeling

Benefits

- No significant capital costs

Limitations

- Will not provide the 9 to 12 mgd capacity desired

Other Information/Comments

- None

Alternative 3: Restore 1975 Plant to Original Design

Description

This alternative involves restoring/rehabilitating most of the 1975 plant to it's original design. Significant modifications include:

- Rehab or upgrade transfer pump station to provide X mgd capacity, or provide capability to gravity to 1975 Plant from influent box
- Restore aeration basins, secondary clarifiers, RAS/WAS pump station, and chlorine contact chambers to 1975 design
- Abandon 1975 thickener, digesters, solids building, and charcoal filter
- Expand/upgrade 1985 plant components as needed

Potential Capacity Estimate

9 to 12 mgd ADWF as needed

Benefits

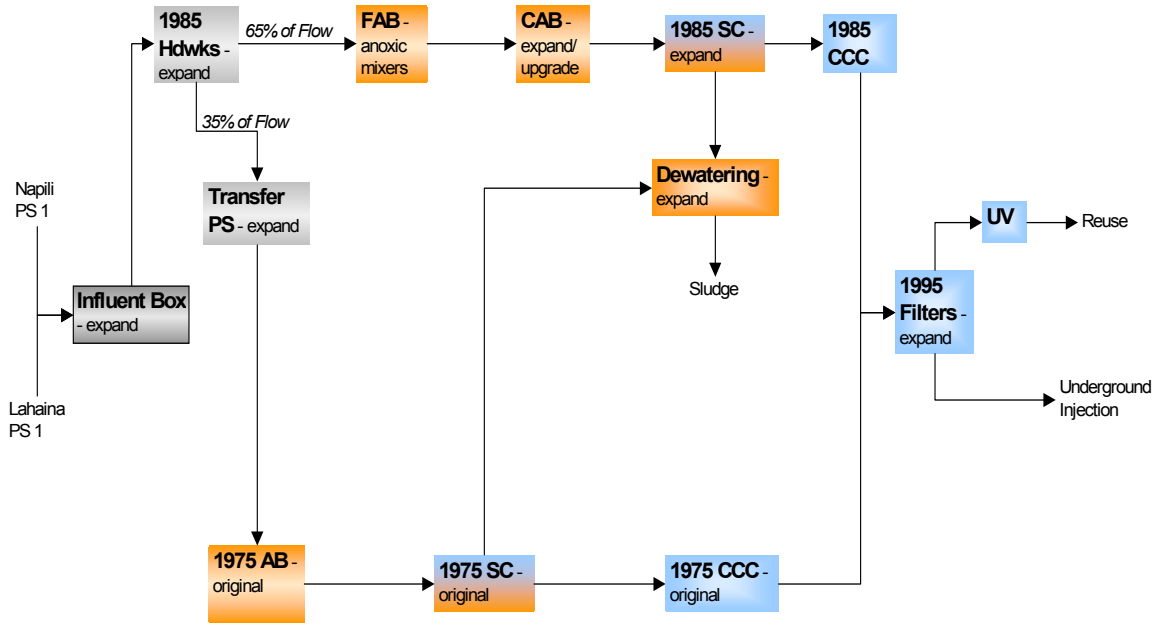
- Salvages some of the existing 1975 concrete and equipment
- Provides desired capacity

Limitations

- Flow fraction through restored 1975 plant will be limited because this plant will not have nitrogen removal capability
- 1985 plant effluent will need to compensate by producing "better-than-permit" effluent quality
- Not the most efficient use of 1975 plant components

Other Information/Comments

- Dilution is possible as long as there are no mass load limits. Purchasing clean water for dilution is expensive. May need to address diluting versus flow splitting.



Estimated Flow Through Each Plant

	ADWF (mgd)		PWWF (mgd)	
Total	9	12	19.8	26.4
1985 Plant	5.9	7.8	12.9	17.2
1975 Plant	3.2	4.2	6.9	9.2

Alternative 4: Retrofit MBRs in 1975 Plant

Description

This alternative involves retrofitting membrane bioreactors (MBRs) in a portion of the 1975 plant. Significant modifications include:

- Rehab or upgrade transfer pump station to provide X mgd capacity, or provide capability to gravity to 1975 Plant from influent box
- Retrofit MBRs in 1975 secondary clarifiers. Provide diffused aeration and internal recycles for N-removal as needed
- Use 1975 CCC in parallel with UV
- Convert 1975 aeration basin to reclaimed water storage
- Abandon 1975 thickener, digesters, solids building, and charcoal filter
- Expand/upgrade 1985 plant components as needed

Potential Capacity Estimate

9 to 12 mgd ADWF as needed

Benefits

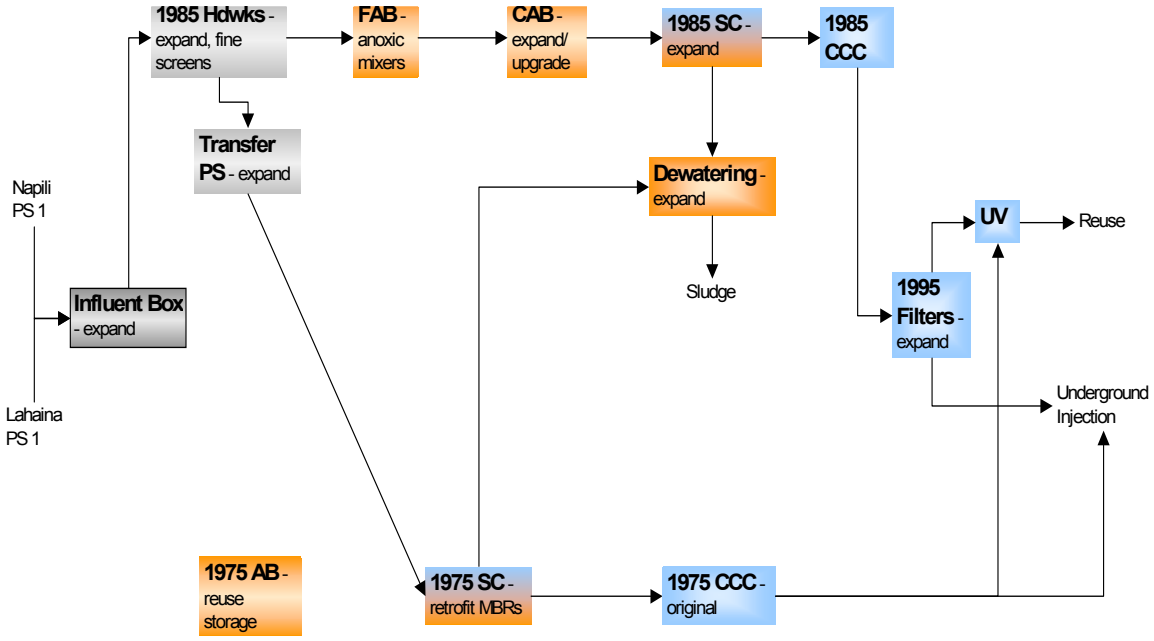
- Salvages much of the existing 1975 concrete and some of the equipment
- Makes efficient use of existing 1975 facilities – matches existing features to desired function as much as possible
- Eliminates need for secondary clarifiers, RAS pumping, and filtration for the 1975 plant
- Provides reclaimed water storage

Limitations

- MBRs are an emerging technology
- High initial cost of membrane modules – replacement in 10 to 15 years
- Uncovered reclaimed water storage may promote algae and bacteria re-growth
- Retrofit-related challenges include unusable electrical conduits, some structural deterioration, and earthwork limitations related to settling of structures

Other Information/Comments

- None



Estimated Flow Through Each Plant

	ADWF (mgd)		PWWF (mgd)	
Total	9	12	19.8	26.4
1985 Plant	5.5	5.5	13.3	19.9
1975 Plant	3.5	6.5	6.5	6.5

Alternative 5: Parallel N-Removal in 1975 Plant

Description

This alternative involves modifying/upgrading the 1975 plant to provide nitrogen removal in parallel with the 1985 plant. Significant modifications include:

- Rehab or upgrade transfer pump station to provide X mgd capacity, or provide capability to gravity to 1975 Plant from influent box
- Retrofit 1975 aeration basin with baffles, diffused aeration, and internal recycles or step feed for N-removal as needed
- Use 1975 CCC in parallel with UV
- Abandon 1975 thickener, digesters, solids building, and charcoal filter
- Expand/upgrade 1985 plant components as needed

Potential Capacity Estimate

9 to 12 mgd ADWF as needed

Benefits

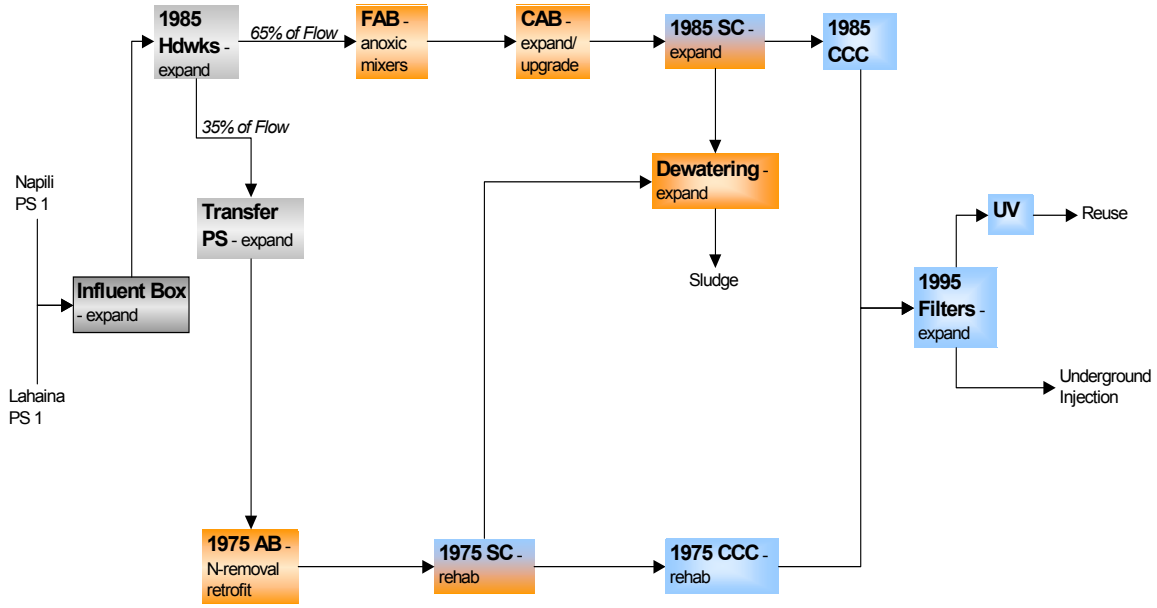
- Salvages much of the existing 1975 concrete and some of the equipment
- Provides N-removal in 1975 plant

Limitations

- Cost of retrofit can be significant
- Retrofit-related challenges include unusable electrical conduits, some structural deterioration, and earthwork limitations related to settling of structures

Other Information/Comments

- None



Estimated Flow Through Each Plant

	ADWF (mgd)		PWWF (mgd)	
Total	9	12	19.8	26.4
1985 Plant	5.9	7.8	12.9	17.2
1975 Plant	3.2	4.2	6.9	9.2

Alternative 6: Use 1975 Plant for Preliminary and Primary Treatment in Series with 1985 Plant

Description

This alternative involves constructing/retrofitting new headworks and primary treatment facilities into the existing 1975 plant, to be used in series with the 1985 plant secondary process. Major components of this alternative include:

- New expanded headworks on 1975 plant side upstream of primary clarifiers
- Convert existing aeration basin and/or secondary clarifiers to primary clarifiers
- Pump primary sludge to 1985 plant for co-thickening/dewatering with WAS
- Use of 1975 CCCs in series with 1985 CCCs
- Expand/upgrade 1985 plant components as needed

Potential Capacity Estimate

- Some increase in aeration capacity will result from reduced loadings to the secondary system, but the increase in hydraulic capacity, which is currently limiting, will be minimal. Most of the capacity increase will need to come from expanding the 1985 plant

Benefits

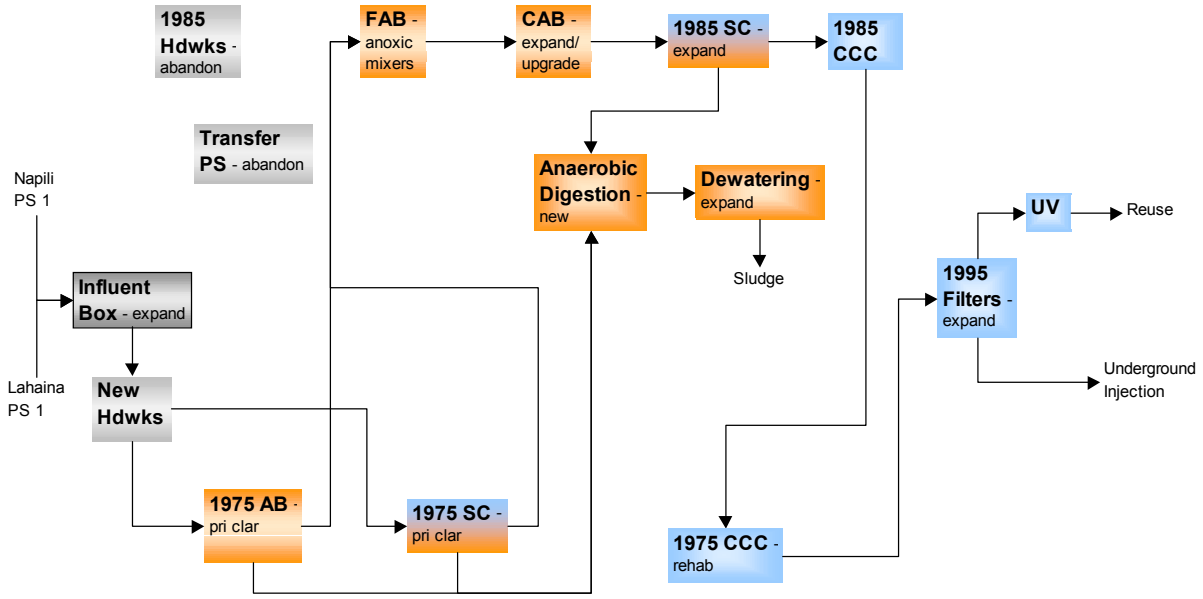
- None

Limitations

- Primary treatment produces odors that would be unacceptable to the resort communities surrounding the plant . Extensive odor containment , control, and treatment would be required
- Undigested primary sludge would create vector-attraction and pathogen problems – difficult to dispose
- Anaerobic digesters would have to be designed and built for proper stabilization
- Inclusion of primary treatment provides minimal capacity advantage
- High capital cost

Other Information/Comments

- This alternative was discussed during the brainstorming sessions and eliminated during high-level screening because of the significant limitations and lack of benefits as described above


1985 Hdwks - abandon
FAB - anoxic mixers
CAB - expand/ upgrade
1985 SC - expand
1985 CCC
Transfer PS - abandon
Napili PS 1
Anaerobic Digestion - new
Dewatering - expand
UV
Reuse
Sludge
Influent Box - expand
1995 Filters - expand
Lahaina PS 1
New Hdwks
Underground Injection
1975 AB - pri clar
1975 SC - pri clar
1975 CCC - rehab

Alternative 7: Demolish 1975 Plant, Expand 1985 Plant

Description

This alternative would completely abandon and demolish the currently idle 1975 plant and expand the 1985 plant to provide the desired capacity.

Potential Capacity Estimate

- 9 to 12 ADWF as required

Benefits

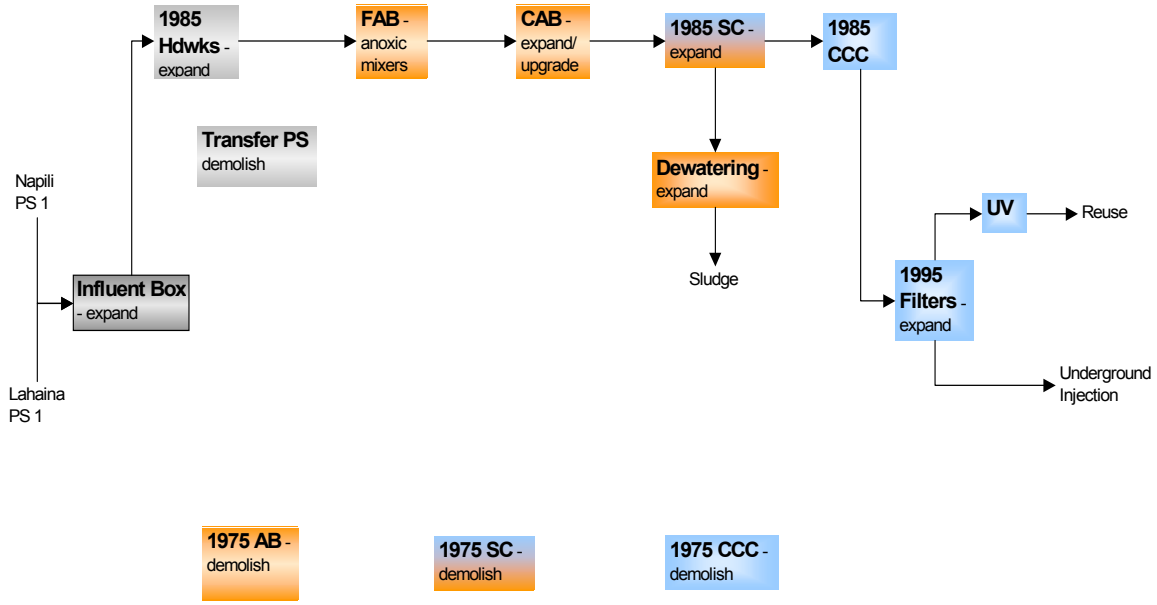
- Meets required capacity
- Provides better operability and stability with only one plant to operate

Limitations

- High capital cost
- Investment in existing 1975 facilities will be lost
- Constructability for expansion of 1985 plant becomes a significant issue

Other Information/Comments

- None



Estimated Flow Through Each Plant

	ADWF (mgd)		PWWF (mgd)	
Total	9	12	19.8	26.4
1985 Plant	5.5	5.5	12.2	12.2
1975 Plant	3.5	6.5	7.6	14.2

Alternative 8: Demolish 1975 Plant, Provide Constructed Wetlands to increase 1985 Plant Capacity

Description

This alternative involves completely abandoning and demolishing the idle 1975 plant, and providing lined, constructed wetlands as a nitrogen removal/polishing process to increase the capacity of the 1985 plant. The new wetlands facility would include associated pump stations as needed.

Potential Capacity Estimate

- 9 to 12 mgd ADWF as required

Benefits

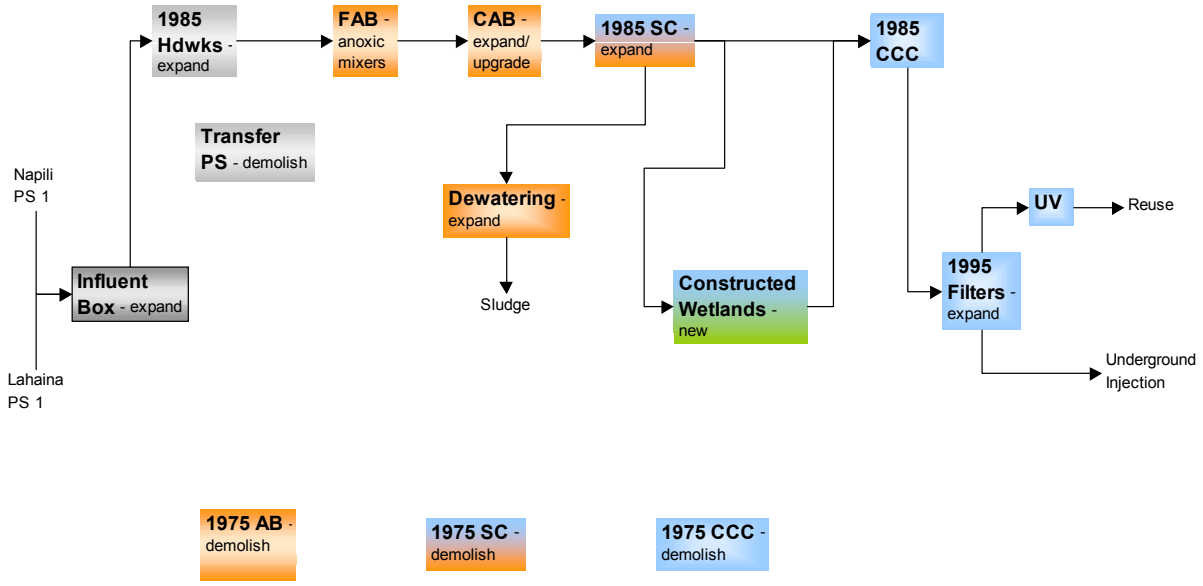
- Potential community benefit/public education opportunity

Limitations

- The facility site does not have the space required to develop a wetlands treatment system
- Cost of purchasing the required acreage would be prohibitive
- Investment in existing 1975 facilities will be lost
- High capital cost

Other Information/Comments

- This alternative was discussed during the brainstorming sessions and eliminated during high-level screening because of the significant limitations and lack of benefits as described above


1985 Hdwks - expand
FAB - anoxic mixers
CAB - expand/ upgrade
1985 SC - expand
1985 CCC
Transfer PS - demolish
Napili PS 1
Dewatering - expand
UV
Reuse
Influent Box - expand
Sludge
Constructed Wetlands - new
1995 Filters - expand
Underground Injection
Lahaina PS 1
1975 AB - demolish
1975 SC - demolish
1975 CCC - demolish

Appendix E: Lahaina WWRF Process Study Preliminary Alternative Evaluation

Lahaina WWRF Process Study: Capacity Improvement Alternatives

Facility, Component, or Criterion	Criterion Weight	Alt 1: Status Quo	Alt 2: Operational Improvements Only	Alt 3: Restore 1975 Plant to Original Design	Alt 4: Retrofit MBRs in Portion of 1975 Plant - Provide N-removal flexibility	Alt 5: Use 1975 Plant with Modifications to Provide Parallel Nitrogen Removal	Alt 6: Use 1975 Plant for Preliminary and Primary Treatment in Series with 1985 Plant	Alt 7: Demolish 1975 Plant, Capital Improvements to 1985 Plant	Alt 8: Demolish 1975 Plant, Provide Constructed Wetlands for Capacity beyond
Alternatives Description (Brainstorming) - Phase 1									
1975 Plant Modifications/Retrofits									
Transfer Pump Station		As is	As is	Rehab or upgrade to provide X mgd capacity, or provide capability to gravity to 1975 Plant from influent box	Rehab or upgrade to provide X mgd capacity, or provide capability to gravity to 1975 Plant from influent box	Rehab or upgrade to provide X mgd capacity, or provide capability to gravity to 1975 Plant from influent box	Abandon	Demolish	Demolish
Screening/Shredder		N/A	N/A	N/A	N/A	N/A	Provide expanded facility for entire plant flow	N/A	N/A
Grit Removal		N/A	N/A	N/A	N/A	N/A	Provide expanded facility for entire plant flow	N/A	N/A
Aeration Basin		As is	As is	1975 Design	Convert to reuse water storage	Retrofit with baffles, diffused aeration, and recycles and/or step feed for N removal	May use for aerobic digestion, replace with anaerobic digesters, or convert to primary clarifier(s)	Demolish	Demolish
Secondary Clarifiers		As is	As is	1975 Design	Convert to MBRs with N-removal flexibility	Rehab or upgrade	Convert to primary clarifiers	Demolish	Demolish
RAS/WAS Pump Station		As is	As is	1975 Design	May use to house permeate and WAS pumps	Rehab or upgrade	Convert to primary sludge pump station. Primary sludge to 1985 Plant	Demolish	Demolish
Chlorine Contact Chambers		As is	As is	1975 Design	Use in parallel with UV	Rehab or upgrade	May modify for use in series with 1985 CCCs	Demolish	Demolish
Chlorine Building and Scrubber		As is	As is	Expand as needed	Expand as needed	Expand as needed	Expand as needed	Expand as needed	Expand as needed
Charcoal Filter		As is	As is	Abandon	Abandon	Abandon	Abandon	Demolish	Demolish
DAF Thickener		As is	As is	Abandon - WAS to 1985 Plant	Abandon - WAS to 1985 Plant	Abandon - WAS to 1985 Plant	Abandon	Demolish - WAS to 1985 Plant	Demolish - WAS to 1985 Plant

Lahaina WWRF Process Study: Capacity Improvement Alternatives

Facility, Component, or Criterion	Criterion Weight	Alt 1: Status Quo	Alt 2: Operational Improvements Only	Alt 3: Restore 1975 Plant to Original Design	Alt 4: Retrofit MBRs in Portion of 1975 Plant - Provide N-removal flexibility	Alt 5: Use 1975 Plant with Modifications to Provide Parallel Nitrogen Removal	Alt 6: Use 1975 Plant for Preliminary and Primary Treatment in Series with 1985 Plant	Alt 7: Demolish 1975 Plant, Capital Improvements to 1985 Plant	Alt 8: Demolish 1975 Plant, Provide Constructed Wetlands for Capacity beyond
Aerobic Digesters		As is	As is	Abandon	Abandon	Abandon	May use for primary sludge thickening	Demolish	Demolish
Solids Building and Equipment		As is	As is	Abandon, may salvage equipment	Abandon, may salvage equipment	Abandon, may salvage equipment	Rehab or upgrade as required	Demolish	Demolish
Filter Backwash Surge Basin		As is	As is	As is	As is	As is	As is	As is	As is
1985 Plant Modifications/Retrofits									
Influent Box		As is	As is	Expand as needed	Expand as needed	Expand as needed	Modify to reroute flow to new headworks	Expand as needed	Expand as needed
Screening		As is	As is	Expand as needed	Replace or supplement with fine screens	Expand as needed	Demolish, may salvage equipment	Expand as needed	Expand as needed
Grit Removal		As is	As is	Expand as needed	Expand as needed	Expand as needed	Demolish, may salvage equipment	Expand as needed	Expand as needed
Odor Control		As is	As is	Expand as needed	Expand as needed	Expand as needed	Relocate to new headworks	Expand as needed	Expand as needed
FAB		As is	As is	Install anoxic mixers. Extend influent pipe to CAB for multi-pass step feed	Install anoxic mixers. Extend influent pipe to CAB for multi-pass step feed	Install anoxic mixers. Extend influent pipe to CAB for multi-pass step feed	Install anoxic mixers. Extend influent pipe to CAB for multi-pass step feed	Install anoxic mixers. Extend influent pipe to CAB for multi-pass step feed	Install anoxic mixers. Extend influent pipe to CAB for multi-pass step feed
CAB		As is	As is	Remove barrier wall. Install directional mixers and/or anoxic mixers. Optimize anoxic/aerobic zone distribution. Convert to two parallel basins (check if center wall is hydrostatic). Expand as needed.	Remove barrier wall. Install directional mixers and/or anoxic mixers. Optimize anoxic/aerobic zone distribution. Convert to two parallel basins (check if center wall is hydrostatic). Expand as needed.	Remove barrier wall. Install directional mixers and/or anoxic mixers. Optimize anoxic/aerobic zone distribution. Convert to two parallel basins (check if center wall is hydrostatic). Expand as needed.	Remove barrier wall. Install directional mixers and/or anoxic mixers. Optimize anoxic/aerobic zone distribution. Convert to two parallel basins (check if center wall is hydrostatic). Expand as needed.	Remove barrier wall. Install directional mixers and/or anoxic mixers. Optimize anoxic/aerobic zone distribution. Convert to two parallel basins (check if center wall is hydrostatic). Expand as needed.	Remove barrier wall. Install directional mixers and/or anoxic mixers. Optimize anoxic/aerobic zone distribution. Convert to two parallel basins (check if center wall is hydrostatic). Expand as needed.
Blowers/Blower Building		As is	As is	Expand as needed	Expand as needed	Expand as needed	Expand as needed	Expand as needed	Expand as needed
Secondary Clarifiers		As is	As is	Expand as needed	Expand as needed	Expand as needed	Expand as needed	Expand as needed	Expand as needed

Lahaina WWRF Process Study: Capacity Improvement Alternatives

Facility, Component, or Criterion	Criterion Weight	Alt 1: Status Quo	Alt 2: Operational Improvements Only	Alt 3: Restore 1975 Plant to Original Design	Alt 4: Retrofit MBRs in Portion of 1975 Plant - Provide N-removal flexibility	Alt 5: Use 1975 Plant with Modifications to Provide Parallel Nitrogen Removal	Alt 6: Use 1975 Plant for Preliminary and Primary Treatment in Series with 1985 Plant	Alt 7: Demolish 1975 Plant, Capital Improvements to 1985 Plant	Alt 8: Demolish 1975 Plant, Provide Constructed Wetlands for Capacity beyond
RAS/WAS Pump Station		As is	As is	Expand as needed	Expand as needed	Expand as needed	Expand as needed	Expand as needed	Expand as needed
Chlorine Contact Chambers		As is	As is	Expand as needed or supplement with UV	Expand as needed or supplement with UV	Expand as needed or supplement with UV	Expand as needed or supplement with UV	Expand as needed or supplement with UV	Expand as needed or supplement with UV
Effluent Filters		As is	As is	Expand as needed	Expand as needed	Expand as needed	Expand as needed	Expand as needed	Expand as needed
UV Disinfection		As is	As is	Expand if required	Expand if required	Expand if required	Expand if required	Expand if required	Expand if required
DAF Thickener		As is	As is	Abandon	Abandon	Abandon	Abandon	Abandon	Abandon
TWAS Storage Tank		As is	As is	Expand as needed. Use for storage of continuously pumped WAS with decanting. Modify piping and pumping as needed.	Expand as needed. Use for storage of continuously pumped WAS with decanting. Modify piping and pumping as needed.	Expand as needed. Use for storage of continuously pumped WAS with decanting. Modify piping and pumping as needed.	Expand as needed. Use for storage of continuously pumped WAS with decanting. Modify piping and pumping as needed.	Expand as needed. Use for storage of continuously pumped WAS with decanting. Modify piping and pumping as needed.	Expand as needed. Use for storage of continuously pumped WAS with decanting. Modify piping and pumping as needed.
Belt Filter Press		As is	As is	As is	As is	As is	As is	As is	As is
Centrifuges		As is	As is	Expand as needed	Expand as needed	Expand as needed	Expand as needed	Expand as needed	Expand as needed
Solids Building and Equipment		As is	As is	Expand as needed	Expand as needed	Expand as needed	Expand as needed	Expand as needed	Expand as needed
New Facilities									
					Blower building, blowers, and diffused aeration system for 1975 plant retrofit	Blower building, blowers, and diffused aeration system for 1975 plant retrofit	Intermediate pump station		Constructed wetland with liner and pump stations as needed
							New headworks		
							GBTs		
							Anaerobic digesters		
Carry forward to concept development?		Yes	Yes	Yes	Yes	Yes	~~No~~	Yes	~~No~~
Preliminary Screening – Phase 1									
Consensus Criteria Weights and Raw Scores									
Cost	4.38	0.50	0.63	−0.25	−0.75	−0.50		−0.50	
Status of technology	3.13	−0.25	0.00	−0.75	1.00	0.63		0.63	
Ease of implementation/ constructability	3.63	0.38	0.50	0.25	0.00	−0.38		−0.38	
Safety/Security	3.88	−0.13	−0.13	−0.25	0.25	0.25		0.25	
Performance reliability and redundancy	4.63	−0.63	0.13	0.25	0.75	0.50		0.75	
Ease of O&M	3.63	−0.25	0.13	−0.50	−0.13	0.13		0.38	
Future regulatory compliance	3.88	−0.50	0.00	0.00	1.00	0.75		0.75	

Lahaina WWRF Process Study: Capacity Improvement Alternatives

Facility, Component, or Criterion	Criterion Weight	Alt 1: Status Quo	Alt 2: Operational Improvements Only	Alt 3: Restore 1975 Plant to Original Design	Alt 4: Retrofit MBRs in Portion of 1975 Plant - Provide N-removal flexibility	Alt 5: Use 1975 Plant with Modifications to Provide Parallel Nitrogen Removal	Alt 6: Use 1975 Plant for Preliminary and Primary Treatment in Series with 1985 Plant	Alt 7: Demolish 1975 Plant, Capital Improvements to 1985 Plant	Alt 8: Demolish 1975 Plant, Provide Constructed Wetlands for Capacity beyond
Flexibility	3.38	-0.63	-0.25	0.00	0.75	0.50		0.75	
Space requirements	3.13	0.13	0.50	0.00	0.38	0.13		-0.50	
Energy efficiency	3.13	0.13	0.00	-0.50	0.50	-0.13		0.25	
Resource recovery/ revenue generation	1.88	-0.25	-0.38	-0.13	0.13	0.00		-0.13	
Labor requirements	3.13	0.00	-0.25	-0.75	-0.25	-0.25		-0.25	
Ease of phasing and expansion	3.00	0.00	-0.38	0.25	0.63	0.63		-0.13	
Odor	3.63	-0.13	0.00	-0.38	-0.25	-0.25		0.25	
Noise	2.13	0.13	0.13	-0.25	0.00	0.00		0.00	
Visual/aesthetics	2.25	-0.25	0.00	-0.13	0.13	0.00		-0.13	
Public acceptance	3.25	0.00	-0.13	0.25	0.25	0.00		0.25	
Consensus Weighted Scores									
Cost		2.19	2.73	-1.09	-3.28	-2.19		-2.19	
Status of technology		-0.78	0.00	-2.34	3.13	1.95		1.95	
Ease of implementation/ constructability		1.36	1.81	0.91	0.00	-1.36		-1.36	
Safety/Security		-0.48	-0.48	-0.97	0.97	0.97		0.97	
Performance reliability and redundancy		-2.89	0.58	1.16	3.47	2.31		3.47	
Ease of O&M		-0.91	0.45	-1.81	-0.45	0.45		1.36	
Future regulatory compliance		-1.94	0.00	0.00	3.88	2.91		2.91	
Flexibility		-2.11	-0.84	0.00	2.53	1.69		2.53	
Space requirements		0.39	1.56	0.00	1.17	0.39		-1.56	
Energy efficiency		0.39	0.00	-1.56	1.56	-0.39		0.78	
Resource recovery/ revenue generation		-0.47	-0.70	-0.23	0.23	0.00		-0.23	
Labor requirements		0.00	-0.78	-2.34	-0.78	-0.78		-0.78	
Ease of phasing and expansion		0.00	-1.13	0.75	1.88	1.88		-0.38	
Odor		-0.45	0.00	-1.36	-0.91	-0.91		0.91	
Noise		0.27	0.27	-0.53	0.00	0.00		0.00	
Visual/aesthetics		-0.56	0.00	-0.28	0.28	0.00		-0.28	
Public acceptance		0.00	-0.41	0.81	0.81	0.00		0.81	
Total Weighted Score		**-6.00**	**3.06**	**-8.91**	**14.48**	**6.92**		**8.91**	
Rank/Priority		**5**	**4**	**6**	**1**	**3**		**2**	
Carry forward to detailed evaluation?		Yes	Yes	Yes	Yes	Yes		Yes	

Notes:

Criterion Weighting Scale: 1=Inconsequential, 2=Somewhat Important, 3=Important, 4=Very Important, 5=Critical
Raw Score Scale: -1=Negative Impact, 0=No Impact, + 1=Positive Impact