APPENDIX A

Special Protections Document

STATE WATER RESOURCES CONTROL BOARD RESOLUTION NO. 2012-0012

APPROVING EXCEPTIONS TO THE CALIFORNIA OCEAN PLAN FOR SELECTED DISCHARGES INTO AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE, INCLUDING SPECIAL PROTECTIONS FOR BENEFICIAL USES, AND CERTIFYING A PROGRAM ENVIRONMENTAL IMPACT REPORT

WHEREAS:

- 1. The State Water Resources Control Board (State Water Board) adopted the California Ocean Plan (Ocean Plan) on July 6, 1972 and revised the Ocean Plan in 1978, 1983, 1988, 1990, 1997, 2000, 2005, and 2009.
- 2. The Ocean Plan prohibits the discharge of waste to designated Areas of Special Biological Significance (ASBS).
- ASBS are designated by the State Water Board as ocean areas requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable.
- 4. Under the Marine Managed Areas Improvement Act, all ASBS are designated as a subset of state water quality protection areas and require special protection as determined by the State Water Board pursuant to the Ocean Plan and the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (Thermal Plan).
- 5. In state water quality protection areas, waste discharges must be prohibited or limited by special conditions, in accordance with the Porter-Cologne Water Quality Control Act, California Water Code §13000 et seq., and implementing regulations, including the Ocean Plan and Thermal Plan.
- 6. The Ocean Plan authorizes the State Water Board to grant an exception to Ocean Plan provisions where the board determines that the exception will not compromise protection of ocean waters for beneficial uses and the public interest will be served.
- 7. On October 18, 2004, the State Water Board notified a number of parties that they must cease the discharge of storm water and nonpoint source waste into ASBS or request an exception to the Ocean Plan.
- 8. The State Water Board has now received 27 applications for an exception to the Ocean Plan prohibition against waste discharges into an ASBS. The applicants, who are listed in Attachment A to this resolution, discharge storm water and nonpoint source waste into ASBS.
- 9. The State Water Board finds that granting the requested exceptions will not compromise protection of ocean waters for beneficial uses, provided that the applicants comply with the prohibitions and special conditions that comprise the Special Protections contained in this resolution. The prohibitions and special conditions in the Special Protections, contained in Attachment B to this resolution, are intended to ensure that storm water

and nonpoint source discharges are controlled to protect the beneficial uses of the affected ASBS, including marine aquatic life and habitat, and to maintain natural water quality within ASBS. The Special Protections are also intended to maintain the natural hydrologic cycle and coastal ecology by allowing the flow of clean precipitation runoff into the ocean, while preserving coastal slope stability and preventing anthropogenic erosion.

- 10. The State Water Board finds that granting the requested exceptions is in the public interest because the various discharges are essential for flood control, slope stability, erosion prevention, and maintenance of the natural hydrologic cycle between terrestrial and marine ecosystems, public health and safety, public recreation and coastal access, commercial and recreational fishing, navigation, and essential military operations (national security).
- 11. The State Water Board staff conducted scoping meetings on August 1, 8, and 15, 2006. The comment period for CEQA scoping closed August 15, 2006. The State Water Board heard a status report on ASBS at the April 1, 2008 meeting.
- 12. The State Water Board staff prepared and circulated a Program Environmental Impact Report for the proposed exceptions, in accordance with the California Environmental Quality Act (CEQA) and implementing regulations.
- 13. The State Water Board held a public hearing on May 18, 2011, to receive comments on the proposed exceptions and the Program Environmental Impact Report. The written comment period ended on May 20, 2011. The State Water Board staff has considered the comments and prepared written response. The State Water Board finds, based on the whole record, including the applications, Draft Program Environmental Impact Report, comments, and responses, that there is no substantial evidence that approval of the exceptions will have a significant effect on the environment because of the terms and conditions incorporated into the project. The Program Environmental Impact Report reflects the State Water Board's independent judgment and analysis.
- 14. Granting the exceptions is consistent with federal and state antidegradation policies, in 40 C.F.R. §131.12 and <u>State Water Board Resolution No. 68-16</u>, respectively. The terms, special conditions, and prohibitions that comprise these Special Protections will not authorize a lowering of water quality, but rather will improve water quality conditions in the affected ASBS.
- 15. This resolution only grants an exception from the Ocean Plan prohibition against waste discharges into ASBS to the applicants listed in Attachment A. It does not authorize waste discharges to state waters. In order to legally discharge waste into an ASBS, the applicants must have both coverage under this resolution and an appropriate authorization to discharge. Authorization to discharge for point source waste discharges to navigable waters consists of coverage under the National Pollutant Discharge Elimination System (NPDES) permit program. Nonpoint source discharges of waste must be regulated under waste discharge requirements, a conditional waiver, or a conditional prohibition.

- 16. The exceptions will be reviewed during the next triennial review of the Ocean Plan. If the State Water Board finds cause to revoke or re-open the exceptions, the board may do so during the triennial review or at any other time. During the next triennial review period staff will also evaluate those aspects of the exception that are successfully protecting beneficial uses, to make recommendations on a potential Ocean Plan amendment to address storm runoff into ASBS.
- 17. The State Water Board's record of proceedings in this matter is located at 1001 I Street, Sacramento, California, 95814 and the custodian is the Division of Water Quality.

THEREFORE BE IT RESOLVED THAT:

The State Water Board:

- 1. The State Water Board certifies that the <u>Final EIR</u> has been completed in compliance with CEQA. The State Water Board has reviewed and considered the information contained in these documents, which reflect the State Water Board's independent judgment and analysis.
- 2. Approves the exceptions to the Ocean Plan prohibition against waste discharges to ASBS for discharges of storm water and nonpoint source waste by the applicants listed in Attachment A to this resolution provided that:
 - a. The discharges are covered under an appropriate authorization to discharge waste to the ASBS, such as an NPDES permit and/or waste discharge requirements;
 - b. The authorization incorporates all of the Special Protections, contained in Attachment B to this resolution, which are applicable to the discharge; and
 - c. Only storm water and nonpoint source waste discharges by the applicants listed in Attachment A to this resolution are covered by this resolution. All other waste discharges to ASBS are prohibited, unless they are covered by a separate, applicable Ocean Plan exception.
- 3. Authorizes the Executive Director or designee to file the Notice of Determination with the Governor's Office of Planning and Research.
- 4. Authorizes the Executive Director or designee to transmit the exceptions to the United States Environmental Agency (U.S. EPA) for concurrence.
- 5. Directs staff to consider development of, and make recommendations for, an Ocean Plan amendment to address storm runoff into ASBS, during the next triennial review period.
- 6. Directs staff to propose for Board consideration up to \$1 million from the Proposition 50 Coastal Nonpoint Source (CNPS) program for additional ASBS Regional Monitoring, starting in the fall of 2012.

 Directs staff, pending budget authority, to propose for Board consideration the use of CNPS funds (approximately \$10 million) in conjunction with the remaining Proposition 84 ASBS funds (\$3.6 million) for additional ASBS BMP projects.

CERTIFICATION

The undersigned Clerk to the Board does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on March 20, 2012.

AYE:Chairman Charles R. Hoppin
Vice Chair Frances Spivy-Weber
Board Member Tam M. DoducNAY:NoneABSENT:None

ABSTAIN: None

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Jeanine Townsend Clerk to the Board

Attachment A – Applicants

Applicant	ASBS
Carmel by the Sea, City of	Carmel Bay
Connolly-Pacific Company	Southeast Santa Catalina Island
Department of Parks and Recreation	Redwoods National Park, Trinidad Head, King Range, Jughandle Cove, Gerstle Cove, James V. Fitzgerald, Año Nuevo, Carmel Bay, Point Lobos, Julia Pfeiffer Burns, Laguna Point to Latigo Point, Irvine Coast
Department of Transportation (CalTrans)	Redwoods National Park, Saunders Reef,James V. Fitzgerald, Año Nuevo, Carmel Bay, Point Lobos, Julia Pfeiffer Burns, Salmon Creek Coast, Laguna Point to Latigo Point, Irvine Coast
Humboldt County	King Range
Humboldt Bay Harbor District	King Range
Irvine Company	Irvine Coast
Laguna Beach, City of	Heisler Park
Los Angeles County	Laguna Point to Latigo Point
Los Angeles County Flood Control District	Laguna Point to Latigo Point
Malibu, City of	Laguna Point to Latigo Point
Marin County	Duxbury Reef
Monterey, City of	Pacific Grove
Monterey, County of	Carmel Bay
Newport Beach, City of, and on behalf of the Pelican Point Homeowners	Robert E. Badham And Irvine Coast
Pacific Grove, City of	Pacific Grove
Pebble Beach Company, and on behalf of the Pebble Beach Stillwater Yacht Club	Carmel Bay
San Diego, City of	La Jolla
San Mateo County	James V. Fitzgerald
Santa Catalina Island Company, and on behalf of the	Northwest Santa Catalina Island
Santa Catalina Island Conservancy	And Western Santa Catalina Island
Sea Ranch Association	Del Mar Landing
Trinidad, City of	Trinidad Head
Trinidad Rancheria	Trinidad Head
U.S. Dept. of Interior, Point Reyes National Seashore	Point Reyes Headlands, Duxbury Reef
U.S. Dept. of Interior, Redwoods National and State Park	Redwoods National Park
U.S. Dept. of Defense, Air Force	James V. Fitzgerald
U.S. Dept. of Defense, Navy	San Nicolas Island & Begg Rock
U.S. Dept. of Defense, Navy	San Clemente Island

Attachment B - Special Protections for Areas of Special Biological Significance, Governing Point Source Discharges of Storm Water and Nonpoint Source Waste Discharges

I. PROVISIONS FOR POINT SOURCE DISCHARGES OF STORM WATER AND NONPOINT SOURCE WASTE DISCHARGES

The following terms, prohibitions, and special conditions (hereafter collectively referred to as special conditions) are established as limitations on point source storm water and nonpoint source discharges. These special conditions provide Special Protections for marine aquatic life and natural water quality in Areas of Special Biological Significance (ASBS), as required for State Water Quality Protection Areas pursuant to California Public Resources Code Sections 36700(f) and 36710(f). These Special Protections are adopted by the State Water Board as part of the California Ocean Plan (Ocean Plan) General Exception.

The special conditions are organized by category of discharge. The State Water Resources Control Board (State Water Board) and Regional Water Quality Control Boards (Regional Water Boards) will determine categories and the means of regulation for those categories [e.g., Point Source Storm Water National Pollutant Discharge Elimination System (NPDES) or Nonpoint Source].

A. PERMITTED POINT SOURCE DISCHARGES OF STORM WATER

- 1. General Provisions for Permitted Point Source Discharges of Storm Water
 - a. Existing storm water discharges into an ASBS are allowed only under the following conditions:
 - (1) The discharges are authorized by an NPDES permit issued by the State Water Board or Regional Water Board;
 - (2) The discharges comply with all of the applicable terms, prohibitions, and special conditions contained in these Special Protections; and
 - (3) The discharges:
 - (i) Are essential for flood control or slope stability, including roof, landscape, road, and parking lot drainage;
 - (ii) Are designed to prevent soil erosion;
 - (iii) Occur only during wet weather;
 - (iv) Are composed of only storm water runoff.
 - b. Discharges composed of storm water runoff shall not alter natural ocean water quality in an ASBS.

- c. The discharge of trash is prohibited.
- d. Only discharges from existing storm water outfalls are allowed. Any proposed or new storm water runoff discharge shall be routed to existing storm water discharge outfalls and shall not result in any new contribution of waste to an ASBS (i.e., no additional pollutant loading). "Existing storm water outfalls" are those that were constructed or under construction prior to January 1, 2005. "New contribution of waste" is defined as any addition of waste beyond what would have occurred as of January 1, 2005. A change to an existing storm water outfall, in terms of re-location or alteration, in order to comply with these special conditions, is allowed and does not constitute a new discharge.
- e. Non-storm water discharges are prohibited except as provided below:
 - (1) The term "non-storm water discharges" means any waste discharges from a municipal separate storm sewer system (MS4) or other NPDES permitted storm drain system to an ASBS that are not composed entirely of storm water.
 - (2) (i) The following non-storm water discharges are allowed, provided that the discharges are essential for emergency response purposes, structural stability, slope stability or occur naturally:
 - (a) Discharges associated with emergency fire fighting operations.
 - (b) Foundation and footing drains.
 - (c) Water from crawl space or basement pumps.
 - (d) Hillside dewatering.
 - (e) Naturally occurring groundwater seepage via a storm drain.
 - (f) Non-anthropogenic flows from a naturally occurring stream via a culvert or storm drain, as long as there are no contributions of anthropogenic runoff.

(ii) An NPDES permitting authority may authorize non-storm water discharges to an MS4 with a direct discharge to an ASBS only to the extent the NPDES permitting authority finds that the discharge does not alter natural ocean water quality in the ASBS.

- (3) Authorized non-storm water discharges shall not cause or contribute to a violation of the water quality objectives in Chapter II of the Ocean Plan nor alter natural ocean water quality in an ASBS.
- 2. Compliance Plans for Inclusion in Storm Water Management Plans (SWMP) and Storm Water Pollution Prevention Plans (SWPPP).

The discharger shall specifically address the prohibition of non-storm water runoff and the requirement to maintain natural water quality for storm water discharges to an ASBS in an ASBS Compliance Plan to be included in its SWMP or a SWPPP, as appropriate to permit type. If a statewide permit includes a SWMP, then the discharger shall prepare a stand-alone

compliance plan for ASBS discharges. The ASBS Compliance Plan is subject to approval by the Executive Director of the State Water Board (statewide permits) or Executive Officer of the Regional Water Board (for permits issued by Regional Water Boards).

- a. The Compliance Plan shall include a map of surface drainage of storm water runoff, showing areas of sheet runoff, prioritize discharges, and describe any structural Best Management Practices (BMPs) already employed and/or BMPs to be employed in the future. Priority discharges are those that pose the greatest water quality threat and which are identified to require installation of structural BMPs. The map shall also show the storm water conveyances in relation to other features such as service areas, sewage conveyances and treatment facilities, landslides, areas prone to erosion, and waste and hazardous material storage areas, if applicable. The SWMP or SWPPP shall also include a procedure for updating the map and plan when changes are made to the storm water conveyance facilities.
- b. The ASBS Compliance Plan shall describe the measures by which all non-authorized non-storm water runoff (e.g., dry weather flows) has been eliminated, how these measures will be maintained over time, and how these measures are monitored and documented.
- c. For Municipal Separate Storm Sewer System (MS4s), the ASBS Compliance Plan shall require minimum inspection frequencies as follows:
 - (1) The minimum inspection frequency for construction sites shall be weekly during rainy season;
 - (2) The minimum inspection frequency for industrial facilities shall be monthly during the rainy season;
 - (3) The minimum inspection frequency for commercial facilities (e.g., restaurants) shall be twice during the rainy season; and
 - (4) Storm water outfall drains equal to or greater than 18 inches (457 mm) in diameter or width shall be inspected once prior to the beginning of the rainy season and once during the rainy season and maintained to remove trash and other anthropogenic debris.
- d. The ASBS Compliance Plan shall address storm water discharges (wet weather flows) and, in particular, describe how pollutant reductions in storm water runoff, that are necessary to comply with these special conditions, will be achieved through BMPs. Structural BMPs need not be installed if the discharger can document to the satisfaction of the State Water Board Executive Director (statewide permits) or Regional Water Board Executive Officer (Regional Water Board permits) that such installation would pose a threat to health or safety. BMPs to control storm water runoff discharges (at the end-of-pipe) during a design storm shall be designed to achieve on average the following target levels:
 - (1) Table B Instantaneous Maximum Water Quality Objectives in Chapter II of the Ocean Plan; or

(2) A 90% reduction in pollutant loading during storm events, for the applicant's total discharges.

The baseline for these determinations is the effective date of the Exception, except for those structural BMPs installed between January 1, 2005 and adoption of these Special Protections, and the reductions must be achieved and documented within four (4) years of the effective date.

- e. The ASBS Compliance Plan shall address erosion control and the prevention of anthropogenic sedimentation in ASBS. The natural habitat conditions in the ASBS shall not be altered as a result of anthropogenic sedimentation.
- f. The ASBS Compliance Plan shall describe the non-structural BMPs currently employed and planned in the future (including those for construction activities), and include an implementation schedule. The ASBS Compliance Plan shall include non-structural BMPs that address public education and outreach. Education and outreach efforts must adequately inform-the public that direct discharges of pollutants from private property not entering an MS4 are prohibited. The ASBS Compliance Plan shall also describe the structural BMPs, including any low impact development (LID) measures, currently employed and planned for higher threat discharges and include an implementation schedule. To control storm water runoff discharges (at the end-of-pipe) during a design storm, permittees must first consider, and use where feasible, LID practices to infiltrate, use, or evapotranspirate storm water runoff on-site, if LID practices would be the most effective at reducing pollutants from entering the ASBS.
- g. The BMPs and implementation schedule shall be designed to ensure that natural water quality conditions in the receiving water are achieved and maintained by either reducing flows from impervious surfaces or reducing pollutant loading, or some combination thereof.
- h. If the results of the receiving water monitoring described in IV.B. of these special conditions indicate that the storm water runoff is causing or contributing to an alteration of natural ocean water quality in the ASBS, the discharger shall submit a report to the State Water Board and Regional Water Board within 30 days of receiving the results.
 - (1) The report shall identify the constituents in storm water runoff that alter natural ocean water quality and the sources of these constituents.
 - (2) The report shall describe BMPs that are currently being implemented, BMPs that are identified in the SWMP or SWPPP for future implementation, and any additional BMPs that may be added to the SWMP or SWPPP to address the alteration of natural water quality. The report shall include a new or modified implementation schedule for the BMPs.
 - (3) Within 30 days of the approval of the report by the State Water Board Executive Director (statewide permits) or Regional Water Board Executive Officer (Regional Water Board permits), the discharger shall revise its ASBS Compliance Plan to incorporate any new or modified BMPs that have been or will be implemented, the implementation schedule, and any additional monitoring required.

- (4) As long as the discharger has complied with the procedures described above and is implementing the revised SWMP or SWPPP, the discharger does not have to repeat the same procedure for continuing or recurring exceedances of natural ocean water quality conditions due to the same constituent.
- (5) The requirements of this section are in addition to the terms, prohibitions, and conditions contained in these Special Protections.
- 3. Compliance Schedule
 - a. On the effective date of the Exception, all non-authorized non-storm water discharges (e.g., dry weather flow) are effectively prohibited.
 - b. Within eighteen (18) months from the effective date of the Exception, the discharger shall submit a draft written ASBS Compliance Plan to the State Water Board Executive Director (statewide permits) or Regional Water Board Executive Officer (Regional Water Board permits) that describes its strategy to comply with these special conditions, including the requirement to maintain natural water quality in the affected ASBS. The ASBS Compliance Plan shall include a description of appropriate non-structural controls and a time schedule to implement structural controls (implementation schedule) to comply with these special conditions for inclusion in the discharger's SWMP or SWPPP, as appropriate to permit type. The final ASBS Compliance Plan, including a description and final schedule for structural controls based on the results of runoff and receiving water monitoring, must be submitted within thirty (30) months from the effective date of the Exception.
 - c. Within 18 months of the effective date of the Exception, any non-structural controls that are necessary to comply with these special conditions shall be implemented.
 - d. Within six (6) years of the effective date of the Exception, any structural controls identified in the ASBS Compliance Plan that are necessary to comply with these special conditions shall be operational.
 - e. Within six (6) years of the effective date of the Exception, all dischargers must comply with the requirement that their discharges into the affected ASBS maintain natural ocean water quality. If the initial results of post-storm receiving water quality testing indicate levels higher than the 85th percentile threshold of reference water quality data and the pre-storm receiving water levels, then the discharger must re-sample the receiving water, pre- and post-storm. If after re-sampling the post-storm levels are still higher than the 85th percentile threshold of reference water quality data, so the pre-storm receiving water levels, for any constituent, then natural ocean water quality is exceeded. See attached Flowchart.
 - f. The Executive Director of the State Water Board (statewide permits) or Executive Officer of the Regional Water Board (Regional Water Board permits) may only authorize additional time to comply with the special conditions d. and e., above if good cause exists to do so. Good cause means a physical impossibility or lack of funding.

If a discharger claims physical impossibility, it shall notify the Board in writing within thirty (30) days of the date that the discharger first knew of the event or circumstance that caused or would cause it to fail to meet the deadline in d. or e. The notice shall describe

the reason for the noncompliance or anticipated noncompliance and specifically refer to this Section of this Exception. It shall describe the anticipated length of time the delay in compliance may persist, the cause or causes of the delay as well as measures to minimize the impact of the delay on water quality, the measures taken or to be taken by the discharger to prevent or minimize the delay, the schedule by which the measures will be implemented, and the anticipated date of compliance. The discharger shall adopt all reasonable measures to avoid and minimize such delays and their impact on water quality.

The discharger may request an extension of time for compliance based on lack of funding. The request for an extension shall require:

- for municipalities, a demonstration of significant hardship to discharger ratepayers, by showing the relationship of storm water fees to annual household income for residents within the discharger's jurisdictional area, and the discharger has made timely and complete applications for all available bond and grant funding, and either no bond or grant funding is available, or bond and/or grant funding is inadequate; or
- 2. for other governmental agencies, a demonstration and documentation of a good faith effort to acquire funding through that agency's budgetary process, and a demonstration that funding was unavailable or inadequate.

B. NONPOINT SOURCE DISCHARGES

- 1. General Provisions for Nonpoint Sources
 - a. Existing nonpoint source waste discharges are allowed into an ASBS only under the following conditions:
 - (1) The discharges are authorized under waste discharge requirements, a conditional waiver of waste discharge requirements, or a conditional prohibition issued by the State Water Board or a Regional Water Board.
 - (2) The discharges are in compliance with the applicable terms, prohibitions, and special conditions contained in these Special Protections.
 - (3) The discharges:
 - (i) Are essential for flood control or slope stability, including roof, landscape, road, and parking lot drainage;
 - (ii) Are designed to prevent soil erosion;
 - (iii) Occur only during wet weather;
 - (iv) Are composed of only storm water runoff.
 - b. Discharges composed of storm water runoff shall not alter natural ocean water quality in an ASBS.

- c. The discharge of trash is prohibited.
- d. Only existing nonpoint source waste discharges are allowed. "Existing nonpoint source waste discharges" are discharges that were ongoing prior to January 1, 2005. "New nonpoint source discharges" are defined as those that commenced on or after January 1, 2005. A change to an existing nonpoint source discharge, in terms of relocation or alteration, in order to comply with these special conditions, is allowed and does not constitute a new discharge.
- e. Non-storm water discharges from nonpoint sources (those not subject to an NPDES Permit) are prohibited except as provided below:
 - (1) The term "non-storm water discharges" means any waste discharges that are not composed entirely of storm water.
 - (2) The following non-storm water discharges are allowed, provided that the discharges are essential for emergency response purposes, structural stability, slope stability, or occur naturally:
 - (i) Discharges associated with emergency fire fighting operations.
 - (ii) Foundation and footing drains.
 - (iii) Water from crawl space or basement pumps.
 - (iv) Hillside dewatering.
 - (v) Naturally occurring groundwater seepage via a storm drain.
 - (vi) Non-anthropogenic flows from a naturally occurring stream via a culvert or storm drain, as long as there are no contributions of anthropogenic runoff.
 - (3) Authorized non-storm water discharges shall not cause or contribute to a violation of the water quality objectives in Chapter II of the Ocean Plan nor alter natural ocean water quality in an ASBS.
- f. At the San Clemente Island ASBS, discharges incidental to military training and research, development, test, and evaluation operations are allowed. Discharges incidental to underwater demolition and other in-water explosions are not allowed in the two military closure areas in the vicinity of Wilson Cove and Castle Rock. Discharges must not result in a violation of the water quality objectives, including the protection of the marine aquatic life beneficial use, anywhere in the ASBS.
- g. At the San Nicolas Island and Begg Rock ASBS, discharges incidental to military research, development, testing, and evaluation of, and training with, guided missile and other weapons systems, fleet training exercises, small-scale amphibious warfare training, and special warfare training are allowed. Discharges incidental to underwater demolition and other in-water explosions are not allowed. Discharges must not result in a violation of the water quality objectives, including the protection of the marine aquatic life beneficial use, anywhere in the ASBS.

- h. All other nonpoint source discharges not specifically authorized above are prohibited.
- 2. Planning and Reporting
 - a. The nonpoint source discharger shall develop an ASBS Pollution Prevention Plan, including an implementation schedule, to address storm water runoff and any other nonpoint source discharges from its facilities. The ASBS Pollution Prevention Plan must be equivalent in contents to an ASBS Compliance Plan as described in I (A)(2) in this document. The ASBS Pollution Prevention Plan is subject to approval by the Executive Director of the State Water Board (statewide waivers or waste discharge requirements) or Executive Officer of the Regional Water Board (Regional Water Board waivers or waste discharge requirements).
 - b. The ASBS Pollution Prevention Plan shall address storm water discharges (wet weather flows) and, in particular, describe how pollutant reductions in storm water runoff that are necessary to comply with these special conditions, will be achieved through Management Measures and associated Management Practices (Management Measures/Practices). Structural BMPs need not be installed if the discharger can document to the satisfaction of the State Water Board Executive Director or Regional Water Board Executive Officer that such installation would pose a threat to health or safety. Management Measures to control storm water runoff during a design storm shall achieve on average the following target levels:
 - (1) Table B Instantaneous Maximum Water Quality Objectives in Chapter II of the Ocean Plan; or
 - (2) A 90% reduction in pollutant loading during storm events, for the applicant's total discharges.

The baseline for these determinations is the effective date of the Exception, except for those structural BMPs installed between January 1, 2005 and adoption of these Special Protections, and the reductions must be achieved and documented within four (4) years of the effective date.

- c. If the results of the receiving water monitoring described in IV.B. of these special conditions indicate that the storm water runoff or other nonpoint source pollution is causing or contributing to an alteration of natural ocean water quality in the ASBS, the discharger shall submit a report to the State Water Board and the Regional Water Board within 30 days of receiving the results.
 - (1) The report shall identify the constituents that alter natural water quality and the sources of these constituents.
 - (2) The report shall describe Management Measures/Practices that are currently being implemented, Management Measures/Practices that are identified in the ASBS Pollution Prevention Plan for future implementation, and any additional Management Measures/Practices that may be added to the Pollution Prevention Plan to address the alteration of natural water quality. The report shall include a new or modified implementation schedule for the Management Measures/Practices.

- (3) Within 30 days of the approval of the report by the State Water Board Executive Director (statewide waivers or waste discharge requirements) or Executive Officer of the Regional Water Board (Regional Water Board waivers or waste discharge requirements), the discharger shall revise its ASBS Pollution Prevention Plan to incorporate any new or modified Management Measures/Practices that have been or will be implemented, the implementation schedule, and any additional monitoring required.
- (4) As long as the discharger has complied with the procedures described above and is implementing the revised ASBS Pollution Prevention Plan, the discharger does not have to repeat the same procedure for continuing or recurring exceedances of natural water quality conditions due to the same constituent.
- (5) The requirements of this section are in addition to the terms, prohibitions, and conditions contained in these Special Protections.
- 3. Compliance Schedule
 - a. On the effective date of the Exception, all non-authorized non-storm water discharges (e.g., dry weather flow) are effectively prohibited.
 - b. Within eighteen (18) months from the effective date of the Exception, the dischargers shall submit a draft written ASBS Pollution Prevention Plan to the State Water Board Executive Director (statewide waivers or waste discharge requirements) or Executive Officer of the Regional Water Board (Regional Water Board waivers or waste discharge requirements) that describes its strategy to comply with these special conditions, including the requirement to maintain natural ocean water quality in the affected ASBS. The Pollution Prevention Plan shall include a description of appropriate non-structural controls and a time schedule to implement structural controls to comply with these special conditions for inclusion in the discharger's Pollution Prevention Plan. The final ASBS Pollution Prevention Plan, including a description and final schedule for structural controls based on the results of runoff and receiving water monitoring, must be submitted within thirty (30) months from the effective date of the Exception.
 - c. Within 18 months of the effective date of the Exception, any non-structural controls that are necessary to comply with these Special Protections shall be implemented.
 - d. Within six (6) years of the effective date of the Exception, any structural controls identified in the ASBS Pollution Prevention Plan that are necessary to comply with these special conditions shall be operational.
 - e. Within six (6) years of the effective date of the Exception, all dischargers must comply with the requirement that their discharges into the affected ASBS maintain natural ocean water quality. If the initial results of post-storm receiving water quality testing indicate levels higher than the 85th percentile threshold of reference water quality data and the pre-storm receiving water levels, then the discharger must re-sample the receiving water pre- and post-storm. If after re-sampling the post-storm levels are still higher than the 85th percentile threshold of reference water quality data and the attached Flowchart.

f. The Executive Director of the State Water Board (statewide waivers or waste discharge requirements) or Executive Officer of the Regional Water Board (Regional Water Board waivers or waste discharge requirements) may only authorize additional time to comply with the special conditions d. and e., above if good cause exists to do so. Good cause means a physical impossibility or lack of funding.

If a discharger claims physical impossibility, it shall notify the Board in writing within thirty (30) days of the date that the discharger first knew of the event or circumstance that caused or would cause it to fail to meet the deadline in d. or e. The notice shall describe the reason for the noncompliance or anticipated noncompliance and specifically refer to this Section of this Exception. It shall describe the anticipated length of time the delay in compliance may persist, the cause or causes of the delay as well as measures to minimize the impact of the delay on water quality, the measures taken or to be taken by the discharger to prevent or minimize the delay, the schedule by which the measures will be implemented, and the anticipated date of compliance. The discharger shall adopt all reasonable measures to avoid and minimize such delays and their impact on water quality.

The discharger may request an extension of time for compliance based on lack of funding. The request for an extension shall require:

- 1. a demonstration that the discharger has made timely and complete applications for all available bond and grant funding, and either no bond or grant funding is available, or bond and/or grant funding is inadequate; or
- 2. for governmental agencies, a demonstration and documentation of a good faith effort to acquire funding through that agency's budgetary process, and a demonstration that funding was unavailable or inadequate.

II. ADDITIONAL REQUIREMENTS FOR PARKS AND RECREATION FACILITIES

In addition to the provisions in Section I (A) or I (B), respectively, a discharger with parks and recreation facilities shall comply with the following:

- A. The discharger shall include a section in an ASBS Compliance Plan (for NPDES dischargers) or an ASBS Pollution Prevention Plan (for nonpoint source dischargers) to address storm water runoff from parks and recreation facilities.
 - The plan shall identify all pollutant sources, including sediment sources, which may result in waste entering storm water runoff. Pollutant sources include, but are not limited to, roadside rest areas and vistas, picnic areas, campgrounds, trash receptacles, maintenance facilities, park personnel housing, portable toilets, leach fields, fuel tanks, roads, piers, and boat launch facilities.
 - The plan shall describe BMPs or Management Measures/Practices that will be implemented to control soil erosion (both temporary and permanent erosion controls) and reduce or eliminate pollutants in storm water runoff in order to achieve and maintain natural water quality conditions in the affected ASBS. The plan shall include BMPs or

Management Measures/Practices to ensure that trails and culverts are maintained to prevent erosion and minimize waste discharges to ASBS.

- 3. The plan shall include BMPs or Management Measures/Practices to prevent the discharge of pesticides or other chemicals, including agricultural chemicals, in storm water runoff to the affected ASBS.
- 4. The plan shall include BMPs or Management Measures/Practices that address public education and outreach. The goal of these BMPs or Management Measures/Practices is to ensure that the public is adequately informed that waste discharges to the affected ASBS are prohibited or limited by special conditions in these Special Protections. The BMPs or Management Measures/Practices shall include signage at camping, picnicking, beach and roadside parking areas, and visitor centers, or other appropriate measures, which notify the public of any applicable requirements of these Special Protections and identify the ASBS boundaries.
- 5. The plan shall include BMPs or Management Measures/Practices that address the prohibition against the discharge of trash to ASBS. The BMPs or Management Measures/Practices shall include measures to ensure that adequate trash receptacles are available for public use at visitor facilities, including parking areas, and that the receptacles are adequately maintained to prevent trash discharges into the ASBS. Appropriate measures include covering trash receptacles to prevent trash from being wind blown and periodically emptying the receptacles to prevent overflows.
- 6. The plan shall include BMPs or Management Measures/Practices to address runoff from parking areas and other developed features to ensure that the runoff does not alter natural water quality in the affected ASBS. BMPs or Management Measures/Practices shall include measures to reduce pollutant loading in runoff to the ASBS through installation of natural area buffers (LID), treatment, or other appropriate measures.
- B. Maintenance and repair of park and recreation facilities must not result in waste discharges to the ASBS. The practice of road oiling must be minimized or eliminated, and must not result in waste discharges to the ASBS.

III. ADDITIONAL REQUIREMENTS – WATERFRONT AND MARINE OPERATIONS

In addition to the provisions in Section I (A) or I (B), respectively, a discharger with waterfront and marine operations shall comply with the following:

- A. For discharges related to waterfront and marine operations, the discharger shall develop a Waterfront and Marine Operations Management Plan (Waterfront Plan). This plan shall contain appropriate Management Measures/Practices to address nonpoint source pollutant discharges to the affected ASBS.
 - 1. The Waterfront Plan shall contain appropriate Management Measures/Practices for any waste discharges associated with the operation and maintenance of vessels, moorings, piers, launch ramps, and cleaning stations in order to ensure that beneficial uses are protected and natural water quality is maintained in the affected ASBS.

- 2. For discharges from marinas and recreational boating activities, the Waterfront Plan shall include appropriate Management Measures, described in The Plan for California's Nonpoint Source Pollution Control Program, for marinas and recreational boating, or equivalent practices, to ensure that nonpoint source pollutant discharges do not alter natural water quality in the affected ASBS.
- 3. The Waterfront Plan shall include Management Practices to address public education and outreach to ensure that the public is adequately informed that waste discharges to the affected ASBS are prohibited or limited by special conditions in these Special Protections. The management practices shall include appropriate signage, or similar measures, to inform the public of the ASBS restrictions and to identify the ASBS boundaries.
- 4. The Waterfront Plan shall include Management Practices to address the prohibition against trash discharges to ASBS. The Management Practices shall include the provision of adequate trash receptacles for marine recreation areas, including parking areas, launch ramps, and docks. The plan shall also include appropriate Management Practices to ensure that the receptacles are adequately maintained and secured in order to prevent trash discharges into the ASBS. Appropriate Management Practices include covering the trash receptacles to prevent trash from being windblown, staking or securing the trash receptacles so they don't tip over, and periodically emptying the receptacles to prevent overflow.
- 5. The discharger shall submit its Waterfront Plan to the by the State Water Board Executive Director (statewide waivers or waste discharge requirements) or Executive Officer of the Regional Water Board (Regional Water Board waivers or waste discharge requirements) within six months of the effective date of these special conditions. The Waterfront Plan is subject to approval by the State Water Board Executive Director or the Regional Water Board Executive Officer, as appropriate. The plan must be fully implemented within 18 months of the effective date of the Exception.
- B. The discharge of chlorine, soaps, petroleum, other chemical contaminants, trash, fish offal, or human sewage to ASBS is prohibited. Sinks and fish cleaning stations are point source discharges of wastes and are prohibited from discharging into ASBS. Anthropogenic accumulations of discarded fouling organisms on the sea floor must be minimized.
- C. Limited-term activities, such as the repair, renovation, or maintenance of waterfront facilities, including, but not limited to, piers, docks, moorings, and breakwaters, are authorized only in accordance with Chapter III.E.2 of the Ocean Plan.
- D. If the discharger anticipates that the discharger will fail to fully implement the approved Waterfront Plan within the 18 month deadline, the discharger shall submit a technical report as soon as practicable to the State Water Board Executive Director or the Regional Water Board Executive Officer, as appropriate. The technical report shall contain reasons for failing to meet the deadline and propose a revised schedule to fully implement the plan.
- E. The State Water Board or the Regional Water Board may, for good cause, authorize additional time to comply with the Waterfront Plan. Good cause means a physical impossibility or lack of funding.

If a discharger claims physical impossibility, it shall notify the Board in writing within thirty (30) days of the date that the discharger first knew of the event or circumstance that caused or would cause it to fail to meet the deadline in Section III.A.5. The notice shall describe the reason for the noncompliance or anticipated noncompliance and specifically refer to this Section of this Exception. It shall describe the anticipated length of time the delay in compliance may persist, the cause or causes of the delay as well as measures to minimize the impact of the delay on water quality, the measures taken or to be taken by the discharger to prevent or minimize the delay, the schedule by which the measures will be implemented, and the anticipated date of compliance. The discharger shall adopt all reasonable measures to avoid and minimize such delays and their impact on water quality. The discharger may request an extension of time for compliance based on lack of funding. The request for an extension shall require:

- 1. a demonstration of significant hardship by showing that the discharger has made timely and complete applications for all available bond and grant funding, and either no bond or grant funding is available, or bond and/or grant funding is inadequate.
- 2. for governmental agencies, a demonstration and documentation of a good faith effort to acquire funding through that agency's budgetary process, and a demonstration that funding was unavailable or inadequate.

IV. MONITORING REQUIREMENTS

Monitoring is mandatory for all dischargers to assure compliance with the Ocean Plan. Monitoring requirements include both: (A) core discharge monitoring, and (B) ocean receiving water monitoring. The State and Regional Water Boards must approve sampling site locations and any adjustments to the monitoring programs. All ocean receiving water and reference area monitoring must be comparable with the Water Boards' Surface Water Ambient Monitoring Program (SWAMP).

Safety concerns: Sample locations and sampling periods must be determined considering safety issues. Sampling may be postponed upon notification to the State and Regional Water Boards if hazardous conditions prevail.

Analytical Chemistry Methods: All constituents must be analyzed using the lowest minimum detection limits comparable to the Ocean Plan water quality objectives. For metal analysis, all samples, including storm water effluent, reference samples, and ocean receiving water samples, must be analyzed by the approved analytical method with the lowest minimum detection limits (currently Inductively Coupled Plasma/Mass Spectrometry) described in the Ocean Plan.

A. CORE DISCHARGE MONITORING PROGRAM

1. General sampling requirements for timing and storm size:

Runoff must be collected during a storm event that is greater than 0.1 inch and generates runoff, and at least 72 hours from the previously measurable storm event. Runoff samples shall be collected during the same storm and at approximately the same time when post-

storm receiving water is sampled, and analyzed for the same constituents as receiving water and reference site samples (see section IV B) as described below.

- 2. Runoff flow measurements
 - a. For municipal/industrial storm water outfalls in existence as of December 31, 2007, 18 inches (457mm) or greater in diameter/width (including multiple outfall pipes in combination having a width of 18 inches, runoff flows must be measured or calculated, using a method acceptable to and approved by the State and Regional Water Boards.
 - b. This will be reported annually for each precipitation season to the State and Regional Water Boards.
- 3. Runoff samples storm events
 - a. For outfalls equal to or greater than 18 inches (0.46m) in diameter or width:
 - (1) samples of storm water runoff shall be collected during the same storm as receiving water samples and analyzed for oil and grease, total suspended solids, and, within the range of the southern sea otter indicator bacteria or some other measure of fecal contamination; and
 - (2) samples of storm water runoff shall be collected and analyzed for critical life stage chronic toxicity (one invertebrate or algal species) at least once during each storm season when receiving water is sampled in the ASBS.
 - (3) If an applicant has no outfall greater than 36 inches, then storm water runoff from the applicant's largest outfall shall be further collected during the same storm as receiving water samples and analyzed for Ocean Plan Table B metals for protection of marine life, Ocean Plan polynuclear aromatic hydrocarbons (PAHs), current use pesticides (pyrethroids and OP pesticides), and nutrients (ammonia, nitrate and phosphates).
 - b. For outfalls equal to or greater than 36 inches (0.91m) in diameter or width:
 - (1) samples of storm water runoff shall be collected during the same storm as receiving water samples and analyzed for oil and grease, total suspended solids, and, within the range of the southern sea otter indicator bacteria or some other measure of fecal contamination; and
 - (2) samples of storm water runoff shall be further collected during the same storm as receiving water samples and analyzed for Ocean Plan Table B metals for protection of marine life, Ocean Plan polynuclear aromatic hydrocarbons (PAHs), current use pesticides (pyrethroids and OP pesticides), and nutrients (ammonia, nitrate and phosphates); and
 - (3) samples of storm water runoff shall be collected and analyzed for critical life stage chronic toxicity (one invertebrate or algal species) at least once during each storm season when receiving water is sampled in the ASBS.

- b. For an applicant not participating in a regional monitoring program [see below in Section IV (B)] in addition to (a.) and (b.) above, a minimum of the two largest outfalls or 20 percent of the larger outfalls, whichever is greater, shall be sampled (flow weighted composite samples) at least three times annually during wet weather (storm event) and analyzed for all Ocean Plan Table A constituents, Table B constituents for marine aquatic life protection (except for toxicity, only chronic toxicity for three species shall be required), DDT, PCBs, Ocean Plan PAHs, OP pesticides, pyrethroids, nitrates, phosphates, and Ocean Plan indicator bacteria. For parties discharging to ASBS in more than one Regional Water Board region, at a minimum, one (the largest) such discharge shall be sampled annually in each Region.
- 4. The Executive Director of the State Water Board (statewide permits) or Executive Officer of the Regional Water Board (Regional Water Board permits) may reduce or suspend core monitoring once the storm runoff is fully characterized. This determination may be made at any point after the discharge is fully characterized, but is best made after the monitoring results from the first permit cycle are assessed.

B. Ocean Receiving Water and Reference Area Monitoring Program

In addition to performing the Core Discharge Monitoring Program in Section II.A above, all applicants having authorized discharges must perform ocean receiving water monitoring. In order to fulfill the requirements for monitoring the physical, chemical, and biological characteristics of the ocean receiving waters within their ASBS, dischargers may choose either (1) an individual monitoring program, or (2) participation in a regional integrated monitoring program.

- Individual Monitoring Program: The requirements listed below are for those dischargers who elect to perform an individual monitoring program to fulfill the requirements for monitoring the physical, chemical, and biological characteristics of the ocean receiving waters within the affected ASBS. In addition to Core Discharge Monitoring, the following additional monitoring requirements shall be met:
 - a. Three times annually, during wet weather (storm events), the receiving water at the point of discharge from the outfalls described in section (IV)(A)(3)(c) above shall be sampled and analyzed for Ocean Plan Table A constituents, Table B constituents for marine aquatic life, DDT, PCBs, Ocean Plan PAHs, OP pesticides, pyrethroids, nitrates, phosphates, salinity, chronic toxicity (three species), and Ocean Plan indicator bacteria.

The sample location for the ocean receiving water shall be in the surf zone at the point of discharges; this must be at the same location where storm water runoff is sampled. Receiving water shall be sampled prior to (pre-storm) and during (or immediately after) the same storm (post storm). Post storm sampling shall be during the same storm and at approximately the same time as when the runoff is sampled. Reference water quality shall also be sampled three times annually and analyzed for the same constituents prestorm and post-storm, during the same storm seasons when receiving water is sampled. Reference stations will be determined by the State Water Board's Division of Water Quality and the applicable Regional Water Board(s).

b. Sediment sampling shall occur at least three times during every five (5) year period. The subtidal sediment (sand or finer, if present) at the discharge shall be sampled and analyzed for Ocean Plan Table B constituents for marine aquatic life, DDT, PCBs, PAHs,

pyrethroids, and OP pesticides. For sediment toxicity testing, only an acute toxicity test using the amphipod *Eohaustorius estuarius* must be performed.

- c. A quantitative survey of intertidal benthic marine life shall be performed at the discharge and at a reference site. The survey shall be performed at least once every five (5) year period. The survey design is subject to approval by the Regional Water Board and the State Water Board's Division of Water Quality. The results of the survey shall be completed and submitted to the State Water Board and Regional Water Board at least six months prior to the end of the permit cycle.
- d. Once during each five (5) year period, a bioaccumulation study shall be conducted to determine the concentrations of metals and synthetic organic pollutants at representative discharge sites and at representative reference sites. The study design is subject to approval by the Regional Water Board and the State Water Board's Division of Water Quality. The bioaccumulation study may include California mussels (*Mytilus californianus*) and/or sand crabs (*Emerita analoga* or *Blepharipoda occidentalis*). Based on the study results, the Regional Water Board and the State Water Board's Division of Water Quality, may adjust the study design in subsequent permits, or add or modify additional test organisms (such as shore crabs or fish), or modify the study design appropriate for the area and best available sensitive measures of contaminant exposure.
- e. Marine Debris: Representative quantitative observations for trash by type and source shall be performed along the coast of the ASBS within the influence of the discharger's outfalls. The design, including locations and frequency, of the marine debris observations is subject to approval by the Regional Water Board and State Water Board's Division of Water Quality.
- f. The monitoring requirements of the Individual Monitoring Program in this section are minimum requirements. After a minimum of one (1) year of continuous water quality monitoring of the discharges and ocean receiving waters, the Executive Director of the State Water Board (statewide permits) or Executive Officer of the Regional Water Board (Regional Water Board permits) may require additional monitoring, or adjust, reduce or suspend receiving water and reference station monitoring. This determination may be made at any point after the discharge and receiving water is fully characterized, but is best made after the monitoring results from the first permit cycle are assessed.
- 2. Regional Integrated Monitoring Program: Dischargers may elect to participate in a regional integrated monitoring program, in lieu of an individual monitoring program, to fulfill the requirements for monitoring the physical, chemical, and biological characteristics of the ocean receiving waters within their ASBS. This regional approach shall characterize natural water quality, pre- and post-storm, in ocean reference areas near the mouths of identified open space watersheds and the effects of the discharges on natural water quality (physical, chemical, and toxicity) in the ASBS receiving waters, and should include benthic marine aquatic life and bioaccumulation components. The design of the ASBS stratum of a regional integrated monitoring program may deviate from the otherwise prescribed individual monitoring approach (in Section IV.B.1) if approved by the State Water Board's Division of Water Quality and the Regional Water Boards.
 - a. Ocean reference areas shall be located at the drainages of flowing watersheds with minimal development (in no instance more than 10% development), and shall not be located in CWA Section 303(d) listed waterbodies or have tributaries that are 303(d)

listed. Reference areas shall be free of wastewater discharges and anthropogenic nonstorm water runoff. A minimum of low threat storm runoff discharges (e.g. stream highway overpasses and campgrounds) may be allowed on a case-by-case basis. Reference areas shall be located in the same region as the ASBS receiving water monitoring occurs. The reference areas for each Region are subject to approval by the participants in the regional monitoring program and the State Water Board's Division of Water Quality and the applicable Regional Water Board(s). A minimum of three ocean reference water samples must be collected from each station, each from a separate storm during the same storm season that receiving water is sampled. A minimum of one reference location shall be sampled for each ASBS receiving water site sampled per responsible party. For parties discharging to ASBS in more than one Regional Water Board region, at a minimum, one reference station and one receiving water station shall be sampled in each region.

- b. ASBS ocean receiving water must be sampled in the surf zone at the location where the runoff makes contact with ocean water (i.e. at "point zero"). Ocean receiving water stations must be representative of worst-case discharge conditions (i.e. co-located at a large drain greater than 36 inches, or if drains greater than 36 inches are not present in the ASBS then the largest drain greater than18 inches.) Ocean receiving water stations are subject to approval by the participants in the regional monitoring program and the State Water Board's Division of Water Quality and the applicable Regional Water Board(s). A minimum of three ocean receiving water samples must be collected during each storm season from each station, each from a separate storm. A minimum of one receiving water location shall be sampled in each ASBS per responsible party in that ASBS. For parties discharging to ASBS in more than one Regional Water Board region, at a minimum, one reference station and one receiving water station shall be sampled in each region.
- c. Reference and receiving water sampling shall commence during the first full storm season following the adoption of these special conditions, and post-storm samples shall be collected during the same storm event when storm water runoff is sampled. Sampling shall occur in a minimum of two storm seasons. For those ASBS dischargers that have already participated in the Southern California Bight 2008 ASBS regional monitoring effort, sampling may be limited to only one storm season.
- d. Receiving water and reference samples shall be analyzed for the same constituents as storm water runoff samples. At a minimum, constituents to be sampled and analyzed in reference and discharge receiving waters must include oil and grease, total suspended solids, Ocean Plan Table B metals for protection of marine life, Ocean Plan PAHs, pyrethroids, OP pesticides, ammonia, nitrate, phosphates, and critical life stage chronic toxicity for three species. In addition, within the range of the southern sea otter, indicator bacteria or some other measure of fecal contamination shall be analyzed.
- 3. Waterfront and Marine Operations: In addition to the above requirements for ocean receiving water monitoring, additional monitoring must be performed for marinas and boat launch and pier facilities:
 - a. For all marina or mooring field operators, in mooring fields with 10 or more occupied moorings, the ocean receiving water must be sampled for Ocean Plan indicator bacteria, residual chlorine, copper, zinc, grease and oil, methylene blue active substances (MBAS), and ammonia nitrogen.

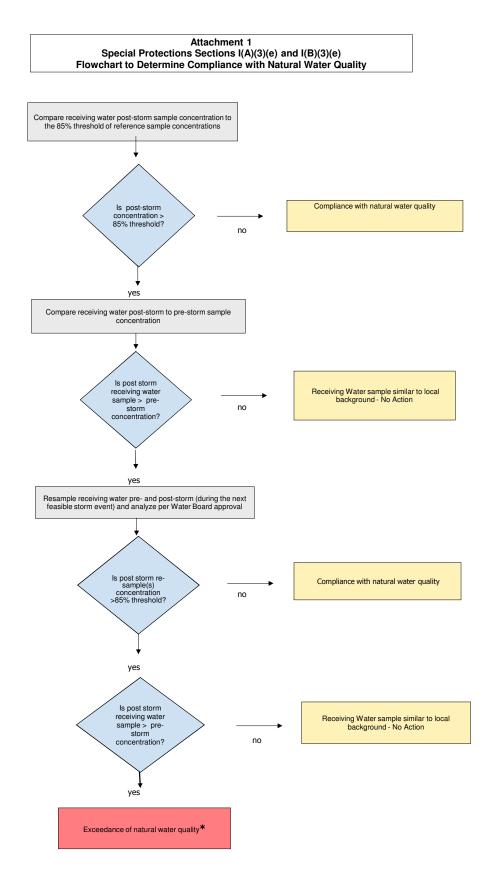
- For mooring field operators opting for an individual monitoring program (Section IV.B.1 above), this sampling must occur weekly (on the weekend) from May through October.
- (2) For mooring field operators opting to participate in a regional integrated monitoring program (Section IV.B.2 above), this sampling must occur monthly from May through October on a high use weekend in each month. The Water Boards may allow a reduction in the frequency of sampling, through the regional monitoring program, after the first year of monitoring.
- b. For all mooring field operators, the subtidal sediment (sand or finer, if present) within mooring fields and below piers shall be sampled and analyzed for Ocean Plan Table B metals (for marine aquatic life beneficial use), acute toxicity, PAHs, and tributyltin. For sediment toxicity testing, only an acute toxicity test using the amphipod *Eohaustorius estuarius* must be performed. This sampling shall occur at least three times during a five (5) year period. For mooring field operators opting to participate in a regional integrated monitoring program, the Water Boards may allow a reduction in the frequency of sampling after the first sampling effort's results are assessed.

Glossary

- At the point of discharge(s) Means in the surf zone immediately where runoff from an outfall meets the ocean water (a.k.a., at point zero).
- Areas of Special Biological Significance (ASBS) Those areas designated by the State Water Board as ocean areas requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable. All Areas of Special Biological Significance are also classified as a subset of State Water Quality Protection Areas.
- Design storm For purposes of these Special Protections, a design storm is defined as the volume of runoff produced from one inch of precipitation per day or, if this definition is inconsistent with the discharger's applicable storm water permit, then the design storm shall be the definition included in the discharger's applicable storm water permit.
- Development Relevant to reference monitoring sites, means urban, industrial, agricultural, grazing, mining, and timber harvesting land uses.
- Higher threat discharges Permitted storm drains discharging equal to or greater than 18 inches, industrial storm drains, agricultural runoff discharged through an MS4, discharges associated with waterfront and marina operations (e.g., piers, launch ramps, mooring fields, and associated vessel support activities, except for passive discharges defined below), and direct discharges associated with commercial or industrial activities to ASBS.
- Low Impact Development (LID) A sustainable practice that benefits water supply and contributes to water quality protection. Unlike traditional storm water management, which entails collecting and conveying storm water runoff through storm drains, pipes, or other conveyances to a centralized storm water facility, LID focuses on using site design and storm water management to maintain the site's pre-development runoff rates and volumes. The goal of LID is to mimic a site's predevelopment hydrology by using design techniques that infiltrate, filter, store, evaporate, and detain runoff close to the source of rainfall.
- Marine Operations Marinas or mooring fields that contain slips or mooring locations for 10 or more vessels.
- Management Measure (MM) Economically achievable measures for the control of the addition of pollutants from various classes of nonpoint sources of pollution, which reflect the greatest degree of pollutant reduction achievable through the application of the best available nonpoint pollution control practices, technologies, processes, siting criteria, operating methods, or other alternatives. For example, in the "marinas and recreational boating" landuse category specified in the Plan for California's Nonpoint Source Pollution Control Program (NPS Program Plan) (SWRCB, 1999), "boat cleaning and maintenance" is considered a MM or the source of a specific class or type of NPS pollution.
- Management Practice (MP) The practices (e.g., structural, non-structural, operational, or other alternatives) that can be used either individually or in combination to address a specific MM class or classes of NPS pollution. For example, for the "boat cleaning and maintenance" MM, specific MPs can include, but are not limited to, methods for the selection of environmentally sensitive hull paints or methods for cleaning/removal of hull copper antifouling paints.

- Municipal Separate Storm Sewer System (MS4) A municipally-owned storm sewer system regulated under the Phase I or Phase II storm water program implemented in compliance with Clean Water Act section 402(p). Note that an MS4 program's boundaries are not necessarily congruent with the permittee's political boundaries.
- Natural Ocean Water Quality The water quality (based on selected physical, chemical and biological characteristics) that is required to sustain marine ecosystems, and which is without apparent human influence, *i.e.*, an absence of significant amounts of: (a) man-made constituents (e.g., DDT); (b) other chemical (e.g., trace metals), physical (temperature/thermal pollution, sediment burial), and biological (e.g., bacteria) constituents at concentrations that have been elevated due to man's activities above those resulting from the naturally occurring processes that affect the area in question; and (c) non-indigenous biota (e.g., invasive algal bloom species) that have been introduced either deliberately or accidentally by man. Discharges "shall not alter natural ocean water quality" as determined by a comparison to the range of constituent concentrations in reference areas agreed upon via the regional monitoring program(s). If monitoring information indicates that natural ocean water quality is not maintained, but there is sufficient evidence that a discharge is not contributing to the alteration of natural water quality, then the Regional Water Board may make that determination. In this case, sufficient information must include runoff sample data that has equal or lower concentrations for the range of constituents at the applicable reference area(s).
- Nonpoint source Nonpoint pollution sources generally are sources that do not meet the definition of a point source. Nonpoint source pollution typically results from land runoff, precipitation, atmospheric deposition, agricultural drainage, marine/boating operations or hydrologic modification. Nonpoint sources, for purposes of these Special Protections, include discharges that are not required to be regulated under an NPDES permit.
- Non-storm water discharge Any runoff that is not the result of a precipitation event. This is often referred to as "dry weather flow."
- Non-structural control A Best Management Practice that involves operational, maintenance, regulatory (e.g., ordinances) or educational activities designed to reduce or eliminate pollutants in runoff, and that are not structural controls (i.e. there are no physical structures involved).
- Physical impossibility Means any act of God, war, fire, earthquake, windstorm, flood or natural catastrophe; unexpected and unintended accidents not caused by discharger or its employees' negligence; civil disturbance, vandalism, sabotage or terrorism; restrain by court order or public authority or agency; or action or non-action by, or inability to obtain the necessary authorizations or approvals from any governmental agency other than the permittee.
- Representative sites and monitoring procedures Are to be proposed by the discharger, with appropriate rationale, and subject to approval by Water Board staff.
- Sheet-flow Runoff that flows across land surfaces at a shallow depth relative to the crosssectional width of the flow. These types of flow may or may not enter a storm drain system before discharge to receiving waters.

- Storm Season Also referred to as rainy season, means the months of the year from the onset of rainfall during autumn until the cessation of rainfall in the spring.
- Structural control A Best Management Practice that involves the installation of engineering solutions to the physical treatment or infiltration of runoff.
- Surf Zone The surf zone is defined as the submerged area between the breaking waves and the shoreline at any one time.
- Surface Water Ambient Monitoring Program (SWAMP) comparable Means that the monitoring program must 1) meet or exceed 2008 SWAMP Quality Assurance Program Management Plan (QAPP) Measurement Quality Objectives, or 2) have a Quality Assurance Project Plan that has been approved by SWAMP; in addition data must be formatted to match the database requirements of the SWAMP Information Management System. Adherence to the measurement quality objectives in the Southern California Bight 2008 ASBS Regional Monitoring Program QAPP and data base management comprises being SWAMP comparable.
- Waterfront Operations Piers, launch ramps, and cleaning stations in the water or on the adjacent shoreline.



* When an exceedance of natural water quality occurs, the discharger must comply with section I.A.2.h (for permitted storm water) or section I.B.2.c (for nonpoint sources). Note, when sampling data is available, end-of-pipe effluent concentrations will be considered by the Water Boards in making this determination.

APPENDIX B

2014 Malibu ASBS Special Protections Monitoring Final Report

Los Angeles County Flood Control District and Los Angeles County Unincorporated Areas: Areas of Special Biological Significance Special Protections Monitoring

2012-2013 and 2013-2014 Seasons

Final Monitoring Report

Los Angeles County Department of Public Works Watershed Management Division 900 S. Fremont Ave. Alhambra, California 91803

November 2014



Los Angeles County Flood Control District and Los Angeles County Unincorporated Areas: Areas of Special Biological Significance Special Protections Monitoring

2012-2013 and 2013-2014 Seasons

FINAL MONITORING REPORT

Prepared For:

Los Angeles County Department of Public Works Watershed Management Division 900 S. Fremont Ave. Alhambra, California 91803

Prepared By:

Weston Solutions, Inc. 5817 Dryden Place, Suite 101 Carlsbad, California 92008

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LIST OF ACRONYMS

ASBS	area of special biological significance
AV	areal velocity
BMPs	best management practices
COP	California Ocean Plan
County	Los Angeles County Unincorporated Areas
DO	dissolved oxygen
Dup	duplicate
EC ₂₅	effect concentration 25: concentration which causes an effect in 25% of test organisms
EC ₅₀	effect concentration 50: concentration which causes an effect in 50% of test organisms
Imax	Instantaneous Maximum concentration provided in California Ocean Plan
LACFCD	Los Angeles County Flood Control District
LC_{50}	lethal concentration which kills 50% of bioassay test organisms
LOEC	lowest observable effect concentration
NOEC	no observable effect concentration
OP	organophosphorus
PAH	polynuclear aromatic hydrocarbons
Public Works	Los Angeles County Department of Public Works
SCCWRP	Southern California Coastal Water Research Project
State Board	State Water Resources Control Board
Storm 1	storm event of February 19, 2013
Storm 2	storm event of March 8, 2013
Storm 3	storm event of February 28, 2014
TSS	total suspended solids
TUc	toxic units chronic
USEPA	United States Environmental Protection Agency
WMMS	Watershed Management Modeling System
WQOs	water quality objectives

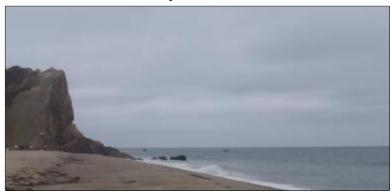
>	greater than
<	less than
%	percent
А	cross-sectional area
°C	degrees Celsius
cfs	cubic feet per second
ft	feet
g	gram
L	liter
mg	milligram
mS	microSiemens
n	Manning roughness coefficient
ng	nanogram
NTU	nephelometric units
Р	wetted perimeter
ppt	Parts per thousand
Q	flow
R	hydraulic radius
S	second
S	hydraulic slope
μg	microgram
WMMS	Watershed Management Modeling System

LIST OF SYMBOLS AND MEASUREMENTS

1.0 INTRODUCTION

The Area of Special Biological Significance (ASBS) 24, also referred to as the Laguna Point to Latigo Point ASBS, was established in 1974 by the State Board to preserve sensitive marine habitat (State Board, 1976). The ASBS stretches 24 miles, contains 11,842 marine acres, and is the largest ASBS along the mainland of Southern California. Approximately 500 direct discharges and 31 natural streams drain to ASBS 24. The boundary of ASBS 24 extends out from the mean high tide line at Laguna Point in Ventura County to either 1000 ft from shore or

to the 100-ft isobath (whichever is greater) in a southwesterly direction to Latigo Point in Malibu, Los Angeles County. Water depth within the conservation area ranges from 0 ft to approximately 100 ft and includes sloping sandy habitat, a rocky intertidal reef complex, and subtidal reef and kelp forest habitat. A wide range of sandy substrate, rocky reef, and coastal pelagic



species can be found within the Laguna Point to Latigo Point ASBS.

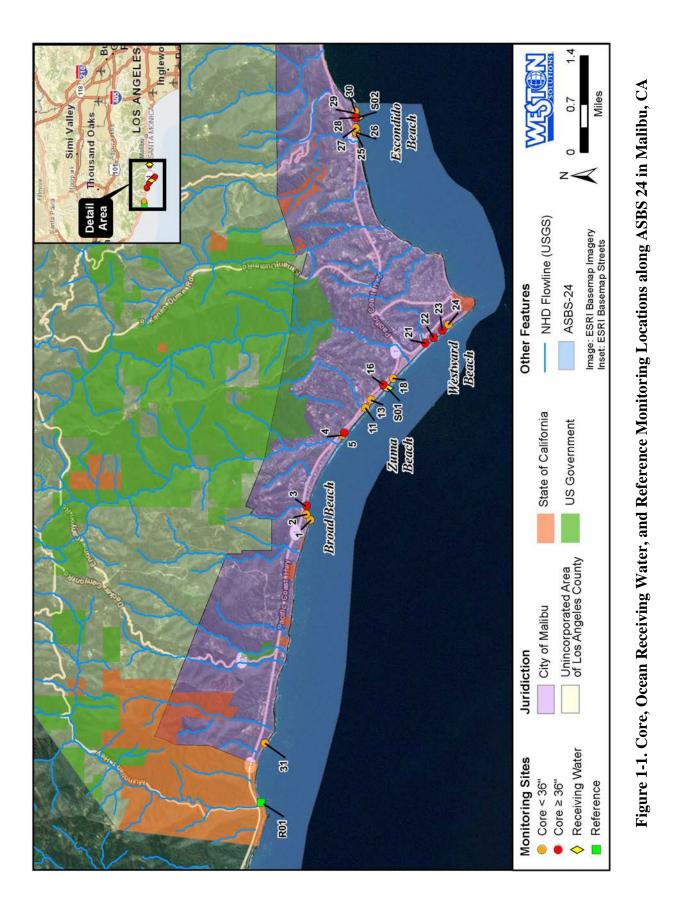
Since 1983, the California Ocean Plan (COP) has prohibited the discharge of waste into ASBS along the California Coast, unless the State Water Resources Control Board (State Board) grants an exception to dischargers. The southern and central portions of ASBS 24 that are located in Los Angeles County are subject to direct discharges from roads, urban landscape runoff, homes, and small businesses. In general, the near coast storm water runoff along ASBS 24 within Los Angeles County is conveyed through storm drain systems before it is discharged at multiple locations along the beach. On December 30, 2004, the Los Angeles County Department of Public Works (Public Works) requested an exception for storm water discharges to ASBS 24 from the State Board on behalf of the County and the Los Angeles County Flood Control District (LACFCD). The State Board received applications from numerous other applicants for an exception to the Ocean Plan. In 2012 the State Board adopted a General Exception to the COP. As part of the General Exception, the State Board produced guidance for monitoring discharges to ASBS entitled Attachment B - Special Protections for Areas of Special Biological Significance, Governing Point Source Discharges of Storm Water and Nonpoint Source Waste Discharges (State Board, 2012) (Appendix A). The Special Protections document is intended to define the terms and conditions that limit storm water discharges to the ASBS for applicants along the California Coast (34 ASBSs have been designated throughout the state). Storm drain discharge pipes along the Malibu coastline fall under various jurisdictions including LACFCD, the Los Angeles County Unincorporated Areas (County), City of Malibu, and the California Department of Transportation (Caltrans).

There are 31 storm drain outfalls 18 inches in diameter or larger located in the County. The storm drain outfalls discharge storm water runoff that reaches ASBS 24; therefore, in accordance with the Special Protections document, described in more detail in Section 2, the outfalls under the jurisdiction of the County and LACFCD were identified for monitoring during the 2012-2013 and 2013-2014 storm seasons by Public Works. Public Works proposes to monitor 20 storm drains along ASBS 24, nine of which are operated by the LACFCD and 11 of which are operated

by the County. Additionally, Caltrans will monitor 11 storm drains located along Zuma Beach as a participant in the regional monitoring program. Figure 1-1 shows the ASBS 24 along the County shoreline and the identified outfalls.

As part of the exception process, Public Works participated in the Bight '08 and Bight '13 ASBS Planning Committee with the State Board, the Southern California Coastal Water Research Project (SCCWRP), and other General Exception applicants. Together, the Committee developed a Regional ASBS Work Plan as part of the Southern California Bight 2008 and Bight 2013 Regional Monitoring Surveys. The Regional ASBS Work Plan is based on the Special Protections document and is intended to provide compliance guidance for the majority of ASBS dischargers in southern California that wish to be part of a regional monitoring effort.

The ASBS Special Protections monitoring described in this document was performed during the 2012 to 2013 and 2013 to 2014 wet weather seasons in ASBS 24 for Public Works and LADFCD. This Special Protections Monitoring Study complies with all monitoring requirements of the Regional ASBS Program through the identification of water quality impacts to ASBS 24 during storm events.



Malibu ASBS Special Protections Monitoring -

Final Report

1.1 Study Objectives

The ASBS 24 Special Protections Monitoring Study was designed to comply with the storm water monitoring requirements set forth in Attachment B of the State Water Resources Control Board Resolution No. 2012-0012, Approving Exceptions to the California Ocean Plan for Selected Discharges into Areas of Special Biological Significance, Including Special Protections for Beneficial Uses, and Certifying a Program Environmental Impact Report (hereafter referred to as "Special Protections"). The special protections document provides descriptions of the following two types of monitoring programs:

- 1. **Core Discharge Monitoring** collecting and analyzing wet weather runoff from the discharge during a storm event.
- 2. **Ocean Receiving Water Monitoring** collecting and analyzing samples from the ocean before and after a storm event at two locations (i.e., directly in front of the discharge and at a reference site removed from the discharge).

Monitoring requirements set forth in Special Protections are intended to help answer the following questions.

- 1. What are the conditions of storm water effluent in the storm drains prior to being discharged into the ocean receiving waters? And what is the range of natural conditions at reference locations?
- 2. What are the conditions of the ocean receiving water directly in front of large storm drain outfalls both prior to, and immediately following, storm events? And how do these conditions compare to natural conditions at reference locations?
- **3.** What are the estimated pollutant loads that are being transported into ASBS 24 from storm drains that fall under the jurisdiction of the County and the LACFCD?

Specifically, Study Questions 1 and 2 were answered by monitoring water quality in ocean receiving water (ASBS 24) and in storm drain effluent associated with storm drains that are equal to, or larger than 18 inches in diameter that discharge to ASBS 24. Flow monitoring equipment installed into two of the largest storm drains that flow into ASBS 24 provided information that was used to answer Study Question 3 by accurately estimating the volume of storm water runoff flowing to the beach and into the receiving water during storm events. Pollutant loads entering ASBS 24 were calculated based upon flow measurements and results of chemical analyses from three storm events during the 2012-2013 and 2013-2014 Wet Weather Seasons.

By answering these three questions, the magnitude of any water quality issues associated with storm water runoff within both the ocean receiving water and within the 20 drainage areas that flow into the monitored storm drains will be better understood. Results from this study will enable the County and LACFD to conform to regional compliance monitoring requirements and will help prioritize potential Best Management Practices (BMPs) for the purpose of reducing pollutant loading to the ASBS.

This report presents and summarizes data collected from sampling events that occurred during the 2012–2013 and 2013-2014 storm seasons. It should be noted that monitoring was initially scheduled to occur only during the 2012-2013 storm season. However, because only a limited number of storms met monitoring criteria during the 2012-2013 storm season, monitoring was extended into the 2013-2014 storm season. Details of the monitoring design are given below.

2.0 STUDY DESIGN

The ASBS Compliance Monitoring Program was designed to be consistent with a broader Regional ASBS Work Plan created by a planning committee as part of the Southern California Bight 2013 Regional Monitoring Survey and the State Board Special Protections document. The Monitoring Plan for Public Works is designed to conform to the elements described in these documents for ASBS 24, which stretches from Latigo Point to Laguna Point along the coastline of Malibu and into Ventura County. The scope of monitoring for Public Works, however, is confined to the area between Latigo Point and the Los Angeles County line, just north of Nicholas Canyon. The Regional ASBS Work Plan is based on the State Board Special Protections for Selected Storm Water and Nonpoint Source Discharges into Areas of Special Biological Significance (State Board, 2008). Monitoring for this study consisted of both Core Discharge Monitoring and Ocean Receiving Water Monitoring.

2.1 Core Discharge Monitoring

Core Discharge Monitoring consisted of sampling and analysis (water chemistry and toxicity) of wet weather discharges from 20 storm drains (greater than 18 inches in diameter) that discharge to ASBS 24. Table 2-1 details the characteristics of the 20 storm drains that were monitored as part of the Core Discharge Monitoring and the analytes that were measured for each outfall. For storm drain outfalls that are greater than 18 inches and less than 36 inches in diameter, oil and grease and total suspended solids (TSS) were measured for each storm event, whereas for storm drains that are either 36 inches or larger in diameter or are linked with an ocean receiving water site, oil and grease, TSS, total metals, polynuclear aromatic hydrocarbons (PAHs), pyrethroids, organophosphate (OP) pesticides, ammonia, nitrate as N, and total phosphorus were analyzed for each storm event. Additionally, during one storm event at each outfall, chronic toxicity was measured using bivalve embryos.

					Ownership Flood			
Monitoring	Beach Location	Site Name	LACDPW Storm Drain Tag	Pipe diameter (in)	Flood Control District	LA County	Analyses and number of storms required	Toxicity Testing and Number of Storms Required
		ASBS-001	PD 363 Line A	24	X	county	TSS, oil and grease- 3 storms	•
	Broad	ASBS-002	PD 363 Line B	18	X		TSS, oil and grease- 3 storms	
	Beach	ASBS-003	PD 2053	51	x		Full List*- 3 storms	1 species**, 1 storm
		ASBS-004	PD 291	24	~	x	TSS, oil and grease- 3 storms	1 1
		ASBS-005	Zuma #U02	36		х	Full List*- 3 storms	1 species**, 1 storm
	Zuma	ASBS-011	Zuma #U06	24		х	TSS, oil and grease- 3 storms	•
	Beach	ASBS-013	Zuma #U08	18		х	TSS, oil and grease- 3 storms	1 species**, 1 storm
	Deach	ASBS-016	Zuma Open Channel	. 60		x	Full List*- 3 storms	1 species**, 1 storm
		ASBS-018	Zuma #U11	24		х	TSS, oil and grease- 3 storms	1 species**, 1 storm
		ASBS-021	PD 1184 Line B	48		х	Full List*- 3 storms	1 species**, 1 storm
Core Monitoring	Westward	ASBS-022	Westward #001	36		x	Full List*- 3 storms	1 species**, 1 storm
Montoling	Beach	ASBS-023	Westward #U15	42		х	Full List*- 3 storms	1 species**, 1 storm
		ASBS-024	Westward #U16	24		х	TSS, oil and grease- 3 storms	1 species**, 1 storm
		ASBS-025	MTD 622 Line 1	18	х		TSS, oil and grease- 3 storms	1 species**, 1 storm
		ASBS-026	MTD 622 Line 2	24	х		TSS, oil and grease- 3 storms	1 species**, 1 storm
	Escondido	ASBS-027	MTD 622 Line 3	24	х		TSS, oil and grease- 3 storms	
	Beach	ASBS-028	MTD 622 Line 4	36	х		-	1 species**, 1 storm
		ASBS-029	MTD 622 Line 5	18	х		TSS, oil and grease- 3 storms	1 species**, 1 storm
		ASBS-030	MTD 622 Line 6	18	х		TSS, oil and grease- 3 storms	1 species**, 1 storm
	Nicholas Beach	ASBS-031	Nicholas #U01	22		x	TSS, oil and grease- 3 storms	

Table 2-1. Core Monitoring Program Stations, Outfall Dimensions, Ownership, and Required Analyses

Yellow highlighting indicates Core Monitoring sites that underwent full chemical analyses based on pipe size (36 inches or greater in diameter) and/or linkage to Ocean Receiving Water site.

*Full constituent list comprises TSS, total metals, PAHs, pyrethroids, OP pesticides, ammonia, nitrate, and total phosphorus.

**Toxicity species includes bivalve embryos.

2.1.1 Sampling Locations

Monitoring locations of the storm drain outfalls are shown on Figure 2-2 through Figure 2-5. A brief description of the storm drain outfall pipes is presented below for each beach from north to south along the Malibu coastline. A more thorough description of each storm drain outfall, including latitude and longitude coordinates, inlet locations, and photographs, is provided in Appendix B. The monitoring locations are as follows:

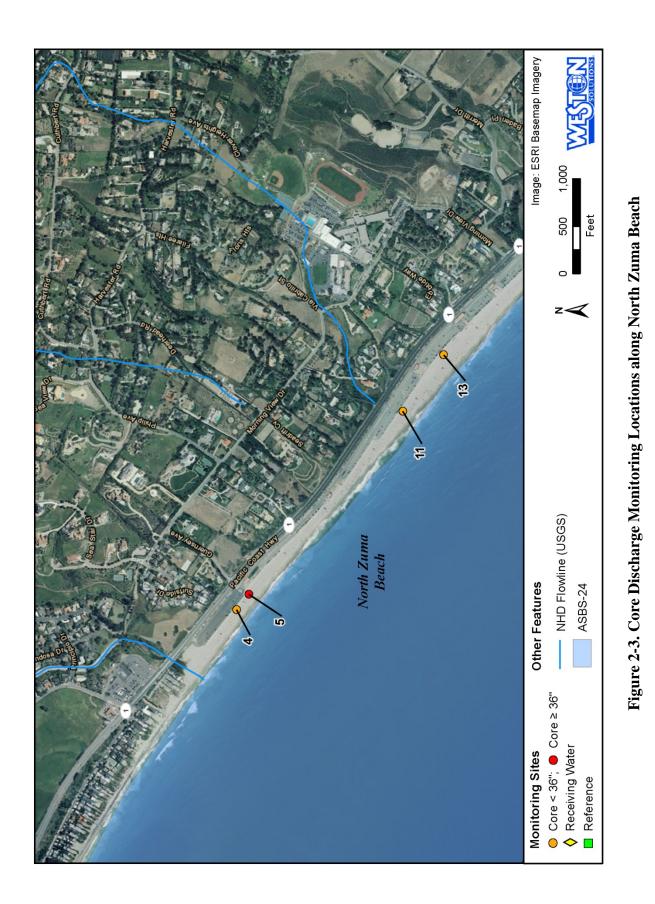
Broad Beach and Nicholas Beach — Three outfalls occur on Broad Beach (ASBS-001 through ASBS-003) and one outfall occurs on Nicholas Beach (ASBS-031) (Figure 2-2). Of these four outfalls, three of the pipes are between 18 inches and 36 inches in diameter, and one (ASBS-003) is 36 inches or larger in diameter. Each of the pipes along Broad Beach is inaccessible during high tide and, as a result, storm water monitoring from the beach could only occur during a tidal height of approximately 2 ft or less. ASBS-001 was difficult to access even during low tide, due to its location behind a rocky intertidal outcropping. Stormwater sampling of ASBS-001 was performed from a storm drain manhole located off Point Lechuza Drive, approximately 140 ft from the outfall.





North Zuma Beach — Four outfalls under the jurisdiction of the County or LAFCD are located along north Zuma Beach (ASBS-004, ASBS-005, ASBS-011 and ASBS-013) (Figure 2-3). Three of the outfall pipes are between 18 inches and 36 inches in diameter, and one of the outfall pipes (ASBS-005) is 36 inches or larger in diameter. Each of the outfalls is accessible during high tide. For safety purposes, during the summer period, the pipes are buried. These buried pipes are then excavated prior to the storm season to ensure stormwater flows are not impeded. The elevation of the surrounding beach sand, however, was approximately 1 to 3 meters above the elevation of the excavated outfalls at most North Zuma Beach sites; thus, during storm events, storm water effluent tended to pond at the outfall sites.





South Zuma Beach and Westward Beach — Six outfalls are situated on south Zuma Beach (ASBS-016 and ASBS-018) and Westward Beach (ASBS-021 through ASBS-024) (Figure 2-4). Two of the outfall pipes are between 18 inches and 36 inches in diameter and four of the outfall pipes (ASBS-016, ASBS-021, ASBS-022, and ASBS-023) are 36 inches or larger in diameter. Each of the outfalls is accessible during high tide. Similar to North Zuma Beach, during the summer period the two pipes along South Zuma Beach were buried for safety purposes and then excavated prior to the storm season to ensure stormwater flows were not impeded. The elevation of the surrounding beach sand, however, was approximately 1 to 3 meters above the elevation of the excavated outfalls at ASBS-016 and ASBS-018; thus, during storm events, storm water effluent tended to pond at these outfall sites.

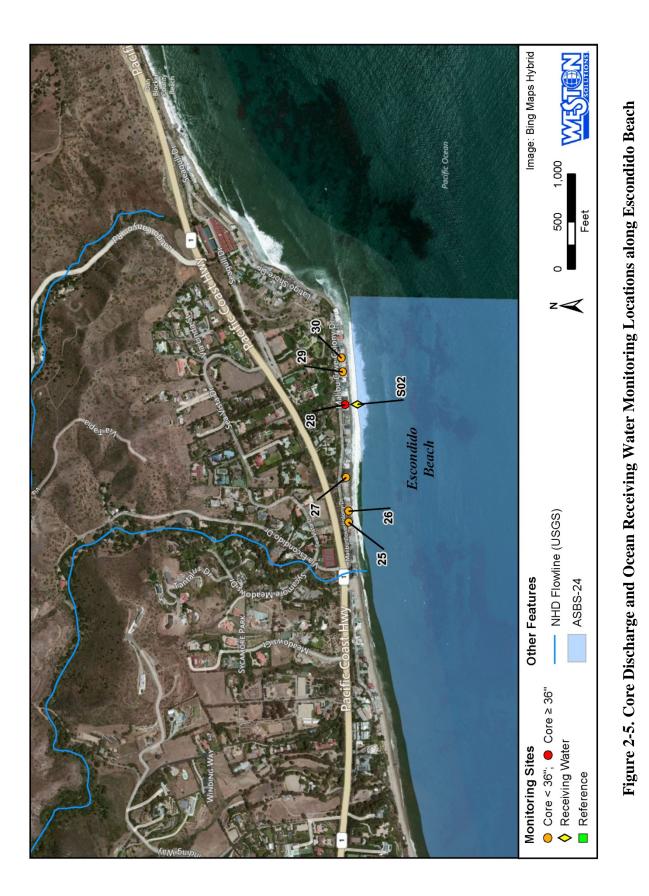


Figure 2-4. Core Discharge and Ocean Receiving Water Monitoring Locations along South Zuma Beach and

Westward Beach

Escondido Beach — Six outfalls occur on Escondido Beach (ASBS-025 through ASBS-030) (Figure 2-5). Five of the outfall pipes are between 18 inches and 36 inches in diameter, whereas one of the outfall pipes (ASBS-028) is 36 inches or larger in diameter. These pipe outfalls are located beneath elevated houses along Escondido Beach and as a result of their proximity to the ocean, are not accessible during tides greater than 3 ft (Figure 2-5). Flow monitoring equipment was installed at a curb inlet for ASBS-028 located along Malibu Cove Colony Drive.





2.2 Ocean Receiving Water Monitoring

The Ocean Receiving Water Monitoring Program was designed to compare conditions in the ASBS near major discharges to "natural" or reference conditions, both prior to and immediately following a storm event. Reference sites located at the mouths of streams in un-urbanized watersheds along the Southern California coast were used to define "natural water quality," based on criteria identified in the Regional ASBS Work Plan. The conditions monitored in this program included water chemistry, water toxicity, and biological integrity.

To achieve its goals, the Ocean Receiving Water Monitoring Program is focused on the following five basic elements:

- 1. Pre-Storm Monitoring of water chemistry,
- 2. Post-Storm Monitoring of water chemistry and toxicity,
- 3. Biological Monitoring of intertidal habitat,
- 4. Bioaccumulation Monitoring, and
- 5. Plume Tracking

The monitoring elements listed above were assessed using samples collected from ASBS ocean receiving water locations that were associated with storm water runoff. Methods and results for elements 1 and 2 are described within this report, whereas methods and results for elements 3, 4, and 5 were performed by SCCWRP on a region-wide basis as part of the Regional Monitoring Program and fall outside of the scope of this report.

Table 2-2 details the characteristics of the two ocean receiving water stations and their affiliated storm drains that were monitored as part of the Ocean Receiving Water Monitoring Program. Ocean receiving water was analyzed for oil and grease, TSS, total metals, PAHs, pyrethroids, OP pesticides, ammonia, nitrate as N, and total phosphorus prior to and during each storm event. Additionally, during each storm event, chronic toxicity was measured using bivalve embryos, echinoderms, and kelp.

Table 2-2. Ocean Receiving Water Monitoring Program Station Locations, Outfall Dimensions, Ownership, and Required Analyses

				Pipe	Owne	ership	Chemical Analyses and	Toxicity Testing and
				diameter			Number of Storms	Number of Storms
Monitoring	Site ID	Location	Beach	of Outfall	District	County	Required	Required
							Full Analitical List*- 3	
Ocean Receiving	ASBS-S01	Surfzone, offshore from Pipe ASBS-016	South Zuma	60	х		storms, Pre-storm and	3 species**, 3 storms-
Water							post-storm	post-storm testing only
Monitoring							Full Analitical List*- 3	
Monitoring	ASBS-S02	Surfzone, offshore from Pipe ASBS-028	Escondido	36		х	storms, Pre-storm and	3 species**, 3 storms-
							post-storm	post-storm testing only
		Surfzone, offshore from Mouth of Arroyo					Full Analitical List*- 3	
Reference	ASBS-R01	Seguit Creek	Broad	NA	NA	NA	storms, Pre-storm and	3 species**, 3 storms-
Monitoring		Sequit Creek					post-storm	post-storm testing only

*Full list= TSS, oil and grease, metals, PAHs, pyrethroids, OP pesticides, ammonia, nitrate and total phosphorus

**Toxicity species include: bivalves, echinoderms, and kelp

2.2.1 Sampling Locations

Receiving water sampling locations SO-1 and SO-2 were monitored to assess stormwater impacts to ocean receiving waters of ASBS 24. SO-1 is located directly in front of the outfall for ASBS-016, a 60-inch box culvert that conveys storm water into a natural channel and onto Zuma Beach (Figure 2-6). SO-2 is located in the ocean receiving water directly in front of ASBS-028, a 36-inch pipe that terminates at the southern end of Escondido Beach, below a residential house (Figure 2-7). Ocean receiving water sampling locations were located in the mixing zone of the Pacific Ocean, in approximately 1m of water depth. Both ASBS-016 and ASBS-028 outfalls were targeted to be monitored in the Regional ASBS Work Plan as a result of their size and their direct discharge to ASBS 24.



Figure 2-6. ASBS-016 Outfall (A) and ASBS-SO1 Receiving Water (B)



Arroyo Sequit Creek was selected as a reference site in the Regional ASBS Work Plan. The Arroyo Sequit watershed is approximately 95% undeveloped and is representative of a drainage

area that has received minimal anthropogenic impacts. The following is a brief description of the sampling locations for the Malibu ASBS 24 Special Protections Monitoring Study:

- ASBS-016 Outfall and Receiving Water SO-1 ASBS-016 is located west of the Pacific Coast Highway (approximately 100 m south of Morning View Drive) along the Zuma Beach Access Road. The watershed draining to ASBS-016 is 115 acres and comprises the following mix of land uses: 33% public facilities, 25% rural residential, 19% vacant, 13% residential, 8% transportation, and 2% open space and recreation. Receiving water samples were collected at SO-1 in the ASBS mixing zone in approximately 1 m of water, directly in front of the Zuma Beach outfall of ASBS-016. During Storms 1 and 2, because no effluent reached the receiving waters, no ocean receiving water samples were collected. Samples were collected, however, during Storm 3.
- ASBS-028 Outfall and Receiving Water SO-2— ASBS-028 is located west of Malibu Cove Colony Drive on Escondido Beach. The watershed draining to ASBS-028 is 36 acres and comprises the following mix of land uses: 44% rural residential, 33% vacant, 9% residential, 8% agriculture, and 6% transportation. Receiving water samples were collected at SO-2 in the ASBS mixing zone in approximately 1 m of water directly in front of the Escondido Beach outfall of ASBS-028.
- Arroyo Sequit Creek and Receiving Water (reference site) Arroyo Sequit Creek terminates at Leo Carrillo State Beach, located at the intersection of Pacific Coast

Highway and Mulholland Highway, approximately 1 km south of the Ventura County line. Arroyo Sequit Creek's watershed is approximately 95% undeveloped. A sand berm typically prevents flow from Arroyo Sequit Creek from reaching the receiving waters of the ASBS during dry weather. Receiving water samples were to be collected by SCCWRP personnel in the ASBS mixing zone in approximately 1 m of water directly in front of the mouth of Arroyo Sequit Creek; however, no ocean



receiving water samples were collected from this reference site during the 2012-2013 or 2013-2014 storm seasons because the sand berm at the mouth of the creek effectively blocked all flow from reaching the receiving waters. A composite of results from reference sites located near ASBS along the California coastline was used to develop natural water quality ranges.

2.3 Sampling Methods

2.3.1 Water Collection

Core discharge samples were collected at the base of each monitored beach outfall unless it was unsafe to do so. Sampling at ASBS-001 was performed from a manhole just upstream of the beach outfall due to safety reasons. Samples were collected in certified clean laboratory bottles appropriate for the analyses to be conducted. Following sampling, samples were placed on ice in a cooler and delivered within the required holding times to Physis Environmental Laboratories, Inc.

Sampling of ocean receiving water was performed prior to each storm's arrival and again during, or immediately following the storm while storm water runoff was flowing to the receiving water. Ocean receiving water samples were collected in the ocean directly in front of the storm drain outfall by submerging a clean 4-L glass container just below the surface of the water in the mixing zone. Water from the glass sampling container was then evenly distributed to each of seven certified clean, pre-labeled laboratory bottles as well as to plastic cubitainers used for toxicity analyses to fill each of the bottles and cubitainers to approximately 25% of capacity. The glass sampling container was then refilled in the same manner as previously described and the collected water re-distributed to each of the laboratory bottles and cubitainers. This process continued until all containers were filled. The water depth was approximately 1 m at the sample collection point.

Samples were collected in bottles appropriate for the analysis to be conducted. After retrieval, the samples were placed on ice in a cooler and delivered within the required holding times for analysis to Physis Environmental Laboratories, Inc. for chemical testing and to ABC Laboratory for toxicity testing.

Chemical and biological analysis methods, detection limits, reporting limits, and applicable Ocean Plan water quality objectives (WQOs) for constituents that were measured in the 2012–2013 and 2013-2014 Ocean Receiving Water Sampling are listed in Table 2-3.

2.3.2 Field Water Quality

During each sampling event, several water quality parameters were measured in the ocean receiving water with a handheld YSI multi-probe water quality meter (Model 650MDS). The meter was submerged in the surf zone at the location of the receiving water monitoring. The following parameters were measured and recorded on field data sheets: water temperature, salinity, pH, conductivity, turbidity, and dissolved oxygen (DO). In addition, the following observations were recorded on the field data sheets: weather and ocean conditions, beach characteristics, runoff characteristics, and flow estimation (using the area-velocity method). Photographs were taken and recorded where appropriate.

2.3.3 Sample Analyses - Water

After collection, core discharge and ocean receiving water samples were submitted to Physis Environmental Laboratories, Inc. for the analyses shown on Table 2-3.

Table 2-3. List of Constituents Analyzed for the 2012–2013 and 2013-2014 Core Discharge
and Ocean Receiving Water Sampling Programs

Constituent	Method	MDL ¹	RL ²	Units	COP ³
Total suspended solids (TSS)*	SM 2540-D		5	mg/L	
Nitrate as N	SM4500-NO3 E		0.05	mg/L	
Ammonia	SM4500-NH3D		0.06	mg/L	6
Oil and grease*	EPA ⁴ 1664A		5	mg/L	
Total orthophosphate as P	SM4500-P E		0.02	mg/L	
Total and Dissolved Trace Meta	als	1	1		
Aluminum (Al)			8.25	µg/L	
Antimony (Sb)			0.015	µg/L	
Arsenic (As)			0.045	µg/L	80
Beryllium (Be)			0.1	µg/L	
Cadmium (Cd)			0.010	µg/L	10
Chromium (Cr)			0.25	µg/L	20*
Copper (Cu)		-	0.05	μg/L	30
Lead (Pb)	1		0.05	μg/L	20
Manganese (Mn)	EPA ⁴ 200.8(m)	-	0.45	P9/-	
Mercury (Hg)		-	0.1	µg/L	0.4
Molybdenum (Mo)			0.1	µ9/⊏	0.1
Nickel (Ni)			0.1	μg/L	50
Selenium (Se)			0.25	μg/L	150
Silver (Ag)			0.25	μg/L	7
Thallium (TI)			0.05	µg/∟	1
Zinc (Zn)			0.03	μg/L	200
Organophosphorus Pesticides			0.01	µg/∟	200
Bolstar (sulprofos)			4	ng/L	
Chlorpyrifos			2	ng/L	
Demeton			2	ng/L	
Diazinon			4	ng/L	
Dichlorvos			6	ng/L	
Disulfoton			2	ng/L	
Ethoprop (ethoprofos)			2	ng/L	
Fenchlorophos (eonnel)		-	4	ng/L	
Fensulfothion	EPA^4 625		2	ng/L	
Fenthion	LIA 025		4	ng/L	
Malathion			6	ng/L	
Methyl parathion			2	ng/L	
Mevinphos (phosdrin)			16	ng/L	
Phorate			10	ng/L	
Tetrachlorvinphos (stirofos)			4	ng/L	
Tokuthion			6	ng/L	
Trichloronate			2	ng/L	
Polynuclear Aromatic Hydroca	rbons (PAHs)		2	ing/∟	l
1-Methylnaphthalene					
1-Methylphenanthrene					
2,3,5-Trimethylnaphthalene					
2,6-Dimethylnaphthalene					
2-Methylnaphthalene					
Acenaphthene	EPA^4 625		5	ng/L	
Acenaphthylene					
Anthracene					
Benz[a]anthracene					
Benzo[a]pyrene					
ренто[а]ругене		I	1		l

Constituent	Method	MDL ¹	RL ²	Units	COP ³
Benzo[b]fluoranthene					
Benzo[e]pyrene					
Benzo[g,h,i]perylene					
Benzo[k]fluoranthene					
Biphenyl	-				
Chrysene					
Dibenz[a,h]anthracene					
Dibenzothiophene					
Fluoranthene	-				
Fluorene					
Indeno[1,2,3-c,d]pyrene					
Naphthalene	7				
Perylene					
Phenanthrene					
Pyrene	7				
Pyrethroids		•	•	•	
Allethrin			2	ng/L	
Bifenthrin			2	ng/L	
Cyfluthrin			2	ng/L	
Cypermethrin			2	ng/L	
Danitol (Fenpropathrin)			2	ng/L	
Deltamethrin/Tralomethrin			2	ng/L	
Esfenvalerate	EPA ⁴ 625 NCI		2	ng/L	
Fenvalerate			2	ng/L	
Fluvalinate			2	ng/L	
L-Cyhalothrin			2	ng/L	
Permethrin			25	ng/L	
Prallethrin			2	ng/L	
Resmethrin			25	ng/L	

*Core discharge outfalls less than 36" in diameter were analyzed only for TSS and oil and grease. Outfalls greater than or equal to 36" in diameter, and ocean receiving water samples were analyzed for all constituents listed in Table 2-3.

 $^{1}MDL = method detection limit.$

 ${}^{2}RL = reporting limit.$

³COP = California Ocean Plan WQOs – instantaneous maximum concentration.

⁴EPA = United States Environmental Protection Agency.

Details of analytical chemistry methods used for Malibu ASBS Special Protections Monitoring are provided in Appendix C.

2.3.4 Flow Monitoring Methods

To accurately measure flow in streams/pipes there are three critical elements needed to develop rating curves, as follows:

- An accurate survey of the stream channel cross section/pipe geometry and longitudinal slope.
- Accurate level measurements based on a fixed point.
- Measurements of velocity and flows at several points throughout the rating curve including low flow, mid flow, and peak flow conditions. This includes utilizing an installed velocity sensor and calculating flows using area velocity method.

Flow monitoring data were collected continuously throughout the partial wet weather season in 2012-2013 (February through April) and the entire wet weather season in 2013-2014 at outfalls ASBS-016 and ASBS-028. Flow meters were installed in the ASBS-016 and ASBS-028 outfalls and data were collected via manual downloads during monthly site visits for maintenance and calibration purposes.

Stream ratings were determined using U.S. Geological Service (USGS) stream rating techniques. Pipe cross-section surveys were conducted at each site to derive stream discharge using the Manning Equation. The cross-section surveys involved measuring the inside diameter of each monitored pipe. A four-foot long steel level was used to measure the longitudinal gradient of each monitored pipe. Measurement were taken for a minimum of two level lengths (one length downstream of sensor and one upstream), and the average pipe slope was calculated from the survey data.

Rating curves were calculated using site-specific survey information and the Chézy–Manning formula (Linsley et al., 1982). The Chézy–Manning formula is an empirical formula for open channel flow, or flow driven by gravity, as follows:

$$Q = (1.486/n)AR^{2/3}S^{1/2}$$

where:

Q = flow n = Manning Roughness coefficient A = cross-sectional area R = hydraulic radius S = hydraulic slope

The hydraulic radius is derived as follows:

$$R = A/P$$

where:

A = cross-sectional area of flow (ft²)

P = wetted perimeter (ft)

ASBS-016 Outfall Parameters	ASBS-028 Parameters
Type: 5-ft. Wide Rectangular Concrete Channel	Type: 36-Inch RCP Storm Drain
Slope = 3.75%	Slope = 6.1%
Manning's Roughness $n = 0.018$	Manning's Roughness $n = 0.013$

Each rating curve was calibrated by comparing the flow computed by Chézy–Manning formula (based on water level and pipe geometry, slope, and roughness) during the monitored events to the flow computed by utilizing water velocity data obtained by the installed equipment (velocity sensor) and the area of flow (based on water level). Field staff made water level observations during the storm event in order to verify the accuracy of the install water level sensors. For both pipes monitored, the Chézy–Manning formula flow and the area-velocity computed flows matched good. The event graphs are shown in the Results Section (Figure 3-10 and Figure 3-11). In general, the consistency and accuracy of velocity sensors varies throughout storm

events. For this reason, the Chézy–Manning formula flow calculations, as opposed to areavelocity method, were used to compute total storm volumes for the monitored sites.

2.3.5 Flow Modeling Methods

Storm event flows were estimated using the LACDPW Watershed Management Modeling System (WMMS) for outfalls sampled where monitoring equipment was not installed. The WMMS has been prepared by LACDPW to be a single, consistent model, to serve as a foundation for addressing watershed management needs within the County. Modeling of each outfall was accomplished by first determining the drainage delineation associated with each for outfall. Next, the appropriate land use types and areas were used as input into the model. The land use data was obtained from the LACDPW WMMS website (http://dpw.lacounty.gov/wmd/wmms/res.aspx), which includes impervious percentage associated with each type of land use. Rainfall data was obtained from nearby Fire Station 70. More information regarding the WMMS is included in the associated ASBS Compliance Plan as well as the LACDPW website.

In order to calibrate and validate the WMMS for this project, the outfalls where monitoring equipment was installed were also modeled, and the results were compared to the measured values for each storm. For the first two events the flows computed by the WMMS matched the flows obtained by the installed equipment well and no calibration was needed. For the third storm event (larger than the first two events), the WMMS underestimated the runoff for both monitored outfalls. The discrepancies were due to the WMMS underestimated by the runoff from the pervious areas of the each watershed. Thus, in order to calibrate the WMMS for this event, the fractions of rainfall that resulted in runoff within the pervious areas of the watersheds were adjusted so that the resulting total volumes matched those obtained by the flow monitoring methods. The portion of the total rainfall that resulted in runoff within the pervious areas of the Outfall ASBS-028 watershed (approximately 34 acres of pervious area) was estimated to be 29.1%, while for ASBS-016 (approximately 109 acres pervious area) it was estimated to be 5.3%. These runoff coefficients (runoff "C") were applied to the pervious areas of the drainage areas to the other outfall for the third storm (e.g., 5.3% for large drainage areas, 29.1% for small drainage areas, and linear interpolation for these values for drainages between 34 and 109 acres of pervious area).

The output from the WMMS provided the computed time step flow discharged from the applicable outfalls. The data were used to compute the total volume associated with each outfall for each event.

2.3.6 Pollutant Load Calculations

Pollutant loading calculations were performed for each of the monitored sites. A graphical representation, storm hydrograph, for each wet weather storm event was used to determine the length of wet weather runoff (typically to a point within 10% of the baseflow or after a clear recession and relatively steady water level, when compared to hydrograph rise and fall). Event volumes were calculated by summing the incremental flow values multiplied by the time elapsed between flows as follows:

$$Volume (cubic feet) = Flow \left(\frac{cubic feet}{second}\right) \times Incremental Time (seconds)$$

The loads for each site for each event were then calculated by applying the measured pollutant concentration to the site volume as follows:

$$Load(pounds) = Volume(cubic feet) \times Conc.(\frac{mg \text{ or } \mu g}{liter}) \times conversion factors$$

Load calculations were based upon chemistry results and in-field flow measurements. Annual load estimates were made by extrapolating the pollutant load for the wet weather period based upon typical annual precipitation in the area.

2.3.7 Sample Analyses- Toxicity

Toxicity testing of three different marine species was also performed during each monitored storm event, as required by Special Protections. Toxicity testing was performed using the marine bivalve, *Mytilus galloprovincialis*, the purple sea urchin, *Strongylocentrotus purpuratus*, and the kelp, *Macrocystis pyrifera*. Toxicity test methods that were used included the following: chronic 48-hour bivalve development test, chronic 72-hour echinoderm fertilization test, and chronic 48-hour kelp germination and growth test. The marine bivalve test was performed using a modified method based on EPA 600/R-15-136 that was used for the Bight '08 program, whereas the purple sea urchin and kelp tests were performed using EPA 600/R-15/136. Each of these methods is approved by the United States Environmental Protection Agency (USEPA) for testing toxicity in marine and estuarine waters of the United States. Details of toxicity test protocols used for Malibu ASBS Special Protections Monitoring are provided in Appendix D.

3.0 RESULTS

Core Discharge Monitoring and Ocean Receiving Water Monitoring were conducted during three storm events during the 2012–2013 and 2013-2014 Wet Seasons. Storm 1 occurred on February 19, 2013; Storm 2 occurred on March 7-8, 2013; and Storm 3 occurred on February 28, 2014. Monitoring was attempted at a total of 20 storm drain outfalls and two ocean receiving water sites. However, if no flow occurred at a core discharge site, no water samples were collected. Similarly, if storm water effluent from an outfall associated with an ocean receiving water site did not reach the receiving water, no receiving water samples were collected. Details of the analyses performed at each core discharge and ocean receiving water site are provided in Table 3-1.

Event	Quitell		rm 1		rm 2	Storm 3 2-28-14				
Event	Outfall		9-13 Tau		7-13					
	4606 604	Chem	Тох	Chem	Тох	Chem	Тох			
Pre-storm	ASBS-SO1	X		X		X				
	ASBS-SO2	Х		х		x				
	ASBS-001	Х	X	х		x				
	ASBS-002	х	x	х		X				
	ASBS-003	х	X	Х		X				
	ASBS-004	Х		Х	Х	Х				
	ASBS-005	Х		Х	х	х				
	ASBS-005-Dup	Х								
	ASBS-008	not sa	mpled	Х	х	not sa	mpled			
	ASBS-011	х		х	х	х				
	ASBS-013	no f	low	no f	low	х	Х			
	ASBS-016	no flow	no flow	х	x	x				
	ASBS-018	х		х	х	х				
Storm	ASBS-021	х		х	х	х				
	ASBS-022	х		х	х	х				
	ASBS-023	х		х	х	х				
	ASBS-024	х		х	х	х				
	ASBS-025	х	х	х		х				
	ASBS-026	х	х	х		х				
	ASBS-027	х	х	х		х				
	ASBS-028	х	х	х		х				
	ASBS-029	х	х	х		х				
	ASBS-030	х	х	х		х				
	ASBS-031	no f	low	no f	low	no f	low			
	ASBS-S01					х	х			
	ASBS-S02	X	Х	Х	х	x	Х			

Table 3-1. Summary of Core Discharge and Ocean Receiving Water Sample Collection

Yellow indicates full chemistry site

Green indicates ocean receiving water site

Storm Event: February 19, 2013

Pre-storm ocean receiving water samples were collected on February 18, 2013 between 13:00 and 15:00 from ASBS-S01 and ASBS-S02. The forecast storm arrived on February 19, 2013, and sampling began just after 18:00 and continued until 21:00. A total of 0.21 inches of rainfall were recorded at the Leo Carrillo beach rain gauge, whereas 0.31 inches of rainfall were recorded at the Point Dume rain gauge (http://raws.wrh.noaa.gov) and 0.12 inches of rainfall were successfully monitored, whereas three of the outfalls had no flow, and thus were not monitored. The sites that had no flow were ASBS-013, ASBS-016, and ASBS-031. It was unclear at the time why these three outfalls did not flow, but debris dams upstream of the outfalls and at one ocean receiving water site (ASBS-028). Because ASBS-016 was not flowing, no receiving water chemistry or toxicity samples were collected.

Storm Event: March 7-8, 2013

Pre-storm ocean receiving water samples were collected on March 6, 2013 between 13:35 and 14:45 from ASBS-S01 and ASBS-S02. The forecast storm arrived on the night of March 7, 2013 and continued into the early morning on March 8, 2013. Sampling began at 21:50 on March 7, 2013 and continued until 01:53 on March 8, 2013. A storm total of 0.50 inches of rainfall were recorded at the Leo Carrillo beach rain gauge (http://raws.wrh.noaa.gov), while 0.74 inches of rainfall were recorded at the Fire Station 70 rain gauge. In total, 19 of the 21 sites were successfully monitored, whereas two of the outfalls had no flow, and thus were not monitored. The sites that had no flow were ASBS-013 and ASBS-031. An investigation following the previous storm event concluded that there was no flow in these outfalls due to the pipe being clogged at ASBS-013 and a likely debris dam around the outfall at ASBS-031. Toxicity samples were collected from 10 of the outfalls and at one ocean receiving water site (ASBS-SO1). Although there was some flow at the ASBS-016 outfall, since the water ponded on the beach and did not reach the receiving water, no receiving water chemistry or toxicity samples were collected.

Storm Event: February 28, 2014

Pre-storm ocean receiving water samples were collected on February 25, 2014 between 14:35 and 15:35 from ASBS-S01 and ASBS-S02. The forecast storm arrived on the morning of February 28, 2014 and continued throughout the day until approximately midnight. Sampling began at 12:16 on February 28, 2013 and continued until 15:43 on February 28, 2013. A storm total of 2.26 inches of rainfall were recorded at the Fire Station 70 rain gauge (http://raws.wrh.noaa.gov). In total, 19 of the 21 sites were successfully monitored, whereas one of the outfalls had no flow (ASBS-031), and one site was not monitored (ASBS-008). ASBS-031 also did not flow in the two previously monitored storm events. Toxicity samples were collected from one of the outfalls (ASBS-016) and at both ocean receiving water sites (ASBS-SO1 and ASBS-SO2). Ocean receiving water chemistry samples were also collected at ASBS-SO1 and ASBS-SO2.

3.1 Core Discharge Monitoring

Core discharge samples were collected manually using clean laboratory-certified containers supplied by the analytical laboratory. Grab samples were collected as the storm water effluent flowed from the pipe onto the sand, or in the case of ASBS-016, from the box culvert onto the natural channel that flowed to Zuma Beach. ASBS-001 was sampled from a manhole located approximately 140 ft above the beach outfall due to unsafe conditions along the beach. Constituent concentrations from core discharge samples were compared to the Instantaneous Maximum (maximum allowable concentration) listed in the California Ocean Plan for reference purposes. Sample water for toxicity testing was collected during one storm event for each outfall, provided there was flow at the outfall. Complete chemistry and toxicity reports for each storm event are provided in Appendices C and D, respectively. A summary of chemistry results is given in Table 3-2, Table 3-3, and Table 3-4, and is described in the following text. In the summary tables, only analytes that were measured above detection limits are listed under the categories organophosphorus pesticides, and synthetic pyrethroids. Values that are highlighted in yellow are above the California Ocean Plan Instantaneous Maximum (Imax) value.

										(Outfall ASB	S-							
Parameter	Units	California Ocean Plan	001	002	003	004	005	011	018	021	022	023	024	025	026	027	028	029	030
		Instantaneous Maximum	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013
General Chemistry																			
Ammonia as N	mg/L	6			1.47		1.12			0.78	1	0.68					0.64		
Nitrate as N	mg/L				10.15		5.57			4.48	8.24	12.45					7.02		
Oil & Grease	mg/L		1.3	1.4	1.6	4	1.6	<1	<1	<1	1.9	2.3	6	3.7	7	3.1	<1	<1	30.9
Total Orthophosphate as P	mg/L				0.53		0.6			0.22	0.35	0.63					0.28		1
Total Suspended Solids	mg/L		270.7	53.8	584	284	186.5	1.8	75.5	22.5	38.7	63.2	453	90.5	870	218	16.3	133	61.3
Total Metals																			
Arsenic (As)	µg/L	80			2.13		1.66			1.15	0.95	2.23					0.88		
Cadmium (Cd)	µg/L	10			0.31		0.35			0.10	0.12	0.20					0.27		
Chromium (Cr)	μg/L	20			10.12		7.90			1.39	3.13	3.20					1.85		
Copper (Cu)	µg/L	30			63.56		30.47			11.43	84.93	266.16					13.14		
Lead (Pb)	µg/L	20			13.99		5.80			1.32	4.33	4.88					2.01		
Mercury (Hg)	µg/L	0.4			0.16		0.05			< 0.0012	< 0.0012	< 0.0012					< 0.0012		
Nickel (Ni)	μg/L	50			11.57		10.47			2.75	3.13	7.01					5.25		
Selenium (Se)	µg/L	150			0.794		0.102			0.138	0.151	0.355					0.435		
Silver (Ag)	µg/L	7			< 0.01*		< 0.01*			< 0.01*	< 0.01*	< 0.01*					< 0.01*		
Zinc (Zn)	µg/L	200			141.4		128.9			60.4	135.3	269.1					39.0		
Organophosphorus Pesticides																			
Malathion	ng/L				<3		<3			<3	<3	2868.9					<3		
		•				All ot	her OP pest	cides were b	elow Method	Detection Li	imits				•				•
Polynuclear Aromatic Hydrocarbo	ns																		
Total PAHs	ng/L				102		208.4			42	103.7	255.6					<1		1
Pyrethroids																			
Bifenthrin	ng/L				700.8		< 0.5			< 0.5	320.9	1184.5					< 0.5		1
Cyfluthrin	ng/L				< 0.5		< 0.5			< 0.5	<0.5	344.4					< 0.5		
Esfenvalerate	ng/L				152.4		< 0.5			< 0.5	<0.5	< 0.5					< 0.5		1
Fenvalerate	ng/L				29.3		< 0.5			< 0.5	<0.5	< 0.5					<0.5		1
	· · · · ·	·				All other	Pyrethroid p	esticides we	re below Met	thod Detection	on Limits				·				
< - results less than the method detection	on limit.																		
J-Analyte was detected at a concentrat	ion below the	e reporting limit and	d above the me	ethod detection	n limit. Repoi	ted value is es	timated.												
*Method detection limit above the nat																			
Yellow highlighted cells indicate results	s above the na	atural water quality	and the insta	ntaneous maxi	mum benchma	rk of the Ocea	n Plan.												

	60	D' 1	D 14 P	C/ 1	T 4 1	^ •	4 41	C 110 1		T 4 4	3.4
Table 3-2. Summary	7 of Coro	llicchargo	Reculte trom	Storm I	Hyont and	('omnori	con to the	l 'olifornio	Licoon Plon	Inctantandor	16 1/191
I abic J-2. Summary		Discharge	MUSUIUS II UII		Lychi anu	Compari	son to the		Ottall I lall	instantantu	15 IVIA/

laximum Criteria

			Outfall ASBS-																		
Parameter	Units	California Ocean Plan	001	002	003	004	005	008	011	016	018	021	022	023	024	025	026	027	028	029	030
		Instantaneous Maximum	3/8/2013	3/8/2013	3/8/2013	3/7/2013	3/7/2013	3/8/2013	3/7/2013	3/8/2013	3/8/2013	3/8/2013	3/7/2013	3/8/2013	3/8/2013	3/8/2013	3/7/2013	3/7/2013	3/8/2013	3/7/2013	3/7/2013
General Chemistry																					
Ammonia as N	mg/L	6			2.1		4.75			4.8		0.57	1.32	0.66					7.8		
Nitrate as N	mg/L				3.78		3.51			10.2		3.24	4.84	5.15					5.29		
Oil & Grease	mg/L		221.1	<1	1.1	83.4	<1	<1	<1	<1	<1	<1	<1	1.3	1.2	1.5	4.8	1.7	6.7	<1	1.2
Total Orthophosphate as P	mg/L				0.5		0.34			0.79		0.51	0.16	0.51					0.75		
Total Suspended Solids	mg/L		531	52.7	315.7	17.5	37.1	115.4	< 0.5	782	58.1	64.1	10.7	33	63.6	64.3	660	17.9	616	29.7	32.4
Total Metals																					
Arsenic (As)	µg/L	80			2.51		1.43			3.738		2.13	2.257	2.158					7.287		
Cadmium (Cd)	µg/L	10			0.69		0.08			1.25		0.54	0.09	0.08					10.95		
Chromium (Cr)	μg/L	20			23.88		2.58			39.21		7.13	1.97	1.83					32.36		
Copper (Cu)	µg/L	30			41.56		27.15			33.87		20.48	35.04	116.98					198.50		
Lead (Pb)	µg/L	20			19.83		1.71			10.14		3.94	1.06	3.65					46.30		
Mercury (Hg)	µg/L	0.4			0.02		0.02			0.02		0.01	0.007J	< 0.0012					0.06		
Nickel (Ni)	µg/L	50			22.30		4.53			47.83		10.48	2.07	3.49					77.08		
Selenium (Se)	µg/L	150			0.363		0.115			0.176		0.076J	0.521	0.151					1.004		
Silver (Ag)	µg/L	7			< 0.01*		0.06			<0.01*		0.08	0.06	0.04					0.06		
Zinc (Zn)	µg/L	200			142.7		104.7			125.2		88.2	41.8	157.7					800.7		
Organophosphorus Pesticides																					
Malathion	ng/L				<3		<3			<3		<3	<3	4128.6					<3		
		-					All of	her OP pesti	cides were b	elow Method	Detection Li	imits		•							
Polynuclear Aromatic Hydrocarbo	ns																				
Total PAHs	ng/L				694		53			231.3		131.8	18.5	251.4					1145.6		
Pyrethroids																					
Bifenthrin	ng/L				214		< 0.5			<0.5		< 0.5	74.6	167.5					203.9		
Cyfluthrin	ng/L				<0.5		21.6			<0.5		< 0.5	< 0.5	268.6					< 0.5		I
Cypermethrin	ng/L				<0.5		16.2			<0.5		<0.5	< 0.5	<0.5					<0.5		I
							All other	pyrethroid p	esticides we	re below Met	hod Detectio	n Limits									
< - results less than the method detecti	on limit.							î													
J-Analyte was detected at a concentrat	ion below th	e reporting limit and	above the me	ethod detection	n limit. Repor	ted value is es	stimated.														
*method detection limit above the natu																					
Yellow highlighted cells indicate results	above the n	atural water quality	and the insta	ntaneous maxi	num benchma	rk of the Ocea	an Plan.														
	-	· · · ·				-	-						1	1							

Table 3-3. Summary of Core Discharge Results from Storm 2 Event and Comparison to the California Ocean Plan Instantaneous Maximum Criteria

		California	Outfall ASBS-																		
Parameter	Units	Ocean Plan	001	002	003	004	005	011	013	016	018	021	022	023	024	025	026	027	028	029	030
		Instantaneous Maximum	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014
General Chemistry																					
Ammonia as N	mg/L	6			4.95		0.37			0.68		0.43	1.51	< 0.02					0.21		
Nitrate as N	mg/L				0.63		0.54			0.72		0.86	1.53	24.54					0.27		
Oil & Grease	mg/L		<1	<1	2.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2.5	1.3	1J	<1	1.3
Total Orthophosphate as P	mg/L				1.08		0.2			0.86		0.83	0.84	0.94					0.27		1
Total Suspended Solids	mg/L		79.2	296	5095	593	497	70.4	119	803	55.3	148	7.9	4.8	27.5	18.2	103.2	78.8	40.3	1.9	42.6
Total Metals																					
Arsenic (As)	µg/L	80			9.08		1.79			2.75		3.52	3.73	4.73					0.656		í I
Cadmium (Cd)	µg/L	10			3.82		0.55			1.41		0.55	0.18	0.28					0.1864		
Chromium (Cr)	µg/L	20			75.35		20.63			23.61		5.98	2.16	1.79					1.2621		
Copper (Cu)	µg/L	30			109.66		27.95			29.91		25.05	56.11	84.92					26.219		
Lead (Pb)	µg/L	20			71.78		6.11			8.13		5.73	2.11	0.54					17.5522		
Mercury (Hg)	µg/L	0.4			< 0.0012		< 0.0012			< 0.0012		< 0.0012	< 0.0012	< 0.0012					< 0.0012		
Nickel (Ni)	µg/L	50			91.11		25.82			38.05		9.12	4.77	8.81					2.9016		
Selenium (Se)	µg/L	150			0.33		0.22			0.23		0.32	1.22	5.10					0.334		
Silver (Ag)	µg/L	7			0.17		0.08			0.10		0.07	0.21	0.06					0.01J		
Zinc (Zn)	µg/L	200			454.8		98.37			151.15		93.27	97.01	199.0					87.7		
Organophosphorus Pesticides																					
Chlorpyrifos	ng/L				67.6		< 0.5			< 0.5		< 0.5	< 0.5	< 0.5					< 0.5		
		•		•			All o	ther OP pest	icides were b	elow Method	Detection L	imits								I	
Polynuclear Aromatic Hydrocarbo	ns																				
Total PAHs	ng/L				7159.2		906.4			778		570.3	54.7	1982.1					812.2		
Pyrethroids																					
Bifenthrin	ng/L				694.4		43.4			5.4		80.3	16.9	188.7					1673.6		
Cyfluthrin	ng/L				33.1		<0.5			<0.5		6.7	5.9	19.9					<0.5		
Cypermethrin	ng/L				88.7		< 0.5			8.2		< 0.5	3.3	< 0.5					< 0.5		
Esfenvalerate	ng/L				15.6		< 0.5			<0.5		1.5J	0.6J	<0.5					< 0.5		
Fenvalerate	ng/L				7.4		<0.5			<0.5		0.9J	0.7J	<0.5					<0.5		
L-Cyhalothrin	ng/L				4.8		1.6J			1.1J		5	< 0.5	<0.5					2.2		(l
Permethrin	ng/L				3845.8		<5			123.1		<5	76.7	<5					<5		[]
		ļ						r pyrethroid j	pesticides we		hod Detectio	-									
< - results less than the method detection	on limit.																				
J-Analyte was detected at a concentrat		e reporting limit and	d above the me	thod detection	limit. Report	ed value is est	imated.														
Yellow highlighted, bold, underlined cel								ean Plan.													
								-				Į.				1				<u> </u>	

laximum Criteria

3.1.1 General Chemistry

ASBS-028 was the only outfall that had a general chemistry constituent measured above the California Ocean Plan Instantaneous Maximum concentration (Imax) value. Ammonia was measured at a concentration of 7.8 milligrams per liter (mg/L) at ASBS-028 during Storm 2, which was slightly above the Imax of 6 mg/L. There are no established Imax values for nitrate, oil and grease, total orthophophate, and total suspended solids (TSS). Oil and grease and TSS were the only constitutents required to be measured at all outfalls. Oil and grease concentrations varied widely, ranging from from less than 5 mg/L at 89% of the outfalls to 221.1 mg/L at ASBS-001 during Storm 2. TSS concentrations also varied significantly among the outfalls, ranging from less than 0.5 mg/L at ASBS-011 during Storm 2 to 5095 mg/L at ASBS-003 during Storm 3.

Across the seven largest outfalls (equal to or greater than 36 inches in diameter), ammonia concentrations ranged from <0.02 mg/L at ASBS-023 during Storm 3 to 7.8 mg/L at ASBS-028 during Storm 2, whereas nitrate ranged from 0.27 mg/L at ASBS-028 during Storm 3 to 24.54 mg/L at ASBS-023 during Storm 3. Total orthophosphate concentrations ranged from 0.27 mg/L to 1.08 mg/L during all storm events at the monitored outfalls.

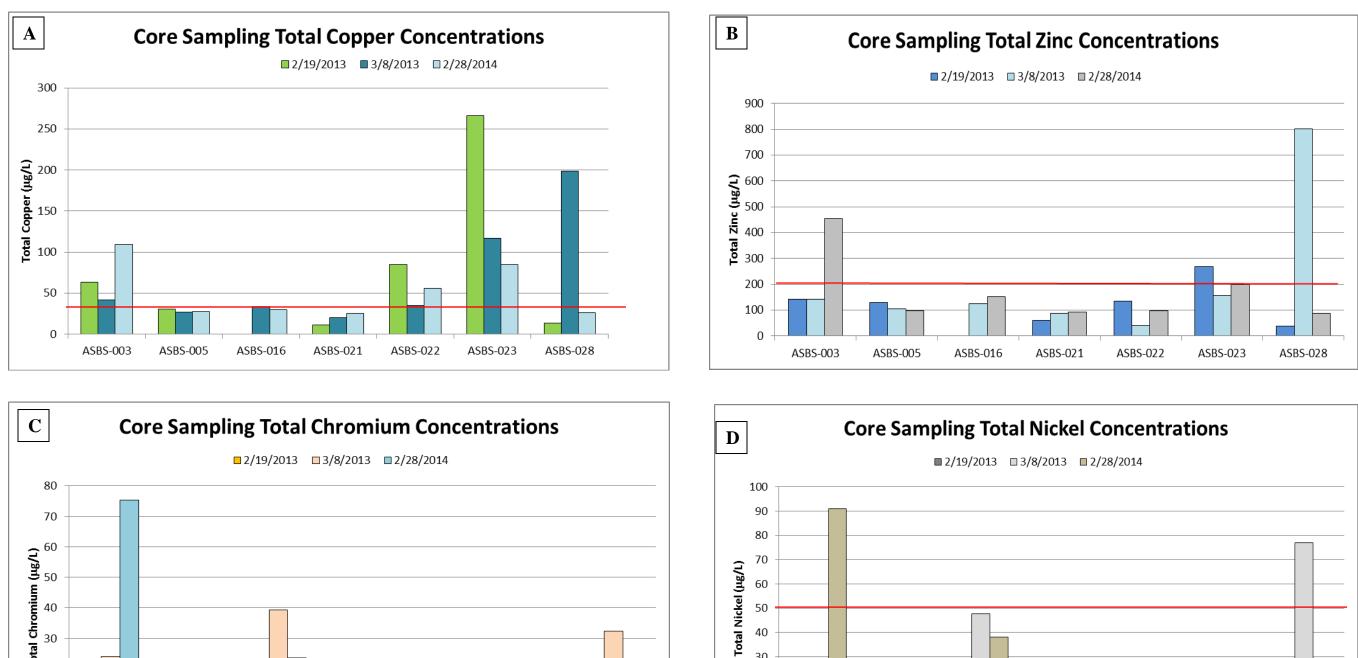
3.1.2 Metals

Total Metals

Concentrations of chromium, copper, and zinc were measured above the California Ocean Plan Imax concentration at one or more of the seven large outfalls that were monitored for metals during the 2012-2013 and 2013-2014 storm season (Figure 3-1).

Analytical results from samples collected during Storm 1 (February 19, 2013) indicated that four storm drain outfalls had concentrations of total copper above the Imax, and that one storm drain outfall had total concentrations of total zinc above the Imax. Copper concentrations ranged from less than 1 to 8.9 times the Imax, whereas zinc concentrations ranged from less than 1 to 1.4 times the Imax.

During Storm 2 (March 7, 2013) concentrations of cadmium, chromium, copper, lead, nickel, and zinc were measured above the California Ocean Plan Imax concentration at one or more of the monitored outfalls (Figure 3-1 and Figure 3-2). Outfalls ASBS-003 and ASBS-016 had Imax concentrations of chromium and copper above the Imax, whereas outfalls ASBS-022 and ASBS-023 had copper concentrations above the Imax. Outfall ASBS-028 had concentrations of cadmium, chromium, copper, lead, nickel, and zinc above the Imax. With the exception of the chromium concentration at ASBS 016 and the silver concentration at ASBS-021, the highest concentrations of each of the analyzed metals were measured at ASBS-028. Copper concentrations were 6.6 times the Imax at ASBS-028 and 3.9 times the Imax at ASBS-023, whereas at all other outfalls, the concentration was less than 1.4 times the Imax. Zinc and lead concentrations at ASBS-028 were 4.0 and 2.3 times the Imax, respectively, whereas they were below the Imax at ASBS-028.



--- indicates California Ocean Plan Imax value

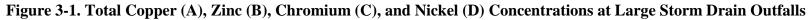
ASBS-005

ASBS-003

ASBS-016

ASBS-021

ASBS-022



ASBS-028

ASBS-023

60 50 40

30

20

10

0

ASBS-003

ASBS-005

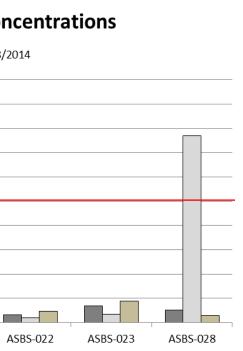
ASBS-016

30 Total

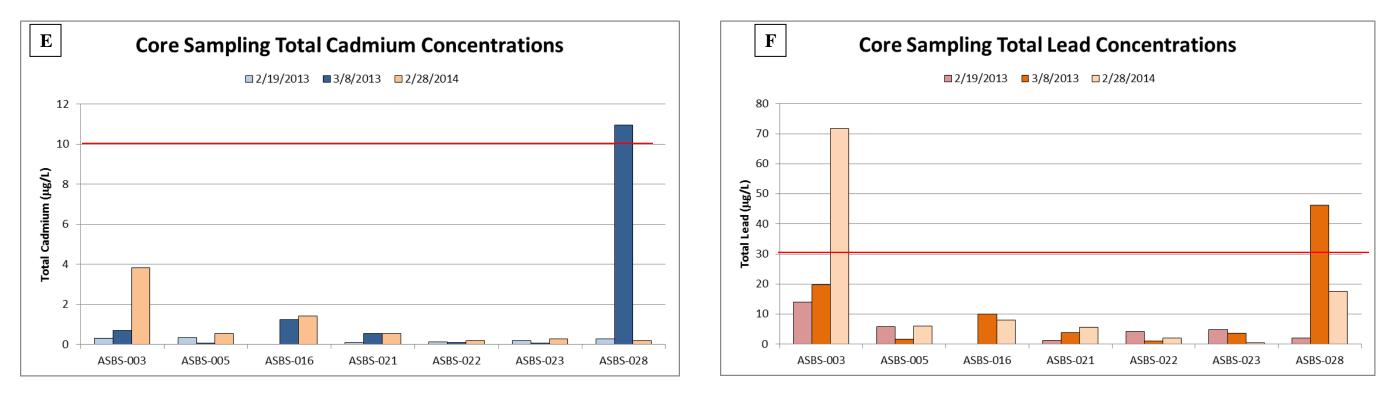
20

10

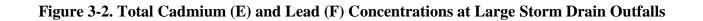
0



ASBS-021



--- indicates California Ocean Plan Imax for zinc



During Storm 3 (February 28, 2014), concentrations of chromium, copper, lead, nickel, and zinc were measured above the California Ocean Plan Imax concentration at one or more of the monitored outfalls (Figure 3-1 and Figure 3-2). Outfall ASBS-003 had five metals that were above Imax criteria, whereas ASBS-005, ASBS-016, ASBS-022 and ASBS-023 had only one metal above Imax criteria. Chromium concentrations were above Imax criteria at outfalls ASBS-003, ASBS-005, and ASBS-16, whereas copper concentrations were above Imax criteria at outfalls ASBS-003, ASBS-003, ASBS-022 and ASBS-023. Lead, nickel, and zinc were also above Imax criteria at outfalls ASBS-003. With the exception of the selenium concentrations of each of the analyzed metals were measured at ASBS-003. Copper, lead, and chromium concentrations ranged from 3.6 to 3.7 times the Imax at ASBS-003. Zinc concentrations were approximately 2.2 times the Imax at ASBS-023 (2.8 times the Imax) was the only other constituent that was greater than 2 times the Imax concentration.

3.1.3 Polynuclear Aromatic Hydrocarbons

Total PAH concentrations varied substantially between storm events and between sites (Figure 3-3), though they were generally higher during Storm 3 across nearly all outfalls. Values for total PAHs during Storm 1 ranged from below the detection limit of 1 nanogram per liter (ng/L) at ASBS-028 during the Storm 1 to 255.6 ng/L at ASBS-023. During Storm 2, total PAHs ranged from 255.6 ng/L at ASBS-022 to 1146 ng/L at ASBS-028, whereas during Storm 3, total PAHs ranged from 54.7 ng/L at ASBS-022 to 7159 ng/L at ASBS-003. The California Ocean Plan does not provide a total PAHs WQO for the protection of marine aquatic life.

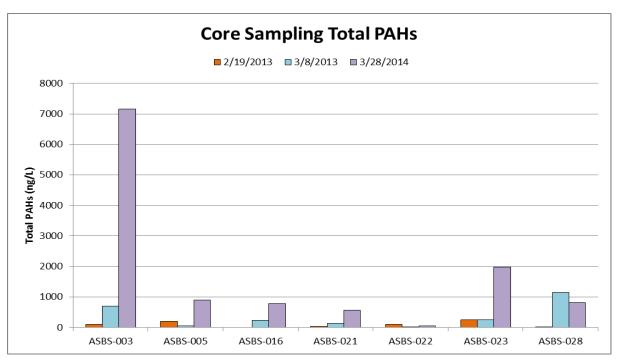


Figure 3-3. Total PAH Concentrations at Large Storm Drain Outfalls

3.1.4 Organophosphorus Pesticides

Malathion was detected at ASBS-023 during Storms 1 and 2 (Figure 3-4), whereas chlorpyrifos was detected at ASBS-003 during Storm 3. No other organophosphorus pesticides were detected from core discharge outfalls during the three monitored storm events over the 2012-2013 and 2013-2014 storm seasons. Malathion concentrations ranged from 2,869 ng/L to 4,129 ng/L at ASBS-023 during Storms 1 and 2, whereas chlorpyrifos had a concentration of 67.6 ng/L at ASBS-003 during Storm 3. Currently, no Imax values are provided in the California Ocean Plan for OP pesticides with regard to the protection of marine life. A literature review was conducted to determine whether previous toxicity studies had been performed using malathion exposures on marine invertebrate species. The lowest LC_{50} value (i.e., the concentration at which 50% of the test organisms expire) found in the literature review was an 83,000-ng/L malathion exposure to *Pagurus longicarpus* (an Atlantic species of hermit crab) (Verschueren, 1996) and an LC_{50} of 10,000 ng/L in *Ampelisca abdita* (a marine amphipod). The highest malathion concentration that was detected in any of the core discharge samples was substantially lower than the lowest LC_{50} value in the literature review, indicating that OP pesticides do not likely present a significant source of toxicity within the ASBS.

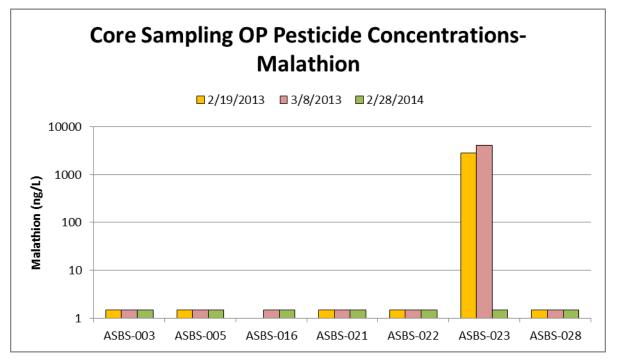


Figure 3-4. Orthophosphorus Concentrations at Large Storm Drain Outfalls

3.1.5 Synthetic Pyrethroids

The synthetic pyrethroids bifenthrin, cyfluthrin, cypermethrin, deltamethrin, esfenvalerate, fenvalerate, L-cyhalothrin, and permethrin were detected at one or more of the large storm drains during the three monitored storm events (Figure 3-5). Concentrations of bifenthrin were greater than 500 ng/L during Storm 1 at ASBS-003 and ASBS-023 and during Storm 3 at ASBS-003 and ASBS-028, whereas the concentration of permethrin was greater than 500 ng/L at ASBS-003 during Storm 3. The highest concentrations of pyrethroids were measured at ASBS-023 during

Storm 1 and Storm 2 and at ASBS-003 during Storm 3. Although the California Ocean Plan does not provide water quality criteria for pyrethroids, toxicity studies have been performed on the effects of bifenthrin, cyfluthrin, cypermethrin, and permethrin exposures to marine invertebrate shrimp species that are similar to native shrimp species living in the ocean receiving water. LC_{50} values of 3.97 ng/L, 2.42 ng/L, 27 ng/L, and 95 ng/L have been derived for the mysid shrimp (Americamvsis bahia) in exposures to bifenthrin, cyfluthrin, cypermethrin, and permethrin respectively (USEPA, 2013; Cripe, 1994). Across all storm events, the highest Bifenthrin concentration (1673.6 ng/L) occurred at ASBS-028 during Storm 3, whereas the highest cyfluthrin concentration (344.4 ng/L) occurred at ASBS-023 during Storm 1. The highest Cypermethrin (88.7 ng/L) and permethrin concentrations (3846 ng/L) occurred at ASBS-003 during Storm 3. LC₅₀ values for mysids exposed to fenvalerate range from 8.0 to 32.0 ng/L (USEPA, 2013). Fenvalerate concentrations were below the detection limit at all outfalls evaluated except ASBS-003, which had a concentration of 29.3 ng/L. No data related to mysid mortality is available for esfenvalerate; however, an LC₅₀ value of 60 ng/L has been derived for the marine grass shrimp Palaemonetes pugio (USEPA, 2013). Esfenvalerate concentrations were below the detection limit at all outfalls evaluated except ASBS-003, which had a concentration of 152.4 ng/L during Storm 1 and a concentration of 15.6 ng/L during Storm 3.

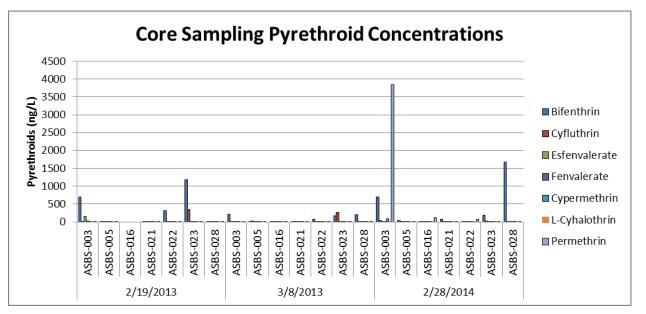


Figure 3-5. Pyrethroid Concentrations at Large Storm Drain Outfalls

3.1.6 Toxicity

Toxicity samples were collected from each storm drain outfall (provided there was flow) one time over the course of the three monitored storm events (Table 3-1). In total, toxicity samples were collected from nine outfalls during the February 19, 2013 storm event (Storm 1), from 10 outfalls during the March 8, 2013 storm event (Storm 2), and one outfall during the February 28, 2014 storm event (Storm 3). Toxicity testing consisted of *Mytilus galloprovincialis* (bivalve) development tests which are on the approved list of test species for chronic toxicity testing in the COP. A summary of toxicity results is presented in Table 3-5.

Results indicate that slight toxicity to *M. galloprovincialis* development was observed in samples collected at five of the outfalls. During Storm 1, toxicity was observed in samples from ASBS-002, ASBS-026, and ASBS-028. ASBS-002 and ASBS-026 samples resulted in no observed effect concentrations (NOECs) of 50 percent (%) and chronic toxic unit (TUc) values of 2, whereas the ASBS-028 sample had a NOEC of 25% and a TUc of 4. During Storm 2, slight toxicity was observed in samples from ASBS-004 and ASBS-022. The sample from ASBS-004 had a NOEC of 50% and a TUc of 2 and the sample from ASBS-022 had a NOEC of 25% and a TUc of 4. The concentrations resulting in 25% (EC₂₅) and 50% (EC₅₀) reductions in normality values for all samples were greater than 100%.

Storm Date	Outfall	NOEC (%)	LOEC (%)	EC ₂₅ (%)	EC ₅₀ (%)	Tu _c
	ASBS-001	100	>100	>100	>100	1
	ASBS-002	50	100	>100	>100	2
	ASBS-003	100	>100	>100	>100	1
	ASBS-025	100	>100	>100	>100	1
February 19, 2013	ASBS-026	50	100	>100	>100	2
	ASBS-027	100	>100	>100	>100	1
	ASBS-028	25	50	>100	>100	4
	ASBS-029	100	>100	>100	>100	1
	ASBS-030	100	>100	>100	>100	1
	ASBS-004	50	100	>100	>100	2
	ASBS-005	100	>100	>100	>100	1
	ASBS-008	100	>100	>100	>100	1
	ASBS-011	100	>100	>100	>100	1
March 8, 2013	ASBS-016	100	>100	>100	>100	1
Waten 8, 2015	ASBS-018	100	>100	>100	>100	1
	ASBS-021	100	>100	>100	>100	1
	ASBS-022	25	50	>100	>100	4
	ASBS-023	100	>100	>100	>100	1
	ASBS-024	100	>100	>100	>100	1
February 28, 2014	ASBS-013	100	>100	>100	>100	1

Table 3-5.	Summary	of Core	Discharge	Toxicity Results

Grey shading indicates potential toxicity.

NOEC = no observed effect concentration.

LOEC = lowest observed effect concentration.

 EC_{25} = concentration producing a 25% response.

 EC_{50} = concentration producing a 50% response, or median lethal concentration.

3.2 Ocean Receiving Water

Ocean receiving water samples were collected at S01 in front of ASBS-016 and at S02 in front of ASBS-028 within 48 hours prior to, and during, or immediately following the storm while effluent runoff was still flowing into the receiving water. The three monitored storm events occurred on February 19, 2013 (Storm 1), March 7-8, 2013 (Storm 2), and February 28, 2014 (Storm 3). Constituent concentrations from ocean receiving water samples were compared to reference threshold concentrations as well as to the California Ocean Plan objectives. Reference threshold concentrations are defined as the 85th percentile of sample concentrations taken from reference sites in Southern California. Estimated values (J-flagged values) measured above the detection limit but below the reporting limit were not considered to be in exceedance of reference thresholds. Complete chemistry and toxicity reports for each storm event are provided in Appendices C and D, respectively. A summary of chemistry results is given in Table 3-6, and is described in the following text.

3.2.1 Field Water Quality

Field measurements were collected using a YSI probe for conductivity, temperature, salinity, DO, pH, and turbidity during both pre-storm and post-storm monitoring. No post-storm measurements were taken at SO1 during Storms 1 and 2 because the flow from outfall ASBS-016 never reached the receiving water. Pre-storm and post-storm conductivity measurements were nearly identical during Storm 1 and Storm 3 at SO2, whereas post-storm measurements were slightly less than pre-storm measurements during Storm 2 at SO2. The pH varied little, ranging from 7.77 pH units to 7.99 pH units during pre-storm and post-storm monitoring for each of the storm events. Salinity, which was not measured during Storm 1 due to an instrument malfunction, was slightly higher during pre-storm monitoring than during post-storm monitoring during Storms 2 and 3. Water temperature dropped several degrees during Storm 1 post-storm monitoring at SO2; however, this drop may have been at least partially due to the post-storm monitoring occurring at night rather than in the day. During Storm 2, water temperature was nearly the same during pre-storm and post-storm monitoring, while during Storm 3, water temperature dropped nearly 4°C at SO1 and 1°C at SO2. Turbidity measurements varied somewhat between pre-storm and post-storm conditions. Increased wave size during the Storm 1 post-storm sampling may have caused a spike in turbidity between the pre-storm (34.8 nephelometric turbidity units [NTU]) and post-storm (232 NTU) field measurements at SO2. Storm 2 pre-storm turbidity ranged from 18.7 NTU to 24.0 NTU, whereas post-storm turbidity was 45.4 NTU. Storm 3 pre-storm turbidity ranged from 16.4 to 26.4 NTU, whereas post-storm turbidity ranged from 4.1 to 15.0 NTU.

		California Ocean Plan	Natural Water Qualty	S01-PRE	S02-PRE	S02-POST	S01-PRE	S02-PRE	S02-POST	S01-PRE	S01-POST	S02-PRE	S02-POST
Parameter	Units	Instantaneous Maximum	85% Percentile Reference Threshold	2/18/2013	2/18/2013	2/19/2013	3/6/2013	3/6/2013	3/8/2013	2/25/2014	2/28/2014	2/25/2014	2/28/2014
Field Measurements													
Conductivity	mS			52.74	52.16	52.35	51.82	51.87	48.73	Not measued	53.463	53.034	52.535
Dissolved Oxygen	mg/L			8.40	9.92	8.34	8.49	8.40	Not measued		4.10	7.89	7.76
рН	pH units			7.85	7.77	7.86	7.86	7.80	7.80	7.93	7.99	7.93	7.92
Salinity	ppt			Not measured	Not measured	Not measured	34.06	34.11	33.60	Not measued	35.32	34.90	34.65
Temperature	°C			14.24	16.05	13.25	13.80	14.19	13.92	19.14	15.25	17.22	16.34
Turbidity	NTU			28.2	34.8	232.0	24.0	18.7	45.4	26.4	4.1	16.4	15.0
General Chemistry													
Ammonia as N	mg/L	6	0.015	0.09	0.04J	< 0.02	0.04J	0.03J	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Nitrate as N	mg/L		0.34	0.51	0.38	0.25	0.48	0.49	0.54	0.03J	0.02J	0.02J	< 0.01
Oil & Grease	mg/L		0.5	14.1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Orthophosphate as P	mg/L		0.10	0.02	0.02	0.03	0.03	0.03	0.06	0.02	0.02	0.02	0.18
Total Suspended Solids	mg/L		48	5.2	7.9	40.5	3.8	14.9	33.3	19.5	25.2	87.7	150
Total Metals		•	•			•				•			
Arsenic (As)	µg/L	80	1.8	1.72	1.47	1.39	1.56	1.56	1.58	1.47	1.28	6.60	4.12
Cadmium (Cd)	μg/L	10	0.15	0.02	0.06	0.06	0.03	0.06	0.14	0.02	0.02	0.51	0.26
Chromium (Cr)	μg/L	20	1.9	0.32	0.54	0.64	0.24	0.65	2.52	1.11	0.39	26.01	4.96
Copper (Cu)	μg/L	30	1.5	0.15	0.32	0.45	0.16	0.38	2.92	0.68	0.22	6.00	2.29
Lead (Pb)	μg/L	20	0.5	0.05	0.10	0.19	0.03	0.16	1.04	0.24	0.06	7.27	1.55
Mercury (Hg)	μg/L	0.4	0.0006	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	0.0046J	<0.0012J	0.01	< 0.0012	0.03
Nickel (Ni)	μg/L	50	1.3	0.27	0.51	0.77	0.28	0.63	1.86	0.87	0.36	21.57	4.24
Selenium (Se)	μg/L	150	0.0025	0.007J	0.02	0.03	0.008J	0.02	0.05	0.02	0.011J	0.08	0.16
Silver (Ag)	μg/L	7	0.08	0.03	0.01J	< 0.01	< 0.01	0.01J	< 0.01	0.09	0.18	0.03	0.14
Zinc (Zn)	μg/L	200	18.6	1.04	1.20	12.28	2.70	37.88	54.10	5.35	21.05	41.71	12.02
Organophosphorus Pesticid	1	1	1	1	1	1			1	1	1		
Total OP pesticides	ng/L		6	6	6	6	6	6	6	6	6	6	6
Polynuclear Aromatic Hydro			10.5	10.5	10.5	41.1	10.5	10.5	57.0	10.5	12.5	17.0	52.0
Total PAHs Pvrethroids	ng/L	1	12.5	12.5	12.5	41.1	12.5	12.5	57.0	12.5	12.5	17.8	53.0
Bifenthrin	ng/L			<0.5	<0.5	<0.5	<0.5	<0.5	8.4	<0.5	<0.5	<0.5	2.5
Deltamethrin/Tralomethrin	ng/L ng/L			<0.5	<0.5	<0.5	<0.5	26.6	<0.5	<0.5	<0.5	<0.5	<0.5
Esfenvalerate	ng/L ng/L			1.1J	<0.5	0.8J	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
All other Pyrethroids	ng/L ng/L			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Pyrethroids	ng/L		6.75	6.75	6.75	6.75	17.35	33.35	15.15	6.75	6.75	6.75	9.25
<- results less than the method detection limit.													
J-Analyte was detected at a concentration below the RL and above the MDL. Reported value is estimated. J-flagged values were not considered to exceed reference thresholds since they are estimated values.													
Grey highlighted cells indicate r	esults above	the natrual water q	uality.										
Grey highlighted hold underlin	ad calls indic	ate recults above th	a natural water (mality and the i	netontonooue ma	vimum benchmar	k of the Ocean	n Dlan					

Table 3-6. Results Summary of Pre-Storm and Post-Storm	Ocean Receiving Water Sampling
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Grey highlighted, bold, underlined cells indicate results above the natural water quality and the instantaneous maximum benchmark of the Ocean Plan.

For non-detect values and J-values, 0.5 times the detection limit was used to compare against Natural WQ criteria

3.2.2 General Chemistry

General chemistry constituents included ammonia as N, nitrate as N, oil and grease, total orthophosphate as P, and TSS. Ammonia concentrations were less than 0.02 mg/L in post-storm samples from S02 for all storm events and from S01 during Storm 3. Pre-storm samples ranged from less than 0.02 mg/L to 0.09 mg/L across all storm events at both ocean receiving water stations. Concentrations of ammonia were greater than the 85th percentile reference threshold (0.015 mg/L) in the Storm 1 and Storm 2 pre-storm samples from S01 and in the Storm 1 pre-storm sample from S02. All ammonia values were well below the California Ocean Plan Imax of 6 mg/L.

Nitrate concentrations ranged from less than 0.01 mg/L to 0.54 mg/L in post-storm samples from S02 across all storm events. Nitrate pre-storm concentrations at SO1 and SO2 were above the 85th percentile reference threshold (0.374 mg/L) during Storm 1 and Storm 2. However, only the post-storm nitrate concentration at SO2 during Storm 2 was above the reference threshold and the pre-storm concentration. There is no established California Ocean Plan Imax value for nitrate.

Oil and grease concentrations were less than 1 mg/L in all samples with the exception of the Storm 1 pre-storm sample from S01, which was measured at 14.1 mg/L. Total orthophosphate concentrations ranged from 0.02 in both S01 and S02 Storm 1 pre-storm samples to 0.18 in the Storm 3 post-storm sample from S02. The Storm 3 post-storm concentration of total orthophosphate (0.18 mg/L) was above the reference threshold (0.114 mg/L). Post-storm TSS concentrations at SO2 varied, ranging from 33.3 mg/L during Storm 2 to 150 mg/L during Storm 3; the post-storm concentration of TSS at S01 was 25.2 during Storm 3. TSS concentrations were greater in post-storm samples than pre-storm samples during each of the monitored storm events. During Storm 3, the SO2 pre-storm and post-storm concentrations (87.7 mg/L and 150 mg/L, respectively) were greater than the 85th percentile reference threshold value of 55.4 mg/L.

3.2.3 Metals

Total Metals

Post-storm metals concentrations in ocean receiving water samples were generally either below the 85th percentile reference threshold values (where applicable) or were below pre-storm concentrations. All metals concentrations, with the exception of the pre-storm chromium concentration in Storm 3, were below the California Ocean Plan Imax values. Concentrations of metals with at least one exceedance of the 85th percentile threshold are presented in Figure 3-6 and Figure 3-7.

For Storm 1 at S02, selenium was measured at concentrations that were slightly above the 85th percentile reference threshold in both pre-storm and post-storm samples. No other metal concentrations exceeded reference threshold criteria during Storm 1.

During Storm 2 at SO2, selenium and zinc were measured above their respective 85^{th} percentile values in the pre-storm sample. The selenium pre-storm concentration was approximately 10 times the reference threshold value (0.0025 µg/L), and the pre-storm zinc concentration was approximately 2 times the reference threshold value (18.6 µg/L). In the post-storm sample at SO2, chromium, copper, lead, nickel, selenium, and zinc were measured at concentrations

greater than their 85th percentile values. Post-storm metals concentrations for Storm 2 at S02 were greater than pre-storm concentrations with the exception of silver, which was estimated at 0.01 μ g/L in the pre-storm sample and was less than the detection limit of 0.01 μ g/L in the post-storm arsenic concentration was nearly the same as the pre-storm concentration, whereas post-storm concentrations of the remaining metals ranged from 1.4 times the pre-storm concentration for zinc to 7.7 times the pre-storm concentration for copper.

During Storm 3 at SO1, silver and selenium were measured above the 85th percentile reference threshold value during pre-storm monitoring, whereas mercury, silver, and zinc were above 85th percentile values during post-storm monitoring. Post-storm concentrations of zinc, mercury, and silver were measured above reference threshold criteria and were also above pre-storm concentrations.

At SO2, all analyzed metals, with the exception of mercury, silver, and zinc had pre-storm and post-storm concentrations that were above the 85th percentile reference threshold values during Storm 3. SO2 pre-storm concentrations of arsenic, cadmium, chromium, copper, lead, nickel, and zinc were higher than post-storm concentrations. Post-storm concentrations of mercury, selenium, and silver were measured above reference threshold criteria and were also above pre-storm concentrations. The pre-storm concentration of chromium at SO2 was the only metal during any of the storm events that was measured above the COP Imax value.

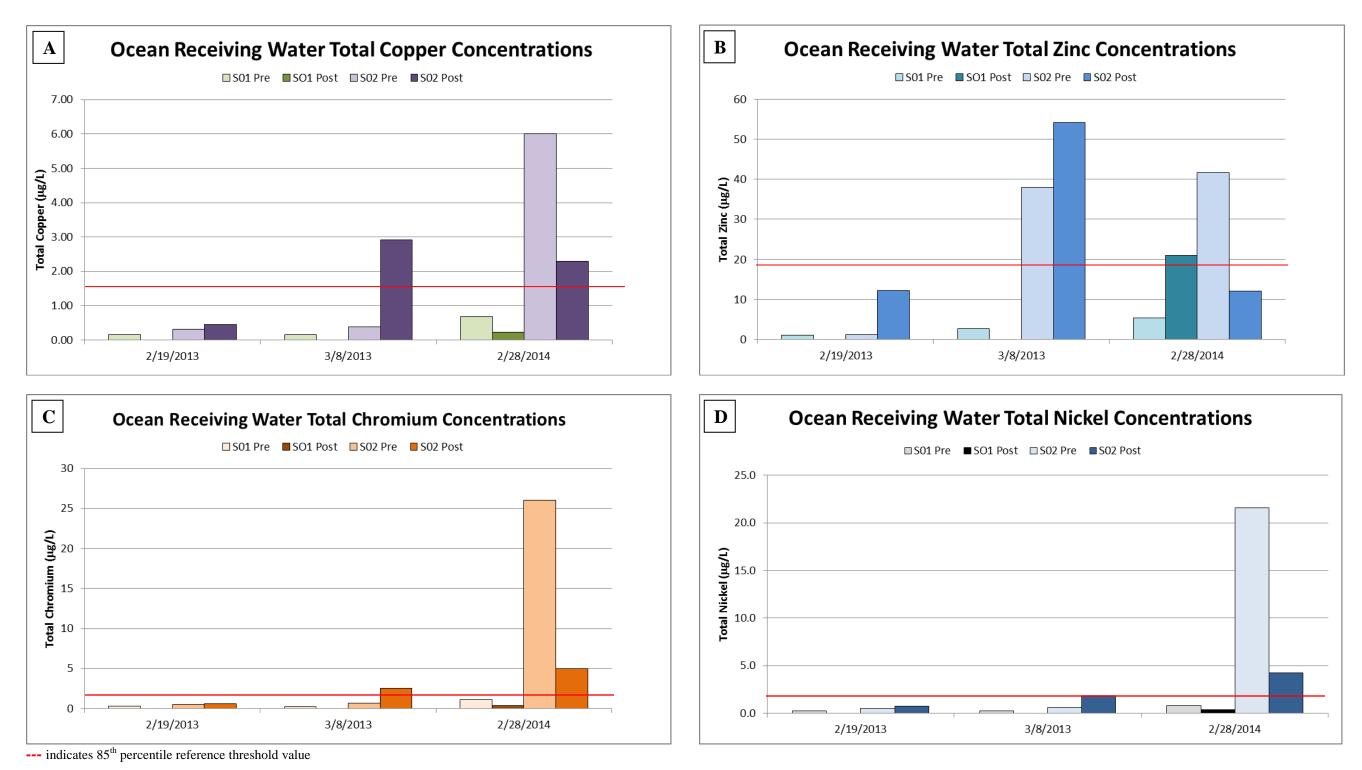
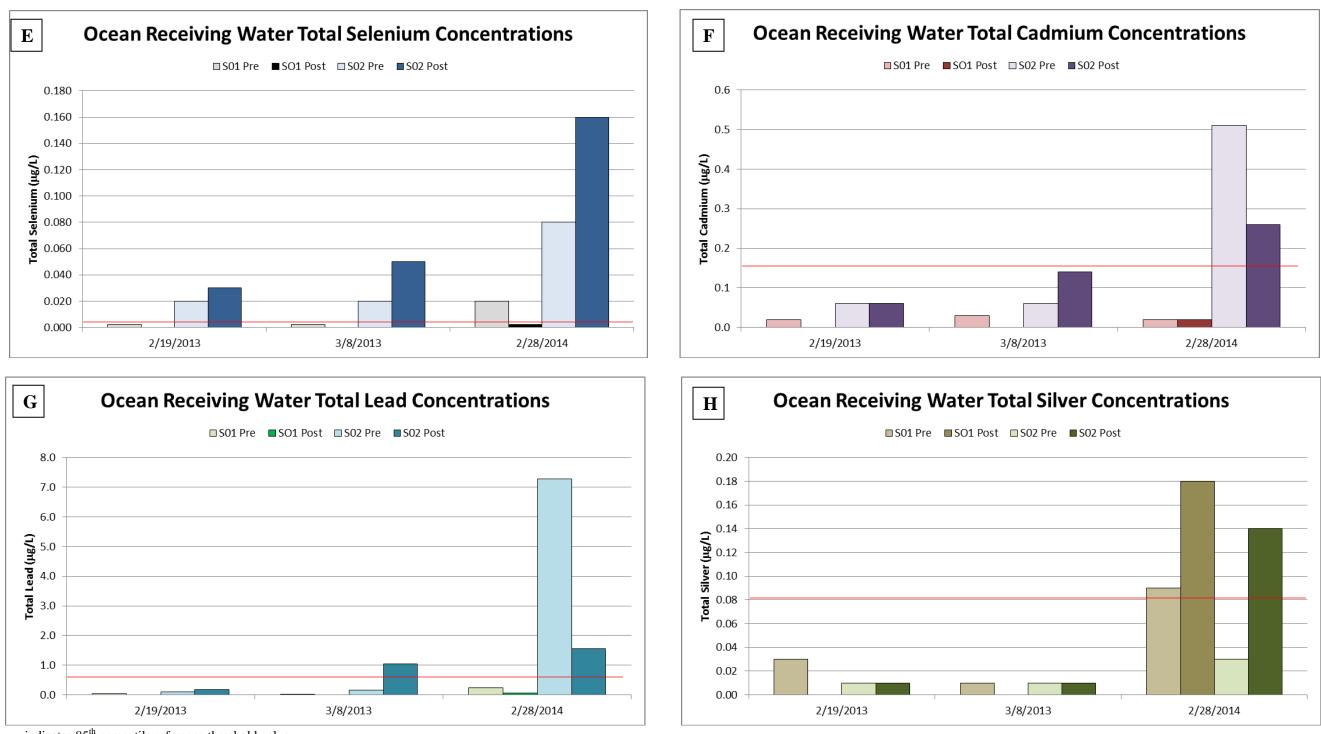


Figure 3-6. Total Copper (A), Zinc (B), Chromium (C), and Nickel (D) Concentrations in Ocean Receiving Water Samples



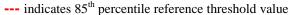
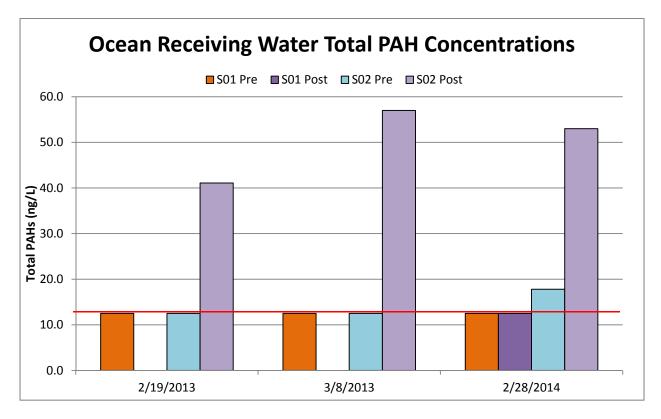


Figure 3-7. Total Arsenic (E), Cadmium (F), Lead (G) and Silver (H) Concentrations in Ocean Receiving Water Samples

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3.2.4 Polynuclear Aromatic Hydrocarbons

PAH concentrations were below the detection limit of 1 ng/L for 24 out of 25 analyzed PAHs during Storm 1 post-storm sampling at SO2. Seven PAHs (out of 25 that were analyzed) were detected in the post-storm sample from SO2 during Storm 2. In post-storm sampling during Storm 3, 4 different PAHs were detected in the ocean receiving water at SO1 and 17 different PAHs were detected in the ocean receiving water at SO2. Total PAH concentrations are presented in Figure 3-8 for each storm event. Because there was no flow from the linked storm drain outfall at SO1, post-storm samples were not collected in the ocean receiving water during Storms 1 and 2. Total PAH concentrations were greater than the 85th percentile reference threshold value (12.5 ng/L) at SO2 during Storms 1, 2, and 3. Pre-storm total PAH concentrations at SO2 during Storm 3 also exceeded the reference threshold value. The California Ocean Plan does not provide a total PAHs WQO for the protection of marine aquatic life. It should be noted that detected values that were below the reporting limit were summed as half the detection limit for comparison against the 85th percentile reference threshold.



---- indicates 85th percentile reference threshold value

Figure 3-8. Total PAH Concentrations in Ocean Receiving Water

3.2.5 Organophosphorus Pesticides

Pre-storm and post-storm concentrations of organophosphorus pesticides were below the detection limit of 2 ng/L during all three of the monitored storm events. The 85th percentile reference threshold value for total organophosphorus pesticides (6.0 ng/L) was not exceeded

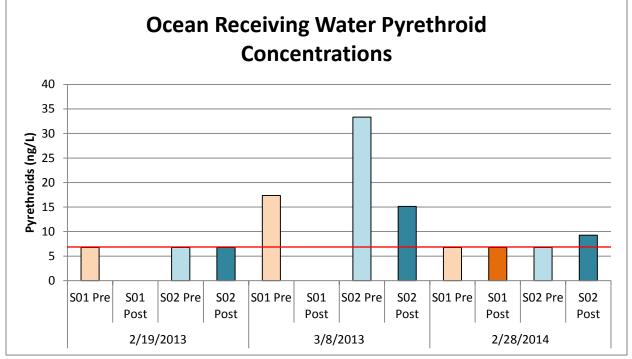
during any of the monitored storm events. There are no California Ocean Plan Imax values for OP pesticides.

3.2.6 Synthetic Pyrethroids

The synthetic pyrethroids bifenthrin, deltamethrin/tralomethrin, and esfenvalerate were detected in one or more ocean receiving water samples. Pyrethroids were either not detected or were detected at concentrations between the detection limit and the reporting limit during Storm 1. During Storm 2, bifenthrin was detected in the S02 post-storm sample and deltamethrin/tralomethrin was detected in the S01 and S02 pre-storm samples, whereas during Storm 3, bifenthrin was the only pyrethroid detected (post-storm sample at SO2).

The 85th percentile reference threshold value for total pyrethroids is 6.75 ng/L and there are no established California Ocean Plan Imax values for synthetic pyrethroids. Estimated concentrations (J-flagged values) were summed in the same fashion as non-detect values at ¹/₂ the detection limit for the purpose of comparing to the 85th percentile reference threshold. The post-storm concentration of total pyrethroids at SO2 during Storm 1 was at the 6.75 ng/L threshold value since esfenvalerate was the only pyrethroid detected and was at a concentration below the reporting limit. During Storm 2, pre-storm concentrations of total pyrethroids at SO1 and SO2 and the post-storm concentration at SO2 were each above the reference threshold value of 6.75 ng/L. However, the post-storm concentration of total pyrethroids during Storm 2 at SO2 (15.2 ng/L) was less than the pre-storm concentration (33.4 ng/L). During Storm 3, no pyrethroids were detected in pre-storm samples collected at SO1 and SO2 or post-storm samples at SO1. Bifenthrin was detected in the post-storm sample at SO2 during Storm 3 which elevated the total pyrethroids concentration above the reference threshold value. Total pyrethroid concentrations are presented in Figure 3-9.

Toxicity studies have been performed on the effects of bifenthrin, deltamethrin/tralomethrin, and esfenvalerate exposures to marine invertebrate species. An LC₅₀ value of 3.97 ng/L has been derived for the mysid shrimp (*Americamysis bahia*) in exposures to bifenthrin (USEPA, 2013). A bifenthrin concentration of 8.4 ng/L (approximately two times greater than the LC₅₀ value), was measured in the Storm 2 S02 post-storm sample. LC₅₀ values for mysids exposed to deltamethrin range from 1.7 to 3.7 ng/L (USEPA, 2013). Deltamethrin/tralomethrin concentrations of 10.6 and 26.6 ng/L were measured in the Storm 2 pre-storm samples from S01 and S02, respectively. These concentrations are approximately six to seven times the LC₅₀ value. No data related to mysid mortality are available for esfenvalerate; however, an LC₅₀ value of 60 ng/L has been derived for the marine grass shrimp *Palaemonetes pugio* (USEPA, 2013). Esfenvalerate concentrations were detected in the Storm 1 pre-storm sample from S01 and the Storm 1 post-storm sample from S02. Both concentrations were estimated values that were between the detection limit and the reporting limit, and were well below 60 ng/L LC₅₀ value.



--- indicates 85th percentile reference threshold value for total pyrethroids

Figure 3-9. Pyrethroid Concentrations in Ocean Receiving Water

3.2.7 Toxicity

Toxicity samples were collected during or immediately following each storm from each ocean receiving water location while runoff from the outfall pipe was still flowing to the receiving water. However, no post-storm samples were collected at S01 during Storm 1 and Storm 2 because the flow from outfall ASBS-016 never reached the receiving water. Post-storm samples were collected at SO1 during Storm 3 and at SO2 during Storms 1, 2, and 3 (Table 3-7). Ocean receiving water monitoring toxicity testing consisted of *M. galloprovincialis* development, *S. purpuratus* (sea urchin) fertilization, and *M. pyrifera* (kelp) germination and growth tests. A summary of toxicity results is presented in Table 3-7.

Results indicate that slight toxicity to *S. purpuratus* fertilization and *M. pyrifera* germination and growth was observed in Storm 1 post-storm samples from S02. The *M. pyrifera* germinaton tests resulted in a NOEC of 50 and a TUc value of 2. The *S. purpuratus* fertilization and *M. pyrifera* growth tests resulted in NOECs of 25% and TUc values of 4. EC_{25} and EC_{50} values were greater than 100% test substance for each of these toxicity tests. No toxicity was observed in Storm 2 post-storm samples from S02. No toxicity was observed in Storm 3 samples from SO1 or from SO2.

Outfall	Storm Date	Toxicity Test	NOEC (%)	LOEC (%)	EC ₂₅ (%)	EC ₅₀ (%)	TUc
	SBS- Storm 3	Bivalve development	100	>100	>100	>100	1
ASBS-		Sea Urchin Fertilization	100	>100	>100	>100	1
SO1	(February 28, 2014)	Kelp Germination	100	>100	>100	>100	1
	2014)	Kelp Growth	100	>100	>100	>100	1
		Bivalve development	100	>100	>100	>100	1
	Storm 1	Sea Urchin Fertilization	25	50	>100	>100	4
	(Febluary 19, 2013)	(February 19, 2013) Kelp Germination		100	>100	>100	2
		Kelp Growth	25	50	>100	>100	4
		Bivalve development	100	>100	>100	>100	1
ASBS-	Storm 2	Sea Urchin Fertilization	100	>100	>100	>100	1
SO2	(March 8, 2013)	Kelp Germination	100	>100	>100	>100	1
		Kelp Growth	100	>100	>100	>100	1
		Bivalve development	100	>100	>100	>100	1
	Storm 3 (February 28, 2014)	Sea Urchin Fertilization	100	>100	>100	>100	1
		Kelp Germination	100	>100	>100	>100	1
		Kelp Growth	100	>100	>100	>100	1

Table 3-7. Summary of Ocean Receiving Water Monitoring Toxicity Results for **Post-Storm Samples**

Grey shading indicates potential toxicity. NOEC = no observed effect concentration.

LOEC = lowest observed effect concentration.

EC25 = concentration producing a 25% response.

EC50 = concentration producing a 50% response, or median lethal concentration.

3.3 Flow Modeling and Pollutant Load Calculations

Flow modeling was performed for each of the monitored outfalls for which flow was observed exiting the outfall pipe onto the beach. During smaller storm events (Storm 1 and Storm 2), storm water from some outfalls likely never reaches the ocean receiving water and instead pools on the sand at the base of the outfall. This scenario occurred predominantly at the outfall located along Zuma Beach and Westward Beach during Storm 1 and Storm 2. During larger storm events, such as Storm 3, it is possible that storm water from each of the outfall pipes, with the exception of outfall ASBS-031, which never flowed during any events, reaches the receiving water. Table 3-8 indicates which storm water outfalls were observed flowing to the ocean at the time of sampling during each monitored event.

		Did flo	w reach receiving	water?
Location	Outfall	Storm 1	Storm 2	Storm 3
		2/19/2013	3/8/2013	2/28/2014
	ASBS-001	Yes	Yes	Yes
Broad Beach	ASBS-002	Yes	Yes	Yes
	ASBS-003	Yes	Yes	Yes
	ASBS-004	Yes	No	Yes
	ASBS-005	No	No	Yes
	ASBS-008	unknown	No	unknown
Zuma Beach	ASBS-011	No	No	No
	ASBS-013	No	No	No
	ASBS-016	No	No	Yes
	ASBS-018	No	No	No
	ASBS-021	No	Yes	Yes
Westward Beach	ASBS-022	No	No	Yes
Westward Deach	ASBS-023	No	No	No
	ASBS-024	No	No	Yes
	ASBS-025	Yes	Yes	Yes
	ASBS-026	Yes	Yes	Yes
Escondido Beach	ASBS-027	Yes	No	Yes
Escondido Beach	ASBS-028	Yes	Yes	Yes
	ASBS-029	Yes	No	Yes
	ASBS-030	No	No	Yes
Nicholas Beach	ASBS-031	No	No	No

Table 3-8. Flow Status of Outfalls during Sampling

Modeling was used to estimate flow volumes from each outfall pipe during the three monitored storm events (Table 3-9). Actual flows were measured at two of the largest outfalls and were used to calibrate the flow model. As mentioned above, because not all storm water effluent reached the receiving water, the flows shown in Table 3-9 are representative of flow that reached the beach but not necessarily the receiving water. Large sand berms in front of the outfalls along Zuma Beach and Westward Beach prevented storm water effluent from smaller events from

reaching the receiving water. In general, flow was approximately one order of magnitude higher during Storm 2 than during Storm 1 across all monitored storm drains. Storm 3 had the largest flows of any of the monitored events. Flows during Storm 3 were generally between 1.5 and 3 orders of magnitude higher than Storm 1 flows, and between 0.5 and 2 orders of magnitude higher than flows during Storm 2.

			-	Fotal Volume (cf)
Location	Outfall	Flow Measurement	Storm 1	Storm 2	Storm 3
		modeuromont	2/19/2013	3/8/2013	2/28/2014
	ASBS-001	Modeled	598	6,090	36,127
Broad Beach	ASBS-002	Modeled	452	4,011	35,158
	ASBS-003	Modeled	1,082	8,071	78,539
	ASBS-004	Modeled	207	1,962	27,600
	ASBS-005	Modeled	850	7,605	73,895
	ASBS-008	Modeled	Not monitored	9,906	Not monitored
Zuma Beach	ASBS-011	Modeled	4,436	41,625	250,516
	ASBS-013	Modeled	0*	0*	28,972
	ASBS-016	Modeled	1,675	17,263	97,065
	A3B3-010	Monitored	0*	17,023	96,999
	ASBS-018	Modeled	81	1,059	25,626
	ASBS-021	Modeled	4,462	41,400	196,481
Westward Beach	ASBS-022	Modeled	72	568	45,105
Westward Deach	ASBS-023	Modeled	147	1,509	46,718
	ASBS-024	Modeled	354	3,457	89,522
	ASBS-025	Modeled	7	58	2,118
	ASBS-026	Modeled	44	425	6,882
	ASBS-027	Modeled	593	5,413	57,127
Escondido Beach	ASBS-028	Modeled	591	6,442	99,483
	A3D3-028	Monitored	991	5,877	99,560
	ASBS-029	Modeled	166	1,617	12,699
	ASBS-030	Modeled	81	645	22,651
Nicholas Beach	ASBS-031	Modeled	0*	0*	0*

Table 3-9. Estimated Flow	Volumes for All Monitored	Outfalls during Each Storm Event
Table 5-7. Estimated Flow	volumes for an infometica	Outland uning Bach Storm Brent

*Field observations indicated no flow occurred.

As described in the Flow Monitoring Methods Section (Section 2.3.5), flow monitoring equipment stationed in outfalls ASBS-016 and ASBS-028 provided data and a method to compare flow computed by Chézy–Manning formula (Manning Calc.)(based on water level and pipe geometry, slope, and roughness) to flows computed by the area-velocity calculation (AV Calc.)(based on velocity sensor data and the area of flow. Graphs of AV Calc. flows versus Manning's Calc. flows for each storm event at these two monitored outfalls are shown in Figure 3-10 and Figure 3-11. The different methods of computing flow resulted in fairly similar peak flow rates, which indicates that the monitoring equipment deployed and methodologies utilized

accurately measured the flows discharged from the pipes during the storm events. In general, the consistency and accuracy of velocity sensor varies throughout storm events. For this reason, the Manning Calc. method, as opposed to AV Calc. method, were used to compute total storm volumes for the monitored sites.

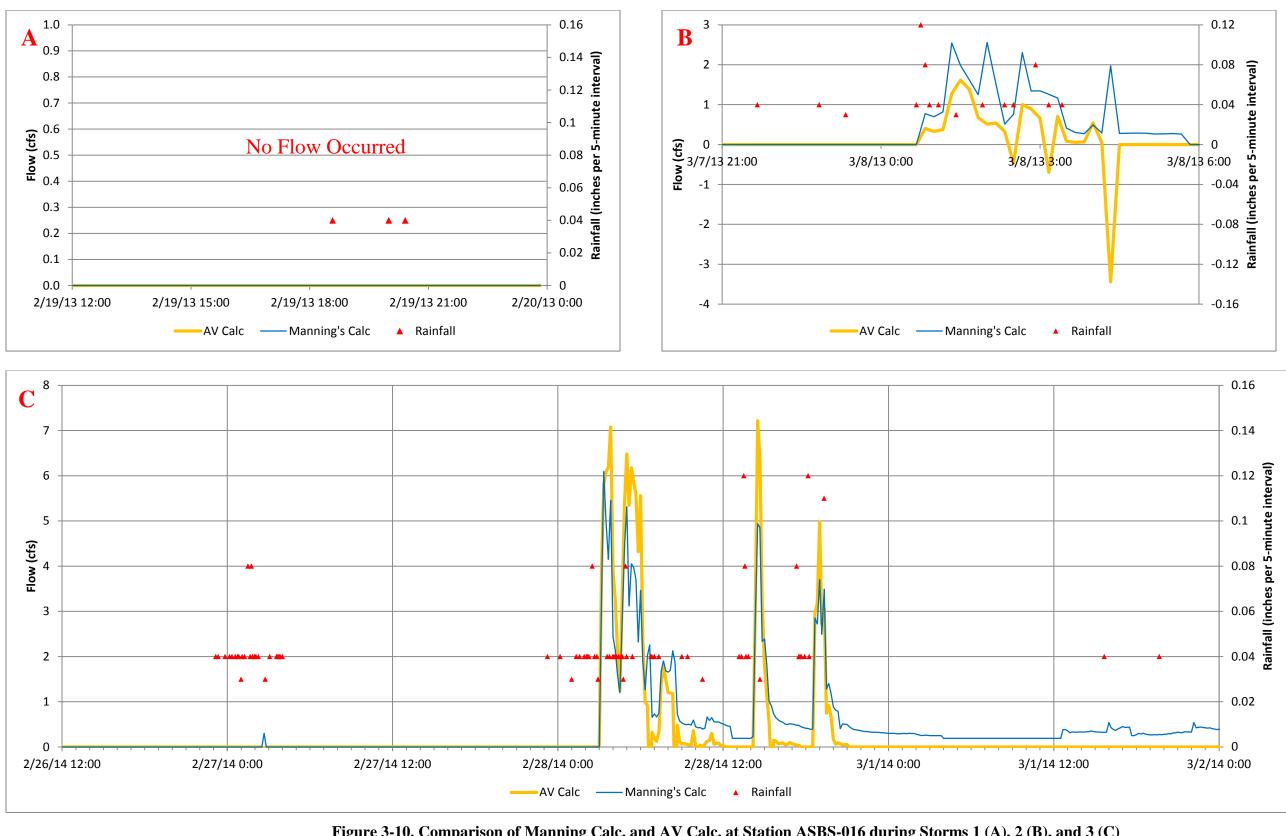


Figure 3-10. Comparison of Manning Calc. and AV Calc. at Station ASBS-016 during Storms 1 (A), 2 (B), and 3 (C)

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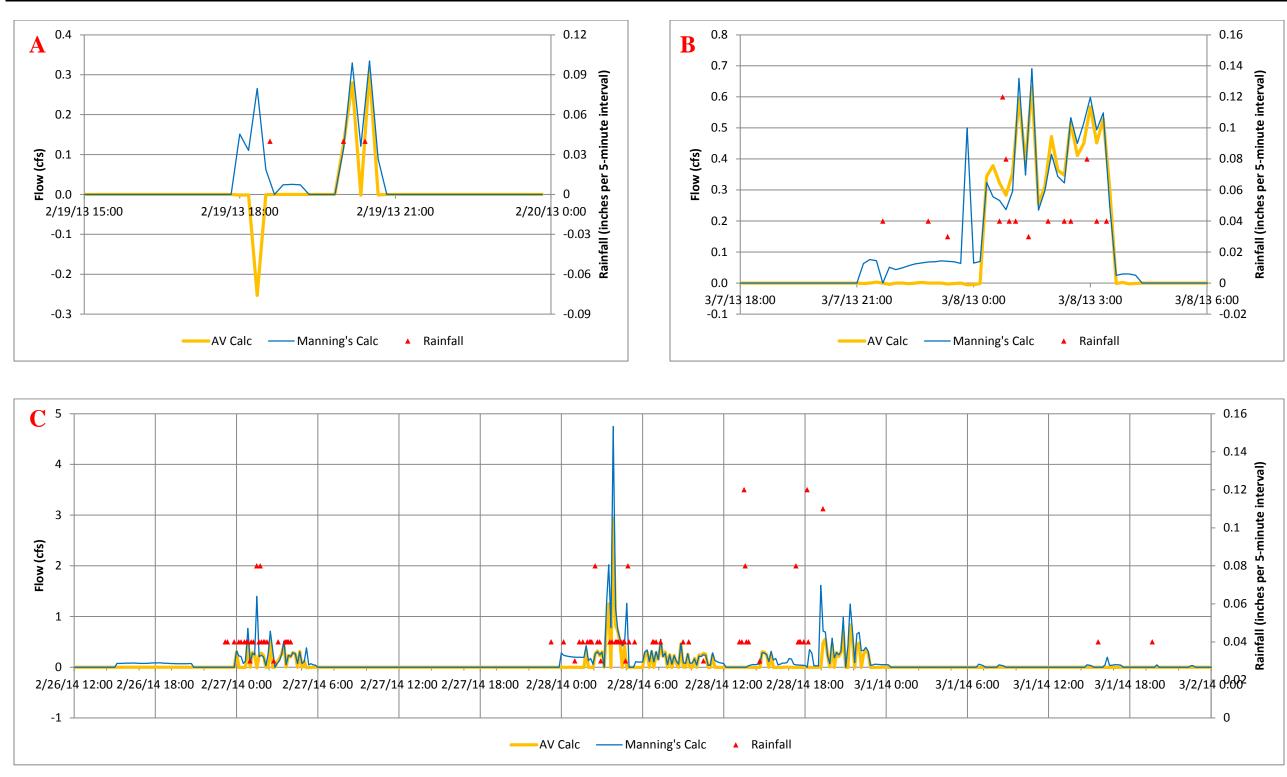


Figure 3-11. Comparison of Manning Calc. and AV Calc. at Station ASBS-028 during Storms 1 (A), 2 (B), and 3 (C)



Flow at ASBS-016

No flow was recorded at ASBS-016 during Storm 1, possibly due to a debris dam upstream of the storm drain's outfall on Zuma Beach. During Storm 2, the monitored flow lagged behind the modeled flow, likely as a result of the presumed debris dam. In general, however, the modeled flow during Storm 2 was fairly predictive of actual recorded flow during this relatively small rain event. Toward the end of Storm 2, negative flow was recorded, likely as a result of the water level falling below the instrument's ability to accurately measure flow. The area velocity sensors used to monitor flow for this project are highly accurate for medium to large rain events, but can become inaccurate at the end of a storm event if the water level at the sensor falls below 0.25 inches. During Storm 3, the monitored flow and the modeled flows were closely aligned, following an adjustment to the model to correct for runoff from pervious areas. Three large peaks in flow were recorded during this event, which spanned nearly 20 hours. The maximum flow during Storm 3 was over 7.0 cfs, recorded at approximately 14:00 on February 28, 2014.

Flow at ASBS-028

Monitored flow closely mirrored actual flow during most of Storm 1. Negative flow was recorded briefly at start of the storm event, likely as a result of the water level being right at the sensor's detection limit (0.25 inches in depth). Peak flows of approximately 0.3 cfs occurred during Storm 1 between 19:00 and 21:00 on February 19, 2013. During Storm 2, the monitored flow initially lagged behind the modeled flow, but then mirrored the modeled flow almost exactly for the remainder of the storm event. Flow during Storm 2 peaked at approximately 0.65 cfs between 01:00 and 02:00 on March 8, 2013. Similar to Storm 2, the actual flow during Storm 3 did not begin at the same time as the modeled flow. This could be a function of the sensor not detecting the initial flow due to low water depth in the storm drain. However, the monitored flow did align well with the modeled flow (following the calibration adjustment for pervious runoff) approximately 03:00 on February 28, 2014.

Estimated Flow at Unmonitored Outfalls

As described in Section 2.3.5, flow was estimated using the WMMS for sampled outfalls where monitoring equipment was not installed. For the first two events that resulted in total rainfall of 0.12 inches (Storm 1) and 0.74 inches (Storm 2), the WMMS output generally matched the monitored data at outfalls ASBS-016 and ASBS-028. As a result, the WMMS model was used without any calibration to model Storm 1 and Storm 2 at the 18 other outfalls for which flow monitoring equipment was not installed. Storm 3, which was considered a large storm (a total of 2.27 inches of rain was recorded in Malibu), the WMMS significantly underestimated both peak flow rates and total flow volumes for both ASBS-016 and ASBS-028 due to inappropriately estimating the runoff with the pervious areas of each drainage area. As a result, the WMMS output data was corrected to better represent the flows measured at these outfalls. The correction included applying a more accurate runoff coefficient to the pervious areas of each drainage area (runoff coefficient of 5.3% and 29% depending upon the acreage of pervious land. For more detailed information on the calibration process associated with Storm 3 see Section 2.3.5. Graphs of modeled flows for each outfall are provided in Appendix E.

Pollutant Load Estimates

Pollutant load estimates were calculated for each outfall based upon measured constituent concentrations and modeled flow estimates. Load tables were provided for each of the four beaches in which flow occurred (Table 3-10, Table 3-11, Table 3-12, and Table 3-13). No flow

occurred at Nicholas Beach outfall ASBS-031 during any of the storm events, so there was no load calculated. Outfalls that did not flow during a given storm event were not included in the load tables for that event. Because it was difficult to determine what percentage of the total flow actually reached the receiving water, the load estimates presented in the load tables are representative of the potential load to the ASBS rather than the actual load to the ASBS. If flow from a given outfall was observed to be ponded and there was no evidence of that flow reaching the receiving water, the pollutant load entering the receiving water was considered to be zero (calculated loads in Table 3-10 through Table 3-13 were shaded and italicized to indicate load did not reach receiving water). Pollutant loads of TSS and oil and grease were calculated for storm water outfalls less than 36 inches in diameter, whereas pollutant loads for constituents listed in Table B of the Ocean Plan were estimated for stormwater outfalls that were 36 inches or greater in diameter.

Broad Beach

Flow from the three monitored outfalls along Broad Beach reached the receiving water during each of the three storm events (Table 3-10). Pollutant loads at the largest outfall (ASBS-003) were higher by nearly an order of magnitude during Storm 3 than during Storms 1 and 2, due to the much greater flow volume. ASBS-001 and ASBS-002 had relatively low oil and grease and TSS loads during Storm 1. During Storm 2, TSS loads increased by nearly an order of magnitude across all three outfalls and oil and grease increased substantially at ASBS-001. Metal concentrations were approximately one order of magnitude higher during Storm 2 than during Storm 1 at ASBS-003. TSS and oil and grease loads were substantially higher during Storm 3 than during Storm 2 at ASBS-002 and ASBS-003, but were lower at ASBS-001 than during the previous event. The total TSS load at ASBS-003 was 11,331 grams (g), which was approximately 38 and 140 times higher than the TSS load at ASBS-002 and ASBS-001, respectively.

Zuma Beach

ASBS-004 was the only monitored outfall along Zuma Beach that flowed to the ocean receiving water during Storm 1. During Storm 2, no storm water effluent reached the ocean receiving water from any of the Zuma Beach outfalls. Storm water effluent did flow from most of the monitored outfalls along Zuma Beach during these first two storm events, but the effluent became ponded once it reached the beach and did not flow to the receiving water. Only trace amounts of TSS and oil and grease entered the receiving water during Storm 1 from ASBS-004. Calculated loads from the other flowing outfalls during Storm 1 and Storm 2 that reached the beach but not the receiving water were all relatively small with the exception of the load from ASBS-016 during Storm 2, which had moderate TSS and metals loads.

During Storm 3, three of the seven monitored outfalls (ASBS-004, ASBS-005, and ASBS-016) had flow that reached the receiving water (Table 3-11). Storm 3 pollutant loads at ASBS-016 were higher than loads from ASBS-004 and ASBS-005 for all measured constituents. The TSS load at ASBS-016 during Storm 3 was approximately two and four times higher than the TSS loads at ASBS-005 and ASBS-004, respectively. In general, metals and ammonia loads at ASBS-016 during Storm 3 were approximately two times higher than metals loads at ASBS-005.

			Broad Beach Outfalls											
		Sto	rm 1- 2/19/	/13	Sto	orm 2- 3/8/	'13	Storm 3- 2/28/14						
Parameter	Units	ASBS-001	ASBS-002	ASBS-003	ASBS-001	ASBS-002	ASBS-003	ASBS-001	ASBS-002	ASBS-003				
Total Flow	cubic ft	598	452	1,082	6,090	4,011	8,071	36,127	35,158	78,539				
Ammonia as N	g			0.05			0.48			11.01				
Oil and Grease	g	0.02	0.02	0.05	38.13	0.06	0.25	0.51	0.50	5.56				
TSS	g	4.58	0.69	17.89	91.57	5.99	72.15	81.02	294.69	11331.22				
Total Metals														
Arsenic	g			0.07			0.57			20.20				
Cadmium	g			0.01			0.16			8.50				
Chromium	g			0.31			5.46			167.58				
Copper	g			1.95			9.50			243.89				
Lead	g			0.43			4.53			159.64				
Mercury	g			0.00			0.01			0.00				
Nickel	g			0.35			5.10			202.63				
Selenium	g			0.02			0.08			0.74				
Silver	g			0.00			0.00			0.38				
Zinc	g			4.33			32.62			1011.53				
Did Flow Reach Receiving Wate		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes				

Table 3-10. Calculated Load Estimates of Constituents Listed in Table B of California Ocean Plan for Outfalls Occurring Along Broad Beach

Table 3-11. Calculated Load Estimates of Constituents Listed in Table B of California Ocean Plan for Outfalls Occurring Along Zuma Beach

			Zuma Beach Outfalls														
			Storm 1-	2/19/13				Storm 2	2- 3/8/13			Storm 3- 2/28/14					
Parameter	Units	ASBS-004	ASBS-005	ASBS-011	ASBS-018	ASBS-004	ASBS-005	ASBS-008	ASBS-011	ASBS-016	ASBS-018	ASBS-004	ASBS-005	ASBS-011	ASBS-013	ASBS-016	ASBS-018
Total Flow	cubic ft	207	850	4,436	81	1,962	7,605	9,906	41,625	17,023	1,059	27,600	73,895	250,516	28,972	96,999	25,626
Ammonia as N	g		0.03				1.02			2.31			0.77			1.87	
Oil and Grease	g	0.02	0.04	0.06	0.00	4.63	0.11	0.14	0.59	0.24	0.01	0.39	1.05	3.55	0.41	1.37	0.36
TSS	g	1.66	4.49	0.23	0.17	0.97	7.99	32.37	0.29	376.96	1.74	463.46	1039.96	499.41	97.63	2205.62	40.13
Total Metals																	
Arsenic	g		0.04				0.31			1.80			3.75			7.55	
Cadmium	g		0.01				0.02			0.60			1.14			3.87	
Chromium	g		0.19				0.56			18.90			43.17			64.84	
Copper	g		0.73				5.85			16.33			58.49			82.14	
Lead	g		0.14				0.37			4.89			12.79			22.33	
Mercury	g		0.00				0.00			0.01			0.00			0.00	
Nickel	g		0.25				0.98			23.05			54.04			104.51	
Selenium	g		0.00				0.02			0.08			0.46			0.62	
Silver	g		0.00				0.01			0.00			0.17			0.27	
Zinc	g		3.10				22.54			60.36			205.83			415.17	
Did Flow Reach Receiving Wate		Yes	No	No	No	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No

Shaded and italicized values indicate that there was flow from the outfall and a chemistry sample was collected, however, flow was ponded at the beach and did not reach the ocean receiving water

Westward Beach

Of the four monitored outfalls along Westward Beach, none flowed to the ocean receiving water during Storm 1, and only outfall ASBS-021 had flow that reached the receiving water during Storm 2. Pollutant loads from ASBS-021 during Storm 2 were calculated to be approximately 75 g TSS, 24 g copper, 12 g nickel, and 103 g zinc, based on the water sample chemistry concentrations and a total flow volume of 41,400 ft³ (Table 3-12).

During Storm 3, three of the four monitored outfalls (ASBS-021, ASBS-022, and ASBS-024) had flow that reached the receiving water. Flow at ASBS-021 during Storm 3 was considerably higher than flow at ASBS-022 and ASBS-024. As a result, pollutant loads at ASBS-021 were also correspondingly higher than loads at the other outfalls for all measured constituents. The TSS load at ASBS-021 during Storm 3 was approximately 82 and 12 times higher than the TSS load at ASBS-022 and at ASBS-024, respectively. In general, metals loads at ASBS-021 during Storm 3 were between 2 and 15 times higher than metals loads at ASBS-022. The ammonia load was slightly higher at ASBS-021 than at ASBS-022, whereas oil and grease loads at ASBS-021 were two and four times higher than at ASBS-024 and ASBS-022.

Escondido Beach

Of the six monitored outfalls along Escondido Beach, five flowed to the ocean receiving water during Storm 1, three flowed to the ocean receiving water during Storm 2, and six flowed to the ocean receiving water during Storm 3 (Table 3-13). Oil and grease loads and TSS loads were generally low across all outfalls during Storm 1 and Storm 2. Ammonia and metals loads were also low at ASBS-028 during Storm 1, but increased nearly two orders of magnitude during Storm 2 as flow increased from 991 ft³ (Storm 1) to 5877 ft³ (Storm 2).

During Storm 3, flow at ASBS-028 was considerably higher than flow at all other Escondido Beach outfalls. Despite this, the TSS load was slightly higher at ASBS-027 than at ASBS-028 and substantially higher than the TSS loads at the other Escondido Beach outfalls. The oil and grease load was approximately 25% higher at ASBS-028 than at ASBS-027, and was more than four times higher than the oil and grease load from all other outfalls. Although the ASBS-028 flow volume was approximately 17 times higher during Storm 3 than its flow volume during Storm 2, the TSS loads for the two storm events were nearly the same and pollutant loads for constituents such as copper and zinc were only two times higher during Storm 3 than during Storm 2. Cadmium, nickel, and chromium had slightly higher loads during Storm 2 than during Storm 3.

TSS Loads

Pollutants typically become bound to particulates in storm water; therefore, it is important to understand which outfalls and storm events are associated with high levels of TSS, because these generally have the highest pollutant loads. TSS loads are presented in Figure 3-12 for each outfall that had flow reaching the ocean receiving water of the ASBS. Although the TSS value for ASBS-003 during Storm 3 was 11,331 g, the scale of Figure 3-12 ranged from 0 to 2500 g in order to retain the resolution needed for the smaller loads to be displayed. In general, the largest TSS loads occurred on Broad Beach and Zuma Beach at the larger outfalls, and on Westward Beach at ASBS-021. TSS loads at Escondido Beach were relatively small by comparion to the other beaches during Storm 3, a large storm event. However, ASBS-028 on Escondido Beach had the highest TSS load of any outfall during a smaller storm event (Storm 2).

			Westward Beach Outfalls											
			Storm 1	- 2/19/13				- 3/8/13			Storm 3	- 2/28/14		
Parameter	Units	ASBS-021	ASBS-022	ASBS-023	ASBS-024	ASBS-021	ASBS-022	ASBS-023	ASBS-024	ASBS-021	ASBS-022	ASBS-023	ASBS-C	
Total Flow	cubic ft	4,462	72	147	354	41,400	568	1,509	3,457	196,481	45,105	46,718	89,52	
Ammonia as N	gg	0.10	0.00	0.00		0.67	0.02	0.03		2.39	1.93	0.01		
Oil and Grease	gg	0.06	0.00	0.01	0.06	0.59	0.01	0.06	0.12	2.78	0.64	0.66	1.27	
TSS	g	2.84	0.08	0.26	4.54	75.15	0.17	1.41	6.23	823.44	10.09	6.35	69.7	
Total Metals														
Arsenic	gg	0.15	0.00	0.01		2.50	0.04	0.09		19.60	4.77	6.26		
Cadmium	g	0.01	0.00	0.00		0.63	0.00	0.00		3.05	0.23	0.37		
Chromium	g	0.18	0.01	0.01		8.36	0.03	0.08		33.25	2.75	2.37		
Copper	g	1.44	0.17	1.11		24.01	0.56	5.00		139.39	71.66	112.34		
Lead	gg	0.17	0.01	0.02		4.62	0.02	0.16		31.86	2.69	0.71		
Mercury	g	0.00	0.00	0.00		0.02	0.00	0.00		0.00	0.00	0.00		
Nickel	gg	0.35	0.01	0.03		12.28	0.03	0.15		50.73	6.10	11.65		
Selenium	gg	0.02	0.00	0.00		0.09	0.01	0.01		1.77	1.56	6.75		
Silver	g	0.00	0.00	0.00		0.09	0.00	0.00		0.39	0.27	0.08		
Zinc	g	7.63	0.28	1.12		103.39	0.67	6.74		518.93	123.90	263.31		
Did Flow Reach Receiving Wate		No	No	No	No	Yes	No	No	No	Yes	Yes	No	Yes	

Table 3-12. Calculated Load Estimates of Constituents Listed in Table B of California Ocean Plan for Outfalls Occurring Along Westward Beach

Shaded and italicized values indicate that there was flow from the outfall and a chemistry sample was collected, however, flow was ponded at the beach and did not reach the ocean receiving water

Table 3-13. Calculated Load Estimates of Constituents Listed in	Table B of California	Ocean Plan for Outfall	s Occurring Along Esc
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			Escondido Beach Outfalls																
		Storm 1- 2/19/13					Storm 2- 3/8/13					Storm 3- 2/28/14							
Parameter	Units	ASBS-025	ASBS-026	ASBS-027	ASBS-028	ASBS-029	ASBS-030	ASBS-025	ASBS-026	ASBS-027	ASBS-028	ASBS-029	ASBS-030	ASBS-025	ASBS-026	ASBS-027	ASBS-028	ASBS-029	ASBS-030
Total Flow	cubic ft	7	44	593	991	166	81	58	425	5,413	5,877	1,617	645	2,118	6,882	57,127	99,560	12,699	22,651
Ammonia as N	g				0.02						1.30						0.59		
Oil and Grease	g	0.00	0.01	0.05	0.01	0.00	0.07	0.00	0.06	0.26	1.12	0.02	0.02	0.03	0.49	2.10	2.82	0.18	0.83
TSS	g	0.02	1.08	3.66	0.46	0.63	0.14	0.11	7.94	2.74	102.51	1.36	0.59	1.09	20.11	127.47	113.62	0.68	27.32
Total Metals																			
Arsenic	g				0.02						1.21						1.85		
Cadmium	g				0.01						1.82						0.53		
Chromium	g				0.05						5.39						3.56		
Copper	g				0.37						33.03						73.92		
Lead	g				0.06						7.70						49.48		
Mercury	g				0.00						0.01						0.00		
Nickel	g				0.15						12.83						8.18		
Selenium	g				0.01						0.17						0.94		
Silver	g				0.00						0.01						0.03		
Zinc	g				1.09						133.25						247.12		
Did Flow Reach Receiving Wate	er?	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes

Shaded and italicized values indicate that there was flow from the outfall and a chemistry sample was collected, however, flow was ponded at the beach and did not reach the ocean receiving water

November 2014



Escondido Beach

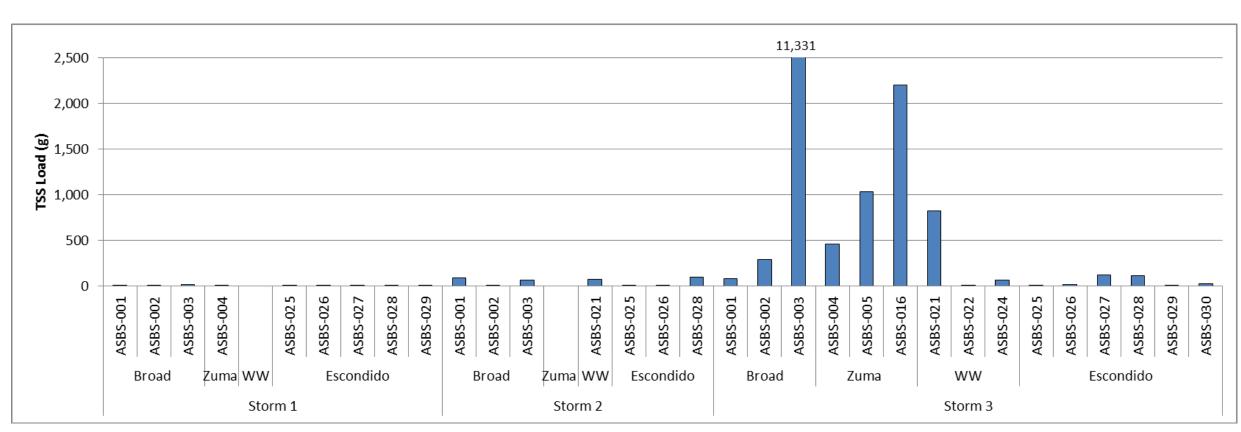


Figure 3-12. TSS Loads from All Sites That Flowed to the Receiving Water

3.4 Annual Load Estimates

Annual load estimates were calculated based on the calculated average load that reached the ocean during the three monitored events, the amount of rainfall that fell during these events, and the average annual rainfall amount for Malibu (15.5 inches, LADPW 2006). Estimates of annual loads for the monitored outfalls along the Malibu ASBS are presented in Table 3-14. Annual loads were categorized based on the percentage of the total load that was expected to reach the ASBS receiving water. A designation of "Full Discharge" indicates that 100% of the annual wet weather load is expected to reach the ocean receiving water because flow was observed reaching the receiving water during each of the three storm events. A designation of "Some Discharge" indicates that approximately 50% of the annual wet weather load is expected to reach the receiving water because effluent was observed reaching the receiving water during one or two of the storm events, but did not reach the receiving water during all of the storm events. A designation of "No Discharge" indicates that flow never reached the receiving water during the three monitored storms and therefore is unlikely to reach the receiving water during future storm events. Of the 21 monitored outfalls, six received a "Full Discharge" designation, whereas nine received a "Some Discharge" designation, and six received a "No Discharge" designation. All of the outfalls that received a "Full Discharge" designation occur on either Broad Beach or Escondido Beach and generally have only a short distance of beach to cross, if any, before reaching the receiving water of the ASBS.

3.5 Determination of Compliance with Natural Water Quality

Compliance with natural water quality was assessed by comparing post-storm receiving water data from wet weather monitoring recently conducted for ASBS 24 to the pre-storm data from the same site and to the 85th percentile threshold of reference sample concentrations measured during Bight 2008 and Bight 2013. Compliance with natural water quality requires lower values of post-storm receiving water concentrations relative to the 85th percentile reference threshold and the pre-storm concentrations. The Bight data from 2013 were combined with previously collected data during Bight '08 to determine the current 85th percentile constituent thresholds for natural water quality.

Concentrations of pollutants in post-storm receiving water were compared to those in pre-storm receiving water and to the 85th percentile threshold of reference sample concentrations. When post-storm receiving water concentrations are greater than the 85th percentile threshold and are greater than pre-storm concentrations for two or more consecutive storm events, they are considered to be in exceedance of natural water quality.

During Storm 1, the selenium concentration at SO2 was the only constituent that was above the 85th percentile reference threshold and was also above the pre-storm concentration. For Storm 2, concentrations of nitrate, copper, lead, selenium, zinc, and total PAHs at SO2 were above the 85th percentile reference threshold and were also above the pre-storm concentrations. Storm 3 had concentrations of TSS, mercury, selenium, and silver above the natural water quality criteria at SO2, and mercury, silver, and zinc concentrations above the natural water quality criteria at SO1.

Thus, at SO1 there is potentially an exceedance of natural water quality for mercury, silver, and zinc. However, because only one storm event had runoff that reached the receiving water, it is assumed to remain in compliance because a second storm event did not confirm these results. For SO2, there is an exceedance of natural water quality for selenium, mercury, and total PAHs.

					-							Outfall ASE	BS-			-	-	-				
			Broad Beach					Zuma Bea	ch			Westward Beach			Escondido Beach					Nicholas Beach		
Parameter	Units	001	002	003	004	005	008	011	013	016	018	021	022	023	024	025	026	027	028	029	030	031
Ammonia as N	g			19.1		3.0				10.4		5.2	3.2	0.1					3.2			
Oil and Grease	g	63.9	0.9	9.7	8.3	2.0	0.7	6.9	2.0	4.0	0.6	5.7	1.1	1.2	2.4	0.1	0.9	4.0	6.5	0.3	1.5	not measured
TSS	g	292.9	498.3	18883.2	770.6	1740.0	160.6	826.5	484.2	6404.8	69.5	1490.4	17.1	13.3	133.1	2.0	48.2	221.3	358.1	4.4	46.4	not measured
Total Metals																						
Arsenic	g			34.5		6.8				23.2		36.8	7.9	10.5					5.1			
Cadmium	g			14.3		1.9				11.1		6.1	0.4	0.6					3.9			
Chromium	g			286.6		72.6				207.7		69.1	4.6	4.1					14.9			
Copper	g			422.2		107.6				244.2		272.6	119.7	195.8					177.4			
Lead	g			272.1		22.0				67.5		60.6	4.5	1.5					94.6			
Mercury	g			0.0		0.0				0.0		0.0	0.0	0.0					0.0			
Nickel	g			344.0		91.4				316.4		104.8	10.1	19.6					35.0			
Selenium	g			1.4		0.8				1.7		3.1	2.6	11.2					1.9			
Silver	g			0.6		0.3				0.7		0.8	0.4	0.1					0.1			
Zinc	g			1733.5		382.7				1179.3		1041.5	206.4	448.3					630.7			
Load entering A	SBS Category	Full Discharge*	Full Discharge*	Full Discharge*	Some Discharge**	Some Discharge**	No Discharge***	No Discharge***	No Discharge***	Some Discharge**	No Discharge***	Some Discharge**	Some Discharge**	No Discharge***	Some Discharge**	Full Discharge*	Full Discharge*	Some Discharge**	Full Discharge*	Some Discharge**	Some Discharge**	* No Discharge***
	Full Discharge* indicates 100% of annual wet weather load is expected to reach ocean receiving water																					
	ome Discharge** indicates approximately 50% of annual wet weather load is expected to reach ocean receiving water																					

 Table 3-14. Estimates of Annual Loads from Monitored Outfalls along ASBS 24

No Discharge*** indicates 0% of annual load is expected to reach ocean receiving water

4.0 SUMMARY AND DISCUSSION

Special Protections Monitoring for ASBS 24 consisted of core monitoring of 21 outfall stations located along five beaches and ocean receiving water monitoring of two stations. Monitoring comprised chemical analyses of PAHs, pyrethroids, metals, OP pesticides, ammonia, nitrate, oil and grease, TSS, and total orthophosphate for core discharge stations with outfalls that were 36 inches or greater in diameter and for ocean receiving water stations. Monitoring of core discharge stations whose outfalls were less than 36 inches in diameter consisted of analysis of TSS and oil and grease. Toxicity testing was also performed on core discharge samples (one species during one storm event) and ocean receiving water samples (three species during each storm event). Results from the three monitoring events are discussed below.

Core Discharge Monitoring

Core discharge monitoring results revealed that TSS and oil and grease concentrations varied substantially among the monitored outfalls, with the highest concentrations of these pollutants occurring at outfalls along Broad Beach (ASBS-003 and ASBS-001, respectively). During Storm 1, copper was above the COP Imax value at four outfalls, whereas zinc was above the Imax at one outfall. During Storm 2, copper and chromium concentrations were above Imax values at five and three outfalls, respectively, whereas ammonia cadmium, lead, nickel and zinc were above Imax values at one outfall. In total, six metals and ammonia exceeded Imax values at ASBS-028 during Storm 2, whereas all other outfalls had two or less Imax exceedances. During Storm 3, ASBS-003 had five metals that exceeded Imax values; no other outfall had more than one metal exceed an Imax value. It should be mentioned that comparison to Imax values is for guidance purposes only and does not imply a breach of compliance.

Two OP pesticides were detected during the core discharge monitoring. Malathion was detected at ASBS-023 during two storm events, whereas chlorpyrifos was detected at ASBS-003 during one storm event. The highest malathion and chlorpyrifos concentrations that were detected in any of the core discharge samples were substantially lower than concentrations shown to cause toxicity in published literature, indicating that OP pesticides do not likely present a significant source of toxicity within the ASBS. Total PAHs varied considerably from storm to storm and outfall to outfall. The highest concentrations of total PAHs occurred at ASBS-023 during Storm 1, ASBS-028 during Storm 2, and ASBS-003 during Storm 3. The highest concentrations of pyrethroid pesticides occurred at ASBS-023 during Storm 1 and Storm 2, and at ASBS-003 during Storm 3. Across all outfalls and storm events, the pyrethroids bifenthrin and cyfluthrin occurred most frequently.

Toxicity testing was performed on 20 of 21 monitored outfalls (no testing was performed on effluent from ASBS-031 because it never flowed during any storm events). Results of toxicity analyses suggest that slight toxicity to *M. galloprovincialis* development occurred in exposure to water collected during Storm 1 at outfalls ASBS-002, ASBS-026, and ASBS-028 and in exposure to water collected during Storm 2 at ABS-004 and ASBS-022. Storm water from only one outfall underwent toxicity testing during Storm 3, and no toxicity was observed. No toxicity was observed at 15 of the 20 outfalls in which testing was performed. The slight toxicity observed resulted in a NOEC of 50% and a TUc value of 2 at ASBS-002, ASBS-004, and ASBS-026, and a NOEC of 25% and a TUc of 4 at ASBS-022 and ASBS-028.

Ocean Receiving Water Monitoring

Ocean receiving water samples were collected from SO2 during all three storm events and from SO1 during Storm 3 only, since no flow reached the receiving water during Storm 1 or Storm 2. Ocean receiving water chemistry results revealed that TSS, nitrate, several metals, total pyrethroids, and total PAHs were above the 85th percentile reference threshold. Several constituents, such as nitrate and ammonia during Storm 1 at SO2, and several metals during Storm 3 at SO2 and SO1, had higher concentrations in pre-storm samples than in post-storm concentrations of constituents that were above both pre-storm concentrations and reference thresholds are presented in Table 4-1. Selenium and total PAHs at SO2 were the only recurring constituents that were elevated above background concentrations (pre-storm concentrations) and the 85th percentile reference threshold for two consecutive storm events.

	Storm 1	S	torm 2	Storm 3				
SO1	SO2	SO1	SO2	SO1	SO2			
	Selenium		Nitrate Chromium	Mercury	Total orthophosphate TSS			
	Total PAHs		Copper	Silver	Mercury			
			Lead	Zinc	Selenium			
			Nickel		Silver			
			Selenium		Total pyrethroids			
			Zinc		Total PAHs			
			Total PAHs					

Table 4-1. Post-storm Ocean Receiving Water Concentrations that were above Pre-storm Concentrations and above 85th Percentile Reference Threshold

Toxicity results from exposure to ocean receiving water associated with receiving water site SO2 (associated with outfall ASBS-028) indicate that slight toxicity to *S. purpuratus* fertilization and *M. pyrifera* germination and growth occurred during Storm 1. No toxicity was observed for any test species or endpoint at SO2 during Storm 2 and Storm 3 or at SO1 during Storm 3. The slight toxicity observed during Storm 1 at SO2 resulted in a kelp germination NOEC of 50% and a TUc value of 2, and sea urchin fertilization and kelp growth NOECs of 25% and TUc values of 4.

Link between Outfall Concentrations and Receiving Water Concentrations

The link between the concentrations measured at outfalls ASBS-016 and ASBS-028 to concentrations measured at their respective ocean receiving water stations were explored. During Storm 1 and Storm 2, flow from outfall ASBS-016 never reached the ocean receiving water, so comparisons between outfall and receiving water during these events could only be made for outfall ASBS-028 and SO2.

As previously mentioned, Selenium and total PAHs at SO2 were the only recurring constituents in the ocean receiving water that were elevated above background concentrations (pre-storm concentrations) and were above the 85th percentile reference threshold for two consecutive storm events.

Total PAHs measured in effluent from outfall ASBS-028 during Storm 1 were 18.1 ng/L. The post-storm receiving water concentration at SO2 was measured at 41.1 ng/L, which was slightly above the reference threshold of 12.5 ng/L (Table 4-2). There is no Imax value for total PAHs. With the exception of naphthalene, all PAHs were measured below detection limits at both the outfall and in the ocean receiving water. Slightly higher naphthalene in the ocean receiving water may have come from an alternate source such as a motorized boat or nearby storm drain. It is also plausible that the low levels detected and small difference between the outfall and receiving water can be attributed to sample variability. Based on these data, the storm drain does not appear to be the cause for the exceedance of natural water quality observed in the receiving water.

The selenium concentration at outfall ASBS-028 during Storm 1 was over two orders of magnitude below the COP Imax value (Table 4-2). The post-storm receiving water concentration was three orders of magnitude below the COP Imax, but was slightly above the reference threshold criteria. The slight increase in selenium from the pre-storm concentration to the post-storm concentration within the receiving water may be attributable to sample variability or it may have been influenced by the somewhat higher outfall concentration. However, it should be noted that selenium is a naturally occurring element and is not toxic to marine aquatic life at the low concentrations observed in the post-storm receiving water.

Demonstra	Units	California Ocean Plan Instantaneous	Natural Water Quality	Outfall	Ocean Receiving Water						
Parameter	Units	Maximum	(85th	028	S02-PRE	S02-POST					
		(Imax)	Percentile)	2/19/2013	2/18/2013	2/19/2013					
Total Metals	Total Metals										
Selenium (Se)	µg/L	150	0.017	0.435	0.015	0.031					
Total PAHs	ng/L		12.5	18.1	12.5	41.1					

Table 4-2. Storm 1 Comparison of Outfall and Ocean Receiving Water Concentrations

grey highlighted cells indicate results above the natural water quality.

The total PAH concentration measured during Storm 2 at ASBS-028 was 1,758 ng/L. The poststorm receiving water concentration at SO2 was measured at 57.0 ng/L, which was slightly above the reference threshold of 12.5 ng/L and the pre-storm concentration of 12.5 ng/L (Table 4-3). Based on these data, the ocean receiving water concentration may have been influenced by the effluent from outfall ASBS-028. However, other outside sources of PAHs such as motorized boats, atmospheric deposition, or runoff from a nearby storm drain cannot be ruled out as potential contributors to the slightly higher post-storm total PAH level.

The selenium concentration at outfall ASBS-028 during Storm 2 was over two orders of magnitude below the COP Imax value (Table 4-3). The post-storm receiving water concentration was three orders of magnitude below the COP Imax, but was slightly above the reference threshold criteria. The slight increase in selenium from the pre-storm concentration to the post-storm concentration within the receiving water may be attributable to sample variability or it may have been influenced by the marginally higher outfall concentration. Selenium is a naturally occurring element and runoff from the surrounding land may have contributed to increased levels in the ocean receiving water. The trace concentrations measured in the ocean receiving water are not toxic to marine aquatic life.



Parameter	Units	California Ocean Plan Instantaneous	Natural Water Quality	Outfall	Ocean Receiving Water					
		Maximum	(85 th	028	S02-PRE	S02-POST				
		(Imax)	Percentile)	2/19/2013	2/18/2013	2/19/2013				
Total Metals	Total Metals									
Selenium (Se) µg/L		150	0.017	1.004	0.017	0.052				
Total PAHs	ng/L		12.5	1757.7	12.5	57.0				

 Table 4-3. Storm 2 Comparison of Outfall and Ocean Receiving Water Concentrations

grey highlighted cells indicate results above the natrual water quality.

Post-storm receiving water concentrations at SO1 were above reference thresholds and above pre-storm concentrations for silver, zinc, and selenium (Table 4-4). Since Storm 3 was an exceptionally large storm event, it should not be surprising that a developed watershed would have effluent concentrations for some constituents that exceeded receiving water criteria of a reference watershed. Both silver and mercury had lower concentrations at the outfall than in the receiving water, indicating that the outfall is an unlikely source of the slight increase in concentration for these constituents in the receiving water. The measured difference in concentration may be the result of sample variability. The post-storm receiving water zinc concentration at ASBS-016. However, this did not occur at SO2, as an elevated zinc concentration at outfall ASBS-028 resulted in a decreased zinc concentration in the receiving water.

Storm 3 outfall concentrations at ASBS-028 were above reference thresholds for total PAHs and selenium. The total PAH concentration measured during Storm 3 at ASBS-028 was 1,181 ng/L. The post-storm receiving water concentration at SO2 was measured at 84.1 ng/L, which was slightly above the reference threshold of 12.5 ng/L and the pre-storm concentration of 28.5 ng/L (Table 4-4). Based on these data, the ocean receiving water concentration may have been influenced by the effluent from outfall ASBS-028. However, other outside sources of PAHs such as motorized boats, atmospheric deposition, or runoff from a nearby storm drain cannot be ruled out as potential contributors to the slightly higher post-storm total PAH level.

The selenium concentration at outfall ASBS-028 during Storm 3 was over two orders of magnitude below the COP Imax value (Table 4-3). Both pre-storm and post-storm receiving water concentrations of selenium were above the reference threshold criteria, despite being approximately three orders of magnitude below the COP Imax. Given the selenium concentration of the outfall (approximately twice the concentration of the post-storm receiving water), it seems unlikely that the outfall would be entirely responsible for the increased selenium concentration of the receiving water, unless one assumes there was a dilution of only 1:2. A dilution this low would run counter to the findings of a dilution and dispersion study performed for the City of San Diego in 2013. In that study, it was determined that the median surf zone dilution for effluent entering a sandy beach in La Jolla Shores was 22:1 (AMEC 2013). Thus, the higher post-storm receiving water concentration of selenium at SO2 during Storm 3 may be attributable to other sources. It should be stressed, however, that the trace selenium concentrations measured in the ocean receiving water are not toxic to marine aquatic life.

		California Ocean Plan	Natural Water	Outfall		eceiving Iter	Outfall	Ocean Receiving Water		
Parameter	Units	Instantaneous	Quality (85 th	016	S01- PRE	S01- POST	028	S02- PRE	S02- POST	
		Maximum	Percentile)	2/28/14	2/25/14	2/28/14	2/28/14	2/25/14	2/28/14	
Total Metals										
Mercury	µg/L	0.4	0.0006	<0.0012 J	<0.0012 J	0.014	<0.0012 J	<0.0012 J	0.0261	
Silver	µg/L	7	0.08	0.10	0.09	0.18	0.01J	0.03	0.14	
Zinc	µg/L	200	18.6	151.15	5.35	21.05	87.65	41.71	12.02	
Selenium	µg/L	150	0.017	0.226	0.016	0.011J	0.334	0.083	0.155	
Total PAHs	ng/L		12.5	1,088.7	12.5	12.5	1,181.3	28.5	84.1	

Table 4-4. Storm 3 Comparison of Outfall and Ocean Receiving Water Concentrations

J-Analyte was detected at a concentration below the reporting limit and above the method detection limit. Reported value is estimated.

grey highlighted cells indicate results above the natural water quality reference threshold.

Compliance with Natural Water Quality

Compliance with natural water quality was determined by comparing post-storm receiving water data from wet weather monitoring recently conducted for ASBS 24 to pre-storm receiving water data and to the 85th percentile threshold of reference sample concentrations calculated from data collected during Bight 2008 and Bight 2013.

In accordance with the *Special Protections* document, concentrations of pollutants in post-storm receiving water are compared to those in pre-storm receiving water and to the 85th percentile threshold of reference sample concentrations. When post-storm receiving water concentrations are greater than the 85th percentile threshold and are greater than pre-storm concentrations, results from the next storm are analyzed. If post-storm receiving water concentrations are again greater than the 85th percentile threshold and pre-storm concentrations, the constituent(s) are considered as exceedances of natural water quality.

During the 2012-2013 and 2013-2014 storm seasons, wet weather monitoring was performed at two receiving water locations: SO1 and SO2. Whereas SO2 was sampled during each of the three monitored storm events, SO1 was only sampled during Storm 3 as a result of a lack of connectivity between the effluent from storm drain ASBS-016 and the ocean receiving water. Based on the results from these three storm events, SO2 was outside of compliance with natural water quality for selenium and total PAHs, per the criteria set forth in *Special Protections*. However, it should be noted that all post-storm samples from SO1 and SO2 were below COP Imax concentrations during all storm events, and that several of the natural water quality exceedances in the receiving water can be attributed to either sample variability or sources other than effluent from the adjacent outfall. As an example, during Storm 3 at SO1, both silver and mercury had lower concentrations at the outfall than in the receiving water, indicating that the outfall is an unlikely source of the slight increase in concentration from pre-storm levels for these constituents in the receiving water.

Storm 3 post-storm samples from SO1 were above pre-storm concentrations and the 85th percentile reference threshold for the metals mercury, silver, and zinc; however, because data were able to be collected from only one storm event, compliance with natural water quality could not be determined.

4.1 Recommendations

For the evaluation on the potential load reductions required in accordance with the *Special Protections* document, see the Area of Special Biological Significance 24 Compliance Plan for the County of Los Angeles and the City of Malibu that is currently being drafted.

5.0 LITERATURE CITED

- AMEC Environment and Infrastructure, Inc., 2013. La Jolla Area of Special Biological Significance Site Specific Dilution and Dispersion Model. Prepared for the City of San Diego. June 2013.
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APPENDIX C

Chemistry Results



March 02, 2016

Dan McCoy Weston Solutions, Inc. 5817 Dryden Place Carlsbad, CA 92008-

Project Name: LACDPW Malibu ASBS Physis Project ID: 1210002-006

Dear Dan,

Enclosed are the analytical results for samples submitted to PHYSIS Environmental Laboratories, Inc. (PHYSIS) on 1/3/2016. A total of 6 samples were received for analysis in accordance with the attached chain of custody (COC). Per the COC, the samples were analyzed for:

Conventionals
Total Suspended Solids by SM 2540 D
Total Orthophosphate as P by SM 4500-P E
Oil & Grease by EPA 1664B
Nitrate as N by SM 4500-NO3 E
Ammonia as N by SM 4500-NH3 D
Elements
Total Trace Metals & Mercury (EPA 1640) by EPA 1640
Organics
Synthetic Pyrethroid Pesticides by EPA 625-NCI
Polynuclear Aromatic Hydrocarbons by EPA 625
Organophosphorus Pesticides by EPA 625

Analytical results in this report apply only to samples submitted to PHYSIS in accordance with the COC and are intended to be considered in their entirety.

Please feel free to contact me at any time with any questions. PHYSIS appreciates the opportunity to provide you with our analytical and support services.

Regards,

Misty Mercier Extension 202 714-335-5918 cell mistymercier@physislabs.com



PROJECT SAMPLE LIST

Weston Solutions, Inc.

PHYSIS Project ID: 1210002-006

LACDPW M	lalibu ASBS		Total Samples: 6					
PHYSIS ID	D Sample ID	Description	Date	Time	Matrix			
38526	LACDPW-010316-ASBS-SO1 PRE		1/3/2016	12:30	Seawater			
38527	LACDPW-010316-ASBS-SO2 PRE		1/3/2016	11:50	Seawater			
38744	LACDPW-010616-ASBS-028		1/6/2016	16:20	Freshwater			
38745	LACDPW-010616-ASBS-S02-Post		1/6/2016	16:20	Seawater			
38746	LACDPW-010616-ASBS-016		1/6/2016	17:15	Freshwater			
38747	LACDPW-010616-ASBS-S01		1/6/2016	17:15	Seawater			

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ABBREVIATIONS and ACRONYMS

QM	Quality Manual
QA	Quality Assurance
QC	Quality Control
MDL	method detection limit
RL	reporting limit
R1	project sample
R2	project sample replicate
MS1	matrix spike
MS2	matrix spike replicate
B1	procedural blank
B2	procedural blank replicate
BS1	blank spike
BS2	blank spike replicate
LCS1	laboratory control spike
LCS2	laboratory control spike replicate
LCM1	laboratory control material
LCM2	laboratory control material replicate
CRM1	certified reference material
CRM2	certified reference material replicate
RPD	relative percent difference
LMW	low molecular weight
HMW	high molecular weight

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QUALITY ASSURANCE SUMMARY

LABORATORY BATCH: Physis' QM defines a laboratory batch as a group of 20 or fewer project samples of similar matrix, processed together under the same conditions and with the same reagents. QC samples are associated with each batch and were used to assess the validity of the sample analyses.

PROCEDURAL BLANK: Laboratory contamination introduced during method use is assessed through the preparation and analysis of procedural blanks is provided at a minimum frequency of one per batch.

ACCURACY: Accuracy of analytical measurements is the degree of closeness based on percent recovery calculations between measured values and the actual or true value and includes a combination of reproducibility error and systematic bias due to sampling and analytical operations. Accuracy of the project data was indicated by analysis of MS, BS, LCS, LCM, CRM, and/or surrogate spikes on a minimum frequency of one per batch. Physis' QM requires that 95% of the target compounds greater than 10 times the MDL be within the specified acceptance limits.

PRECISION: Precision is the agreement among a set of replicate measurements without assumption of knowledge of the true value and is based on RPD calculations between repeated values. Precision of the project data was determined by analysis of replicate MS1/MS2, BS1/BS2, LCS1/LCS2, LCM1/LCM2, CRM1/CRM2, surrogate spikes and/or replicate project sample analysis (R1/R2) on a minimum frequency of one per batch. Physis' QM requires that for 95% of the compounds greater than 10 times the MDL, the percent RPD should be within the specified acceptance range.

BLANK SPIKES: BS is the introduction of a known concentration of analyte into the procedural blank. BS demonstrates performance of the preparation and analytical methods on a clean matrix void of potential matrix related interferences. The BS is performed in laboratory deionized water, making these recoveries a better indicator of the efficiency of the laboratory method per se.

MATRIX SPIKES: MS is the introduction of a known concentration of analyte into a sample. MS samples demonstrate the effect a particular project sample matrix has on the accuracy of a measurement. Individually, MS samples also indicate the bias of analytical measurements due to chemical interferences inherent in the in the specific project sample spiked. Intrinsic target analyte concentration in the specific project sample can also significantly impact MS recovery.

CERTIFIED REFERENCE MATERIALS: CRMs are materials of various matrices for which analytical information has been determined and certified by a recognized authority. These are used to provide a quantitative assessment of the accuracy of an analytical method. CRMs provide evidence that the laboratory preparation and analysis produces results that are comparable to those obtained by an independent organization.

LABORATORY CONTROL MATERIAL: LCM is provided because a suitable natural seawater CRM is not available and can be used to indicate accuracy of the method. Physis' internal LCM is seawater collected at ~800 meters in the Southern California San Pedro Basin and can be used as a reference for background concentrations in clean, natural seawater for comparison to project samples.

LABORATORY CONTROL SPIKES: LCS is the introduction of a known concentration of analyte into Physis' LCM. LCS samples were employed to assess the effect the seawater matrix has on the accuracy of a measurement. LCS also indicate the bias of this method due to chemical interferences inherent in the in the seawater matrix. Intrinsic LCM concentration can also significantly impact LCS recovery.

SURROGATES: A surrogate is a pure analyte unlikely to be found in any project sample, behaves similarly to

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the target analyte and most often used with organic analytical procedures. Surrogates are added in known concentration to all samples and are measured to indicate overall efficiency of the method including processing and analyses.

HOLDING TIME: Method recommended holding times are the length of time a project sample can be stored under specific conditions after collection and prior to analysis without significantly affecting the analyte's concentration. Holding times can be extended if preservation techniques are employed to reduce biodegradation, volatilization, oxidation, sorption, precipitation, and other physical and chemical processes.

SAMPLE STORAGE/RETENTION: In order to maintain chemical integrity prior to analysis, all samples submitted to Physis are refrigerated (liquids) or frozen (solids) upon receipt unless otherwise recommended by applicable methods. Solid samples are retained for 1 year from collection while liquid samples are retained until method recommended holding times elapse.

TOTAL/DISSOLVED FRACTION: In some instances, the results for the dissolved fraction may be higher than the total fraction for a particular analyte (e.g. trace metals). This is typically caused by the analytical variation for each result and indicates that the target analyte is primarily in the dissolved phase, within the sample.



PHYSIS QUALIFIER CODES

CODE	DEFINITION
#	see Case Narrative
ND	analyte not detected at or above the MDL
В	analyte was detected in the procedural blank greater than 10 times the MDL
E	analyte concentration exceeds the upper limit of the linear calibration range, reported value is estimated
Н	sample received and/or analyzed past the recommended holding time
J	analyte was detected at a concentration below the RL and above the MDL, reported value is estimated
Ν	insufficient sample, analysis could not be performed
Μ	analyte was outside the specified accuracy and/or precision acceptance limits due to matrix interference. The associated B/BS were within limits, therefore the sample data was reported without further clarification
SH	analyte concentration in the project sample exceeded the spike concentration, therefore accuracy and/or precision acceptance limits do not apply
SL	analyte results were lower than 10 times the MDL, therefore accuracy and/or precision acceptance limits do not apply
NH	project sample was heterogeneous and sample homogeneity could not be readily achieved using routine laboratory practices, therefore accuracy and/or precision acceptance limits do not apply
Q	analyte was outside the specified QAPP acceptance limits for precision and/or accuracy but within Physis derived acceptance limits, therefore the sample data was reported without further clarification
R	Physis' QM allows for 5% of the target compounds greater than 10 times the MDL to be outside the specified acceptance limits for precision and/or accuracy. This is often due to random error and does not indicate any significant problems with the analysis of these project samples

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fax: (714) 602-5321

main: (714) 602-5320

www.physislabs.com info@

info@physislabs.com

ANALYTICAL REPORT

CA ELAP #2769

1904 E. Wright Circle, Anaheim CA 92806 Conventionals

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
Sample ID: 38526-R1	LACDPW-010316-ASBS-SO1 PRE	Matrix: Se	awater	Sampled: 03-Jan-16	12:30	Received: 03-Jan-16
	Method: SM 2540 D	Batch ID: C-1	7143	Prepared: 09-Jan-16	-	Analyzed: 09-Jan-16
Total Suspended Solids	NA	57.6	0.5	0.5	mg/L	
	Method: SM 4500-NH3 D	Batch ID: C-18	8115	Prepared: 28-Jan-16		Analyzed: 28-Jan-16
Ammonia as N	NA	ND	0.02	0.05	mg/L	
	Method: EPA 1664B	Batch ID: C-1	9048	Prepared: 25-Jan-16		Analyzed: 25-Jan-16
Oil & Grease	NA	ND	1	1	mg/L	
	Method: SM 4500-P E	Batch ID: C-2	3143	Prepared: 05-Jan-16		Analyzed: 05-Jan-16
Total Orthophosphate as P	NA	0.03	0.01	0.02	mg/L	
	Method: SM 4500-NO3 E	Batch ID: C-2	3155	Prepared: 05-Jan-16		Analyzed: 26-Jan-16
Nitrate as N	NA	0.02	0.01	0.05	mg/L	J
Sample ID: 38527-R1	LACDPW-010316-ASBS-SO2 PRE Method: SM 2540 D	Matrix: Se Batch ID: C-1		Sampled: 03-Jan-16 Prepared: 09-Jan-16	11:50	Received: 03-Jan-16 Analyzed: 09-Jan-16
Total Suspended Solids	NA	4.5	0.5	0.5	mg/L	
	Method: SM 4500-NH3 D	Batch ID: C-18	8115	Prepared: 28-Jan-16		Analyzed: 28-Jan-16
Ammonia as N	NA	ND	0.02	0.05	mg/L	
	Method: EPA 1664B	Batch ID: C-1	9048	Prepared: 25-Jan-16		Analyzed: 25-Jan-16
Oil & Grease	NA	ND	1	1	mg/L	
	Method: SM 4500-P E	Batch ID: C-2	3143	Prepared: 05-Jan-16		Analyzed: 05-Jan-16
Total Orthophosphate as P	NA	0.03	0.01	0.02	mg/L	
	Method: SM 4500-NO3 E	Batch ID: C-2	3155	Prepared: 05-Jan-16		Analyzed: 26-Jan-16
Nitrate as N	NA	0.02	0.01	0.05	mg/L	J
Sample ID: 38744-R1	LACDPW-010616-ASBS-028 Method: SM 2540 D	Matrix: Fre Batch ID: C-1		Sampled: 06-Jan-16 Prepared: 09-Jan-16	16:20	Received: 06-Jan-16 Analyzed: 09-Jan-16
Total Suspended Solids	NA	1040	0.5	0.5	mg/L	
	Method: SM 4500-NH3 D	Batch ID: C-1	8115	Prepared: 28-Jan-16		Analyzed: 28-Jan-16
Ammonia as N	NA	0.42	0.02	0.05	mg/L	
	Method: EPA 1664B	Batch ID: C-1	9048	Prepared: 25-Jan-16		Analyzed: 25-Jan-16
Oil & Grease	NA	4.8	1	1	mg/L	
	Method: SM 4500-P E	Batch ID: C-2	3150	Prepared: 08-Jan-16		Analyzed: 08-Jan-16

PHYSIS Project ID: 1210002-006

Client: Weston Solutions, Inc.



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om CA ELAP #2769

1904 E. Wright Circle, Anaheim CA 92806 Conventionals

ANAL	YTIC	AI R	FPC	RT

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
Total Orthophosphate as P	NA	0.21	0.01	0.02	mg/L	
	Method: SM 4500-NO3 E	Batch ID: C-2	3155	Prepared: 08-Jan-16		Analyzed: 26-Jan-16
Nitrate as N	NA	0.34	0.01	0.05	mg/L	
Sample ID: 38745-R1	LACDPW-010616-ASBS-S02-Post Method: SM 2540 D	Matrix: Se Batch ID: C-1		Sampled: 06-Jan-16 Prepared: 09-Jan-16	16:20	Received: 06-Jan-16 Analyzed: 09-Jan-16
Total Suspended Solids	NA	35.2	0.5	0.5	mg/L	
	Method: SM 4500-NH3 D	Batch ID: C-1	8115	Prepared: 28-Jan-16		Analyzed: 28-Jan-16
Ammonia as N	NA	0.04	0.02	0.05	mg/L	J
	Method: EPA 1664B	Batch ID: C-1	9048	Prepared: 25-Jan-16		Analyzed: 25-Jan-16
Oil & Grease	NA	ND	1	1	mg/L	
	Method: SM 4500-P E	Batch ID: C-2	3150	Prepared: 08-Jan-16		Analyzed: 08-Jan-16
Total Orthophosphate as P	NA	0.04	0.01	0.02	mg/L	
	Method: SM 4500-NO3 E	Batch ID: C-2	3155	Prepared: 08-Jan-16		Analyzed: 26-Jan-16
Nitrate as N	NA	0.03	0.01	0.05	mg/L	J
Sample ID: 38746-R1	LACDPW-010616-ASBS-016 Method: SM 2540 D	Matrix: Fro Batch ID: C-1		Sampled: 06-Jan-16 Prepared: 09-Jan-16	17:15	Received: 06-Jan-16 Analyzed: 09-Jan-16
Total Suspended Solids	NA	284	0.5	0.5	mg/L	.,
•	Method: SM 4500-NH3 D	Batch ID: C-1	8115	Dropprodu 28 Jan (C	0	
	Method, SM 4500-NH3 D			Prepareu: 28-Jan-16		Analyzed: 28-Jan-16
Ammonia as N	NA	0.51	-	Prepared: 28-Jan-16 0.05	mg/L	Analyzed: 28-Jan-16
Ammonia as N			0.02		mg/L	Analyzed: 28-Jan-16 Analyzed: 25-Jan-16
Ammonia as N Oil & Grease	NA	0.51	0.02	0.05	mg/L mg/L	
	NA Method: EPA 1664B	0.51 Batch ID: C-1	0.02 9048 1	0.05 Prepared: 25-Jan-16	Ū	
	NA Method: EPA 1664B NA	0.51 Batch ID: C-14 ND	0.02 9048 1 3150	0.05 Prepared: 25-Jan-16 1	Ū	Analyzed: 25-Jan-16
Oil & Grease	NA Method: EPA 1664B NA Method: SM 4500-P E	0.51 Batch ID: C-1 ND Batch ID: C-2	0.02 9048 1 3150 0.01	0.05 Prepared: 25-Jan-16 1 Prepared: 08-Jan-16	mg/L	Analyzed: 25-Jan-16
Oil & Grease	NA Method: EPA 1664B NA Method: SM 4500-P E NA	0.51 Batch ID: C-1 ND Batch ID: C-2 0.39	0.02 9048 1 3150 0.01	0.05 Prepared: 25-Jan-16 1 Prepared: 08-Jan-16 0.02	mg/L	Analyzed: 25-Jan-16 Analyzed: 08-Jan-16
Oil & Grease Total Orthophosphate as P	NA Method: EPA 1664B NA Method: SM 4500-P E NA Method: SM 4500-NO3 E NA	0.51 Batch ID: C-1 ND Batch ID: C-2 0.39 Batch ID: C-2 1.98 Matrix: Se	0.02 9048 1 3150 0.01 3155 0.01 awater	0.05 Prepared: 25-Jan-16 1 Prepared: 08-Jan-16 0.02 Prepared: 08-Jan-16 0.05 Sampled: 06-Jan-16	mg/L mg/L mg/L	Analyzed: 25-Jan-16 Analyzed: 08-Jan-16 Analyzed: 26-Jan-16 Received: 06-Jan-16
Oil & Grease Total Orthophosphate as P Nitrate as N Sample ID: 38747-R1	NA Method: EPA 1664B NA Method: SM 4500-P E NA Method: SM 4500-NO3 E NA	0.51 Batch ID: C-10 ND Batch ID: C-2 0.39 Batch ID: C-2 1.98	0.02 9048 1 3150 0.01 3155 0.01 awater 7143	0.05 Prepared: 25-Jan-16 1 Prepared: 08-Jan-16 0.02 Prepared: 08-Jan-16 0.05	mg/L mg/L mg/L 17:15	Analyzed: 25-Jan-16 Analyzed: 08-Jan-16 Analyzed: 26-Jan-16
Oil & Grease Total Orthophosphate as P Nitrate as N	NA Method: EPA 1664B NA Method: SM 4500-P E NA Method: SM 4500-NO3 E NA Method: SM 4500-NO3 E NA Method: SM 2500-NO3 E NA	0.51 Batch ID: C-1 ND Batch ID: C-2 0.39 Batch ID: C-2 1.98 Matrix: Se Batch ID: C-1	0.02 9048 1 3150 0.01 3155 0.01 awater 7143 0.5	0.05 Prepared: 25-Jan-16 1 Prepared: 08-Jan-16 0.02 Prepared: 08-Jan-16 0.05 Sampled: 06-Jan-16 Prepared: 09-Jan-16	mg/L mg/L mg/L	Analyzed: 25-Jan-16 Analyzed: 08-Jan-16 Analyzed: 26-Jan-16 Received: 06-Jan-16

PHYSIS Project ID: 1210002-006

Client: Weston Solutions, Inc.

main: (714) 602-5320



fax: (714) 602-5321 www.physislabs.com info@physislabs.com

Conventionals

1904 E. Wright Circle, Anaheim CA 92806

ANALYTICAL REPO	ORT
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CA ELAP #2769

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
	Method: EPA 1664B	Batch ID: C-1	9048	Prepared: 25-Ja	an-16	Analyzed: 25-Jan-16
Oil & Grease	NA	ND	1	1	mg/L	
	Method: SM 4500-P E	Batch ID: C-2	3150	Prepared: o8-Ja	an-16	Analyzed: 08-Jan-16
Total Orthophosphate as P	NA	0.03	0.01	0.02	mg/L	
	Method: SM 4500-NO3 E	Batch ID: C-2	3155	Prepared: 08-Ja	an-16	Analyzed: 26-Jan-16
Nitrate as N	NA	0.04	0.01	0.05	mg/L	J

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ANALYTICAL REPORT

CA ELAP #2769

Elements

1904 E. Wright Circle, Anaheim CA 92806

FRACTION	RESULT	MDL	RL	UNITS	QA CODE
				0	QA CODE
LACDPW-010316-ASBS-SO1 PRE Method: EPA 1640	Matrix: Se Batch ID: E-1		Sampled: 03-Jan-16 Prepared: 11-Feb-16	12:30	Received: 03-Jan-16 Analyzed: 20-Feb-16
				ua/L	
Total	0.3222	0.0025	0.005		
Total	ND	0.0012	0.005		
Total	0.9828	0.0025	0.005		
Total	0.02	0.005	0.015		
Total	0.08	0.01	0.02	µg/L	
Total	0.3685	0.0025	0.005	µg/L	
LACDPW-010316-ASBS-SO2 PRE Method: EPA 1640	Matrix: Seawater Batch ID: E-10073		Sampled: 03-Jan-16 Prepared: 11-Feb-16	11:50	Received: 03-Jan-16 Analyzed: 20-Feb-16
Total	1.437	0.005	0.015	µg/L	
Total	0.0275	0.0025	0.005	µg/L	
Total	0.2748	0.0125	0.025	µg/L	
Total	0.25	0.005	0.01	µg/L	
Total	0.0552	0.0025	0.005	µg/L	
Total	ND	0.0012	0.005	µg/L	
Total	0.3281	0.0025	0.005	µg/L	
Total	0.015	0.005	0.015	µg/L	
Total	0.08	0.01	0.02	µg/L	
Total	1.4714	0.0025	0.005	µg/L	
LACDPW-010616-ASBS-028 Method: EPA 1640			Sampled: 06-Jan-16 Prepared: 11-Feb-16	16:20	Received: 06-Jan-16 Analyzed: 19-Feb-16
Total	7.243	0.005	0.015	µg/L	
Total	8.3246	0.0025	0.005	µg/L	
Total	36.7011	0.0125	0.025	µg/L	
Total	71.403	0.005	0.01	µg/L	
	Total Total	Total 1.525 Total 0.0357 Total 0.3171 Total 0.396 Total 0.3222 Total 0.3222 Total 0.3222 Total 0.3222 Total 0.02 Total 0.02 Total 0.02 Total 0.08 Total 0.3685 LACDPW-oto316-ASBS-SO2 PRE Matrix: Se Method: EPA 1640 Batch ID: E- Total 0.2748 Total 0.2748 Total 0.2748 Total 0.25 Total 0.25 Total 0.25 Total 0.3281 Total 0.3281 Total 0.015 Total 0.08 Total 0.08 Total 0.08 Total 0.08 Total 0.08 Total 0.08 Total 0.243 Total 0.243 Total <td< td=""><td>Total 1.525 0.005 Total 0.0357 0.0025 Total 0.3171 0.0125 Total 0.396 0.005 Total 0.3222 0.0025 Total 0.3222 0.0025 Total 0.025 0.012 Total 0.9828 0.0025 Total 0.08 0.01 Total 0.08 0.01 Total 0.08828 0.0025 Total 0.08 0.01 Total 0.0865 0.0025 Total 0.3685 0.0025 Method: EPA 1640 Batch ID: E-10073 Total 0.0275 0.0025 Total 0.0275 0.0025 Total 0.2748 0.0125 Total 0.2748 0.0125 Total 0.252 0.0052 Total 0.252 0.0052 Total 0.015 0.0052 Total 0.025 0.0052 <td>Total 1.525 0.005 0.015 Total 0.0357 0.025 0.005 Total 0.3171 0.0125 0.025 Total 0.396 0.005 0.01 Total 0.3222 0.0025 0.005 Total 0.3222 0.0025 0.005 Total 0.9828 0.0025 0.005 Total 0.02 0.005 0.015 Total 0.02 0.005 0.015 Total 0.02 0.005 0.015 Total 0.02 0.005 0.005 Total 0.02 0.005 0.005 Method: EPA 1640 Batch ID: E-10073 Prepared: 11-Feb-16 Method: EPA 1640 0.2748 0.0125 0.005 Total 0.2748 0.0125 0.005 Total 0.2748 0.012 0.005 Total 0.2821 0.005 0.015 Total 0.015 0.005 0.015</td><td>Total 1.525 0.005 0.015 µg/L Total 0.0357 0.0025 0.005 µg/L Total 0.3171 0.0125 0.025 µg/L Total 0.396 0.005 0.01 µg/L Total 0.322 0.0025 0.005 µg/L Total 0.9828 0.0025 0.005 µg/L Total 0.9828 0.0025 0.005 µg/L Total 0.02 0.005 0.015 µg/L Method: EPA 1640 Batch ID: E-10073 Prepared: 11-Feb-16 Prepared: 11-Feb-16 Total 0.027 0.005 0.011 µg/L Total 0.2748 0.0125 0.025 µg/L Total 0.25 0.005 0.01 µg/L Total</td></td></td<>	Total 1.525 0.005 Total 0.0357 0.0025 Total 0.3171 0.0125 Total 0.396 0.005 Total 0.3222 0.0025 Total 0.3222 0.0025 Total 0.025 0.012 Total 0.9828 0.0025 Total 0.08 0.01 Total 0.08 0.01 Total 0.08828 0.0025 Total 0.08 0.01 Total 0.0865 0.0025 Total 0.3685 0.0025 Method: EPA 1640 Batch ID: E-10073 Total 0.0275 0.0025 Total 0.0275 0.0025 Total 0.2748 0.0125 Total 0.2748 0.0125 Total 0.252 0.0052 Total 0.252 0.0052 Total 0.015 0.0052 Total 0.025 0.0052 <td>Total 1.525 0.005 0.015 Total 0.0357 0.025 0.005 Total 0.3171 0.0125 0.025 Total 0.396 0.005 0.01 Total 0.3222 0.0025 0.005 Total 0.3222 0.0025 0.005 Total 0.9828 0.0025 0.005 Total 0.02 0.005 0.015 Total 0.02 0.005 0.015 Total 0.02 0.005 0.015 Total 0.02 0.005 0.005 Total 0.02 0.005 0.005 Method: EPA 1640 Batch ID: E-10073 Prepared: 11-Feb-16 Method: EPA 1640 0.2748 0.0125 0.005 Total 0.2748 0.0125 0.005 Total 0.2748 0.012 0.005 Total 0.2821 0.005 0.015 Total 0.015 0.005 0.015</td> <td>Total 1.525 0.005 0.015 µg/L Total 0.0357 0.0025 0.005 µg/L Total 0.3171 0.0125 0.025 µg/L Total 0.396 0.005 0.01 µg/L Total 0.322 0.0025 0.005 µg/L Total 0.9828 0.0025 0.005 µg/L Total 0.9828 0.0025 0.005 µg/L Total 0.02 0.005 0.015 µg/L Method: EPA 1640 Batch ID: E-10073 Prepared: 11-Feb-16 Prepared: 11-Feb-16 Total 0.027 0.005 0.011 µg/L Total 0.2748 0.0125 0.025 µg/L Total 0.25 0.005 0.01 µg/L Total</td>	Total 1.525 0.005 0.015 Total 0.0357 0.025 0.005 Total 0.3171 0.0125 0.025 Total 0.396 0.005 0.01 Total 0.3222 0.0025 0.005 Total 0.3222 0.0025 0.005 Total 0.9828 0.0025 0.005 Total 0.02 0.005 0.015 Total 0.02 0.005 0.015 Total 0.02 0.005 0.015 Total 0.02 0.005 0.005 Total 0.02 0.005 0.005 Method: EPA 1640 Batch ID: E-10073 Prepared: 11-Feb-16 Method: EPA 1640 0.2748 0.0125 0.005 Total 0.2748 0.0125 0.005 Total 0.2748 0.012 0.005 Total 0.2821 0.005 0.015 Total 0.015 0.005 0.015	Total 1.525 0.005 0.015 µg/L Total 0.0357 0.0025 0.005 µg/L Total 0.3171 0.0125 0.025 µg/L Total 0.396 0.005 0.01 µg/L Total 0.322 0.0025 0.005 µg/L Total 0.9828 0.0025 0.005 µg/L Total 0.9828 0.0025 0.005 µg/L Total 0.02 0.005 0.015 µg/L Method: EPA 1640 Batch ID: E-10073 Prepared: 11-Feb-16 Prepared: 11-Feb-16 Total 0.027 0.005 0.011 µg/L Total 0.2748 0.0125 0.025 µg/L Total 0.25 0.005 0.01 µg/L Total

Client: Weston Solutions, Inc.

main: (714) 602-5320



fax: (714) 602-5321

www.physislabs.com info@

info@physislabs.com

CA ELAP #2769

Elements

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ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
Lead (Pb)	Total	33.5413	0.0025	0.005	µg/L	
Mercury (Hg)	Total	0.5599	0.0012	0.005	µg/L	
Nickel (Ni)	Total	69.7875	0.0025	0.005	µg/L	
Selenium (Se)	Total	1.482	0.005	0.015	µg/L	
Silver (Ag)	Total	0.01	0.01	0.02	µg/L	J
Zinc (Zn)	Total	413.4303	0.0025	0.005	µg/L	

Sample ID: 38745-R1	LACDPW-010616-ASBS-S02-Post Method: EPA 1640	Matrix: Seawater Batch ID: E-10073		Sampled: 06-Jan-16 16:20 Prepared: 11-Feb-16		Received: 06-Jan-16 Analyzed: 20-Feb-16
Arsenic (As)	Total	1.592	0.005	0.015	µg/L	
Cadmium (Cd)	Total	0.1077	0.0025	0.005	µg/L	
Chromium (Cr)	Total	1.955	0.0125	0.025	µg/L	
Copper (Cu)	Total	2.004	0.005	0.01	µg/L	
Lead (Pb)	Total	0.6518	0.0025	0.005	µg/L	
Mercury (Hg)	Total	ND	0.0012	0.005	µg/L	
Nickel (Ni)	Total	1.9523	0.0025	0.005	µg/L	
Selenium (Se)	Total	0.076	0.005	0.015	µg/L	
Silver (Ag)	Total	0.09	0.01	0.02	µg/L	
Zinc (Zn)	Total	5.2993	0.0025	0.005	µg/L	

Sample ID: 38746-R1	LACDPW-010616-ASBS-016 Method: EPA 1640	Matrix: Freshwater Batch ID: E-10073		Sampled: 06-Jan-16 17:15 Prepared: 11-Feb-16		5 Received: 06-Jan-16 Analyzed: 19-Feb-16
Arsenic (As)	Total	4.141	0.005	0.015	µg/L	
Cadmium (Cd)	Total	9.2101	0.0025	0.005	µg/L	
Chromium (Cr)	Total	35.1759	0.0125	0.025	µg/L	
Copper (Cu)	Total	73.101	0.005	0.01	µg/L	
Lead (Pb)	Total	34.7992	0.0025	0.005	µg/L	
Mercury (Hg)	Total	0.4391	0.0012	0.005	µg/L	
Nickel (Ni)	Total	72.0448	0.0025	0.005	µg/L	
Selenium (Se)	Total	0.965	0.005	0.015	µg/L	
Silver (Ag)	Total	0.08	0.01	0.02	µg/L	
Zinc (Zn)	Total	446.4958	0.0025	0.005	µg/L	

PHYSIS Project ID: 1210002-006

main: (714) 602-5320



fax: (714) 602-5321

www.physislabs.com info@

info@physislabs.com

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CA ELAP #2769

Elements

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ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
Sample ID: 38747-R1	LACDPW-010616-ASBS-S01 Method: EPA 1640	Matrix: So Batch ID: E-		Sampled: 06-Jan-16 Prepared: 11-Feb-16	17:15	Received: o6-Jan-16 Analyzed: 20-Feb-16
Arsenic (As)	Total	1.551	0.005	0.015	µg/L	
Cadmium (Cd)	Total	0.0279	0.0025	0.005	µg/L	
Chromium (Cr)	Total	0.8967	0.0125	0.025	µg/L	
Copper (Cu)	Total	0.564	0.005	0.01	µg/L	
Lead (Pb)	Total	0.1701	0.0025	0.005	µg/L	
Mercury (Hg)	Total	ND	0.0012	0.005	µg/L	
Nickel (Ni)	Total	0.8076	0.0025	0.005	µg/L	
Selenium (Se)	Total	0.012	0.005	0.015	µg/L	J
Silver (Ag)	Total	0.09	0.01	0.02	µg/L	
Zinc (Zn)	Total	1.1452	0.0025	0.005	µg/L	

main: (714) 602-5320



1904 E. Wright Circle, Anaheim CA 92806

main: (714) 602-5320

fax: (714) 602-5321 www.physislabs.com

info@physislabs.com

ANALYTICAL REPORT

CA ELAP #2769

Organophosphorus Pesticides

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
Sample ID: 38526-R1	LACDPW-010316-ASBS-SO1 PRE Method: EPA 625		: Seawater : 0-9034	Sampled: 03-Jan-16 Prepared: 07-Jan-16	5 12:30	Received: 03-Jan-16 Analyzed: 04-Feb-16
(PCB030)	Total	89		c	% Recovery	
(PCB112)	Total	90		c	% Recovery	
(PCB198)	Total	83		c	% Recovery	
(TCMX)	Total	71		c	% Recovery	
Bolstar (Sulprofos)	Total	ND	2	4	ng/L	
Chlorpyrifos	Total	ND	0.5	1	ng/L	
Demeton	Total	ND	1	2	ng/L	
Diazinon	Total	ND	0.5	1	ng/L	
Dichlorvos	Total	ND	3	6	ng/L	
Dimethoate	Total	ND	5	10	ng/L	
Disulfoton	Total	ND	1	2	ng/L	
Ethoprop (Ethoprofos)	Total	ND	1	2	ng/L	
Fenchlorphos (Ronnel)	Total	ND	2	4	ng/L	
Fensulfothion	Total	ND	1	2	ng/L	
Fenthion	Total	ND	2	4	ng/L	
Malathion	Total	ND	3	6	ng/L	
Methidathion	Total	ND	5	10	ng/L	
Methyl parathion	Total	ND	1	2	ng/L	
Mevinphos (Phosdrin)	Total	ND	5	10	ng/L	
Phorate	Total	ND	5	10	ng/L	
Phosmet	Total	ND	5	10	ng/L	
Tetrachlorvinphos (Stirofos)	Total	ND	2	4	ng/L	
Tokuthion	Total	ND	3	6	ng/L	
Trichloronate	Total	ND	1	2	ng/L	
Sample ID: 38527-R1	LACDPW-010316-ASBS-SO2 PRE Method: EPA 625		: Seawater : 0-9034	Sampled: 03-Jan-16 Prepared: 07-Jan-16	5 11:50	Received: 03-Jan-16 Analyzed: 04-Feb-16



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info@physislabs.com

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ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
(TCMX)	Total	56			% Recovery	
Bolstar (Sulprofos)	Total	ND	2	4	ng/L	
Chlorpyrifos	Total	ND	0.5	1	ng/L	
Demeton	Total	ND	1	2	ng/L	
Diazinon	Total	ND	0.5	1	ng/L	
Dichlorvos	Total	ND	3	6	ng/L	
Dimethoate	Total	ND	5	10	ng/L	
Disulfoton	Total	ND	1	2	ng/L	
Ethoprop (Ethoprofos)	Total	ND	1	2	ng/L	
Fenchlorphos (Ronnel)	Total	ND	2	4	ng/L	
Fensulfothion	Total	ND	1	2	ng/L	
Fenthion	Total	ND	2	4	ng/L	
Malathion	Total	ND	3	6	ng/L	
Methidathion	Total	ND	5	10	ng/L	
Methyl parathion	Total	ND	1	2	ng/L	
Mevinphos (Phosdrin)	Total	ND	5	10	ng/L	
Phorate	Total	ND	5	10	ng/L	
Phosmet	Total	ND	5	10	ng/L	
Tetrachlorvinphos (Stirofos)	Total	ND	2	4	ng/L	
Tokuthion	Total	ND	3	6	ng/L	
Trichloronate	Total	ND	1	2	ng/L	

Sample ID: 38744-R1	LACDPW-010616-ASBS-028 Method: EPA 625	Matrix: Batch ID:	Freshwater O-9034	Sampled: Prepared:	06-Jan-16 16:20 07-Jan-16	Received: 06-Jan-16 Analyzed: 04-Feb-16
(PCB030)	Total	96			% Recovery	
(PCB112)	Total	93			% Recovery	
(PCB198)	Total	31			% Recovery	
(TCMX)	Total	99			% Recovery	
Bolstar (Sulprofos)	Total	ND	2	4	ng/L	
Chlorpyrifos	Total	ND	0.5	1	ng/L	
Demeton	Total	ND	1	2	ng/L	
Diazinon	Total	ND	0.5	1	ng/L	
Dichlorvos	Total	ND	3	6	ng/L	

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Innovative Solutions for Nature fax: (714) 602-5321 www.p

www.physislabs.com info@

info@physislabs.com

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Organophosphorus Pesticides

main: (714) 602-5320

1904 E. Wright Circle, Anaheim CA 92806

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS QA CODE	
Dimethoate	Total	ND	5	10	ng/L	
Disulfoton	Total	ND	1	2	ng/L	
Ethoprop (Ethoprofos)	Total	ND	1	2	ng/L	
Fenchlorphos (Ronnel)	Total	ND	2	4	ng/L	
Fensulfothion	Total	ND	1	2	ng/L	
Fenthion	Total	ND	2	4	ng/L	
Malathion	Total	ND	3	6	ng/L	
Methidathion	Total	ND	5	10	ng/L	
Methyl parathion	Total	ND	1	2	ng/L	
Mevinphos (Phosdrin)	Total	ND	5	10	ng/L	
Phorate	Total	ND	5	10	ng/L	
Phosmet	Total	ND	5	10	ng/L	
Tetrachlorvinphos (Stirofos)	Total	ND	2	4	ng/L	
Tokuthion	Total	ND	3	6	ng/L	
Trichloronate	Total	ND	1	2	ng/L	

Sample ID: 38745-R1	LACDPW-010616-ASBS-S02-Post Method: EPA 625	Matrix: Batch ID:	Seawater O-9034	Sampled: o Prepared: o		Received: 06-Jan-16 Analyzed: 04-Feb-16
(PCB030)	Total	97			% Recovery	
(PCB112)	Total	93			% Recovery	
(PCB198)	Total	84			% Recovery	
(TCMX)	Total	90			% Recovery	
Bolstar (Sulprofos)	Total	ND	2	4	ng/L	
Chlorpyrifos	Total	ND	0.5	1	ng/L	
Demeton	Total	ND	1	2	ng/L	
Diazinon	Total	ND	0.5	1	ng/L	
Dichlorvos	Total	ND	3	6	ng/L	
Dimethoate	Total	ND	5	10	ng/L	
Disulfoton	Total	ND	1	2	ng/L	
Ethoprop (Ethoprofos)	Total	ND	1	2	ng/L	
Fenchlorphos (Ronnel)	Total	ND	2	4	ng/L	
Fensulfothion	Total	ND	1	2	ng/L	
Fenthion	Total	ND	2	4	ng/L	

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info@physislabs.com

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ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
Malathion	Total	ND	3	6	ng/L	
Methidathion	Total	ND	5	10	ng/L	
Methyl parathion	Total	ND	1	2	ng/L	
Mevinphos (Phosdrin)	Total	ND	5	10	ng/L	
Phorate	Total	ND	5	10	ng/L	
Phosmet	Total	ND	5	10	ng/L	
Tetrachlorvinphos (Stirofos)	Total	ND	2	4	ng/L	
Tokuthion	Total	ND	3	6	ng/L	
Trichloronate	Total	ND	1	2	ng/L	

Sample ID: 38746-R1	LACDPW-010616-ASBS-016 Method: EPA 625	Matrix: Freshwater Batch ID: O-9034		Sampled: o Prepared: o		Received: 06-Jan-16 Analyzed: 04-Feb-16
(PCB030)	Total	77			% Recovery	· · ·
(PCB112)	Total	78			% Recovery	
(PCB198)	Total	74			% Recovery	
(TCMX)	Total	68			% Recovery	
Bolstar (Sulprofos)	Total	ND	2	4	ng/L	
Chlorpyrifos	Total	ND	0.5	1	ng/L	
Demeton	Total	ND	1	2	ng/L	
Diazinon	Total	ND	0.5	1	ng/L	
Dichlorvos	Total	ND	3	6	ng/L	
Dimethoate	Total	ND	5	10	ng/L	
Disulfoton	Total	ND	1	2	ng/L	
Ethoprop (Ethoprofos)	Total	ND	1	2	ng/L	
Fenchlorphos (Ronnel)	Total	ND	2	4	ng/L	
Fensulfothion	Total	ND	1	2	ng/L	
Fenthion	Total	ND	2	4	ng/L	
Malathion	Total	ND	3	6	ng/L	
Methidathion	Total	ND	5	10	ng/L	
Methyl parathion	Total	ND	1	2	ng/L	
Mevinphos (Phosdrin)	Total	ND	5	10	ng/L	
Phorate	Total	ND	5	10	ng/L	
Phosmet	Total	ND	5	10	ng/L	

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ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
Tetrachlorvinphos (Stirofos)	Total	ND	2	4	ng/L	
Tokuthion	Total	ND	3	6	ng/L	
Trichloronate	Total	ND	1	2	ng/L	

Sample ID: 38747-R1	LACDPW-010616-ASBS-S01 Method: EPA 625	Matrix Batch ID	Seawater : 0-9034	Sampled: (Prepared: (Received: 06-Jan-16 Analyzed: 04-Feb-16
(PCB030)	Total	79			% Recovery	
(PCB112)	Total	79			% Recovery	
(PCB198)	Total	78			% Recovery	
(TCMX)	Total	59			% Recovery	
Bolstar (Sulprofos)	Total	ND	2	4	ng/L	
Chlorpyrifos	Total	ND	0.5	1	ng/L	
Demeton	Total	ND	1	2	ng/L	
Diazinon	Total	ND	0.5	1	ng/L	
Dichlorvos	Total	ND	3	6	ng/L	
Dimethoate	Total	ND	5	10	ng/L	
Disulfoton	Total	ND	1	2	ng/L	
Ethoprop (Ethoprofos)	Total	ND	1	2	ng/L	
Fenchlorphos (Ronnel)	Total	ND	2	4	ng/L	
Fensulfothion	Total	ND	1	2	ng/L	
Fenthion	Total	ND	2	4	ng/L	
Malathion	Total	ND	3	6	ng/L	
Methidathion	Total	ND	5	10	ng/L	
Methyl parathion	Total	ND	1	2	ng/L	
Mevinphos (Phosdrin)	Total	ND	5	10	ng/L	
Phorate	Total	ND	5	10	ng/L	
Phosmet	Total	ND	5	10	ng/L	
Tetrachlorvinphos (Stirofos)	Total	ND	2	4	ng/L	
Tokuthion	Total	ND	3	6	ng/L	
Trichloronate	Total	ND	1	2	ng/L	



1904 E. Wright Circle, Anaheim CA 92806

main: (714) 602-5320

fax: (714) 602-5321 www.physislabs.com

info@physislabs.com

ANALYTICAL REPORT

CA ELAP #2769

Polynuclear Aromatic Hydrocarbons

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
Sample ID: 38526-R1	LACDPW-010316-ASBS-SO1 PRE Method: EPA 625	Matrix: 9 Batch ID: 0	Seawater D-9034	Sampled: 03 Prepared: 07-	-	Received: 03-Jan-16 Analyzed: 04-Feb-16
(d10-Acenaphthene)	Total	83			% Recovery	
(d10-Phenanthrene)	Total	80			% Recovery	
(d12-Chrysene)	Total	100			% Recovery	
(d8-Naphthalene)	Total	76			% Recovery	
1-Methylnaphthalene	Total	ND	1	5	ng/L	
1-Methylphenanthrene	Total	ND	1	5	ng/L	
2,3,5-TrimethyInaphthalene	Total	ND	1	5	ng/L	
2,6-Dimethylnaphthalene	Total	ND	1	5	ng/L	
2-Methylnaphthalene	Total	ND	1	5	ng/L	
Acenaphthene	Total	ND	1	5	ng/L	
Acenaphthylene	Total	ND	1	5	ng/L	
Anthracene	Total	ND	1	5	ng/L	
Benz[a]anthracene	Total	ND	1	5	ng/L	
Benzo[a]pyrene	Total	ND	1	5	ng/L	
Benzo[b]fluoranthene	Total	ND	1	5	ng/L	
Benzo[e]pyrene	Total	ND	1	5	ng/L	
Benzo[g,h,i]perylene	Total	ND	1	5	ng/L	
Benzo[k]fluoranthene	Total	ND	1	5	ng/L	
Biphenyl	Total	ND	1	5	ng/L	
Chrysene	Total	ND	1	5	ng/L	
Dibenz[a,h]anthracene	Total	ND	1	5	ng/L	
Dibenzothiophene	Total	ND	1	5	ng/L	
Fluoranthene	Total	ND	1	5	ng/L	
Fluorene	Total	ND	1	5	ng/L	
Indeno[1,2,3-c,d]pyrene	Total	ND	1	5	ng/L	
Naphthalene	Total	2.1	1	5	ng/L	J
Perylene	Total	ND	1	5	ng/L	
Phenanthrene	Total	ND	1	5	ng/L	
Pyrene	Total	ND	1	5	ng/L	
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Client: Weston Solutions, Inc.



1904 E. Wright Circle, Anaheim CA 92806

main: (714) 602-5320

fax: (714) 602-5321 www.physislabs.com

info@physislabs.com

ANALYTICAL REPORT

CA ELAP #2769

Polynuclear Aromatic Hydrocarbons

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
Sample ID: 38527-R1	LACDPW-010316-ASBS-SO2 PRE Method: EPA 625	Matrix: Batch ID:	Seawater 0-9034	Sampled: o Prepared: o		Received: 03-Jan-16 Analyzed: 04-Feb-16
(d10-Acenaphthene)	Total	78			% Recovery	
(d10-Phenanthrene)	Total	80			% Recovery	
(d12-Chrysene)	Total	102			% Recovery	
(d8-Naphthalene)	Total	70			% Recovery	
1-Methylnaphthalene	Total	ND	1	5	ng/L	
1-Methylphenanthrene	Total	ND	1	5	ng/L	
2,3,5-TrimethyInaphthalene	Total	ND	1	5	ng/L	
2,6-Dimethylnaphthalene	Total	ND	1	5	ng/L	
2-Methylnaphthalene	Total	1.6	1	5	ng/L	J
Acenaphthene	Total	ND	1	5	ng/L	
Acenaphthylene	Total	ND	1	5	ng/L	
Anthracene	Total	ND	1	5	ng/L	
Benz[a]anthracene	Total	ND	1	5	ng/L	
Benzo[a]pyrene	Total	ND	1	5	ng/L	
Benzo[b]fluoranthene	Total	ND	1	5	ng/L	
Benzo[e]pyrene	Total	ND	1	5	ng/L	
Benzo[g,h,i]perylene	Total	ND	1	5	ng/L	
Benzo[k]fluoranthene	Total	ND	1	5	ng/L	
Biphenyl	Total	ND	1	5	ng/L	
Chrysene	Total	ND	1	5	ng/L	
Dibenz[a,h]anthracene	Total	ND	1	5	ng/L	
Dibenzothiophene	Total	ND	1	5	ng/L	
Fluoranthene	Total	ND	1	5	ng/L	
Fluorene	Total	ND	1	5	ng/L	
Indeno[1,2,3-c,d]pyrene	Total	ND	1	5	ng/L	
Naphthalene	Total	2.7	1	5	ng/L	J
Perylene	Total	ND	1	5	ng/L	
Phenanthrene	Total	1.1	1	5	ng/L	J
Pyrene	Total	ND	1	5	ng/L	

PHYSIS Project ID: 1210002-006

Client: Weston Solutions, Inc.



1904 E. Wright Circle, Anaheim CA 92806

main: (714) 602-5320

fax: (714) 602-5321 www.physislabs.com

info@physislabs.com

ANALYTICAL REPORT

CA ELAP #2769

Polynuclear Aromatic Hydrocarbons

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
Sample ID: 38744-R1	LACDPW-010616-ASBS-028 Method: EPA 625	Matrix: Fre Batch ID: O-9		Sampled: 06 Prepared: 07-J		Received: o6-Jan-16 Analyzed: o4-Feb-16
(d10-Acenaphthene)	Total	94			% Recovery	
(d10-Phenanthrene)	Total	89			% Recovery	
(d12-Chrysene)	Total	136			% Recovery	
(d8-Naphthalene)	Total	85			% Recovery	
1-Methylnaphthalene	Total	6.3	1	5	ng/L	
1-Methylphenanthrene	Total	42.8	1	5	ng/L	
2,3,5-Trimethylnaphthalene	Total	ND	1	5	ng/L	
2,6-DimethyInaphthalene	Total	ND	1	5	ng/L	
2-Methylnaphthalene	Total	11.3	1	5	ng/L	
Acenaphthene	Total	10.7	1	5	ng/L	
Acenaphthylene	Total	10.4	1	5	ng/L	
Anthracene	Total	36.1	1	5	ng/L	
Benz[a]anthracene	Total	104.6	1	5	ng/L	
Benzo[a]pyrene	Total	54.4	1	5	ng/L	
Benzo[b]fluoranthene	Total	124	1	5	ng/L	
Benzo[e]pyrene	Total	136.8	1	5	ng/L	
Benzo[g,h,i]perylene	Total	122.9	1	5	ng/L	
Benzo[k]fluoranthene	Total	35.4	1	5	ng/L	
Biphenyl	Total	5.3	1	5	ng/L	
Chrysene	Total	307.8	1	5	ng/L	
Dibenz[a,h]anthracene	Total	32.3	1	5	ng/L	
Dibenzothiophene	Total	24.9	1	5	ng/L	
Fluoranthene	Total	352.3	1	5	ng/L	
Fluorene	Total	12.6	1	5	ng/L	
Indeno[1,2,3-c,d]pyrene	Total	106.5	1	5	ng/L	
Naphthalene	Total	23.1	1	5	ng/L	
Perylene	Total	67.1	1	5	ng/L	
Phenanthrene	Total	255.5	1	5	ng/L	
Pyrene	Total	277.1	1	5	ng/L	

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1904 E. Wright Circle, Anaheim CA 92806

main: (714) 602-5320

fax: (714) 602-5321 www.physislabs.com

info@physislabs.com

ANALYTICAL REPORT

CA ELAP #2769

Polynuclear Aromatic Hydrocarbons

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
Sample ID: 38745-R1	LACDPW-010616-ASBS-S02-Post Method: EPA 625	Matrix: Seawater Batch ID: O-9034		Sampled: o Prepared: o;		Received: 06-Jan-16 Analyzed: 04-Feb-16
(d10-Acenaphthene)	Total	90			% Recovery	
(d10-Phenanthrene)	Total	85			% Recovery	
(d12-Chrysene)	Total	112			% Recovery	
(d8-Naphthalene)	Total	81			% Recovery	
1-Methylnaphthalene	Total	1.3	1	5	ng/L	J
1-Methylphenanthrene	Total	ND	1	5	ng/L	
2,3,5-TrimethyInaphthalene	Total	ND	1	5	ng/L	
2,6-Dimethylnaphthalene	Total	2.9	1	5	ng/L	J
2-Methylnaphthalene	Total	2.1	1	5	ng/L	J
Acenaphthene	Total	1.4	1	5	ng/L	J
Acenaphthylene	Total	ND	1	5	ng/L	
Anthracene	Total	1.3	1	5	ng/L	J
Benz[a]anthracene	Total	2.7	1	5	ng/L	J
Benzo[a]pyrene	Total	1.7	1	5	ng/L	J
Benzo[b]fluoranthene	Total	3.1	1	5	ng/L	J
Benzo[e]pyrene	Total	2.6	1	5	ng/L	J
Benzo[g,h,i]perylene	Total	4	1	5	ng/L	J
Benzo[k]fluoranthene	Total	1.3	1	5	ng/L	J
Biphenyl	Total	ND	1	5	ng/L	
Chrysene	Total	4.6	1	5	ng/L	J
Dibenz[a,h]anthracene	Total	ND	1	5	ng/L	
Dibenzothiophene	Total	ND	1	5	ng/L	
Fluoranthene	Total	6.9	1	5	ng/L	
Fluorene	Total	ND	1	5	ng/L	
Indeno[1,2,3-c,d]pyrene	Total	ND	1	5	ng/L	
Naphthalene	Total	3.9	1	5	ng/L	J
Perylene	Total	6.1	1	5	ng/L	
Phenanthrene	Total	6.3	1	5	ng/L	
Pyrene	Total	5.4	1	5	ng/L	

PHYSIS Project ID: 1210002-006

Client: Weston Solutions, Inc.



1904 E. Wright Circle, Anaheim CA 92806

main: (714) 602-5320

fax: (714) 602-5321 www.physislabs.com

info@physislabs.com

ANALYTICAL REPORT

CA ELAP #2769

Polynuclear Aromatic Hydrocarbons

Sample ID: 38746-RiLACDPW-oto61-ASBS-oto Method: EPA 625Matrix: Freshwate Batch ID: 0-9034Sampled: 66-Jan-16Received: 66-Jan-16 Analyzed: 04-Feb-16(d10-Acenaphthene)Total82% Recovery(d10-Phenanthrene)Total88% Recovery(d12-Chrysene)Total118% Recovery(d12-Analysted: 0-10al118% Recovery(d12-Analyted: 0-10al82% Recovery1-MethylnaphthaleneTotalND151-MethylnaphthaleneTotalND152,3-5 TrimethylnaphthaleneTotalND152,6-DimethylnaphthaleneTotalND152,6-DimethylnaphthaleneTotal0.7152,4-DimethylnaphthaleneTotalND15ng/L2,6-DimethylnaphthaleneTotal0.715ng/L2,6-DimethylnaphthaleneTotal0.715ng/L2,6-DimethylnaphthaleneTotal0.715ng/L2,6-DimethylnaphthaleneTotal0.715ng/L2,6-DimethylnaphthaleneTotal0.715ng/L2,6-DimethylnaphthaleneTotal0.715ng/L2,6-DimethylnaphthaleneTotal0.715ng/L2,6-DimethylnaphthaleneTotal0.715ng/L2,6-DimethylnaphthaleneTotal0.715ng/L2,6-Dimethylnap
Instrument Total 88 % Recovery (d12-Chrysene) Total 118 % Recovery (d8-Naphthalene) Total 82 % Recovery 1-Methylnaphthalene Total 1.5 1 5 ng/L J 1-Methylnaphthalene Total ND 1 5 ng/L J 2,3,5-Trimethylnaphthalene Total ND 1 5 ng/L J 2,6-Dimethylnaphthalene Total ND 1 5 ng/L J 2,6-Dimethylnaphthalene Total RO 1 5 ng/L J 2,6-Dimethylnaphthalene Total RO 1 5 ng/L J 4.cenaphthene Total RO 1 5 ng/L J J Actenaphthylene Total ND 1 5 ng/L J J J J J J J J J J J J J
(d12-Chrysene)Total118% Recovery(d8-Naphthalene)Total82% Recovery1-MethylnaphthaleneTotal1.515ng/L1-MethylphenanthreneTotalND15ng/L2,3,5-TrimethylnaphthaleneTotalND15ng/L2,6-DimethylnaphthaleneTotalND15ng/L2,6-DimethylnaphthaleneTotalND15ng/L2,6-DimethylnaphthaleneTotal2.715ng/L2-MethylnaphthaleneTotal6.715ng/LAcenaphtheneTotalND15ng/LAcenaphthyleneTotalND15ng/LAcenaphthyleneTotal6.715ng/LBenz[ajanthraceneTotal9.215ng/LBenza[ajphreneTotal6.715ng/LBenzo[ajpreneTotal14.315ng/LBenzo[ajpreneTotal14.315ng/LBenzo[ajpreneTotal14.315ng/LBenzo[ajhrlperyleneTotal14.715ng/LBenzo[ajhrlperyleneTotal14.715ng/LBenzo[ajhrlperyleneTotal14.715ng/LBenzo[ajhrlperyleneTotal14.715ng/LBenzo[k]fluorantheneTotal5.615<
(d8-Naphthalene) Total 82 % Recovery 1-Methylnaphthalene Total 1.5 1 5 ng/L 1-Methylnaphthalene Total ND 1 5 ng/L 2,3,5-Trimethylnaphthalene Total ND 1 5 ng/L 2,3,5-Trimethylnaphthalene Total ND 1 5 ng/L 2,6-Dimethylnaphthalene Total ND 1 5 ng/L 2,6-Dimethylnaphthalene Total ND 1 5 ng/L 2-Methylnaphthalene Total 0.7 1 5 ng/L Acenaphthylene Total 0.7 1 5 ng/L Acenaphthylene Total 0.7 1 5 ng/L Acenaphthylene Total 9.2 1 5 ng/L Benzo[a]pyrene Total 6.7 1 5 ng/L Benzo[b]fluoranthene Total 6.7 1 5 ng/L
1-MethylnaphthaleneTotal1.515ng/LJ1-MethylphenanthreneTotalND15ng/L2,3,5-TrimethylnaphthaleneTotalND15ng/L2,6-DimethylnaphthaleneTotalND15ng/L2,6-DimethylnaphthaleneTotalND15ng/L2,6-DimethylnaphthaleneTotalND15ng/L2,6-DimethylnaphthaleneTotal6.715ng/L2-MethylnaphthaleneTotal6.715ng/LAcenaphthyleneTotalND15ng/LAcenaphthyleneTotalND15ng/LAcenaphthyleneTotal17.415ng/LBenzo[a]phyreneTotal9.215ng/LBenzo[a]pyreneTotal6.715ng/LBenzo[b]fluorantheneTotal14.315ng/LBenzo[b]pyreneTotal14.315ng/LBenzo[b]pyreneTotal14.715ng/LBenzo[b]fluorantheneTotal14.715ng/LBenzo[b]fluorantheneTotal14.715ng/LBenzo[b]fluorantheneTotal14.715ng/LBenzo[b]fluorantheneTotal14.715ng/LBenzo[b]fluorantheneTotal14.715ng/LBenzo[
1-MethylpenanthreneTotalND15ng/L2,3,5-TrimethylnaphthaleneTotalND15ng/L2,6-DimethylnaphthaleneTotalND15ng/L2-MethylnaphthaleneTotal2.715ng/L2-MethylnaphthaleneTotal6.715ng/LAcenaphtheneTotal6.715ng/LAcenaphthyleneTotal17.415ng/LAnthraceneTotal9.215ng/LBenzo[a]pyreneTotal6.715ng/LBenzo[b]fluorantheneTotal18.115ng/LBenzo[e]pyreneTotal14.315ng/LBenzo[b]fluorantheneTotal14.715ng/LBenzo[k]fluorantheneTotal14.715ng/LBenzo[k]fluorantheneTotal14.715ng/LBenzo[k]fluorantheneTotal5.615ng/L
2,3,5-TimethylnaphthaleneTotalND15ng/L2,6-DimethylnaphthaleneTotalND15ng/L2-MethylnaphthaleneTotal2.715ng/L2-MethylnaphthaleneTotal6.715ng/LAcenaphtheneTotal6.715ng/LAcenaphthyleneTotalND15ng/LAcenaphthyleneTotal17.415ng/LBenz[a]anthraceneTotal9.215ng/LBenzo[a]pyreneTotal6.715ng/LBenzo[a]pyreneTotal18.115ng/LBenzo[b]fluorantheneTotal14.315ng/LBenzo[e]pyreneTotal14.715ng/LBenzo[k]fluorantheneTotal14.715ng/LBenzo[k]fluorantheneTotal14.715ng/LBenzo[k]fluorantheneTotal5.615ng/L
2,6-DimethylaphthaleneTotalND15ng/L2-MethylaphthaleneTotal2.715ng/LAcenaphtheneTotal6.715ng/LAcenaphtyleneTotalND15ng/LAcenaphthyleneTotal17.415ng/LAnthraceneTotal9.215ng/LBenzo[a]pyreneTotal6.715ng/LBenzo[b]fluorantheneTotal6.715ng/LBenzo[b]fluorantheneTotal14.315ng/LBenzo[b]fluorantheneTotal14.315ng/LBenzo[b,h]jperyleneTotal14.715ng/LBenzo[k]fluorantheneTotal14.715ng/LBenzo[k]fluorantheneTotal14.715ng/LBenzo[k]fluorantheneTotal5.615ng/L
2-MethylnaphthaleneTotal2.715ng/LJAcenaphtheneTotal6.715ng/LAcenaphthyleneTotalND15ng/LAcenaphthyleneTotal17.415ng/LAnthraceneTotal9.215ng/LBenz[a]anthraceneTotal6.715ng/LBenzo[a]pyreneTotal6.715ng/LBenzo[b]fluorantheneTotal18.115ng/LBenzo[e]pyreneTotal14.315ng/LBenzo[g,h,i]peryleneTotal14.715ng/LBenzo[k]fluorantheneTotal5.615ng/L
AcenaphtheneTotal6.715ng/LAcenaphthyleneTotalND15ng/LAnthraceneTotal17.415ng/LBenz[a]anthraceneTotal9.215ng/LBenzo[a]pyreneTotal6.715ng/LBenzo[a]pyreneTotal6.715ng/LBenzo[b]fluorantheneTotal18.115ng/LBenzo[b]pyreneTotal14.315ng/LBenzo[g]pyreneTotal14.715ng/LBenzo[g,h,i]peryleneTotal14.715ng/LBenzo[k]fluorantheneTotal5.615ng/L
AcenaphthyleneTotalND15ng/LAnthraceneTotal17.415ng/LBenz[a]anthraceneTotal9.215ng/LBenzo[a]pyreneTotal6.715ng/LBenzo[b]fluorantheneTotal18.115ng/LBenzo[e]pyreneTotal14.315ng/LBenzo[g],h,i]peryleneTotal14.715ng/LBenzo[g,h,i]peryleneTotal14.715ng/LBenzo[k]fluorantheneTotal5.615ng/L
AnthraceneTotal17.415ng/LBenz[a]anthraceneTotal9.215ng/LBenzo[a]pyreneTotal6.715ng/LBenzo[b]fluorantheneTotal18.115ng/LBenzo[e]pyreneTotal14.315ng/LBenzo[g],h,i]peryleneTotal14.715ng/LBenzo[k]fluorantheneTotal14.715ng/LBenzo[k]fluorantheneTotal5.615ng/L
Benz[a]anthraceneTotal9.215ng/LBenzo[a]pyreneTotal6.715ng/LBenzo[b]fluorantheneTotal18.115ng/LBenzo[e]pyreneTotal14.315ng/LBenzo[g,h,i]peryleneTotal14.715ng/LBenzo[k]fluorantheneTotal5.615ng/L
Benzo[a]pyreneTotal6.715ng/LBenzo[b]fluorantheneTotal18.115ng/LBenzo[e]pyreneTotal14.315ng/LBenzo[g,h,i]peryleneTotal14.715ng/LBenzo[k]fluorantheneTotal5.615ng/L
Benzo[b]fluorantheneTotal18.115ng/LBenzo[e]pyreneTotal14.315ng/LBenzo[g,h,i]peryleneTotal14.715ng/LBenzo[k,fluorantheneTotal5.615ng/L
Benzo[e]pyreneTotal14.315ng/LBenzo[g,h,i]peryleneTotal14.715ng/LBenzo[k]fluorantheneTotal5.615ng/L
Benzo[g,h,i]peryleneTotal14.715ng/LBenzo[k]fluorantheneTotal5.615ng/L
Benzo[k]fluoranthene Total 5.6 1 5 ng/L
Pinhonyl Total 2.1 1 5 po/l
Chrysene Total 24 1 5 ng/L
Dibenz[a,h]anthracene Total 7.1 1 5 ng/L
Dibenzothiophene Total 9.4 1 5 ng/L
Fluoranthene Total 23.9 1 5 ng/L
Fluorene Total ND 1 5 ng/L
Indeno[1,2,3-c,d]pyrene Total 20.6 1 5 ng/L
Naphthalene Total 5.9 1 5 ng/L
Perylene Total 3.4 1 5 ng/L J
Phenanthrene Total 14.6 1 5 ng/L
Pyrene Total 20.6 1 5 ng/L

PHYSIS Project ID: 1210002-006

Client: Weston Solutions, Inc.



fax: (714) 602-5321

1904 E. Wright Circle, Anaheim CA 92806

main: (714) 602-5320

www.physislabs.com

info@physislabs.com

ANALYTICAL REPORT

CA ELAP #2769

Polynuclear Aromatic Hydrocarbons

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
Sample ID: 38747-R1	LACDPW-010616-ASBS-S01 Method: EPA 625	Matrix: Seawater Batch ID: O-9034		Sampled: o Prepared: o		Received: 06-Jan-16 Analyzed: 04-Feb-16
(d10-Acenaphthene)	Total	77			% Recovery	
(d10-Phenanthrene)	Total	84			% Recovery	
(d12-Chrysene)	Total	102			% Recovery	
(d8-Naphthalene)	Total	69			% Recovery	
1-Methylnaphthalene	Total	ND	1	5	ng/L	
1-Methylphenanthrene	Total	ND	1	5	ng/L	
2,3,5-TrimethyInaphthalene	Total	ND	1	5	ng/L	
2,6-Dimethylnaphthalene	Total	1.8	1	5	ng/L	J
2-Methylnaphthalene	Total	1.3	1	5	ng/L	J
Acenaphthene	Total	ND	1	5	ng/L	
Acenaphthylene	Total	ND	1	5	ng/L	
Anthracene	Total	ND	1	5	ng/L	
Benz[a]anthracene	Total	ND	1	5	ng/L	
Benzo[a]pyrene	Total	ND	1	5	ng/L	
Benzo[b]fluoranthene	Total	ND	1	5	ng/L	
Benzo[e]pyrene	Total	ND	1	5	ng/L	
Benzo[g,h,i]perylene	Total	ND	1	5	ng/L	
Benzo[k]fluoranthene	Total	ND	1	5	ng/L	
Biphenyl	Total	ND	1	5	ng/L	
Chrysene	Total	ND	1	5	ng/L	
Dibenz[a,h]anthracene	Total	ND	1	5	ng/L	
Dibenzothiophene	Total	ND	1	5	ng/L	
Fluoranthene	Total	ND	1	5	ng/L	
Fluorene	Total	ND	1	5	ng/L	
Indeno[1,2,3-c,d]pyrene	Total	ND	1	5	ng/L	
Naphthalene	Total	2.1	1	5	ng/L	J
Perylene	Total	ND	1	5	ng/L	
Phenanthrene	Total	1.1	1	5	ng/L	J
Pyrene	Total	ND	1	5	ng/L	

PHYSIS Project ID: 1210002-006

Client: Weston Solutions, Inc.



Innovative Solutions for Nature

www.physislabs.com info@

info@physislabs.com

ANALYTICAL REPORT

CA ELAP #2769

Pyrethroids

1904 E. Wright Circle, Anaheim CA 92806

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
Sample ID: 38526-R1	LACDPW-010316-ASBS-SO1 PRE Method: EPA 625-NCI		: Seawater : 0-9034	Sampled: 03-Jan- Prepared: 07-Jan-16		Received: 03-Jan-16 Analyzed: 20-Jan-16
Allethrin	Total	ND	0.5	2	ng/L	
Bifenthrin	Total	ND	0.5	2	ng/L	
Cyfluthrin	Total	ND	0.5	2	ng/L	
Cyhalothrin, Total Lambda	Total	ND	0.5	2	ng/L	
Cypermethrin	Total	ND	0.5	2	ng/L	
Danitol (Fenpropathrin)	Total	ND	0.5	2	ng/L	
Deltamethrin/Tralomethrin	Total	ND	0.5	2	ng/L	
Esfenvalerate	Total	ND	0.5	2	ng/L	
Fenvalerate	Total	ND	0.5	2	ng/L	
Fluvalinate	Total	ND	0.5	2	ng/L	
Permethrin, cis-	Total	ND	5	10	ng/L	
Permethrin, trans-	Total	ND	5	10	ng/L	
Prallethrin	Total	ND	0.5	2	ng/L	
Resmethrin	Total	ND	5	10	ng/L	
Sample ID: 38527-R1	LACDPW-010316-ASBS-SO2 PRE		: Seawater	Sampled: 03-Jan-	16 11:50	Received: 03-Jan-16
	Method: EPA 625-NCI		: 0-9034	Prepared: 07-Jan-16	5	Analyzed: 20-Jan-16
Allethrin	Total	ND	0.5	2	ng/L	
Bifenthrin	Total	ND	0.5	2	ng/L	
Cyfluthrin	Total	ND	0.5	2	ng/L	
Cyhalothrin, Total Lambda	Total	ND	0.5	2	ng/L	
Cypermethrin	Total	ND	0.5	2	ng/L	
Danitol (Fenpropathrin)	Total	ND	0.5	2	ng/L	
Deltamethrin/Tralomethrin	Total	ND	0.5	2	ng/L	
Esfenvalerate	Total	ND	0.5	2	ng/L	
Fenvalerate	Total	ND	0.5	2	ng/L	
Fluvalinate	Total	ND	0.5	2	ng/L	
Permethrin, cis-	Total	ND	5	10	ng/L	
Permethrin, trans-	Total	ND	5	10	ng/L	
Prallethrin	Total	ND	0.5	2	ng/L	

PHYSIS Project ID: 1210002-006

Client: Weston Solutions, Inc.

main: (714) 602-5320



Innovative Solutions for Nature

www.physislabs.com info@

info@physislabs.com

ANALYTICAL REPORT

CA ELAP #2769

Pyrethroids

1904 E. Wright Circle, Anaheim CA 92806

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
Resmethrin	Total	ND	5	10	ng/L	
Sample ID: 38744-R1	LACDPW-010616-ASBS-028 Method: EPA 625-NCI	Matrix: F Batch ID: C	reshwater 9-9034	Sampled: 06-Jan-16 Prepared: 07-Jan-16	16:20	Received: 06-Jan-16 Analyzed: 20-Jan-16
Allethrin	Total	ND	0.5	2	ng/L	
Bifenthrin	Total	164.2	0.5	2	ng/L	
Cyfluthrin	Total	ND	0.5	2	ng/L	
Cyhalothrin, Total Lambda	Total	3.9	0.5	2	ng/L	
Cypermethrin	Total	ND	0.5	2	ng/L	
Danitol (Fenpropathrin)	Total	ND	0.5	2	ng/L	
Deltamethrin/Tralomethrin	Total	ND	0.5	2	ng/L	
Esfenvalerate	Total	3.3	0.5	2	ng/L	
envalerate	Total	1.1	0.5	2	ng/L	J
Iuvalinate	Total	ND	0.5	2	ng/L	
Permethrin, cis-	Total	ND	5	10	ng/L	
Permethrin, trans-	Total	ND	5	10	ng/L	
Prallethrin	Total	ND	0.5	2	ng/L	
Resmethrin	Total	ND	5	10	ng/L	
Sample ID: 38745-R1	LACDPW-010616-ASBS-S02-Post Method: EPA 625-NCI	Matrix: S Batch ID: C		Sampled: 06-Jan-16 Prepared: 07-Jan-16	16:20	Received: 06-Jan-16 Analyzed: 20-Jan-16
llethrin	Total	ND	0.5	2	ng/L	
Bifenthrin	Total	ND	0.5	2	ng/L	
Cyfluthrin	Total	ND	0.5	2	ng/L	
Syhalothrin, Total Lambda	Total	ND	0.5	2	ng/L	
Cypermethrin	Total	ND	0.5	2	ng/L	
Danitol (Fenpropathrin)	Total	ND	0.5	2	ng/L	
Deltamethrin/Tralomethrin	Total	ND	0.5	2	ng/L	
sfenvalerate	Total	ND	0.5	2	ng/L	
envalerate	Total	ND	0.5	2	ng/L	
Fluvalinate	Total	ND	0.5	2	ng/L	

PHYSIS Project ID: 1210002-006

Permethrin, cis-

Permethrin, trans-

Client: Weston Solutions, Inc.

ND

ND

Total

Total

main: (714) 602-5320

Project: LACDPW Malibu ASBS

10

10

ng/L

ng/L

5

5



Innovative Solutions for Nature fax: (714) 602-5321 www.pl

www.physislabs.com info@

info@physislabs.com CA ELAP #2769

ANALYTICAL REPORT

Pyrethroids

1904 E. Wright Circle, Anaheim CA 92806

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
Prallethrin	Total	ND	0.5	2	ng/L	
Resmethrin	Total	ND	5	10	ng/L	

Sample ID: 38746-R1	LACDPW-010616-ASBS-016 Method: EPA 625-NCI		atrix: Freshwater tch ID: 0-9034	Sampled: Prepared:		Received: 06-Jan-16 Analyzed: 20-Jan-16
Allethrin	Total	ND	0.5	2	ng/L	
Bifenthrin	Total	ND	0.5	2	ng/L	
Cyfluthrin	Total	ND	0.5	2	ng/L	
Cyhalothrin, Total Lambda	Total	ND	0.5	2	ng/L	
Cypermethrin	Total	ND	0.5	2	ng/L	
Danitol (Fenpropathrin)	Total	ND	0.5	2	ng/L	
Deltamethrin/Tralomethrin	Total	ND	0.5	2	ng/L	
Esfenvalerate	Total	ND	0.5	2	ng/L	
Fenvalerate	Total	ND	0.5	2	ng/L	
Fluvalinate	Total	ND	0.5	2	ng/L	
Permethrin, cis-	Total	ND	5	10	ng/L	
Permethrin, trans-	Total	ND	5	10	ng/L	
Prallethrin	Total	ND	0.5	2	ng/L	
Resmethrin	Total	ND	5	10	ng/L	

Sample ID: 38747-R1	LACDPW-010616-ASBS-S01	Ma	atrix: Seawater	Sampled: o	5-Jan-16 17:15	Received: 06-Jan-16
	Method: EPA 625-NCI	Bat	ch ID: 0-9034	Prepared: 07	-Jan-16	Analyzed: 20-Jan-16
Allethrin	Total	ND	0.5	2	ng/L	
Bifenthrin	Total	ND	0.5	2	ng/L	
Cyfluthrin	Total	ND	0.5	2	ng/L	
Cyhalothrin, Total Lambda	Total	ND	0.5	2	ng/L	
Cypermethrin	Total	ND	0.5	2	ng/L	
Danitol (Fenpropathrin)	Total	ND	0.5	2	ng/L	
Deltamethrin/Tralomethrin	Total	ND	0.5	2	ng/L	
Esfenvalerate	Total	ND	0.5	2	ng/L	
Fenvalerate	Total	ND	0.5	2	ng/L	
Fluvalinate	Total	ND	0.5	2	ng/L	
Permethrin, cis-	Total	ND	5	10	ng/L	
Permethrin, cis-	Total	ND	5	10	ng/L	

PHYSIS Project ID: 1210002-006

Client: Weston Solutions, Inc.

main: (714) 602-5320



www.physislabs.com

info@physislabs.com CA ELAP #2769

Pyrethroids

1904 E. Wright Circle, Anaheim CA 92806

ANALYTICAL REPORT

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
Permethrin, trans-	Total	ND	5	10	ng/L	
Prallethrin	Total	ND	0.5	2	ng/L	
Resmethrin	Total	ND	5	10	ng/L	

fax: (714) 602-5321

main: (714) 602-5320

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1904 E. Wright Circle, Anaheim CA 92806 main: (714) 602-5320

fax: (714) 602-5321

www.physislabs.com

info@physislabs.com

QUALITY CONTROL REPORT

CA ELAP #2769

Conventionals

SAMPLE ID)	BATCH ID	RESULT	MDL	RL	UNITS	SPIKE LEVEL	SOURCE RESULT	%	ACCURACY LIMITS	P %	_	SION IMITS	QA CODE
Am	nmonia as N		Method: SM	4500-NH3	D	Fractio	n: NA	Pro	epared	l: 28-Jan-16	Analy	zed:	28-Jan-16	5
38524-B1	QAQC Procedural Blank	C-18115	ND	0.02	0.05	mg/L								
38524-BS1	QAQC Procedural Blank	C-18115	0.25	0.02	0.05	mg/L	0.25	0	100	80 - 120% PASS				
38524-BS2	QAQC Procedural Blank	C-18115	0.25	0.02	0.05	mg/L	0.25	0	100	80 - 120% PASS	0	25	PASS	
38526-MS1	LACDPW-010316-ASBS-	C-18115	0.32	0.02	0.05	mg/L	0.25	0	128	80 - 120% PASS			PASS	Q
38526-MS2	LACDPW-010316-ASBS-	C-18115	0.32	0.02	0.05	mg/L	0.25	0	128	80 - 120% PASS	0	25	PASS	Q
38526-R2	LACDPW-010316-ASBS-	C-18115	ND	0.02	0.05	mg/L					0	25	PASS	
Nit	rate as N		Method: SM	4500-NO3	F	Fractio	n: NA	Pro	enared	l: 05-Jan-16	Analy	zed:	26-Jan-16	5
38524-B1	QAQC Procedural Blank	C-23155	ND	0.01	0.05	mg/L			eparee		7 inter y	-cur		,
38524-BS1	QAQC Procedural Blank	C-23155	0.52	0.01	0.05	mg/L	0.5	0	104	80 - 120% PASS				
38524-BS2	QAQC Procedural Blank	C-23155	0.52	0.01	0.05	mg/L	0.5	0	104	80 - 120% PASS	0	25	PASS	
38526-MS1	LACDPW-010316-ASBS-	C-23155	0.57	0.01	0.05	mg/L	0.5	0.02	110	80 - 120% PASS				
38526-MS2	LACDPW-010316-ASBS-		0.58	0.01	0.05	mg/L	0.5	0.02	112	80 - 120% PASS	2	25	PASS	
38526-R2	LACDPW-010316-ASBS-	C-23155	0.02	0.01	0.05	mg/L					0	25	PASS	J
Oil	& Grease		Method: EP/	A 1664B		Fractio	n: NA	Pro	epared	l: 25-Jan-16	Analy	zed:	25-Jan-16	
38524-B1	QAQC Procedural Blank	C-19048	ND	1	1	mg/L			-p		,			•
38524-BS1	QAQC Procedural Blank	C-19048	36.2	1	1	mg/L	40	0	91	80 - 120% PASS				
38524-BS2	QAQC Procedural Blank	C-19048	37.5	1	1	mg/L	40	0	94	80 - 120% PASS	4	25	PASS	
To	tal Orthophosphate as	Р	Method: SM	4500-P E		Fractio	n: NA	Pro	epared	l: 05-Jan-16	Analy	zed:	05-Jan-16	5
38524-B1	QAQC Procedural Blank	C-23143	ND	0.01	0.02	mg/L					, í		-	
38524-BS1	QAQC Procedural Blank	C-23143	0.19	0.01	0.02	mg/L	0.2	0	95	80 - 120% PASS				
38524-BS2	QAQC Procedural Blank	C-23143	0.2	0.01	0.02	mg/L	0.2	0	100	80 - 120% PASS	5	25	PASS	
38526-MS1	LACDPW-010316-ASBS-	C-23143	0.22	0.01	0.02	mg/L	0.2	0.03	95	80 - 120% PASS				
38526-MS2	LACDPW-010316-ASBS-	C-23143	0.22	0.01	0.02	mg/L	0.2	0.03	95	80 - 120% PASS	0	25	PASS	
38526-R2	LACDPW-010316-ASBS-	C-23143	0.03	0.01	0.02	mg/L					0	25	PASS	
38745-MS1	LACDPW-010616-ASBS-	C-23150	0.23	0.01	0.02	mg/L	0.2	0.04	95	80 - 120% PASS				
38745-MS2	LACDPW-010616-ASBS-	C-23150	0.24	0.01	0.02	mg/L	0.2	0.04	100	80 - 120% PASS	5	25	PASS	
38745-R2	LACDPW-010616-ASBS-	C-23150	0.04	0.01	0.02	mg/L					0	25	PASS	
38748-B1	QAQC Procedural Blank	C-23150	ND	0.01	0.02	mg/L								

PHYSIS Project ID: 1210002-006

Client: Weston Solutions, Inc.



1904 E. Wright Circle, Anaheim CA 92806	main: (714) 602-5320	fax: (714) 602-5321	www.physislabs.com	info@physislabs.com	CA ELAP #2769	

Conventionals

SAMPLE ID)	BATCH ID	RESULT	MDL	RL	UNITS	SPIKE	SOURCE	ł	ACCURACY	PI	RECISION	QA CODE
							LEVEL	RESULT	%	LIMITS	%	LIMITS	
38748-BS1	QAQC Procedural Blank	C-23150	0.2	0.01	0.02	mg/L	0.2	0	100	80 - 120% PASS			
38748-BS2	QAQC Procedural Blank	C-23150	0.21	0.01	0.02	mg/L	0.2	0	105	80 - 120% PASS	5	25 PASS	
То	tal Suspended Solids		Method: SM	2540 D		Fractio	n: NA	Pro	epared	: 09-Jan-16	Analyz	ed: 09-Jan-1	6
38524-B1	QAQC Procedural Blank	C-17143	ND	0.5	0.5	mg/L							
38744-R2	LACDPW-010616-ASBS-	C-17143	952	0.5	0.5	mg/L					9	25 PASS	



1904 E. Wright Circle, Anaheim CA 92806

fax: (714) 602-5321

main: (714) 602-5320

www.physislabs.com

info@physislabs.com

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Elements

Elem	nents					QUALITY CON	TROL REPORT
ANALYTE	FRACTION	I RESULT	MDL	RL	UNITS SPIKI LEVE	 ACCURACY % LIMITS	PRECISION QA CODE % LIMITS
Sample ID: 38524	-	AQC Procedura ethod: EPA 1640	l Blank		Matrix: DI Wat Batch ID: E-10073	 ampled: Prepared: 11-Feb-16	Received: Analyzed: 20-Feb-16
Arsenic (As)	Total	ND	0.005	0.015	µg/L		
Cadmium (Cd)	Total	ND	0.0025	0.005	µg/L		
Chromium (Cr)	Total	ND	0.0125	0.025	µg/L		
Copper (Cu)	Total	ND	0.005	0.01	µg/L		
Lead (Pb)	Total	ND	0.0025	0.005	µg/L		
Mercury (Hg)	Total	ND	0.0012	0.005	µg/L		
Nickel (Ni)	Total	ND	0.0025	0.005	μg/L		
Selenium (Se)	Total	ND	0.005	0.015	μg/L		
Silver (Ag)	Total	ND	0.01	0.02	µg/L		
Zinc (Zn)	Total	ND	0.0025	0.005	µg/L		
Sample ID: 38525	-	AQC LCM - Phys ethod: EPA 1640	is Seawat	er	Matrix: Seawa Batch ID: E-10073	ampled: Prepared: 11-Feb-16	Received: Analyzed: 20-Feb-16
Arsenic (As)	Total	1.731	0.005	0.015	µg/L		
Cadmium (Cd)	Total	0.0839	0.0025	0.005	µg/L		
Chromium (Cr)	Total	0.182	0.0125	0.025	µg/L		
Copper (Cu)	Total	0.149	0.005	0.01	µg/L		
Lead (Pb)	Total	0.0067	0.0025	0.005	μg/L		

	rotar	0.0007	0.0020	0.000	P9/ L							
Mercury (Hg)	Total	ND	0.0012	0.005	µg/L							
Nickel (Ni)	Total	0.355	0.0025	0.005	µg/L							
Selenium (Se)	Total	0.033	0.005	0.015	µg/L							
Silver (Ag)	Total	0.06	0.01	0.02	µg/L							
Zinc (Zn)	Total	0.7389	0.0025	0.005	µg/L							
Sample ID: 385	•	AQC LCM - Physi ethod: EPA 1640	is Seawat	er		ix: Seawate ID: E-10073	er.	Sampled: Prepared:			Received: Analyzed: 20-Feb-16	
Arsenic (As)	Total	22.176	0.005	0.015	µg/L	20	1.731	102	75 - 125%	PASS		
	T ()	40.0704	0.0005	0.005		00	0 0000	~ ~ ~	75 4050/	D 4 0 0		

· · ·					10					
Cadmium (Cd)	Total	16.8781	0.0025	0.005	µg/L	20	0.0839	84	75 - 125% PASS	
Chromium (Cr)	Total	21.3525	0.0125	0.025	µg/L	20	0.182	106	75 - 125% PASS	
Copper (Cu)	Total	19.244	0.005	0.01	µg/L	20	0.149	95	75 - 125% PASS	

PHYSIS Project ID: 1210002-006

Client: Weston Solutions, Inc.

Project: LACDPW Malibu ASBS

qcb - 1 of 11



fax: (714) 602-5321

1904 E. Wright Circle, Anaheim CA 92806

main: (714) 602-5320

www.physislabs.com

info@physislabs.com

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Elements

QUALITY CONTROL REPORT

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	SPIKE	SOURCE	А	CCURACY	PRECISION	QA CODE
						LEVEL	RESULT	%	LIMITS	% LIMITS	
Lead (Pb)	Total	18.7909	0.0025	0.005	µg/L	20	0.0067	94	75 - 125% PASS		
Mercury (Hg)	Total	8.7439	0.0012	0.005	µg/L	10	0	87	75 - 125% PASS		
Nickel (Ni)	Total	18.5916	0.0025	0.005	µg/L	20	0.355	91	75 - 125% PASS		
Selenium (Se)	Total	20.089	0.005	0.015	µg/L	20	0.033	100	75 - 125% PASS		
Silver (Ag)	Total	9.63	0.01	0.02	µg/L	10	0.06	96	75 - 125% PASS		
Zinc (Zn)	Total	17.4756	0.0025	0.005	µg/L	20	0.7389	84	75 - 125% PASS		

Sample ID: 38525-LCS2 QAQC LCM - Physis Seawater

Matrix: Seawater Sampled: **Received:**

	Meth	iod: EPA 1640			Batch	ID: E-10073		Prepared:	11-Feb-16		Analyzed: 20-Feb-16
Arsenic (As)	Total	20.981	0.005	0.015	µg/L	20	1.731	96	75 - 125% PASS	6	25 PASS
Cadmium (Cd)	Total	16.4895	0.0025	0.005	µg/L	20	0.0839	82	75 - 125% PASS	2	25 PASS
Chromium (Cr)	Total	20.7739	0.0125	0.025	µg/L	20	0.182	103	75 - 125% PASS	3	25 PASS
Copper (Cu)	Total	18.967	0.005	0.01	µg/L	20	0.149	94	75 - 125% PASS	1	25 PASS
Lead (Pb)	Total	18.2203	0.0025	0.005	µg/L	20	0.0067	91	75 - 125% PASS	3	25 PASS
Mercury (Hg)	Total	8.4421	0.0012	0.005	µg/L	10	0	84	75 - 125% PASS	4	25 PASS
Nickel (Ni)	Total	18.1838	0.0025	0.005	µg/L	20	0.355	89	75 - 125% PASS	2	25 PASS
Selenium (Se)	Total	19.939	0.005	0.015	µg/L	20	0.033	100	75 - 125% PASS	0	25 PASS
Silver (Ag)	Total	9.51	0.01	0.02	µg/L	10	0.06	94	75 - 125% PASS	2	25 PASS
Zinc (Zn)	Total	16.4964	0.0025	0.005	µg/L	20	0.7389	79	75 - 125% PASS	6	25 PASS

Sample ID: 385	26-R2	LACDPW-010316-A Method: EPA 1640	ASBS-SO1	PRE	Matrix: Seawater Batch ID: E-10073	Sampled: 03-Jan-16 12:30 Prepared: 11-Feb-16	F	Received: 03-Ja Analyzed: 20-Fet	
Arsenic (As)	Total	1.465	0.005	0.015	µg/L		4	25 PASS	
Cadmium (Cd)	Total	0.0305	0.0025	0.005	μg/L		16	25 PASS	
Chromium (Cr)	Total	0.5959	0.0125	0.025	µg/L		61	25 FAIL	NH
Copper (Cu)	Total	0.386	0.005	0.01	µg/L		3	25 PASS	
Lead (Pb)	Total	0.3149	0.0025	0.005	µg/L		2	25 PASS	
Mercury (Hg)	Total	ND	0.0012	0.005	µg/L		0	25 PASS	
Nickel (Ni)	Total	0.9567	0.0025	0.005	µg/L		3	25 PASS	
Selenium (Se)	Total	0.018	0.005	0.015	µg/L		11	25 PASS	
Silver (Ag)	Total	0.08	0.01	0.02	µg/L		0	25 PASS	
Zinc (Zn)	Total	0.2144	0.0025	0.005	μg/L		53	25 FAIL	NH

PHYSIS Project ID: 1210002-006

Client: Weston Solutions, Inc.



1904 E. Wright Circle, Anaheim CA 92806

main: (714) 602-5320

fax: (714) 602-5321 www.physislabs.com **QUALITY CONTROL REPORT**

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CA ELAP #2769

Elements

							-				
ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	SPIKE SOU	RCE A	ACCURACY	PI	RECISION	QA CODE
						LEVEL RES	ULT %	LIMITS	%	LIMITS	
Sample ID: 3		DPW-010616-A	SBS-028			x: Freshwater		: 06-Jan-16 16:20		eceived: 06-Ja	
Aroopia (Ap)	Total	nod: EPA 1640 3.94	0.005	0.015		D: E-10073	Prepared	: 11-Feb-16	59	Analyzed: 19-Feb 25 FAIL	NH
Arsenic (As)					µg/L						
Cadmium (Cd)	Total	8.9511	0.0025	0.005	µg/L				7	25 PASS	
Chromium (Cr)	Total	34.506	0.0125	0.025	µg/L				6	25 PASS	
Copper (Cu)	Total	70.083	0.005	0.01	µg/L				2	25 PASS	
Lead (Pb)	Total	33.3159	0.0025	0.005	µg/L				1	25 PASS	
Mercury (Hg)	Total	0.5363	0.0012	0.005	µg/L				4	25 PASS	
Nickel (Ni)	Total	71.7218	0.0025	0.005	µg/L				3	25 PASS	
Selenium (Se)	Total	1.387	0.005	0.015	µg/L				7	25 PASS	
Silver (Ag)	Total	0.06	0.01	0.02	µg/L				143	25 FAIL	SL
Zinc (Zn)	Total	422.4352	0.0025	0.005	µg/L				2	25 PASS	



fax: (714) 602-5321

1904 E. Wright Circle, Anaheim CA 92806

main: (714) 602-5320

QUALITY CONTROL REPORT

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Organophosphorus Pesticides

ANALYTE	FRACTI	ON RESULT	MDL	RL	UNITS	SPIKE	SOUR		CCURACY		PRECISION	QA CODE
						LEVEL	RESUI	LT %	LIMITS		% LIMITS	
Sample ID: 38524-	·B1	QAQC Procedural	Blank		Matrix	: DI Water		Sampled:			Received:	
, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		Method: EPA 625			Batch II): 0-9034		Prepared:	06-Jan-16		Analyzed: 03-Fel	D-16
(PCB030)	Total	91			% Recovery	100		91	57 - 133% F	PASS		
(PCB112)	Total	90			% Recovery	100		90	65 - 133% P	PASS		
(PCB198)	Total	95			% Recovery	100		95	69 - 133% P	PASS		
(TCMX)	Total	85			% Recovery	100		85	39 - 135% P	PASS		
Bolstar (Sulprofos)	Total	ND	2	4	ng/L							
Chlorpyrifos	Total	ND	0.5	1	ng/L							
Demeton	Total	ND	1	2	ng/L							
Diazinon	Total	ND	0.5	1	ng/L							
Dichlorvos	Total	ND	3	6	ng/L							
Dimethoate	Total	ND	5	10	ng/L							
Disulfoton	Total	ND	1	2	ng/L							
Ethoprop (Ethoprofos)	Total	ND	1	2	ng/L							
Fenchlorphos (Ronnel)	Total	ND	2	4	ng/L							
Fensulfothion	Total	ND	1	2	ng/L							
Fenthion	Total	ND	2	4	ng/L							
Malathion	Total	ND	3	6	ng/L							
Methidathion	Total	ND	5	10	ng/L							
Methyl parathion	Total	ND	1	2	ng/L							
Mevinphos (Phosdrin)	Total	ND	5	10	ng/L							
Phorate	Total	ND	5	10	ng/L							
Phosmet	Total	ND	5	10	ng/L							
Tetrachlorvinphos (Stirofos)	Total	ND	2	4	ng/L							
Tokuthion	Total	ND	3	6	ng/L							
Trichloronate	Total	ND	1	2	ng/L							
Sample ID: 38524-		QAQC Procedural	Blank			C DI Water		Sampled:			Received:	<i>,</i>
		Method: EPA 625				0: 0-9034	0	Prepared:			Analyzed: 03-Fe	0-16
(PCB030)	Total	65			% Recovery	100	0	65	57 - 133% P	ASS		

% Recovery

(PCB112)

65

Total

Project: LACDPW Malibu ASBS

65 - 133% PASS

65

0

100



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QUALITY CONTROL REPORT

Organophosphorus Pesticides

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ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	SPIKE	SOURCE	Α	CCURACY	PR	ECISION	QA CODE
						LEVEL	RESULT	%	LIMITS	%	LIMITS	
(PCB198)	Total	69			% Recovery	100	0	69	69 - 133% PASS			
(TCMX)	Total	60			% Recovery	100	0	60	39 - 135% PASS			
Bolstar (Sulprofos)	Total	346.4	2	4	ng/L	500	0	69	50 - 150% PASS			
Chlorpyrifos	Total	385.9	0.5	1	ng/L	500	0	77	50 - 150% PASS			
Demeton	Total	254.3	1	2	ng/L	500	0	51	50 - 150% PASS			
Diazinon	Total	436.3	0.5	1	ng/L	500	0	87	50 - 150% PASS			
Dichlorvos	Total	377.2	3	6	ng/L	500	0	75	50 - 150% PASS			
Dimethoate	Total	353.2	5	10	ng/L	500	0	71	50 - 150% PASS			
Disulfoton	Total	420.9	1	2	ng/L	500	0	84	50 - 150% PASS			
Ethoprop (Ethoprofos)	Total	388.5	1	2	ng/L	500	0	78	50 - 150% PASS			
Fenchlorphos (Ronnel)	Total	396.5	2	4	ng/L	500	0	79	50 - 150% PASS			
Fensulfothion	Total	411.9	1	2	ng/L	500	0	82	50 - 150% PASS			
Fenthion	Total	299.6	2	4	ng/L	500	0	60	50 - 150% PASS			
Malathion	Total	284.2	3	6	ng/L	500	0	57	50 - 150% PASS			
Methidathion	Total	228.1	5	10	ng/L	500	0	46	50 - 150% PASS		PASS	Q
Methyl parathion	Total	468.8	1	2	ng/L	500	0	94	50 - 150% PASS			
Mevinphos (Phosdrin)	Total	396	5	10	ng/L	500	0	79	50 - 150% PASS			
Phorate	Total	301	5	10	ng/L	500	0	60	50 - 150% PASS			
Phosmet	Total	254.9	5	10	ng/L	500	0	51	50 - 150% PASS			
Tetrachlorvinphos (Stirofos)	Total	338.7	2	4	ng/L	500	0	68	50 - 150% PASS			
Tokuthion	Total	378.8	3	6	ng/L	500	0	76	50 - 150% PASS			
Trichloronate	Total	378.3	1	2	ng/L	500	0	76	50 - 150% PASS			

Sample ID: 389	524-BS2	QAQC Procedura Method: EPA 625	Blank			: DI Water): 0-9034		Sampled: Prepared:	06-Jan-16		e ceived: Analyzed: 03-Feb-16
(PCB030)	Total	76			% Recovery	100	0	76	57 - 133% PASS	16	30 PASS
(PCB112)	Total	73			% Recovery	100	0	73	65 - 133% PASS	12	30 PASS
(PCB198)	Total	78			% Recovery	100	0	78	69 - 133% PASS	12	30 PASS
(TCMX)	Total	71			% Recovery	100	0	71	39 - 135% PASS	17	30 PASS
Bolstar (Sulprofos)	Total	423.9	2	4	ng/L	500	0	85	50 - 150% PASS	21	25 PASS
Chlorpyrifos	Total	472.5	0.5	1	ng/L	500	0	94	50 - 150% PASS	20	25 PASS
Demeton	Total	294.7	1	2	ng/L	500	0	59	50 - 150% PASS	15	25 PASS

PHYSIS Project ID: 1210002-006

Client: Weston Solutions, Inc.



fax: (714) 602-5321

www.physislabs.com info@physislabs.com

CA ELAP #2769

Organophosphorus Pesticides

main: (714) 602-5320

1904 E. Wright Circle, Anaheim CA 92806

QUALITY CONTROL REPORT

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	SPIKE	SOURCE	ACCURACY		PRECISION		QA CODE
						LEVEL	RESULT	%	LIMITS	%	LIMITS	
Diazinon	Total	511.6	0.5	1	ng/L	500	0	102	50 - 150% PASS	16	25 PASS	
Dichlorvos	Total	430	3	6	ng/L	500	0	86	50 - 150% PASS	14	25 PASS	
Dimethoate	Total	323	5	10	ng/L	500	0	65	50 - 150% PASS	9	25 PASS	
Disulfoton	Total	482.6	1	2	ng/L	500	0	97	50 - 150% PASS	14	25 PASS	
Ethoprop (Ethoprofos)	Total	456.5	1	2	ng/L	500	0	91	50 - 150% PASS	15	25 PASS	
Fenchlorphos (Ronnel)	Total	475.1	2	4	ng/L	500	0	95	50 - 150% PASS	18	25 PASS	
Fensulfothion	Total	369.5	1	2	ng/L	500	0	74	50 - 150% PASS	10	25 PASS	
Fenthion	Total	373.8	2	4	ng/L	500	0	75	50 - 150% PASS	22	25 PASS	
Malathion	Total	356.5	3	6	ng/L	500	0	71	50 - 150% PASS	22	25 PASS	
Methidathion	Total	256.4	5	10	ng/L	500	0	51	50 - 150% PASS	10	25 PASS	
Methyl parathion	Total	585.3	1	2	ng/L	500	0	117	50 - 150% PASS	22	25 PASS	
Mevinphos (Phosdrin)	Total	376.9	5	10	ng/L	500	0	75	50 - 150% PASS	5	25 PASS	
Phorate	Total	363.3	5	10	ng/L	500	0	73	50 - 150% PASS	20	25 PASS	
Phosmet	Total	301.2	5	10	ng/L	500	0	60	50 - 150% PASS	16	25 PASS	
Tetrachlorvinphos (Stirofos)	Total	403.7	2	4	ng/L	500	0	81	50 - 150% PASS	17	25 PASS	
Tokuthion	Total	375.8	3	6	ng/L	500	0	75	50 - 150% PASS	1	25 PASS	
Trichloronate	Total	394.1	1	2	ng/L	500	0	79	50 - 150% PASS	4	25 PASS	



fax: (714) 602-5321

1904 E. Wright Circle, Anaheim CA 92806

main: (714) 602-5320

QUALITY CONTROL REPORT

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CA ELAP #2769

Polynuclear Aromatic Hydrocarbons

ANALYTE	FRACTIO	N RESULT	MDL	RL	UNITS	SPIKE LEVEL	SOURCE RESULT	A %	CCURACY LIMITS	PRECISION % LIMITS	QA CODE
Sample ID: 3852		AQC Procedura ethod: EPA 625	l Blank			x: DI Water D: 0-9034		ampled: Prepared:	06-Jan-16	Received: Analyzed: 03-Fe	b-16
(d10-Acenaphthene)	Total	100			% Recovery	100		100	65 - 113% PASS		
(d10-Phenanthrene)	Total	92			% Recovery	100		92	80 - 111% PASS		
(d12-Chrysene)	Total	99			% Recovery	100		99	60 - 139% PASS		
(d8-Naphthalene)	Total	101			% Recovery	100		101	44 - 119% PASS		
1-Methylnaphthalene	Total	ND	1	5	ng/L						
1-Methylphenanthrene	Total	ND	1	5	ng/L						
2,3,5-Trimethylnaphthalene	Total	ND	1	5	ng/L						
2,6-Dimethylnaphthalene	Total	ND	1	5	ng/L						
2-Methylnaphthalene	Total	ND	1	5	ng/L						
Acenaphthene	Total	ND	1	5	ng/L						
Acenaphthylene	Total	ND	1	5	ng/L						
Anthracene	Total	ND	1	5	ng/L						
Benz[a]anthracene	Total	ND	1	5	ng/L						
Benzo[a]pyrene	Total	ND	1	5	ng/L						
Benzo[b]fluoranthene	Total	ND	1	5	ng/L						
Benzo[e]pyrene	Total	ND	1	5	ng/L						
Benzo[g,h,i]perylene	Total	ND	1	5	ng/L						
Benzo[k]fluoranthene	Total	ND	1	5	ng/L						
Biphenyl	Total	ND	1	5	ng/L						
Chrysene	Total	ND	1	5	ng/L						
Dibenz[a,h]anthracene	Total	ND	1	5	ng/L						
Dibenzothiophene	Total	ND	1	5	ng/L						
Fluoranthene	Total	ND	1	5	ng/L						
Fluorene	Total	ND	1	5	ng/L						
Indeno[1,2,3-c,d]pyrene	Total	ND	1	5	ng/L						
Naphthalene	Total	ND	1	5	ng/L						
Perylene	Total	ND	1	5	ng/L						
Phenanthrene	Total	ND	1	5	ng/L						
Pyrene	Total	ND	1	5	ng/L						

PHYSIS Project ID: 1210002-006

Client: Weston Solutions, Inc.



1904 E. Wright Circle, Anaheim CA 92806

main: (714) 602-5320

www.physislabs.com fax: (714) 602-5321 **QUALITY CONTROL REPORT**

info@physislabs.com

CA ELAP #2769

Polynuclear Aromatic Hydrocarbons

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	SPIKE	SOURCE	А	CCURACY	PRECISION	QA CODE
						LEVEL	RESULT	%	LIMITS	% LIMITS	
Sample ID: 38524	-BS1 QA	QC Procedural	Blank		Matrix	: DI Water	9	Sampled:		Received:	
	-	hod: EPA 625			Batch II): 0-9034		Prepared:	06-Jan-16	Analyzed: 03-Fe	b-16
(d10-Acenaphthene)	Total	88			% Recovery	100	0	88	65 - 113% PASS		
(d10-Phenanthrene)	Total	84			% Recovery	100	0	84	80 - 111% PASS		
(d12-Chrysene)	Total	95			% Recovery	100	0	95	60 - 139% PASS		
(d8-Naphthalene)	Total	84			% Recovery	100	0	84	44 - 119% PASS		
1-Methylnaphthalene	Total	468.6	1	5	ng/L	500	0	94	50 - 150% PASS		
1-Methylphenanthrene	Total	426.4	1	5	ng/L	500	0	85	50 - 150% PASS		
2,3,5-Trimethylnaphthalene	Total	448	1	5	ng/L	500	0	90	50 - 150% PASS		
2,6-Dimethylnaphthalene	Total	462.2	1	5	ng/L	500	0	92	50 - 150% PASS		
2-Methylnaphthalene	Total	463.7	1	5	ng/L	500	0	93	50 - 150% PASS		
Acenaphthene	Total	463.7	1	5	ng/L	500	0	93	50 - 150% PASS		
Acenaphthylene	Total	418.6	1	5	ng/L	500	0	84	50 - 150% PASS		
Anthracene	Total	324.5	1	5	ng/L	500	0	65	50 - 150% PASS		
Benz[a]anthracene	Total	467.8	1	5	ng/L	500	0	94	50 - 150% PASS		
Benzo[a]pyrene	Total	409.5	1	5	ng/L	500	0	82	50 - 150% PASS		
Benzo[b]fluoranthene	Total	422.8	1	5	ng/L	500	0	85	50 - 150% PASS		
Benzo[e]pyrene	Total	467.7	1	5	ng/L	500	0	94	50 - 150% PASS		
Benzo[g,h,i]perylene	Total	425.7	1	5	ng/L	500	0	85	50 - 150% PASS		
Benzo[k]fluoranthene	Total	427	1	5	ng/L	500	0	85	50 - 150% PASS		
Biphenyl	Total	473.8	1	5	ng/L	500	0	95	50 - 150% PASS		
Chrysene	Total	506.8	1	5	ng/L	500	0	101	50 - 150% PASS		
Dibenz[a,h]anthracene	Total	427.1	1	5	ng/L	500	0	85	50 - 150% PASS		
Dibenzothiophene	Total	441.9	1	5	ng/L	500	0	88	50 - 150% PASS		
Fluoranthene	Total	409.1	1	5	ng/L	500	0	82	50 - 150% PASS		
Fluorene	Total	442.7	1	5	ng/L	500	0	89	50 - 150% PASS		
Indeno[1,2,3-c,d]pyrene	Total	432.6	1	5	ng/L	500	0	87	50 - 150% PASS		
Naphthalene	Total	469.1	1	5	ng/L	500	0	94	50 - 150% PASS		
Perylene	Total	414.7	1	5	ng/L	500	0	83	50 - 150% PASS		
Phenanthrene	Total	435.9	1	5	ng/L	500	0	87	50 - 150% PASS		
Pyrene	Total	419.8	1	5	ng/L	500	0	84	50 - 150% PASS		

PHYSIS Project ID: 1210002-006

Client: Weston Solutions, Inc.



fax: (714) 602-5321

1904 E. Wright Circle, Anaheim CA 92806

main: (714) 602-5320

QUALITY CONTROL REPORT

www.physislabs.com

info@physislabs.com

CA ELAP #2769

Polynuclear Aromatic Hydrocarbons

ANALYTE	FRACTION	I RESULT	MDL	RL	UNITS	SPIKE	SOURCE	А	CCURACY	Р	RECISION	QA CODE
						LEVEL	RESULT	%	LIMITS	%	LIMITS	
Sample ID: 38524	•	AQC Procedural	Blank			: DI Water	. <u>e</u>	Sampled:		R	eceived:	
		ethod: EPA 625				0: 0-9034	0	Prepared:		10	Analyzed: 03-Fe	D-16
(d10-Acenaphthene)	Total	99			% Recovery	100	0	99	65 - 113% PASS	12	30 PASS	
(d10-Phenanthrene)	Total	94			% Recovery	100	0	94	80 - 111% PASS	11	30 PASS	
(d12-Chrysene)	Total	111 92			% Recovery	100 100	0	111 92	60 - 139% PASS 44 - 119% PASS	16	30 PASS 30 PASS	
(d8-Naphthalene)	Total		1	~	% Recovery	500	0			9	25 PASS	
1-Methylnaphthalene	Total	552.9	•	5	ng/L		0	111 100	50 - 150% PASS 50 - 150% PASS	17		
1-Methylphenanthrene	Total	498.9	1	5	ng/L	500	0			16		
2,3,5-Trimethylnaphthalene	Total Total	531.6 537.2	1	5 5	ng/L	500 500	0	106 107	50 - 150% PASS 50 - 150% PASS	16 15	25 PASS 25 PASS	
2,6-Dimethylnaphthalene	Total	537.2	1	5 5	ng/L	500	0	107	50 - 150% PASS	15	25 PASS 25 PASS	
2-Methylnaphthalene		536.6	1		ng/L	500					25 PASS 25 PASS	
Acenaphthene	Total	491.2	1	5 5	ng/L	500	0	107	50 - 150% PASS 50 - 150% PASS	14	25 PASS 25 PASS	
Acenaphthylene	Total	377.4	1		ng/L		0	98 75	50 - 150% PASS	15	25 PASS 25 PASS	
Anthracene	Total		•	5	ng/L	500	-			14		
Benz[a]anthracene	Total	572.8	1	5	ng/L	500 500	0	115	50 - 150% PASS 50 - 150% PASS	20	25 PASS 25 PASS	
Benzo[a]pyrene	Total	480.8 510.6		5	ng/L		0	96 102	50 - 150% PASS	16	25 PASS 25 PASS	
Benzo[b]fluoranthene	Total		1	5	ng/L	500	0	102		18		
Benzo[e]pyrene	Total	549.4	1	5	ng/L	500	0			16		
Benzo[g,h,i]perylene	Total	506.8	1	5	ng/L	500	0	101	50 - 150% PASS	17		
Benzo[k]fluoranthene	Total	521		5	ng/L	500	0	104	50 - 150% PASS	20		
Biphenyl	Total	550.5	1	5	ng/L	500	0	110	50 - 150% PASS	15	25 PASS	
Chrysene	Total	602.6	1	5	ng/L	500	0	121	50 - 150% PASS	18	25 PASS	
Dibenz[a,h]anthracene	Total	501.1	1	5	ng/L	500	0	100	50 - 150% PASS	16	25 PASS	
Dibenzothiophene	Total	511.8	1	5	ng/L	500	0	102	50 - 150% PASS	15	25 PASS	
Fluoranthene	Total	477.8	1	5	ng/L	500	0	96	50 - 150% PASS	16	25 PASS	
Fluorene	Total	517.1	1	5	ng/L	500	0	103	50 - 150% PASS	15	25 PASS	
Indeno[1,2,3-c,d]pyrene	Total	501.7	1	5	ng/L	500	0	100	50 - 150% PASS	14	25 PASS	
Naphthalene	Total	556.3	1	5	ng/L	500	0	111	50 - 150% PASS	17	25 PASS	
Perylene	Total	484.5	1	5	ng/L	500	0	97	50 - 150% PASS	16	25 PASS	
Phenanthrene	Total	503.9	1	5	ng/L	500	0	101	50 - 150% PASS	15	25 PASS	
Pyrene	Total	486.6	1	5	ng/L	500	0	97	50 - 150% PASS	14	25 PASS	

PHYSIS Project ID: 1210002-006

Client: Weston Solutions, Inc.



1904 E. Wright Circle, Anaheim CA 92806

main: (714) 602-5320 fax: (714) 602-5321

www.physislabs.com

info@physislabs.com

QUALITY CONTROL REPORT

CA ELAP #2769

Pyrethroids

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	SPIKE LEVEL	SOUR		•
Sample ID: 38524	-	C Procedura od: EPA 625-NC				x: DI Water D: 0-9034		Sampled: Prepared: 06-Jan-16	Received: Analyzed: 19-Jan-16
Allethrin	Total	ND	0.5	2	ng/L				
Bifenthrin	Total	ND	0.5	2	ng/L				
Cyfluthrin	Total	ND	0.5	2	ng/L				
Cyhalothrin, Total Lambda	Total	ND	0.5	2	ng/L				
Cypermethrin	Total	ND	0.5	2	ng/L				
Danitol (Fenpropathrin)	Total	ND	0.5	2	ng/L				
Deltamethrin/Tralomethrin	Total	ND	0.5	2	ng/L				
Esfenvalerate	Total	ND	0.5	2	ng/L				
Fenvalerate	Total	ND	0.5	2	ng/L				
Fluvalinate	Total	ND	0.5	2	ng/L				
Permethrin, cis-	Total	ND	5	10	ng/L				
Permethrin, trans-	Total	ND	5	10	ng/L				
Prallethrin	Total	ND	0.5	2	ng/L				
Resmethrin	Total	ND	5	10	ng/L				
Sample ID: 38524	-	C Procedura				x: DI Water D: 0-9034		Sampled: Prepared: 06-Jan-16	Received: Analyzed: 19-Jan-16
Allethrin	Total	308.4	0.5	2	ng/L	500	0	•	% PASS R
Bifenthrin	Total	338.2	0.5	2	ng/L	500	0		% PASS
Cufluthrin	Total	406.6	0.5	2	ng/l	505	0		

Difermini	TOLAI	550.2	0.5	2	ng/∟	500	0	00	JU-130/0 FA33	
Cyfluthrin	Total	406.6	0.5	2	ng/L	505	0	81	50 - 150% PASS	
Cyhalothrin, Total Lambda	Total	369	0.5	2	ng/L	500	0	74	50 - 150% PASS	
Cypermethrin	Total	413.6	0.5	2	ng/L	500	0	83	50 - 150% PASS	
Danitol (Fenpropathrin)	Total	358.4	0.5	2	ng/L	500	0	72	50 - 150% PASS	
Deltamethrin/Tralomethrin	Total	448.3	0.5	2	ng/L	500	0	90	50 - 150% PASS	
Esfenvalerate	Total	428.3	0.5	2	ng/L	500	0	86	50 - 150% PASS	
Fenvalerate	Total	422.1	0.5	2	ng/L	500	0	84	50 - 150% PASS	
Fluvalinate	Total	443.7	0.5	2	ng/L	500	0	89	50 - 150% PASS	
Permethrin, cis-	Total	99.3	5	10	ng/L	133.5	0	74	50 - 150% PASS	
Permethrin, trans-	Total	294.9	5	10	ng/L	358	0	82	50 - 150% PASS	

PHYSIS Project ID: 1210002-006

Client: Weston Solutions, Inc.

Project: LACDPW Malibu ASBS

qcb - 10 of 11



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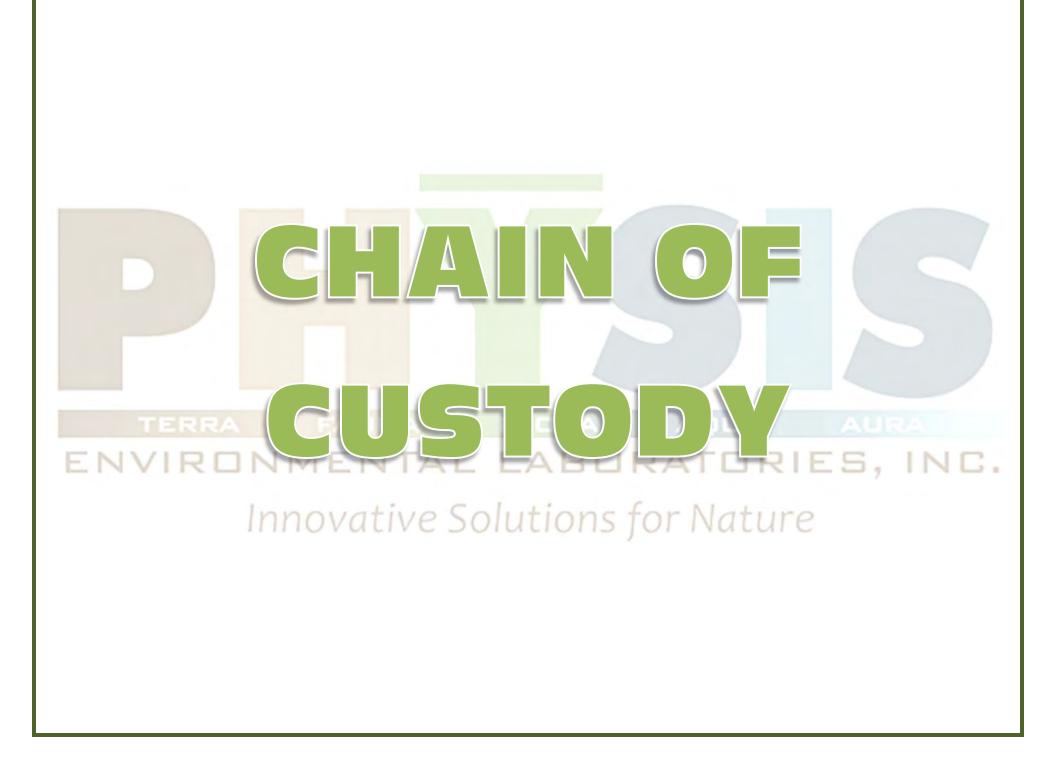
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CA ELAP #2769

Pyrethroids

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	SPIKE	SOURCE	А	CCURACY	PR	ECISION	QA CODE
						LEVEL	RESULT	%	LIMITS	%	LIMITS	
Prallethrin	Total	300.3	0.5	2	ng/L	500	0	60	50 - 150% PASS			
Resmethrin	Total	0	5	10	ng/L	500	0	0	50 - 150% PASS		PASS	Q

Sample ID: 38524-	-BS2	QAQC Procedural	Blank		Mati	rix: DI Water		Sampled:		I	Received:	
		Method: EPA 625-NCI			Batch	1D: O-9034		Prepared: 0	06-Jan-16		Analyzed: 19-Jan-16	
Allethrin	Total	331.7	0.5	2	ng/L	500	0	66	50 - 150% PASS	6	25 PASS	
Bifenthrin	Total	418.3	0.5	2	ng/L	500	0	84	50 - 150% PASS	21	25 PASS	
Cyfluthrin	Total	527.7	0.5	2	ng/L	505	0	104	50 - 150% PASS	25	25 PASS	
Cyhalothrin, Total Lambda	Total	460.4	0.5	2	ng/L	500	0	92	50 - 150% PASS	22	25 PASS	
Cypermethrin	Total	555.2	0.5	2	ng/L	500	0	111	50 - 150% PASS	29	25 PASS	Q
Danitol (Fenpropathrin)	Total	437.2	0.5	2	ng/L	500	0	87	50 - 150% PASS	19	25 PASS	
Deltamethrin/Tralomethrin	Total	604	0.5	2	ng/L	500	0	121	50 - 150% PASS	29	25 PASS	Q
Esfenvalerate	Total	572.9	0.5	2	ng/L	500	0	115	50 - 150% PASS	29	25 PASS	Q
Fenvalerate	Total	571.1	0.5	2	ng/L	500	0	114	50 - 150% PASS	30	25 PASS	Q
Fluvalinate	Total	600.7	0.5	2	ng/L	500	0	120	50 - 150% PASS	30	25 PASS	Q
Permethrin, cis-	Total	132	5	10	ng/L	133.5	0	99	50 - 150% PASS	29	25 PASS	Q
Permethrin, trans-	Total	391.2	5	10	ng/L	358	0	109	50 - 150% PASS	28	25 PASS	Q
Prallethrin	Total	323.6	0.5	2	ng/L	500	0	65	50 - 150% PASS	8	25 PASS	
Resmethrin	Total	0	5	10	ng/L	500	0	0	50 - 150% PASS	0	25 PASS	Q



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36238 PAGE DATE OF de PROJECT NAME / SUBVEY / PROJECT NUMBER CONDINER TYPE / VOLUME ANALYSIS/TEST REQUESTED FOR WESTON USE ONLY 6 KOPR TOTAL DAN MCCOY F CLIENT 4O ADDRESS ADDRESS SEE ABOVE TOTAL NUMBER C 2 V4 4N REANIC N ITPHTE MUMMUM METAC SAMPLE 210 TEMP. (°C) PRESERVED UPON SITE ID (Location) SAMPLE ID DATE TIME MATRIX HOW RECEIPT WESTON LAB ID ASBS = SOI FRE LACOPW-010316-15BS-SON PRE 7 X SPA X V tel ICE ASBS-SOZ PRE LACDAW-010316-ASBS-502 PRE 11:40 7 v V Y Sample Matrix Codes: FW= fresh water GW=ground water SLT=salt water SW=storm water WW=waste water SAMPLED BY: PRINT SIGNATURE SED=sediment A=air BIO=biologic SS=soil T=tissue O=other (specify) Container Code: G=glass P=plastic B=bags O=other COMMENTS / SPECIAL INSTRUCTIONS Shipped By: Courier UPS FedEx USPS Client drop off Other Turnaround Time: 2-day 5-day 7-day 10-day 14-day Standard Other Reporting Requirements: SPDF DEDD DHard Copy DEmail Sother CEDEN RELINQUISHED BY RECEIVED BY Print Name Signature Firm Date/Time Print Name Signature Firm Date/Time DAN MCCOY WESTON ISMAEL PHENG 1/3/16 PHYSIS 13/16 3:46 2 3 Δ 5. 6.

WHITE - return to originator . YELLOW - lab . PINK - retained by originator

Ocean Receiving Water Chemistry and Toxicity

Table 2. List of Analyses to Be Conducted on Samples Collected at Ocean Receiving Water Monitoring Sites

Constituent	Method	Holding Time	Method Reporting Limits	Units	COP ¹	Bottle Type/ Preservative
General Chemistry						
Total Suspended Solids	SM 2540-D	7 days	5.0	mg/L		1 L HDPE
Oil and Grease	EPA 1664A	28 days	5.0	mg/L		250-mL glass
Ammonia-N	SM 4500- NH3 D	28 days	0.06	µg/L		250 mL glass H ₂ SO4
Nitrate-N	SM 4500- NO3 E	48 hours	0.05	mg/L		250 mL HDPE
Total Orthosphosphate (as P)	SM 4500- P E	28 days	0.02	mg/L		250 IIIL HDPE
Total Metals						
Aluminum (Al)		1.000	6	μg/L		
Antimony (Sb)			0.015	µg/L		
Arsenic (As)			0.015	µg/L	80	
Beryllium (Be)			0.01	μg/L		
Cadmium (Cd)			0.01	µg/L	10	
Chromium (Cr)			0.05	µg/L	20*	
Copper (Cu)	A STATE OF A STATE	Lab will	0.02	μg/L	30	
Lead (Pb)	EPA 1640	acidify,	0.01	μg/L	20	11 LUDDE
Manganese (Mn)		then 180	0.02	µg/L		1L HDPE
Molybdenum (Mo)		days	0.01	μg/L	1	
Nickel (Ni)			0.01	µg/L	50	
Selenium (Se)			0.015	μg/L	150	
Silver (Ag)			0.04	μg/L	7	
Thallium (Tl)			0.01	μg/L		
Zinc (Zn)			0.01	μg/L	200	
Mercury (Hg)	EPA 1640		0.02	μg/L	0.4	
Organophosphorus Pesticido	es					
Bolstar (Sulprofos)			4	ng/L		
Chlorpyrifos			2	ng/L		
Demeton			2	ng/L		
Diazinon			4	ng/L		
Dichlorvos			6	ng/L		
Disulfoton		7 days	2	ng/L		A total of
Ethoprop (Ethoprofos)		7 days until	2	ng/L		2 L for OP
Fenchlorophos (Ronnel)		extraction,	4	ng/L		pesticides,
Fensulfothion	EPA 625	40 days	2	ng/L		Synthetic
Fenthion		until	4	ng/L		pyrethroids and
Malathion		analysis	6	ng/L		PAHs- Amber
Methyl Parathion		und yors	2	ng/L		bottles
Mevinphos (Phosdrin)			16	ng/L		
Phorate			12	ng/L		
Tetrachlorvinphos (Stirofos)			4	ng/L		
Tokuthion			6	ng/L		
Trichloronate	-		2	ng/L		

Ocean Receiving Water Chemistry and Toxicity

Table 2. List of Analyses to Be Conducted on Samples Collected at Ocean Receiving Water	
Monitoring Sites	

Constituent	Method	Holding Time	Method Reporting Limits	Units	COP	Bottle Type/ Preservative
Allethrin	1		2	ng/L		
Bifenthrin			2	ng/L		1
Cyfluthrin			2	ng/L		
Cypermethrin			2	ng/L		
Danitol (Fenpropathrin)			2	ng/L		A total of
Deltamethrin			2	ng/L	1	2 L for OP
Esfenvalerate	EPA 625	21.1	2	ng/L		pesticides.
Fenvalerate	NCI	21 days	2	ng/L		Synthetic
Fluvalinate			2	ng/L		PAHs- Amber
L-Cyhalothrin			2	ng/L		bottles
Permethrin, cis-			25	ng/L		Donnes
Permethrin, trans-			25	ng/L		
Prallethrin	1		2	ng/L		
Resmethrin			25	ng/L		
Polynuclear Aromatic Hyd	rocarbons (PA)	Hs)				
1-Methylnaphthalene			5	ng/L		
1-Methylphenanthrene	-		5	ng/L		
2,3,5-Trimethylnaphthalene			5	ng/L		
2,6-Dimethylnaphthalene	1		5	ng/L		
2-Methylnaphthalene	-		5	ng/L		1
Acenaphthene	-		5	ng/L		
Acenaphthylene			5	ng/L		
Anthracene	-		5	ng/L		
Benzo(a)anthracene	-		5	ng/L		
Benzo(a)pyrene	-		5	ng/L		A total of
Benzo(b)fluoranthene	-	7 days	5	ng/L		2 L for OP
Benzo(e)pyrene	-	until	5	ng/L		pesticides,
Benzo(g,h,i)perylene	EPA 625	extraction,	5	ng/L		Synthetic
Benzo(k)fluoranthene	- 517 025	40 days	5	ng/L ng/L		pyrethroids and
Biphenyl	-	until	5	ng/L		PAHs- Amber
Chrysene	-	analysis	5	ng/L		bottles
Dibenzo(a,h)anthracene	-		5	ng/L ng/L		Jouros
Dibenzothiophene	-		5			
Fluoranthene	-		5	ng/L		
Fluorene	-		5	ng/L		
Indeno(1,2,3-cd)pyrene	-		5	ng/L		
Naphthalene	-		5	ng/L		1
	-		5	ng/L		-
Perylene Phenanthrene	-		5	ng/L		1
	-			ng/L		
Pyrene			5	ng/L		
Toxicity Bivalve Development (1- storm event)	EPA/600/R -95/136 (Mod Bight	36 h preferred	NA	NA	NA	4 L cubitainer



1210002-006

Sample Receipt Summary

Client: Weston Solutions, Inc.	Date Received:	1/3/2016 Received E	By: IP Inspected By: RGH			
Courier:	Cool	ler:	Temperature:			
🗌 Physis 🗌 FEDEX 🗌 UPS 🖌 Client	✓ Cooler 🗌 Box	Total #: 1	□ BLUE 🖌 WET □ DRY			
Start End Other:	Other:		☐ None 7.6 °C			
1. COC(s) included and completely filled c		Yes				
2. All sample containers arrived intact			<u>Y</u> es			
3. All samples listed on COC(s) are preser						
4. Information on containers consistent v						
5. Correct containers and volume for all a	••••••	Yes				
6. All samples received within method ho		Yes				
7. Correct preservation used for all analys		Yes				
8. Name of sampler included on COC(s)						

Notes:

Sample ID LACDPW-010316-ASBS-SO1 PRE on the COC is SO11 but on the bag it is SO1, so we logged it in to match the bag sample ID. Sample ID LACDPW-010316-ASBS-SO1 PRE both the TSS and Metals were double bagged.

Sample ID LACDPW-010316-ASBS-SO2 PRE none of the 1L HDPE's (TSS & Metals) were double bagged.



5817 Dryden Place, Ste 101 • Carlsbad, CA 9
 (760) 795-6900, FAX 931-1580
 1340 Treat Blvd, Ste 210 • Walnut Creek, CA 94597 • (925) 948-2600, FAX 948-2601

CHAIN OF CL TODY

36233

1/6/16 PAGE DATE / OF / PROJECT NAME / SURVEY / PROJECT NUMBER PROJECT MANAGER / CONTACT CONTAINER TYPE / VOLUME ANALYSUS/TEST REQUESTED FOR WESTON USE ONLY PrtoPith DAN MCCOY GROME 4O CLIENT TOTAL NUMBER CONTAINER E WESTON SOLUTIONS aRTHON ADDRESS 6. ORGANICS Di ABOVIE SEE METHAS SAMPLE PHONE / FAX / EMAIL 133 TEMP. (°C) 20 PRESERVED UPON SITE ID (Location) SAMPLE ID DATE MATRIX TIME HOW RECEIPT WESTON LAB ID ASBS-028 VARIED 7 16:20 FW LACDPW-010616 -A585-028 1/6/16 X X X X X X ICE ASBS- 502 11:20 SLT x LACDAN - 010616 - ASBS- 502 POST 1 x ¥ Х 7 ASBS-016 LACOPW-010416-MS65-016 17:15 X × FW × × × × LACOPW-010616-158550 ASBS-SO 1 × x × x x X SAMPLED BY: PRINT Sample Matrix Codes: FW= fresh water GW=ground water SLT=salt water SW=storm water WW=waste water SIGNATURE SED=sediment A=air BIO=biologic SS=soil T=tissue O=other (specify) Container Code: G=glass e=plaste B=bags O=other OVA E.HO COMMENTS / SPECIAL INSTRUCTIONS Shipped By: Courier UPS FedEx USPS Client drop off Other Turnaround Time: 2-day 5-day 7-day 10-day 14-day Standard Other Reporting Requirements: KPDF DEDD DHard Copy DEmail DOther CEDEN EDD **RELINQUISHED BY** RECEIVED BY Print Name Signatur Firm Date//ime Print Name Signature Firm / Date/Time Mecol 1951 NESTON Madrey 1.6.16 ASI sie 3 4 5. 6.



1210002-006

Sample Receipt Summary

Client: Weston Solutions, Inc.	Date Received:	1/6/2016 Received B	By: CN Inspected By: RGH
Courier:	Соо	ler:	Temperature:
🗌 Physis 🗌 FEDEX 🗌 UPS 🖌 Client	Cooler 🗌 Box	Total #: 4	□ BLUE 🗹 WET □ DRY
Start End Other:	Other:		□ None 0.5 °C
	Sample Integrity Upor	n Receipt:	
1. COC(s) included and completely filled	out		Yes
2. All sample containers arrived intact			
3. All samples listed on COC(s) are prese		Yes	
4. Information on containers consistent	<u>(s)</u>	Yes	
5. Correct containers and volume for all		Yes	
6. All samples received within method h		Yes	
7. Correct preservation used for all analy			
8. Name of sampler included on COC(s).			Yes

Notes:



April 22, 2016

Dan McCoy Weston Solutions, Inc. 5817 Dryden Place Carlsbad, CA 92008-

Project Name: LACDPW Malibu ASBS Physis Project ID: 1210002-007

Dear Dan,

Enclosed are the analytical results for samples submitted to PHYSIS Environmental Laboratories, Inc. (PHYSIS) on 3/4/2016. A total of 5 samples were received for analysis in accordance with the attached chain of custody (COC). Per the COC, the samples were analyzed for:

Conventionals
Total Suspended Solids by SM 2540 D
Total Orthophosphate as P by SM 4500-P E
Nitrate as N by SM 4500-NO3 E
Ammonia as N by SM 4500-NH3 D
Elements
Total Trace Metals & Mercury (EPA 1640) by EPA 1640
Organics
Synthetic Pyrethroid Pesticides by EPA 625-NCI
Polynuclear Aromatic Hydrocarbons by EPA 625
Organophosphorus Pesticides by EPA 625
Oil & Grease by EPA 1664B

Analytical results in this report apply only to samples submitted to PHYSIS in accordance with the COC and are intended to be considered in their entirety.

Please feel free to contact me at any time with any questions. PHYSIS appreciates the opportunity to provide you with our analytical and support services.

Regards,

Misty Mercier Extension 202 714-335-5918 cell mistymercier@physislabs.com



PROJECT SAMPLE LIST

Weston Solutions, Inc.

PHYSIS Project ID: 1210002-007

LACDPW Malibu ASBS Total Samples: 5							
PHYSIS ID	D Sample ID	Description	Date	Time	Matrix		
39402	LACDPW-030416-ASBS-S01	ASBS-S01	3/4/2016	13:40	Seawater		
39403	LACDPW-030616-ASBS-016-POST	ASBS-016	3/6/2016	4:30	Freshwater		
39404	CDPW-030616-ASBS-016-DUP PO	ASBS-016	3/6/2016	5:20	Freshwater		
39405	_ACDPW-030616-ASBS-S01-POST	ASBS-S01	3/6/2016	4:45	Seawater		
39406	LACDPW-030616-ASBS-FB	Field Blankk	3/6/2016	5:45	Freshwater		

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ABBREVIATIONS and ACRONYMS

QM	Quality Manual
QA	Quality Assurance
QC	Quality Control
MDL	method detection limit
RL	reporting limit
R1	project sample
R2	project sample replicate
MS1	matrix spike
MS2	matrix spike replicate
B1	procedural blank
B2	procedural blank replicate
BS1	blank spike
BS2	blank spike replicate
LCS1	laboratory control spike
LCS2	laboratory control spike replicate
LCM1	laboratory control material
LCM2	laboratory control material replicate
CRM1	certified reference material
CRM2	certified reference material replicate
RPD	relative percent difference
LMW	low molecular weight
HMW	high molecular weight

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QUALITY ASSURANCE SUMMARY

LABORATORY BATCH: Physis' QM defines a laboratory batch as a group of 20 or fewer project samples of similar matrix, processed together under the same conditions and with the same reagents. QC samples are associated with each batch and were used to assess the validity of the sample analyses.

PROCEDURAL BLANK: Laboratory contamination introduced during method use is assessed through the preparation and analysis of procedural blanks is provided at a minimum frequency of one per batch.

ACCURACY: Accuracy of analytical measurements is the degree of closeness based on percent recovery calculations between measured values and the actual or true value and includes a combination of reproducibility error and systematic bias due to sampling and analytical operations. Accuracy of the project data was indicated by analysis of MS, BS, LCS, LCM, CRM, and/or surrogate spikes on a minimum frequency of one per batch. Physis' QM requires that 95% of the target compounds greater than 10 times the MDL be within the specified acceptance limits.

PRECISION: Precision is the agreement among a set of replicate measurements without assumption of knowledge of the true value and is based on RPD calculations between repeated values. Precision of the project data was determined by analysis of replicate MS1/MS2, BS1/BS2, LCS1/LCS2, LCM1/LCM2, CRM1/CRM2, surrogate spikes and/or replicate project sample analysis (R1/R2) on a minimum frequency of one per batch. Physis' QM requires that for 95% of the compounds greater than 10 times the MDL, the percent RPD should be within the specified acceptance range.

BLANK SPIKES: BS is the introduction of a known concentration of analyte into the procedural blank. BS demonstrates performance of the preparation and analytical methods on a clean matrix void of potential matrix related interferences. The BS is performed in laboratory deionized water, making these recoveries a better indicator of the efficiency of the laboratory method per se.

MATRIX SPIKES: MS is the introduction of a known concentration of analyte into a sample. MS samples demonstrate the effect a particular project sample matrix has on the accuracy of a measurement. Individually, MS samples also indicate the bias of analytical measurements due to chemical interferences inherent in the in the specific project sample spiked. Intrinsic target analyte concentration in the specific project sample can also significantly impact MS recovery.

CERTIFIED REFERENCE MATERIALS: CRMs are materials of various matrices for which analytical information has been determined and certified by a recognized authority. These are used to provide a quantitative assessment of the accuracy of an analytical method. CRMs provide evidence that the laboratory preparation and analysis produces results that are comparable to those obtained by an independent organization.

LABORATORY CONTROL MATERIAL: LCM is provided because a suitable natural seawater CRM is not available and can be used to indicate accuracy of the method. Physis' internal LCM is seawater collected at ~800 meters in the Southern California San Pedro Basin and can be used as a reference for background concentrations in clean, natural seawater for comparison to project samples.

LABORATORY CONTROL SPIKES: LCS is the introduction of a known concentration of analyte into Physis' LCM. LCS samples were employed to assess the effect the seawater matrix has on the accuracy of a measurement. LCS also indicate the bias of this method due to chemical interferences inherent in the in the seawater matrix. Intrinsic LCM concentration can also significantly impact LCS recovery.

SURROGATES: A surrogate is a pure analyte unlikely to be found in any project sample, behaves similarly to

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the target analyte and most often used with organic analytical procedures. Surrogates are added in known concentration to all samples and are measured to indicate overall efficiency of the method including processing and analyses.

HOLDING TIME: Method recommended holding times are the length of time a project sample can be stored under specific conditions after collection and prior to analysis without significantly affecting the analyte's concentration. Holding times can be extended if preservation techniques are employed to reduce biodegradation, volatilization, oxidation, sorption, precipitation, and other physical and chemical processes.

SAMPLE STORAGE/RETENTION: In order to maintain chemical integrity prior to analysis, all samples submitted to Physis are refrigerated (liquids) or frozen (solids) upon receipt unless otherwise recommended by applicable methods. Solid samples are retained for 1 year from collection while liquid samples are retained until method recommended holding times elapse.

TOTAL/DISSOLVED FRACTION: In some instances, the results for the dissolved fraction may be higher than the total fraction for a particular analyte (e.g. trace metals). This is typically caused by the analytical variation for each result and indicates that the target analyte is primarily in the dissolved phase, within the sample.



PHYSIS QUALIFIER CODES

CODE	DEFINITION
#	see Case Narrative
ND	analyte not detected at or above the MDL
В	analyte was detected in the procedural blank greater than 10 times the MDL
E	analyte concentration exceeds the upper limit of the linear calibration range, reported value is estimated
Н	sample received and/or analyzed past the recommended holding time
J	analyte was detected at a concentration below the RL and above the MDL, reported value is estimated
Ν	insufficient sample, analysis could not be performed
М	analyte was outside the specified accuracy and/or precision acceptance limits due to matrix interference. The associated B/BS were within limits, therefore the sample data was reported without further clarification
SH	analyte concentration in the project sample exceeded the spike concentration, therefore accuracy and/or precision acceptance limits do not apply
SL	analyte results were lower than 10 times the MDL, therefore accuracy and/or precision acceptance limits do not apply
NH	project sample was heterogeneous and sample homogeneity could not be readily achieved using routine laboratory practices, therefore accuracy and/or precision acceptance limits do not apply
Q	analyte was outside the specified QAPP acceptance limits for precision and/or accuracy but within Physis derived acceptance limits, therefore the sample data was reported without further clarification
R	Physis' QM allows for 5% of the target compounds greater than 10 times the MDL to be outside the specified acceptance limits for precision and/or accuracy. This is often due to random error and does not indicate any significant problems with the analysis of these project samples

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fax: (714) 602-5321

www.physislabs.com info@physislabs.com

CA ELAP #2769

ANALYTICAL REPORT

1904 E. Wright Circle, Anaheim CA 92806 Conventionals

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
Sample ID: 39402-R1	LACDPW-030416-ASBS-S01 ASBS-S01	Matrix: Sea	water	Sampled: 04-M	lar-16 13:40	Received: 04-Mar-16
56p.6.27))1-2	Method: SM 4500-NH3 D	Batch ID: C-181		Prepared: 29-Ma		Analyzed: 29-Mar-16
Ammonia as N	NA	ND	0.02	0.05	mg/L	
	Method: SM 4500-P E	Batch ID: C-28	025	Prepared: 06-Ma	ar-16	Analyzed: 06-Mar-16
otal Orthophosphate as P	NA	0.04	0.01	0.02	mg/L	
	Method: SM 4500-NO3 E	Batch ID: C-28	042	Prepared: 06-Ma	ar-16	Analyzed: 28-Mar-16
litrate as N	NA	ND	0.01	0.05	mg/L	
	Method: SM 2540 D	Batch ID: C-29	016	Prepared: 10-Ma	r-16	Analyzed: 10-Mar-16
otal Suspended Solids	NA	5.6	0.5	0.5	mg/L	
Sample ID: 39403-R1	LACDPW-030616-ASBS-016-POST ASE	S-o Matrix: Free	hwater	Sampled: o6-M	lar-16 4:30	Received: 06-Mar-16
	Method: SM 4500-NH3 D	Batch ID: C-181	25	Prepared: 29-Ma	ir-16	Analyzed: 29-Mar-16
Ammonia as N	NA	0.17	0.02	0.05	mg/L	
	Method: SM 4500-P E	Batch ID: C-28	029	Prepared: 08-Ma	ar-16	Analyzed: 08-Mar-16
otal Orthophosphate as P	NA	0.57	0.01	0.02	mg/L	
	Method: SM 4500-NO3 E	Batch ID: C-28	042	Prepared: o8-Ma	ar-16	Analyzed: 28-Mar-16
litrate as N	NA	1.08	0.01	0.05	mg/L	
	Method: SM 2540 D	Batch ID: C-29	016	Prepared: 10-Ma	r-16	Analyzed: 10-Mar-16
otal Suspended Solids	NA	510	0.5	0.5	mg/L	
Sample ID: 39404-R1	LACDPW-030616-ASBS-016-DUP POS	TA Matrix: Free	hwater	Sampled: 06-M	lar-16 5:20	Received: 06-Mar-16
	Method: SM 4500-NH3 D	Batch ID: C-181	25	Prepared: 29-Ma	ir-16	Analyzed: 29-Mar-16
mmonia as N	NA	0.11	0.02	0.05	mg/L	
	Method: SM 4500-P E	Batch ID: C-28	029	Prepared: 08-Ma	ar-16	Analyzed: 08-Mar-16
otal Orthophosphate as P	NA	0.35	0.01	0.02	mg/L	
	Method: SM 4500-NO3 E	Batch ID: C-28	042	Prepared: 08-Ma	ar-16	Analyzed: 28-Mar-16
litrate as N	NA	1.04	0.01	0.05	mg/L	
	Method: SM 2540 D	Batch ID: C-29		Prepared: 10-Ma	r-16	Analyzed: 10-Mar-16
otal Suspended Solids	NA	464	0.5	0.5	mg/L	
Sample ID: 39405-R1	LACDPW-030616-ASBS-S01-POST ASE Method: SM 4500-NH3 D	SS-S Matrix: Sea Batch ID: C-181		Sampled: o6-M Prepared: 29-Ma		Received: o6-Mar-16 Analyzed: 29-Mar-16
Ammonia as N	NA	0.04	0.02	0.05	mg/L	J

PHYSIS Project ID: 1210002-007

Client: Weston Solutions, Inc.

main: (714) 602-5320



main: (714) 602-5320 fax: (714) 602-5321 www.physislabs.com

info@physislabs.com

CA ELAP #2769

Conventionals

1904 E. Wright Circle, Anaheim CA 92806

ANALYTICAL REPORT

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
	Method: SM 4500-P E	Batch ID: 0	-28029	Prepared: 08-	Mar-16	Analyzed: 08-Mar-16
Total Orthophosphate as P	NA	0.15	0.01	0.02	mg/L	
	Method: SM 4500-NO3 E	Batch ID: (2-28042	Prepared: 08-	Mar-16	Analyzed: 28-Mar-16
Nitrate as N	NA	0.08	0.01	0.05	mg/L	
	Method: SM 2540 D	Batch ID: (-29016	Prepared: 10-1	Mar-16	Analyzed: 10-Mar-16
Total Suspended Solids	NA	52.7	0.5	0.5	mg/L	
Sample ID: 39406-R1	LACDPW-030616-ASBS-FB Fiel Method: SM 4500-NH3 D	d Blank Matrix: I Batch ID: (Freshwater	Sampled: 06 Prepared: 30-	- Mar-16 5:45 Mar-16	Received: o6-Mar-16 Analyzed: 30-Mar-16
Ammonia as N	NA	ND	0.02	0.05	mg/L	
	Method: SM 4500-P E	Batch ID: (-28029	Prepared: 08-	Mar-16	Analyzed: 08-Mar-16
Total Orthophosphate as P	NA	ND	0.01	0.02	mg/L	
	Method: SM 4500-NO3 E	Batch ID: 0	-28042	Prepared: 08-	Mar-16	Analyzed: 28-Mar-16
Nitrate as N	NA	ND	0.01	0.05	mg/L	
	Method: SM 2540 D	Batch ID: 0	2-29016	Prepared: 10-1	Mar-16	Analyzed: 10-Mar-16



fax: (714) 602-5321

www.physislabs.com info@physislabs.com

CA ELAP #2769

ANALYTICAL REPORT

Elements

1904 E. Wright Circle, Anaheim CA 92806

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
Sample ID: 39402-R1	LACDPW-030416-ASBS-S01 ASBS-S01 Method: EPA 1640	Matrix: Se Batch ID: E-1		Sampled: 04- Prepared: 14-A		Received: 04-Mar-16 Analyzed: 18-Apr-16
Arsenic (As)	Total	1.414	0.005	0.015	µg/L	
Cadmium (Cd)	Total	0.0523	0.0025	0.005	μg/L	
Chromium (Cr)	Total	0.6154	0.0125	0.025	µg/L	
Copper (Cu)	Total	0.346	0.005	0.01	μg/L	
Lead (Pb)	Total	0.1906	0.0025	0.005	µg/L	
Mercury (Hg)	Total	ND	0.0012	0.005	μg/L	
Nickel (Ni)	Total	0.459	0.0025	0.005	μg/L	
Selenium (Se)	Total	0.023	0.005	0.015	μg/L	
Silver (Ag)	Total	0.02	0.01	0.02	μg/L	
Zinc (Zn)	Total	1.0353	0.0025	0.005	μg/L	
Sample ID: 39403-R1	LACDPW-030616-ASBS-016-POST ASB Method: EPA 1640	S-o Matrix: Fr Batch ID: E-1		Sampled: 06- Prepared: 14-A		Received: 06-Mar-16 Analyzed: 18-Apr-16
Arsenic (As)	Total	2.483	0.005	0.015	μg/L	
Cadmium (Cd)	Total	0.8965	0.0025	0.005	μg/L	
Chromium (Cr)	Total	33.3862	0.0125	0.025	μg/L	
Copper (Cu)	Total	26.032	0.005	0.01	μg/L	
Lead (Pb)	Total	6.4917	0.0025	0.005	µg/L	
Mercury (Hg)	Total	0.0629	0.0012	0.005	μg/L	
Nickel (Ni)	Total	36.0925	0.0025	0.005	µg/L	
Selenium (Se)	Total	0.12	0.005	0.015	μg/L	
Silver (Ag)	Total	ND	0.01	0.02	μg/L	
Zinc (Zn)	Total	102.7039	0.0025	0.005	μg/L	
Sample ID: 39404-R1	LACDPW-030616-ASBS-016-DUP POST Method: EPA 1640	A Matrix: Fr Batch ID: E-1		Sampled: 06- Prepared: 14-A	-	Received: 06-Mar-16 Analyzed: 18-Apr-16
Arsenic (As)	Total	2.586	0.005	0.015	μg/L	
Cadmium (Cd)	Total	0.9335	0.0025	0.005	μg/L	
. ,						
Chromium (Cr)	Total	32.0911	0.0125	0.025	µg/L	

PHYSIS Project ID: 1210002-007

Client: Weston Solutions, Inc.

main: (714) 602-5320



fax: (714) 602-5321

www.physislabs.com

info@physislabs.com

CA ELAP #2769

Elements

1904 E. Wright Circle, Anaheim CA 92806

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
Lead (Pb)	Total	6.4383	0.0025	0.005	μg/L	
Mercury (Hg)	Total	0.0494	0.0012	0.005	µg/L	
Nickel (Ni)	Total	35.9173	0.0025	0.005	μg/L	
Selenium (Se)	Total	0.118	0.005	0.015	µg/L	
Silver (Ag)	Total	ND	0.01	0.02	μg/L	
Zinc (Zn)	Total	99.2754	0.0025	0.005	µg/L	

Sample ID: 39405-R1	LACDPW-030616-ASBS-S01-POST ASB	S-S Matrix:	Seawater	Sampled: o	06-Mar-16 4:45	Received: 06-Mar-16
	Method: EPA 1640	Batch ID:	E-10125	Prepared: 1	4-Apr-16	Analyzed: 18-Apr-16
Arsenic (As)	Total	2.061	0.005	0.015	μg/L	
Cadmium (Cd)	Total	0.0906	0.0025	0.005	μg/L	
Chromium (Cr)	Total	5.0684	0.0125	0.025	μg/L	
Copper (Cu)	Total	2.349	0.005	0.01	μg/L	
Lead (Pb)	Total	0.6623	0.0025	0.005	µg/L	
Mercury (Hg)	Total	١D	0.0012	0.005	μg/L	
Nickel (Ni)	Total	3.5096	0.0025	0.005	µg/L	
Selenium (Se)	Total	0.042	0.005	0.015	μg/L	
Silver (Ag)	Total	0.02	0.01	0.02	µg/L	
Zinc (Zn)	Total	10.3902	0.0025	0.005	μg/L	

Sample ID: 39406-R1	LACDPW-030616-ASBS-FB Fie Method: EPA 1640	eld Blank	Matrix: Freshwater Batch ID: E-10125	Sampled: o Prepared: 1	06-Mar-16 5:45 4-Apr-16	Received: o6-Mar-16 Analyzed: 18-Apr-16
Arsenic (As)	Total	ND	0.005	0.015	μg/L	
Cadmium (Cd)	Total	ND	0.0025	0.005	µg/L	
Chromium (Cr)	Total	ND	0.0125	0.025	µg/L	
Copper (Cu)	Total	ND	0.005	0.01	μg/L	
Lead (Pb)	Total	ND	0.0025	0.005	μg/L	
Mercury (Hg)	Total	ND	0.0012	0.005	µg/L	
Nickel (Ni)	Total	ND	0.0025	0.005	µg/L	
Selenium (Se)	Total	ND	0.005	0.015	µg/L	
Silver (Ag)	Total	ND	0.01	0.02	µg/L	
Zinc (Zn)	Total	ND	0.0025	0.005	µg/L	

PHYSIS Project ID: 1210002-007

main: (714) 602-5320



fax: (714) 602-5321

www.physislabs.com info@physislabs.com

CA ELAP #2769

ANALYTICAL REPORT

Organophosphorus Pesticides

main: (714) 602-5320

1904 E. Wright Circle, Anaheim CA 92806

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
Sample ID: 39402-R1	LACDPW-030416-ASBS-S01 ASBS-S01 Method: EPA 625		: Seawater : O-9128	Sampled: o Prepared: o	4-Mar-16 13:40 6-Mar-16	Received: 04-Mar-16 Analyzed: 28-Mar-16
(PCB030)	Total	76			% Recovery	
(PCB112)	Total	96			% Recovery	
(PCB198)	Total	76			% Recovery	
(TCMX)	Total	68			% Recovery	
Bolstar (Sulprofos)	Total	ND	2	4	ng/L	
Chlorpyrifos	Total	ND	0.5	1	ng/L	
Demeton	Total	ND	1	2	ng/L	
Diazinon	Total	ND	0.5	1	ng/L	
Dichlorvos	Total	ND	3	6	ng/L	
Dimethoate	Total	ND	5	10	ng/L	
Disulfoton	Total	ND	1	2	ng/L	
Ethoprop (Ethoprofos)	Total	ND	1	2	ng/L	
Fenchlorphos (Ronnel)	Total	ND	2	4	ng/L	
Fensulfothion	Total	ND	1	2	ng/L	
Fenthion	Total	ND	2	4	ng/L	
Malathion	Total	ND	3	6	ng/L	
Methidathion	Total	ND	5	10	ng/L	
Methyl parathion	Total	ND	1	2	ng/L	
Mevinphos (Phosdrin)	Total	ND	5	10	ng/L	
Phorate	Total	ND	5	10	ng/L	
Phosmet	Total	ND	5	10	ng/L	
Tetrachlorvinphos (Stirofos)	Total	ND	2	4	ng/L	
Tokuthion	Total	ND	3	6	ng/L	
Trichloronate	Total	ND	1	2	ng/L	
Sample ID: 39403-R1	LACDPW-030616-ASBS-016-POST ASE Method: EPA 625		: Freshwater : O-9128	Sampled: o Prepared: o	6-Mar-16 4:30 6-Mar-16	Received: 06-Mar-16 Analyzed: 28-Mar-16
(PCB030)	Total	77			% Recovery	
(PCB112)	Total	96			% Recovery	
(PCB198)	Total	71			% Recovery	



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ANALYTICAL REPORT

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ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
(TCMX)	Total	69			% Recovery	
Bolstar (Sulprofos)	Total	ND	2	4	ng/L	
Chlorpyrifos	Total	ND	0.5	1	ng/L	
Demeton	Total	ND	1	2	ng/L	
Diazinon	Total	ND	0.5	1	ng/L	
Dichlorvos	Total	ND	3	6	ng/L	
Dimethoate	Total	ND	5	10	ng/L	
Disulfoton	Total	ND	1	2	ng/L	
Ethoprop (Ethoprofos)	Total	ND	1	2	ng/L	
Fenchlorphos (Ronnel)	Total	ND	2	4	ng/L	
Fensulfothion	Total	ND	1	2	ng/L	
Fenthion	Total	ND	2	4	ng/L	
Malathion	Total	ND	3	6	ng/L	
Methidathion	Total	ND	5	10	ng/L	
Methyl parathion	Total	ND	1	2	ng/L	
Mevinphos (Phosdrin)	Total	ND	5	10	ng/L	
Phorate	Total	ND	5	10	ng/L	
Phosmet	Total	ND	5	10	ng/L	
Tetrachlorvinphos (Stirofos)	Total	ND	2	4	ng/L	
Tokuthion	Total	ND	3	6	ng/L	
Trichloronate	Total	ND	1	2	ng/L	

Sample ID: 39404-R1	LACDPW-030616-ASBS-016-DUP POST A Method: EPA 625	Matrix: Freshwater Batch ID: 0-9128	•	06-Mar-16 5:20 06-Mar-16	Received: 06-Mar-16 Analyzed: 28-Mar-16
(PCB030)	Total	80		% Recovery	
(PCB112)	Total	116		% Recovery	
(PCB198)	Total	63		% Recovery	
(TCMX)	Total	72		% Recovery	
Bolstar (Sulprofos)	Total ND	2	4	ng/L	
Chlorpyrifos	Total ND	0.5	1	ng/L	
Demeton	Total ND	1	2	ng/L	
Diazinon	Total ND	0.5	1	ng/L	
Dichlorvos	Total ND	3	6	ng/L	

PHYSIS Project ID: 1210002-007

Client: Weston Solutions, Inc.

Project: LACDPW Malibu ASBS

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ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
Dimethoate	Total	ND	5	10	ng/L	
Disulfoton	Total	ND	1	2	ng/L	
Ethoprop (Ethoprofos)	Total	ND	1	2	ng/L	
Fenchlorphos (Ronnel)	Total	ND	2	4	ng/L	
Fensulfothion	Total	ND	1	2	ng/L	
Fenthion	Total	ND	2	4	ng/L	
Malathion	Total	ND	3	6	ng/L	
Methidathion	Total	ND	5	10	ng/L	
Methyl parathion	Total	ND	1	2	ng/L	
Mevinphos (Phosdrin)	Total	ND	5	10	ng/L	
Phorate	Total	ND	5	10	ng/L	
Phosmet	Total	ND	5	10	ng/L	
Tetrachlorvinphos (Stirofos)	Total	ND	2	4	ng/L	
Tokuthion	Total	ND	3	6	ng/L	
Trichloronate	Total	ND	1	2	ng/L	

Sample ID: 39405-R1	LACDPW-030616-ASBS-S01-PO Method: EPA 625	ST ASBS-S Matrix: S Batch ID: C		Sampled: o Prepared: o	06-Mar-16 4:45 06-Mar-16	Received: o6-Mar-16 Analyzed: 28-Mar-16
(PCB030)	Total	70	,		% Recovery	
(PCB112)	Total	97			% Recovery	
(PCB198)	Total	74			% Recovery	
(TCMX)	Total	57			% Recovery	
Bolstar (Sulprofos)	Total	ND	2	4	ng/L	
Chlorpyrifos	Total	ND	0.5	1	ng/L	
Demeton	Total	ND	1	2	ng/L	
Diazinon	Total	ND	0.5	1	ng/L	
Dichlorvos	Total	ND	3	6	ng/L	
Dimethoate	Total	ND	5	10	ng/L	
Disulfoton	Total	ND	1	2	ng/L	
Ethoprop (Ethoprofos)	Total	ND	1	2	ng/L	
Fenchlorphos (Ronnel)	Total	ND	2	4	ng/L	
Fensulfothion	Total	ND	1	2	ng/L	
Fenthion	Total	ND	2	4	ng/L	

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fax: (714) 602-5321

www.physislabs.com info@p

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FRACTION	RESULT	MDL	RL	UNITS	QA CODE
Total	ND	3	6	ng/L	
Total	ND	5	10	ng/L	
Total	ND	1	2	ng/L	
Total	ND	5	10	ng/L	
Total	ND	5	10	ng/L	
Total	ND	5	10	ng/L	
Total	ND	2	4	ng/L	
Total	ND	3	6	ng/L	
Total	ND	1	2	ng/L	
	Total Total Total Total Total Total Total Total Total Total	TotalNDTotalNDTotalNDTotalNDTotalNDTotalNDTotalNDTotalNDTotalNDTotalNDTotalND	TotalND3TotalND5TotalND1TotalND5TotalND5TotalND5TotalND2TotalND3	TotalND36TotalND510TotalND12TotalND510TotalND510TotalND510TotalND510TotalND24TotalND36	TotalND36ng/LTotalND510ng/LTotalND12ng/LTotalND510ng/LTotalND510ng/LTotalND510ng/LTotalND510ng/LTotalND24ng/LTotalND36ng/L

Sample ID: 39406-R1	LACDPW-030616-ASBS-FB Field Blank		: Freshwater	•	06-Mar-16 5:45	Received: 06-Mar-16
	Method: EPA 625	Batch ID	: O-9128	Prepared: c		Analyzed: 28-Mar-16
(PCB030)	Total	69			% Recovery	
(PCB112)	Total	93			% Recovery	
(PCB198)	Total	75			% Recovery	
(TCMX)	Total	54			% Recovery	
Bolstar (Sulprofos)	Total	ND	2	4	ng/L	
Chlorpyrifos	Total	ND	0.5	1	ng/L	
Demeton	Total	ND	1	2	ng/L	
Diazinon	Total	ND	0.5	1	ng/L	
Dichlorvos	Total	ND	3	6	ng/L	
Dimethoate	Total	ND	5	10	ng/L	
Disulfoton	Total	ND	1	2	ng/L	
Ethoprop (Ethoprofos)	Total	ND	1	2	ng/L	
Fenchlorphos (Ronnel)	Total	ND	2	4	ng/L	
Fensulfothion	Total	ND	1	2	ng/L	
Fenthion	Total	ND	2	4	ng/L	
Malathion	Total	ND	3	6	ng/L	
Methidathion	Total	ND	5	10	ng/L	
Methyl parathion	Total	ND	1	2	ng/L	
Mevinphos (Phosdrin)	Total	ND	5	10	ng/L	
Phorate	Total	ND	5	10	ng/L	
Phosmet	Total	ND	5	10	ng/L	

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fax: (714) 602-5321

info@physislabs.com

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CA ELAP #2769 **ANALYTICAL REPORT**

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
Tetrachlorvinphos (Stirofos)	Total	ND	2	4	ng/L	
Tokuthion	Total	ND	3	6	ng/L	
Trichloronate	Total	ND	1	2	ng/L	



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main: (714) 602-5320

fax: (714) 602-5321 www.physislabs.com

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ANALYTICAL REPORT

CA ELAP #2769

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
Sample ID: 39402-R1	LACDPW-030416-ASBS-S01 ASBS-S01 Method: EPA 625	Matrix: Batch ID:	Seawater O-9128	Sampled: Prepared:	04-Mar-16 13:40 06-Mar-16	Received: 04-Mar-16 Analyzed: 28-Mar-16
(d10-Acenaphthene)	Total	77			% Recovery	
(d10-Phenanthrene)	Total	85			% Recovery	
(d12-Chrysene)	Total	76			% Recovery	
(d8-Naphthalene)	Total	72			% Recovery	
1-Methylnaphthalene	Total	ND	1	5	ng/L	
1-Methylphenanthrene	Total	ND	1	5	ng/L	
2,3,5-TrimethyInaphthalene	Total	ND	1	5	ng/L	
2,6-Dimethylnaphthalene	Total	ND	1	5	ng/L	
2-Methylnaphthalene	Total	ND	1	5	ng/L	
Acenaphthene	Total	ND	1	5	ng/L	
Acenaphthylene	Total	ND	1	5	ng/L	
Anthracene	Total	ND	1	5	ng/L	
Benz[a]anthracene	Total	ND	1	5	ng/L	
Benzo[a]pyrene	Total	ND	1	5	ng/L	
Benzo[b]fluoranthene	Total	ND	1	5	ng/L	
Benzo[e]pyrene	Total	ND	1	5	ng/L	
Benzo[g,h,i]perylene	Total	ND	1	5	ng/L	
Benzo[k]fluoranthene	Total	ND	1	5	ng/L	
Biphenyl	Total	ND	1	5	ng/L	
Chrysene	Total	ND	1	5	ng/L	
Dibenz[a,h]anthracene	Total	ND	1	5	ng/L	
Dibenzothiophene	Total	ND	1	5	ng/L	
Fluoranthene	Total	ND	1	5	ng/L	
Fluorene	Total	ND	1	5	ng/L	
Indeno[1,2,3-c,d]pyrene	Total	ND	1	5	ng/L	
Naphthalene	Total	ND	1	5	ng/L	
Perylene	Total	ND	1	5	ng/L	
Phenanthrene	Total	ND	1	5	ng/L	
Pyrene	Total	ND	1	5	ng/L	



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main: (714) 602-5320

www.physislabs.com

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ANALYTICAL REPORT

CA ELAP #2769

Polynuclear Aromatic Hydrocarbons

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
Sample ID: 39403-R1	LACDPW-030616-ASBS-016-PO Method: EPA 625	ST ASBS-o Matrix: Fre Batch ID: O-9		Sampled: 00 Prepared: 06	5- Mar-16 4:30 5-Mar-16	Received: 06-Mar-16 Analyzed: 28-Mar-16
(d10-Acenaphthene)	Total	73			% Recovery	
(d10-Phenanthrene)	Total	89			% Recovery	
(d12-Chrysene)	Total	74			% Recovery	
(d8-Naphthalene)	Total	61			% Recovery	
1-Methylnaphthalene	Total	4.2	1	5	ng/L	J
1-Methylphenanthrene	Total	ND	1	5	ng/L	
2,3,5-TrimethyInaphthalene	Total	ND	1	5	ng/L	
2,6-Dimethylnaphthalene	Total	1.9	1	5	ng/L	J
2-Methylnaphthalene	Total	4.2	1	5	ng/L	J
Acenaphthene	Total	9.4	1	5	ng/L	
Acenaphthylene	Total	2.2	1	5	ng/L	J
Anthracene	Total	12.1	1	5	ng/L	
Benz[a]anthracene	Total	9.2	1	5	ng/L	
Benzo[a]pyrene	Total	9.3	1	5	ng/L	
Benzo[b]fluoranthene	Total	15.9	1	5	ng/L	
Benzo[e]pyrene	Total	14.9	1	5	ng/L	
Benzo[g,h,i]perylene	Total	9.2	1	5	ng/L	
Benzo[k]fluoranthene	Total	7.5	1	5	ng/L	
Biphenyl	Total	2.2	1	5	ng/L	J
Chrysene	Total	25.3	1	5	ng/L	
Dibenz[a,h]anthracene	Total	1.7	1	5	ng/L	J
Dibenzothiophene	Total	5.2	1	5	ng/L	
Fluoranthene	Total	27.8	1	5	ng/L	
Fluorene	Total	8.3	1	5	ng/L	
Indeno[1,2,3-c,d]pyrene	Total	6.7	1	5	ng/L	
Naphthalene	Total	9.1	1	5	ng/L	
Perylene	Total	3.1	1	5	ng/L	J
Phenanthrene	Total	29.6	1	5	ng/L	
Pyrene	Total	22.9	1	5	ng/L	

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fax: (714) 602-5321

1904 E. Wright Circle, Anaheim CA 92806

main: (714) 602-5320

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info@physislabs.com

ANALYTICAL REPORT

CA ELAP #2769

Sample ID: 39404-R1 LACDPW-030616-ASBS-016-DUP POST A Method: EPA 625 Matrix: Freshwater Batch ID: 0-9128 Sampled: 06-Mar-16 5:20 Received: 0 (d10-Acenaphthene) Total 74 % Recovery (d10-Phenanthrene) Total 89 % Recovery	
(d10-Phenanthrene) Total 89 % Recovery	
(d12-Chrysene) Total 67 % Recovery	
(d8-Naphthalene) Total 63 % Recovery	
1-Methylnaphthalene Total 3.5 1 5 ng/L J	
1-Methylphenanthrene Total ND 1 5 ng/L	
2,3,5-Trimethylnaphthalene Total ND 1 5 ng/L	
2,6-Dimethylnaphthalene Total 1.8 1 5 ng/L J	
2-Methylnaphthalene Total 3.7 1 5 ng/L J	
Acenaphthene Total 8.6 1 5 ng/L	
Acenaphthylene Total 1.7 1 5 ng/L J	
Anthracene Total 10.2 1 5 ng/L	
Benz[a]anthracene Total 9.3 1 5 ng/L	
Benzo[a]pyrene Total 8.2 1 5 ng/L	
Benzo[b]fluoranthene Total 16 1 5 ng/L	
Benzo[e]pyrene Total 13.6 1 5 ng/L	
Benzo[g,h,i]perylene Total 6.5 1 5 ng/L	
Benzo[k]fluoranthene Total 6.8 1 5 ng/L	
Biphenyl Total 1.8 1 5 ng/L J	
Chrysene Total 27.3 1 5 ng/L	
Dibenz[a,h]anthracene Total 1.5 1 5 ng/L J	
Dibenzothiophene Total 5.2 1 5 ng/L	
Fluoranthene Total 25.4 1 5 ng/L	
Fluorene Total 7.9 1 5 ng/L	
Indeno[1,2,3-c,d]pyrene Total 5.4 1 5 ng/L	
Naphthalene Total 8.5 1 5 ng/L	
Perylene Total 2.6 1 5 ng/L J	
Phenanthrene Total 27.9 1 5 ng/L	
Pyrene Total 19.8 1 5 ng/L	



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main: (714) 602-5320

fax: (714) 602-5321 www.physislabs.com

info@physislabs.com

ANALYTICAL REPORT

CA ELAP #2769

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
Sample ID: 39405-R1	LACDPW-030616-ASBS-S01-POS Method: EPA 625	T ASBS-S Matrix: Sea Batch ID: 0-9		Sampled: o	6-Mar-16 4:45 ^{6-Mar-16}	Received: 06-Mar-16 Analyzed: 28-Mar-16
(d10-Acenaphthene)	Total	72			% Recovery	
(d10-Phenanthrene)	Total	88			% Recovery	
(d12-Chrysene)	Total	74			% Recovery	
(d8-Naphthalene)	Total	62			% Recovery	
1-Methylnaphthalene	Total	ND	1	5	ng/L	
1-Methylphenanthrene	Total	ND	1	5	ng/L	
2,3,5-TrimethyInaphthalene	Total	ND	1	5	ng/L	
2,6-Dimethylnaphthalene	Total	ND	1	5	ng/L	
2-Methylnaphthalene	Total	ND	1	5	ng/L	
Acenaphthene	Total	ND	1	5	ng/L	
Acenaphthylene	Total	ND	1	5	ng/L	
Anthracene	Total	1.1	1	5	ng/L	J
Benz[a]anthracene	Total	1.4	1	5	ng/L	J
Benzo[a]pyrene	Total	ND	1	5	ng/L	
Benzo[b]fluoranthene	Total	6.8	1	5	ng/L	
Benzo[e]pyrene	Total	1.9	1	5	ng/L	J
Benzo[g,h,i]perylene	Total	ND	1	5	ng/L	
Benzo[k]fluoranthene	Total	1	1	5	ng/L	J
Biphenyl	Total	ND	1	5	ng/L	
Chrysene	Total	4.6	1	5	ng/L	J
Dibenz[a,h]anthracene	Total	ND	1	5	ng/L	
Dibenzothiophene	Total	ND	1	5	ng/L	
Fluoranthene	Total	4.1	1	5	ng/L	J
Fluorene	Total	1	1	5	ng/L	J
Indeno[1,2,3-c,d]pyrene	Total	ND	1	5	ng/L	
Naphthalene	Total	1.7	1	5	ng/L	J
Perylene	Total	ND	1	5	ng/L	
Phenanthrene	Total	4	1	5	ng/L	J
Pyrene	Total	3.1	1	5	ng/L	J



1904 E. Wright Circle, Anaheim CA 92806

main: (714) 602-5320

fax: (714) 602-5321 www.physislabs.com

info@physislabs.com

ANALYTICAL REPORT

CA ELAP #2769

Sample ID: 39406-R ACDPW-030616-ASBS-FB Field Blank Matrix: Freshwater Batch ID: 0-9128 Sampled: 06-Mar-16 5-45 Received: 06-Mar-16 (d10-Aconaphthane) Total 81 %Recovery (d12-Chrysene) Total 97 %Recovery (d12-Chrysene) Total 83 %Recovery (d12-Chrysene) Total 14 1 5 ng/L 1-Methylnaphthalene Total 49 1 5 ng/L J 2.3.5 Timethylnaphthalene Total ND 1 5 ng/L J 2.4.5-Insthylnaphthalene Total ND 1 5 ng/L J 2.4.5-Timethylnaphthalene Total 4.1 1 5 ng/L J <th>ANALYTE</th> <th>FRACTION</th> <th>RESULT</th> <th>MDL</th> <th>RL</th> <th>UNITS</th> <th>QA CODE</th>	ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE
Index (d10-Phenanthrene)Total97% Recovery(d12-Chrysene)Total83% Recovery(d2-Aphylablene)Total71% Recovery1-MethylnaphthaleneTotal1.415ng/L1-MethylnaphthaleneTotal4.915ng/L2.3.5. TrimethylnaphthaleneTotalND15ng/L2.3.6. TrimethylnaphthaleneTotalND15ng/L2.4.6. TrimethylnaphthaleneTotalND15ng/L2.4.6. TrimethylnaphthaleneTotalND15ng/L2.4.6. TrimethylnaphthaleneTotalND15ng/L3.4.6. aphtheneTotalND15ng/L4.6.enaphthyleneTotal1.415ng/L4.1.1.2.1.415ng/LJ4.6.enaphthyleneTotal1.415ng/L4.1.1.2.1.415ng/LJ4.6.enaphthyleneTotal1.415ng/L4.6.enaphthyleneTotal1.415ng/L4.6.enaphthyleneTotal1.415ng/L4.6.enaphthyleneTotal1.415ng/L4.6.enaphthyleneTotal1.415ng/L4.6.enaphthyleneTotal1.415ng/L4.6.enaphthyleneTotal1.415ng/L	Sample ID: 39406-R1				•		
(d12-Chrysene) Total R3 % Recovery (d4-Naphthalene) Total 71 % Recovery 1-Methylphenanthrene Total 1.4 1 5 ngL J 1-Methylphenanthrene Total 4.9 1 5 ngL J 2.6-Dimethylnaphthalene Total ND 1 5 ngL J 2.4-Methylnaphthalene Total 1.2 1 5 ngL J 2.4-Methylnaphthalene Total ND 1 5 ngL J 2.4-Methylnaphthalene Total ND 1 5 ngL J Acenaphthene Total A.1 1 5 ngL J Acenaphthylene Total 4.1 1 5 ngL J Benzo[ajprene Total 1.4.4 1 5 ngL J Benzo[ajprene Total 8.6.7 1 5 ngL J Benzo[ajprene Total 6.6.7 1 5 ngL J	(d10-Acenaphthene)	Total	81			% Recovery	
(d8-Naphthalene)Total71% Recovery1-MethylnaphthaleneTotal1.415ng/LJ1-MethylphenanthreneTotal4.915ng/LJ2,3,5-TrimethylnaphthaleneTotalND15ng/LJ2,6-DimethylnaphthaleneTotal1.415ng/LJ2-MethylnaphthaleneTotal1.415ng/LJ2-MethylnaphthaleneTotalND15ng/LJ2-MethylnaphthaleneTotalND15ng/LJAcenaphthyleneTotalND15ng/LJAcenaphthyleneTotal1.415ng/LJAcenaphthyleneTotal1.415ng/LJBenzo[alpyreneTotal1.415ng/LJBenzo[alpyreneTotal1.415ng/LJBenzo[alpyreneTotal65.715ng/LJBenzo[alpyreneTotal65.715ng/LJBenzo[alphathraceneTotal1.315ng/LJBenzo[alphathraceneTotal1.315ng/LJBenzo[alphathraceneTotal1.315ng/LJBenzo[alphathraceneTotal1.35ng/LJJBenzo[alphathraceneTotal8.215 <td>(d10-Phenanthrene)</td> <td>Total</td> <td>97</td> <td></td> <td></td> <td>% Recovery</td> <td></td>	(d10-Phenanthrene)	Total	97			% Recovery	
1-MethylnaphthaleneTotal1.415ng/LJ2.3.5-TrinethylnaphthaleneTotalND15ng/LJ2.6.0-ImethylnaphthaleneTotal1.415ng/LJ2.6.0-ImethylnaphthaleneTotal1.415ng/LJ2.6.0-ImethylnaphthaleneTotal1.215ng/LJ2.4.0-ImethylnaphthaleneTotal1.215ng/LJ2.4.0-ImethylnaphthaleneTotalND15ng/LJAcenaphtheneTotalND15ng/LJAcenaphthyleneTotal4.115ng/LJBenzolapyreneTotal1.415ng/LJBenzolpjlyreneTotal1.4.715ng/LJBenzolpjlyreneTotal8.715ng/LJBenzolpjlyreneTotal65.715ng/LJBenzolpjlyreneTotal1.715ng/LJBenzolpjlyreneTotal1.315ng/LJBenzolpjlyreneTotal1.315ng/LJBenzolpjlyreneTotal1.315ng/LJBenzolpjlyreneTotal3.215ng/LJBenzolpjlyreneTotal3.215ng/LJBenzolpjlyreneTotal3.2 <t< td=""><td>(d12-Chrysene)</td><td>Total</td><td>83</td><td></td><td></td><td>% Recovery</td><td></td></t<>	(d12-Chrysene)	Total	83			% Recovery	
1-MethylphenanthreneTotal4.915ng/LJ2,3-TrimethylnaphthaleneTotalND15ng/LJ2,6-DimethylnaphthaleneTotal1.415ng/LJ2-MethylnaphthaleneTotal1.215ng/LJ2-MethylnaphthaleneTotalND15ng/LJAcenaphthyleneTotalND15ng/LJAcenaphthyleneTotal4.1115ng/LJBenz(ajanthraceneTotal1.4715ng/LJBenzo[bifuorantheneTotal815ng/LJBenzo[bifuorantheneTotal65.715ng/LJBenzo[bifuorantheneTotal65.715ng/LJBenzo[bifuorantheneTotal65.715ng/LJBenzo[bifuorantheneTotal65.715ng/LJBenzo[bifuorantheneTotal2.615ng/LJBenzo[bifuorantheneTotal3.215ng/LJBenzo[bifuorantheneTotal3.215ng/LJBenzo[bifuorantheneTotal3.215ng/LJBenzo[bifuorantheneTotal3.215ng/LJDibenz[a,h]anthraceneTotal3.215ng/LJDibenz[a,h]anth	(d8-Naphthalene)	Total	71			% Recovery	
2,3,5-TrimethylnaphthaleneTotalND15ng/L2,6-DimethylnaphthaleneTotal1,415ng/LJ2-MethylnaphthaleneTotal1,215ng/LJAcenaphthyleneTotalND15ng/LJAcenaphthyleneTotalND15ng/LJAnthraceneTotal4.115ng/LJBenz(ajaphraceneTotal1.415ng/LJBenz(ajaphraceneTotal14.715ng/LJBenz(ajaphraceneTotal14.715ng/LJBenz(ajaphraceneTotal65.715ng/LJBenz(ajaphraceneTotal65.715ng/LJBenz(aja,hjaper/eneTotal1.715ng/LJBenz(aja,hjaper/eneTotal1.715ng/LJBenz(aja,hjaper/eneTotal1.715ng/LJBenz(aja,hjaper/eneTotal2.615ng/LJDibenz(a,hjaper/eneTotal8.215ng/LJDibenz(a,hjaper/eneTotal3.215ng/LJDibenz(a,hjaper/eneTotal3.215ng/LJDibenz(a,hjaper/eneTotal3.215ng/LJIndeno(1,2,3-c,djpyreneTotal3.	1-Methylnaphthalene	Total	1.4	1	5	ng/L	J
2.6-DimethylnaphthaleneTotal1.415ng/LJ2-MethylnaphthaleneTotal1.215ng/LJAcenaphtheneTotalND15ng/LJAcenaphthyleneTotalND15ng/LJAcenaphthyleneTotalND15ng/LJBenz[a]anthraceneTotal1.415ng/LJBenz[a]phraceneTotal1.415ng/LJBenzo[a]pyreneTotal1.415ng/LJBenzo[a]pyreneTotal24.215ng/LJBenzo[a]pyreneTotal65.715ng/LJBenzo[a]hilowantheneTotal65.715ng/LJBenzo[a]hilowantheneTotal1.715ng/LJBenzo[a]hilowantheneTotal1.315ng/LJBibenylTotal2.615ng/LJDibenz(a]halntraceneTotal83.215ng/LJFluoreneTotal83.215ng/LJFluoreneTotal3.215ng/LJFluoreneTotal3.215ng/LJFluoreneTotal2.915ng/LJFluoreneTotal3.215ng/LJFluor	1-Methylphenanthrene	Total	4.9	1	5	ng/L	J
2-MethylnaphthaleneTotal1.215ng/LJAcenaphtheneTotalND15ng/LAcenaphthyleneTotalND15ng/LAnthraceneTotal4.115ng/LBenzaljanthraceneTotal1.415ng/LBenzolghyreneTotal14.715ng/LBenzolghyreneTotal24.215ng/LBenzolghyreneTotal65.715ng/LBenzolghiluorantheneTotal1.715ng/LBenzolghiluorantheneTotal1.715ng/LBenzolghiluorantheneTotal2.615ng/LBenzolghiluorantheneTotal2.615ng/LBenzolghiluorantheneTotal2.615ng/LBenzolghilperyleneTotal3.215ng/LDibenzia,hjanthraceneTotal4.515ng/LDibenzia,hjanthraceneTotal3.215ng/LDibenzia,hjanthraceneTotal3.215ng/LJieneneTotal3.215ng/LJieneneTotal3.215ng/LJieneneTotal3.215ng/LJieneneTotal3.215ng/LJieneneTotal3.215ng/L <t< td=""><td>2,3,5-TrimethyInaphthalene</td><td>Total</td><td>ND</td><td>1</td><td>5</td><td>ng/L</td><td></td></t<>	2,3,5-TrimethyInaphthalene	Total	ND	1	5	ng/L	
AcenaphtheneTotalND15ng/LAcenaphthyleneTotalND15ng/LAcenaphthyleneTotalA.115ng/LJAnthraceneTotal1.415ng/LJBenz(ajnthraceneTotal1.4.715ng/LJBenzo(ajpyreneTotal1.4.715ng/LJBenzo(ajpyreneTotal24.215ng/LJBenzo(gj,h,ijenyleneTotal65.715ng/LJBenzo(gj,h,ijenyleneTotal1.715ng/LJBenzo(gj,h,ijenyleneTotal1.715ng/LJBenzo(gj,h,ijenyleneTotal1.715ng/LJBenzo(gj,h,ijenyleneTotal1.715ng/LJBenzo(gj,h,ijenyleneTotal1.315ng/LJBenzo(gj,h,ijenyleneTotal1.315ng/LJDibenz(a,hjanthraceneTotal8.215ng/LJDibenzothopheneTotal8.215ng/LJFluoreneTotal8.215ng/LJIndeno(1, z,3-c,djoyreneTotal3.215ng/LJIndeno(1, z,3-c,djoyreneTotal2.715ng/LJPeryleneTotal2.915ng/L	2,6-Dimethylnaphthalene	Total	1.4	1	5	ng/L	J
AcenaphthyleneTotalND15ng/LAnthraceneTotal4.115ng/LJBenz(ajanthraceneTotal1.415ng/LJBenzo(ajpyreneTotal14.715ng/LJBenzo(bjfluorantheneTotal815ng/LJBenzo(bjfluorantheneTotal24.215ng/LJBenzo(bjfluorantheneTotal65.715ng/LJBenzo(bjfluorantheneTotal1.715ng/LJBenzo(bjfluorantheneTotal1.715ng/LJBenzo(bjfluorantheneTotal2.615ng/LJDibenz(a,hjanthraceneTotalND15ng/LJDibenz(a,hjanthraceneTotal83.215ng/LJFluoreneTotal3.215ng/LJFluoreneTotal3.215ng/LJIndeno(1,2,3-c,djpyreneTotal2.715ng/LJPerjeneTotal2.915ng/LJPenanthreneTotal2.915ng/LJPenanthreneTotal2.915ng/LJPenanthreneTotal2.915ng/LJ	2-Methylnaphthalene	Total	1.2	1	5	ng/L	J
AntraceneTotal4.115ng/LJBenz(a)anthraceneTotal1.415ng/LJBenzo(a)pyreneTotal14.715ng/LJBenzo(b)fluorantheneTotal24.215ng/LJBenzo(g),njperyleneTotal24.215ng/LJBenzo(g),njperyleneTotal65.715ng/LJBenzo(g),njperyleneTotal65.715ng/LJBenzo(g),njperyleneTotal1.715ng/LJBenzo(g),njperyleneTotal1.315ng/LJBiphenylTotal1.315ng/LJDibenz(a,h)anthraceneTotalND15ng/LJDibenz(a,h)anthraceneTotal83.215ng/LJFluoreneTotal3.215ng/LJI ideno(1,2,3-c,d)pyreneTotal3.215ng/LJNaphthaleneTotal2.715ng/LJNaphthaleneTotal2.915ng/LJPeryleneTotal2.915ng/LJPenanthreneTotal2.915ng/LJ	Acenaphthene	Total	ND	1	5	ng/L	
Benz[a]anthraceneTotal1.415ng/LJBenzo[a]pyreneTotal14.715ng/LIBenzo[b]fluorantheneTotal815ng/LIBenzo[a]pyreneTotal24.215ng/LIBenzo[g,h,i]peryleneTotal65.715ng/LIBenzo[k]fluorantheneTotal65.715ng/LJBenzo[k]fluorantheneTotal1.715ng/LJBeiphenylTotal1.315ng/LJDibenz[a,h]anthraceneTotal2.615ng/LJDibenz[a,h]anthraceneTotal4.515ng/LJDibenz[a,h]anthraceneTotal3.215ng/LJFluorantheneTotal3.215ng/LJIndeno[1,2,3-c,d]pyreneTotal3.215ng/LJIndeno[1,2,3-c,d]pyreneTotal2.715ng/LJPeryleneTotal2.915ng/LJPhenanthreneTotal2.915ng/LJPhenanthreneTotal2.915ng/LJ	Acenaphthylene	Total	ND	1	5	ng/L	
Benzo[a]pyreneTotal14.715ng/LBenzo[b]fluorantheneTotal815ng/LBenzo[e]pyreneTotal24.215ng/LBenzo[g,h,i]peryleneTotal65.715ng/LBenzo[k]fluorantheneTotal1.715ng/LBenzo[k]fluorantheneTotal1.715ng/LBenzo[k]fluorantheneTotal1.315ng/LBiphenylTotal1.315ng/LJDibenz[a,h]anthraceneTotal2.615ng/LJDibenz[a,h]anthraceneTotal83.215ng/LJFluorantheneTotal3.215ng/LJFluorantheneTotal3.215ng/LJIndeno[1,2,3-c,d]pyreneTotal2.715ng/LJPeryleneTotal2.915ng/LJPhenanthreneTotal2.915ng/LJ	Anthracene	Total	4.1	1	5	ng/L	J
BenzolpjiurantheneTotal815ng/LBenzolpjyeneTotal24.215ng/LBenzolg,h,i)peryleneTotal65.715ng/LBenzolk,ifluorantheneTotal1.715ng/LBenzolk,ifluorantheneTotal1.715ng/LBiphenylTotal1.315ng/LJDibenz[a, h]anthraceneTotal2.615ng/LJDibenz[a, h]anthraceneTotalND15ng/LJDibenztinopheneTotal4.515ng/LJFluorantheneTotal83.215ng/LJFluorantheneTotal3.215ng/LJIndeno[1,2,3-c,d]pyreneTotal10.915ng/LJNaphthaleneTotal2.915ng/LJPeryleneTotal2.915ng/LJPhenanthreneTotal45.315ng/LJ	Benz[a]anthracene	Total	1.4	1	5	ng/L	J
Benzolejpyrene Total 24.2 1 5 ng/L Benzolejn, ijperylene Total 65.7 1 5 ng/L Benzolejn, ijperylene Total 1.7 1 5 ng/L J Benzolejnyne Total 1.7 1 5 ng/L J Biphenyl Total 1.3 1 5 ng/L J Ohrysene Total 2.6 1 5 ng/L J Dibenzla, hjanthracene Total 2.6 1 5 ng/L J Dibenzothiophene Total 83.2 1 5 ng/L J Fluorene Total 3.2 1 5 ng/L J Indeno[1,2,3-c,d]pyrene Total 3.2 1 5 ng/L J Naphthalene Total 2.7 1 5 ng/L J Perylene Total 2.9 1 5 ng/L J <td>Benzo[a]pyrene</td> <td>Total</td> <td>14.7</td> <td>1</td> <td>5</td> <td>ng/L</td> <td></td>	Benzo[a]pyrene	Total	14.7	1	5	ng/L	
Benzolg,h,i]peryleneTotal65.715ng/LBenzolk/ifluorantheneTotal1.715ng/LJBiphenylTotal1.315ng/LJChryseneTotal2.615ng/LJDibenz[a,h]anthraceneTotalND15ng/LJDibenzthiopheneTotal4.515ng/LJFluorantheneTotal83.215ng/LJFluoreneTotal3.215ng/LJIndeno[1,2,3-c,d]pyreneTotal10.915ng/LJNaphthaleneTotal2.715ng/LJPeryleneTotal2.915ng/LJPhenanthreneTotal45.315ng/LJ	Benzo[b]fluoranthene	Total	8	1	5	ng/L	
Benzolk/fluorantheneTotal1.715ng/LJBiphenylTotal1.315ng/LJChryseneTotal2.615ng/LJDibenz[a,h]anthraceneTotalND15ng/LJDibenzenathopheneTotal4.515ng/LJFluorantheneTotal83.215ng/LJFluoreneTotal3.215ng/LJIndeno[1,2,3-c,d]pyreneTotal10.915ng/LJNaphthaleneTotal2.715ng/LJPeryleneTotal2.915ng/LJPhenanthreneTotal45.315ng/LJ	Benzo[e]pyrene	Total	24.2	1	5	ng/L	
BiphenyTotal1.315ng/LJChryseneTotal2.615ng/LJDibenz[a,h]anthraceneTotalND15ng/LJDibenzothiopheneTotal4.515ng/LJFluorantheneTotal83.215ng/LJFluoreneTotal3.215ng/LJIndeno[1,2,3-c,d]pyreneTotal10.915ng/LJNaphthaleneTotal2.715ng/LJPeryleneTotal2.915ng/LJPhenanthreneTotal45.315ng/LJ	Benzo[g,h,i]perylene	Total	65.7	1	5	ng/L	
ChryseneTotal2.615ng/LJDibenz[a,h]anthraceneTotalND15ng/LJDibenzothiopheneTotal4.515ng/LJFluorantheneTotal83.215ng/LJFluoreneTotal3.215ng/LJIndeno[1,2,3-c,d]pyreneTotal10.915ng/LJNaphthaleneTotal2.715ng/LJPeryleneTotal2.915ng/LJPhenanthreneTotal45.315ng/LJ	Benzo[k]fluoranthene	Total	1.7	1	5	ng/L	J
Dibenz[a,h]anthraceneTotalND15ng/LDibenzothiopheneTotal4.515ng/LJFluorantheneTotal83.215ng/LJFluoreneTotal3.215ng/LJIndeno[1,2,3-c,d]pyreneTotal10.915ng/LJNaphthaleneTotal2.715ng/LJPeryleneTotal2.915ng/LJPhenanthreneTotal45.315ng/LJ	Biphenyl	Total	1.3	1	5	ng/L	J
DibenzothiopheneTotal4.515ng/LJFluorantheneTotal83.215ng/L-FluoreneTotal3.215ng/LJIndeno[1,2,3-c,d]pyreneTotal10.915ng/L-NaphthaleneTotal2.715ng/LJPeryleneTotal2.915ng/LJPhenanthreneTotal45.315ng/L-	Chrysene	Total	2.6	1	5	ng/L	J
FluorantheneTotal83.215ng/LFluoreneTotal3.215ng/LJIndeno[1,2,3-c,d]pyreneTotal10.915ng/LTotalNaphthaleneTotal2.715ng/LJPeryleneTotal2.915ng/LJPhenanthreneTotal45.315ng/LJ	Dibenz[a,h]anthracene	Total	ND	1	5	ng/L	
FluoreneTotal3.215ng/LJIndeno[1,2,3-c,d]pyreneTotal10.915ng/LNaphthaleneTotal2.715ng/LJPeryleneTotal2.915ng/LJPhenanthreneTotal45.315ng/LJ	Dibenzothiophene	Total	4.5	1	5	ng/L	J
Indeno[1,2,3-c,d]pyreneTotal10.915ng/LNaphthaleneTotal2.715ng/LJPeryleneTotal2.915ng/LJPhenanthreneTotal45.315ng/LJ	Fluoranthene	Total	83.2	1	5	ng/L	
NaphthaleneTotal2.715ng/LJPeryleneTotal2.915ng/LJPhenanthreneTotal45.315ng/L	Fluorene	Total	3.2	1	5	ng/L	J
PeryleneTotal2.915ng/LJPhenanthreneTotal45.315ng/L	Indeno[1,2,3-c,d]pyrene	Total	10.9	1	5	ng/L	
Phenanthrene Total 45.3 1 5 ng/L	Naphthalene	Total	2.7	1	5	ng/L	J
·	Perylene	Total	2.9	1	5	ng/L	J
	Phenanthrene	Total	45.3	1	5	ng/L	
Pyrene lotal 378.7 1 5 ng/L	Pyrene	Total	378.7	1	5	ng/L	



fax: (714) 602-5321

www.physislabs.com info@physislabs.com

CA ELAP #2769

ANALYTICAL REPORT

Pyrethroids

1904 E. Wright Circle, Anaheim CA 92806

ANALYTE	FRACTION	RES	ULT MDL	RL	UNITS	QA CODE			
Sample ID: 39402-R1	LACDPW-030416-ASBS-S01 ASBS-S0 Method: EPA 625-NCI	Matrix: Seawater Batch ID: 0-9128			04-Mar-16 13:40 06-Mar-16	Received: 04-Mar-16 Analyzed: 21-Mar-16			
Allethrin	Total	ND	0.5	2	ng/L				
Bifenthrin	Total	ND	0.5	2	ng/L				
Cyfluthrin	Total	ND	0.5	2	ng/L				
Cyhalothrin, Total Lambda	Total	ND	0.5	2	ng/L				
Cypermethrin	Total	ND	0.5	2	ng/L				
Danitol (Fenpropathrin)	Total	ND	0.3	2	ng/L				
Deltamethrin/Tralomethrin	Total	ND	0.5	2	ng/L				
Esfenvalerate	Total	ND	0.5	2	ng/L				
Fenvalerate	Total	ND	0.5	2	ng/L				
Fluvalinate	Total	ND	0.5	2	ng/L				
Permethrin, cis-	Total	ND	2	4	ng/L				
Permethrin, trans-	Total	ND	1	2	ng/L				
Prallethrin	Total	ND	0.5	2	ng/L				
Resmethrin	Total	ND	5	10	ng/L				
Sample ID: 39403-R1	LACDPW-030616-ASBS-016-POST AS Method: EPA 625-NCI		Matrix: Freshwater Batch ID: 0-9128		06-Mar-16 4:30 06-Mar-16	Received: 06-Mar-16 Analyzed: 21-Mar-16			
Allethrin	Total	ND	0.5	2	ng/L				
Bifenthrin	Total	ND	0.5	2	ng/L				
Cyfluthrin	Total	ND	0.5	2	ng/L				
Cyhalothrin, Total Lambda	Total	ND	0.5	2	ng/L				
Cypermethrin	Total	ND	0.5	2	ng/L				
Danitol (Fenpropathrin)	Total	ND	0.3	2	ng/L				
Deltamethrin/Tralomethrin	Total	ND	0.5	2	ng/L				
Esfenvalerate	Total	ND	0.5	2	ng/L				
Fenvalerate	Total	ND	0.5	2	ng/L				
Fluvalinate	Total	ND	0.5	2	ng/L				
		ND	2	4	ng/L				
Permethrin, cis-	Total	ND	<u> </u>	· · · · ·	J.				
Permethrin, cis- Permethrin, trans-	Total Total	ND	1	2	ng/L				

PHYSIS Project ID: 1210002-007

Client: Weston Solutions, Inc.

main: (714) 602-5320



fax: (714) 602-5321

www.physislabs.com info@

info@physislabs.com

ANALYTICAL REPORT

CA ELAP #2769

Pyrethroids

1904 E. Wright Circle, Anaheim CA 92806

ANALYTE	FRACTION	RES	SULT MDL	RL	UNITS	QA CODE
Resmethrin	Total	ND	5	10	ng/L	
Sample ID: 39404-R1	LACDPW-030616-ASBS-016-DU Method: EPA 625-NCI	IP POST A	Matrix: Freshwater Batch ID: 0-9128	Sampled: Prepared:	06-Mar-16 5:20 06-Mar-16	Received: 06-Mar-16 Analyzed: 21-Mar-16
Allethrin	Total	ND	0.5	2	ng/L	
Bifenthrin	Total	5	i.3 0.5	2	ng/L	
Cyfluthrin	Total	ND	0.5	2	ng/L	
Cyhalothrin, Total Lambda	Total	ND	0.5	2	ng/L	
Cypermethrin	Total	ND	0.5	2	ng/L	
Danitol (Fenpropathrin)	Total	ND	0.3	2	ng/L	
Deltamethrin/Tralomethrin	Total	ND	0.5	2	ng/L	
Esfenvalerate	Total	ND	0.5	2	ng/L	
Fenvalerate	Total	ND	0.5	2	ng/L	
Fluvalinate	Total	ND	0.5	2	ng/L	
Permethrin, cis-	Total	ND	2	4	ng/L	
Permethrin, trans-	Total	ND	1	2	ng/L	
Prallethrin	Total	ND	0.5	2	ng/L	
Resmethrin	Total	ND	5	10	ng/L	
Sample ID: 39405-R1	LACDPW-030616-ASBS-S01-PO Method: EPA 625-NCI	ST ASBS-S	Matrix: Seawater Batch ID: O-9128	Sampled: Prepared:	06-Mar-16 4:45 06-Mar-16	Received: 06-Mar-16 Analyzed: 21-Mar-16
Allethrin	Total	ND	0.5	2	ng/L	
Bifenthrin	Total	ND	0.5	2	ng/L	
Cyfluthrin	Total	ND	0.5	2	ng/L	
Cyhalothrin, Total Lambda	Total	ND	0.5	2	ng/L	
Cypermethrin	Total	ND	0.5	2	ng/L	
Danitol (Fenpropathrin)	Total	ND	0.3	2	ng/L	
Deltamethrin/Tralomethrin	Total	ND	0.5	2	ng/L	
Esfenvalerate	Total	ND	0.5	2	ng/L	
Fenvalerate	Total	ND	0.5	2	ng/L	
Fluvalinate	Total	ND	0.5	2	ng/L	
Permethrin, cis-	Total	ND	2	4	ng/L	
Permethrin, trans-	Total	ND	1	2	ng/L	

PHYSIS Project ID: 1210002-007

Client: Weston Solutions, Inc.

main: (714) 602-5320

Project: LACDPW Malibu ASBS

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fax: (714) 602-5321

www.physislabs.com info@physislabs.com

CA ELAP #2769

ANALYTICAL REPORT

Pyrethroids

1904 E. Wright Circle, Anaheim CA 92806

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	QA CODE	
Prallethrin	Total	ND	0.5	2	ng/L		
Resmethrin	Total	ND	5	10	ng/l		

Sample ID: 39406-R1	LACDPW-030616-ASBS-FB Fi Method: EPA 625-NCI		Matrix: Freshwater Batch ID: 0-9128	Sampled: Prepared:	06-Mar-16 5:45 06-Mar-16	Received: 06-Mar-16 Analyzed: 21-Mar-16
Allethrin	Total	ND	0.5	2	ng/L	
Bifenthrin	Total	ND	0.5	2	ng/L	
Cyfluthrin	Total	ND	0.5	2	ng/L	
Cyhalothrin, Total Lambda	Total	ND	0.5	2	ng/L	
Cypermethrin	Total	ND	0.5	2	ng/L	
Danitol (Fenpropathrin)	Total	ND	0.3	2	ng/L	
Deltamethrin/Tralomethrin	Total	ND	0.5	2	ng/L	
Esfenvalerate	Total	ND	0.5	2	ng/L	
Fenvalerate	Total	ND	0.5	2	ng/L	
Fluvalinate	Total	ND	0.5	2	ng/L	
Permethrin, cis-	Total	ND	2	4	ng/L	
Permethrin, trans-	Total	ND	1	2	ng/L	
Prallethrin	Total	ND	0.5	2	ng/L	
Resmethrin	Total	ND	5	10	ng/L	

main: (714) 602-5320



1904 E. Wright Circle, Anah	neim CA 92806 main: (714) 602-9	innovative Solutions fol 320 fax: (714) 602-5321	www.physislabs.com	info@physislabs.com	CA ELAP #2769					
Total Extractable OrganicsANALYTICAL REPORT										
ANALYTE	FRACTION	RESULT	MDL RL	UNITS	QA CODE					
Sample ID: 39402-R1	LACDPW-030416-ASBS-S01 AS Method: EPA 1664B	3S-So1 Matrix: Seaw Batch ID: C-1905	-	04-Mar-16 13:40 31-Mar-16	Received: 04-Mar-16 Analyzed: 31-Mar-16					
Oil & Grease	NA	ND	1 1	mg/L						
Sample ID: 39403-R1	LACDPW-030616-ASBS-016-PO Method: EPA 1664B	ST ASBS-o Matrix: Fresh Batch ID: C-1905		06-Mar-16 4:30 31-Mar-16	Received: 06-Mar-16 Analyzed: 31-Mar-16					
Oil & Grease	NA	1	1 1	mg/L	J					
Sample ID: 39404-R1	LACDPW-030616-ASBS-016-DU Method: EPA 1664B	P POST A Matrix: Fresh Batch ID: C-1905		06-Mar-16 5:20 31-Mar-16	Received: o6-Mar-16 Analyzed: 31-Mar-16					
Oil & Grease	NA	1.4	1 1	mg/L						
Sample ID: 39405-R1	LACDPW-030616-ASBS-S01-PO Method: EPA 1664B	ST ASBS-S Matrix: Seaw Batch ID: C-1905		06-Mar-16 4:45 31-Mar-16	Received: 06-Mar-16 Analyzed: 31-Mar-16					
Oil & Grease	NA	1.1	1 1	mg/L						
Sample ID: 39406-R1	LACDPW-030616-ASBS-FB Fiel Method: EPA 1664B	d Blank Matrix: Fresh Batch ID: C-1905	-	06-Mar-16 5:45 31-Mar-16	Received: 06-Mar-16 Analyzed: 31-Mar-16					
Oil & Grease	NA	1.8	1 1	mg/L						

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main: (714) 602-5320

fax: (714) 602-5321 www.physislabs.com

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CA ELAP #2769

1904 E. Wright Circle, Anaheim CA 92806 Conventionals

SAMPLE ID													
		BATCH ID	RESULT	MDL	RL	UNITS	SPIKE	SOURCE		ACCURACY	P	RECISION	QA CODE
							LEVEL	RESULT	%	LIMITS	%	LIMITS	
Am	imonia as N		Method: SM	4500-NH3	D	Fractio	n: NA	Pre	epared	l: 29-Mar-16	Analy	zed: 29-Mar-1	16
39400-B1	QAQC Procedural Blank	C-18125	ND	0.02	0.05	mg/L					,		
39400-BS1	QAQC Procedural Blank	C-18125	0.28	0.02	0.05	mg/L	0.25	0	112	80 - 120% PASS			
39400-BS2	QAQC Procedural Blank	C-18125	0.28	0.02	0.05	mg/L	0.25	0	112	80 - 120% PASS	0	25 PASS	
39402-MS1	LACDPW-030416-ASBS	C-18125	0.29	0.02	0.05	mg/L	0.25	0	116	80 - 120% PASS			
39402-MS2	LACDPW-030416-ASBS	C-18125	0.28	0.02	0.05	mg/L	0.25	0	112	80 - 120% PASS	4	25 PASS	
39402-R2	LACDPW-030416-ASBS	C-18125	ND	0.02	0.05	mg/L					0	25 PASS	
Nitr	rate as N		Method: SM	4500-NO3	E	Fractio	n: NA	Pr	epared	l: 08-Mar-16	Analy	zed: 28-Mar-1	16
39400-B1	QAQC Procedural Blank	C-28042	ND	0.01	0.05	mg/L							
39400-BS1	QAQC Procedural Blank	C-28042	0.51	0.01	0.05	mg/L	0.5	0	102	80 - 120% PASS			
39400-BS2	QAQC Procedural Blank	C-28042	0.51	0.01	0.05	mg/L	0.5	0	102	80 - 120% PASS	0	25 PASS	
39402-MS1	LACDPW-030416-ASBS	C-28042	0.54	0.01	0.05	mg/L	0.5	0	108	80 - 120% PASS			
39402-MS2	LACDPW-030416-ASBS	C-28042	0.54	0.01	0.05	mg/L	0.5	0	108	80 - 120% PASS	0	25 PASS	
39402-R2	LACDPW-030416-ASBS	C-28042	ND	0.01	0.05	mg/L					0	25 PASS	
Tot	al Orthophosphate as	P	Method: SM	4500-P F		Fractio	n: NA	Pr	enared	: 06-Mar-16	Analy	zed: o6-Mar-	16
39400-B1	QAQC Procedural Blank	C-28025	ND	0.01	0.02	mg/L	110 1171		epuree		7 that y		
39400-BS1	QAQC Procedural Blank	C-28025	0.21	0.01	0.02	mg/L	0.2	0	105	80 - 120% PASS			
39400-BS2	QAQC Procedural Blank	C-28025	0.22	0.01	0.02	mg/L	0.2	0	110	80 - 120% PASS	5	25 PASS	
39402-MS1	LACDPW-030416-ASBS	C-28025	0.24	0.01	0.02	mg/L	0.2	0.04	100	80 - 120% PASS			
39402-MS2	LACDPW-030416-ASBS	C-28025	0.25	0.01	0.02	mg/L	0.2	0.04	105	80 - 120% PASS	5	25 PASS	
39402-R2	LACDPW-030416-ASBS	C-28025	0.04	0.01	0.02	mg/L					0	25 PASS	
19220-B1	QAQC Procedural Blank	C-28029	ND	0.01	0.02	mg/L							
19220-BS1	QAQC Procedural Blank	C-28029	0.2	0.01	0.02	mg/L	0.2	0	100	80 - 120% PASS			
19220-BS2	QAQC Procedural Blank	C-28029	0.19	0.01	0.02	mg/L	0.2	0	95	80 - 120% PASS	5	25 PASS	
39404-MS1	LACDPW-030616-ASBS	C-28029	0.51	0.01	0.02	mg/L	0.2	0.36	75	80 - 120% PASS		PASS	Q
39404-MS2	LACDPW-030616-ASBS	C-28029	0.52	0.01	0.02	mg/L	0.2	0.36	80	80 - 120% PASS	6	25 PASS	
39404-R2			0.36	0.01	0.02	mg/L					3	25 PASS	
Tot	al Suspended Solids		Method: SM	2540 D		Fractio	n: NA	Pr	eparec	l: 10-Mar-16	Analy	zed: 10-Mar-1	6
39400-B1	QAQC Procedural Blank	C-29016	ND	0.5	0.5	mg/L			epuiet		/ that y		•



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Conventionals

SAMPLE ID)	BATCH ID	RESULT	MDL	RL	UNITS	SPIKE	SOURCE	AC	CURACY	PI	RECISION	QA CODE
							LEVEL	RESULT	%	LIMITS	%	LIMITS	
39404-R2	LACDPW-030616-ASBS	C-29016	466	0.5	0.5	mg/L					0	25 PASS	

QUALITY CONTROL REPORT



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QUALITY CONTROL REPORT

ANALYTE	FRACTIO	N RESULT	MDL	RL	UNITS	SPIKE LEVEL	SOURCE RESULT	AC %	CURACY LIMITS	PRECISION QA CODE % LIMITS
Sample ID: 3940	DO-B1 Q	AQC Procedura	al Blank		Matrix	: DI Wate	r Sa	mpled:		Received:
	Method: EPA 1640				Batch II	D: E-10125	P	repared: 14	1-Apr-16	Analyzed: 18-Apr-16
Arsenic (As)	Total	ND	0.005	0.015	µg/L					
Cadmium (Cd)	Total	ND	0.0025	0.005	µg/L					
Chromium (Cr)	Total	ND	0.0125	0.025	µg/L					
Copper (Cu)	Total	ND	0.005	0.01	µg/L					
Lead (Pb)	Total	ND	0.0025	0.005	µg/L					
Mercury (Hg)	Total	ND	0.0012	0.005	µg/L					
Nickel (Ni)	Total	ND	0.0025	0.005	µg/L					
Selenium (Se)	Total	ND	0.005	0.015	µg/L					
Silver (Ag)	Total	ND	0.01	0.02	µg/L					
Zinc (Zn)	Total	ND	0.0025	0.005	µg/L					

Sample ID: 3940	01-LCM1	QAQC LCM - Phys Method: EPA 1640	is Seawat	er	Matrix: Seawater Batch ID: E-10125	Sampled: Prepared: 14-Apr-16	Received: Analyzed: 18-Apr-16
Arsenic (As)	Total	1.612	0.005	0.015	µg/L		
Cadmium (Cd)	Total	0.0913	0.0025	0.005	μg/L		
Chromium (Cr)	Total	0.1867	0.0125	0.025	µg/L		
Copper (Cu)	Total	0.148	0.005	0.01	μg/L		
Lead (Pb)	Total	0.0109	0.0025	0.005	µg/L		
Mercury (Hg)	Total	ND	0.0012	0.005	μg/L		
Nickel (Ni)	Total	0.3416	0.0025	0.005	µg/L		
Selenium (Se)	Total	0.036	0.005	0.015	µg/L		
Silver (Ag)	Total	0.02	0.01	0.02	µg/L		
Zinc (Zn)	Total	0.1268	0.0025	0.005	µg/L		

Sample ID: 3	9401-LCS1 Q	AQC LCM - Physi	Matri	Matrix: Seawater				Received:		
	N	lethod: EPA 1640			Batch	ID: E-10125		Prepared:	14-Apr-16	Analyzed: 19-Apr-16
Arsenic (As)	Total	19.093	0.005	0.015	µg/L	20	1.612	87	75 - 125% PAS	S
Cadmium (Cd)	Total	17.3819	0.0025	0.005	µg/L	20	0.0913	86	75 - 125% PAS	S
Chromium (Cr)	Total	20.1777	0.0125	0.025	µg/L	20	0.1867	100	75 - 125% PAS	S
Copper (Cu)	Total	18.784	0.005	0.01	µg/L	20	0.148	93	75 - 125% PAS	S

PHYSIS Project ID: 1210002-007

Client: Weston Solutions, Inc.

Project: Malibu ASBS



fax: (714) 602-5321

1904 E. Wright Circle, Anaheim CA 92806

main: (714) 602-5320

www.physislabs.com

Prepared: 14-Apr-16

info@physislabs.com

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QUALITY	CONTROL R	EPORT
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ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	SPIKE	SOURCE	А	CCURACY	PRECISION	QA CODE
						LEVEL	RESULT	%	LIMITS	% LIMITS	
Lead (Pb)	Total	19.6718	0.0025	0.005	µg/L	20	0.0109	98	75 - 125% PASS		
Mercury (Hg)	Total	8.7502	0.0012	0.005	µg/L	10	0	88	75 - 125% PASS		
Nickel (Ni)	Total	18.1103	0.0025	0.005	µg/L	20	0.3416	89	75 - 125% PASS		
Selenium (Se)	Total	19.498	0.005	0.015	µg/L	20	0.036	97	75 - 125% PASS		
Silver (Ag)	Total	11.33	0.01	0.02	µg/L	10	0.02	113	75 - 125% PASS		
Zinc (Zn)	Total	18.7116	0.0025	0.005	µg/L	20	0.1268	93	75 - 125% PASS		

Batch ID: E-10125

Sample ID: 39401-LCS2 QAQC LCM

QAQC LCM - Physis Seawater Method: EPA 1640 Matrix: Seawater Sampled:

Received: Analyzed: 19-Apr-16 10 25 PASS

Arsenic (As)	Total	17.36	0.005	0.015	µg/L	20	1.612	79	75 - 125% PASS	10	25 PASS	
Cadmium (Cd)	Total	16.9025	0.0025	0.005	µg/L	20	0.0913	84	75 - 125% PASS	2	25 PASS	
Chromium (Cr)	Total	19.9591	0.0125	0.025	µg/L	20	0.1867	99	75 - 125% PASS	1	25 PASS	
Copper (Cu)	Total	18.32	0.005	0.01	µg/L	20	0.148	91	75 - 125% PASS	2	25 PASS	
Lead (Pb)	Total	19.1687	0.0025	0.005	µg/L	20	0.0109	96	75 - 125% PASS	2	25 PASS	
Mercury (Hg)	Total	9.4016	0.0012	0.005	µg/L	10	0	94	75 - 125% PASS	7	25 PASS	
Nickel (Ni)	Total	17.6022	0.0025	0.005	µg/L	20	0.3416	86	75 - 125% PASS	3	25 PASS	
Selenium (Se)	Total	18.933	0.005	0.015	µg/L	20	0.036	94	75 - 125% PASS	3	25 PASS	
Silver (Ag)	Total	9.78	0.01	0.02	µg/L	10	0.02	98	75 - 125% PASS	14	25 PASS	
Zinc (Zn)	Total	19.5891	0.0025	0.005	µg/L	20	0.1268	97	75 - 125% PASS	4	25 PASS	

Sample ID: 394		LACDPW-030416- Method: EPA 1640	ASBS-So1 A	ASBS-So1	Matrix: Seawater Batch ID: E-10125	Sampled: 04-Mar-16 13:40 Prepared: 14-Apr-16	F	Received: 04-M Analyzed: 18-Apr	
Arsenic (As)	Total	1.527	0.005	0.015	µg/L		8	25 PASS	
Cadmium (Cd)	Total	0.0335	0.0025	0.005	µg/L		44	25 FAIL	
Chromium (Cr)	Total	0.5873	0.0125	0.025	µg/L		5	25 PASS	
Copper (Cu)	Total	0.344	0.005	0.01	µg/L		1	25 PASS	
Lead (Pb)	Total	0.1272	0.0025	0.005	µg/L		40	25 FAIL	
Mercury (Hg)	Total	ND	0.0012	0.005	µg/L		0	25 PASS	
Nickel (Ni)	Total	0.4532	0.0025	0.005	µg/L		1	25 PASS	
Selenium (Se)	Total	0.025	0.005	0.015	µg/L		8	25 PASS	
Silver (Ag)	Total	0.03	0.01	0.02	μg/L		40	25 FAIL	SL
Zinc (Zn)	Total	0.4179	0.0025	0.005	μg/L		85	25 FAIL	

PHYSIS Project ID: 1210002-007

Client: Weston Solutions, Inc.

Project: Malibu ASBS



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1904 E. Wright Circle, Anaheim CA 92806 main: (714) 602-5320

fax: (714) 602-5321

info@physislabs.com

QUALITY CONTROL REPORT

CA ELAP #2769

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ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	SPIKE SO	URCE	ACCURACY	PF	RECISION	QA CODE
						LEVEL RE	SULT	% LIMITS	%	LIMITS	
Sample ID: 39	9403-R2 LAC	DPW-030616-A	ASBS-016-	POST AS	BS-o Matrix	: Freshwater	Samı	oled: 06-Mar-16 4:30	Re	eceived: 06-N	lar-16
	Met	hod: EPA 1640			Batch ID): E-10125	Prep	ared: 14-Apr-16		Analyzed: 18-Ap	-16
Arsenic (As)	Total	2.255	0.005	0.015	µg/L				10	25 PASS	
Cadmium (Cd)	Total	0.8938	0.0025	0.005	µg/L				0	25 PASS	
Chromium (Cr)	Total	33.5173	0.0125	0.025	µg/L				0	25 PASS	
Copper (Cu)	Total	26.003	0.005	0.01	µg/L				0	25 PASS	
Lead (Pb)	Total	6.4763	0.0025	0.005	µg/L				0	25 PASS	
Mercury (Hg)	Total	0.0654	0.0012	0.005	µg/L				4	25 PASS	
Nickel (Ni)	Total	36.0084	0.0025	0.005	µg/L				0	25 PASS	
Selenium (Se)	Total	0.21	0.005	0.015	µg/L				55	25 FAIL	
Silver (Ag)	Total	ND	0.01	0.02	µg/L				0	25 PASS	
Zinc (Zn)	Total	102.7733	0.0025	0.005	µg/L				0	25 PASS	



fax: (714) 602-5321

1904 E. Wright Circle, Anaheim CA 92806

main: (714) 602-5320

www.physislabs.com

info@physislabs.com

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Organophosphorus Pesticides

ANALYTE	FRACTION	N RESULT	MDL	RL	UNITS	SPIKE LEVEL	SOUR RESU		CCURACY LIMITS		PRECI % I	ISION LIMITS	QA CODE
Sample ID: 39400	-B1 Q/	AQC Procedura	l Blank		Matrix	: DI Water		Sampled:	LINITS		Recei		
	Me	ethod: EPA 625			Batch ID	: 0-9128		Prepared:	06-Mar-16		Anal	yzed: 27-Ma	ar-16
(PCB030)	Total	83			% Recovery	100		83	50 - 150%	PASS			
(PCB112)	Total	77			% Recovery	100		77	50 - 150%	PASS			
(PCB198)	Total	79			% Recovery	100		79	50 - 150%	PASS			
(TCMX)	Total	82			% Recovery	100		82	50 - 150%	PASS			
Bolstar (Sulprofos)	Total	ND	2	4	ng/L								
Chlorpyrifos	Total	ND	0.5	1	ng/L								
Demeton	Total	ND	1	2	ng/L								
Diazinon	Total	ND	0.5	1	ng/L								
Dichlorvos	Total	ND	3	6	ng/L								
Dimethoate	Total	ND	5	10	ng/L								
Disulfoton	Total	ND	1	2	ng/L								
Ethoprop (Ethoprofos)	Total	ND	1	2	ng/L								
Fenchlorphos (Ronnel)	Total	ND	2	4	ng/L								
Fensulfothion	Total	ND	1	2	ng/L								
Fenthion	Total	ND	2	4	ng/L								
Malathion	Total	ND	3	6	ng/L								
Methidathion	Total	ND	5	10	ng/L								
Methyl parathion	Total	ND	1	2	ng/L								
Mevinphos (Phosdrin)	Total	ND	5	10	ng/L								
Phorate	Total	ND	5	10	ng/L								
Phosmet	Total	ND	5	10	ng/L								
Tetrachlorvinphos (Stirofos)	Total	ND	2	4	ng/L								
Tokuthion	Total	ND	3	6	ng/L								
Trichloronate	Total	ND	1	2	ng/L								
Sample ID: 39400		AQC Procedural ethod: EPA 625	l Blank			: DI Water : 0-9128		Sampled:	06-Mar-16		Recei	ved: yzed: 27-Ma	ar-16
(PCB030)	Total	89			% Recovery	100	0	80	50 - 150%	DACC		<i>y</i> 200, 2/100	

	Method:	EPA 625	Batch ID: (D-9128	F	repared:	06-Mar-16		Analyzed: 27-Mar-16	
(PCB030)	Total	89	% Recovery	100	0	89	50 - 150%	PASS		
(PCB112)	Total	94	% Recovery	100	0	94	50 - 150%	PASS		



fax: (714) 602-5321

www.physislabs.com

info@physislabs.com

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QUALITY CONTROL REPORT

CA ELAP #2769

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	SPIKE	SOURCE	А	CCURACY	PR	ECISION	QA CODE
						LEVEL	RESULT	%	LIMITS	%	LIMITS	
(PCB198)	Total	104			% Recovery	100	0	104	50 - 150% PASS			
(TCMX)	Total	84			% Recovery	100	0	84	50 - 150% PASS			
Bolstar (Sulprofos)	Total	474.4	2	4	ng/L	500	0	95	50 - 150% PASS			
Chlorpyrifos	Total	442	0.5	1	ng/L	500	0	88	50 - 150% PASS			
Demeton	Total	453.5	1	2	ng/L	500	0	91	50 - 150% PASS			
Diazinon	Total	432.7	0.5	1	ng/L	500	0	87	50 - 150% PASS			
Dichlorvos	Total	421.1	3	6	ng/L	500	0	84	50 - 150% PASS			
Dimethoate	Total	293.4	5	10	ng/L	500	0	59	50 - 150% PASS			
Disulfoton	Total	362.2	1	2	ng/L	500	0	72	50 - 150% PASS			
Ethoprop (Ethoprofos)	Total	404.5	1	2	ng/L	500	0	81	50 - 150% PASS			
Fenchlorphos (Ronnel)	Total	432.8	2	4	ng/L	500	0	87	50 - 150% PASS			
Fensulfothion	Total	618.6	1	2	ng/L	500	0	124	50 - 150% PASS			
Fenthion	Total	422.8	2	4	ng/L	500	0	85	50 - 150% PASS			
Malathion	Total	477.1	3	6	ng/L	500	0	95	50 - 150% PASS			
Methidathion	Total	516.1	5	10	ng/L	500	0	103	50 - 150% PASS			
Methyl parathion	Total	462	1	2	ng/L	500	0	92	50 - 150% PASS			
Mevinphos (Phosdrin)	Total	408.3	5	10	ng/L	500	0	82	50 - 150% PASS			
Phorate	Total	415.5	5	10	ng/L	500	0	83	50 - 150% PASS			
Phosmet	Total	457.2	5	10	ng/L	500	0	91	50 - 150% PASS			
Tetrachlorvinphos (Stirofos)	Total	512.2	2	4	ng/L	500	0	102	50 - 150% PASS			
Tokuthion	Total	428.5	3	6	ng/L	500	0	86	50 - 150% PASS			
Trichloronate	Total	418.7	1	2	ng/L	500	0	84	50 - 150% PASS			

Sample ID: 39	400-BS2	QAQC Procedural Blank					Sampled:		R	eceived:	
		Method: EPA 625			Batch ID): 0-9128		Prepared:	06-Mar-16		Analyzed: 27-Mar-16
(PCB030)	Total	86			% Recovery	100	0	86	50 - 150% PASS	3	30 PASS
(PCB112)	Total	92			% Recovery	100	0	92	50 - 150% PASS	2	30 PASS
(PCB198)	Total	101			% Recovery	100	0	101	50 - 150% PASS	3	30 PASS
(TCMX)	Total	78			% Recovery	100	0	78	50 - 150% PASS	7	30 PASS
Bolstar (Sulprofos)	Total	464.3	2	4	ng/L	500	0	93	50 - 150% PASS	2	25 PASS
Chlorpyrifos	Total	436.2	0.5	1	ng/L	500	0	87	50 - 150% PASS	1	25 PASS
Demeton	Total	431.7	1	2	ng/L	500	0	86	50 - 150% PASS	6	25 PASS

PHYSIS Project ID: 1210002-007

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fax: (714) 602-5321

www.physislabs.com info@

info@physislabs.com

CA ELAP #2769

Organophosphorus Pesticides

main: (714) 602-5320

1904 E. Wright Circle, Anaheim CA 92806

QUALITY CONTROL REPORT

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	SPIKE	SOURCE	А	CCURACY	PRI	CISION	QA CODE
						LEVEL	RESULT	%	LIMITS	%	LIMITS	
Diazinon	Total	414.3	0.5	1	ng/L	500	0	83	50 - 150% PASS	5	25 PASS	
Dichlorvos	Total	379.5	3	6	ng/L	500	0	76	50 - 150% PASS	10	25 PASS	
Dimethoate	Total	280.5	5	10	ng/L	500	0	56	50 - 150% PASS	5	25 PASS	
Disulfoton	Total	350.2	1	2	ng/L	500	0	70	50 - 150% PASS	3	25 PASS	
Ethoprop (Ethoprofos)	Total	377.1	1	2	ng/L	500	0	75	50 - 150% PASS	8	25 PASS	
Fenchlorphos (Ronnel)	Total	420.8	2	4	ng/L	500	0	84	50 - 150% PASS	4 2	25 PASS	
Fensulfothion	Total	565.5	1	2	ng/L	500	0	113	50 - 150% PASS	9	25 PASS	
Fenthion	Total	426.2	2	4	ng/L	500	0	85	50 - 150% PASS	0 2	25 PASS	
Malathion	Total	483.3	3	6	ng/L	500	0	97	50 - 150% PASS	2	25 PASS	
Methidathion	Total	529.4	5	10	ng/L	500	0	106	50 - 150% PASS	3	25 PASS	
Methyl parathion	Total	496.1	1	2	ng/L	500	0	99	50 - 150% PASS	7	25 PASS	
Mevinphos (Phosdrin)	Total	362.6	5	10	ng/L	500	0	73	50 - 150% PASS	12	25 PASS	
Phorate	Total	404.4	5	10	ng/L	500	0	81	50 - 150% PASS	2	25 PASS	
Phosmet	Total	474.7	5	10	ng/L	500	0	95	50 - 150% PASS	4	25 PASS	
Tetrachlorvinphos (Stirofos)	Total	520.1	2	4	ng/L	500	0	104	50 - 150% PASS	2	25 PASS	
Tokuthion	Total	411.2	3	6	ng/L	500	0	82	50 - 150% PASS	5	25 PASS	
Trichloronate	Total	427	1	2	ng/L	500	0	85	50 - 150% PASS	1 :	25 PASS	



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1904 E. Wright Circle, Anaheim CA 92806

main: (714) 602-5320

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Y CONTROL REPORT

CA ELAP #2769

Polynuclear Aromatic Hydrocarbons

ANALYTE	FRACTIO	N RESULT	MDL	RL	UNITS	SPIKE LEVEL	SOURCE RESULT	A %	CCURACY LIMITS	PRECISION % LIMITS	QA CODE
Sample ID: 39400	-	AQC Procedura ethod: EPA 625	l Blank			<: DI Water D: 0-9128	. 9	Sampled: Prepared:	06-Mar-16	Received: Analyzed: 27-Ma	ar-16
(d10-Acenaphthene)	Total	81			% Recovery	100		81	50 - 150% PASS		
(d10-Phenanthrene)	Total	76			% Recovery	100		76	50 - 150% PASS		
(d12-Chrysene)	Total	112			% Recovery	100		112	50 - 150% PASS		
(d8-Naphthalene)	Total	77			% Recovery	100		77	50 - 150% PASS		
1-Methylnaphthalene	Total	ND	1	5	ng/L						
1-Methylphenanthrene	Total	ND	1	5	ng/L						
2,3,5-TrimethyInaphthalene	Total	ND	1	5	ng/L						
2,6-DimethyInaphthalene	Total	ND	1	5	ng/L						
2-Methylnaphthalene	Total	ND	1	5	ng/L						
Acenaphthene	Total	ND	1	5	ng/L						
Acenaphthylene	Total	ND	1	5	ng/L						
Anthracene	Total	ND	1	5	ng/L						
Benz[a]anthracene	Total	ND	1	5	ng/L						
Benzo[a]pyrene	Total	ND	1	5	ng/L						
Benzo[b]fluoranthene	Total	ND	1	5	ng/L						
Benzo[e]pyrene	Total	ND	1	5	ng/L						
Benzo[g,h,i]perylene	Total	ND	1	5	ng/L						
Benzo[k]fluoranthene	Total	ND	1	5	ng/L						
Biphenyl	Total	ND	1	5	ng/L						
Chrysene	Total	ND	1	5	ng/L						
Dibenz[a,h]anthracene	Total	ND	1	5	ng/L						
Dibenzothiophene	Total	ND	1	5	ng/L						
Fluoranthene	Total	ND	1	5	ng/L						
Fluorene	Total	ND	1	5	ng/L						
Indeno[1,2,3-c,d]pyrene	Total	ND	1	5	ng/L						
Naphthalene	Total	ND	1	5	ng/L						
Perylene	Total	ND	1	5	ng/L						
Phenanthrene	Total	ND	1	5	ng/L						
Pyrene	Total	ND	1	5	ng/L						



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Y CONTROL REPORT

CA ELAP #2769

Polynuclear Aromatic Hydrocarbons

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	SPIKE LEVEL	SOURCE RESULT	A %	CCURACY LIMITS	PRECISION % LIMITS	QA CODE
Sample ID: 3940	-	QC Procedural	Blank			: DI Wate): 0-9128	r 9	Sampled: Prepared:	06 Mar 16	Received: Analyzed: 27-Ma	NF 16
(d10-Acenaphthene)	Total	87			% Recovery	100	0	87	50 - 150% PASS	Analyzed: 27-Ma	1-10
(d10-Phenanthrene)	Total	95			% Recovery	100	0	95	50 - 150% PASS		
(d12-Chrysene)	Total	114			% Recovery	100	0	114	50 - 150% PASS		
(d8-Naphthalene)	Total	79			% Recovery	100	0	79	50 - 150% PASS		
1-Methylnaphthalene	Total	448.5	1	5	ng/L	500	0	90	50 - 150% PASS		
1-Methylphenanthrene	Total	458	1	5	ng/L	500	0	92	50 - 150% PASS		
2,3,5-Trimethylnaphthalene	Total	466.8	1	5	ng/L	500	0	93	50 - 150% PASS		
2,6-Dimethylnaphthalene	Total	458.8	1	5	ng/L	500	0	92	50 - 150% PASS		
2-Methylnaphthalene	Total	445.3	1	5	ng/L	500	0	89	50 - 150% PASS		
Acenaphthene	Total	457.2	1	5	ng/L	500	0	91	50 - 150% PASS		
Acenaphthylene	Total	440.5	1	5	ng/L	500	0	88	50 - 150% PASS		
Anthracene	Total	449.9	1	5	ng/L	500	0	90	50 - 150% PASS		
Benz[a]anthracene	Total	526.5	1	5	ng/L	500	0	105	50 - 150% PASS		
Benzo[a]pyrene	Total	484.6	1	5	ng/L	500	0	97	50 - 150% PASS		
Benzo[b]fluoranthene	Total	502.1	1	5	ng/L	500	0	100	50 - 150% PASS		
Benzo[e]pyrene	Total	505.4	1	5	ng/L	500	0	101	50 - 150% PASS		
Benzo[g,h,i]perylene	Total	454.6	1	5	ng/L	500	0	91	50 - 150% PASS		
Benzo[k]fluoranthene	Total	518.2	1	5	ng/L	500	0	104	50 - 150% PASS		
Biphenyl	Total	465	1	5	ng/L	500	0	93	50 - 150% PASS		
Chrysene	Total	531.5	1	5	ng/L	500	0	106	50 - 150% PASS		
Dibenz[a,h]anthracene	Total	425.8	1	5	ng/L	500	0	85	50 - 150% PASS		
Dibenzothiophene	Total	467.9	1	5	ng/L	500	0	94	50 - 150% PASS		
Fluoranthene	Total	452.5	1	5	ng/L	500	0	90	50 - 150% PASS		
Fluorene	Total	465.9	1	5	ng/L	500	0	93	50 - 150% PASS		
Indeno[1,2,3-c,d]pyrene	Total	443.5	1	5	ng/L	500	0	89	50 - 150% PASS		
Naphthalene	Total	433.8	1	5	ng/L	500	0	87	50 - 150% PASS		
Perylene	Total	477.9	1	5	ng/L	500	0	96	50 - 150% PASS		
Phenanthrene	Total	465.9	1	5	ng/L	500	0	93	50 - 150% PASS		
Pyrene	Total	453.4	1	5	ng/L	500	0	91	50 - 150% PASS		

PHYSIS Project ID: 1210002-007

Client: Weston Solutions, Inc.

Project: Malibu ASBS

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1904 E. Wright Circle, Anaheim CA 92806

main: (714) 602-5320

www.physislabs.com

info@physislabs.com

Y CONTROL REPORT

CA ELAP #2769

Polynuclear Aromatic Hydrocarbons

ANALYTE	FRACTIO	N RESULT	MDL	RL	UNITS	SPIKE LEVEL	SOURCE RESULT	A %	CCURACY LIMITS	P %	RECISION LIMITS	QA CODE
Sample ID: 3940		AQC Procedural	Blank			: DI Wate	r S	Sampled:		R	eceived:	
(d10-Acenaphthene)	Total	lethod: EPA 625 87			% Recovery): O-9128 100	0	Prepared: 87	06-Mar-16 50 - 150% PASS	0	Analyzed: 27-Ma 30 PASS	ar-16
(d10-Phenanthrene)	Total	96			% Recovery	100	0	96	50 - 150% PASS	1	30 PASS	
(d12-Chrysene)	Total	114			% Recovery	100	0	114	50 - 150% PASS	0	30 PASS	
(d8-Naphthalene)	Total	79			% Recovery	100	0	79	50 - 150% PASS	0	30 PASS	
1-Methylnaphthalene	Total	455.4	1	5	ng/L	500	0	91	50 - 150% PASS	1	25 PASS	
1-Methylphenanthrene	Total	478.9	1	5	ng/L	500	0	96	50 - 150% PASS	4	25 PASS	
2,3,5-Trimethylnaphthalene	Total	466.4	1	5	ng/L	500	0	93	50 - 150% PASS	0	25 PASS	
2,6-Dimethylnaphthalene	Total	461.5	1	5	ng/L	500	0	92	50 - 150% PASS	0	25 PASS	
2-Methylnaphthalene	Total	456.8	1	5	ng/L	500	0	91	50 - 150% PASS	2	25 PASS	
Acenaphthene	Total	459.1	1	5	ng/L	500	0	92	50 - 150% PASS	1	25 PASS	
Acenaphthylene	Total	447.4	1	5	ng/L	500	0	89	50 - 150% PASS	1	25 PASS	
Anthracene	Total	464.1	1	5	ng/L	500	0	93	50 - 150% PASS	3	25 PASS	
Benz[a]anthracene	Total	537.3	1	5	ng/L	500	0	107	50 - 150% PASS	2	25 PASS	
Benzo[a]pyrene	Total	492.2	1	5	ng/L	500	0	98	50 - 150% PASS	1	25 PASS	
Benzo[b]fluoranthene	Total	510.3	1	5	ng/L	500	0	102	50 - 150% PASS	2	25 PASS	
Benzo[e]pyrene	Total	512.5	1	5	ng/L	500	0	102	50 - 150% PASS	1	25 PASS	
Benzo[g,h,i]perylene	Total	460.7	1	5	ng/L	500	0	92	50 - 150% PASS	1	25 PASS	
Benzo[k]fluoranthene	Total	520.3	1	5	ng/L	500	0	104	50 - 150% PASS	0	25 PASS	
Biphenyl	Total	466.7	1	5	ng/L	500	0	93	50 - 150% PASS	0	25 PASS	
Chrysene	Total	539.5	1	5	ng/L	500	0	108	50 - 150% PASS	2	25 PASS	
Dibenz[a,h]anthracene	Total	445.7	1	5	ng/L	500	0	89	50 - 150% PASS	5	25 PASS	
Dibenzothiophene	Total	476.1	1	5	ng/L	500	0	95	50 - 150% PASS	1	25 PASS	
Fluoranthene	Total	474.9	1	5	ng/L	500	0	95	50 - 150% PASS	5	25 PASS	
Fluorene	Total	464	1	5	ng/L	500	0	93	50 - 150% PASS	0	25 PASS	
Indeno[1,2,3-c,d]pyrene	Total	454.2	1	5	ng/L	500	0	91	50 - 150% PASS	2	25 PASS	
Naphthalene	Total	449.5	1	5	ng/L	500	0	90	50 - 150% PASS	3	25 PASS	
Perylene	Total	486.5	1	5	ng/L	500	0	97	50 - 150% PASS	1	25 PASS	
Phenanthrene	Total	475.5	1	5	ng/L	500	0	95	50 - 150% PASS	2	25 PASS	
Pyrene	Total	482.9	1	5	ng/L	500	0	97	50 - 150% PASS	6	25 PASS	

PHYSIS Project ID: 1210002-007

Client: Weston Solutions, Inc.

Project: Malibu ASBS



1904 E. Wright Circle, Anaheim CA 92806 main: (714) 602-5320

fax: (714) 602-5321 www.physislabs.com

info@physislabs.com

QUALITY CONTROL REPORT

CA ELAP #2769

Pyrethroids

ANALYTE	FRACTION RESULT		MDL	RL	UNITS	SPIKE	SOURCE	_	CURACY	PRECISION QA CODE
						LEVEL	RESULT	%	LIMITS	% LIMITS
Sample ID: 39400-	-B1 QA	QC Procedural	l Blank		Matrix	: DI Wateı		ampled:		Received:
	Met	hod: EPA 625-NC	I		Batch ID	: 0-9128		Prepared: o	6-Mar-16	Analyzed: 20-Mar-16
Allethrin	Total	ND	0.5	2	ng/L					
Bifenthrin	Total	ND	0.5	2	ng/L					
Cyfluthrin	Total	ND	0.5	2	ng/L					
Cyhalothrin, Total Lambda	Total	ND	0.5	2	ng/L					
Cypermethrin	Total	ND	0.5	2	ng/L					
Danitol (Fenpropathrin)	Total	ND	0.3	2	ng/L					
Deltamethrin/Tralomethrin	Total	ND	0.5	2	ng/L					
Esfenvalerate	Total	ND	0.5	2	ng/L					
Fenvalerate	Total	ND	0.5	2	ng/L					
Fluvalinate	Total	ND	0.5	2	ng/L					
Permethrin, cis-	Total	ND	2	4	ng/L					
Permethrin, trans-	Total	ND	1	2	ng/L					
Prallethrin	Total	ND	0.5	2	ng/L					
Resmethrin	Total	ND	5	10	ng/L					

Sample ID: 39400-	BS1	QAQC Procedural Method: EPA 625-NCI	Blank			ix: DI Water ID: 0-9128		Sampled: Prepared:	06-Mar-16	Received: Analyzed: 21-Mar-16
Allethrin	Total	501.8	0.5	2	ng/L	500	0	100	50 - 150% PASS	
Bifenthrin	Total	558.1	0.5	2	ng/L	500	0	112	50 - 150% PASS	
Cyfluthrin	Total	488	0.5	2	ng/L	500	0	98	50 - 150% PASS	
Cyhalothrin, Total Lambda	Total	494.1	0.5	2	ng/L	500	0	99	50 - 150% PASS	
Cypermethrin	Total	460	0.5	2	ng/L	500	0	92	50 - 150% PASS	
Danitol (Fenpropathrin)	Total	520.3	0.3	2	ng/L	500	0	104	50 - 150% PASS	
Deltamethrin/Tralomethrin	Total	440.2	0.5	2	ng/L	500	0	88	50 - 150% PASS	
Esfenvalerate	Total	478	0.5	2	ng/L	500	0	96	50 - 150% PASS	
Fenvalerate	Total	457.4	0.5	2	ng/L	500	0	91	50 - 150% PASS	
Fluvalinate	Total	448	0.5	2	ng/L	500	0	90	50 - 150% PASS	
Permethrin, cis-	Total	148.3	2	4	ng/L	133.5	0	111	50 - 150% PASS	
Permethrin, trans-	Total	328	1	2	ng/L	358	0	92	50 - 150% PASS	

PHYSIS Project ID: 1210002-007

Client: Weston Solutions, Inc.

Project: Malibu ASBS

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Pyrethroids

QUALITY CONTROL REPORT

ANALYTE	FRACTION	RESULT	MDL	RL	UNITS	SPIKE	SOURCE	E A	ACCURACY			QA CODE
						LEVEL	RESULT	. %	LIMITS	%	LIMITS	
Prallethrin	Total	516	0.5	2	ng/L	500	0	103	50 - 150% PASS			
Resmethrin	Total	0	5	10	ng/L	500	0	0	50 - 150% PASS		PASS	Q
Sample ID:	Sample ID: 20400-BS2 OAOC Procedural Blank				Matri	v• DI Water		Sampled		Baca	ived	

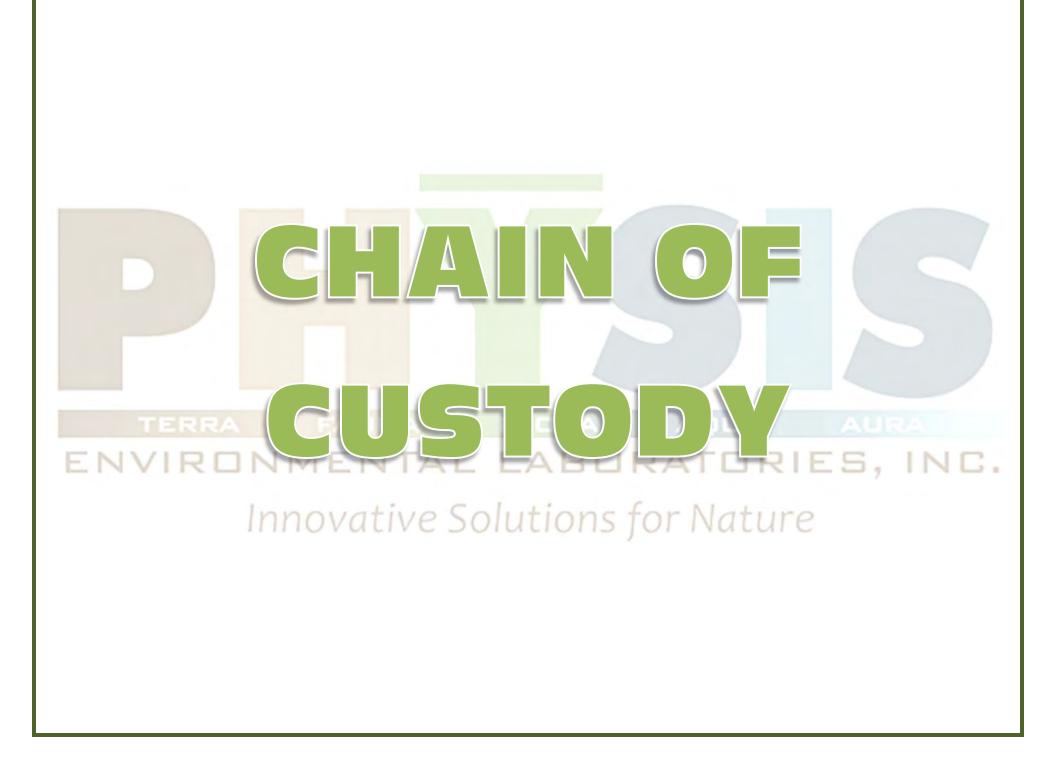
Sample ID: 39400	D-B22	QAQC Procedural	Blank		Matr	ix: DI Water		Sampled:		Re	ceived:	
		Method: EPA 625-NC	l		Batch	ID: 0-9128		Prepared:	06-Mar-16	A	nalyzed: 21-Mar	-16
Allethrin	Total	483.4	0.5	2	ng/L	500	0	97	50 - 150% PASS	3	25 PASS	
Bifenthrin	Total	547.9	0.5	2	ng/L	500	0	110	50 - 150% PASS	2	25 PASS	
Cyfluthrin	Total	482.6	0.5	2	ng/L	500	0	97	50 - 150% PASS	1	25 PASS	
Cyhalothrin, Total Lambda	Total	448.3	0.5	2	ng/L	500	0	90	50 - 150% PASS	10	25 PASS	
Cypermethrin	Total	478.9	0.5	2	ng/L	500	0	96	50 - 150% PASS	4	25 PASS	
Danitol (Fenpropathrin)	Total	487	0.3	2	ng/L	500	0	97	50 - 150% PASS	7	25 PASS	
Deltamethrin/Tralomethrin	Total	443.2	0.5	2	ng/L	500	0	89	50 - 150% PASS	1	25 PASS	
Esfenvalerate	Total	467.5	0.5	2	ng/L	500	0	94	50 - 150% PASS	2	25 PASS	
Fenvalerate	Total	461	0.5	2	ng/L	500	0	92	50 - 150% PASS	1	25 PASS	
Fluvalinate	Total	449.3	0.5	2	ng/L	500	0	90	50 - 150% PASS	0	25 PASS	
Permethrin, cis-	Total	173.5	2	4	ng/L	133.5	0	130	50 - 150% PASS	16	25 PASS	
Permethrin, trans-	Total	173.6	1	2	ng/L	358	0	48	50 - 150% PASS	63	25 PASS	Q
Prallethrin	Total	485	0.5	2	ng/L	500	0	97	50 - 150% PASS	6	25 PASS	
Resmethrin	Total	0	5	10	ng/L	500	0	0	50 - 150% PASS	0	25 PASS	Q



Total Extractable	Organics		OUAL	TY CONTROL	REPORT	
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I otal Extractable Organics

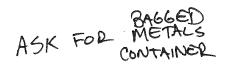
ANALYTE	FRACT	ION RESUL	r MDL	RL	UNITS	SPIKE LEVEL	SOURC RESUL		CURACY LIMITS	PRECISION C % LIMITS	A CODE
Sample ID: 3	39400-B1	QAQC Procedu Method: EPA 166				k: DI Water D: C-19056		Sampled: Prepared:	31-Mar-16	Received: Analyzed: 31-Mar-16	
Oil & Grease	NA	ND	1	1	mg/L						
Sample ID: 3	39400-BS1	QAQC Procedu Method: EPA 166				k: DI Water D: C-19056		Sampled: Prepared:	31-Mar-16	Received: Analyzed: 31-Mar-16	
Oil & Grease	NA	31.2	1	1	mg/L	40	0	78	80 - 120% PASS	PASS	Q
Sample ID: 3	39400-BS2	QAQC Procedu Method: EPA 166				k: DI Water D: C-19056		Sampled: Prepared:	31-Mar-16	Received: Analyzed: 31-Mar-16	
Oil & Grease	NA	31.5	1	1	mg/L	40	0	79	80 - 120% PASS	1 25 PASS	Q





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SBE	D WESTON ABOVE				AINE	TOTAL NUMBER (CONTAINER	X					SAMPLE		
PHONE / FAX / EMAIL	L X				Nt	TAL NT/						TEMP. (°C)		
SITE ID (Location)	SAMPLE ID	DATE		MATRIX	8	28					PRESERVED	UPON	WESTON LAB	ID
ALOG-CO.	SAMPLE ID LACD PW-030416-1	3-41	16 ¹¹	SEA	R VARIE		X					RECEIPT	WESTONLAB	ю
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Ocean Receiving Water Chemistry and Toxicity

Table 2. List of Analyses to Be Conducted on Samples Collected at Ocean Receiving Water Monitoring Sites

Constituent	Method	Holding Time	Method Reporting Limits	Units	COP ¹	Bottle Type/ Preservative
General Chemistry Total Suspended Solids	SM 2540-D	7 days	5.0	mg/L	[]	I L HDPE
Oil and Grease	EPA 1664A	28 days	5.0	mg/L		250-mL glass
Ammonia-N	SM 4500- NH3 D	28 days	0.06	μg/L		250 mL glass H ₂ SO4
Nitrate-N	SM 4500- NO3 E	48 hours	0.05	mg/L		250 mL HDPE
Total Orthosphosphate (as P)	SM 4500- P E	28 days	0.02	mg/L		
Total Metals						
Aluminum (Al)	_		6	μg/L		
Antimony (Sb)			0.015	µg/L		
Arsenic (As)			0.015	μg/L	80	
Beryllium (Be)			0.01	μg/L	ļ	
Cadmium (Cd)	-		0.01	μg/L	10	
Chromium (Cr)			0.05	μg/L	20*	
Copper (Cu)		Lab will	0.02	μg/L	30	
Lead (Pb)	EPA 1640	acidify,	0.01	μg/L	20	1L HDPE
Manganese (Mn)		then 180	0.02	μg/L		ie nore
Molybdenum (Mo)		days	0.01	μg/L		
Nickel (Ni)			0.01	μg/L	50	
Selenium (Se)			0.015	μg/L	150	
Silver (Ag)			0.04	μg/L	7	
Thallium (Tl)			0.01	μg/L		
Zinc (Zn)			0.01	μg/L	200	
Mercury (Hg)	EPA 1640		0.02	μg/L	0.4	
Organophosphorus Pesticide	es					
Bolstar (Sulprofos)			4	ng/L		
Chlorpyrifos			2	ng/L		
Demeton			2	ng/L		
Diazinon			4	ng/L		
Dichlorvos			6	ng/L	_	
Disulfoton		7 days	2	ng/L		A total of
Ethoprop (Ethoprofos)	1	7 days until	2	ng/L		2 L for OP
Fenchlorophos (Ronnel)		extraction,	4	ng/L		pesticides.
Fensulfothion	EPA 625	40 days	2	ng/L		Synthetic
Fenthion		until	4	ng/L		pyrethroids and
Malathion		analysis	6	ng/L		PAHs- Amber
Methyl Parathion		unary 515	2	ng/L		bottles
Mevinphos (Phosdrin)			16	ng/L		
Phorate			12	ng/L		
Tetrachlorvinphos (Stirofos)			4	ng/L		
Tokuthion			6	ng/L		
Trichloronate			2	ng/L	1	

Ocean Receiving Water Chemistry and Toxicity

Table 2. List of Analyses to Be Conducted on Samples Collected at Ocean Receiving Water Monitoring Sites

Constituent	Method	Holding Time	Method Reporting Limits	Units	COP ¹	Bottle Type/ Preservative
	A COLOCOM		2	ng/L		
Allethrin		-	2	ng/L		
Bifenthrin		ŀ	2	ng/L		
Cyfluthrin		F	2	ng/L		
Cypermethrin		H	2	ng/L		A total of
Danitol (Fenpropathrin)			2	ng/L		2 L for OP
Deltamethrin	ED 1 (35	F	2	ng/L		pesticides.
Esfenvalerate	EPA 625 NCI	21 days	2	ng/L		Synthetic
Fenvalerate	NCI	-	2	ng/L		pyrethroids and
Fluvalinate			2			PAHs- Amber
L-Cyhalothrin				ng/L		bottles
Permethrin, cis-			25	ng/L		
Permethrin, trans-			25	ng/L		
Prallethrin			2	ng/L		
Resmethrin			25	ng/L		
Polynuclear Aromatic Hydro	ocarbons (PAI	ls)		,		
1-Methylnaphthalene			5	ng/L		
1-Methylphenanthrene		-	5	ng/L		
2,3,5-Trimethylnaphthalene			5	ng/L		
2,6-Dimethylnaphthalene			5	ng/L		
2-MethyInaphthalene			5	ng/L		
Acenaphthene			5	ng/L		
Acenaphthylene			5	ng/L		_
Anthracene			5	ng/L		-
Benzo(a)anthracene			5	ng/L		
Benzo(a)pyrene			5	ng/L		A total of
Benzo(b)fluoranthene		7 days	5	ng/L		2 L for OP
Benzo(e)pyrene		until	5	ng/L		pesticides,
Benzo(g,h,i)perylene	EPA 625	extraction,	5	ng/L		Synthetic
Benzo(k)fluoranthene	L;/(025	40 days	5	ng/L		pyrethroids and
		until	5	ng/L		PAHs- Amber
Biphenyl Chrysene		analysis	5	ng/L		bottles
			5	ng/L		
Dibenzo(a,h)anthracene	_	51/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/	5	ng/L		
Dibenzothiophene			5	ng/L		-
Fluoranthene		and the second se	5	ng/L ng/L		-
Fluorene	-		5	ng/L ng/L		-
Indeno(1,2,3-cd)pyrene	4		5	ng/L ng/L		
Naphthalene	4		5	ng/L ng/L		-
Perylene	4				+	-
Phenanthrene			5	ng/L	+	-
Pyrene			5	ng/L		
Toxicity	T	1	T		<u>1999 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997</u> 1	
Bivalve Development (1- storm event)	EPA/600/R -95/136 (Mod Bight	36 h preferred	NA	NA	NA	4 L cubitainer



1210002-007

Sample Receipt Summary

Client: Weston Solutions, Inc.	Date Received: 3/4/2010	6 Received By:	RGH Inspected By: RGH		
Courier:	Cooler:		Temperature:		
🗌 Physis 🗌 FEDEX 🗌 UPS 🖌 Client	🖌 Cooler 🗌 Box Tota	al #: 1	BLUE 🗹 WET 🗌 DRY		
Start End Other:	Other:		None 1.5 °C		
	Sample Integrity Upon Receipt	•			
1. COC(s) included and completely filled	out		Yes		
2. All sample containers arrived intact			Yes		
3. All samples listed on COC(s) are prese	nt		<u>í</u> es		
4. Information on containers consistent					
5. Correct containers and volume for all	analyses indicated	/es			
6. All samples received within method h	olding time		(es		
Correct preservation used for all analy					
8. Name of sampler included on COC(s).		······	/es		

Notes:



5817 DRYDEN PL, SWITE 101, CATUSISAD CA 92008 740.7956900

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CHAIN OF C STODY

33275 PAGE 1 OF PROJECT NAME / SURVEY / PROJECT NUMBER CONTAINER TYPE / VOLUME ANALYSIS/TEST REQUESTED FOR WESTON USE ONLY PROJECT MANAGER / CONTAC NUTRATE AND TETAL ORTHOPHUSPANE DAN MCCO Ŧ CLIENT TOTAL NUMBER OF CONTAINER WESTON SOLUTIONS à Greasc METALS MD ADDRESS SEE ABAG ORGANICS ANNONIA t55 SAMPLE PHONE / FAX / EMAIL 11 TEMP. (°C) 10 PRESERVED UPON SITE ID (Location) SAMPLE ID TIME MATRIX DATE HOW RECEIPT WESTON LAB ID LACDPN-030616-ASBS-016-105-3/0/16 04:30 FW. X AS86-016 VARIED 7 Х ICEX ASBSOIL 05.20 FW LACOPW OBOGIE-ASESOIE-DUPPET 1 ASB5-501 LACOPW-030616-1685-501-7051 04:4545 LAC DPW-030616-ASPS-FB 05:45 FW ŧ 4 FRUD BUNK SAMPLED BY: PRINT SIGNATURE Sample Matrix Codes: FW= fresh water GW=ground water SLT=salt water SW=storm water WW=waste water SED=sediment A=air BIO=biologic SS=soil T=tissue O=other (specify) DAN MCCOY COMMENTS / SPECIAL INSTRUCTIONS Shipped By: Courier UPS FedEx USPS Client drop off Other METALS ANALYSIS INCLUDES HQ. SEE ATTACHED ANALYSES TABLE Turnaround Time: 2-day 5-day 7-day 10-day 14-day Standard Other Reporting Requirements: XPDF REDD Hard Copy BEmail Other **RELINQUISHED BY** RECEIVED BY Print Name Date/Time Print Name Firm Signature Firm Date/Time DAN HOW WESTON 3/4/14 HYSIS 2 CEASAR MWADIKA 3/6/1 4 5. 6.

Ocean Receiving Water Chemistry and Toxicity

Table 2. List of Analyses to Be Conducted on Samples Collected at Ocean Receiving Water Monitoring Sites

Constituent	Method	Holding Time	Method Reporting Limits	Units	COP	Bottle Type/ Preservative
General Chemistry						
Total Suspended Solids	SM 2540-D	7 days	5.0	mg/L	1	1 L HDPE
Oil and Grease	EPA 1664A	28 days	5.0	mg/L		250-mL glass
Ammonia-N	SM 4500- NH3 D	28 days	0.06	µg/L		250 mL glass H ₂ SO4
Nitrate-N	SM 4500- NO3 E	48 hours	0.05	mg/L		250 mL HDPE
Total Orthosphosphate (as P)	SM 4500- P E	28 days	0.02	mg/L		230 IIIL HDPE
Total Metals						
Aluminum (Al)			6	µg/L		
Antimony (Sb)			0.015	µg/L		
Arsenic (As)			0.015	µg/L	80	
Beryllium (Be)			0.01	µg/L		
Cadmium (Cd)			0.01	µg/L	10	
Chromium (Cr)		(0.05	µg/L	20*	
Copper (Cu)		Lab will	0.02	µg/L	30	
Lead (Pb)	EPA 1640	acidify,	0.01	µg/L	20	IL HDPE
Manganese (Mn)		then 180	0.02	µg/L		IL HDPE
Molybdenum (Mo)		days	0.01	µg/L		
Nickel (Ni)	1	1.1.571.0	0.01	µg/L	50	
Selenium (Se)	1		0.015	µg/L	150	
Silver (Ag)	1		0.04	µg/L	7	
Thallium (Tl)]		0.01	µg/L	Long Street St.	1 · · · · · · · · · · · · · · · · · · ·
Zinc (Zn)			0.01	µg/L	200	
Mercury (Hg)	EPA 1640	1	0.02	µg/L	0.4	
Organophosphorus Pesticide	es					
Bolstar (Sulprofos)	-	1	4	ng/L	A	
Chlorpyrifos	1		2	ng/L		
Demeton	1		2	ng/L		
Diazinon			4	ng/L		
Dichlorvos			6	ng/L		
Disulfoton	1		2	ng/L	1	A total of
Ethoprop (Ethoprofos)		7 days	2	ng/L	1	2 L for OP
Fenchlorophos (Ronnel)		until	4	ng/L	2	pesticides,
Fensulfothion	EPA 625	extraction,	2	ng/L		Synthetic
Fenthion		40 days until	4	ng/L	-	pyrethroids and
Malathion		analysis	6	ng/L	·	PAHs- Amber
Methyl Parathion		anarysis	2	ng/L		bottles
Mevinphos (Phosdrin)		1.6	16	ng/L		
Phorate			12	ng/L		
Tetrachlorvinphos (Stirofos)			4	ng/L		
Tokuthion			6	ng/L		
Trichloronate	1	1	2	ng/L		

Ocean Receiving Water Chemistry and Toxicity

Table 2. List of Analyses to Be Conducted on Samples Collected at Ocean Receiving Water
Monitoring Sites

Constituent	Method	Holding Time	Method Reporting Limits	Units	COP	Bottle Type/ Preservative
Allethrin		1	2	ng/L		
Bifenthrin			2	ng/L	1	
Cyfluthrin ·			2	ng/L		
Cypermethrin	10 I I		2	ng/L		
Danitol (Fenpropathrin)			2	ng/L		A total of
Deltamethrin			2	ng/L		2 L for OP
Esfenvalerate	EPA 625		2	ng/L		pesticides,
Fenvalerate	NCI	21 days	2	ng/L		Synthetic
Fluvalinate			2	ng/L		pyrethroids and
L-Cyhalothrin			2	ng/L	1	PAHs- Amber
Permethrin, cis-	1		25	ng/L		bottles
Permethrin, trans-			25	ng/L		
Prallethrin			2	ng/L		
Resmethrin			25	ng/L		
Polynuclear Aromatic Hydr	rocarbons (PA)	Hs)				
1-Methylnaphthalene			5	ng/L		
1-Methylphenanthrene			5	ng/L		
2,3,5-Trimethylnaphthalene	1		5	ng/L		
2,6-Dimethylnaphthalene	-		5	ng/L		
2-Methylnaphthalene	1		5	ng/L		
Acenaphthene	-		5	ng/L		
Acenaphthylene	-		5	ng/L		
Anthracene	-		5	ng/L		1
Benzo(a)anthracene	-		5	ng/L		2
Benzo(a)pyrene	-	1. Sec. 1. 1	5	ng/L		A total of
Benzo(b)fluoranthene	-	7 days	5	ng/L		2 L for OP
Benzo(e)pyrene		until	5	ng/L ng/L		pesticides,
Benzo(g,h,i)perylene	EPA 625	extraction,	5	ng/L		Synthetic
Benzo(k)fluoranthene	LIA 025	40 days	5			pyrethroids and
Biphenyl	-	until	5	ng/L ng/L		PAHs- Amber
Chrysene	-	analysis	5		-	bottles
Dibenzo(a,h)anthracene	-		5	ng/L		bottles
Dibenzothiophene	-		5	ng/L		
Fluoranthene	-		5	ng/L		
Fluorene			5	ng/L	-	
Indeno(1,2,3-cd)pyrene	-			ng/L		
	-		5	ng/L		
Naphthalene			5	ng/L		
Perylene	-		5	ng/L		
Phenanthrene	-		5	ng/L	-	
Pyrene			5	ng/L		
Toxicity	EDA/COO/D		1	-		-
Bivalve Development (1- storm event)	EPA/600/R -95/136 (Mod Bight	36 h preferred	NA	NA	NA	4 L cubitainer



1210002-007

Sample Receipt Summary

Client: We	Client: Weston Solutions, Inc.					3/6/2016	Received I	By: CN	Inspected By: RGH
	С	ourier:			Coo	oler:			Temperature:
Physis	FEDEX	UPS	✔ Client	🖌 Coo	er 🗌 Box	Total #:	2	🗌 BLUE	✓ WET DRY
Start	End	Other:		Oth	er:			None	3.5 ℃
				Sa	nple Integrity Upc	n Receipt:			
 COC(s) included and completely filled out 								Yes	
3. All s	amples list	ed on COC	(s) are prese	nt				Yes	
					rmation on CO				
5. Cor	rect contair	ners and vo	olume for all	analyses	indicated			No; see	e notes below
					ne				
7. Cor	rect preserv	ation used	d for all analy	ses indic	ated			Yes	

Notes:

Sample ID(s) LACDPW-030616-ASBS-016-DUP POST (ASBS-016), LACDPW-030616-ASBS-FB (Field Blank) were received in the wrong container or lack of preservation. We noted the inccorect containers and we preserved the Ammonia bottle ASAP.

APPENDIX D

Toxicity Results



March 31, 2016

Mr. Dan McCoy Weston Solutions 5817 Dryden Place Carlsbad, CA 92008

Dear Mr. McCoy:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms, EPA/R-95/136.* "The concentration-response was normal. Test was set at 38 hours holding time which is beyond the prescribed 36 hour hold but within 72 hours. Reference toxicant was within limits and all other test acceptability criteria was met. This is a valid test." Results were as follows:

CLIENT: SAMPLE I.D.: DATE RECEIVED: ABC LAB. NO.: Weston Solutions LACDPW-010616-ASBS-S02-POST 1/8/2016 WST0116.085

CHRONIC SEA URCHIN FERTILIZATION BIOASSAY

NOEC TUc	100.00 % 1.00
EC25 EC50	>100.00 % >100.00 %

Yours very truly,

2- Scott Johnson Laboratory Director

CETIS Summary Report

Purple Sea Ui	A	Aquatic	Bioassay &	Consulting	g Labs, Inc								
Batch ID:	02-6241-7936	Те	est Type:	Fertilization	Fertilization				t: Joe	Freas			
Start Date:	08 Jan-16 13:00	Pr	otocol:	EPA/600/R-95/136 (1995)				Diluent	t: Lat	oratory Sea	water		
Ending Date:	08 Jan-16 13:40) Sp	pecies:	Strongylocentro	otus purpura	tus		Brine:	No	Applicable			
Duration:	40m	Sc	ource:	David Gutoff				Age:					
Sample ID:	01-7596-9727	Co	ode:	WST0116.085	ıf			Client:	We	Weston Solutions			
Sample Date:	06 Jan-16 16:20	Ma	aterial:	Sample Water				Project	: LA	LACDPW MALIBU ASBS			
Receive Date:	: 08 Jan-16 10:00	Sc	ource:	Bioassay Repo	rt								
Sample Age:	45h	St	ation:	LACDPW-0106	16-ASBS-S	02-Post							
Comparison S	Summary												
Analysis ID	Endpoint		NOEL	LOEL	TOEL	PMSD	TU		Viethod				
20-0562-4291	Fertilization Rate	9	100	>100	NA	4.78%	1		Dunnett I	nnett Multiple Comparison Test			
Point Estimat	e Summary												
Analysis ID	Endpoint		Level	%	95% LCL	95% UCL	TU	N	Nethod				
10-5156-2027	Fertilization Rate	e	EC5	>100	N/A	N/A	<1	L	inear In	erpolation (I	CPIN)		
			EC10	>100	N/A	N/A	<1						
			EC15	>100	N/A	N/A	<1						
			EC20	>100	N/A	N/A	<1						
			EC25	>100	N/A	N/A	<1						
					NI/A	N/A	<1						
			EC40	>100	N/A								
			EC40 EC50	>100	N/A N/A	N/A	<1						
-	-		EC50	>100	N/A	N/A							
Analysis ID	Endpoint		EC50	>100 ute	N/A Test Stat	N/A TAC Limi			Dverlap	Decision		Critoria	
Analysis ID 10-5156-2027	Endpoint Fertilization Rate		EC50 Attrib Contro	>100 ute ol Resp	N/A Test Stat 0.926	N/A TAC Limi 0.7 - NL		Y	res .	Passes A	cceptability		
Test Acceptal Analysis ID 10-5156-2027 20-0562-4291 20-0562-4291	Endpoint Fertilization Rate Fertilization Rate	Э	Attrib Contro Contro	>100 ute ol Resp ol Resp	N/A Test Stat 0.926 0.926	N/A TAC Limi 0.7 - NL 0.7 - NL		۲ ۲	res res	Passes A Passes A	cceptability cceptability	Criteria	
Analysis ID 10-5156-2027 20-0562-4291 20-0562-4291	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate	Э	EC50 Attrib Contro	>100 ute ol Resp ol Resp	N/A Test Stat 0.926	N/A TAC Limi 0.7 - NL		۲ ۲	res .	Passes A Passes A	cceptability	Criteria	
Analysis ID 10-5156-2027 20-0562-4291 20-0562-4291 Fertilization R	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Rate Summary	ə Ə	EC50 Attrib Contro PMSD	>100 ute ol Resp ol Resp	N/A Test Stat 0.926 0.926 0.04779	N/A TAC Limi 0.7 - NL 0.7 - NL NL - 0.25	ts	Y Y N	Yes Yes No	Passes A Passes A Passes A	cceptability cceptability cceptability	r Criteria Criteria	
Analysis ID 10-5156-2027 20-0562-4291 20-0562-4291 Fertilization F C-%	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Rate Summary Control Type	e e Count	EC50 Attrib Contro Contro PMSD	>100 ute ol Resp ol Resp ol Resp ol Resp	N/A Test Stat 0.926 0.926 0.04779 95% UCL	N/A TAC Limi 0.7 - NL 0.7 - NL NL - 0.25 Min	ts Max	Y Y N	Yes Yes No Std Err	Passes A Passes A Passes A Std Dev	cceptability cceptability cceptability CV%	Criteria Criteria %Effec	
Analysis ID 10-5156-2027 20-0562-4291 20-0562-4291 Fertilization R C-% 0	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Rate Summary	e e Count 5	EC50 Attrib Contro Contro PMSD Mean 0.926	>100 ute ol Resp ol Resp ol Resp o 95% LCL 0.9003	N/A Test Stat 0.926 0.926 0.04779 95% UCL 0.9517	N/A TAC Limi 0.7 - NL 0.7 - NL NL - 0.25 Min 0.9	ts Max 0.95	Y Y N S 0	Yes Yes No Std Err 0.009273	Passes A Passes A Passes A Std Dev 6 0.02074	cceptability cceptability cceptability cceptability CV% 2.24%	Criteria Criteria %Effec 0.0%	
Analysis ID 10-5156-2027 20-0562-4291 20-0562-4291 Fertilization R C-% 0 25	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Rate Summary Control Type	e e Count 5 5	EC50 Attrib Contro Contro PMSD Mean 0.926 0.942	>100 ute ol Resp ol Re	N/A Test Stat 0.926 0.926 0.04779 95% UCL 0.9517 0.9624	N/A TAC Limi 0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.92	Max 0.95	Y Y N S S O O O	Yes Yes No Std Err 0.009273 0.007348	Passes A Passes A Passes A Std Dev 0.02074 0.01643	cceptability cceptability cceptability CV% 2.24% 1.74%	Criteria Criteria %Effec 0.0% -1.73%	
Analysis ID 10-5156-2027 20-0562-4291 20-0562-4291 Fertilization R C-% D 25 50	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Rate Summary Control Type	e e Count 5	EC50 Attrib Contro Contro PMSD Mean 0.926	>100 ute ol Resp ol Resp ol Resp o 95% LCL 0.9003	N/A Test Stat 0.926 0.926 0.04779 95% UCL 0.9517	N/A TAC Limi 0.7 - NL 0.7 - NL NL - 0.25 Min 0.9	ts Max 0.95	Y Y N S 0 0 0 0 0	Yes Yes No Std Err 0.009273	Passes A Passes A Passes A Std Dev 0.02074 0.01643	cceptability cceptability cceptability cceptability CV% 2.24%	Criteria Criteria %Effec 0.0%	
Analysis ID 10-5156-2027 20-0562-4291 20-0562-4291 Fertilization R C-% D 25 50 100	Endpoint Fertilization Rate Fertilization Rate Rate Summary Control Type Negative Control	e e 5 5 5	Attrib Contro Contro PMSD Mean 0.926 0.942 0.944	>100 ute ol Resp ol Re	N/A Test Stat 0.926 0.926 0.04779 95% UCL 0.9517 0.9624 0.9666	N/A TAC Limi 0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.92 0.92	Max 0.95 0.96 0.97	Y Y N S 0 0 0 0 0	Yes Yes No Std Err 0.009273 0.007348 0.008124	Passes A Passes A Passes A Std Dev 0.02074 0.01643 0.01817	cceptability cceptability cceptability CV% 2.24% 1.74% 1.92%	 Criteria Criteria %Effec 0.0% -1.73% -1.94% 	
Analysis ID 10-5156-2027 20-0562-4291 20-0562-4291 Fertilization R C-% 0 25 50 100 Fertilization R	Endpoint Fertilization Rate Fertilization Rate Rate Summary Control Type Negative Control	e e 5 5 5	Attrib Contro Contro PMSD Mean 0.926 0.942 0.944	>100 ute ol Resp ol Resp o 95% LCL 0.9003 0.9216 0.9214 0.9188	N/A Test Stat 0.926 0.926 0.04779 95% UCL 0.9517 0.9624 0.9666	N/A TAC Limi 0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.92 0.92	Max 0.95 0.96 0.97	Y Y N S 0 0 0 0 0	Yes Yes No Std Err 0.009273 0.007348 0.008124	Passes A Passes A Passes A Std Dev 0.02074 0.01643 0.01817	cceptability cceptability cceptability CV% 2.24% 1.74% 1.92%	 Criteria Criteria %Effec 0.0% -1.73% -1.94% 	
Analysis ID 10-5156-2027 20-0562-4291 20-0562-4291 Fertilization R C-% 0 25 50 100 Fertilization R C-%	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Rate Summary Control Type Negative Control	e Count 5 5 5 5 7 8 8	EC50 Attrib Contro Contro PMSD Mean 0.926 0.942 0.944 0.96	>100 ute ol Resp ol Resp o 95% LCL 0.9003 0.9216 0.9214 0.9188	N/A Test Stat 0.926 0.926 0.04779 95% UCL 0.9517 0.9624 0.9666 1	N/A TAC Limi 0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.92 0.92 0.91	Max 0.95 0.96 0.97	Y Y N S 0 0 0 0 0	Yes Yes No Std Err 0.009273 0.007348 0.008124	Passes A Passes A Passes A Std Dev 0.02074 0.01643 0.01817	cceptability cceptability cceptability CV% 2.24% 1.74% 1.92%	 Criteria Criteria %Effec 0.0% -1.73% -1.94% 	
Analysis ID 10-5156-2027 20-0562-4291 20-0562-4291 Fertilization R C-% 0 25 50 100 Fertilization R C-% 0	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Rate Summary Control Type Negative Control	e Count 5 5 5 5 7 8 8	EC50 Attrib Contro PMSD Mean 0.926 0.942 0.944 0.96 Rep 2	>100 ute ol Resp ol Resp ol Resp ol Resp ol Resp 0.9003 0.9216 0.9214 0.9188 Rep 3	N/A Test Stat 0.926 0.926 0.04779 95% UCL 0.9517 0.9624 0.9666 1 Rep 4	N/A TAC Limi 0.7 - NL NL - 0.25 Min 0.9 0.92 0.92 0.91 Rep 5	Max 0.95 0.96 0.97	Y Y N S 0 0 0 0 0	Yes Yes No Std Err 0.009273 0.007348 0.008124	Passes A Passes A Passes A Std Dev 0.02074 0.01643 0.01817	cceptability cceptability cceptability CV% 2.24% 1.74% 1.92%	 Criteria Criteria %Effec 0.0% -1.73% -1.94% 	
Analysis ID 10-5156-2027 20-0562-4291 20-0562-4291 Fertilization R C-% 0 25 50 100 Fertilization R C-% 0 25	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Rate Summary Control Type Negative Control	e e 5 5 5 5 7 8 Rep 1 0.9	EC50 Attrib Contro PMSD Mean 0.926 0.942 0.944 0.96 Rep 2 0.93	>100 ute ol Resp ol Resp ol Resp ol Resp ol Resp ol Resp 0.9214 0.9214 0.9188 Rep 3 0.91	N/A Test Stat 0.926 0.926 0.04779 95% UCL 0.9517 0.9624 0.9666 1 Rep 4 0.94	N/A TAC Limi 0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.92 0.92 0.92 0.91 Rep 5 0.95	Max 0.95 0.96 0.97	Y Y N S 0 0 0 0 0	Yes Yes No Std Err 0.009273 0.007348 0.008124	Passes A Passes A Passes A Std Dev 0.02074 0.01643 0.01817	cceptability cceptability cceptability CV% 2.24% 1.74% 1.92%	 Criteria Criteria %Effec 0.0% -1.73% -1.94% 	
Analysis ID 10-5156-2027 20-0562-4291 20-0562-4291 20-0562-4291 Fertilization R C-% D 25 50 100 Fertilization R C-% D 25 50	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Rate Summary Control Type Negative Control	e e 5 5 5 5 5 Rep 1 0.9 0.92	EC50 Attrib Contro Contro PMSD 0.926 0.942 0.944 0.96 Rep 2 0.93 0.93	>100 ute ol Resp ol Resp ol Resp ol Resp ol Resp ol Resp ol Resp 0.9188 0.9188 0.91 0.91 0.95	N/A Test Stat 0.926 0.926 0.04779 95% UCL 0.9517 0.9624 0.9666 1 Rep 4 0.94 0.96	N/A TAC Limi 0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.92 0.92 0.92 0.91 Rep 5 0.95	Max 0.95 0.96 0.97	Y Y N S 0 0 0 0 0	Yes Yes No Std Err 0.009273 0.007348 0.008124	Passes A Passes A Passes A Std Dev 0.02074 0.01643 0.01817	cceptability cceptability cceptability CV% 2.24% 1.74% 1.92%	 Criteria Criteria %Effec 0.0% -1.73% -1.94% 	
Analysis ID 10-5156-2027 20-0562-4291 20-0562-4291 Fertilization R C-% 0 25 50 100 Fertilization R C-% 0 25 50 100 100 100	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Rate Summary Control Type Negative Control	e e 5 5 5 5 5 Rep 1 0.9 0.92 0.94	EC50 Attrib Contro Contro PMSD Mean 0.926 0.942 0.944 0.96 Rep 2 0.93 0.93 0.93 0.97	>100 ute DI Resp DI Resp DI Resp DI Resp DI Resp 0 95% LCL 0.9003 0.9216 0.9214 0.9188 Rep 3 0.91 0.95 0.95	N/A Test Stat 0.926 0.926 0.04779 95% UCL 0.9517 0.9624 0.9666 1 Rep 4 0.94 0.96 0.92	N/A TAC Limi 0.7 - NL NL - 0.25 Min 0.9 0.92 0.92 0.92 0.91 Rep 5 0.95 0.95 0.94	Max 0.95 0.96 0.97	Y Y N S 0 0 0 0 0	Yes Yes No Std Err 0.009273 0.007348 0.008124	Passes A Passes A Passes A Std Dev 0.02074 0.01643 0.01817	cceptability cceptability cceptability CV% 2.24% 1.74% 1.92%	 Criteria Criteria %Effec 0.0% -1.73% -1.94% 	
Analysis ID 10-5156-2027 20-0562-4291 20-0562-4291 Fertilization R C-% D 25 50 100 Fertilization R C-% D 25 50 100 Fertilization R	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Rate Summary Control Type Negative Control Rate Detail Control Type Negative Control	e e 5 5 5 5 5 Rep 1 0.9 0.92 0.94	EC50 Attrib Contro Contro PMSD Mean 0.926 0.942 0.944 0.96 Rep 2 0.93 0.93 0.93 0.97	>100 ute ol Resp ol Resp ol Resp o 95% LCL 0.9003 0.9216 0.9214 0.9214 0.9188 Rep 3 0.91 0.95 0.95 0.91	N/A Test Stat 0.926 0.926 0.04779 95% UCL 0.9517 0.9624 0.9666 1 Rep 4 0.94 0.96 0.92	N/A TAC Limi 0.7 - NL NL - 0.25 Min 0.9 0.92 0.92 0.92 0.91 Rep 5 0.95 0.95 0.94	Max 0.95 0.96 0.97	Y Y N S 0 0 0 0 0	Yes Yes No Std Err 0.009273 0.007348 0.008124	Passes A Passes A Passes A Std Dev 0.02074 0.01643 0.01817	cceptability cceptability cceptability CV% 2.24% 1.74% 1.92%	 Criteria Criteria %Effect 0.0% -1.73% -1.94% 	
Analysis ID 10-5156-2027 20-0562-4291 20-0562-4291 Fertilization R C-% 0 25 50 100 Fertilization R C-% 0 25 50 100 Fertilization R C-%	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Rate Summary Control Type Negative Control Rate Detail Control Type Negative Control Rate Binomials	B B Count 5 5 5 5 5 0.9 0.94 0.99 Rep 1	EC50 Attrib Contro PMSD Mean 0.926 0.942 0.944 0.96 Rep 2 0.93 0.93 0.93 0.93 0.97 0.96	>100 ute DI Resp DI Resp DI Resp DI Resp 0 95% LCL 0.9003 0.9216 0.9214 0.9188 Rep 3 0.91 0.95 0.95 0.91 Rep 3	N/A Test Stat 0.926 0.926 0.04779 95% UCL 0.9517 0.9624 0.9666 1 Rep 4 0.94 0.92 0.92 0.92 0.95	N/A TAC Limi 0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.92 0.92 0.92 0.91 Rep 5 0.95 0.95 0.95 0.94 0.99	Max 0.95 0.96 0.97	Y Y N S 0 0 0 0 0	Yes Yes No Std Err 0.009273 0.007348 0.008124	Passes A Passes A Passes A Std Dev 0.02074 0.01643 0.01817	cceptability cceptability cceptability CV% 2.24% 1.74% 1.92%	 Criteria Criteria %Effect 0.0% -1.73% -1.94% 	
Analysis ID 10-5156-2027 20-0562-4291 20-0562-4291 Fertilization R C-% 0 25 50 100 Fertilization R C-% 0 25 50 100 Fertilization R C-% 0	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Rate Summary Control Type Negative Control Rate Detail Control Type Negative Control Regative Control	B B Count 5 5 5 5 5 0.9 0.94 0.99 Rep 1	EC50 Attrib Contro PMSD Mean 0.926 0.942 0.944 0.96 Rep 2 0.93 0.93 0.93 0.97 0.96 Rep 2	>100 ute DI Resp DI Resp DI Resp DI Resp 0 95% LCL 0.9003 0.9214 0.9188 Rep 3 0.91 0.95 0.95 0.91 0.91 Rep 3 0.91 0.91 0.95 0.91 0.95 0.91 0.91 0.95 0.91 0.91 0.91 0.95 0.91 0.95 0.91 0.91 0.95 0.91 0.95 0.91 0.95 0.91 0.95 0.91 0.95 0.91 0.95 0.91 0.95 0.95 0.91 0.95 0.91 0.95 0.95 0.91 0.95 0.95 0.91 0.95 0.91 0.95 0.95 0.91 0.95 0.95 0.91 0.95 0.95 0.91 0.95 0.95 0.91 0.95 0.91 0.95 0.91 0.95 0.91 0.95 0.91 0.95 0.91 0.95 0.91 0.95 0.91 0.95 0.91 0.95 0.91 0.95 0.95 0.91 0.95 0.91 0.95 0.91 0.95 0.91 0.95 0.91 0.91 0.95 0.91 0.95 0.91 0.95 0.91 0.91 0.95 0.91 0.91 0.95 0.91 0.91 0.95 0.91 0.91 0.91 0.91 0.95 0.91	N/A Test Stat 0.926 0.926 0.04779 95% UCL 0.9517 0.9624 0.9666 1 Rep 4 0.94 0.92 0.92 0.95 Rep 4	N/A TAC Limi 0.7 - NL NL - 0.25 Min 0.9 0.92 0.92 0.91 Rep 5 0.95 0.95 0.95 0.94 0.99 Rep 5	Max 0.95 0.96 0.97	Y Y N S 0 0 0 0	Yes Yes No Std Err 0.009273 0.007348 0.008124	Passes A Passes A Passes A Std Dev 0.02074 0.01643 0.01817	cceptability cceptability cceptability CV% 2.24% 1.74% 1.92%	 Criteria Criteria %Effec 0.0% -1.73% -1.94% 	
Analysis ID 10-5156-2027 20-0562-4291 20-0562-4291 Fertilization R C-% 0 25 50 100 Fertilization R C-% 0 25 50 100	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Rate Summary Control Type Negative Control Rate Detail Control Type Negative Control Regative Control	e e 5 5 5 5 7 8 8 7 8 7 7 7 7 7 7 7 7 7 7 7	EC50 Attrib Contro PMSD Mean 0.926 0.942 0.944 0.96 Rep 2 0.93 0.93 0.93 0.93 0.97 0.96 Rep 2 93/100	>100 ute DI Resp DI Resp DI Resp DI Resp 0 95% LCL 0.9003 0.9216 0.9214 0.9188 Rep 3 0.91 0.95 0.91 0.95 0.91 Rep 3 0.91/100 0 95/100	N/A Test Stat 0.926 0.926 0.04779 95% UCL 0.9517 0.9624 0.9666 1 Rep 4 0.92 0.92 0.95 Rep 4 94/100	N/A TAC Limi 0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.92 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.99 0.99 0.99 0.95	Max 0.95 0.96 0.97	Y Y N S 0 0 0 0	Yes Yes No Std Err 0.009273 0.007348 0.008124	Passes A Passes A Passes A Std Dev 0.02074 0.01643 0.01817	cceptability cceptability cceptability CV% 2.24% 1.74% 1.92%	 Criteria Criteria %Effec 0.0% -1.73% -1.94% 	

Purple Sea Urchin Sperm Cell Fertilization Test Aquatic Bioassay & Consulting Labs, Inc. Fertilization Rate **CETIS Version:** CETISv1.8.7 Analysis ID: 20-0562-4291 Endpoint: Parametric-Control vs Treatments **Official Results:** Yes Analyzed: 31 Mar-16 10:36 Analysis: 02-6241-7936 Test Type: Fertilization Analyst: Joe Freas Batch ID: Laboratory Seawater Start Date: 08 Jan-16 13:00 Protocol: EPA/600/R-95/136 (1995) Diluent: 08 Jan-16 13:40 Species: Strongylocentrotus purpuratus Brine: Not Applicable Ending Date: David Gutoff Age: **Duration:** 40m Source: WST0116.085uf Client: Weston Solutions Sample ID: 01-7596-9727 Code: Sample Date: 06 Jan-16 16:20 Project: LACDPW MALIBU ASBS Material: Sample Water Receive Date: 08 Jan-16 10:00 **Bioassay Report** Source: LACDPW-010616-ASBS-S02-Post Station: Sample Age: 45h PMSD NOEL LOEL TOEL τu Data Transform Zeta Alt Hyp Trials Seed Angular (Corrected) NA C > T NA NA 4.78% 100 >100 NA 1 **Dunnett Multiple Comparison Test** P-Type Decision(a:5%) Control vs C-% Test Stat Critical MSD DF P-Value CDF Non-Significant Effect **Negative Control** 25 -0.9199 2.227 0.078 8 0.9544 CDF Non-Significant Effect 50 -1.067 2.227 0.078 8 0.9674 CDF Non-Significant Effect 100 -2.498 2.227 0.078 8 0.9992 **Test Acceptability Criteria** Attribute **Test Stat** TAC Limits Overlap Decision Yes Passes Acceptability Criteria Control Resp 0.926 0.7 - NL PMSD 0.04779 NL - 0.25 No Passes Acceptability Criteria ANOVA Table Mean Square DF F Stat P-Value Decision(a:5%) Source Sum Squares 0.1364 Non-Significant Effect 0.006470069 3 2.131 Between 0.01941021 0.003036014 16 Error 0.04857622 Total 19 0.06798643 **Distributional Tests** Test Stat Critical P-Value Decision(a:1%) Attribute Test 0.2171 Equal Variances Bartlett Equality of Variance 4.447 11.34 Variances Mod Levene Equality of Variance 2.766 5.953 0.0877 Equal Variances Variances Levene Equality of Variance 2.702 5.292 0.0803 Equal Variances Variances Distribution Shapiro-Wilk W Normality 0.9705 0.866 0.7662 Normal Distribution Kolmogorov-Smirnov D 0.109 0.2235 0.8532 Normal Distribution Distribution 0.7197 Normal Distribution 2.576 Distribution D'Agostino Skewness 0.3588 0.5652 2.576 0.5719 Normal Distribution Distribution D'Agostino Kurtosis Normal Distribution D'Agostino-Pearson K2 Omnibus 0.4482 9.21 0.7992 Distribution 0.8063 Normal Distribution 0.2394 3.878 Distribution Anderson-Darling A2 Normality Fertilization Rate Summary Std Err CV% %Effect Min Max C-% **Control Type** Count Mean 95% LCL 95% UCL Median 0.009273 2.24% 0.0% 0 0.926 0.9003 0.9517 0.93 0.9 0.95 **Negative Control 5** -1.73% 0.95 0.92 0.007348 1.74% 0.9216 0.9624 0.96 25 5 0.942 1.92% -1.94% 50 5 0.944 0.9214 0.9666 0.94 0.92 0.97 0.008124 0.99 0.01483 3.46% -3.67% 5 0.96 0.9188 0.96 0.91 100 1 Angular (Corrected) Transformed Summary Std Err CV% %Effect Min Max **Control Type** Count 95% LCL 95% UCL Median C-% Mean 0.0% 1.297 1.347 1.303 1.249 1.345 0.01777 3.06% 0 Negative Contro 5 1.248 2.62% 1.286 1.373 1.345 1.284 1.369 0.01559 -2.47% 5 1.329 25 -2.87% 1.397 0.01842 3.09% 1.283 1.386 1.323 1.284 50 5 1.335 -6.71% 1.493 1.369 1.266 1.471 0.03913 6.32% 100 5 1.384 1.276

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CETIS Analytical Report

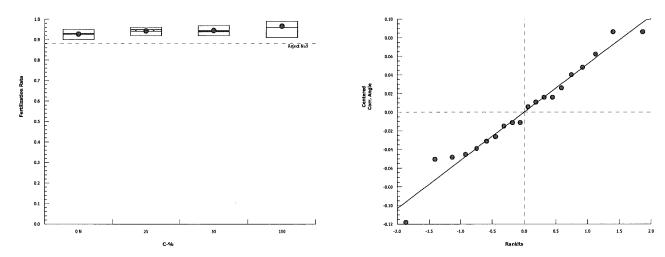
Report Date: 31 Mar-16 10:41 (p 2 of 2) Test Code:

WST0116.085urcf | 08-1732-7897

							Test Code.	W310110.0050101 00-1752-7697
Purple Sea U	Irchin Sperm Cell	Fertili	zation Test				Aquatic B	ioassay & Consulting Labs, Inc.
Analysis ID:	20-0562-4291		Endpoint:	Fertilization F	Rate		CETIS Version:	CETISv1.8.7
Analyzed:	31 Mar-16 10:36	3	Analysis:	Parametric-C	ontrol vs Tre	atments	Official Results:	Yes
Fertilization	Rate Detail							
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5		
0	Negative Control	0.9	0.93	0.91	0.94	0.95		
25		0.92	0.93	0.95	0.96	0.95		
50		0.94	0.97	0.95	0.92	0.94		
100		0.99	0.96	0.91	0.95	0.99		
Angular (Cor	rected) Transforn	ned De	tail					
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5		
0	Negative Control	1.249	1.303	1.266	1.323	1.345		
25		1.284	1.303	1.345	1.369	1.345		
50		1.323	1.397	1.345	1.284	1.323		
100		1.471	1.369	1.266	1.345	1.471		
Fertilization	Rate Binomials						, , , , , , , , , , , , , , , , , , ,	
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5		

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	90/100	93/100	91/100	94/100	95/100
25		92/100	93/100	95/100	96/100	95/100
50		94/100	97/100	95/100	92/100	94/100
100		99/100	96/100	91/100	95/100	99/100

Graphics



QA:<u>¥</u>

CETIS Analytical Report

Aquatic Bioassay & Consulting Labs, Inc. Purple Sea Urchin Sperm Cell Fertilization Test CETISv1.8.7 10-5156-2027 Endpoint: Fertilization Rate **CETIS Version:** Analysis ID: Linear Interpolation (ICPIN) **Official Results:** Yes Analyzed: 31 Mar-16 10:36 Analysis: Joe Freas Batch ID: 02-6241-7936 Test Type: Fertilization Analyst: Start Date: 08 Jan-16 13:00 Protocol: EPA/600/R-95/136 (1995) Diluent: Laboratory Seawater 08 Jan-16 13:40 Strongylocentrotus purpuratus Brine: Not Applicable Ending Date: Species: 40m David Gutoff Age: Duration: Source: 01-7596-9727 WST0116.085uf Client: Weston Solutions Sample ID: Code: LACDPW MALIBU ASBS Sample Date: 06 Jan-16 16:20 Material: Sample Water Project: Receive Date: 08 Jan-16 10:00 Source: **Bioassay Report** Station: LACDPW-010616-ASBS-S02-Post Sample Age: 45h **Linear Interpolation Options** Exp 95% CL Method X Transform Y Transform Resamples Seed 907777 **Two-Point Interpolation** Linear Linear 280 Yes Test Acceptability Criteria Test Stat TAC Limits Overlap Decision Attribute Control Resp 0.926 0.7 - NL Yes Passes Acceptability Criteria **Point Estimates** 95% UCL TU 95% LCL 95% UCL % 95% LCL Level EC5 >100 N/A N/A <1 NA NA NA NA EC10 >100 N/A N/A <1 N/A NA NA EC15 >100 N/A <1 EC20 >100 N/A N/A <1 NA NA N/A N/A NA NA **EC25** >100 <1 N/A N/A <1 NA NA EC40 >100 >100 N/A N/A <1 NA NA EC50 Calculated Variate(A/B) **Fertilization Rate Summary** в CV% C-% **Control Type** Count Mean Min Max Std Err Std Dev %Effect А 0.02074 0.0% 463 500 0 **Negative Control** 5 0.926 0.9 0.95 0.009273 2.24% 500 25 5 0.942 0.92 0.96 0.007348 0.01643 1.74% -1.73% 471 500 50 5 0.944 0.92 0.97 0.008124 0.01817 1.92% -1.94% 472 5 0.99 0.03317 3.46% -3.67% 480 500 100 0.96 0.91 0.01483 **Fertilization Rate Detail** Rep 4 Rep 5 C-% **Control Type** Rep 1 Rep 2 Rep 3 0 **Negative Control** 0.9 0.93 0.91 0.94 0.95 0.96 0.95 0.93 0.95 25 0.92 0.92 0.94 50 0,94 0.97 0.95 0.95 0.99 100 0.99 0.96 0.91 Fertilization Rate Binomials C-% **Control Type** Rep 1 Rep 2 Rep 3 Rep 4 Rep 5 0 Negative Control 90/100 93/100 91/100 94/100 95/100 93/100 92/100 95/100 95/100 96/100 25 94/100 97/100 95/100 92/100 94/100 50 99/100 100 99/100 96/100 91/100 95/100

CETIS™ v1.8.7.11

Purple Sea U	rchin Sperm Cell Fe	rtilization Tes	Aquatic Bioassay & Consulting Labs, Inc.				
Analysis ID: Analyzed:	10-5156-2027 31 Mar-16 10:36	Endpoint: Analysis:	Fertilization Rate Linear Interpolation (ICPIN)	CETIS Version: Official Results:	CETISv1.8.7 Yes		
Graphics							
1.0 <u>F</u>							
0.9		•					
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000-055-186-4

CETIS Analytical Report

CETIS™ v1.8.7.11

Analyst:_____QA:____

31 Mar-16 10:41 (p 2 of 2)

WST0116.085urcf | 08-1732-7897

Report Date:

Test Code:

CETIS Measurement Report

									est coue.	1101011		0-1102-1001	
Purple Sea Urchin Sperm Cell Fertilization Test									Aquatic Bioassay & Consulting Labs, Inc				
Batch ID:	02-6241-7936	т	est Type:	Fertilizatio	n			A	nalyst:	Joe Freas			
Start Date:	08 Jan-16 13:0	an-16 13:00 Protocol:		EPA/600/	R-95/	/136 (1995)		D	iluent:	Laboratory Sea	awater		
Ending Date:	08 Jan-16 13:4	D S	pecies:	Strongylo	centre	otus purpura	atus	E	rine:	Not Applicable			
Duration:	40m	S	ource:	David Gut	off			А	.ge:				
Sample ID:	01-7596-9727	C	ode:	WST0116	.085	uf		C	lient:	Weston Solution	ons		
Sample Date:	06 Jan-16 16:20	N C	laterial:	Sample W	/ater			P	roject:	LACDPW MAL	IBU ASBS		
Receive Date:	08 Jan-16 10:0) s	ource:	Bioassay	Repo	ort							
Sample Age:	45h	S	tation:	LACDPW	-0106	616-ASBS-S	602-Post						
Parameter Ac	ceptability Crite	ria											
Parameter		N	lin	Max	Acc	eptability	Limits	Overlap	Decisi	on			
Salinity-ppt			4	34	32 -			Yes		Within Limits			
Temperature-°	С	1	4.8	14.9	11 -	13		Yes	Results	Results Above Limit			
Dissolved Ox	ygen-mg/L												
C-%	Control Type	Count	Mean	· · · ·		95% UCL		Max	Std E		CV%	QA Count	
0	Negative Contro	2	6.7	5.429		7.971	6.6	6.8	0.0999		2.11%	0	
25		2	6.55	5.915		7.185	6.5	6.6	0.0499		1.08%	0	
50		2	6.15	5.515		6.785	6.1	6.2	0.0500		1.15%	0	
100		2	6.7	4.159		9.241	6.5	6.9	0.2	0.2828	4.22%	0	
Overall		8	6.525				6.1	6.9				0 (0%)	
pH-Units													
C-%	Control Type	Count	Mean	95% I	CL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count	
0	Negative Contro		7.9	7.884		7.916	7.9	7.9	0	0	0.0%	0	
25		2	7.8	7.787		7.813	7.8	7.8	0	0	0.0%	0	
50		2	7.75	7.115		8.385	7.7	7.8	0.0500		0.91%	0	
100		2	7.75	7.115		8.385	7.7	7.8	0.0500	0.07072	0.91%	0	
Overall		8	7.8				7.7	7.9				0 (0%)	
Salinity-ppt													
C-%	Control Type	Count	Mean		_CL	95% UCL		Max	Std E		CV%	QA Count	
0	Negative Contro		34	34		34	34	34	0	0	0.0%	0	
25		2	34	34		34	34	34	0	0	0.0%	0	
50		2	34	34		34	34	34	0	0	0.0%	0	
100		2	34	34		34	34	34	0	0	0.0%	0	
Overall		8	34				34	34				0 (0%)	
Temperature-		. .			.				• · • =		0.64		
C-%	Control Type	Count	Mean			95% UCL		Max	Std E		CV%	QA Count	
0	Negative Contro		14.85			15.49	14.8	14.9	0.050		0.48%	0	
25 50		2 2	14.85 14.85			15.49 15.49	14.8 14.8	14.9 14.9	0.050 0.050		0.48% 0.48%	0 0	
50 100		2	14.65			15.49 15.49	14.8	14.9 14.9	0.050		0.48%	0	
Overall		8	14.85			10.40	14.8	14.9	0.000		0.4070	0 (0%)	

CETIS™ v1.8.7.11

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					Ies	t Code:	WS10116.06501C1 06-1732-7897
Purple Se	ea Urchin Sperm Cel	l Fertiliza	ation Test			Aquatio	Bioassay & Consulting Labs, Inc.
Dissolve	d Oxygen-mg/L						
C-%	Control Type	1	2				
0	Negative Contr	6.6	6.8				
25		6.6	6.5				
50		6.2	6.1				
100		6.9	6.5				
pH-Units							
C-%	Control Type	1	2				
0	Negative Contr	7.9	7.9				
25		7.8	7.8				
50		7.7	7.8				
100		7.8	7.7				
Salinity-p	opt						
C-%	Control Type	1	2				
0	Negative Contr	34	34				
25		34	34				
50		34	34				
100		34	34				
Temperat	ture-°C						
C-%	Control Type	1	2	1			
0	Negative Contr	14.8	14.9				
25		14.8	14.9				
50		14.8	14.9				
100		14.8	14.9				

009-923-732-3



March 31, 2016

Mr. Dan McCoy Weston Solutions 5817 Dryden Place Carlsbad, CA 92008

Dear Mr. McCoy:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms, EPA/R-95/136.* "The concentration-response was normal. Test was set at 38 hours holding time which is beyond the prescribed 36 hour hold but within 72 hours. Reference toxicant was within limits and all other test acceptability criteria was met. This is a valid test." Results were as follows:

CLIENT:	Weston Solutions
SAMPLE I.D.:	LACDPW-010616-ASBS-S01-POST
DATE RECEIVED:	1/8/2016
ABC LAB. NO.:	WST0116.086

CHRONIC SEA URCHIN FERTILIZATION BIOASSAY

NOEC =	100.00 %
TUc =	1.00
EC25 =	>100.00 %
EC50 =	>100.00 %

Yours very truly, Scott Johnson

Laboratory Director

CETIS Summary Report

								lest Code	•	VV510116			
Purple Sea Urchin Sperm Cell Fertilization Test									Aquatic Bioassay & Consulting Labs, Inc.				
Batch ID:	01-2897-2531			Fertilization				Analyst:					
Start Date:	08 Jan-16 13:0		rotocol:	EPA/600/R-95/				Diluent:		oratory Sea	water		
Ending Date:	08 Jan-16 13:4		pecies:	Strongylocentro	otus purpura	itus		Brine:	Not	Applicable			
Duration:	40m	S	ource:	David Gutoff				Age:				-	
Sample ID:	01-8413-7006		ode:	WST0116.086	uf			Client:	Wes	ton Solutio	ns		
-	06 Jan-16 17:1		aterial:	Sample Water				Project:	LAC	LACDPW MALIBU ASBS			
Receive Date:	: 08 Jan-16 10:00	o s e	ource:	Bioassay Repo									
Sample Age:	44h	St	tation:	LACDPW-0106	616-ASBS-S	01-Post							
Comparison §	Summary												
Analysis ID	Endpoint		NOEL	LOEL	TOEL	PMSD	ΤU	Met	ethod				
11-5090-3798	Fertilization Rat	e	100	>100	NA	4.11%	1	Dun	nett Multiple Comparison Test			st	
Point Estimat	e Summary												
Analysis ID	Endpoint		Level	%	95% LCL	95% UCL	TU	Meti	hod				
13-1584-8583	Fertilization Rat	e	EC5	>100	N/A	N/A	<1	Line	ar Inte	rpolation (I	CPIN)		
			EC10	>100	N/A	N/A	<1						
			EC15	>100	N/A	N/A	<1						
			EC20	>100	N/A	N/A	<1						
			EC25	>100	N/A	N/A	<1						
			EC40	>100	N/A	N/A	<1						
			EC50	>100	N/A	N/A	<1						
Test Acceptat	oility												
-	-		• · · •					_					
Analysis ID	Endpoint		Attrib		Test Stat	TAC Limi	ts	Ove	rlap	Decision			
Analysis ID 11-5090-3798	Endpoint Fertilization Rat		Contro	ol Resp	0.9225	0.7 - NL	ts	Yes	rlap	Passes A	cceptability		
Analysis ID 11-5090-3798 13-1584-8583	Endpoint Fertilization Rat Fertilization Rat	e	Contro Contro	ol Resp ol Resp	0.9225 0.9225	0.7 - NL 0.7 - NL	ts	Yes Yes	rlap	Passes A Passes A	cceptability	Criteria	
Analysis ID 11-5090-3798 13-1584-8583 11-5090-3798	Endpoint Fertilization Rat Fertilization Rat Fertilization Rat	e	Contro	ol Resp ol Resp	0.9225	0.7 - NL	its	Yes	rlap	Passes A Passes A	•	Criteria	
Analysis ID 11-5090-3798 13-1584-8583 11-5090-3798 Fertilization R	Endpoint Fertilization Rat Fertilization Rat Fertilization Rat	e	Contro Contro PMSD	ol Resp ol Resp	0.9225 0.9225 0.04109	0.7 - NL 0.7 - NL NL - 0.25		Yes Yes No		Passes A Passes A Passes A	cceptability cceptability	Criteria Criteria	
Analysis ID 11-5090-3798 13-1584-8583 11-5090-3798 Fertilization R C-%	Endpoint Fertilization Rat Fertilization Rat Fertilization Rat Rate Summary Control Type	e e Count	Contro Contro PMSD Mean	ol Resp ol Resp 95% LCL	0.9225 0.9225 0.04109 95% UCL	0.7 - NL 0.7 - NL NL - 0.25 Min	Max	Yes Yes No Std	Err	Passes A Passes A Passes A Std Dev	cceptability cceptability CV%	Criteria Criteria %Effect	
Analysis ID 11-5090-3798 13-1584-8583 11-5090-3798 Fertilization R C-%	Endpoint Fertilization Rat Fertilization Rat Fertilization Rat	e e Count	Contro Contro PMSD Mean 0.9225	91 Resp 91 Resp 95% LCL 5 0.8872	0.9225 0.9225 0.04109 95% UCL 0.9578	0.7 - NL 0.7 - NL NL - 0.25 Min 0.9	Max 0.95	Yes Yes No Std	Err 109	Passes A Passes A Passes A Std Dev 0.02217	cceptability cceptability CV% 2.4%	Criteria Criteria %Effect 0.0%	
Analysis ID 11-5090-3798 13-1584-8583 11-5090-3798 Fertilization R C-% D 25	Endpoint Fertilization Rat Fertilization Rat Fertilization Rat Rate Summary Control Type	e e Count 4	Contro Contro PMSD Mean 0.9225 0.93	91 Resp 91 Resp 95% LCL 5 0.8872 0.8956	0.9225 0.9225 0.04109 95% UCL 0.9578 0.9644	0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.9	Max 0.95 0.95	Yes Yes No Std 0.01 0.01	Err 109 08	Passes A Passes A Passes A Std Dev 0.02217 0.0216	cceptability cceptability CV% 2.4% 2.32%	Criteria Criteria %Effect 0.0% -0.81%	
Analysis ID 11-5090-3798 13-1584-8583 11-5090-3798 Fertilization R C-% 0 25 50	Endpoint Fertilization Rat Fertilization Rat Fertilization Rat Rate Summary Control Type	e e Count	Contro Contro PMSD Mean 0.9225	95% LCL 0.8872 0.8956 0.9003	0.9225 0.9225 0.04109 95% UCL 0.9578	0.7 - NL 0.7 - NL NL - 0.25 Min 0.9	Max 0.95 0.95 0.95	Yes Yes No Std 0.01 0.01 0.01 0.00	Err 109 08 8539	Passes A Passes A Passes A Std Dev 0.02217	cceptability cceptability CV% 2.4%	Criteria Criteria %Effect 0.0% -0.81% -0.54%	
Analysis ID 11-5090-3798 13-1584-8583 11-5090-3798 Fertilization R C-% D 25 50 100	Endpoint Fertilization Rat Fertilization Rat Rate Summary Control Type Negative Control	e e Count 4 4 4	Contro Contro PMSD Mean 0.9225 0.93 0.9275	95% LCL 0.8872 0.8956 0.9003	0.9225 0.9225 0.04109 95% UCL 0.9578 0.9644 0.9547	0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.9 0.91	Max 0.95 0.95	Yes Yes No Std 0.01 0.01 0.01 0.00	Err 109 08 8539	Passes A Passes A Passes A Std Dev 0.02217 0.0216 0.01708	CCPtability CCPtability CV% 2.4% 2.32% 1.84%	Criteria Criteria %Effect 0.0% -0.81%	
Analysis ID 11-5090-3798 13-1584-8583 11-5090-3798 Fertilization R 2-% 0 25 50 100 Fertilization R	Endpoint Fertilization Rat Fertilization Rat Fertilization Rat Control Type Negative Control Rate Detail Control Type	e e Count 4 4 4 8 Rep 1	Contro Contro PMSD Mean 0.9225 0.93 0.9275	95% LCL 95% LCL 0.8872 0.8956 0.9003 0.9147 Rep 3	0.9225 0.9225 0.04109 95% UCL 0.9578 0.9644 0.9547 0.9803 Rep 4	0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.9 0.91	Max 0.95 0.95 0.95	Yes Yes No Std 0.01 0.01 0.01 0.00	Err 109 08 8539	Passes A Passes A Passes A Std Dev 0.02217 0.0216 0.01708	CCPtability CCPtability CV% 2.4% 2.32% 1.84%	Criteria Criteria %Effect 0.0% -0.81% -0.54%	
Analysis ID 11-5090-3798 13-1584-8583 11-5090-3798 Fertilization R C-% D 25 50 100 Fertilization R C-%	Endpoint Fertilization Rat Fertilization Rat Fertilization Rat Rate Summary Control Type Negative Control	e e Count 4 4 4 4 8 8 ep 1 0.9	Contro Contro PMSD 0.9225 0.93 0.9275 0.9475	95% LCL 5 0.8872 0.8956 5 0.9003 5 0.9147	0.9225 0.9225 0.04109 95% UCL 0.9578 0.9644 0.9547 0.9803	0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.9 0.91	Max 0.95 0.95 0.95	Yes Yes No Std 0.01 0.01 0.01 0.00	Err 109 08 8539	Passes A Passes A Passes A Std Dev 0.02217 0.0216 0.01708	CCPtability CCPtability CV% 2.4% 2.32% 1.84%	Criteria Criteria %Effect 0.0% -0.81% -0.54%	
Analysis ID 11-5090-3798 13-1584-8583 11-5090-3798 Fertilization R C-% D 25 50 100 Fertilization R C-%	Endpoint Fertilization Rat Fertilization Rat Fertilization Rat Control Type Negative Control Rate Detail Control Type	e e Count 4 4 4 8 Rep 1	Contro Contro PMSD 0.9225 0.93 0.9275 0.9475 Rep 2	95% LCL 95% LCL 0.8872 0.8956 0.9003 0.9147 Rep 3	0.9225 0.9225 0.04109 95% UCL 0.9578 0.9644 0.9547 0.9803 Rep 4	0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.9 0.91	Max 0.95 0.95 0.95	Yes Yes No Std 0.01 0.01 0.01 0.00	Err 109 08 8539	Passes A Passes A Passes A Std Dev 0.02217 0.0216 0.01708	CCPtability CCPtability CV% 2.4% 2.32% 1.84%	Criteria Criteria %Effect 0.0% -0.81% -0.54%	
Analysis ID 11-5090-3798 13-1584-8583 11-5090-3798 Fertilization R C-% 0 25 50 100 Fertilization R C-% 0 25 50 100	Endpoint Fertilization Rat Fertilization Rat Fertilization Rat Control Type Negative Control Rate Detail Control Type	e e Count 4 4 4 4 8 8 ep 1 0.9	Contro Contro PMSD 0.9225 0.93 0.9275 0.9475 Rep 2 0.95	95% LCL 95% LCL 0.8872 0.8956 0.9003 0.9147 Rep 3 0.91	0.9225 0.9225 0.04109 95% UCL 0.9578 0.9644 0.9547 0.9803 Rep 4 0.93	0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.9 0.91	Max 0.95 0.95 0.95	Yes Yes No Std 0.01 0.01 0.01 0.00	Err 109 08 8539	Passes A Passes A Passes A Std Dev 0.02217 0.0216 0.01708	CCPtability CCPtability CV% 2.4% 2.32% 1.84%	Criteria Criteria %Effect 0.0% -0.81% -0.54%	
Analysis ID 11-5090-3798 13-1584-8583 11-5090-3798 Fertilization R C-% 25 50 100 Fertilization R C-% 25 50 100 Fertilization R C-% 25 50 100	Endpoint Fertilization Rat Fertilization Rat Fertilization Rat Control Type Negative Control Rate Detail Control Type	e e 4 4 4 4 8 6 8 9 0.9 0.9	Contro Contro PMSD 0.9225 0.93 0.9275 0.9475 Rep 2 0.95 0.93	95% LCL 95% LCL 0.8956 0.9003 0.9147 Rep 3 0.91 0.95	0.9225 0.9225 0.04109 95% UCL 0.9578 0.9644 0.9547 0.9803 Rep 4 0.93 0.94	0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.9 0.91	Max 0.95 0.95 0.95	Yes Yes No Std 0.01 0.01 0.01 0.00	Err 109 08 8539	Passes A Passes A Passes A Std Dev 0.02217 0.0216 0.01708	CCPtability CCPtability CV% 2.4% 2.32% 1.84%	Criteria Criteria %Effect 0.0% -0.81% -0.54%	
Analysis ID 11-5090-3798 13-1584-8583 11-5090-3798 Fertilization R C-% 0 25 50 100 Fertilization R C-% 0 25 50 100 100	Endpoint Fertilization Rat Fertilization Rat Fertilization Rat Control Type Negative Control Rate Detail Control Type	e e 4 4 4 4 9 0.9 0.9 0.91	Contro Contro PMSD 0.9225 0.93 0.9275 0.9475 0.9475 0.95 0.93 0.92	95% LCL 95% LCL 0.8956 0.9003 0.9147 Rep 3 0.91 0.95 0.93	0.9225 0.9225 0.04109 95% UCL 0.9578 0.9644 0.9547 0.9803 Rep 4 0.93 0.94 0.95	0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.9 0.91	Max 0.95 0.95 0.95	Yes Yes No Std 0.01 0.01 0.01 0.00	Err 109 08 8539	Passes A Passes A Passes A Std Dev 0.02217 0.0216 0.01708	CCPtability CCPtability CV% 2.4% 2.32% 1.84%	Criteria Criteria %Effect 0.0% -0.81% -0.54%	
Analysis ID 11-5090-3798 13-1584-8583 11-5090-3798 Fertilization R 2-% 0 25 50 100 Fertilization R 2-% 0 25 50 100 Fertilization R 50 100 Fertilization R	Endpoint Fertilization Rat Fertilization Rat Fertilization Rat Control Type Negative Control	e e 4 4 4 4 9 0.9 0.9 0.91	Contro Contro PMSD 0.9225 0.93 0.9275 0.9475 0.9475 0.95 0.93 0.92	95% LCL 95% LCL 0.8956 0.9003 0.9147 Rep 3 0.91 0.95 0.93	0.9225 0.9225 0.04109 95% UCL 0.9578 0.9644 0.9547 0.9803 Rep 4 0.93 0.94 0.95	0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.9 0.91	Max 0.95 0.95 0.95	Yes Yes No Std 0.01 0.01 0.01 0.00	Err 109 08 8539	Passes A Passes A Passes A Std Dev 0.02217 0.0216 0.01708	CCPtability CCPtability CV% 2.4% 2.32% 1.84%	Criteria Criteria %Effect 0.0% -0.81% -0.54%	
Analysis ID 11-5090-3798 13-1584-8583 11-5090-3798 Fertilization R C-% D 25 50 100 Fertilization R C-% D 25 50 100 Fertilization R C-%	Endpoint Fertilization Rat Fertilization Rat Fertilization Rat Control Type Negative Control ate Detail Control Type Negative Control	e e Count 4 4 4 4 8 0.9 0.9 0.91 0.95 Rep 1	Contro Contro PMSD 0.9225 0.93 0.9275 0.9475 Rep 2 0.95 0.93 0.92 0.97	95% LCL 95% LCL 0.8956 0.9003 0.9147 Rep 3 0.91 0.95 0.93 0.95 Rep 3	0.9225 0.9225 0.04109 95% UCL 0.9578 0.9644 0.9547 0.9803 Rep 4 0.93 0.94 0.95 0.92	0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.9 0.91	Max 0.95 0.95 0.95	Yes Yes No Std 0.01 0.01 0.01 0.00	Err 109 08 8539	Passes A Passes A Passes A Std Dev 0.02217 0.0216 0.01708	CCPtability CCPtability CV% 2.4% 2.32% 1.84%	Criteria Criteria %Effec 0.0% -0.81% -0.54%	
Analysis ID 11-5090-3798 13-1584-8583 11-5090-3798 Fertilization R C-% D 25 50 100 Fertilization R C-% D Eertilization R C-% D	Endpoint Fertilization Rat Fertilization Rat Fertilization Rat Control Type Negative Control Rate Detail Control Type Negative Control Regative Control ate Binomials Control Type	e e Count 4 4 4 4 8 0.9 0.9 0.91 0.95 Rep 1	Contro Contro PMSD 0.9225 0.93 0.9275 0.9475 0.9475 Rep 2 0.95 0.93 0.92 0.97 Rep 2	95% LCL 95% LCL 0.8872 0.8956 0.9003 0.9147 Rep 3 0.95 0.93 0.95 Rep 3 0.91/100	0.9225 0.9225 0.04109 95% UCL 0.9578 0.9644 0.9547 0.9803 Rep 4 0.93 0.94 0.95 0.92 Rep 4	0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.9 0.91	Max 0.95 0.95 0.95	Yes Yes No Std 0.01 0.01 0.01 0.00	Err 109 08 8539	Passes A Passes A Passes A Std Dev 0.02217 0.0216 0.01708	CCPtability CCPtability CV% 2.4% 2.32% 1.84%	Criteria Criteria %Effect 0.0% -0.81% -0.54%	
Analysis ID 11-5090-3798 13-1584-8583 11-5090-3798 Fertilization R C-% 0 25 50 100 Fertilization R C-% 0 25 50 100 Fertilization R C-%	Endpoint Fertilization Rat Fertilization Rat Fertilization Rat Control Type Negative Control Rate Detail Control Type Negative Control Regative Control ate Binomials Control Type	e e Count 4 4 4 4 4 0.9 0.9 0.91 0.95 Rep 1 90/100	Contro Contro PMSD 0.9225 0.93 0.9275 0.93 0.9275 0.93 0.92 0.95 0.93 0.92 0.97 Rep 2 95/100	95% LCL 95% LCL 0.8872 0.8956 0.9003 0.9147 Rep 3 0.91 0.95 0.93 0.95 Rep 3 91/100 95/100	0.9225 0.9225 0.04109 95% UCL 0.9578 0.9644 0.9547 0.9803 Rep 4 0.93 0.94 0.95 0.92 Rep 4 93/100	0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.9 0.91	Max 0.95 0.95 0.95	Yes Yes No Std 0.01 0.01 0.01 0.00	Err 109 08 8539	Passes A Passes A Passes A Std Dev 0.02217 0.0216 0.01708	CCPtability CCPtability CV% 2.4% 2.32% 1.84%	Criteria Criteria %Effect 0.0% -0.81% -0.54%	

CETIS™ v1.8.7.11

CETIS Analytical Report

 Report Date:
 31 Mar-16 10:36 (p 1 of 2)

 Test Code:
 WST0116.086urcf | 14-5529-3936

-	rchin Sperm Cel							•	ic Bioassay & (g _u.so, in	
Analysis ID: Analyzed:	11-5090-3798 31 Mar-16 10:3			Fertilization Rate Parametric-Control vs Treatments				CETIS Version: CETISv1.8.7 Official Results: Yes				
Batch ID:	01-2897-2531	Те	st Type: Fe				Anal	yst: .	Joe Freas			
Start Date:	08 Jan-16 13:01			PA/600/R-95/			Dilu		Laboratory Seav	vater		
Ending Date:	08 Jan-16 13:41	•		rongylocentro	otus purpura	tus	Brin		Not Applicable			
Duration:	40m	So	urce: Da	avid Gutoff			Age:					
Sample ID:	•			ST0116.086u	ıf		Clier	nt: \	Weston Solution	S		
•			terial: Sa	ample Water			Proj	ect: l	_ACDPW MALIE	BU ASBS		
	te: 08 Jan-16 10:00 Source: Bioassay Report											
Sample Age:	44h	St	ation: L/	CDPW-0106	16-ASBS-S	01-Post						
Data Transfo	rm 🕔	Zeta	Alt Hyp	Trials	Seed		PMSD	NOEL		TOEL	τu	
Angular (Corre	ected)	NA	C > T	NA	NA		4.11%	100	>100	NA	1	
Dunnett Mult	iple Comparison	Test										
Control	vs C-%		Test Sta	t Critical	MSD DF	P-Value	P-Type		ion(α:5%)			
Negative Cont			-0.4907	2.287	0.067 6	0.8886	CDF		ignificant Effect			
	50		-0.3001	2.287	0.067 6	0.8436	CDF		ignificant Effect			
	100		-1.782	2.287	0.067 6	0.9937	CDF	Non-S	ignificant Effect			
Test Accepta	bility Criteria											
Attribute	Test Stat		nits	Overlap	Decision							
Control Resp	0.9225	0.7 - NL		Yes	Passes Acceptability Criteria							
PMSD	0.04109	NL - 0.2	5	No	Passes Ac	cceptability	Criteria					
ANOVA Table)											
Source	Sum Squa	ares	Mean So	uare	DF	F Stat	P-Value		ion(α:5%)			
Between	0.0062978		0.002099				0.3400	Non-S	ignificant Effect			
Error	0.0203992		0.001699	935	12	_						
Total	0.0266970	9			15							
Distributiona	l Tests		•									
Attribute	Test			Test Stat		P-Value	Decision					
Variances	Bartlett Ed			0.2513	11.34	0.9689	Equal Var					
Variances		•	ty of Varianc		5.953	0.9686	Equal Var					
Variances	Levene Eo Shapiro-V			0.09169 0.9484	5.953 0.8408	0.9632 0.4645	Equal Var Normal D		n			
Distribution Distribution	Kolmogor		-	0.9484 0.1116	0.8408	0.4645	Normal D Normal D					
Distribution	D'Agostin			0.06999	2.576	0.9442	Normal D					
Distribution	-		2 Normality	0.297	3.878	0.6209	Normal D					
Fertilization F	Rate Summary											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effec	
0	Negative Control	4	0.9225	0.8872	0.9578	0.92	0.9	0.95	0.01109	2.4%	0.0%	
~ <i>~</i>		4	0.93	0.8956	0.9644	0.935	0.9	0.95	0.0108	2.32%	-0.81%	
25		4	0.9275	0.9003	0.9547	0.925	0.91	0.95	0.008539	1.84%	-0.54%	
50			0.9475	0.9147	0.9803	0.95	0.92	0.97	0.01031	2.18%	-2.71%	
50		4	0.0170									
50 100	rected) Transforr											
50 100 Angular (Cori C-%	Control Type	ned Sum Count	mary Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%		
C-%		ned Sum Count 4	mary Mean 1.291	95% LCL 1.223	1.359	1.285	1.249	1.345	0.02135	3.31%	0.0%	
50 100 Angular (Corr C-% 0 25	Control Type	ned Sum Count 4 4	mary Mean 1.291 1.305	95% LCL 1.223 1.24	1.359 1.371	1.285 1.313	1.249 1.249	1.345 1.345	0.02135 0.0206	3.31% 3.16%	-1.11%	
50 100 Angular (Corr C-% 0	Control Type	ned Sum Count 4	mary Mean 1.291	95% LCL 1.223	1.359	1.285	1.249	1.345	0.02135	3.31%	0.0%	

CETIS™ v1.8.7.11

Analyst:_____QA:____

WST0116.086urcf | 14-5529-3936

						Test Code:	WS10116.086urcf 14-5529-3936
Purple Sea L	Jrchin Sperm Cell	Fertiliz	zation Test			Aquatic B	ioassay & Consulting Labs, Inc.
Analysis ID:	11-5090-3798	I	Endpoint:	Fertilization Ra		CETIS Version:	CETISv1.8.7
Analyzed:	31 Mar-16 10:35	57	Analysis:	Parametric-Co	ontrol vs Treatments	Official Results:	Yes
Fertilization	Rate Detail						
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4		
0	Negative Control	0.9	0.95	0.91	0.93		
25		0.9	0.93	0.95	0.94		
50		0.91	0.92	0.93	0.95		
100		0.95	0.97	0.95	0.92		
Angular (Co	rrected) Transforn	ned De	tail				
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4		
0	Negative Control	1.249	1.345	1.266	1.303		
25		1.249	1.303	1.345	1.323		
50		1.266	1.284	1.303	1.345		
100		1.345	1.397	1.345	1.284		
Fertilization	Rate Binomials						
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4		
0	Negative Control	90/100) 95/10	0 91/100	93/100		

94/100

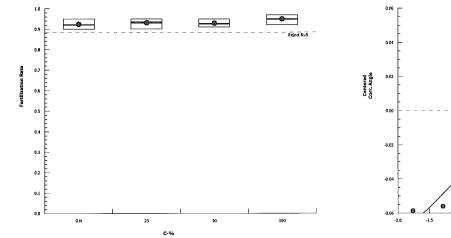
95/100

92/100

25

50

100



93/100

92/100

97/100

95/100

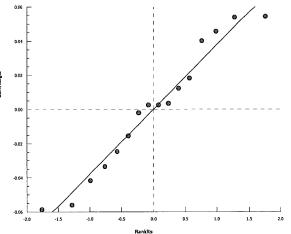
93/100

95/100

90/100

91/100

95/100



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_____QA:_____

31 Mar-16 10:36 (p 1 of 2) Report Date: Test Code:

WST0116.086urcf | 14-5529-3936

								Tes	st Code	:	WST0116.	086urcf	14-5529-393
Purple	Sea Ur	chin Sperm Cell	Fertilizatio	n Test					Aqu	atic Bi	oassay &	Consulti	ng Labs, Inc
Analysi	is ID:	13-1584-8583	End	point:	Fertilization Rat	e		CE	TIS Ver	sion:	CETISv1	.8.7	
Analyze		31 Mar-16 10:35		ysis:	Linear Interpola			Off	icial Re	sults:	Yes		
Batch I	D:	01-2897-2531	Test	Type:	Fertilization			An	alyst:	Joe F	Freas		
Start Da	ate:	08 Jan-16 13:01	Prot	ocol:	EPA/600/R-95/	136 (1995)		Dil	uent:	Labo	ratory Seav	water	
Ending	Date:	08 Jan-16 13:41	Spee	ies:	Strongylocentro	tus purpurat	us	Bri	ne:	Not A	Applicable		
Duratio	on:	40m	Sou	ce:	David Gutoff			Ag	e:				
Sample		01-8413-7006	Cod	э:	WST0116.086u	f		Cli	ent:	West	ton Solutio	ns	
Sample	e Date:	06 Jan-16 17:15	Mate	rial:	Sample Water			Pro	oject:	LAC	OPW MALI	BU ASBS	3
Receive	e Date:	08 Jan-16 10:00	Sou	ce:	Bioassay Repo								
Sample	e Age:	44h	Stati	on:	LACDPW-0106	16-ASBS-S	01-Post						
Linear	Interpo	lation Options											
X Trans	sform	Y Transform	Seed	ł	Resamples	Exp 95%							
Linear		Linear	0		280	Yes	Two	-Point Inte	rpolation	ו 			
Test Ac	ceptab	ility Criteria											
Attribut	te	Test Stat	TAC Limit	s	Overlap	Decision							
Control	Resp	0.9225	0.7 - NL		Yes	Passes Ac	ceptability	Criteria					
Point E	stimate	es											
Level	%	95% LCL	95% UCL	τu	95% LCL	95% UCL					1.0000		
EC5	>100	N/A	N/A	<1	NA	NA							
EC10	>100	N/A	N/A	<1	NA	NA							
EC15	>100	N/A	N/A	<1	NA	NA							
EC20	>100	N/A	N/A	<1	NA	NA							
EC25	>100	N/A	N/A	<1	NA	NA							
EC40	>100	N/A	N/A	<1	NA	NA							
EC50	>100	N/A	N/A	<1	NA	NA							
Fertiliza	ation R	ate Summary				Calcu	lated Varia	ate(A/B)				-	
C-%		ontrol Type	Count	Mean		Max	Std Err	Std Dev			%Effect	Α	В
0	N	egative Control	4	0.922		0.95	0.01109	0.02217			0.0%	369	400
25			4	0.93	0.9	0.95	0.0108	0.0216	2.32		-0.81%	372	400
50			4	0.927		0.95	0.008539				-0.54%	371	400
100			4	0.947	5 0.92	0.97	0.01031	0.02062	2.18	3%	-2.71%	379	400
Fertiliza	ation R	ate Detail											
C-%		ontrol Type	Rep 1	Rep 2	Rep 3	Rep 4							
0	N	egative Control	0.9	0.95	0.91	0.93							
25			0.9	0.93	0.95	0.94							
50			0.91	0.92	0.93	0.95							
100			0.95	0.97	0.95	0.92							
Fertiliz	ation R	ate Binomials											
C-%		Control Type	Rep 1	Rep 2	Rep 3	Rep 4							
0		Negative Control	90/100	95/10	0 91/100	93/100							
25			90/100	93/10	0 95/100	94/100							
			91/100	92/10		95/100							
50													

Analyst: _____ QA: _____

CETIS Ana	alytical Report			Report Date: Test Code:	31 Mar-16 10:36 (p 2 of 2) WST0116.086urcf 14-5529-3936				
Purple Sea U	rchin Sperm Cell Fe	rtilization Tes	t	Aquatic Bioassay & Consulting Labs, Inc					
Analysis ID: Analyzed:	13-1584-8583 31 Mar-16 10:35	Endpoint: Analysis:	Fertilization Rate Linear Interpolation (ICPIN)	CETIS Version: Official Results:	CETISv1.8.7 Yes				
Graphics									
1.0 0.9 0.9 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7	•	•	<u> </u>						
0.1	20 40		<u>, , , </u> 80 100						
	C-4	/o							

CETIS Measurement Report

 Report Date:
 31 Mar-16 10:36 (p 1 of 2)

 Test Code:
 WST0116.086urcf | 14-5529-3936

Start Date: 0.8 Jan-16 13:01 Protocol: EPA/800/R-85/136 (1995) Ditumit: Laboratory Seawater Ending Date: 0.8 Jan-16 13:41 Species: Strongylocentrotus purpuratus Brine: Nol Applicable Sample Di: 0.9 Jan-16 17:15 Material: Sample Material: Sample Material: Sample Material: Sample Material: Sample Age: LACDPW MALIBU ASBS Sample Age: Source: Bioassay Report Bioassay Report LACDPW MALIBU ASBS LACDPW MALIBU ASBS Parameter Acceptability Criteria Parameter Acceptability Limits Overlap Decision LACDPW MALIBU ASBS Parameter -C 14.7 11.1 13 Yes Results Above Limit Triteria Control Type Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% QA Court 0 Negative Contro 2 6.55 5.915 7.185 6.56 6.6 0.04999 0.0707 1.08% 0 2 6.65 5.915 7.185 6.56	Purple Sea Ur	chin Sperm Ce	II Ferti	lization Tes	it					Aqua	atic Bioassay 8	Consultin	g Labs, Inc.
Sample Date: 06 Jan-16 17:15 Boolve Date: Material: Sample Material: Sample Material: Basasay Report Sample Age: 04 Jan-16 10:00 Basabay Report LACDPW-010816-XBS-S01-Post Version LACDPW MALIBU ASBS Parameter Acceptability Criteria LACDPW-010816-XBS-S01-Post Version Decision Salinity-ppl 34 34 32 - 36 Yes Results Within Limits Temperature-*C 14.7 14.9 11 - 13 Yes Results Alver Limits Dissolved Crygen-mag/L 14.7 14.9 11 - 13 Yes Results Alver Limits Dissolved Crygen-mag/L 14.7 14.9 11 - 13 Yes Results Alver Limits C*M Control Type Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% QA Court 0 Negative Contro 2 6.6 6.58 6.61 6.6 0.0 0.0707 1.08% 0 0 2 6.6 6.58 7.8 7.8 7.8 0.05	Batch ID: Start Date: Ending Date: Duration:	08 Jan-16 13:0 08 Jan-16 13:4		Protocol: Species:	EPA/6 Strong	600/R-95 gylocentr	. ,	atus	Di Bi	iluent: rine:	Laboratory Se		
Parameter Min Max Acceptability Limits Overlap Decision Salinity-ppt 34 34 32 - 36 Yes Results Within Limits Temperature-'C 14.7 14.9 11 - 13 Yes Results Within Limits Disolved Oxygen-mg/L Control Type Count Mean 95% LCL 95% UCL Min Max Std Er Std Dev CV% QA Court 0 Negative Contro 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0707 1.08% 0 20 6.65 5.915 7.185 6.5 6.6 0.04999 0.0707 1.08% 0 20 6.6 5.915 7.185 6.1 6.2 0.0500 0.0707 1.08% 0 0100 2 6.6 6.64 6.6 6.6 0.0 0 0.0% 0 02 7.76 7.8 7.767 7.813 7.8 7.9 0.0 0.0%	Receive Date:	06 Jan-16 17:1 08 Jan-16 10:0		Material: Source:	Samp Bioass	le Water say Repo	ort	501-Post					
Salinity-ppt 34 34 32 - 36 Yes Results Within Limits Temperature-*C 14.7 14.9 11 - 13 Yes Results Above Limit Dissolved Oxygen-mg/L C Control Type Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% QA Court 0 Negative Contro 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0707 1.08% 0 2 6.65 5.915 7.185 6.5 6.6 0.04999 0.0707 1.08% 0 0 2 6.6 6.566 6.1 6.6 0 0 0.0% 0 Outrall 8 6.463 6.1 6.6 0 0 0.0% 0 Otherall 8 7.75 7.15 8.455 7.7 7.8 0.0500 0.07071 0.9% 0 0 0 2 7.75 7.115 8.455	Parameter Acc	ceptability Crite	ria										
Salinity-ppt 34 34 32 - 36 Yes Results Within Limits Temperature-*C 14.7 14.9 11 - 13 Yes Results Within Limits Dissolved Oxygen-mg/L Control Type Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% QA Court 0 Negative Contro 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0707 1.08% 0 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0707 1.08% 0 0 2 6.6 6.566 6.1 6.2 0.0500 0.0707 1.18% 0	Parameter			Min	Max	Acc	eptability	Limits	Overlap	Decisi	on		
Co-% Control Type Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% QA Court 0 Negative Contro 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0707 1.08% 0 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0707 1.08% 0 50 2 6.15 5.515 6.785 6.1 6.2 0.05001 0.0777 1.08% 0 000 2 6.6 6.646 6.6 0 0 0.09% 0 Overall 8 6.463 - 6.1 6.6 0 0 0.09% 0 Overall 8 7.215 8.485 7.8 7.9 0.05 0.0701 0.9% 0 2 7.7 7.15 8.485 7.7 7.8 0 0 0.0% 0 2 7.7 7.15	Salinity-ppt Temperature-°	С				32 -	- 36		Yes	Result	s Within Limits		
Co-% Control Type Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% QA Court 0 Negative Contro 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0707 1.08% 0 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0707 1.08% 0 50 2 6.15 5.515 6.785 6.1 6.2 0.05001 0.0777 1.08% 0 000 2 6.6 6.646 6.6 0 0 0.09% 0 Overall 8 6.463 - 6.1 6.6 0 0 0.09% 0 Overall 8 7.215 8.485 7.8 7.9 0.05 0.0701 0.9% 0 2 7.7 7.15 8.485 7.7 7.8 0 0 0.0% 0 2 7.7 7.15	Dissolved Oxy	/aen-ma/L											
Negative Contro 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0707 1.08% 0 25 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0707 1.08% 0 50 2 6.15 5.515 6.785 6.1 6.2 0.05001 0.0707 1.18% 0 00 2 6.6 6.586 6.614 6.6 6.6 0 0 0.0707 1.08% 0 Ourerall 8 6.463 5.15 6.785 6.1 6.6 0 0 0.0707 0.08 0 0.0707 1.08% 0 Overall 8 6.463 6.6 6.6 6.6 0 0 0.0707 0.08 0 0.0707 0.9% 0 Co-% Control Type Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% QA Cour 100	-		Coun	t Mean	95	5% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
25 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0707 1.08% 0 50 2 6.15 5.515 6.785 6.1 6.2 0.05001 0.07072 1.18% 0 100 2 6.6 6.586 6.1 6.6 0 0 0.0707 1.08% 0 0ucerall 8 6.463 - 6.1 6.6 0 0 0.0707 0.0% 0 0ucerall 8 6.463 - 6.1 6.6 0 0 0.0707 0.0% 0 0 0ucerall 8 6.463 - 6.1 6.6 0 0 0.0707 0.0% 0 <td< td=""><td>0</td><td></td><td>2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	0		2										
50 2 6.15 5.515 6.785 6.1 6.2 0.05001 0.07072 1.15% 0 100 2 6.6 6.586 6.614 6.6 6.6 0 0 0.0% 0 Overall 8 6.463 6.614 6.6 6.6 0 0 0.0% 0 pH-Units 8 6.463 55% UCL 95% UCL Min Max Std Err Std Dev CV% QA Cour 0 Negative Contro 2 7.8 7.215 8.485 7.8 7.8 0 0 0.0% 0 25 2 7.7 7.15 8.385 7.7 7.8 0.0501 0.07072 0.91% 0 100 2 7.7 7.698 7.702 7.7 7.8 0.05001 0.07072 0.91% 0 Stalinity-ppt 2 7.7 7.698 7.77 7.7 7.9 0 0.0% 0 Std Err Std Dev CV% QA Cour 0 0.0% 0 <td>25</td> <td>0</td> <td></td> <td>6.55</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	25	0		6.55									
100 2 6.6 6.586 6.614 6.6 6.6 0 0 0.0% 0 Overall 8 6.463 6.1 6.6 6.6 0 0 0.0% 0 pH-Units C-% Control Type Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% QA Cour 0 Negative Contro 2 7.85 7.215 8.485 7.8 7.9 0.05 0.07071 0.9% 0 25 2 7.8 7.787 7.813 7.8 7.8 0 0 0.07072 0.91% 0 100 2 7.7 7.698 7.702 7.7 7.7 0 0 0.0% 0 Salinity-ppt Court Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% QA Cour 0 Negative Contro 2 34 34 34 34 34 0 0 0.0% 0 255 2 3	50		2	6.15	5.	515	6.785	6.1	6.2	0.050	01 0.07072	1.15%	
Overall 8 6.463 6.1 6.6 0 (0%) pH-Units C-% Control Type Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% QA Cour 0 Negative Contro 2 7.85 7.215 8.485 7.8 7.9 0.05 0.07071 0.9% 0 25 2 7.8 7.787 7.813 7.8 7.8 0 0 0.0% 0 50 2 7.75 7.115 8.385 7.7 7.8 0.05001 0.07072 0.91% 0 100 2 7.7 7.698 7.702 7.7 7.9 0 0 0.0% 0 Overall 8 7.775 7.75 7.7 7.9 0 0 0.0% 0 Std Err Std Dev CV% QA Cour 0 0.0% 0 0 0 0 0 0 0	100		2	6.6	6.	586	6.614	6.6		0	0	0.0%	
Control Type Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% QA Court 0 Negative Contro 2 7.85 7.215 8.485 7.8 7.9 0.05 0.07071 0.9% 0 25 2 7.8 7.787 7.813 7.8 7.9 0.05001 0.07072 0.91% 0 500 2 7.7 7.698 7.702 7.7 7.7 0 0 0.0% 0 00verall 8 7.77 7.698 7.702 7.7 7.9 0 0 0.0% 0 Salinity-ppt Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% QA Court 0 Negative Contro 2 34 34 34 34 0 0 0.0% 0 50 2 34 34 34 34 0 0 0.0%	Overall		8	6.463				6.1	6.6				0 (0%)
Negative Contro 2 7.85 7.215 8.485 7.8 7.9 0.05 0.07071 0.9% 0 25 2 7.8 7.787 7.813 7.8 7.8 0 0 0.0% 0 50 2 7.75 7.115 8.385 7.7 7.8 0.05001 0.07072 0.91% 0 100 2 7.7 7.698 7.702 7.7 7.7 0 0 0.0% 0 Overall 8 7.775 7.698 7.77 7.9 0 0 0.0% 0 Salinity-ppt 8 7.775 7.7 7.9 0 0 0.0% 0 0 Negative Contro 2 34 34 34 34 0 0 0.0% 0 2 34 34 34 34 34 0 0 0.0% 0 2 34 34 34 34 34 0	pH-Units												
25 2 7.8 7.787 7.813 7.8 7.8 0 0 0.0% 0 50 2 7.75 7.115 8.385 7.7 7.8 0.05001 0.07072 0.91% 0 100 2 7.7 7.698 7.702 7.7 7.7 0 0 0.0% 0 Ouverall 8 7.77 7.698 7.702 7.7 7.7 0 0 0.0% 0 Salinity-ppt 8 7.77 7.698 7.70 7.7 7.9 0 0 0.0% 0 Salinity-ppt Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% QA Cour 0 Negative Contro 2 34 34 34 34 0 0 0.0% 0 20 14 34 34 34 34 0 0 0.0% 0 2100 2 34 34 34 34 0 0 0.0% 0	C-%	Control Type	Coun	t Mean	95	5% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
50 2 7.75 7.115 8.385 7.7 7.8 0.05001 0.07072 0.91% 0 100 2 7.7 7.698 7.702 7.7 7.7 0 0 0.0% 0 Overall 8 7.775 7.698 7.702 7.7 7.7 0 0 0.0% 0 Salinity-ppt 8 7.755 7.115 8.385 7.7 7.9 0 0.0% 0 0 0.0% 0 Salinity-ppt Control Type Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% QA Cour 0 Negative Contro 2 34 34 34 34 34 0 0 0.0% 0 25 2 34 34 34 34 34 0 0 0.0% 0 100 2 34 34 34 34 34 0 0 0.0% 0 Coverall 8 34 34 34 34 </td <td>0</td> <td>Negative Contro</td> <td>2</td> <td>7.85</td> <td>7.</td> <td>215</td> <td>8.485</td> <td>7.8</td> <td>7.9</td> <td>0.05</td> <td>0.07071</td> <td>0.9%</td> <td>0</td>	0	Negative Contro	2	7.85	7.	215	8.485	7.8	7.9	0.05	0.07071	0.9%	0
100 2 7.7 7.698 7.702 7.7 7.7 0 0 0.0% 0 Overall 8 7.775 7.9 7.9 0 0 0.0% 0 Salinity-ppt Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% QA Cour 0 Negative Contro 2 34 34 34 34 34 0 0 0.0% 0 25 2 34 34 34 34 34 0 0 0.0% 0 100 2 34 34 34 34 34 0 0 0.0% 0 100 2 34 34 34 34 34 0 0 0.0% 0 100 2 34 34 34 34 0 0 0 0 0 100 2 34 34 34 34 0 0 0 0 0 0 0 0	25		2	7.8	7.	787	7.813	7.8	7.8	0	0	0.0%	0
Deverall 8 7.775 7.7 7.9 0 (0%) Salinity-ppt Control Type Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% QA Cour 0 Negative Contro 2 34 34 34 34 0 0 0.0% 0 25 2 34 34 34 34 0 0 0.0% 0 50 2 34 34 34 34 0 0 0.0% 0 100 2 34 34 34 34 0 0 0.0% 0 Deverall 8 34 34 34 0 0 0.0% 0 Deverall 8 34 34 34 34 0 0 0.0% 0 Deverall 8 34 34 34 0 0 0.0% 0 Deverall 8	50		2	7.75	7.	115	8.385	7.7	7.8	0.050	01 0.07072	0.91%	0
Salinity-ppt Control Type Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% QA Court 0 Negative Contro 2 34 34 34 34 34 0 0 0.0% 0 25 2 34 34 34 34 34 0 0 0.0% 0 50 2 34 34 34 34 34 0 0 0.0% 0 100 2 34 34 34 34 34 0 0 0.0% 0 Overall 8 34 34 34 34 0 0 0.0% 0 Overall 8 34 34 34 34 0 0 0.0% 0 Dverall 8 34 34 34 34 0 0 0.0% 0 C-% Control Type Count Mean </td <td>100</td> <td></td> <td>2</td> <td>7.7</td> <td>7.</td> <td>698</td> <td>7.702</td> <td>7.7</td> <td>7.7</td> <td>0</td> <td>0</td> <td>0.0%</td> <td>0</td>	100		2	7.7	7.	698	7.702	7.7	7.7	0	0	0.0%	0
C-% Control Type Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% QA Court 0 Negative Contro 2 34 34 34 34 0 0 0.0% 0 25 2 34 34 34 34 0 0 0.0% 0 50 2 34 34 34 34 0 0 0.0% 0 50 2 34 34 34 34 0 0 0.0% 0 100 2 34 34 34 34 0 0 0.0% 0 Overall 8 34 34 34 0 0 0.0% 0 Overall 8 34 34 34 34 0 0 0.0% QA Court Overall 8 34 14.21 15.49 14.8 14.9 0.05004 0.07077<	Overall		8	7.775				7.7	7.9				0 (0%)
Negative Contro 2 34	Salinity-ppt												
25 2 34 34 34 34 34 34 0 0 0.0% 0 50 2 34 34 34 34 34 0 0 0.0% 0 100 2 34 34 34 34 0 0 0.0% 0 100 2 34 34 34 34 0 0 0.0% 0 Overall 8 34 34 34 34 0 0 0.0% 0 Temperature-°C C 8 34 - 34 34 - 0 0.0% 0 0 Negative Contro 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0 25 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0 50 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0 100 <td>C-%</td> <td>Control Type</td> <td>Coun</td> <td>t Mean</td> <td>95</td> <td>5% LCL</td> <td>95% UCL</td> <td>Min</td> <td>Max</td> <td>Std E</td> <td>rr Std Dev</td> <td>CV%</td> <td>QA Count</td>	C-%	Control Type	Coun	t Mean	95	5% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
50 2 34 34 34 34 34 34 0 0 0.0% 0 100 2 34 34 34 34 34 0 0 0.0% 0 Overall 8 34 34 34 34 0 0 0.0% 0 Temperature-°C Control Type Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% QA Cour 0 Negative Contro 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0 25 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0 50 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0 60 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0 100 2 14.85 14.21 15.49	0	Negative Contro	2	34	34	1	34	34	34	0	0	0.0%	0
100 2 34 34 34 34 34 0 0 0.0% 0 Overall 8 34 34 34 34 34 34 0 0 0.0% 0 Temperature-°C Control Type Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% QA Cour 0 Negative Contro 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0 25 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0 50 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0 60 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0 100 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0	25		2	34	34	1	34	34	34	0	0	0.0%	0
B 34 34 34 0 (0%) Temperature-°C Control Type Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% QA Cour 0 Negative Contro 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0 25 2 14.75 14.11 15.39 14.7 14.8 0.05002 0.07075 0.48% 0 50 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0 50 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0 100 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0	50		2	34	34	1	34	34	34	0	0	0.0%	0
Comportature-°C Control Type Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% QA Cour 0 Negative Contro 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0 25 2 14.75 14.11 15.39 14.7 14.8 0.05002 0.07075 0.48% 0 50 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0 60 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0 100 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0	100				34	1	34			0	0	0.0%	
C-% Control Type Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% QA Court 0 Negative Contro 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0 25 2 14.75 14.11 15.39 14.7 14.8 0.05002 0.07075 0.48% 0 50 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0 100 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0	Overall		8	34				34	34				0 (0%)
D Negative Contro 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0 25 2 14.75 14.11 15.39 14.7 14.8 0.05002 0.07075 0.48% 0 25 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0 50 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0 100 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0	Temperature-°	C											
25 2 14.75 14.11 15.39 14.7 14.8 0.05002 0.07075 0.48% 0 50 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0 100 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0	C-%	Control Type	Count	t Mean	95	5% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
50214.8514.2115.4914.814.90.050040.070770.48%0100214.8514.2115.4914.814.90.050040.070770.48%0	0	Negative Contro	2	14.85	14	1.21	15.49	14.8	14.9	0.050	04 0.07077	0.48%	0
50 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0 100 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 0.48% 0	25		2	14.75	14	1.11	15.39	14.7	14.8	0.0500	0.07075	0.48%	0
	50		2	14.85	14	1.21	15.49	14.8	14.9	0.0500	0.07077	0.48%	
Strength 8 14.83 14.7 14.9 0 (0%)	100		2	14.85	14	1.21	15.49	14.8	14.9	0.0500	0.07077	0.48%	0
	Overall		8	14.83				14.7	14.9				0 (0%)

Analyst:

QA[__

009-923-732-3

CETIS™ v1.8.7.11

WST0116.086urcf | 14-5529-3936

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009-923-732-3

Analyst:______QA:_____



March 31, 2016

Mr Dan McCoy Weston Solutions 5817 Dryden Place, Suite 101 Carlsbad, CA 92008

Dear Mr. McCoy:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms, EPA/R-95/136.* "All acceptability criteria were met and the concentration-response was normal. Test was set within holding time, reference toxicant was within limits, and all other TAC was met. This is a valid test." Results were as follows:

CLIENT: SAMPLE I.D.: DATE RECEIVED: ABC LAB. NO.: Weston Solutions LACDPW-010616-ASBS-S02-POST 1/8/2016 WST0116.085

MYTILUS SHELL DEVELOPMENT BIOASSAY

NOEC = TUc =	100.00 % 1.00
EC25 = EC50 =	>100.00 % >100.00 %

very truly, Scott Johnson

Scott Johnson Laboratory Director

CETIS Summary Report

 Report Date:
 31 Mar-16 10:40 (p 1 of 1)

 Test Code:
 WST0116.085myt | 02-6240-6477

Mussel Shell I	Development Te	st								Aquatio	c Bi	oassay & (Consulting	g Labs, Inc
Batch ID: Start Date: Ending Date: Duration:	13-6852-8059 08 Jan-16 13:00 10 Jan-16 13:00 48h) Prot	ocol: cies:	EP# Myt	velopment-S A/600/R-95/ ilis galloprov Isbad Aqual	136 (1995) vincialis			Analy Dilue Brine Age:	nt: L	abo	Freas ratory Wate Applicable	ər	
Sample ID:	14-1753-1095	Cod	e:	WS	T0116.085r	n			Clien	t: V	Vest	on Solution	IS	
•	06 Jan-16 16:20) Mate	erial:	San	nple Water				Proje	ct: L	ACE	OPW MALI	BU ASBS	
Receive Date:	08 Jan-16 10:00) Sou	rce:	Bioa	assay Repo	rt								
Sample Age:	45h	Stat	ion:	LAC	CDPW-0106	16-ASBS-S	02-Post							
Comparison S	Summary													
Analysis ID	Endpoint		NOEI	L	LOEL	TOEL	PMSD	τU		Method	ł			
20-6506-1092	Combined Prop	ortion Norm	100		>100	NA	2.83%	1		Dunnet	t Mu	ultiple Com	parison Te	st
Point Estimate	e Summary							-						
Analysis ID	Endpoint		Leve		%	95% LCL	95% UCL	τU		Method	dt			
08-6621-3906	Combined Prop	ortion Norm	EC5		>100	N/A	N/A	<1		Linear	Inter	rpolation (IC	CPIN)	
			EC10)	>100	N/A	N/A	<1						
			EC15	5	>100	N/A	N/A	<1						
			EC20)	>100	N/A	N/A	<1						
			EC25		>100	N/A	N/A	<1						
			EC40)	>100	N/A	N/A	<1						
			EC50)	>100	N/A	N/A	<1						
Test Acceptab	oility													
Analysis ID	Endpoint		Attrik	oute		Test Stat	TAC Limi	its		Overla	р	Decision		
20-6506-1092	Combined Prop	ortion Norm	PMSI	D		0.02835	NL - 0.25			No		Passes A	cceptability	/ Criteria
Combined Pro	portion Normal	Summary												
C-%	Control Type	Count	Mean	<u>۱</u>	95% LCL	95% UCL	Min	Max	x	Std Er	r	Std Dev	CV%	%Effect
0	Negative Control	5	0.955	52	0.9312	0.9791	0.9372	0.98	821	0.0086	26	0.01929	2.02%	0.0%
25		5	0.945		0.928	0.9626	0.9327	0.96		0.0062		0.01397	1.48%	1.03%
50		5	0.958		0.946	0.9714	0.9462	0.96		0.0045		0.01023	1.07%	-0.38%
100		5	0.964	1	0.9371	0.9911	0.9372	0.98	865	0.0097	22	0.02174	2.26%	-0.94%
	oportion Normal	Detail												
	Control Type	Rep 1	Rep 2		Rep 3	Rep 4	Rep 5							
D	Negative Control	0.9462	0.937	2	0.9686	0.9821	0.9417							
25		0.9462	0.932		0.9686	0.9417	0.9372							
50		0.9686	0.950)7	0.9686	0.9596	0.9462							
100		0.9372	0.968	86	0.9865	0.9462	0.9821							
Combined Pro	oportion Normal	Binomials												
	Control Type	Rep 1	Rep 2	2	Rep 3	Rep 4	Rep 5							
0	Negative Control	211/223	209/2	223	216/223	219/223	210/223							
25		211/223	208/2	223	216/223	210/223	209/223							
50		216/223	212/2	223	216/223	214/223	211/223							
							a. (a. (a.							

100

CETIS™ v1.8.7.11

216/223 220/223 211/223 219/223

209/223

Analyst:_____ QA:____

Aquatic Bioassay & Consulting Labs, Inc. **Mussel Shell Development Test Combined Proportion Normal CETIS Version:** CETISv1.8.7 Analysis ID: 20-6506-1092 Endpoint: Parametric-Control vs Treatments **Official Results:** Yes Analyzed: 31 Mar-16 10:36 Analysis: Joe Freas Batch ID: 13-6852-8059 Test Type: **Development-Survival** Analyst: EPA/600/R-95/136 (1995) Diluent: Laboratory Water 08 Jan-16 13:00 Protocol: Start Date: Mytilis galloprovincialis Brine: Not Applicable Ending Date: 10 Jan-16 13:00 Species: Carlsbad Aquafarms CA Age: **Duration:** 48h Source: Client: Weston Solutions 14-1753-1095 Code: WST0116.085m Sample ID: Sample Date: 06 Jan-16 16:20 Material: Sample Water Project: LACDPW MALIBU ASBS **Bioassay Report** Receive Date: 08 Jan-16 10:00 Source: LACDPW-010616-ASBS-S02-Post Station: Sample Age: 45h PMSD NOEL LOEL TOEL TU Alt Hyp Trials Seed Data Transform Zeta 100 >100 NA 2.83% 1 C > T NA NA Angular (Corrected) NA **Dunnett Multiple Comparison Test** Test Stat Critical Decision(a:5%) MSD DF P-Value P-Type Control vs C-% 8 CDF Non-Significant Effect **Negative Control** 25 0.9085 2.227 0.063 0.3682 0.063 8 0.8135 CDF Non-Significant Effect 50 -0.1923 2.227 2.227 0.063 8 0.9530 CDF Non-Significant Effect 100 -0.9056 **Test Acceptability Criteria** Attribute Test Stat TAC Limits Overlap Decision Passes Acceptability Criteria PMSD 0.02835 NL - 0.25 No **ANOVA** Table Decision(a:5%) DF F Stat P-Value Source Sum Squares Mean Square 3 1.116 0.3720 Non-Significant Effect Between 0.006645774 0.002215258 16 0.001985584 Error 0.03176935 19 Total 0.03841512 **Distributional Tests** Test Stat Critical **P-Value** Decision(a:1%) Attribute Test 3.018 11.34 0.3888 Equal Variances Variances Bartlett Equality of Variance 5.953 0.2241 Equal Variances Variances Mod Levene Equality of Variance 1.679 5.292 0.1109 Equal Variances Variances Levene Equality of Variance 2.351 0.9636 0.866 0.6182 Normal Distribution Shapiro-Wilk W Normality Distribution Normal Distribution 0.5417 0.1282 Distribution Kolmogorov-Smirnov D 0.2235 0.6624 2.576 0.5077 Normal Distribution Distribution **D'Agostino Skewness** Normal Distribution Distribution D'Agostino Kurtosis 0.8484 2.576 0.3962 D'Agostino-Pearson K2 Omnibus 1.159 0.5603 Normal Distribution 9.21 Distribution Normal Distribution Anderson-Darling A2 Normality 0.3367 3.878 0.5101 Distribution **Combined Proportion Normal Summary Control Type** 95% LCL 95% UCL Median Min Max Std Err CV% %Effect C-% Count Mean 0.9791 0.9462 0.9372 0.9821 0.008626 2.02% 0.0% Negative Control 5 0.9312 0 0.9552 0.9686 0.006246 1.48% 1.03% 0.9453 0.928 0.9626 0.9417 0.9327 25 5 0.9596 0.9462 0.9686 0.004573 1.07% -0.38% 5 0.9587 0.946 0.9714 50 0.9686 0.9372 0.9865 0.009722 2.26% -0.94% 5 0.9641 0.9911 0.9371 100 Angular (Corrected) Transformed Summary Std Err CV% %Effect C-% **Control Type** Count Mean 95% LCL 95% UCL Median Min Max 1.425 1.337 1.318 1.436 0.02273 3.73% 0.0% 0 Negative Contro 5 1.362 1.299 1.378 1.393 0.01482 2.48% 1.88% 1.327 1.308 25 5 1.336 1.295 1.88% -0.4% 5 1.367 1.336 1.399 1.369 1.337 1.393 0.0115 50 1.455 0.02683 4.32% -1.87% 5 1.388 1.313 1.462 1.393 1.318 100

Report Date: Test Code:

31 Mar-16 10:40 (p 2 of 2) WST0116.085myt | 02-6240-6477

Mussel Shell	Development Te	st					Aquatic Bi	oassay & Consulting Labs, Inc.
Analysis ID: Analyzed:	20-6506-1092 31 Mar-16 10:36		•	Combined Pro Parametric-Co	-		CETIS Version: Official Results:	CETISv1.8.7 Yes
Combined P	oportion Normal	Detail						
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5		
0	Negative Control	0.9462	0.9372	0.9686	0.9821	0.9417		
25		0.9462	0.9327	0.9686	0.9417	0.9372		
50		0.9686	0.9507	0.9686	0.9596	0.9462		
100		0.9372	0.9686	0.9865	0.9462	0.9821		
Angular (Cor	rected) Transforn	ned Det	ail					
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5		
0	Negative Control	1.337	1.318	1.393	1.436	1.327		
25		1.337	1.308	1.393	1.327	1.318		
50		1.393	1.347	1.393	1.369	1.337		
100		1.318	1.393	1.455	1.337	1.436		
Combined P	oportion Normal	Binomi	als					
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5		
0	Negative Control	211/22	3 209/22	3 216/223	219/223	210/223		
25		211/22	3 208/22	3 216/223	210/223	209/223		

214/223

211/223

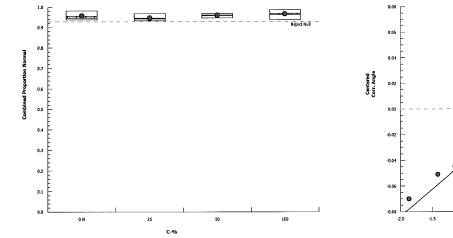
211/223

219/223

Graphics

50

100



212/223

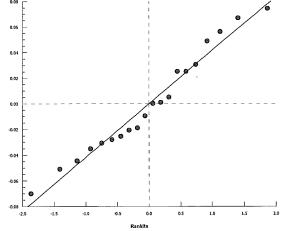
216/223

216/223

220/223

216/223

209/223



____QA:_____

Report Date: Test Code:

31 Mar-16 10:40 (p 1 of 2) WST0116.085myt | 02-6240-6477

Musse	I Shell I	Development Te	st						Aquat	ic Bioassay	& Consultin	g Labs, Ir
Analys	is ID:	08-6621-3906	End	point:	Combined Prop	ortion Norm	nal	CET	'IS Versi	on: CETIS	v1.8.7	
Analyz	ed:	31 Mar-16 10:36	6 Ana	lysis:	Linear Interpola	ation (ICPIN)	Offi	cial Res	u lts : Yes		
Batch	ID:	13-6852-8059	Test	: Type:	Development-S	urvival		Ana	lyst:	Joe Freas		
Start D	ate:	08 Jan-16 13:00		ocol:	EPA/600/R-95/			Dilu		Laboratory W	/ater	
Ending	Date:	10 Jan-16 13:00) Spe	cies:	Mytilis galloprov	vincialis		Brin	ie:	Not Applicab	е	
Duratio	on:	48h	Sou	rce:	Carlsbad Aquat	farms CA		Age	:			
Sample	e ID:	14-1753-1095	Cod	e:	WST0116.085r	n		Clie	nt:	Weston Solu	tions	
Sample	e Date:	06 Jan-16 16:20) Mate	erial:	Sample Water			Proj	ect:	LACDPW MA	LIBU ASBS	
Receiv	e Date:	08 Jan-16 10:00) Sou	rce:	Bioassay Repo							
Sample	e Age:	45h	Stat	ion:	LACDPW-0106	16-ASBS-S	02-Post					
∟inear	Interpo	lation Options										
(Tran	sform	Y Transform	See	d	Resamples	Exp 95%				41-0945-0000 -0		
Linear		Linear	0		280	Yes	Two-	Point Interp	olation			
°oint E	Estimate	es										
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL						
EC5	>100	N/A	N/A	<1	NA	NA						
EC10 EC15	>100 >100	N/A N/A	N/A N/A	<1 <1	NA NA	NA NA						
	>100	N/A N/A	N/A N/A	<1	NA	NA						
EC20 EC25	>100	N/A	N/A N/A	<1	NA	NA						
EC25 EC40	>100	N/A	N/A	<1	NA	NA						
EC40 EC50	>100	N/A N/A	N/A N/A	<1	NA	NA						
		portion Normal					lated Varia	to(A/B)				
C-%		ontrol Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effec	t A	в
0		egative Control	5	0.955		0.9821	0.008626	0.01929	2.02%		1065	1115
25		-9	5	0.945		0.9686	0.006246	0.01397	1.48%		1054	1115
50			5	0.958		0.9686	0.004573	0.01023	1.07%			1115
100	~		5	0.964		0.9865	0.009722	0.02174	2.26%			1115
Combi	ned Pro	portion Normal	Detail									
-%	с	ontrol Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
)	N	egative Control	0.9462	0.937	2 0.9686	0.9821	0.9417					
25			0.9462	0.932	7 0.9686	0.9417	0.9372					
50			0.9686	0.950	7 0.9686	0.9596	0.9462					
100			0.9372	0.968	6 0.9865	0.9462	0.9821					
Combi	ned Pro	portion Normal	Binomials									
		Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
C-%		Negative Control		209/2		219/223	210/223					
C-% 0		,										
			211/223	208/2	23 216/223	210/223	209/223					
0			211/223 216/223	208/2 212/2		210/223 214/223	209/223 211/223					

Analyst:_____ QA:_____

CETIS Ana	alytical Report			Report Date: Test Code:	31 Mar-16 10:40 (p 2 of 2) WST0116.085myt 02-6240-6477			
Mussel Shell	Development Test			Aquatic Bioassay & Consulting Lab				
Analysis ID: Analyzed:	08-6621-3906 31 Mar-16 10:36	Endpoint: Analysis:	Combined Proportion Normal Linear Interpolation (ICPIN)	CETIS Version: Official Results:	CETISv1.8.7 Yes			
Graphics			and a second					
^{1.0} F		A						
0.9								
0.8								
uoppod								
24 0.5								
4 0.4 -								
0.3								
0.2								

000-055-186-4

0.1

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1 20

40 C-%

CETIS™ v1.8.7.11

Analyst:

1 QA:2___

CETIS Measurement Report

 Report Date:
 31 Mar-16 10:40 (p 1 of 2)

 Test Code:
 WST0116.085myt | 02-6240-6477

								real code.	VV310110	5.005myr	02-0240-0477
Mussel Shell	Development To	est						Aqua	tic Bioassay &	Consultin	g Labs, Inc.
Batch ID:	13-6852-8059		Test Type:	Development-	Survival			Analyst:	Joe Freas		
Start Date:	08 Jan-16 13:0	0	Protocol:	EPA/600/R-95	/136 (1995)			Diluent:	Laboratory Wa	ter	
Ending Date:	10 Jan-16 13:0	0	Species:	Mytilis gallopro	ovincialis			Brine:	Not Applicable		
Duration:	48h		Source:	Carlsbad Aqua	afarms CA			Age:			
Sample ID:	14-1753-1095		Code:	WST0116.085	m			Client:	Weston Solution	ons	
Sample Date:	06 Jan-16 16:2	0	Material:	Sample Water				Project:	LACDPW MAL	IBU ASBS	
Receive Date:	: 08 Jan-16 10:0	0	Source:	Bioassay Rep	ort						
Sample Age:	45h		Station:	LACDPW-010	616-ASBS-8	602-Post					
Dissolved Ox	ygen-mg/L										
C-%	Control Type	Coun	t Mean	95% LCL	95% UCL	Min	Мах	Std E	rr Std Dev	CV%	QA Count
0	Negative Contro	2	6.55	5.915	7.185	6.5	6.6	0.049	99 0.0707	1.08%	0
25		2	6.4	3.859	8.941	6.2	6.6	0.2	0.2828	4.42%	0
50		2	6.45	5.815	7.085	6.4	6.5	0.050	01 0.07072	1.1%	0
100		2	6.55	2.103	11	6.2	6.9	0.35	0.495	7.56%	0
Overall		8	6.488			6.2	6.9				0 (0%)
pH-Units											
C-%	Control Type	Coun	t Mean	95% LCL	95% UCL	Min	Мах	Std E	rr Std Dev	CV%	QA Count
0	Negative Contro	2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
25		2	7.8	7.787	7.813	7.8	7.8	0	0	0.0%	0
50		2	7.8	7.787	7.813	7.8	7.8	0	0	0.0%	0
100		2	7.75	7.115	8.385	7.7	7.8	0.050	01 0.07072	0.91%	0
Overall		8	7.813			7.7	7.9				0 (0%)
Salinity-ppt											
C-%	Control Type	Coun	t Mean	95% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
0	Negative Contro	2	34	34	34	34	34	0	0	0.0%	0
25		2	34	34	34	34	34	0	0	0.0%	0
50		2	34	34	34	34	34	0	0	0.0%	0
100		2	34	34	34	34	34	0	0	0.0%	0
Overall		8	34			34	34				0 (0%)
Temperature-	°C										
C-%	Control Type	Coun	t Mean	95% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
0	Negative Control	2	14.85	14.21	15.49	14.8	14.9	0.050		0.48%	0
25		2	14.85	14.21	15.49	14.8	14.9	0.050	04 0.07077	0.48%	0
50		2	14.85	14.21	15.49	14.8	14.9	0.050		0.48%	0
100		2	14.85	14.21	15.49	14.8	14.9	0.050	04 0.07077	0.48%	0
Overall		8	14.85			14.8	14.9				0 (0%)

Aquatic Bioassay & Consulting Labs, Inc.

Mussel Shell Development Test

Dissolved	Oxygen-mg/L				
C-%	Control Type	1	2		
0	Negative Contr	6.6	6.5		
25		6.6	6.2		
50		6.5	6.4		
100		6.9	6.2		
pH-Units					
C-%	Control Type	1	2		
0	Negative Contr	7.9	7.9		
25		7.8	7.8		
50		7.8	7.8		
100		7.8	7.7	 	
Salinity-pp	ot				
C-%	Control Type	1	2		
0	Negative Contr	34	34		
25		34	34		
50		34	34		
100		34	34		
Temperatu	ıre-°C				
C-%	Control Type	1	2		
0	Negative Contr	14.8	14.9		
25		14.8	14.9		
50		14.8	14.9		

100

14.8

14.9



March 31, 2016

Mr Dan McCoy Weston Solutions 5817 Dryden Place, Suite 101 Carlsbad, CA 92008

Dear Mr. McCoy:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms, EPA/R-95/136.* "All acceptability criteria were met and the concentration-response was normal. Test was set within holding time, reference toxicant was within limits, and all other TAC was met. This is a valid test." Results were as follows:

CLIENT: SAMPLE I.D.: DATE RECEIVED: ABC LAB. NO.: Weston Solutions LACDPW-010616-ASBS-S01-POST 1/8/2016 WST0116.086

MYTILUS SHELL DEVELOPMENT BIOASSAY

NOEC = 100.00 %TUc = 1.00EC25 = >100.00 %EC50 = >100.00 %

Yours very truly, Scott Johnson Laboratory Director

CETIS Summary Report

 Report Date:
 31 Mar-16 10:38 (p 1 of 1)

 Test Code:
 WST0116.086myt | 00-3807-4967

								Test C				
Mussel Shell [Development Tes	st							Aquatic	Bioassay &	Consulting	g Labs, Inc
Batch ID:	20-0005-8041	Test	Type:	Development-S	Survival			Analys	it: Jo	e Freas		
Start Date:	08 Jan-16 13:01	Prot	ocol:	EPA/600/R-95/	136 (1995)			Diluen	t: La	boratory Wate	er	
Ending Date:	10 Jan-16 13:01	Spe	cies:	Mytilis gallopro	vincialis			Brine:	No	ot Applicable		
Duration:	48h	Sou	rce:	Carlsbad Aqua	farms CA			Age:				
Sample ID:	04-5722-4904	Cod	e:	WST0116.086r	n			Client:	W	eston Solutior	าร	
Sample Date:	06 Jan-16 17:15	Mate	erial:	Sample Water				Projec	t: LA	CDPW MALI	BU ASBS	
Receive Date:	08 Jan-16 10:00	Sou	rce:	Bioassay Repo	rt							
Sample Age:	44h	Stati	ion:	LACDPW-0106	16-ASBS-S	01-Post						
Comparison S	Summary											
Analysis ID	Endpoint		NOEL	LOEL	TOEL	PMSD	τU	1	Method			
12-3606-7304	Combined Propo	ortion Norm	100	>100	NA	2.57%	1		Dunnett	Multiple Com	parison Te	st
Point Estimate	e Summary											
Analysis ID	Endpoint		Level	%	95% LCL	95% UCL	TU		Method			
02-4549-6946	Combined Propo	ortion Norm		>100	N/A	N/A	<1	l	Linear Ir	nterpolation (I	CPIN)	
			EC10	>100	N/A	N/A	<1					
			EC15	>100	N/A	N/A	<1					
			EC20	>100	N/A	N/A	<1					
			EC25	>100	N/A	N/A	<1					
			EC40	>100	N/A	N/A	<1					
			EC50	>100	N/A	N/A	<1					
Test Acceptab	ility											
Analysis ID	Endpoint		Attrib		Test Stat	TAC Limi	ts		Overlap			
12-3606-7304	Combined Propo	ortion Norm	PMSD	•	0.02572	NL - 0.25			No	Passes A	cceptability	Criteria
	portion Normal	Summary										
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max		Std Err	Std Dev	CV%	%Effec
C-%	-	Count 5	0.9552	2 0.934	0.9764	0.9372	0.97	76	0.00763	6 0.01708	1.79%	0.0%
C-% 0 25	Control Type	Count 5 5	0.9552 0.9632	2 0.934 2 0.9488	0.9764 0.9776	0.9372 0.9462	0.97 0.97	76 76	0.00763 0.00519	6 0.01708 1 0.01161	1.79% 1.21%	0.0% -0.85%
C-% 0 25 50	Control Type	Count 5 5 5 5	0.9552 0.9632 0.9596	2 0.934 2 0.9488 6 0.9351	0.9764 0.9776 0.9842	0.9372 0.9462 0.9327	0.97 0.97 0.98	76 76 21	0.00763 0.00519 0.00885	6 0.01708 1 0.01161 6 0.0198	1.79% 1.21% 2.06%	0.0% -0.85% -0.47%
C-% 0 25 50 100	Control Type Negative Control	Count 5 5 5 5 5	0.9552 0.9632	2 0.934 2 0.9488 6 0.9351	0.9764 0.9776	0.9372 0.9462	0.97 0.97	76 76 21	0.00763 0.00519	6 0.01708 1 0.01161 6 0.0198	1.79% 1.21%	0.0% -0.85%
C-% 0 25 50 100 Combined Pro	Control Type Negative Control	Count 5 5 5 5 5 Detail	0.9552 0.9632 0.9596 0.9848	2 0.934 2 0.9488 3 0.9351 3 0.9763	0.9764 0.9776 0.9842 0.9932	0.9372 0.9462 0.9327 0.9776	0.97 0.97 0.98	76 76 21	0.00763 0.00519 0.00885	6 0.01708 1 0.01161 6 0.0198	1.79% 1.21% 2.06%	0.0% -0.85% -0.47%
C-% 0 25 50 100 Combined Pro	Control Type Negative Control oportion Normal Control Type	Count 5 5 5 5 5 Detail Rep 1	0.9552 0.9632 0.9596 0.9848 Rep 2	2 0.934 2 0.9488 3 0.9351 3 0.9763 Rep 3	0.9764 0.9776 0.9842 0.9932 Rep 4	0.9372 0.9462 0.9327 0.9776 Rep 5	0.97 0.97 0.98	76 76 21	0.00763 0.00519 0.00885	6 0.01708 1 0.01161 6 0.0198	1.79% 1.21% 2.06%	0.0% -0.85% -0.47%
C-% 0 25 50 100 Combined Pro C-%	Control Type Negative Control	Count 5 5 5 5 5 Detail Rep 1 0.9462	0.9552 0.9632 0.9596 0.9848 Rep 2 0.9686	2 0.934 2 0.9488 3 0.9351 3 0.9763 Rep 3 3 0.9372	0.9764 0.9776 0.9842 0.9932 Rep 4 0.9776	0.9372 0.9462 0.9327 0.9776 Rep 5 0.9462	0.97 0.97 0.98	76 76 21	0.00763 0.00519 0.00885	6 0.01708 1 0.01161 6 0.0198	1.79% 1.21% 2.06%	0.0% -0.85% -0.47%
C-% 0 25 50 100 Combined Pro C-% 0 25	Control Type Negative Control oportion Normal Control Type	Count 5 5 5 5 Detail Rep 1 0.9462 0.9776	0.9552 0.9632 0.9596 0.9848 Rep 2 0.9686 0.9462	2 0.934 2 0.9488 3 0.9351 3 0.9763 Rep 3 3 0.9372 2 0.9686	0.9764 0.9776 0.9842 0.9932 Rep 4 0.9776 0.9596	0.9372 0.9462 0.9327 0.9776 Rep 5 0.9462 0.9641	0.97 0.97 0.98	76 76 21	0.00763 0.00519 0.00885	6 0.01708 1 0.01161 6 0.0198	1.79% 1.21% 2.06%	0.0% -0.85% -0.47%
C-% 0 25 50 100 Combined Pro C-% 0 25 50	Control Type Negative Control oportion Normal Control Type	Count 5 5 5 5 Detail Rep 1 0.9462 0.9776 0.9821	0.9552 0.9632 0.9596 0.9848 Rep 2 0.9686 0.9462 0.9327	2 0.934 2 0.9488 3 0.9351 3 0.9763 Rep 3 3 0.9372 2 0.9686 7 0.9686	0.9764 0.9776 0.9842 0.9932 Rep 4 0.9776 0.9596 0.9462	0.9372 0.9462 0.9327 0.9776 Rep 5 0.9462 0.9641 0.9686	0.97 0.97 0.98	76 76 21	0.00763 0.00519 0.00885	6 0.01708 1 0.01161 6 0.0198	1.79% 1.21% 2.06%	0.0% -0.85% -0.47%
C-% 0 25 50 100 Combined Pro C-% 0 25 50	Control Type Negative Control oportion Normal Control Type	Count 5 5 5 5 Detail Rep 1 0.9462 0.9776	0.9552 0.9632 0.9596 0.9848 Rep 2 0.9686 0.9462	2 0.934 2 0.9488 3 0.9351 3 0.9763 Rep 3 3 0.9372 2 0.9686 7 0.9686	0.9764 0.9776 0.9842 0.9932 Rep 4 0.9776 0.9596	0.9372 0.9462 0.9327 0.9776 Rep 5 0.9462 0.9641	0.97 0.97 0.98	76 76 21	0.00763 0.00519 0.00885	6 0.01708 1 0.01161 6 0.0198	1.79% 1.21% 2.06%	0.0% -0.85% -0.47%
C-% 0 25 50 100 Combined Pro C-% 0 25 50 100	Control Type Negative Control oportion Normal Control Type	Count 5 5 5 5 Detail Rep 1 0.9462 0.9776 0.9821 0.9821	0.9552 0.9632 0.9596 0.9848 Rep 2 0.9686 0.9462 0.9327	2 0.934 2 0.9488 3 0.9351 3 0.9763 Rep 3 3 0.9372 2 0.9686 7 0.9686	0.9764 0.9776 0.9842 0.9932 Rep 4 0.9776 0.9596 0.9462	0.9372 0.9462 0.9327 0.9776 Rep 5 0.9462 0.9641 0.9686	0.97 0.97 0.98	76 76 21	0.00763 0.00519 0.00885	6 0.01708 1 0.01161 6 0.0198	1.79% 1.21% 2.06%	0.0% -0.85% -0.47%
C-% 0 25 50 100 Combined Pro 25 50 100 Combined Pro C-%	Control Type Negative Control Oportion Normal Control Type Negative Control Oportion Normal Control Type	Count 5 5 5 5 Detail Rep 1 0.9462 0.9776 0.9821 0.9821 Binomials Rep 1	0.9552 0.9632 0.9596 0.9848 Rep 2 0.9686 0.9462 0.9327 0.9955 Rep 2	2 0.934 2 0.9488 3 0.9351 3 0.9763 Rep 3 3 0.9372 2 0.9686 5 0.9821 Rep 3	0.9764 0.9776 0.9842 0.9932 Rep 4 0.9776 0.9596 0.9462 0.9865 Rep 4	0.9372 0.9462 0.9327 0.9776 Rep 5 0.9462 0.9641 0.9686 0.9776 Rep 5	0.97 0.97 0.98	76 76 21	0.00763 0.00519 0.00885	6 0.01708 1 0.01161 6 0.0198	1.79% 1.21% 2.06%	0.0% -0.85% -0.47%
C-% 0 25 50 100 Combined Pro C-% 100 Combined Pro C-% 0	Control Type Negative Control Oportion Normal Control Type Negative Control	Count 5 5 5 5 Detail Rep 1 0.9462 0.9776 0.9821 0.9821 Binomials Rep 1 211/223	0.9552 0.9632 0.9596 0.9848 Rep 2 0.9686 0.9462 0.9327 0.9955 Rep 2 216/22	2 0.934 2 0.9488 3 0.9351 3 0.9763 Rep 3 3 0.9372 2 0.9686 5 0.9821 Rep 3 23 209/223	0.9764 0.9776 0.9842 0.9932 Rep 4 0.9776 0.9596 0.9462 0.9865 Rep 4 218/223	0.9372 0.9462 0.9327 0.9776 Rep 5 0.9462 0.9641 0.9686 0.9776 Rep 5 211/223	0.97 0.97 0.98	76 76 21	0.00763 0.00519 0.00885	6 0.01708 1 0.01161 6 0.0198	1.79% 1.21% 2.06%	0.0% -0.85% -0.47%
C-% 0 25 50 100 Combined Pro C-% 0 25 50 100 Combined Pro C-% 0 25	Control Type Negative Control Oportion Normal Control Type Negative Control Oportion Normal Control Type	Count 5 5 5 5 Detail Rep 1 0.9462 0.9776 0.9821 0.9821 0.9821 Binomials Rep 1 211/223 218/223	0.9552 0.9632 0.9596 0.9844 Rep 2 0.9686 0.9462 0.9327 0.9955 Rep 2 216/22 211/22	2 0.934 2 0.9488 3 0.9351 3 0.9763 Rep 3 3 0.9372 2 0.9686 5 0.9821 Rep 3 2 2 09/223 2 3 216/223	0.9764 0.9776 0.9842 0.9932 Rep 4 0.9776 0.9596 0.9462 0.9865 Rep 4 218/223 214/223	0.9372 0.9462 0.9327 0.9776 Rep 5 0.9462 0.9641 0.9686 0.9776 Rep 5 211/223 215/223	0.97 0.97 0.98	76 76 21	0.00763 0.00519 0.00885	6 0.01708 1 0.01161 6 0.0198	1.79% 1.21% 2.06%	0.0% -0.85% -0.47%
C-% 0 25 50 100 Combined Pro C-% 0 25 50 100 Combined Pro C-%	Control Type Negative Control Oportion Normal Control Type Negative Control Oportion Normal Control Type	Count 5 5 5 5 Detail Rep 1 0.9462 0.9776 0.9821 0.9821 Binomials Rep 1 211/223	0.9552 0.9632 0.9596 0.9848 Rep 2 0.9686 0.9462 0.9327 0.9955 Rep 2 216/22	2 0.934 2 0.9488 3 0.9351 3 0.9763 Rep 3 3 0.9372 2 0.9686 5 0.9821 Rep 3 23 209/223 23 216/223 23 216/223	0.9764 0.9776 0.9842 0.9932 Rep 4 0.9776 0.9596 0.9462 0.9865 Rep 4 218/223	0.9372 0.9462 0.9327 0.9776 Rep 5 0.9462 0.9641 0.9686 0.9776 Rep 5 211/223	0.97 0.97 0.98	76 76 21	0.00763 0.00519 0.00885	6 0.01708 1 0.01161 6 0.0198	1.79% 1.21% 2.06%	0.0% -0.85% -0.47%

							Test	Code:	WS10116.	086myt 0	0-3807-496
Mussel Shell	Development Te	st						Aquat	ic Bioassay & (Consulting	g Labs, Inc
Analysis ID:	12-3606-7304		Endpoint:	Combined Pro	portion Norm	nal	CET	IS Versi	on: CETISv1.	.8.7	
Analyzed:	31 Mar-16 10:3	5	Analysis:	Parametric-Co	ntrol vs Trea	tments	Offic	cial Resu	ults: Yes		
Batch ID:	20-0005-8041		Test Type:	Development-	Survival		Ana	lyst:	Joe Freas		
Start Date:	08 Jan-16 13:01	I	Protocol:	EPA/600/R-95	/136 (1995)		Dilu	ent: I	Laboratory Wate	er	
Ending Date:	10 Jan-16 13:01	l	•	Mytilis gallopro			Brin	e: I	Not Applicable		
Duration:	48h		Source:	Carlsbad Aqua	afarms CA		Age	:			
Sample ID:	04-5722-4904			WST0116.086			Clie		Weston Solutior		
	06 Jan-16 17:15			Sample Water			Proj	ect: I	LACDPW MALII	BU ASBS	
	08 Jan-16 10:00			Bioassay Repo							
Sample Age:	44h		Station:	LACDPW-010	616-ASBS-S	01-Post					
Data Transfor		Zeta	Alt Hy		Seed		PMSD	NOEL		TOEL	TU
Angular (Corre	cted)	NA	C > T	NA	NA		2.57%	100	>100	NA	1
Dunnett Multi	ple Comparison	Test									
Control	vs C-%		Test S	tat Critical		P-Value	P-Type		ion(α:5%)		
Negative Contr			-0.7436		0.057 8	0.9333	CDF		ignificant Effect		
	50		-0.494		0.057 8	0.8903	CDF		ignificant Effect		
	100		-3.521	2.227	0.057 8	1.0000	CDF	Non-S	ignificant Effect		
Test Acceptab	oility Criteria										
Attribute	Test Stat	TAC I		Overlap	Decision						
PMSD	0.02572	NL - ().25	No	Passes A	cceptability	Criteria				
ANOVA Table											
Source	Sum Squa	res	Mean	Square	DF	F Stat	P-Value	Decis	ion(α:5%)		
Between	0.0243517		0.0081		3	5.022	0.0122	Signifi	cant Effect		
Error	0.0258588		0.0016	16181	16						
Total	0.0502106	8			19						
Distributional											
Attribute	Test			Test Stat		P-Value	Decision				
Variances			of Variance	1.248	11.34	0.7415 0.7396	Equal Va				
Variances Variances			ality of Varia of Variance	nce 0.4236 1.241	5.953 5.292	0.7396	Equal Va Equal Va				
Distribution	Shapiro-V			0.9652	0.866	0.6519	Normal D		'n		
Distribution	Kolmogor		•	0.1193	0.2235	0.6786	Normal D				
Distribution	D'Agostin			0.4502	2.576	0.6526	Normal D	istributio	'n		
Distribution	D'Agostin	o Kurto	sis	0.9723	2.576	0.3309	Normal D	istributio	'n		
Distribution	-		son K2 Omni		9.21	0.5633	Normal D				
Distribution	Anderson	-Darlin	g A2 Normali	ty 0.2761	3.878	0.6856	Normal D	istributio	n		
Combined Pro	oportion Normal	Sumn	nary								
C-%	Control Type	Coun		95% LCL			Min	Max	Std Err	CV%	%Effect
0	Negative Control		0.9552		0.9764	0.9462	0.9372	0.9776		1.79%	0.0%
25		5	0.9632		0.9776	0.9641	0.9462	0.9776		1.21%	-0.85%
50		5	0.9596		0.9842	0.9686 0.9821	0.9327 0.9776	0.982 0.995		2.06% 0.69%	-0.47% -3.1%
100		5	0.9848	0.9763	0.9932	0.9021	0.9770	0.995	0.003041	0.09%	-3.170
	ected) Transforr										
C-%	Control Type	Coun		95% LCL			Min	Max	Std Err	CV%	%Effect
0	Negative Contro		1.361	1.307	1.415	1.337	1.318	1.42	0.01951	3.21%	0.0%
25 50		5 5	1.38	1.341	1.418	1.38	1.337	1.42	0.0138 0.02268	2.24% 3.69%	-1.39% -0.92%
50 100		5 5	1.373	1.31 1.41	1.436 1.49	1.393 1.436	1.308 1.42	1.436			
100		5	1.45	1.41	1.49	1.436	1.42	1.504	0.0144	2.22%	-6.58%

31 Mar-16 10:38 (p 2 of 2) Report Date: Test Code:

WST0116.086myt | 00-3807-4967

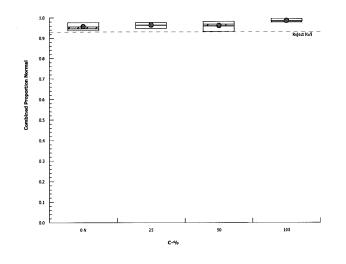
Mussel Shell	Development Te	st					Aquatic Bi	oassay & Consulting Labs, Inc
Analysis ID: Analyzed:	12-3606-7304 31 Mar-16 10:3			ombined Pro arametric-Co			CETIS Version: Official Results:	CETISv1.8.7 Yes
Combined P	roportion Normal	Detail						
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5		
0	Negative Control	0.9462	0.9686	0.9372	0.9776	0.9462		
25		0.9776	0.9462	0.9686	0.9596	0.9641		
50		0.9821	0.9327	0.9686	0.9462	0.9686		
100		0.9821	0.9955	0.9821	0.9865	0.9776		
Angular (Cor	rected) Transform	ned Deta	il					
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5		
0	Negative Control	1.337	1.393	1.318	1.42	1.337		
25		1.42	1.337	1.393	1.369	1.38		
50		1.436	1.308	1.393	1.337	1.393		
100		1.436	1.504	1.436	1.455	1.42		
Combined Pi	roportion Normal	Binomia	ls					
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5		
0	Negative Control	211/223	216/223	209/223	218/223	211/223		
25		218/223	211/223	216/223	214/223	215/223		<i>i</i>
50		219/223	208/223	216/223	211/223	216/223		

220/223

218/223

Graphics

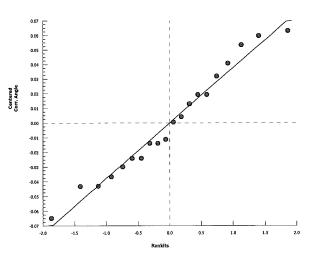
100



219/223

222/223

219/223



31 Mar-16 10:38 (p 1 of 2) Report Date: Test Code:

WST0116.086myt | 00-3807-4967

								Test	Code:	WST0116	3.086myt 0	0-3807-4
Musse	I Shell I	Development Te	st						Aquati	ic Bioassay 8	Consultin	g Labs, lı
Analys	is ID:	02-4549-6946	End	point:	Combined Prop	ortion Norm	nal	CET	S Versio	on: CETISv	1.8.7	
Analyz		31 Mar-16 10:35	5 Ana	lysis:	Linear Interpolation (ICPIN)				ial Resu	ı lts : Yes		
Batch	ID:	20-0005-8041	Test	t Type:	Development-S	urvival		Anal	yst: J	loe Freas		
Start D	ate:	08 Jan-16 13:01	Pro	tocol:	EPA/600/R-95/	136 (1995)		Dilu	ent: L	aboratory Wa	ter	
Ending	J Date:	10 Jan-16 13:01	Spe	cies:	Mytilis galloprov	vincialis		Brin	e: N	Not Applicable		
Duratio	on:	48h	Sou	rce:	Carlsbad Aquat	farms CA		Age				
Sample		04-5722-4904	Cod	le:	WST0116.086n	n		Clie		Weston Solution		
-		06 Jan-16 17:15		erial:	Sample Water			Proj	Project: LACDPW MAL			
Receiv	e Date:	08 Jan-16 10:00) Sou	rce:	Bioassay Repo	rt						
Sample	e Age:	44h	Stat	ion:	LACDPW-0106	16-ASBS-S	01-Post				. <u></u>	
Linear	Interpo	lation Options										
X Tran	sform	Y Transform			Resamples	Exp 95%			alati			
Linear		Linear	8203	3	280	Yes	1 WO-	Point Interp	olation			
	Estimate											
Level	%		95% UCL		95% LCL							
EC5	>100	N/A	N/A	<1	NA	NA						
EC10 EC15	>100 >100	N/A N/A	N/A N/A	<1 <1	NA NA	NA NA						
EC15	>100	N/A	N/A	<1	NA	NA						
EC25	>100	N/A	N/A	<1	NA	NA						
EC40	>100	N/A	N/A	<1	NA	NA						
EC50	>100	N/A	N/A	<1	NA	NA						
Combi	ned Pro	portion Normal	Summary			Calcu	lated Varia	te(A/B)				
C-%	с	ontrol Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	Α	в
0	N	egative Control	5	0.955	2 0.9372	0.9776	0.007636	0.01708	1.79%	0.0%	1065	1115
25			5	0.963	2 0.9462	0.9776	0.005191	0.01161	1.21%	-0.85%	1074	1115
50			5	0.959	6 0.9327	0.9821	0.008856	0.0198	2.06%	-0.47%	1070	1115
100			5	0.984	8 0.9776	0.9955	0.003041	0.0068	0.69%	-3.1%	1098	1115
Combi	ned Pro	portion Normal	Detail									
C-%		ontrol Type	Rep 1	Rep 2	· · · · · · · · · · · · · · · · · · ·	Rep 4	Rep 5	a de la deserva				
0	N	egative Control	0.9462	0.968		0.9776	0.9462					
25			0.9776	0.946		0.9596	0.9641					
50			0.9821	0.932		0.9462	0.9686					
100			0.9821	0.995	5 0.9821	0.9865	0.9776	,				
Combi	ned Pro	portion Normal		;								
<u>C-%</u>		Control Type	Rep 1	Rep 2		Rep 4	Rep 5					
0		Negative Control		216/2		218/223	211/223					
25			218/223	211/2		214/223	215/223					
50			219/223	208/2		211/223	216/223					
100			219/223	222/2	23 219/223	220/223	218/223					

CETIS Ana	alytical Report			Report Date: Test Code:	31 Mar-16 10:38 (p 2 of 2) WST0116.086myt 00-3807-4967		
Mussel Shell	Development Test			Aquatic Bioassay & Consulting Labs, Inc.			
Analysis ID: Analyzed:	02-4549-6946 31 Mar-16 10:35	Endpoint: Analysis:	Combined Proportion Normal Linear Interpolation (ICPIN)	CETIS Version: Official Results:	CETISv1.8.7 Yes		
Graphics							
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Termony not							
49 60 0.4							
0.3							
0.2							
0.1							

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20 40 60 60 100 C4%

<u>/</u> QA:<u>/</u>___

CETIS Measurement Report

Report Date: 31 Mar-16 10:38 (p 1 of 2) WST0116.086myt | 00-3807-4967 Test Code:

Mussel Shell	Development T	est				- · · ···		Aqua	tic Bioassay &	Consultin	ıg Labs, Inc.
Batch ID:	20-0005-8041		Test Type:	Development-	Survival			Analyst:	Joe Freas		
Start Date:	08 Jan-16 13:0	01	Protocol:	EPA/600/R-95	/136 (1995)			Diluent:	Laboratory Wa	ter	
Ending Date:	10 Jan-16 13:0	01	Species:	Mytilis gallopro	ovincialis			Brine:	Not Applicable		
Duration:	48h		Source:	Carlsbad Aqua	afarms CA			Age:			
Sample ID:	04-5722-4904		Code:	WST0116.086	im			Client:	Weston Solution	ons	
Sample Date:	06 Jan-16 17:1	5	Material:	Sample Water				Project:	LACDPW MAL	IBU ASBS	
Receive Date:	: 08 Jan-16 10:0	00	Source:	Bioassay Rep	ort						
Sample Age:	44h		Station:	LACDPW-010	616-ASBS-S	601-Post					
Dissolved Ox	ygen-mg/L										
C-%	Control Type	Coun	t Mean	95% LCL	95% UCL	Min	Мах	Std E	rr Std Dev	CV%	QA Count
0	Negative Control	o 2	6.7	5.429	7.971	6.6	6.8	0.099	99 0.1414	2.11%	0
25		2	6.55	5.915	7.185	6.5	6.6	0.049	99 0.0707	1.08%	0
50		2	6.35	4.444	8.256	6.2	6.5	0.15	0.2121	3.34%	0
100		2	6.35	3.173	9.527	6.1	6.6	0.25	0.3536	5.57%	0
Overall		8	6.488			6.1	6.8				0 (0%)
pH-Units											
C-%	Control Type	Count	t Mean	95% LCL	95% UCL	Min	Мах	Std E	rr Std Dev	CV%	QA Count
0	Negative Control	o 2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
25		2	7.85	7.215	8.485	7.8	7.9	0.05	0.07071	0.9%	0
50		2	7.8	7.787	7.813	7.8	7.8	0	0	0.0%	0
100		2	7.75	7.115	8.385	7.7	7.8	0.050	01 0.07072	0.91%	0
Overall		8	7.825			7.7	7.9				0 (0%)
Salinity-ppt											
C-%	Control Type	Count		95% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
0	Negative Control	o 2	34	34	34	34	34	0	0	0.0%	0
25		2	34	34	34	34	34	0	0	0.0%	0
50		2	34	34	34	34	34	0	0	0.0%	0
100		2	34	34	34	34	34	0	0	0.0%	0
Overall		8	34			34	34				0 (0%)
Temperature-	°C										
C-%	Control Type	Count	t Mean	95% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
0	Negative Contro	o 2	14.85	14.21	15.49	14.8	14.9	0.050	04 0.07077	0.48%	0
25		2	14.85	14.21	15.49	14.8	14.9	0.050	04 0.07077	0.48%	0
50		2	14.85	14.21	15.49	14.8	14.9	0.050	04 0.07077	0.48%	0
100		2	14.85	14.21	15.49	14.8	14.9	0.050	04 0.07077	0.48%	0
Overall		8	14.85			14.8	14.9				0 (0%)

Analyst: _____ QA: _____

31 Mar-16 10:38 (p 2 of 2) WST0116.086myt | 00-3807-4967

Aquatic Bioassay & Consulting Labs, Inc.

Mussel Shell Development Test
Dissolved Oxygen-mg/L

14.8

14.8

14.9

14.9

Dissolved O	xygen-mg/L			
C-%	Control Type	1	2	
0	Negative Contr	6.6	6.8	
25		6.6	6.5	
50		6.2	6.5	
100		6.1	6.6	
pH-Units				
C-%	Control Type	1	2	
0	Negative Contr	7.9	7.9	
25		7.9	7.8	
50		7.8	7.8	
100		7.8	7.7	
Salinity-ppt				
C-%	Control Type	1	2	
0	Negative Contr	34	34	
25		34	34	
50		34	34	
100		34	34	
Temperature	è-°C			
C-%	Control Type	1	2	
0	Negative Contr	14.8	14.9	
25		14.8	14.9	

50

100

CETIS™ v1.8.7.11

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March 31, 2016

Mr. Dan McCoy Weston Solutions 5817 Dryden Place, Suite 101 Carlsbad, CA 92008

Dear Mr. McCoy:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in Short-Term Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms, EPA/R-95/136. "All acceptability criteria were met and the concentration-response was normal. Test was set within holding time, reference toxicant was within limits, and all other TAC was met. This is a valid test." Results were as follows:

CLIENT: SAMPLE I.D.: DATE RECEIVED: ABC LAB. NO.:

Weston Solutions LACDPW-010616-ASBS-S02-POST 1/8/2016 WST0116.085 CHRONIC KELP GERMINATION AND GROWTH BIOASSAY

GERMINATION	NOEC = TUc = EC25 = EC50 =	100.00 % 1.00 >100.00 % >100.00 %
TUBE LENGTH	NOEC = TUc = IC25 =	100.00 % 1.00 >100.00 %
Yours very truly, Scott Johnson	IC50 =	>100.00 %

Laboratory Director

CETIS Summary Report Report Date: 31 Mar-16 10:39 (p 1 of 2) **Test Code:** WST0116.085klp | 00-7816-5752 Macrocystis Germination and Germ Tube Growth Test Aquatic Bioassay & Consulting Labs, Inc. Batch ID: 10-1325-6290 Test Type: Growth-Germination Analyst: Joe Freas Start Date: 08 Jan-16 13:00 Protocol: EPA/600/R-95/136 (1995) Diluent: Laboratory Seawater Ending Date: 10 Jan-16 13:00 Species: Macrocystis pyrifera Brine: Not Applicable Duration: 48h Source: Aquatic Bioassay Labs Collection Age: Sample ID: 14-1670-0134 Code: WST0116.085k Client: Weston Solutions Sample Date: 06 Jan-16 16:20 Material: Sample Water Project: LACDPW MALIBU ASBS Receive Date: 08 Jan-16 10:00 Source: **Bioassay Report** Sample Age: 45h Station: LACDPW-010616-ASBS-S02-Post Comparison Summary Analysis ID Endpoint NOEL LOEL TOEL PMSD ΤU Method 10-1458-9156 Germination Rate 100 >100 NA 4.03% 1 **Dunnett Multiple Comparison Test** 17-2798-1695 Mean Length 100 >100 NA 2.54% 1 **Dunnett Multiple Comparison Test Point Estimate Summary** Analysis ID Endpoint 95% LCL Level % 95% UCL ΤU Method 17-2437-7481 Germination Rate EC5 >100 N/A N/A <1 Linear Interpolation (ICPIN) EC10 >100 N/A N/A <1 **EC15** >100 N/A N/A <1 EC20 >100 N/A N/A <1 EC25 >100 N/A N/A <1 EC40 >100 N/A N/A <1 EC50 >100 N/A N/A <1 03-7855-4270 Mean Length IC5 >100 N/A N/A Linear Interpolation (ICPIN) <1 IC10 >100 N/A N/A <1 IC15 >100 N/A N/A <1 IC20 >100 N/A N/A <1 IC25 >100 N/A N/A <1 IC40 >100 N/A N/A <1 IC50 >100 N/A N/A <1 **Test Acceptability** Analysis ID Endpoint Attribute Test Stat TAC Limits Overlap Decision 10-1458-9156 Germination Rate Control Resp 0.914 0.7 - NL Yes Passes Acceptability Criteria 17-2437-7481 Germination Rate 0.914 0.7 - NL Control Resp Yes Passes Acceptability Criteria 03-7855-4270 Mean Length Control Resp 14.36 10 - NL Yes Passes Acceptability Criteria 17-2798-1695 Mean Length Control Resp 14.36 10 - NL Yes Passes Acceptability Criteria 10-1458-9156 Germination Rate PMSD 0.04027 NL - 0.2 No Passes Acceptability Criteria 17-2798-1695 Mean Length PMSD 0.02544 NL - 0.2 No Passes Acceptability Criteria **Germination Rate Summary** C-% **Control Type** Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% %Effect 0 0.914 Negative Control 5 0.8772 0.88 0.9508 0.96 0.01327 0.02966 3.25% 0.0% 25 5 0.92 0.8952 0.95 0.9448 0.9 0.008944 0.02 2.17% -0.66% 50 5 0.932 0.9051 0.9589 0.91 0.96 0.009695 0.02168 2.33% -1.97% 100 5 0.926 0.9003 0.9517 0.9 0.95 0.009274 0.02074 2.24% -1.31% Mean Length Summary C-% **Control Type** Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% %Effect 0 **Negative Control 5** 14.36 14.05 14.67 14 14.6 0.1122 0.251 1.75% 0.0% 25 5 14.38 14.08 14.68 14 14.6 0.1068 0.2387 1.66% -0.14% 50 5 14.32 14.05 14.59 14.1 14.6 0.09695 0.2168 1.51% 0.28% 100 5 14.42 14.02 14.82 14 14.8 0.1428 0.3194 2.22% -0.42%

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Analyst:_____ QA:_____

CETIS Summary Report

Macrocystis Germination and Germ Tube Growth Test

Report Date: 31 Mar-16 10:39 (p 2 of 2) WST0116.085klp | 00-7816-5752 Test Code:

Aquatic Bioassay & Consulting Labs, Inc.

Germinat	tion Rate Detail					
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	0.91	0.9	0.88	0.92	0.96
25		0.91	0.93	0.9	0.91	0.95
50		0.92	0.96	0.91	0.95	0.92
100		0.91	0.93	0.95	0.94	0.9
Mean Ler	ngth Detail					
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	14.6	14.5	14	14.2	14.5
25		14.6	14	14.3	14.5	14.5
50		14.2	14.1	14.6	14.5	14.2
100		14.2	14	14.6	14.8	14.5
Germinat	tion Rate Binomials					
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	91/100	90/100	88/100	92/100	96/100
25		91/100	93/100	90/100	91/100	95/100
50		92/100	96/100	91/100	95/100	92/100
100		91/100	93/100	95/100	94/100	90/100

009-923-732-3

Macrocystis G	Germination and	Germ Tu	be Growth	Test				Aquat	ic Bioassay & C	Consulting	g Labs, In
Analysis ID:	10-1458-9156	En	dpoint: G	ermination Ra	ite		CET	IS Versi	on: CETISv1.	8.7	
Analyzed:	31 Mar-16 10:36		•	arametric-Con		tments	Official Results: Yes				
Batch ID:	10-1325-6290	Te	st Type: G	rowth-Germin	ation		Anal	vst:	Joe Freas		
Start Date:	08 Jan-16 13:00			PA/600/R-95/			Dilue	-	Laboratory Seav	vater	
Ending Date:	10 Jan-16 13:00) Sp	ecies: N	lacrocystis pyr	rifera		Brin	e:	Not Applicable		
Duration:	48h	So		quatic Bioassa		ection	Age:				
Sample ID:	14-1670-0134	Cc	de: V	/ST0116.085k			Clier	nt:	Weston Solution	S	
	06 Jan-16 16:20			ample Water			Proj	ect:		BU ASBS	
-	: 08 Jan-16 10:00		urce: B	ioassay Repo	rt						
Sample Age:	45h	Sta	ation: L	ACDPW-0106	16-ASBS-S	02-Post					
Data Transfor	m	Zeta	Alt Hyp	Trials	Seed		PMSD	NOEL	LOEL	TOEL	TU
Angular (Corre	cted)	NA	C > T	NA	NA		4.03%	100	>100	NA	1
Dunnett Multi	ple Comparison	Test									
Control	vs C-%		Test Sta	t Critical	MSD DF	P-Value	P-Type	Decis	ion(α:5%)		
Negative Contr			-0.3037	2.227	0.064 8	0.8451	CDF		ignificant Effect		
-	50		-1.129	2.227	0.064 8	0.9719	CDF		ignificant Effect		
	100		-0.6997	2.227	0.064 8	0.9269	CDF	Non-S	ignificant Effect		
Test Acceptat	oility Criteria										
Attribute	Test Stat	TAC Lin	nits	Overlap	Decision						
Control Resp	0.914	0.7 - NL		Yes	Passes Ac	ceptability	Criteria				
PMSD	0.04027	NL - 0.2		No	Passes Ac	cceptability	Criteria				
ANOVA Table									-		
Source	Sum Squa	ares	Mean S	quare	DF	F Stat	P-Value	Decis	ion(α:5%)		
Between	0.0030082		0.00100		3	0.4801	0.7007	Non-S	ignificant Effect		
Error	0.0334165	6	0.00208	8535	16				-		
Total	0.0364247	9			19						
Distributional	Tests										
Attribute	Test			Test Stat	Critical	P-Value	Decision	(α:1%)			
Variances	Bartlett Ec	quality of V	Variance	0.7432	11.34	0.8630	Equal Var	-			
Variances	Mod Leve		ty of Varian	ce 0.1128	5.953	0.9509	Equal Var	lances			
	Mod Leve Levene Ec	ne Equalit	•	ce 0.1128 0.1895	5.953 5.292	0.9509 0.9020	Equal Var Equal Var				
Variances		ne Equalit quality of V	Variance				-	riances	n		
Variances Distribution	Levene Ec	ne Equalit quality of V Vilk W Nor	Variance rmality	0.1895	5.292	0.9020	Equal Var Normal D Normal D	riances istributic istributic	n		
Variances Distribution Distribution	Levene Eo Shapiro-W	ne Equalit quality of V Vilk W Nor ov-Smirne	Variance rmality ov D	0.1895 0.94 0.1817 1.303	5.292 0.866 0.2235 2.576	0.9020 0.2403 0.0825 0.1925	Equal Var Normal D	riances istributic istributic	n		
Variances Distribution Distribution Distribution	Levene Eo Shapiro-W Kolmogoro	ne Equalit quality of V Vilk W Nor ov-Smirnc o Skewne	Variance rmality ov D ss	0.1895 0.94 0.1817	5.292 0.866 0.2235 2.576 2.576	0.9020 0.2403 0.0825 0.1925 0.7341	Equal Var Normal D Normal D	riances istributic istributic istributic	n n		
Variances Distribution Distribution Distribution Distribution	Levene Ec Shapiro-W Kolmogoro D'Agostino D'Agostino D'Agostino	ne Equalit quality of ^V Vilk W Nor ov-Smirnc o Skewne o Kurtosis o-Pearsor	Variance rmality ov D ss i t K2 Omnib	0.1895 0.94 0.1817 1.303 0.3396 us 1.814	5.292 0.866 0.2235 2.576 2.576 9.21	0.9020 0.2403 0.0825 0.1925 0.7341 0.4038	Equal Var Normal D Normal D Normal D Normal D Normal D	riances istributic istributic istributic istributic istributic	n n n		
Variances Distribution Distribution Distribution Distribution Distribution	Levene Ec Shapiro-W Kolmogoro D'Agostino D'Agostino D'Agostino	ne Equalit quality of ^V Vilk W Nor ov-Smirnc o Skewne o Kurtosis o-Pearsor	Variance rmality ov D ss	0.1895 0.94 0.1817 1.303 0.3396 us 1.814	5.292 0.866 0.2235 2.576 2.576	0.9020 0.2403 0.0825 0.1925 0.7341	Equal Var Normal D Normal D Normal D Normal D	riances istributic istributic istributic istributic istributic	n n n		
Variances Distribution Distribution Distribution Distribution Distribution Distribution	Levene Ec Shapiro-W Kolmogoro D'Agostino D'Agostino D'Agostino	ne Equalit quality of ^V Vilk W Nor ov-Smirnc o Skewne o Kurtosis o-Pearsor	Variance rmality ov D ss i t K2 Omnib	0.1895 0.94 0.1817 1.303 0.3396 us 1.814	5.292 0.866 0.2235 2.576 2.576 9.21	0.9020 0.2403 0.0825 0.1925 0.7341 0.4038	Equal Var Normal D Normal D Normal D Normal D Normal D	riances istributic istributic istributic istributic istributic	n n n		
Variances Distribution Distribution Distribution Distribution Distribution Germination F C-%	Levene Ed Shapiro-W Kolmogord D'Agostind D'Agostind D'Agostind Anderson- Rate Summary Control Type	ne Equalit quality of ^N Vilk W Noi ov-Smirnc o Skewne o Kurtosis o-Pearsor -Darling A Count	Variance rmality ov D ss h K2 Omnib 2 Normality Mean	0.1895 0.94 0.1817 1.303 0.3396 us 1.814 0.5618 95% LCL	5.292 0.866 0.2235 2.576 2.576 9.21 3.878 95% UCL	0.9020 0.2403 0.0825 0.1925 0.7341 0.4038 0.1499 Median	Equal Var Normal D Normal D Normal D Normal D Normal D Normal D	iances istributic istributic istributic istributic istributic istributic Max	n n n Std Err	CV%	
Variances Distribution Distribution Distribution Distribution Distribution Germination F C-% 0	Levene Ed Shapiro-W Kolmogord D'Agostind D'Agostind D'Agostind Anderson- Rate Summary	ne Equalit quality of ^N Vilk W Nor ov-Smirnc o Skewne o Kurtosis o-Pearsor -Darling A Count I 5	Variance rmality ov D ss 1 K2 Omnib 2 Normality <u>Mean</u> 0.914	0.1895 0.94 0.1817 1.303 0.3396 us 1.814 0.5618 95% LCL 0.8772	5.292 0.866 0.2235 2.576 9.21 3.878 95% UCL 0.9508	0.9020 0.2403 0.0825 0.1925 0.7341 0.4038 0.1499 Median 0.91	Equal Var Normal D Normal D Normal D Normal D Normal D Min 0.88	iances istributic istributic istributic istributic istributic Max 0.96	n n n Std Err 0.01327	3.25%	0.0%
Variances Distribution Distribution Distribution Distribution Distribution Distribution Germination F C-% 0 25	Levene Ed Shapiro-W Kolmogord D'Agostind D'Agostind D'Agostind Anderson- Rate Summary Control Type	ne Equalit quality of ^N Vilk W Nor ov-Smirnc o Skewne o Kurtosis o-Pearsor -Darling A Count I 5 5	Variance rmality ov D ss 1 K2 Omnib 2 Normality <u>Mean</u> 0.914 0.92	0.1895 0.94 0.1817 1.303 0.3396 us 1.814 0.5618 95% LCL 0.8772 0.8952	5.292 0.866 0.2235 2.576 9.21 3.878 95% UCL 0.9508 0.9448	0.9020 0.2403 0.0825 0.1925 0.7341 0.4038 0.1499 Median 0.91 0.91	Equal Var Normal D Normal D Normal D Normal D Normal D Normal D Min 0.88 0.9	iances istributic istributic istributic istributic istributic istributic Max 0.96 0.95	n n n n Std Err 0.01327 0.008944	3.25% 2.17%	0.0% -0.66%
Variances Distribution Distribution Distribution Distribution Distribution Distribution Germination F C-% 0 25 50	Levene Ed Shapiro-W Kolmogord D'Agostind D'Agostind D'Agostind Anderson- Rate Summary Control Type	ne Equalit quality of ^N Vilk W Nor ov-Smirnc o Skewne o Kurtosis o-Pearsor -Darling A Darling A Count	Variance rmality ov D ss h K2 Omnib 2 Normality Mean 0.914 0.92 0.932	0.1895 0.94 0.1817 1.303 0.3396 us 1.814 0.5618 95% LCL 0.8772 0.8952 0.9051	5.292 0.866 0.2235 2.576 9.21 3.878 95% UCL 0.9508 0.9448 0.9589	0.9020 0.2403 0.0825 0.1925 0.7341 0.4038 0.1499 Median 0.91 0.91 0.92	Equal Var Normal D Normal D Normal D Normal D Normal D Normal D Normal D 0.88 0.9 0.91	iances istributic istributic istributic istributic istributic istributic Max 0.96 0.95 0.96	n n n n Std Err 0.01327 0.008944 0.009695	3.25% 2.17% 2.33%	0.0% -0.66% -1.97%
Variances Distribution Distribution Distribution Distribution Distribution Distribution Germination F C-% D 25 50	Levene Ed Shapiro-W Kolmogord D'Agostind D'Agostind D'Agostind Anderson- Rate Summary Control Type	ne Equalit quality of ^N Vilk W Nor ov-Smirnc o Skewne o Kurtosis o-Pearsor -Darling A Count I 5 5	Variance rmality ov D ss 1 K2 Omnib 2 Normality <u>Mean</u> 0.914 0.92	0.1895 0.94 0.1817 1.303 0.3396 us 1.814 0.5618 95% LCL 0.8772 0.8952	5.292 0.866 0.2235 2.576 9.21 3.878 95% UCL 0.9508 0.9448	0.9020 0.2403 0.0825 0.1925 0.7341 0.4038 0.1499 Median 0.91 0.91	Equal Var Normal D Normal D Normal D Normal D Normal D Normal D Min 0.88 0.9	iances istributic istributic istributic istributic istributic istributic Max 0.96 0.95	n n n n Std Err 0.01327 0.008944	3.25% 2.17% 2.33%	0.0% -0.66% -1.97%
Variances Distribution Distribution Distribution Distribution Distribution Distribution Germination F C-% 0 25 50 100	Levene Ed Shapiro-W Kolmogord D'Agostind D'Agostind D'Agostind Anderson- Rate Summary Control Type	ne Equalil quality of ¹ Vilk W Nor ov-Smirno o Skewne o Kurtosis o-Pearsor -Darling A Count 1 5 5 5 5	Variance rmality by D ss h K2 Omnib 2 Normality Mean 0.914 0.92 0.926	0.1895 0.94 0.1817 1.303 0.3396 us 1.814 0.5618 95% LCL 0.8772 0.8952 0.9051	5.292 0.866 0.2235 2.576 9.21 3.878 95% UCL 0.9508 0.9448 0.9589	0.9020 0.2403 0.0825 0.1925 0.7341 0.4038 0.1499 Median 0.91 0.91 0.92	Equal Var Normal D Normal D Normal D Normal D Normal D Normal D Normal D 0.88 0.9 0.91	iances istributic istributic istributic istributic istributic istributic Max 0.96 0.95 0.96	n n n n Std Err 0.01327 0.008944 0.009695	3.25% 2.17% 2.33%	0.0% -0.66% -1.97% -1.31%
Variances Distribution Distribution Distribution Distribution Distribution Distribution Germination F C-% 0 25 50 100 Angular (Corr C-%	Levene Ed Shapiro-W Kolmogord D'Agostind D'Agostind D'Agostind Anderson- Rate Summary Control Type Negative Control	ne Equalit quality of V Vilk W Nor ov-Smirnc o Skewne o Kurtosis o-Pearsor -Darling A Count 1 5 5 5 5 5 med Sumi	Variance rmality pv D ss h K2 Omnib 2 Normality Mean 0.914 0.92 0.932 0.926 mary Mean	0.1895 0.94 0.1817 1.303 0.3396 us 1.814 0.5618 95% LCL 0.8772 0.8952 0.9051 0.9003 95% LCL	5.292 0.866 0.2235 2.576 9.21 3.878 95% UCL 0.9508 0.9448 0.9589 0.9517 95% UCL	0.9020 0.2403 0.0825 0.1925 0.7341 0.4038 0.1499 Median 0.91 0.91 0.92 0.93 Median	Equal Var Normal D Normal D Normal D Normal D Normal D Normal D 0.88 0.9 0.91 0.9 0.91 0.9	iances istributic istributic istributic istributic istributic istributic 0.96 0.95 0.95 0.95 Max	n n n n Std Err 0.01327 0.008944 0.009695 0.009273 Std Err	3.25% 2.17% 2.33% 2.24%	0.0% -0.66% -1.97% -1.31% %Effec
Variances Distribution Distribution Distribution Distribution Distribution Germination F C-% 0 25 50 100 Angular (Corr C-% 0	Levene Ed Shapiro-W Kolmogord D'Agostind D'Agostind D'Agostind Anderson- Rate Summary Control Type Negative Control	ne Equalit quality of V Vilk W Nor ov-Smirnc o Skewne o Kurtosis o-Pearsor -Darling A Count 1 5 5 5 5 5 med Sumi	Variance rmality pv D ss k K2 Omnib 2 Normality Mean 0.914 0.92 0.926 mary Mean 1.277	0.1895 0.94 0.1817 1.303 0.3396 us 1.814 0.5618 95% LCL 0.8772 0.8952 0.9051 0.9003 95% LCL 1.206	5.292 0.866 0.2235 2.576 9.21 3.878 95% UCL 0.9508 0.9448 0.9589 0.9517 95% UCL 1.348	0.9020 0.2403 0.0825 0.1925 0.7341 0.4038 0.1499 Median 0.91 0.91 0.92 0.93 Median 1.266	Equal Var Normal D Normal D Normal D Normal D Normal D Normal D Normal D 0.88 0.9 0.91 0.9 0.91 0.9 0.91 0.9	iances istributic istributic istributic istributic istributic istributic 0.96 0.95 0.95 0.95 0.95 0.95 0.95 1.369	n n n n Std Err 0.01327 0.008944 0.009695 0.009273 Std Err 0.02558	3.25% 2.17% 2.33% 2.24% CV% 4.48%	0.0% -0.66% -1.97% -1.31% %Effec 0.0%
Variances Distribution Distribution Distribution Distribution Distribution Distribution Germination F C-% 0 25 50 100 Angular (Corr C-% 0 25	Levene Ed Shapiro-W Kolmogord D'Agostind D'Agostind D'Agostind Anderson- Rate Summary Control Type Negative Control	ne Equalil quality of ¹ Vilk W Nor ov-Smirnc o Skewne o Kurtosis o-Pearsor -Darling A Count 1 5 5 5 5 5 med Sum 5 5 5	Variance rmality pv D ss h K2 Omnib 2 Normality Mean 0.914 0.92 0.932 0.926 mary Mean 1.277 1.286	0.1895 0.94 0.1817 1.303 0.3396 us 1.814 0.5618 95% LCL 0.8772 0.8952 0.9051 0.9003 95% LCL 1.206 1.238	5.292 0.866 0.2235 2.576 9.21 3.878 95% UCL 0.9508 0.9448 0.9589 0.9517 95% UCL 1.348 1.334	0.9020 0.2403 0.0825 0.1925 0.7341 0.4038 0.1499 Median 0.91 0.91 0.92 0.93 Median 1.266 1.266	Equal Var Normal D Normal D Normal D Normal D Normal D Normal D Normal D 0.88 0.9 0.91 0.9 0.91 0.9 0.91 0.9 0.91 0.9	iances istributic istributic istributic istributic istributic istributic 0.96 0.95 0.96 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95	n n n n n n n n n n 0.01327 0.008944 0.009695 0.009273 0.009273 0.002558 0.01727	3.25% 2.17% 2.33% 2.24% CV% 4.48% 3.0%	0.0% -0.66% -1.97% -1.31% %Effec 0.0% -0.69%
Distribution Distribution Distribution Distribution Distribution Distribution Germination F C-% 0 25 50 100	Levene Ed Shapiro-W Kolmogord D'Agostind D'Agostind D'Agostind Anderson- Rate Summary Control Type Negative Control	ne Equalil quality of ¹ Vilk W Nor ov-Smirnc o Skewne o Kurtosis o-Pearsor -Darling A Count 1 5 5 5 5 5 5 med Sum 5	Variance rmality pv D ss k K2 Omnib 2 Normality Mean 0.914 0.92 0.926 mary Mean 1.277	0.1895 0.94 0.1817 1.303 0.3396 us 1.814 0.5618 95% LCL 0.8772 0.8952 0.9051 0.9003 95% LCL 1.206	5.292 0.866 0.2235 2.576 9.21 3.878 95% UCL 0.9508 0.9448 0.9589 0.9517 95% UCL 1.348	0.9020 0.2403 0.0825 0.1925 0.7341 0.4038 0.1499 Median 0.91 0.91 0.92 0.93 Median 1.266	Equal Var Normal D Normal D Normal D Normal D Normal D Normal D Normal D 0.88 0.9 0.91 0.9 0.91 0.9 0.91 0.9	iances istributic istributic istributic istributic istributic istributic 0.96 0.95 0.95 0.95 0.95 0.95 0.95 1.369	n n n n Std Err 0.01327 0.008944 0.009695 0.009273 Std Err 0.02558	3.25% 2.17% 2.33% 2.24% CV% 4.48%	-0.66% -1.97% -1.31% %Effec

31 Mar-16 10:39 (p 2 of 4) Report Date: Test Code:

WST0116.085klp | 00-7816-5752

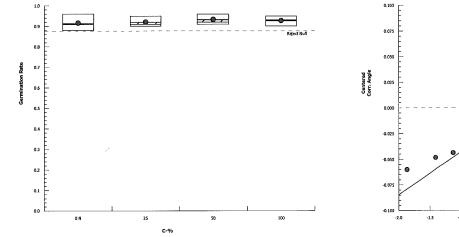
Macrocystis	Germination and	Germ	Tube Grow	th Test			Aquatic Bioassay & Consulting Labs, Inc		
Analysis ID: Analyzed:	10-1458-9156 31 Mar-16 10:36	3	Endpoint: Analysis:	Germination F Parametric-Co		atments	CETIS Version: Official Results:	CETISv1.8.7 Yes	
Germination	Rate Detail								
C-%	Control Type	Rep 1	I Rep 2	Rep 3	Rep 4	Rep 5			
0	Negative Control	0.91	0.9	0.88	0.92	0.96			
25	ζ.	0.91	0.93	0.9	0.91	0.95			
50		0.92	0.96	0.91	0.95	0.92			
100		0.91	0.93	0.95	0.94	0.9			
Angular (Cor	rected) Transforn	ned De	etail			1884 B - 1116 1		,	
C-%	Control Type	Rep ′	1 Rep 2	Rep 3	Rep 4	Rep 5			
0	Negative Control	1.266	1.249	1.217	1.284	1.369			
25		1.266	1.303	1.249	1.266	1.345			
50		1.284	1.369	1.266	1.345	1.284			
100		1.266	i 1.303	1.345	1.323	1.249			
Germination	Rate Binomials							2	
C-%	Control Type	Rep ′	1 Rep 2	Rep 3	Rep 4	Rep 5			
0	Negative Control	91/10	0 90/10	0 88/100	92/100	96/100			
25	,	91/10	0 93/10	0 90/100	91/100	95/100			
50		92/10	96/10	0 91/100	95/100	92/100			

94/100

90/100

Graphics

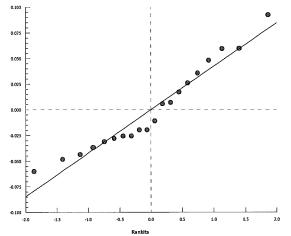
100



93/100

95/100

91/100



							Test	Code:	WSTOTIE	5.085KIP 0	0-7816-57
Macrocystis G	Germination and	Germ T	ube Growth	Test				Aquatio	: Bioassay &	Consultin	g Labs, Ind
Analysis ID:	17-2798-1695	E	ndpoint: M	ean Length			CET	IS Versio	n: CETISv1	.8.7	
Analyzed:	31 Mar-16 10:3	6 A	nalysis: Pa	arametric-Cor	ntrol vs Trea	tments	Offic	cial Resul	ts: Yes		
Batch ID:	10-1325-6290	Т	est Type: G	owth-Germin	ation		Ana	lyst: Jo	be Freas		
Start Date:	08 Jan-16 13:00			PA/600/R-95/			Dilu	ent: La	aboratory Sea	water	
Ending Date:	10 Jan-16 13:00) s	pecies: M	acrocystis py	rifera		Brin	ie: N	ot Applicable		
Duration:	48h		-	uatic Bioass	ay Labs Coll	lection	Age	:			
Sample ID:	14-1670-0134	С	ode: W	ST0116.085k			Clie	nt: W	leston Solutio	ns	
Sample Date:	06 Jan-16 16:20) N	laterial: Sa	mple Water			Proj	ect: L	ACDPW MALI	BU ASBS	
Receive Date:	08 Jan-16 10:00) s	ource: Bi	oassay Repo	rt						
Sample Age:	45h	S	tation: LA	CDPW-0106	16-ASBS-S	02-Post					
Data Transfor	m	Zeta	Alt Hyp	Trials	Seed		PMSD	NOEL	LOEL	TOEL	тυ
Untransformed		NA	C > T	NA	NA		2.54%	100	>100	NA	1
Dunnett Multij	ple Comparison	Test									
Control	vs C-%		Test Sta	t Critical	MSD DF	P-Value	P-Type	Decisio	on(α:5%)		
Negative Contr	rol 25		-0.1219	2.227	0.365 8	0.7916	CDF	Non-Sig	nificant Effect	t	
	50		0.2439	2.227	0.365 8	0.6553	CDF	Non-Sig	nificant Effect	t	
	100		-0.3658	2.227	0.365 8	0.8611	CDF	Non-Sig	nificant Effect	t	
Test Acceptab	oility Criteria										
Attribute	Test Stat	TAC LI		Overlap	Decision						
Control Resp	14.36	10 - NL		Yes		cceptability					
PMSD	0.02544	NL - 0.2	2	No	Passes Ac	cceptability	Criteria				
ANOVA Table											
Source	Sum Squa	res	Mean Sc	uare	DF	F Stat	P-Value	Decisio	on(α:5%)		
Between	0.0260000	1	0.008666	669	3	0.1289	0.9416	Non-Sig	nificant Effect	t	
Error	1.076001		0.067250	06	16	_					
Total	1.102001				19						
Distributional	Tests										
Attribute	Test			Test Stat	Critical	P-Value	Decision	(α:1%)			
Variances	Bartlett Ec	quality of	Variance	0.6244	11.34	0.8908	Equal Va	riances			
Variances	Mod Leve	ne Equa	lity of Varianc	e 0.2299	5.953	0.8738	Equal Va				
Variances	Levene E	quality of	l Variance	0.4764	5.292	0.7031	Equal Va	riances			
Distribution	Shapiro-W		-	0.9348	0.866	0.1908		istribution			
Distribution	Kolmogor			0.193	0.2235	0.0493		vistribution			
Distribution	D'Agostin			0.7356	2.576	0.4619		vistribution			
Distribution	D'Agostin			1.361	2.576	0.1735		istribution			
Distribution	-		on K2 Omnibu		9.21	0.3022		istribution			
Distribution	Anderson	-Darling	A2 Normality	0.6405	3.878	0.0953	Normal D	istribution			
Mean Length S	Summary										
	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
	Negative Control		14.36	14.05	14.67	14.5	14	14.6	0.1122	1.75%	0.0%
25		5	14.38	14.08	14.68	14.5	14	14.6	0.1068	1.66%	-0.14%
50		5	14.32	14.05	14.59	14.2	14.1	14.6	0.09695	1.51%	0.28%
400		5	14.42	14.02	14.82	14.5	14	14.8	0.1428	2.22%	-0.42%
100											
	Detail										
Mean Length I C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
Mean Length I C-% 0		14.6	14.5	14	14.2	14.5				·	
Mean Length I C-% 0 25	Control Type	14.6 14.6	-	•		14.5 14.5				<u> </u>	
	Control Type	14.6	14.5	14	14.2	14.5					

CETIS Ana	lytical Report				Report Date: Test Code:	31 Mar-16 10:39 (p 4 of 4) WST0116.085klp 00-7816-5752
Macrocystis (Germination and Ger	m Tube Grow	/th Test		Aquatic Bi	oassay & Consulting Labs, Inc.
Analysis ID: Analyzed:	17-2798-1695 31 Mar-16 10:36	Endpoint: Analysis:	Mean Length Parametric-Control ve	s Treatments	CETIS Version: Official Results:	CETISv1.8.7 Yes
Graphics			Rejed Kul	0.5 0.4 0.4 0.3 0.5 0.4 0.4 0.3 0.5 0.4 0.4 0.3 0.5 0.4 0.5 0.5 0.4 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5		00000
0	J 0N 25 C	- 96	100	-0.5	i i i -1.0 -0.5 0.0 Rankits	0.5 10 1.5 20

 Report Date:
 31 Mar-16 10:39 (p 1 of 4)

 Test Code:
 WST0116.085klp | 00-7816-5752

								•				5.000 mp [00 / 010 0
Macro	cystis G	Sermination and	d Germ Tul	e Grow	vth Test				Aq	uatic B	ioassay &	Consulti	ng Labs, I
Analys Analyz		17-2437-7481 31 Mar-16 10:3		dpoint: alysis:	Germination Rate Linear Interpolation (ICPIN)				ETIS Ve fficial F	ersion: Results:	CETISv1 Yes	.8.7	
Batch	ID:	10-1325-6290	Tes	t Type:	Growth-Germin	A	nalyst:	Joe I	Freas	A			
Start D	ate:	08 Jan-16 13:0	0 Pro	tocol:	EPA/600/R-95/	/136 (1995)			iluent:	Labo	ratory Sea	water	
Ending	Date:	10 Jan-16 13:0	0 Sp e	ecies:	Macrocystis py	rifera		В	rine:	Not A	Applicable		
Duratio	on:	48h	So	urce:	Aquatic Bioass	ay Labs Col	lection	Α	ge:				
Sample		14-1670-0134	Co	de:	WST0116.085	k		С	lient:	West	ton Solutio	ns	
•		06 Jan-16 16:2		terial:	Sample Water			Р	roject:	LACI	OPW MALI	BU ASBS	5
		08 Jan-16 10:0		irce:	Bioassay Repo								
Sample	e Age:	45h	Sta	tion:	LACDPW-0106	516-ASBS-S	02-Post						
		lation Options											
X Tran	sform	Y Transform			Resamples	Exp 95%		thod					
Linear		Linear	860	24	280	Yes	Tw	o-Point Int	erpolatio	on			
Test Ac	ceptab	ility Criteria											
Attribu			TAC Limi	ts	Overlap	Decision							
Control	Resp	0.914	0.7 - NL		Yes	Passes Ac	cceptabilit	y Criteria					
Point E	stimate	s											
Level	%	95% LCL	95% UCL		95% LCL	95% UCL					90000 CT		
EC5	>100	N/A	N/A	<1	NA	NA							
EC10 EC15	>100 >100	N/A	N/A	<1	NA	NA							
EC15 EC20	>100	N/A N/A	N/A N/A	<1 <1	NA NA	NA NA							
EC25	>100	N/A	N/A	<1	NA	NA							
EC40	>100	N/A	N/A	<1	NA	NA							
EC50	>100	N/A	N/A	<1	NA	NA							
Germin	ation R	ate Summary				Calcu	lated Var	iate(A/B)					
C-%		ontrol Type	Count	Mean	Min	Max	Std Err	Std De	v CV	%	%Effect	A	в
)	N	egative Control	5	0.914	0.88	0.96	0.01327	0.0296		5%	0.0%	457	500
25			5	0.92	0.9	0.95	0.00894	4 0.02	2.1	7%	-0.66%	460	500
50			5	0.932		0.96	0.00969	5 0.0216	8 2.3	3%	-1.97%	466	500
100			5	0.926	0.9	0.95	0.009273	3 0.0207	4 2.2	4%	-1.31%	463	500
Germin	ation R	ate Detail											
C-%		ontrol Type	Rep 1	Rep 2		Rep 4	Rep 5				· · · · · · · · · · · · · · · · · · ·		
0	Ne	egative Control	0.91	0.9	0.88	0.92	0.96						
25			0.91	0.93	0.9	0.91	0.95						
50			0.92	0.96	0.91	0.95	0.92						
100			0.91	0.93	0.95	0.94	0.9						
Germin	ation R	ate Binomials											
C-%		Control Type	Rep 1	Rep 2		Rep 4	Rep 5						
		Negative Contro		90/100		92/100	96/100						
C				00/40/	90/100	91/100	95/100						
25			91/100	93/100									
			91/100 92/100 91/100	93/100 96/100 93/100	91/100	95/100 94/100	92/100 90/100						

CETIS Ana	alytical Report			Report Date: Test Code:	31 Mar-16 10:39 (p 2 of 4) WST0116.085klp 00-7816-5752
Macrocystis (Germination and Ge	rm Tube Grow	/th Test	Aquatic Bi	oassay & Consulting Labs, Inc.
Analysis ID: Analyzed:	17-2437-7481 31 Mar-16 10:36	Endpoint: Analysis:	Germination Rate Linear Interpolation (ICPIN)	CETIS Version: Official Results:	CETISv1.8.7 Yes
Graphics					
1.0 E					
e.o	0				
0.8					
the state of the s					
0.4					
0.3					
0.2					
			1 J		
0	20 40 C.4	60	80 100		

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000-055-186-4

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									lest Code	:	WST0116.085kip 00-7816	0-0/0
Macro	cystis G	Bermination and	Germ Tub	e Grow	th Test				Aqu	atic Bi	ioassay & Consulting Labs	s, Inc.
Analys	is ID:	03-7855-4270	End	point:	Mean Length			(CETIS Ver	sion:	CETISv1.8.7	
Analyz		31 Mar-16 10:3	6 Ana	lysis:	Linear Interpola	tion (ICPIN)		(Official Re	sults:	Yes	
Batch	ID:	10-1325-6290	Test	: Type:	Growth-Germin	ation			Analyst:	Joe I	Freas	
Start D	ate:	08 Jan-16 13:00	0 Prot	ocol:	EPA/600/R-95/	136 (1995)		ĩ	Diluent:	Labo	ratory Seawater	
Ending	g Date:	10 Jan-16 13:00	0 Spe	cies:	Macrocystis py	rifera		E	Brine:	Not A	Applicable	
Duratio	on:	48h	Sou	rce:	Aquatic Bioass	ay Labs Coll	ection		Age:			
Sample		14-1670-0134	Cod	e:	WST0116.085k	7			Client:		ton Solutions	
-		06 Jan-16 16:20		erial:	Sample Water			F	Project:	LACI	DPW MALIBU ASBS	
		08 Jan-16 10:00			Bioassay Repo							
Sampl	e Age:	45h	Stat	ion:	LACDPW-0106	16-ASBS-S	02-Post					
_inear	Interpo	lation Options										
K Tran	sform	Y Transform			Resamples	Exp 95%		ethod				••
inear		Linear	1956	561	280	Yes	IW	vo-Point In	terpolation	1		
	•	oility Criteria										
Attribu		Test Stat	TAC Limit	s	Overlap	Decision						
Control	Resp	14.36	10 - NL		Yes	Passes Ac	ceptabili	ity Criteria				
Point E	Estimate	es										
.evel	%	95% LCL	95% UCL	TU	95% LCL	95% UCL						
C5	>100	N/A	N/A	<1	NA	NA						
C10	>100	N/A	N/A	<1	NA	NA						
C15	>100	N/A	N/A	<1	NA	NA						
C20	>100	N/A	N/A	<1	NA	NA						
C25	>100	N/A	N/A	<1	NA	NA						
C40	>100	N/A	N/A	<1	NA	NA						
C50	>100	N/A	N/A	<1	NA	NA						
	_ength :	Summary				Cal	culated					
2-%		ontrol Type	Count	Mean		Max	Std Err				%Effect	
)	N	legative Control	5	14.36		14.6	0.1122				0.0%	
25			5	14.38		14.6	0.1068				-0.14%	
50			5	14.32		14.6	0.0969				0.28%	
00			5	14.42	. 14	14.8	0.1428	0.319	94 2.22	:%	-0.42%	
	_ength											
C-%		ontrol Type	Rep 1	Rep 2		Rep 4	Rep 5				A MARK PARK I TO T	
0	N	legative Control	14.6	14.5	14	14.2	14.5					
25			14.6	14	14.3	14.5	14.5					
			14.2	14.1	14.6	14.5	14.2					
50 100			14.2	14	14.6	14.8	14.5					

000-055-186-4

				Test coue.	W310110.065kip 00-7610-5752
Macrocystis (Germination and Ge	rm Tube Grow	vth Test	Aquatic Bi	oassay & Consulting Labs, Inc.
Analysis ID:	03-7855-4270	Endpoint:	Mean Length	CETIS Version:	CETISv1.8.7
Analyzed:	31 Mar-16 10:36	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Graphics					· · · · · · · · · · · · · · · · · · ·
¹⁵ –					
14	@	•			
12					
£ 10					
Mean Length					
5					
4					

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 Report Date:
 31 Mar-16 10:39 (p 4 of 4)

 Test Code:
 WST0116.085klp | 00-7816-5752

 Aquatic Bloassay & Consulting Labs, Inc.

CETIS Measurement Report

Macrocystis C	Germination and	d Germ	Tube Grow	th Test				Aqua	tic Bioassay &	Consultin	g Labs, Inc.
Batch ID: Start Date: Ending Date: Duration:	10-1325-6290 08 Jan-16 13:0 10 Jan-16 13:0 48h		Test Type: Protocol: Species: Source:	Growth-Germin EPA/600/R-95 Macrocystis py Aquatic Bioass	/136 (1995) /rifera	llection		Analyst: Diluent: Brine: Age:	Joe Freas Laboratory Sea Not Applicable		
Sample ID:	14-1670-0134		Code:	WST0116.085				Client:	Weston Solution		
•	06 Jan-16 16:2		Material:	Sample Water				Project:	LACDPW MAL	.IBU ASBS	
	08 Jan-16 10:0	0	Source:	Bioassay Repo							
Sample Age:	45h		Station:	LACDPW-010	616-ASBS-8	502-Post					
Dissolved Oxy	ygen-mg/L										
C-%	Control Type	Coun		95% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
0	Negative Control	2	6.7	5.429	7.971	6.6	6.8	0.099	99 0.1414	2.11%	0
25		2	6.55	5.915	7.185	6.5	6.6	0.049	99 0.0707	1.08%	0
50		2	6.4	3.859	8.941	6.2	6.6	0.2	0.2828	4.42%	0
100		2	6.7	4.159	9.241	6.5	6.9	0.2	0.2828	4.22%	0
Overall		8	6.587			6.2	6.9				0 (0%)
pH-Units											
C-%	Control Type	Coun	t Mean	95% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
0	Negative Contro	2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
25	-	2	7.85	7.215	8.485	7.8	7.9	0.05	0.07071	0.9%	0
50		2	7.8	7.787	7.813	7.8	7.8	0	0	0.0%	0
100		2	7.75	7.115	8.385	7.7	7.8	0.050	01 0.07072	0.91%	0
Overall		8	7.825			7.7	7.9				0 (0%)
Salinity-ppt											
C-%	Control Type	Coun	t Mean	95% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
0	Negative Contro	02	34	34	34	34	34	0	0	0.0%	0
25		2	34	34	34	34	34	0	0	0.0%	0
50		2	34	34	34	34	34	0	0	0.0%	0
100		2	34	34	34	34	34	0	0	0.0%	0
Overall		8	34			34	34				0 (0%)
Temperature-	°C										
C-%	Control Type	Coun	t Mean	95% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
0	Negative Contro	2	14.85	14.21	15.49	14.8	14.9	0.050	04 0.07077	0.48%	0
25		2	14.85	14.21	15.49	14.8	14.9	0.050	04 0.07077	0.48%	0
50		2	14.85	14.21	15.49	14.8	14.9	0.050	04 0.07077	0.48%	0
100		2	14.85	14.21	15.49	14.8	14.9	0.050	04 0.07077	0.48%	0
Overall		8	14.85			14.8	14.9				0 (0%)

Macrocy	stis Germination and	i Germ Tu	be Growth Test	Aquatic Bioassay & Consulting Labs, Inc.
Dissolve	d Oxygen-mg/L			
C-%	Control Type	1	2	
0	Negative Contr	6.6	6.8	
25		6.6	6.5	
50		6.6	6.2	
100		6.9	6.5	
pH-Units				
C-%	Control Type	1	2	
0	Negative Contr	7.9	7.9	
25		7.9	7.8	
50		7.8	7.8	
100		7.8	7.7	
Salinity-p	opt			
C-%	Control Type	1	2	
0	Negative Contr	34	34	
25		34	34	
50		34	34	
100		34	34	
Tempera	ture-°C			
C-%	Control Type	1	2	
0	Negative Contr	14.8	14.9	
25		14.8	14.9	
50		14.8	14.9	
100		14.8	14.9	

009-923-732-3

Analyst:_____ QA:_____



March 31, 2016

Mr. Dan McCoy Weston Solutions 5817 Dryden Place, Suite 101 Carlsbad, CA 92008

Dear Mr. McCoy:

N

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms, EPA/R-95/136.* "All acceptability criteria were met and the concentration-response was normal. Test was set within holding time, reference toxicant was within limits, and all other TAC was met. This is a valid test." Results were as follows:

CLIENT:	Weston Solutions
SAMPLE I.D.:	LACDPW-010616-ASBS-S01-POST
DATE RECEIVED:	1/8/2016
ABC LAB. NO.:	WST0116.086
CHRONIC KEL	P GERMINATION AND GROWTH BIOASSAY

GERMINATION	NOEC =	100.00~%
	TUc =	1.00
	EC25 =	>100.00 %
	EC50 =	>100.00 %
TUBE LENGTH	NOEC =	100.00~%
	TUc =	1.00
	IC25 =	>100.00 %
Λι	IC50 =	>100.00 %
Yours very truly,		
UNT .		
Scott Johnson		
Laboratory Director		

CETIS Summary Report

							Test coue.			incoord p 1 i	0-1214-033
Macrocystis G	Sermination and Ge	rm Tube Grow	th Test				Aqua	tic B	ioassay & (Consulting	Labs, Inc.
Batch ID: Start Date: Ending Date: Duration:	13-6147-0395 08 Jan-16 13:01 10 Jan-16 13:01 48h	Test Type: Protocol: Species: Source:	Growth-Germin EPA/600/R-95/ Macrocystis pyr Aquatic Bioass	136 (1995) rifera	ection		Analyst: Diluent: Brine: Age:	Labo	Freas pratory Seav Applicable	water	
	14-0500-2328 06 Jan-16 17:15 08 Jan-16 10:00 44h	Code: Material: Source: Station:	WST0116.086k Sample Water Bioassay Repo LACDPW-0106	rt	01-Post		Client: Project:		ton Solutior DPW MALI		
Comparison S	Summary										
Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	ΤU	Meth				
18-0773-9860	Germination Rate	100	>100	NA	4.18%	1			ultiple Com		
21-1037-3833	Mean Length	100	>100	NA	3.02%	1	Dunn	ett M	ultiple Com	parison Te	st
Point Estimate	e Summary										
Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Meth	od			
09-3543-0235	Germination Rate	EC5	>100	N/A	N/A	<1	Linea	r Inte	rpolation (I	CPIN)	
		EC10	>100	N/A	N/A	<1					
		EC15		N/A	N/A	<1					
		EC20		N/A	N/A	<1					
		EC25		N/A	N/A	<1					
		EC40		N/A	N/A	<1					
		EC50		N/A	N/A	<1					
09-3318-7022	Mean Length	IC5	>100	N/A	N/A	<1	Linea	ir Inte	rpolation (I	CPIN)	
		IC10	>100	N/A	N/A	<1					
		IC15	>100	N/A	N/A	<1					
		IC20	>100	N/A	N/A	<1					
		IC25	>100	N/A	N/A	<1					
		IC40 IC50	>100 >100	N/A N/A	N/A N/A	<1 <1					
Test Acceptab	oility										
Analysis ID	Endpoint	Attrib	ute	Test Stat	TAC Limi	ts	Over	lap	Decision		
09-3543-0235	Germination Rate	Contr	ol Resp	0.918	0.7 - NL		Yes		Passes A	cceptability	Criteria
8-0773-9860	Germination Rate		ol Resp	0.918	0.7 - NL		Yes			cceptability	
09-3318-7022	Mean Length	Contr	ol Resp	14.32	10 - NL		Yes		Passes A	cceptability	Criteria
21-1037-3833	Mean Length	Contr	ol Resp	14.32	10 - NL		Yes		Passes A	cceptability	Criteria
8-0773-9860	Germination Rate	PMS)	0.04177	NL - 0.2		No			cceptability	
21-1037-3833	Mean Length	PMSI)	0.03016	NL - 0.2		No		Passes A	cceptability	Criteria
Germination F	Rate Summary										
C-%	Control Type Co	ount Mean	95% LCL		Min	Max			Std Dev	CV%	%Effect
C	Negative Control 5	0.918		0.9449	0.9	0.9			0.02168	2.36%	0.0%
25	5	0.922		0.9459	0.9	0.9			0.01924	2.09%	-0.44%
50	5	0.92	0.8952	0.9448	0.9	0.9			0.02	2.17%	-0.22%
100	5	0.938	0.8993	0.9767	0.9	0.97	7 0.013	393	0.03114	3.32%	-2.18%
Mean Length	-										
		ount Mean		95% UCL	Min	Max			Std Dev	CV%	%Effect
	Negative Control 5	14.32		14.62	14	14.6			0.2387	1.67%	0.0%
25	5	14.42		14.8	14	14.			0.3033	2.1%	-0.7%
50	5	14.28		14.72	14	14.9			0.3564	2.5%	0.28%
100	5	14.4	14.01	14.79	14	14.8	B 0.141	14	0.3162	2.2%	-0.56%

Analyst:_____ QA:____

CETIS Summary Report

Macrocystis Germination and Germ Tube Growth Test

Report Date: Test Code: WST0116.086klp | 16-7274-8994

Aquatic Bioassay & Consulting Labs, Inc.

Germina	tion Rate Detail						
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	Negative Control	0.9	0.93	0.91	0.95	0.9	
25		0.93	0.91	0.9	0.92	0.95	
50		0.91	0.93	0.95	0.91	0.9	
100		0.91	0.96	0.95	0.97	0.9	
Mean Le	ngth Detail						
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	Negative Control	14.2	14	14.3	14.6	14.5	
25		14.6	14	14.2	14.6	14.7	
50		14.2	14.1	14.9	14	14.2	
100		14.4	14.2	14	14.6	14.8	
Germina	tion Rate Binomials						
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	Negative Control	90/100	93/100	91/100	95/100	90/100	
25		93/100	91/100	90/100	92/100	95/100	
50		91/100	93/100	95/100	91/100	90/100	
100		91/100	96/100	95/100	97/100	90/100	

Macrocystis Germination and Germ Tube Growth Test Aquatic Bioassay & Consulting Labs, Inc. CETISv1.8.7 Germination Rate **CETIS Version:** Analysis ID: 18-0773-9860 Endpoint: Analyzed: 31 Mar-16 10:35 Analysis: Parametric-Control vs Treatments **Official Results:** Yes Joe Freas Batch ID: 13-6147-0395 Test Type: Growth-Germination Analyst: Laboratory Seawater Start Date: 08 Jan-16 13:01 Protocol: EPA/600/R-95/136 (1995) Diluent: Brine: Not Applicable 10 Jan-16 13:01 Species: Macrocystis pyrifera Ending Date: Aquatic Bioassay Labs Collection **Duration:** 48h Source: Age: Client: Weston Solutions 14-0500-2328 Code: WST0116.086k Sample ID: LACDPW MALIBU ASBS Sample Date: 06 Jan-16 17:15 Material: Sample Water Project: Receive Date: 08 Jan-16 10:00 Source: **Bioassay Report** LACDPW-010616-ASBS-S01-Post Station: Sample Age: 44h NOEL LOEL TOEL τu **Data Transform** Zeta Alt Hyp Trials Seed PMSD >100 NA C > T NA NA 4.18% 100 1 NA Angular (Corrected) **Dunnett Multiple Comparison Test** Critical MSD **DF P-Value** P-Type Decision(a:5%) Control vs C-% Test Stat 0.8265 CDF Non-Significant Effect **Negative Control** 25 -0.2362 2.227 0.066 8 50 -0.1152 2.227 0.066 8 0.7894 CDF Non-Significant Effect 100 -1.445 2.227 0.066 8 0.9870 CDF Non-Significant Effect **Test Acceptability Criteria** Test Stat TAC Limits Overlap Decision Attribute Yes Passes Acceptability Criteria Control Resp 0.918 0.7 - NL Passes Acceptability Criteria PMSD 0.04177 NL - 0.2 No **ANOVA Table** DF F Stat P-Value Decision(a:5%) Source Sum Squares Mean Square 3 0.9005 0.4626 Non-Significant Effect Between 0.005927434 0.001975811 16 0.03510731 0.002194207 Error 19 Total 0.04103475 **Distributional Tests** Attribute Test Test Stat Critical P-Value Decision(a:1%) Bartlett Equality of Variance 1.631 11.34 0.6524 Equal Variances Variances 5.953 0.4540 Equal Variances Variances Mod Levene Equality of Variance 0.9349 0.1827 Equal Variances Variances Levene Equality of Variance 1.828 5.292 0.9525 0.4065 Normal Distribution Shapiro-Wilk W Normality 0.866 Distribution 0.2946 Normal Distribution 0.1486 Distribution Kolmogorov-Smirnov D 0.2235 **D'Agostino Skewness** 0.3488 2.576 0.7273 Normal Distribution Distribution 0.2364 Normal Distribution D'Agostino Kurtosis 1.184 2.576 Distribution 0.4669 Normal Distribution D'Agostino-Pearson K2 Omnibus 1.523 9.21 Distribution Normal Distribution Distribution Anderson-Darling A2 Normality 0.4427 3.878 0.2918 **Germination Rate Summary** CV% %Effect C-% Control Type Count Mean 95% LCL 95% UCL Median Min Max Std Err 0.9449 0.91 0.9 0.95 0.009695 2.36% 0.0% 0 Negative Control 5 0.918 0.8911 0.922 0.8981 0.9459 0.92 0.9 0.95 0.008602 2.09% -0.44% 25 5 0.92 0.8952 0.9448 0.91 0.9 0.95 0.008944 2.17% -0.22% 50 5 0.8993 0.9767 0.95 0.9 0.97 0.01393 3.32% -2.18% 0.938 100 5 Angular (Corrected) Transformed Summary Max Std Err CV% %Effect C-% Control Type Count Mean 95% LCL 95% UCL Median Min 3.23% 0.0% Negative Contro 5 1.283 1.231 1.334 1.266 1.249 1.345 0.01853 0 -0.55% 1.284 1.249 1.345 0.0166 2.88% 25 5 1.29 1.243 1.336 5 1.286 1.238 1.334 1.266 1.249 1.345 0.01727 3.0% -0.27% 50 1.325 1.245 1.406 1.345 1.249 1.397 0.02895 4.89% -3.34% 5 100

Report Date: Test Code:

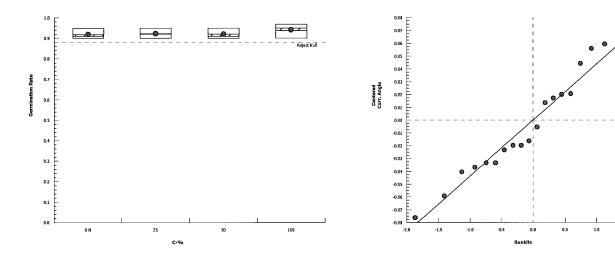
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2.0

1.5

							Test Coue:	W310110.000Kip 10-7274-0994
Macrocystis	Germination and	Germ	Tube Grow	th Test			Aquatic Bi	oassay & Consulting Labs, Inc.
Analysis ID: Analyzed:	18-0773-9860 31 Mar-16 10:38	5	Endpoint: Analysis:	Germination Parametric-C		eatments	CETIS Version: Official Results:	CETISv1.8.7 Yes
Germination	Rate Detail							
C-%	Control Type	Rep '	1 Rep 2	Rep 3	Rep 4	Rep 5		
0	Negative Control	0.9	0.93	0.91	0.95	0.9		
25		0.93	0.91	0.9	0.92	0.95		
50		0.91	0.93	0.95	0.91	0.9		
100		0.91	0.96	0.95	0.97	0.9		
Angular (Cor	rected) Transforn	ned D	etail				10 - 1021 - 0031 - 0000000 <u>7</u> -5,000000 <u>7</u> -5,0000000	
C-%	Control Type	Rep	1 Rep 2	Rep 3	Rep 4	Rep 5		
0	Negative Control	1.249	1.303	1.266	1.345	1.249		
25		1.303	1.266	1.249	1.284	1.345		
50		1.266	1.303	1.345	1.266	1.249		
100		1.266	1.369	1.345	1.397	1.249		
Germination	Rate Binomials							·····
C-%	Control Type	Rep '	1 Rep 2	Rep 3	Rep 4	Rep 5		
0	Negative Control	90/10	0 93/100	0 91/100	95/100	90/100		
25		93/10	0 91/100	0 90/100	92/100	95/100		
50		91/10	0 93/100	0 95/100	91/100	90/100		
100		91/10	0 96/100	0 95/100	97/100	90/100		

Graphics



								lest	Code:	VV510116	.086610	6-7274-698
Macrocystis G	Bermination and	Germ	Tube Growth	Test					Aquat	ic Bioassay &	Consultin	g Labs, Inc
Analysis ID: Analyzed:	21-1037-3833 31 Mar-16 10:3	5	•	ean Length arametric-Cor	ntrol vs Tre	atment	s		S Versio		.8.7	
Batch ID:	13-6147-0395		Test Type: G	rowth-Germin	ation			Anal	yst: 、	Joe Freas		
Start Date:	08 Jan-16 13:01		Protocol: El	PA/600/R-95/	136 (1995))		Dilue	ənt: l	Laboratory Seav	water	
Ending Date:	10 Jan-16 13:01		-	acrocystis py				Brin	e: l	Not Applicable		
Duration:	48h		Source: A	quatic Bioass	ay Labs Co	ollection	1	Age:				
Sample ID:	14-0500-2328			/ST0116.086k	ĸ			Clier		Weston Solution		
-	06 Jan-16 17:15			ample Water				Proj	ect: I	LACDPW MALI	BU ASBS	
	08 Jan-16 10:00)		oassay Repo								
Sample Age:	44h		Station: L/	ACDPW-0106	16-ASBS-	S01-P0	ost					
Data Transfor		Zeta	Alt Hyp	Trials	Seed			MSD	NOEL		TOEL	TU
Jntransformed		NA	C > T	NA	NA		3	8.02%	100	>100	NA	1
Dunnett Multi	ple Comparison	Test										
Control	vs C-%		Test Sta			F P-V		P-Type		ion(α:5%)		
Negative Contr			-0.5157	2.227	0.432 8			DF		ignificant Effect		
	50		0.2063	2.227	0.432 8			DF		ignificant Effect		
	100		-0.4126	2.227	0.432 8	0.87	23 C	DF	Non-S	ignificant Effect		
Fest Acceptat	oility Criteria											
Attribute	Test Stat		Limits	Overlap	Decisio							
Control Resp	14.32	10 - 1		Yes			ability Crit					
PMSD	0.03016	NL -	0.2	No	Passes	чссерта	ability Crit	teria	,			
ANOVA Table												
Source	Sum Squa	res	Mean So	· · · · · · · · · · · · · · · · · · ·	DF	F St		P-Value		ion(α:5%)		
Between	0.0655000	8	0.02183		3	0.23	323 0	.8726	Non-S	ignificant Effect		
Error	1.504		0.094000	002	16 19							
Fotal	1.5695				19							
Distributional				T (0 ((0.111		- l D		(40/)			
Attribute	Test	au a litu	of Variance	7est Stat 0.5759	11.34	0.90		Decision Equal Var				
Variances Variances			uality of Variance		5.953	0.90		Equal Val				
Variances		-	of Variance	0.2074	5.292	0.88		Equal Val				
Distribution			Normality	0.963	0.866	0.60		Normal D		n		
Distribution	Kolmogor		•	0.1388	0.2235	0.40		lormal D				
Distribution	D'Agostin	o Skev	wness	0.8158	2.576	0.41	146 N	lormal D	istributio	n		
Distribution	D'Agostin			0.3073	2.576	0.75		lormal D				
Distribution			rson K2 Omnibı		9.21	0.68		Normal D				
Distribution	Anderson	-Darlir	ng A2 Normality	0.3323	3.878	0.52	215 N	lormal D	istributio	n		
Mean Length	Summary											
C-%	Control Type	Cou		95% LCL				Min	Max	Std Err	CV%	%Effect
)	Negative Control		14.32	14.02	14.62	14.3		4	14.6	0.1068	1.67%	0.0%
25		5	14.42	14.04	14.8	14.6		4 4	14.7 14.0	0.1356	2.1% 2.5%	-0.7% 0.28%
50		5 5	14.28 14.4	13.84 14.01	14.72 14.79	14.2 14.4		4 4	14.9 14.8	0.1594 0.1414	2.5% 2.2%	0.28% -0.56%
100		U	14.4	14.01	14.19	14.4	, I		14.0	0.1414	£.£ /0	-0.0070
Mean Length				_	_	_	_					
C-%	Control Type	Rep		Rep 3	Rep 4	Rep						
כ	Negative Control		14	14.3	14.6	14.5						
25		14.6	14	14.2	14.6	14.7						
50		14.2	14.1	14.9	14	14.2						
100		444	14.2	14	116	1/ 5	2					

14.4

14.2

14

100

14.8

14.6

CETIS Ana	lytical Report				Report Date: Test Code:	31 Mar-16 10:38 (p 4 of 4) WST0116.086klp 16-7274-8994
Macrocystis (Germination and Ger	n Tube Grow	rth Test		Aquatic B	ioassay & Consulting Labs, Inc.
Analysis ID: Analyzed:	21-1037-3833 31 Mar-16 10:35	Endpoint: Analysis:	Mean Length Parametric-Control vs	s Treatments	CETIS Version: Official Results:	CETISv1.8.7 Yes
Graphics			-			
¹⁶ F				0.7 E	1	
14 =			Reject Nu3	0.6		•
12 -				0.5		×
-				gound a creat		
трбитэт 10 - 				Centered Untransformed 70 70 71 71	 	
s -				0.1		
6				-0.1	6 6	
4				-0.2		
2				-0.3		
<u>،</u> لـــــــ			I	-0.5		III
	0 N 25 C-	50	100	-2.0 -1.	.5 -1.0 -0.5 0.0 Rankits	0.5 1.0 1.5 2.0

7

		.,						Tes	t Code:		WST0116	.086klp ′	6-7274-899
Macroo	cystis G	ermination and	Germ Tub	e Grow	th Test				Aqua	tic Bi	oassay & (Consultin	g Labs, Inc.
Analys	is ID:	09-3543-0235	End	point:	Germination Ra	ate		CE	TIS Vers	ion:	CETISv1	8.7	
Analyz	ed:	31 Mar-16 10:36	6 Anal	ysis:	Linear Interpola	tion (ICPIN)	I.	Off	icial Res	ults:	Yes		
Batch I	D:	13-6147-0395	Test	Type:	Growth-Germin	ation		Ana	alyst:	Joe F	reas		
Start D	ate:	08 Jan-16 13:01	Prot	ocol:	EPA/600/R-95/	136 (1995)		Dilu	lent:	Labor	ratory Seav	vater	
Ending	Date:	10 Jan-16 13:01	Spee	cies:	Macrocystis py	rifera		Bri	ne:	Not A	pplicable		
Duratio		48h	Sou	rce:	Aquatic Bioassa	ay Labs Coll	ection	Age) :				
Sample	e ID:	14-0500-2328	Cod	e:	WST0116.086k			Clie	ent:	West	on Solutior	IS	
Sample	e Date:	06 Jan-16 17:15	Mate	erial:	Sample Water			Pro	ject:	LACE	OPW MALI	BU ASBS	
Receiv	e Date:	08 Jan-16 10:00	Sou	rce:	Bioassay Repo	rt							
Sample	e Age:	44h	Stat	ion:	LACDPW-0106	16-ASBS-S	01-Post						
inear	Interpo	lation Options											
K Trans	sform	Y Transform	Seed	d	Resamples	Exp 95%							
Linear		Linear	0		280	Yes	Two-	Point Inter	polation				
Fest Ac	cceptab	ility Criteria											
Attribu		Test Stat		S	Overlap	Decision							
Control	Resp	0.918	0.7 - NL		Yes	Passes Ad	ceptability	Criteria					
Point E	Estimate	es											
_evel	%	95% LCL	95% UCL	TU	95% LCL	95% UCL							
EC5	>100	N/A	N/A	<1	NA	NA							
EC10	>100	N/A	N/A	<1	NA	NA							
EC15	>100	N/A	N/A	<1	NA	NA							
EC20	>100	N/A	N/A	<1	NA	NA							
EC25	>100	N/A	N/A	<1	NA	NA							
EC40	>100	N/A	N/A	<1	NA	NA NA							
EC50	>100	N/A	N/A	<1	NA								
		tate Summary					lated Varia						_
<u>C-%</u>		ontrol Type	Count	Mean		Max 0.95	Std Err 0.009695	0.02168	CV%		%Effect 0.0%	A 459	B 500
25	IN	egative Control	5 5	0.918		0.95	0.009695	0.02108	2.09%		-0.44%	459 461	500
50			5	0.922	0.9	0.95	0.008944	0.01323	2.007		-0.22%	460	500
100			5	0.938		0.97	0.01393	0.03114	3.32%		-2.18%	469	500
Germin	nation F	ate Detail											
C-%		ontrol Type	Rep 1	Rep 2	2 Rep 3	Rep 4	Rep 5						
)			0.9	0.93	0.91	0.95	0.9						
25		-	0.93	0.91	0.9	0.92	0.95						
50			0.91	0.93	0.95	0.91	0.9						
100			0.91	0.96	0.95	0.97	0.9						
Germir	nation F	ate Binomials											
C-%		Control Type	Rep 1	Rep 2	2 Rep 3	Rep 4	Rep 5						
)		Negative Control	90/100	93/10	0 91/100	95/100	90/100						
,				04/40	0.00/4.00	92/100	05400						
-			93/100	91/10	0 90/100	92/100	95/100						
25 50			93/100 91/100	91/10 93/10		92/100 91/100	95/100 90/100						

CETIS Ana	alytical Report			Report Date: Test Code:	31 Mar-16 10:39 (p 2 of 4) WST0116.086klp 16-7274-8994
Macrocystis (Germination and Ge	rm Tube Grow	/th Test	Aquatic Bi	oassay & Consulting Labs, Inc.
Analysis ID: Analyzed:	09-3543-0235 31 Mar-16 10:36	Endpoint: Analysis:	Germination Rate Linear Interpolation (ICPIN)	CETIS Version: Official Results:	CETISv1.8.7 Yes
Graphics					
1.0 0.9			6		
0.8					
Germiniation Rate					
amme 0.5 0.4					
0.3					
0.1					
0.0 E 0	<u>∟ i i i i i i i i i i i i i i i i i i i</u>	60 60	601 (60		

000-055-186-4

CETIS™ v1.8.7.11

Analyst:_____ QA:____

is Germination D: 09-3318-70 31 Mar-16 13-6147-03 : 08 Jan-16 1	22 Enc 0:36 Ana	e Grow Ipoint: Iysis:	Mean Length				0.5710	•	ioassay & Consulting Labs, Ind					
31 Mar-16 ⁻ 13-6147-03 : 08 Jan-16 1	0:36 Ana	•	•				0.5710							
08 Jan-16 1			Linear Interpola	tion (ICPIN)				Version: al Results:	CETISv1.8.7 Yes					
	105 105	t Type:	Growth-Germin	ation			Analy		Freas					
	3:01 Pro	tocol:	EPA/600/R-95/				Dilue		oratory Seawater					
te: 10 Jan-16 1	3:01 Spe	cies:	Macrocystis py				Brine	Not	Applicable					
48h	Sou	Irce:	Aquatic Bioass	ay Labs Col	ection		Age:							
		le:		τ.				• • • • • •	ston Solutions					
ate: 06 Jan-16 1	7:15 Mat	erial:	Sample Water				Proje	ct: LAC	DPW MALIBU ASBS					
je: 44h	Sta	tion:	LACDPW-0106	16-ASBS-S	01-Pos	st								
erpolation Optio	ns													
			Resamples				1		U.U.Insurran					
Linear	192	7374	280	Yes		Iwo-Point	Interpo	lation						
-														
		ts					•							
sp 14.32	10 - NL		Yes	Passes A	cceptat	bility Criter	Ia							
nates														
95% L	CL 95% UCL	TU	95% LCL	95% UCL										
	N/A		NA											
	N/A													
	N/A	~1												
	•						D	0) (%)						
									%Effect 0.0%					
Negative Conf									-0.7%					
									0.28%					
	5 5	14.20	14	14.9 14.8				2.2%	-0.56%					
nth Detail														
-	Ren 1	Ren 2	2 Rep 3	Rep 4	Rep	5								
									·					
	ate: 06 Jan-16 1 ate: 08 Jan-16 1 ge: 44h erpolation Optio rm Y Transfo Linear ptability Criteria Test S sp 14.32 mates 5 95% L 100 N/A 100 N/A	ate: 06 Jan-16 17:15 Mat ate: 08 Jan-16 10:00 Sou ge: 44h Stat erpolation Options From Y Transform See Linear 192 ptability Criteria TAC Limi sp 14.32 10 - NL mates 95% LCL 95% UCL 100 N/A N/A 100 N/A S 5 5 5 5 5 5 5 5 5 5 5 5 5	ate: 06 Jan-16 17:15 Material: ate: 08 Jan-16 10:00 Source: ge: 44h Station: erpolation Options Seed Linear 1927374 ptability Criteria TAC Limits sp 14.32 10 - NL mates 95% LCL 95% UCL TU 100 N/A N/A <1	ate: 06 Jan-16 17:15 Material: Sample Water ate: 08 Jan-16 10:00 Source: Bioassay Repo ge: 44h Station: LACDPW-0106 erpolation Options Image: Control Type Resamples Linear 1927374 280 ptability Criteria Test Stat TAC Limits Overlap sp 14.32 10 - NL Yes mates 95% LCL 95% UCL TU 95% LCL 6 95% LCL 95% UCL TU 95% LCL 100 N/A N/A <1	ate: 06 Jan-16 17:15 Material: Sample Water ate: 08 Jan-16 10:00 Source: Bioassay Report ge: 44h Station: LACDPW-010616-ASBS-S erpolation Options station: LACDPW-010616-ASBS-S erpolation Options 1927374 280 Yes ptability Criteria Seed Resamples Exp 95% ptability Criteria Test Stat TAC Limits Overlap Decision sp 14.32 10 - NL Yes Passes Admates 6 95% LCL 95% UCL TU 95% LCL 95% UCL 100 N/A N/A <1	Atte: 06 Jan-16 17:15 Material: Sample Water Bioassay Report LACDPW-010616-ASBS-S01-Pox Tansform Seed Resamples Exp 95% CL LACDPW-010616-ASBS-S01-Pox Probability Options Test Stat TAC Limits Overlap Decision ptability Criteria Test Stat TAC Limits Overlap Decision sp 14.32 10 - NL Yes Passes Accepta mates Sign 14.32 10 - NL Yes Passes Accepta mates Sign 14.32 NA N/A Min NA Min NA Min Na Min Min Min <th colspan="4" m<="" td=""><td>Atte: 06 Jan-16 17:15 Material: Sample Water Bioassay Report LACDPW-010616-ASBS-S01-Post Bioassay Report LACDPW-010616-ASBS-S01-Post Source: Bioassay Report LACDPW-010616-ASBS-S01-Post Problem options Transform Seed Resamples Exp 95% CL Method Linear 1927374 280 Yes Two-Point Test Stat TAC Limits Overlap Decision sp 14.32 10 - NL Yes Passes Acceptability Criter mates op5% LCL 95% UCL Overlap Decision Test Stat TAC Limits Overlap Decision mates op5% LCL 95% UCL 95% UCL 0 Store of the N/A NA <th c<="" td=""><td>Action of the control of th</td><td>Image: Notice Naterial: Sample Water Project: LAC ate: 06 Jan-16 10:00 Source: Bioassay Report Bioassay Report</td></th></td></th>	<td>Atte: 06 Jan-16 17:15 Material: Sample Water Bioassay Report LACDPW-010616-ASBS-S01-Post Bioassay Report LACDPW-010616-ASBS-S01-Post Source: Bioassay Report LACDPW-010616-ASBS-S01-Post Problem options Transform Seed Resamples Exp 95% CL Method Linear 1927374 280 Yes Two-Point Test Stat TAC Limits Overlap Decision sp 14.32 10 - NL Yes Passes Acceptability Criter mates op5% LCL 95% UCL Overlap Decision Test Stat TAC Limits Overlap Decision mates op5% LCL 95% UCL 95% UCL 0 Store of the N/A NA <th c<="" td=""><td>Action of the control of th</td><td>Image: Notice Naterial: Sample Water Project: LAC ate: 06 Jan-16 10:00 Source: Bioassay Report Bioassay Report</td></th></td>				Atte: 06 Jan-16 17:15 Material: Sample Water Bioassay Report LACDPW-010616-ASBS-S01-Post Bioassay Report LACDPW-010616-ASBS-S01-Post Source: Bioassay Report LACDPW-010616-ASBS-S01-Post Problem options Transform Seed Resamples Exp 95% CL Method Linear 1927374 280 Yes Two-Point Test Stat TAC Limits Overlap Decision sp 14.32 10 - NL Yes Passes Acceptability Criter mates op5% LCL 95% UCL Overlap Decision Test Stat TAC Limits Overlap Decision mates op5% LCL 95% UCL 95% UCL 0 Store of the N/A NA <th c<="" td=""><td>Action of the control of th</td><td>Image: Notice Naterial: Sample Water Project: LAC ate: 06 Jan-16 10:00 Source: Bioassay Report Bioassay Report</td></th>	<td>Action of the control of th</td> <td>Image: Notice Naterial: Sample Water Project: LAC ate: 06 Jan-16 10:00 Source: Bioassay Report Bioassay Report</td>	Action of the control of th	Image: Notice Naterial: Sample Water Project: LAC ate: 06 Jan-16 10:00 Source: Bioassay Report Bioassay Report

Analyst:_____ QA:____

CETIS Ana	alytical Report			Report Date: Test Code:	31 Mar-16 10:39 (p 4 of 4) WST0116.086klp 16-7274-8994
Macrocystis	Germination and Ge	rm Tube Grow	vth Test		ioassay & Consulting Labs, Inc.
Analysis ID: Analyzed:	09-3318-7022 31 Mar-16 10:36	Endpoint: Analysis:	Mean Length Linear Interpolation (ICPIN)	CETIS Version: Official Results:	CETISv1.8.7 Yes
Graphics					
¹⁶ -					
14					
12					
Mean Length					
6					

20 40 60 80 100 C-%6

000-055-186-4

CETIS™ v1.8.7.11

Analyst:____

CETIS Mea	isurement l	Repo	rt					leport Date: est Code:			:39 (p 1 of 2) 16-7274-8994
Macrocystis G	Sermination and	d Germ	Tube Grow	th Test				Aquatic	Bioassay &	Consultin	g Labs, Inc.
Batch ID: Start Date: Ending Date: Duration:	13-6147-0395 08 Jan-16 13:0 10 Jan-16 13:0 48h		Test Type: Protocol: Species: Source:	Growth-Germin EPA/600/R-95 Macrocystis py Aquatic Bioass	/136 (1995) /rifera	llection	C	Analyst: Joe Freas Diluent: Laboratory Seawater Brine: Not Applicable Age:			
•	nple Date: 06 Jan-16 17:15 Material: Sample Water ceive Date: 08 Jan-16 10:00 Source: Bioassay Report						Client: Weston Solutions Project: LACDPW MALIBU ASBS				
Dissolved Ox	ygen-mg/L										
C-%	Control Type	Count	t Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Control	o 2	6.55	5.915	7.185	6.5	6.6	0.04999	0.0707	1.08%	0
25	-	2	6.65	4.744	8.556	6.5	6.8	0.15	0.2121	3.19%	0
50		2	6.4	3.859	8.941	6.2	6.6	0.2	0.2828	4.42%	0
100		2	6.55	2.103	11	6.2	6.9	0.35	0.495	7.56%	0
Overall		8	6.538			6.2	6.9				0 (0%)
pH-Units											
C-%	Control Type	Count	t Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Control	o 2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
25		2	7.8	7.787	7.813	7.8	7.8	0	0	0.0%	0
50		2	7.75	7.115	8.385	7.7	7.8	0.05001	0.07072	0.91%	0
100		2	7.75	7.115	8.385	7.7	7.8	0.05001	0.07072	0.91%	0
Overall		8	7.8			7.7	7.9				0 (0%)
Salinity-ppt											
C-%	Control Type	Count	t Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Control	o 2	34	34	34	34	34	0	0	0.0%	0
25		2	34	34	34	34	34	0	0	0.0%	0
50		2	34	34	34	34	34	0	0	0.0%	0
100		2	34	34	34	34	34	0	0	0.0%	0
Overall		8	34			34	34				0 (0%)
Temperature-	°C										
C-%	Control Type	Count		95% LCL	95% UCL	Min	Мах	Std Err	Std Dev	CV%	QA Count
0	Negative Control	52	14.85	14.21	15.49	14.8	14.9	0.05004	0.07077	0.48%	0
05		•	440	44.70	44.00	440	440	^	0	0.00/	^

0.0%

0.48%

0.48%

0

0

0

0 (0%)

14.78

14.21

14.21

14.82

15.49

15.49

14.8

14.8

14.8

14.8

14.8

14.9

14.9

14.9

0

0.05004

0.05004

0

0.07077

0.07077

14.8

14.85

14.85

14.84

2

2

2

8

25

50

100

Overall

Macrocystis Germination and Germ Tube Growth Test

Dissolved	Oxygen-mg/L					
C-%	Control Type	1	2			
0	Negative Contr	6.6	6.5	Harry C.	 	
25		6.5	6.8			
50		6.6	6.2			
100		6.9	6.2			
pH-Units						
C-%	Control Type	1	2			
0	Negative Contr	7.9	7.9		 	
25		7.8	7.8			
50		7.8	7.7			
100		7.8	7.7			
Salinity-pp	ot					
C-%	Control Type	1	2			
0	Negative Contr	34	34			
25		34	34			
50		34	34			
100		34	34			
Temperatı	ıre-°C					
C-%	Control Type	1	2			

6-%	Control Type	1	2	
0	Negative Contr	14.8	14.9	
25		14.8	14.8	
50		14.9	14.8	
100		14.8	14.9	

Aquatic Bioassay & Consulting Labs, Inc.

009-923-732-3



May 13, 2016

Mr Dan McCoy Weston Solutions 5817 Dryden Place, Suite 101 Carlsbad, CA 92008

Dear Mr. McCoy:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms, EPA/R-95/136.* "All acceptability criteria were met and the concentration-response was normal. Test was set within holding time, reference toxicant was within limits, and all other TAC was met. This is a valid test." Results were as follows:

CLIENT: SAMPLE I.D.: DATE RECEIVED: ABC LAB. NO.: Weston Solutions LACDPW-030616-ASBS-S01-Post 3/8/2016 WST0316.052

MYTILUS SHELL DEVELOPMENT BIOASSAY

NOEC = TUc =	100.00 % 1.00
EC25 =	>100.00 %
EC50 =	>100.00 %

Yours/very truly, Scott Johnson

Laboratory Director

oens sun	nmary Repo	rt						Report Test C			May-16 10: .052myt 0	54 (p 1 of 19-3773-829
Mussel Shell [Development Te	st							Aquatic I	Bioassay &	Consulting	g Labs, Inc
Batch ID: Start Date: Ending Date: Duration:	15-6768-5281 08 Mar-16 13:00 10 Mar-16 13:00 48h) Prot	ocol: cies:	Development-S EPA/600/R-95/ Mytilis gallopro Carlsbad Aqua	136 (1995) vincialis			Analys Diluen Brine: Age:	t: Lab	Freas poratory Wate Applicable	er	
Sample ID: Sample Date: Receive Date: Sample Age:	08 Mar-16 10:20		erial: rce:	WST0316.052r Sample Water Bioassay Repo LACDPW-0306	rt	01-Post		Client: Projec		ston Solutio CDPW MALI		
Comparison S	ummary											
Analysis ID	Endpoint		NOEL	LOEL	TOEL	PMSD	TU '		Method			
20-1538-5799	Combined Prop	ortion Norm	100	>100	NA	2.86%	1		Dunnett N	Multiple Com	parison Te	st
Point Estimate	e Summary											
Analysis ID	Endpoint		Level	%	95% LCL	95% UCL	τU		Method			
	Combined Prop	ortion Norm	EC5	>100	N/A	N/A	<1		Linear Int	erpolation (I	CPIN)	
			EC10	>100	N/A	N/A	<1					
			EC15	>100	N/A	N/A	<1					
			EC20	>100	N/A	N/A	<1					
			EC25	>100	N/A	N/A	<1					
			EC40	>100	N/A	N/A	<1					
			EC50	>100	N/A	N/A	<1					
Tost Accontab												
-	-		A 44-11-		Test Otet	TAO Line	4-		0	Desision		
Analysis ID	Endpoint	ortion Norm	Attrib PMSD		Test Stat 0.02863	TAC Limi NL - 0.25	ts		Overlap No	Decision Passes A	cceptability	Criteria
Analysis ID 20-1538-5799	Endpoint Combined Prope						ts		•		cceptability	v Criteria
Analysis ID 20-1538-5799 Combined Pro	Endpoint Combined Propo portion Normal						ts Max		•		cceptability CV%	
Analysis ID 20-1538-5799 Combined Pro C-%	Endpoint Combined Prope	Summary Count	PMSD	95% LCL	0.02863	NL - 0.25			No	Passes A Std Dev		
Analysis ID 20-1538-5799 Combined Pro C-%	Endpoint Combined Prop portion Normal Control Type	Summary Count	PMSD Mean	95% LCL 7 0.9297	0.02863 95% UCL	NL - 0.25 Min	Max	:	No Std Err	Passes A Std Dev	CV%	%Effect
Analysis ID 20-1538-5799 Combined Pro C-% 0 25	Endpoint Combined Prop portion Normal Control Type	Summary Count 5	PMSD Mean 0.9467	95% LCL 7 0.9297 3 0.9389	0.02863 95% UCL 0.9637	NL - 0.25 Min 0.9289	Max 0.96	89	No Std Err 0.006126	Passes A Std Dev 0.0137 0.01201	CV%	%Effect 0.0%
Analysis ID 20-1538-5799 Combined Pro C-% 0 25 50	Endpoint Combined Prop portion Normal Control Type	Summary Count 5 5	PMSD Mean 0.9467 0.9538	95% LCL 7 0.9297 3 0.9389	0.02863 95% UCL 0.9637 0.9687	NL - 0.25 Min 0.9289 0.9378	Max 0.96 0.96	89 44	No Std Err 0.006126 0.00537	Passes A Std Dev 0.0137 0.01201	CV% 1.45% 1.26%	%Effec 0.0% -0.75%
Analysis ID 20-1538-5799 Combined Pro C-% 0 25 50 100	Endpoint Combined Prop portion Normal Control Type	Summary Count 5 5 5 5 5 5	PMSD Mean 0.9467 0.9538 0.9547	95% LCL 7 0.9297 3 0.9389 7 0.9415	0.02863 95% UCL 0.9637 0.9687 0.9678	NL - 0.25 Min 0.9289 0.9378 0.9378	Max 0.96 0.96	89 44	No Std Err 0.006126 0.00537 0.004745	Passes A Std Dev 0.0137 0.01201 0.01061	CV% 1.45% 1.26% 1.11%	%Effect 0.0% -0.75% -0.85%
Analysis ID 20-1538-5799 Combined Pro C-% 0 25 50 100 Combined Pro	Endpoint Combined Propo portion Normal Control Type Negative Control	Summary Count 5 5 5 5 5 5	PMSD Mean 0.9467 0.9538 0.9547	95% LCL 7 0.9297 3 0.9389 7 0.9415 0.9083	0.02863 95% UCL 0.9637 0.9687 0.9678	NL - 0.25 Min 0.9289 0.9378 0.9378	Max 0.96 0.96	89 44	No Std Err 0.006126 0.00537 0.004745	Passes A Std Dev 0.0137 0.01201 0.01061	CV% 1.45% 1.26% 1.11%	%Effec 0.0% -0.75% -0.85%
Analysis ID 20-1538-5799 Combined Pro C-% 0 25 50 100 Combined Pro C-%	Endpoint Combined Propo portion Normal Control Type Negative Control	Summary Count 5 5 5 5 5 Detail Rep 1	PMSD Mean 0.9467 0.9538 0.9547 0.944	95% LCL 7 0.9297 3 0.9389 7 0.9415 0.9083	0.02863 95% UCL 0.9637 0.9687 0.9678 0.9797	NL - 0.25 Min 0.9289 0.9378 0.9378 0.9022	Max 0.96 0.96	89 44	No Std Err 0.006126 0.00537 0.004745	Passes A Std Dev 0.0137 0.01201 0.01061	CV% 1.45% 1.26% 1.11%	%Effec 0.0% -0.75% -0.85%
Analysis ID 20-1538-5799 Combined Pro C-% 0 25 50 100 Combined Pro C-% 0 25 50 100 Combined Pro C-% 0 0	Endpoint Combined Propo oportion Normal Control Type Negative Control	Summary Count 5 5 5 5 5 Detail Rep 1	PMSD Mean 0.9467 0.9538 0.9547 0.944 Rep 2	95% LCL 7 0.9297 3 0.9389 7 0.9415 0.9083 Rep 3	0.02863 95% UCL 0.9637 0.9687 0.9678 0.9797 Rep 4	NL - 0.25 Min 0.9289 0.9378 0.9378 0.9378 0.9022 Rep 5	Max 0.96 0.96	89 44	No Std Err 0.006126 0.00537 0.004745	Passes A Std Dev 0.0137 0.01201 0.01061	CV% 1.45% 1.26% 1.11%	%Effect 0.0% -0.75% -0.85%
Analysis ID 20-1538-5799 Combined Pro C-% 0 25 50 100 Combined Pro C-% 0 25	Endpoint Combined Propo oportion Normal Control Type Negative Control	Summary <u>Count</u> 5 5 5 5 Detail <u>Rep 1</u> 0.9378	PMSD Mean 0.9467 0.9538 0.9547 0.944 Rep 2 0.96	95% LCL 7 0.9297 3 0.9389 7 0.9415 0.9083 Rep 3 0.9289 0.9689	0.02863 95% UCL 0.9637 0.9687 0.9678 0.9797 Rep 4 0.96	NL - 0.25 Min 0.9289 0.9378 0.9378 0.9022 Rep 5 0.9467	Max 0.96 0.96	89 44	No Std Err 0.006126 0.00537 0.004745	Passes A Std Dev 0.0137 0.01201 0.01061	CV% 1.45% 1.26% 1.11%	%Effect 0.0% -0.75% -0.85%
Analysis ID 20-1538-5799 Combined Pro C-% 0 25 50 100 Combined Pro C-% 0 25 50	Endpoint Combined Propo oportion Normal Control Type Negative Control	Summary Count 5 5 5 5 5 5 5 5 5 5 5 5 5	PMSD Mean 0.9467 0.9538 0.9547 0.944 Rep 2 0.96 0.96	95% LCL 7 0.9297 3 0.9389 7 0.9415 0.9083 Rep 3 0.9289 0.9689 1 0.9644	0.02863 95% UCL 0.9637 0.9687 0.9678 0.9797 Rep 4 0.96 0.9556	NL - 0.25 Min 0.9289 0.9378 0.9378 0.9022 Rep 5 0.9467 0.9378	Max 0.96 0.96	89 44	No Std Err 0.006126 0.00537 0.004745	Passes A Std Dev 0.0137 0.01201 0.01061	CV% 1.45% 1.26% 1.11%	%Effect 0.0% -0.75% -0.85%
Analysis ID 20-1538-5799 Combined Pro C-% 0 25 50 100 Combined Pro C-% 0 25 50 100	Endpoint Combined Propo oportion Normal Control Type Negative Control	Summary Count 5 5 5 5 Detail Rep 1 0.9378 0.9467 0.96 0.9733	PMSD 0.9467 0.9538 0.9547 0.944 Rep 2 0.96 0.96 0.9511	95% LCL 7 0.9297 3 0.9389 7 0.9415 0.9083 Rep 3 0.9289 0.9689 1 0.9644	0.02863 95% UCL 0.9637 0.9687 0.9678 0.9797 Rep 4 0.96 0.9556 0.9378	NL - 0.25 Min 0.9289 0.9378 0.9378 0.9378 0.9022 Rep 5 0.9467 0.9378 0.9378	Max 0.96 0.96	89 44	No Std Err 0.006126 0.00537 0.004745	Passes A Std Dev 0.0137 0.01201 0.01061	CV% 1.45% 1.26% 1.11%	%Effect 0.0% -0.75% -0.85%
Analysis ID 20-1538-5799 Combined Pro C-% 0 25 50 100 Combined Pro C-% 0 25 50 100 Combined Pro	Endpoint Combined Propo oportion Normal Control Type Negative Control oportion Normal Control Type Negative Control	Summary Count 5 5 5 5 Detail Rep 1 0.9378 0.9467 0.96 0.9733	PMSD 0.9467 0.9538 0.9547 0.944 Rep 2 0.96 0.96 0.9511	95% LCL 7 0.9297 3 0.9389 7 0.9415 0.9083 7 0.9083 7 0.9289 0.9689 0.9689 1 0.9689	0.02863 95% UCL 0.9637 0.9687 0.9678 0.9797 Rep 4 0.96 0.9556 0.9378	NL - 0.25 Min 0.9289 0.9378 0.9378 0.9378 0.9022 Rep 5 0.9467 0.9378 0.9378	Max 0.96 0.96	89 44	No Std Err 0.006126 0.00537 0.004745	Passes A Std Dev 0.0137 0.01201 0.01061	CV% 1.45% 1.26% 1.11%	%Effect 0.0% -0.75% -0.85%
Analysis ID 20-1538-5799 Combined Pro C-% 0 25 50 100 Combined Pro C-% 100 Combined Pro C-%	Endpoint Combined Propo oportion Normal Control Type Negative Control oportion Normal Control Type Negative Control	Summary Count 5 5 5 5 Detail Rep 1 0.9378 0.9467 0.96 0.9733 Binomials Rep 1	PMSD 0.9467 0.9538 0.9547 0.944 Rep 2 0.96 0.9511 0.9378	95% LCL 7 0.9297 3 0.9389 7 0.9415 0.9083 7 0.9289 0.9689 0.9689 1 0.9689 1 0.9689 8 0.9689 Rep 3	0.02863 95% UCL 0.9637 0.9687 0.9678 0.9797 Rep 4 0.96 0.9556 0.9378 0.9378	NL - 0.25 Min 0.9289 0.9378 0.9378 0.9022 Rep 5 0.9467 0.9378 0.96 0.9022	Max 0.96 0.96	89 44	No Std Err 0.006126 0.00537 0.004745	Passes A Std Dev 0.0137 0.01201 0.01061	CV% 1.45% 1.26% 1.11%	%Effec 0.0% -0.75% -0.85%
Combined Pro C-% 25 50 100 Combined Pro C-% 0 25 50 100 Combined Pro Combined Pro	Endpoint Combined Propo oportion Normal Control Type Negative Control oportion Normal Control Type Negative Control	Summary Count 5 5 5 5 Detail Rep 1 0.9378 0.9467 0.96 0.9733 Binomials Rep 1	PMSD 0.9467 0.9538 0.9547 0.944 Rep 2 0.96 0.9511 0.9378 Rep 2	95% LCL 7 0.9297 3 0.9389 7 0.9415 0.9083 7 0.9289 0.9689 0.9689 1 0.9689 1 0.9689 1 0.9689 1 0.9689 2 0.9689 2 0.9689	0.02863 95% UCL 0.9637 0.9687 0.9678 0.9797 Rep 4 0.96 0.9556 0.9378 0.9378 0.9378	NL - 0.25 Min 0.9289 0.9378 0.9378 0.9022 Rep 5 0.9467 0.9378 0.96 0.96 0.9022 Rep 5	Max 0.96 0.96	89 44	No Std Err 0.006126 0.00537 0.004745	Passes A Std Dev 0.0137 0.01201 0.01061	CV% 1.45% 1.26% 1.11%	%Effect 0.0% -0.75% -0.85%
Analysis ID 20-1538-5799 Combined Pro C-% 0 25 50 100 Combined Pro C.% 0 25 50 100 Combined Pro 25 50 100 Combined Pro Combined Pro Combined Pro Combined Pro 0	Endpoint Combined Propo oportion Normal Control Type Negative Control oportion Normal Control Type Negative Control	Summary Count 5 5 5 5 Detail Rep 1 0.9378 0.9467 0.96 0.9733 Binomials Rep 1 211/225	PMSD 0.9467 0.9538 0.9547 0.944 Rep 2 0.96 0.96 0.9511 0.9378 Rep 2 216/22	95% LCL 7 0.9297 3 0.9389 7 0.9415 0.9083 7 0.9289 0.9689 0.9689 1 0.9689 1 0.9689 1 0.9689 1 0.9689 1 0.9689 2 0.9689 2 209/225 2 209/225	0.02863 95% UCL 0.9637 0.9687 0.9678 0.9797 Rep 4 0.96 0.9556 0.9378 0.9378 0.9378 Rep 4 216/225	NL - 0.25 Min 0.9289 0.9378 0.9378 0.9022 Rep 5 0.9467 0.9378 0.96 0.9022 Rep 5 213/225	Max 0.96 0.96	89 44	No Std Err 0.006126 0.00537 0.004745	Passes A Std Dev 0.0137 0.01201 0.01061	CV% 1.45% 1.26% 1.11%	%Effec 0.0% -0.75% -0.85%

Analyst:_____ QA:____

 Report Date:
 13 May-16 10:54 (p 1 of 2)

 Test Code:
 WST0316.052myt | 09-3773-8294

							lest	Code:	VVS10316.		
Mussel Shell	Development Te	st						Aquati	ic Bioassay &	Consultin	g Labs, Ind
Analysis ID: Analyzed:	20-1538-5799 13 May-16 10:5		•	•	ined Proportion Normal netric-Control vs Treatments			IS Versio cial Resu	on: CETISv1 Ilts: Yes	.8.7	
Batch ID:	15-6768-5281	. T e	est Type: [Development-S	Survival		Ana	lyst:	Joe Freas		
Start Date:	08 Mar-16 13:00	0 P	rotocol:	EPA/600/R-95/	/136 (1995)		Dilu	ent: l	_aboratory Wate	ər	
Ending Date:	10 Mar-16 13:00	0 s	pecies: N	Mytilis gallopro	vincialis		Brin	e: 1	Not Applicable		1
Duration:	48h	S	-	-	lsbad Aquafarms CA			Age:			
Sample ID:	16-4676-7952	С	ode: \	WST0316.052r	m		Clie	nt: \	Weston Solutior	ıs	·····
Sample Date:	06 Mar-16	M	aterial:	Sample Water			Proj	ect: L	ACDPW MALI	BU ASBS	
Receive Date:	: 08 Mar-16 10:20	o s	ource: E	Bioassay Repo	ort						
Sample Age:	61h (1 °C)	S	tation: L	ACDPW-0306	316-ASBS-S	01-Post					
Data Transfor	rm	Zeta	Alt Hy	o Trials	Seed		PMSD	NOEL	LOEL	TOEL	TU
Angular (Corre	ected)	NA	C > T	NA	NA		2.86%	100	>100	NA	1
Dunnett Multi	iple Comparison	Test									
Control	vs C-%		Test St	at Critical	MSD DF	P-Value	P-Type	Decisi	on(α:5%)		
Negative Conti	rol 25		-0.6487	2.227	0.056 8	0.9189	CDF	Non-Si	ignificant Effect		
-	50		-0.7184	2.227	0.056 8	0.9297	CDF	Non-Si	ignificant Effect		
	100		0.04602		0.056 8	0.7332	CDF		ignificant Effect		
Test Acceptat	bility Criteria										
Attribute	Test Stat	TAC Lir	nits	Overlap	Decision						
PMSD	0.02863	NL - 0.2	:5	No	Passes A	cceptability	Criteria				
ANOVA Table)										
Source	Sum Squa	ares	Mean S	quare	DF	F Stat	P-Value	Decisi	on(α:5%)		
Between	0.0015895	79	0.00052	298596	3	0.3352	0.8001	Non-Si	ignificant Effect		
Error	0.0252947	4	0.00158	30921	16						
Total	0.0268843	2			19						
Distributional	Tests										
Attribute	Test			Test Stat	Critical	P-Value	Decision	(α:1%)			
Variances	Bartlett Ec			4.387	11.34	0.2226	Equal Var				
Variances		-	ity of Variar		5.953	0.1912	Equal Var				
Variances	Levene Ed	•		2.728	5.292	0.0784	Equal Var				
Distribution	Shapiro-W		-	0.9799	0.866	0.9327	Normal D				
Distribution	Kolmogor			0.09497	0.2235	1.0000	Normal D				
Distribution	D'Agostin			0.4758	2.576	0.6342	Normal D				
Distribution	D'Agostin			0.5927	2.576	0.5534	Normal D				
Distribution	-		n K2 Omnik		9.21	0.7491	Normal D				
Distribution		-	A2 Normality	y 0.2207	3.878	0.8672	Normal D	Istribution	n		
	oportion Normal		-								
C-%	Control Type	Count	Mean	95% LCL		Median	Min	Max	Std Err	CV%	%Effect
	Negative Control		0.9467	0.9297	0.9637	0.9467	0.9289	0.96	0.006127	1.45%	0.0%
		5	0.9538	0.9389	0.9687	0.9556	0.9378	0.9689		1.26%	-0.75%
		5	0.9547	0.9415	0.9678	0.96	0.9378	0.9644		1.11%	-0.85%
50							0.9022	0.9733	0.01285	3.04%	0.28%
50		5	0.944	0.9083	0.9797	0.9378	0.9022			5.04 70	
50 100 Angular (Corre	ected) Transform	5 ned Sum	0.944 Imary	0.9083							
50 100 Angular (Corr C-%	Control Type	5 ned Sum Count	0.944 Imary Mean	0.9083 95% LC L	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
50 100 Angular (Corr C-% 0	-	5 ned Sum Count 5	0.944 Imary <u>Mean</u> 1.339	0.9083 95% LCL 1.301	95% UCL 1.377	Median 1.338	Min 1.301	Max 1.369	Std Err 0.01364	CV% 2.28%	%Effect 0.0%
50 100 Angular (Corr C-% 0 25	Control Type	5 ned Sum Count 5 5	0.944 mary Mean 1.339 1.356	0.9083 95% LCL 1.301 1.32	95% UCL 1.377 1.391	Median 1.338 1.358	Min 1.301 1.319	Max 1.369 1.393	Std Err 0.01364 0.01288	CV% 2.28% 2.12%	%Effect 0.0% -1.22%
	Control Type	5 ned Sum Count 5	0.944 Imary <u>Mean</u> 1.339	0.9083 95% LCL 1.301	95% UCL 1.377	Median 1.338	Min 1.301	Max 1.369	Std Err 0.01364	CV% 2.28%	%Effect 0.0%

Analyst:_____ QA:____

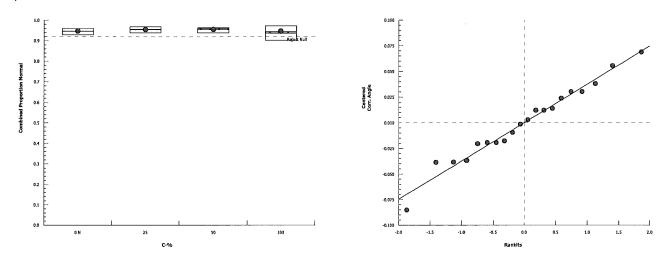
Report Date: 13 May-16 10:54 (p 2 of 2) Test Code:

WST0316.052myt | 09-3773-8294

Mussel Shell	Development Te	st					Aquatic Bi	oassay & Consulting Labs, Inc.
Analysis ID: Analyzed:	20-1538-5799 13 May-16 10:5			-	oortion Norm htrol vs Trea		CETIS Version: Official Results:	CETISv1.8.7 Yes
Combined Pr	oportion Normal	Detail						
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5		
0	Negative Control	0.9378	0.96	0.9289	0.96	0.9467		
25		0.9467	0.96	0.9689	0.9556	0.9378		
50		0.96	0.9511	0.9644	0.9378	0.96		
100		0.9733	0.9378	0.9689	0.9378	0.9022		
Angular (Cor	rected) Transforn	ned Detail					· · · · · · · · · · · · · · · · · · ·	
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	•	
0	Negative Control	1.319	1.369	1.301	1.369	1.338	······································	
25		1.338	1.369	1.393	1.358	1.319		
50		1.369	1.348	1.381	1.319	1.369		
100		1.407	1.319	1.393	1.319	1.253		
Combined Pr	oportion Normal	Binomials						
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5		
0	Negative Control	211/225	216/225	209/225	216/225	213/225		
25		213/225	216/225	218/225	215/225	211/225		
50 [·]		216/225	214/225	217/225	211/225	216/225		

Graphics

100



211/225

203/225

211/225

218/225

219/225

QA:_____

13 May-16 10:54 (p 1 of 2) Report Date: Test Code:

WST0316.052mvt | 09-3773-8294

		<i>,</i>						Test	Code:	WST0316	.052myt 0	9-3773-829
Musse	I Shell I	Development Te	st						Aquatic	Bioassay &	Consulting	g Labs, Inc
Analys Analyz		20-0956-8785 13 May-16 10:5		dpoint: alysis:	Combined Prop Linear Interpola				S Version ial Results		.8.7	
Batch	D:	15-6768-5281	Tes	st Type:	Development-S	Survival		Anal	yst: Joe	e Freas		
Start D	ate:	08 Mar-16 13:00		tocol:	EPA/600/R-95/			Dilu		poratory Wat	er	
Ending				Brin	e: No	t Applicable						
Duratio		48h	So	urce:	Carlsbad Aquat			Age:				
Sample	e ID:	16-4676-7952	Co	de:	WST0316.052m				nt: We	ston Solutio	ns	
Sample	Date:	06 Mar-16	Ma	terial:	Sample Water			Proj	ect: LA	CDPW MALI	BU ASBS	
Receiv	e Date:	08 Mar-16 10:20) So i	urce:	Bioassay Repo	rt						
Sample	e Age:	61h (1 °C)	Sta	tion:	LACDPW-0306	616-ASBS-S	01-Post					
inear	Interpo	lation Options										
(Tran	sform	Y Transform	See	d	Resamples	Exp 95%	CL Meth	od				
inear		Linear	0		280	Yes	Two-	Point Interp	olation			
Point E	stimate	es										
_evel	%	95% LCL	95% UCL		95% LCL	95% UCL						
EC5	>100	N/A	N/A	<1	NA	NA						
EC10	>100	N/A	N/A	<1	NA	NA						
EC15	>100	N/A	N/A	<1	NA	NA						
EC20	>100	N/A	N/A	<1	NA	NA						
EC25	>100	N/A	N/A	<1	NA	NA						
EC40 EC50	>100 >100	N/A N/A	N/A N/A	<1 <1	NA NA	NA NA						
					NA .							
		oportion Normal	-				lated Varia		0.1%	0/ 555		-
C-%		ontrol Type legative Control	Count 5	Mean 0.946		Max 0.96	Std Err 0.006127	Std Dev 0.0137	CV%	%Effect 0.0%	A 1065	B 1125
, 25		legative Control	5	0.940		0.9689	0.00537	0.0137	1.45 %	-0.75%	1003	1125
50			5	0.954		0.9644	0.00337	0.01201	1.11%	-0.85%	1073	1125
00			5	0.944		0.9733	0.01285	0.02873	3.04%	0.28%	1062	1125
	and Dro	portion Normal										
-%		ontrol Type	Rep 1	Rep 2	2 Rep 3	Rep 4	Rep 5					
)			0.9378	0.96	0.9289	0.96	0.9467					
:5		oguite control	0.9467	0.96	0.9689	0.9556	0.9378					
50			0.96	0.951		0.9378	0.96					
100			0.9733	0.937		0.9378	0.9022					
	ned Pro	portion Normal	Binomial	3								
Combir		Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
						216/225	213/225					
Combin C-%		Negative Control	211/225	216/2	25 209/225	210/220						
C-%			211/225 213/225	216/2 216/2		215/225	211/225					
C-%					25 218/225							

Analyst:_____ QA:____

CETIS Ana	lytical Report			Report Date: Test Code:	13 May-16 10:54 (p 2 of 2) WST0316.052myt 09-3773-8294
Mussel Shell	Development Test			Aquatic B	ioassay & Consulting Labs, Inc.
Analysis ID: Analyzed:	20-0956-8785 13 May-16 10:53	Endpoint: Analysis:	Combined Proportion Normal Linear Interpolation (ICPIN)	CETIS Version: Official Results:	CETISv1.8.7 Yes
Graphics					
¹⁰ E					
0.9	Ū				
0.8 - 					
Combined Proportion Normal					
odau 0.5					
0 0.4					
E0					
0.2					
	20 40	60			
U	20 40 C-4		en 162		

000-055-186-4

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Analyst: _____ QA:____

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CETIS Measurement Report

Report Date: Test Code:

13 May-16 10:54 (p 1 of 2) WST0316.052myt | 09-3773-8294

Mussel Shell	Development T	est			Aquatic Bioassay & Consulting Labs, Inc.						
Batch ID: Start Date: Ending Date: Duration:		08 Mar-16 13:00 Protocol 10 Mar-16 13:00 Species:			Development-Survival EPA/600/R-95/136 (1995) Mytilis galloprovincialis Carlsbad Aquafarms CA				Joe Freas Laboratory Wa Not Applicable		
Sample ID: Sample Date: Receive Date: Sample Age:	06 Mar-16 : 08 Mar-16 10:2	20	Code: Material: Source: Station:	WST0316.052 Sample Water Bioassay Repo LACDPW-030	ort	601-Post		Client: Project:	Weston Solutio		
Dissolved Ox	ygen-mg/L										M****** **
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
0	Negative Contro	2	6.7	5.429	7.971	6.6	6.8	0.099	99 0.1414	2.11%	0
25	-	2	6.7	4.159	9.241	6.5	6.9	0.2	0.2828	4.22%	0
50		2	6.35	4.444	8.256	6.2	6.5	0.15	0.2121	3.34%	0`
100		2	6.7	5.429	7.971	6.6	6.8	0.099	99 0.1414	2.11%	0
Overall		8	6.613			6.2	6.9				0 (0%)
pH-Units											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
0	Negative Contro	2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
25		2	7.8	7.787	7.813	7.8	7.8	0	0	0.0%	0
50		2	7.75	7.115	8.385	7.7	7.8	0.050	01 0.07072	0.91%	0
100		2	7.7	7.698	7.702	7.7	7.7	0	0	0.0%	0
Overall		8	7.788			7.7	7.9				0 (0%)
Salinity-ppt											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
0	Negative Contro	2	34	34	34	34	34	0	0	0.0%	0
25		2	34	34	34	34	34	0	0	0.0%	0
50		2	34	34	34	34	34	0	0	0.0%	0
100		2	34	34	34	34	34	0	0	0.0% .	0
Overall		8	34			34	34	•			0 (0%)
Temperature-	°C								,		
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std E	rr Std Dev	CV%	QA Count
0	Negative Control		14.85	14.21	15.49	14.8	14.9	0.050		0.48%	0
25		2	14.85	14.21	15.49	14.8	14.9	0.050		0.48%	0
50		2	14.85	14.21	15.49	14.8	14.9	0.050		0.48%	0
100		2	14.85	14.21	15.49	14.8	14.9	0.050	04 0.07077	0.48%	0
Overall		8	14.85			14.8	14.9				0 (0%)

Analyst:_____ QA:_____

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Aquatic Bioassay & Consulting Labs, Inc.

Mussel Shell Development Test

Dissolve	d Oxygen-mg/L				
C-%	Control Type	1	2		
0	Negative Contr	6.6	6.8		
25		6.5	6.9		
50		6.2	6.5		
100		6.6	6.8		
pH-Units					
C-%	Control Type	1	2		
0	Negative Contr	7.9	7.9	 	
25		7.8	7.8		
50		7.8	7.7		
100		7.7	7.7		
Salinity-p	opt				
C-%	Control Type	1	2		
0	Negative Contr	34	34		
25	٠ ١	34	34		
50		34	34		
100		34	34	 	
Temperat	ture-°C				
C-%	Control Type	1	2		
0	Negative Contr	14.8	1/ 0		

0	Negative Contr	14.8	14.9
25		14.8	14.9
50		14.8	14.9
100		14.8	14.9

Analyst:_____ QA:____



May 13, 2016

Mr. Dan McCoy Weston Solutions 5817 Dryden Place, Suite 101 Carlsbad, CA 92008

Dear Mr. McCoy:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms, EPA/R-95/136.* "All acceptability criteria were met and the concentration-response was normal. Test was set within holding time, reference toxicant was within limits, and all other TAC was met. This is a valid test." Results were as follows:

CLIENT: SAMPLE I.D.: DATE RECEIVED: ABC LAB. NO.:

Scott Johnson Laboratory Director Weston Solutions LACDPW-030616-ASBS-S01-Post 3/8/2016 WST0316.052

CHRONIC KELP GERMINATION AND GROWTH BIOASSAY

GERMINATION	NOEC = TUc = EC25 = EC50 =	100.00 % 1.00 >100.00 % >100.00 %
TUBE LENGTH	NOEC = TUc =	100.00 %
,	IC25 =	>100.00 %
Yoursvery truly,	IC50 =	>100.00 %

29 north olive st. ventura, ca 93001 (805) 643 5621 www.aquabio.org

CETIS Summary Report

15 May-10 10.54 (p 1 01 2)
WST0316.052klp 00-1704-6117

								Test Code:		10310310	o.uozkip į u	0-1704-611
Macrocystis C	Germination and	Germ Tube (Growt	h Test				Aquat	ic Bio	bassay &	Consulting	j Labs, Inc
Batch ID: Start Date: Ending Date: Duration:	21-3175-0769 08 Mar-16 13:00 10 Mar-16 13:00 48h) Protoc	ol: s:	Growth-Germin EPA/600/R-95/ Macrocystis py Aquatic Bioass	136 (1995) rifera	lection		Diluent:		reas atory Seav pplicable	water	
Sample ID: Sample Date: Receive Date: Sample Age:	: 08 Mar-16 10:20	Code: Materi) Source Station	al: e:	WST0316.052F Sample Water Bioassay Repo LACDPW-0306	rt	01-Post				on Solutior PW MALI		
Comparison S	Summary											
Analysis ID	Endpoint	١	IOEL	LOEL	TOEL	PMSD	ΤU	Metho	bd			
21-0723-5558	Germination Rat	te 1	00	>100	NA	3.41%	1	Dunne	ett Mu	Itiple Com	parison Te	st
01-4072-2856	Mean Length	1	00	>100	NA	2.31%	1	Dunne	ett Mu	Itiple Com	parison Te	st
Point Estimat	e Summary											
Analysis ID	Endpoint	L	.evel	%	95% LCL	95% UCL	τU	Metho	bd			
02-6794-7528	Germination Rat	te E	C5	>100	N/A	N/A	<1	Linear	Inter	polation (I	CPIN)	
			C10	>100	N/A	N/A	<1					
			C15	>100	N/A	N/A	<1					
			C20	>100	N/A	N/A	<1					
			C25	>100	N/A	N/A	<1					
			C40	>100	N/A	N/A	<1					
			C50	>100	N/A	N/A	<1					
9-5289-7306	Mean Length		C5	>100	N/A	N/A	<1	Linear	Inter	polation (I	CPIN)	
			C10	>100	N/A	N/A	<1					
			C15	>100	N/A	N/A	<1					
			C20	>100	N/A	N/A	<1					
			C25 C40	>100 >100	N/A N/A	N/A N/A	<1 <1					
			C50	>100	N/A N/A	N/A	<1					
Test Acceptab	oility								•			
Analysis ID	Endpoint	A	ttribu	ite	Test Stat	TAC Limi	ts	Overla	ар	Decision		
02-6794-7528	Germination Rat	te C	Contro	l Resp	0.934	0.7 - NL		Yes		Passes A	cceptability	Criteria
21-0723-5558	Germination Rat	te C	Contro	l Resp	0.934	0.7 - NL		Yes		Passes A	cceptability	Criteria
01-4072-2856	Mean Length			l Resp	14.24	10 - NL		Yes			cceptability	
9-5289-7306	Mean Length			l Resp	14.24	10 - NL		Yes			cceptability	
21-0723-5558	Germination Rat		MSD		0.03412	NL - 0.2		No			cceptability	
01-4072-2856	Mean Length	F	MSD		0.02309	NL - 0.2		No		Passes A	cceptability	Criteria
	Rate Summary				0.5% 1101			0/ L =			0.101	
C-%	Control Type	Count N	lean	95% LCL	95% UCL 0.9566	Min 0.91	Max			Std Dev	CV%	%Effect
		E ^			LI MANNA	11.91	0.95	0.0081	124	0.01817	1.95%	0.0%
)	Negative Control		.934	0.9114				0 000	111	0.02	2 1 5 0/	U 120/
) 25		5 0	.93	0.9052	0.9548	0.91	0.96			0.02	2.15% 2.24%	0.43% 0.86%
) 25 50		5 0 5 0	.93 .926	0.9052 0.9003	0.9548 0.9517	0.91 0.9	0.96 0.95	0.0092	274	0.02074	2.24%	0.86%
) 25 50 00	Negative Control	5 0 5 0	.93	0.9052	0.9548	0.91	0.96	0.0092	274			
) 25 50 100 /lean Length 3	Negative Control	5 0 5 0 5 0	.93 .926	0.9052 0.9003	0.9548 0.9517	0.91 0.9	0.96 0.95	0.0092	274 19	0.02074	2.24%	0.86% 0.43%
) 25 50 00 /lean Length 5 2-%	Negative Control	5 0 5 0 5 0 5 0	.93 .926 .93	0.9052 0.9003 0.9009	0.9548 0.9517 0.9591	0.91 0.9 0.91	0.96 0.95 0.97	0.0092 0.0104	274 19 r r	0.02074 0.02345	2.24% 2.52%	0.86% 0.43%
) 25 50 100 Mean Length 3	Negative Control Summary Control Type	5 0 5 0 5 0 Count M 5 1	.93 .926 .93 /lean	0.9052 0.9003 0.9009 95% LCL	0.9548 0.9517 0.9591 95% UCL	0.91 0.9 0.91 Min	0.96 0.95 0.97 Max	5 0.0092 0.0104 5 Std Ei 5 0.0812	274 19 r r 24	0.02074 0.02345 Std Dev	2.24% 2.52% CV%	0.86% 0.43% %Effect
) 25 50 100 Mean Length : 2-%	Negative Control Summary Control Type	5 0 5 0 5 0 Count N 5 1 5 1	.93 .926 .93 //ean 4.24	0.9052 0.9003 0.9009 95% LCL 14.01	0.9548 0.9517 0.9591 95% UCL 14.47	0.91 0.9 0.91 <u>Min</u> 14	0.96 0.95 0.97 Max 14.5	0.0092 0.0104 5 Std Ei 0.0812 0.0812	274 19 rr 24	0.02074 0.02345 Std Dev 0.1817	2.24% 2.52% CV% 1.28%	0.86% 0.43% %Effect 0.0%

Analyst:_____ QA:_____

CETIS Summary Report

Macrocystis Germination and Germ Tube Growth Test

WST0316.052klp | 00-1704-6117 Test Code: Aquatic Bioassay & Consulting Labs, Inc.

Report Date:

Germinat	ion Rate Detail					
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	0.92	0.91	0.95	0.94	0.95
25		0.92	0.91	0.96	0.94	0.92
50		0.91	0.9	0.93	0.95	0.94
100		0.92	0.93	0.91	0.97	0.92
Mean Ler	ngth Detail					
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	14	14.2	14.3	14.5	14.2
25		14	14.6	14.5	14.5	14
50		14.6	14.6	14.5	14.2	14.6
100		14.2	14.8	14.2	14.6	14.5
Germinat	ion Rate Binomials					
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	92/100	91/100	95/100	94/100	95/100
25		92/100	91/100	96/100	94/100	92/100
50		91/100	90/100	93/100	95/100	94/100
100		92/100	93/100	91/100	97/100	92/100

Analyst: _____ QA: _____

13 May-16 10:54 (p 2 of 2)

WST0316.052klp | 00-1704-6117

	Germination and	Germ	Tube Growt	h Test				Aquati	c Bioassay & (Consultin	g Labs, In
Analysis ID: Analyzed:	21-0723-5558 13 May-16 10:5	52	•	Germination Ra Parametric-Cor		tments		IS Versic cial Resu	on: CETISv1. Its: Yes	.8.7	
Batch ID:	21-3175-0769		Test Type:	Growth-Germin	ation		Ana	yst: J	oe Freas		
Start Date:	08 Mar-16 13:00	0		EPA/600/R-95/			Dilu	•	aboratory Seav	vater	
Ending Date:	10 Mar-16 13:00	0	Species:	Macrocystis py	rifera		Brin	e: N	lot Applicable		
Duration:	48h		Source:	Aquatic Bioass	ay Labs Col	lection	Age	:			
Sample ID:	18-8651-9264		Code:	WST0316.052	<		Clier	nt: V	Veston Solution	ıs	
Sample Date:	06 Mar-16		Material:	Sample Water			Proj	ect: L	ACDPW MALIE	BU ASBS	
Receive Date:	08 Mar-16 10:20	D	Source:	Bioassay Repo	rt						
Sample Age:	61h (1 °C)		Station:	LACDPW-0306	16-ASBS-S	01-Post					
Data Transfor	m	Zeta	Alt Hy	p Trials	Seed		PMSD	NOEL	LOEL	TOEL	τU
Angular (Corre	cted)	NA	C > T	NA	NA		3.41%	100	>100	NA	1
Dunnett Multij	ple Comparison	Test									
Control	vs C-%		Test S			P-Value	P-Type		on(α:5%)		
Negative Contr			0.2745	2.227	0.060 8	0.6425	CDF		gnificant Effect		
	50		0.5717		0.060 8	0.5130	CDF		gnificant Effect		
	100		0.2228	2.227	0.060 8	0.6639	CDF	Non-Si	gnificant Effect		
Test Acceptab	oility Criteria										
Attribute	Test Stat	TAC		Overlap	Decision						
Control Resp	0.934	0.7 - 1		Yes		cceptability					
PMSD	0.03412	NL - ().2	No	Passes A	cceptability	Criteria				
ANOVA Table											
Source	Sum Squa		Mean S	•	DF	F Stat	P-Value		on(α:5%)		
Between	0.0006065	799	0.0002	021933	3	0.1107	0.9526	Non-Si	gnificant Effect		
·	0.0000404	^	0.0040	0000	40						
	0.0292131		0.0018	25825	16	_					
	0.0292131 0.0298197		0.0018	25825	16 19	_					
Error Total Distributional	0.0298197		0.0018	25825							
Total Distributional Attribute	0.0298197 Tests Test	7		Test Stat	19 Critical	P-Value	Decision	· · ·			
Total Distributional Attribute	0.0298197 Tests Test Bartlett Ec	7 quality	of Variance	Test Stat 0.5401	19 Critical 11.34	0.9100	Equal Var	iances			
Total Distributional Attribute Variances	0.0298197 Tests Test Bartlett Ec Mod Leve	7 quality ne Equ	of Variance ality of Varian	Test Stat 0.5401 nce 0.008278	19 Critical		Equal Var Equal Var	iances iances			
Total Distributional Attribute Variances Variances Variances	0.0298197 Tests Test Bartlett Ec Mod Leve Levene Ec	7 quality ne Equ quality	of Variance ality of Varian of Variance	Test Stat 0.5401 nce 0.008278 0.06121	19 Critical 11.34	0.9100	Equal Var Equal Var Equal Var	iances iances iances			
Total Distributional Attribute Variances Variances Variances Distribution	0.0298197 Tests Test Bartlett Ec Mod Leve Levene Ec Shapiro-W	7 quality ne Equ quality Vilk W	of Variance iality of Varian of Variance Normality	Test Stat 0.5401 0.008278 0.06121 0.9277	19 Critical 11.34 5.953 5.292 0.866	0.9100 0.9989 0.9795 0.1395	Equal Var Equal Var Equal Var Normal D	iances iances iances istributior			
Total Distributional Attribute Variances Variances Variances Distribution Distribution	0.0298197 Tests Test Bartlett Ec Mod Leve Levene Ec Shapiro-W Kolmogord	7 quality ne Equ quality Vilk W ov-Smi	of Variance Jality of Varian of Variance Normality irnov D	Test Stat 0.5401 0.008278 0.06121 0.9277 0.2069	Critical 11.34 5.953 5.292 0.866 0.2235	0.9100 0.9989 0.9795 0.1395 0.0247	Equal Var Equal Var Equal Var Normal D Normal D	iances iances iances istributior istributior	n		
Total Distributional Attribute Variances Variances Distribution Distribution Distribution	0.0298197 Tests Test Bartlett Ec Mod Leve Levene Ec Shapiro-W Kolmogor D'Agostino	7 quality ne Equ quality Vilk W ov-Smi o Skew	of Variance Jality of Varian of Variance Normality Jrnov D Jrness	Test Stat 0.5401 0.008278 0.06121 0.9277 0.2069 1.454	19 Critical 11.34 5.953 5.292 0.866 0.2235 2.576	0.9100 0.9989 0.9795 0.1395 0.0247 0.1459	Equal Var Equal Var Equal Var Normal D Normal D Normal D	iances iances iances istributior istributior istributior	1		
Total Distributional Attribute Variances Variances Distribution Distribution Distribution Distribution	0.0298197 Tests Bartlett Ec Mod Leve Levene Ec Shapiro-W Kolmogoru D'Agostino D'Agostino	7 quality ne Equ quality Vilk W ov-Smi o Skew o Kurto	of Variance Jality of Varian of Variance Normality Jrnov D Vness Ssis	Test Stat 0.5401 0.008278 0.06121 0.9277 0.2069 1.454 0.03772	19 Critical 11.34 5.953 5.292 0.866 0.2235 2.576 2.576	0.9100 0.9989 0.9795 0.1395 0.0247 0.1459 0.9699	Equal Var Equal Var Equal Var Normal D Normal D Normal D	iances iances iances istributior istributior istributior)))		
Total Distributional Attribute Variances Variances Distribution Distribution Distribution Distribution Distribution	0.0298197 Tests Test Bartlett Ec Mod Leve Levene Ec Shapiro-W Kolmogor D'Agostino D'Agostino D'Agostino	7 quality ne Equ quality Vilk W ov-Smi o Skew o Kurto o-Pear	of Variance Jality of Varian of Variance Normality irnov D Josis son K2 Omnil	Test Stat 0.5401 0.008278 0.06121 0.9277 0.2069 1.454 0.03772 public	19 Critical 11.34 5.953 5.292 0.866 0.2235 2.576 2.576 9.21	0.9100 0.9989 0.9795 0.1395 0.0247 0.1459 0.9699 0.3471	Equal Var Equal Var Equal Var Normal D Normal D Normal D Normal D	iances iances iances istributior istributior istributior istributior	1 1 1		
Total Distributional Attribute Variances Variances Distribution Distribution Distribution Distribution Distribution Distribution	0.0298197 Tests Test Bartlett Ec Mod Leve Levene Ec Shapiro-W Kolmogoro D'Agostino D'Agostino D'Agostino Anderson	7 quality ne Equ quality Vilk W ov-Smi o Skew o Kurto o-Pear	of Variance Jality of Varian of Variance Normality Jrnov D Vness Ssis	Test Stat 0.5401 0.008278 0.06121 0.9277 0.2069 1.454 0.03772 public	19 Critical 11.34 5.953 5.292 0.866 0.2235 2.576 2.576	0.9100 0.9989 0.9795 0.1395 0.0247 0.1459 0.9699	Equal Var Equal Var Equal Var Normal D Normal D Normal D	iances iances iances istributior istributior istributior istributior	1 1 1		
Total Distributional Attribute Variances Variances Distribution Distribution Distribution Distribution Distribution Distribution Distribution Germination F	0.0298197 Tests Bartlett Ec Mod Leve Levene Ec Shapiro-W Kolmogor D'Agostine D'Agostine Anderson- Rate Summary	7 quality ne Equ quality Vilk W ov-Smi o Skew o Kurto o-Paring	of Variance Jality of Varian of Variance Normality irnov D vness son S Son K2 Omnil g A2 Normalit	Test Stat 0.5401 0.008278 0.06121 0.9277 0.2069 1.454 0.03772 pus 2.116 y 0.5843	19 Critical 11.34 5.953 5.292 0.866 0.2235 2.576 9.21 3.878	0.9100 0.9989 0.9795 0.1395 0.0247 0.1459 0.9699 0.3471 0.1318	Equal Var Equal Var Equal Var Normal D Normal D Normal D Normal D	iances iances istributior istributior istributior istributior istributior			
Total Distributional Attribute Variances Variances Distribution Distribution Distribution Distribution Distribution Germination F C-%	0.0298197 Tests Bartlett Ec Mod Leve Levene Ec Shapiro-W Kolmogor D'Agostine D'Agostine D'Agostine Anderson- Rate Summary Control Type	7 quality ne Equ quality Vilk W ov-Smi o Skew o Skew o Kurto o-Pearing -Darling Coun	of Variance Jality of Varian of Variance Normality irnov D vness vsis son K2 Omnil g A2 Normalit t Mean	Test Stat 0.5401 0.008278 0.06121 0.9277 0.2069 1.454 0.03772 pus 2.116 y 95% LCL	19 Critical 11.34 5.953 5.292 0.866 0.2235 2.576 9.21 3.878 95% UCL	0.9100 0.9989 0.9795 0.1395 0.0247 0.1459 0.9699 0.3471 0.1318 Median	Equal Var Equal Var Equal Var Normal D Normal D Normal D Normal D Normal D	iances iances istributior istributior istributior istributior istributior Max	Std Err		%Effec
Total Distributional Attribute Variances Variances Distribution Distribution Distribution Distribution Distribution Germination F C-%	0.0298197 Tests Bartlett Ec Mod Leve Levene Ec Shapiro-W Kolmogor D'Agostine D'Agostine Anderson- Rate Summary	7 quality ne Equ quality Vilk W ov-Smi o Skew o Kurto o-Pear o Coun 5	of Variance Jality of Variance of Variance Normality irnov D vness son K2 Omnil g A2 Normalit t Mean 0.934	Test Stat 0.5401 0.008278 0.06121 0.9277 0.2069 1.454 0.03772 pus 2.116 y 0.5843 95% LCL 0.9114	19 Critical 11.34 5.953 5.292 0.866 0.2235 2.576 2.576 9.21 3.878 95% UCL 0.9566	0.9100 0.9989 0.9795 0.1395 0.0247 0.1459 0.9699 0.3471 0.1318 Median 0.94	Equal Var Equal Var Equal Var Normal D Normal D Normal D Normal D Normal D <u>Min</u> 0.91	iances iances iances istributior istributior istributior istributior Max 0.95	Std Err 0.008124	1.95%	0.0%
Total Distributional Attribute Variances Variances Distribution Distribution Distribution Distribution Distribution Germination F C-% D	0.0298197 Tests Bartlett Ec Mod Leve Levene Ec Shapiro-W Kolmogor D'Agostine D'Agostine D'Agostine Anderson- Rate Summary Control Type	7 quality ne Equ quality Vilk W ov-Smi o Skew o Kurto o-Pear o Skew o Kurto o Skew o Kurto o Skew o Kurto o Skew o Kurto o Skew o Skew	of Variance Jality of Varian of Variance Normality irnov D yness son K2 Omnil g A2 Normalit t Mean 0.934 0.93	Test Stat 0.5401 0.008278 0.06121 0.9277 0.2069 1.454 0.03772 pus 2.116 y 0.5843 95% LCL 0.9114 0.9052	19 Critical 11.34 5.953 5.292 0.866 0.2235 2.576 9.21 3.878 95% UCL 0.9566 0.9548	0.9100 0.9989 0.9795 0.1395 0.0247 0.1459 0.9699 0.3471 0.1318 Median 0.94 0.92	Equal Var Equal Var Equal Var Normal D Normal D Normal D Normal D Normal D <u>Min</u> 0.91	iances iances iances istributior istributior istributior istributior Max 0.95 0.96	Std Err 0.008124 0.008944	1.95% 2.15%	0.0% 0.43%
Total Distributional Attribute Variances Variances Distribution Distribution Distribution Distribution Distribution Germination F C-% 0 25 50	0.0298197 Tests Bartlett Ec Mod Leve Levene Ec Shapiro-W Kolmogor D'Agostine D'Agostine D'Agostine Anderson- Rate Summary Control Type	7 quality ne Equ quality Vilk W ov-Smi o Skew o Kurto o-Pear o Skew o Kurto o-Pear o Skew o Kurto o Skew o Kurto o Skew o Kurto o Skew o Kurto o Skew o Skew	of Variance uality of Varian of Variance Normality irnov D yness son K2 Omnil g A2 Normalit t Mean 0.934 0.93 0.926	Test Stat 0.5401 0.008278 0.06121 0.9277 0.2069 1.454 0.03772 pus 2.116 y 0.5843 95% LCL 0.9114 0.9052 0.9003	19 Critical 11.34 5.953 5.292 0.866 0.2235 2.576 9.21 3.878 95% UCL 0.9566 0.9548 0.9517	0.9100 0.9989 0.9795 0.1395 0.0247 0.1459 0.9699 0.3471 0.1318 Median 0.94 0.92 0.93	Equal Var Equal Var Equal Var Normal D Normal D Normal D Normal D Normal D <u>Min</u> 0.91 0.91	iances iances istributior istributior istributior istributior istributior Max 0.95 0.96 0.95	Std Err 0.008124 0.008944 0.009273	1.95% 2.15% 2.24%	0.0% 0.43% 0.86%
Total Distributional Attribute Variances Variances Distribution Distribution Distribution Distribution Distribution Germination F C-% D 25 50 100	0.0298197 Tests Bartlett Ec Mod Leve Levene Ec Shapiro-W Kolmogor D'Agostinc D'Agostinc D'Agostinc Anderson- Rate Summary Control Type Negative Control	7 quality ne Equ quality Vilk W ov-Smi o Skew o Kurto o-Pear o Coun 5 5 5 5	of Variance Jality of Varian of Variance Normality irnov D vness son K2 Omnil g A2 Normalit t Mean 0.934 0.93 0.926 0.93	Test Stat 0.5401 0.008278 0.06121 0.9277 0.2069 1.454 0.03772 pus 2.116 y 0.5843 95% LCL 0.9114 0.9052	19 Critical 11.34 5.953 5.292 0.866 0.2235 2.576 9.21 3.878 95% UCL 0.9566 0.9548	0.9100 0.9989 0.9795 0.1395 0.0247 0.1459 0.9699 0.3471 0.1318 Median 0.94 0.92	Equal Var Equal Var Equal Var Normal D Normal D Normal D Normal D Normal D <u>Min</u> 0.91	iances iances iances istributior istributior istributior istributior Max 0.95 0.96	Std Err 0.008124 0.008944	1.95% 2.15%	0.0% 0.43%
Total Distributional Attribute Variances Variances Distribution Distribution Distribution Distribution Distribution Germination F C-% D 25 50 100 Angular (Corre	0.0298197 Tests Test Bartlett Ec Mod Leve Levene Ec Shapiro-W Kolmogord D'Agostine D'Agostine D'Agostine Anderson Rate Summary Control Type Negative Control	7 quality ne Equ quality Vilk W ov-Smi o Skew o Kurto o-Pear -Darling 5 5 5 5 5 5	of Variance Jality of Varian of Variance Normality irnov D yness osis son K2 Omnil g A2 Normalit t Mean 0.934 0.93 0.926 0.93 Jummary	Test Stat 0.5401 0.008278 0.06121 0.9277 0.2069 1.454 0.03772 public state 95% LCL 0.9114 0.9052 0.9003 0.9009	19 Critical 11.34 5.953 5.292 0.866 0.2235 2.576 2.576 9.21 3.878 95% UCL 0.9566 0.9548 0.9591	0.9100 0.9989 0.9795 0.1395 0.0247 0.1459 0.9699 0.3471 0.1318 Median 0.94 0.92 0.93 0.92	Equal Var Equal Var Equal Var Normal D Normal D Normal D Normal D Normal D Normal D 0.91 0.91 0.91	iances iances istributior istributior istributior istributior istributior Max 0.95 0.96 0.95 0.97	Std Err 0.008124 0.008944 0.009273 0.01049	1.95% 2.15% 2.24% 2.52%	0.0% 0.43% 0.86% 0.43%
Total Distributional Attribute Variances Variances Ustribution Distribution Distribution Distribution Distribution Commation Germination C-% C-% Angular (Corre	0.0298197 Tests Test Bartlett Ec Mod Leve Levene Ec Shapiro-W Kolmogord D'Agostind D'Agostind D'Agostind D'Agostind Anderson- Rate Summary Control Type Negative Control	7 quality ne Equ quality Vilk W ov-Smi o Skew o Kurto o-Pear -Darling 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	of Variance Jality of Varian of Variance Normality irnov D Joiss son K2 Omnil g A2 Normalit t Mean 0.934 0.93 0.926 0.93 Jummary t Mean	Test Stat 0.5401 0.008278 0.06121 0.9277 0.2069 1.454 0.03772 puss 2.116 y 95% LCL 0.9003 0.9009	19 Critical 11.34 5.953 5.292 0.866 0.2235 2.576 2.576 9.21 3.878 95% UCL 0.9566 0.9548 0.9517 0.9591 95% UCL	0.9100 0.9989 0.9795 0.1395 0.0247 0.1459 0.9699 0.3471 0.1318 Median 0.94 0.92 0.93 0.92 Median	Equal Var Equal Var Equal Var Normal D Normal D Normal D Normal D Normal D Normal D 0.91 0.91 0.91 0.91 0.91 0.91	iances iances istributior istributior istributior istributior istributior Max 0.95 0.96 0.95 0.95 0.97 Max	Std Err 0.008124 0.008944 0.009273 0.01049 Std Err	1.95% 2.15% 2.24% 2.52%	0.0% 0.43% 0.86% 0.43%
Total Distributional Attribute Variances Variances Variances Distribution Distribution Distribution Distribution Distribution Germination C-% 0 25 50 100 Angular (Correc 0 0	0.0298197 Tests Test Bartlett Ec Mod Leve Levene Ec Shapiro-W Kolmogord D'Agostine D'Agostine D'Agostine Anderson Rate Summary Control Type Negative Control	7 quality ne Equ quality vilk W ov-Smi o Skew o Kurto o-Pearing 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	of Variance Jality of Varian of Variance Normality irnov D Joiss son K2 Omnil g A2 Normalit t Mean 0.934 0.93 0.926 0.93 Jummary t Mean 1.313	Test Stat 0.5401 nce 0.008278 0.06121 0.9277 0.2069 1.454 0.03772 puss 2.116 y 0.5843 95% LCL 0.9003 0.9003 0.9009 95% LCL 1.268	19 Critical 11.34 5.953 5.292 0.866 0.2235 2.576 2.576 9.21 3.878 95% UCL 0.9566 0.9548 0.9517 0.9591 95% UCL 1.358	0.9100 0.9989 0.9795 0.1395 0.0247 0.1459 0.9699 0.3471 0.1318 Median 0.94 0.92 0.93 0.92 Median 1.323	Equal Var Equal Var Equal Var Normal D Normal D Normal D Normal D Normal D Normal D Normal D 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91	iances iances istributior istributior istributior istributior istributior Max 0.95 0.96 0.95 0.97 Max 1.345	Std Err 0.008124 0.008944 0.009273 0.01049 Std Err 0.01617	1.95% 2.15% 2.24% 2.52% CV% 2.75%	0.0% 0.43% 0.86% 0.43% %Effec 0.0%
Total Distributional Attribute Variances Variances Variances Uariances Distribution Distribution Distribution Distribution Distribution Germination C-% 0 25 50 100 Angular (Correc C-% 0 25	0.0298197 Tests Test Bartlett Ec Mod Leve Levene Ec Shapiro-W Kolmogord D'Agostind D'Agostind D'Agostind D'Agostind Anderson- Rate Summary Control Type Negative Control	7 quality ne Equ quality vilk W ov-Smi o Skew o Kurto o-Pear 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	of Variance Jality of Varian of Variance Normality irnov D yness son K2 Omnil g A2 Normalit t Mean 0.934 0.93 0.926 0.93 Jummary t Mean 1.313 1.305	Test Stat 0.5401 0.008278 0.06121 0.9277 0.2069 1.454 0.03772 pus 2.116 y 0.5843 95% LCL 0.9003 0.9009 95% LCL 1.268 1.254	19 Critical 11.34 5.953 5.292 0.866 0.2235 2.576 9.21 3.878 95% UCL 0.9566 0.9548 0.9517 0.9591 95% UCL 1.358 1.357	0.9100 0.9989 0.9795 0.1395 0.0247 0.1459 0.9699 0.3471 0.1318 Median 0.94 0.92 0.93 0.92 Median 1.323 1.284	Equal Var Equal Var Equal Var Normal D Normal D Normal D Normal D Normal D Normal D Normal D 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91	iances iances istributior istributior istributior istributior istributior istributior Max 0.95 0.96 0.95 0.97 Max 1.345 1.369	Std Err 0.008124 0.008944 0.009273 0.01049 Std Err 0.01617 0.01855	1.95% 2.15% 2.24% 2.52% CV% 2.75% 3.18%	0.0% 0.43% 0.86% 0.43% %Effec 0.0% 0.57%
Total Distributional Attribute Variances Variances Variances Distribution Distribution Distribution Distribution Distribution Germination C-% 0 25 50 100 Angular (Correc 0 0	0.0298197 Tests Test Bartlett Ec Mod Leve Levene Ec Shapiro-W Kolmogord D'Agostind D'Agostind D'Agostind D'Agostind Anderson- Rate Summary Control Type Negative Control	7 quality ne Equ quality vilk W ov-Smi o Skew o Kurto o-Pearing 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	of Variance Jality of Varian of Variance Normality irnov D Joiss son K2 Omnil g A2 Normalit t Mean 0.934 0.93 0.926 0.93 Jummary t Mean 1.313	Test Stat 0.5401 nce 0.008278 0.06121 0.9277 0.2069 1.454 0.03772 puss 2.116 y 0.5843 95% LCL 0.9003 0.9003 0.9009 95% LCL 1.268	19 Critical 11.34 5.953 5.292 0.866 0.2235 2.576 2.576 9.21 3.878 95% UCL 0.9566 0.9548 0.9517 0.9591 95% UCL 1.358	0.9100 0.9989 0.9795 0.1395 0.0247 0.1459 0.9699 0.3471 0.1318 Median 0.94 0.92 0.93 0.92 Median 1.323	Equal Var Equal Var Equal Var Normal D Normal D Normal D Normal D Normal D Normal D Normal D 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91	iances iances istributior istributior istributior istributior istributior Max 0.95 0.96 0.95 0.97 Max 1.345	Std Err 0.008124 0.008944 0.009273 0.01049 Std Err 0.01617	1.95% 2.15% 2.24% 2.52% CV% 2.75%	0.0% 0.43% 0.86% 0.43% %Effec 0.0%

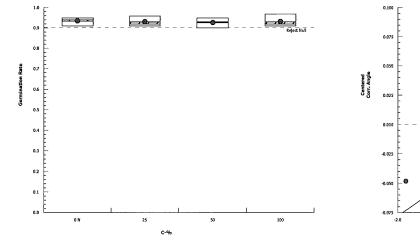
Analyst: _____ QA:_____

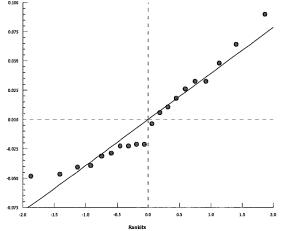
Report Date:13 May-1Test Code:WST0316.052

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Macrocystis	Germination and	Germ	Tube Grow	Aquatic Bioassay & Consulting Labs, Inc				
Analysis ID: Analyzed:	21-0723-5558 13 May-16 10:5	2	Endpoint: Analysis:	Germination F Parametric-Co		atments	CETIS Version: Official Results:	CETISv1.8.7 Yes
Germination	Rate Detail							
C-%	Control Type	Rep	1 Rep 2	Rep 3	Rep 4	Rep 5		
0	Negative Control	0.92	0.91	0.95	0.94	0.95		
25		0.92	0.91	0.96	0.94	0.92		
50		0.91	0.9	0.93	0.95	0.94		
100		0.92	0.93	0.91	0.97	0.92		
Angular (Cor	rected) Transforn	ned D	etail					
C-%	Control Type	Rep	1 Rep 2	Rep 3	Rep 4	Rep 5		
0	Negative Control	1.284	1.266	1.345	1.323	1.345		
25		1.284	1.266	1.369	1.323	1.284		
50		1.266	5 1.249	1.303	1.345	1.323		
100		1.284	1.303	1.266	1.397	1.284		
Germination	Rate Binomials							· · · · · · · · · · · · · · · · · · ·
C-%	Control Type	Rep	1 Rep 2	Rep 3	Rep 4	Rep 5		,
0	Negative Control	92/10	0 91/100	0 95/100	94/100	95/100		
25		92/10	0 91/100	96/100	94/100	92/100		
50		91/10	90/100	0 93/100	95/100	94/100		
100		92/10	0 93/100	0 91/100	97/100	92/100		

Graphics





Report Date: Test Code:

13 May-16 10:53 (p 3 of 4) WST0316.052klp | 00-1704-6117

							lest				0-1704-01
Macrocystis C	Germination and	Germ T	ube Growtl	n Test				Aqua	tic Bioassay &	Consulting	g Labs, Inc
Analysis ID: Analyzed:	01-4072-2856 13 May-16 10:5			Mean Length Parametric-Cor	ntrol vs Trea	itments		IS Vers cial Res	ion: CETISv1 sults: Yes	.8.7	
Batch ID:	21-3175-0769	Те	est Type:	Growth-Germin	ation		Ana	lyst:	Joe Freas		
Start Date:	08 Mar-16 13:00			EPA/600/R-95/			Dilu		Laboratory Seav	water	
Ending Date:	10 Mar-16 13:00) s	pecies:	Macrocystis py	rifera		Brin	e:	Not Applicable		
Duration:	48h		-	Aquatic Bioass		lection	Age	:			
Sample ID:	18-8651-9264	C	ode:	NST0316.052	(Clie	nt:	Weston Solution	าร	
Sample Date:	06 Mar-16	м	aterial:	Sample Water			Proj	ect:	LACDPW MALI	BU ASBS	
Receive Date:	: 08 Mar-16 10:20) S	ource:	Bioassay Repo	rt						
Sample Age:	61h (1 °C)	Si	tation:	_ACDPW-0306	16-ASBS-S	01-Post					
Data Transfor	m	Zeta	Alt Hy	p Trials	Seed		PMSD	NOEI	L LOEL	TOEL	TU
Untransformed	1	NA	C > T	NA	NA		2.31%	100	>100	NA	1
Dunnett Multi	ple Comparison	Test									
Control	vs C-%		Test St		MSD DF	P-Value	Р-Туре		sion(α:5%)		
Negative Contr			-0.5418		0.329 8	0.8998	CDF		Significant Effect		
	50		-1.761	2.227	0.329 8	0.9943	CDF		Significant Effect		
	100		-1.49	2.227	0.329 8	0.9884	CDF	Non-S	Significant Effect		
Test Acceptab	oility Criteria										
Attribute	Test Stat	TAC Lir	nits	Overlap	Decision						
Control Resp	14.24	10 - NL		Yes		cceptability					
PMSD	0.02309	NL - 0.2		No	Passes A	cceptability	Criteria				
ANOVA Table											
Source	Sum Squa	res	Mean S		DF	F Stat	P-Value		sion(α:5%)		
Between	0.2200003		0.0733		3	1.346	0.2949	Non-S	Significant Effect		
Error	0.8720011		0.0545	0007	16						
Total	1.092001				19						
Distributional	Tests										
Attribute	Test			Test Stat	Critical	P-Value	Decision				
Vorionooo											
	Bartlett Eq			1.484	11.34	0.6859	Equal Va				
Variances	Mod Lever	ne Equal	ity of Varia	nce 0.6582	5.953	0.5933	Equal Va	riances			
Variances Variances	Mod Lever Levene Ec	ne Equal quality of	ity of Variar Variance	nce 0.6582 1.968	5.953 5.292	0.5933 0.1595	Equal Va Equal Va	riances riances	20		
Variances Variances Distribution	Mod Lever Levene Ec Shapiro-W	ne Equal quality of /ilk W No	ity of Variar Variance ormality	nce 0.6582 1.968 0.9165	5.953 5.292 0.866	0.5933 0.1595 0.0847	Equal Var Equal Var Normal D	riances riances istributio			
Variances Variances Distribution Distribution	Mod Lever Levene Ec Shapiro-W Kolmogoro	ne Equal quality of /ilk W No ov-Smirn	ity of Variar Variance ormality ov D	nce 0.6582 1.968 0.9165 0.1687	5.953 5.292 0.866 0.2235	0.5933 0.1595 0.0847 0.1416	Equal Var Equal Var Normal D Normal D	riances riances istributio istributio	on		
Variances Variances Distribution Distribution Distribution	Mod Lever Levene Ec Shapiro-W	ne Equal quality of /ilk W No ov-Smirn o Skewne	ity of Varian Variance ormality ov D ess	nce 0.6582 1.968 0.9165 0.1687 0.5537	5.953 5.292 0.866 0.2235 2.576	0.5933 0.1595 0.0847 0.1416 0.5798	Equal Var Equal Var Normal D	riances riances istributio istributio istributio	on on		
Variances Variances Distribution Distribution Distribution Distribution	Mod Leven Levene Ec Shapiro-W Kolmogoro D'Agostino D'Agostino	ne Equal quality of /ilk W No ov-Smirn o Skewne o Kurtosia	ity of Varian Variance ormality ov D ess	nce 0.6582 1.968 0.9165 0.1687 0.5537 1.689	5.953 5.292 0.866 0.2235	0.5933 0.1595 0.0847 0.1416	Equal Var Equal Var Normal D Normal D Normal D	riances riances istributio istributio istributio	on on on		
Variances Variances Distribution Distribution Distribution Distribution Distribution	Mod Leven Levene Ec Shapiro-W Kolmogoro D'Agostino D'Agostino D'Agostino	ne Equal quality of /ilk W No ov-Smirn o Skewne o Kurtosis o-Pearso	ity of Variar Variance ormality ov D ess s	nce 0.6582 1.968 0.9165 0.1687 0.5537 1.689 pous 3.158	5.953 5.292 0.866 0.2235 2.576 2.576	0.5933 0.1595 0.0847 0.1416 0.5798 0.0913	Equal Var Equal Var Normal D Normal D Normal D Normal D	riances riances istributio istributio istributio istributio	on on on on		
Variances Variances Distribution Distribution Distribution Distribution Distribution	Mod Lever Levene Ec Shapiro-W Kolmogoro D'Agostino D'Agostino D'Agostino Anderson-	ne Equal quality of /ilk W No ov-Smirn o Skewne o Kurtosis o-Pearso	ity of Varian Variance ormality ov D ess s s n K2 Omnit	nce 0.6582 1.968 0.9165 0.1687 0.5537 1.689 pus 3.158	5.953 5.292 0.866 0.2235 2.576 2.576 9.21	0.5933 0.1595 0.0847 0.1416 0.5798 0.0913 0.2062	Equal Var Equal Var Normal D Normal D Normal D Normal D	riances riances istributio istributio istributio istributio	on on on on		
Variances Variances Distribution Distribution Distribution Distribution Distribution Mean Length	Mod Lever Levene Ec Shapiro-W Kolmogoro D'Agostino D'Agostino D'Agostino Anderson-	ne Equal quality of /ilk W No ov-Smirn o Skewne o Kurtosis o-Pearso	ity of Varian Variance ormality ov D ess s s n K2 Omnit	nce 0.6582 1.968 0.9165 0.1687 0.5537 1.689 pus 3.158	5.953 5.292 0.866 0.2235 2.576 2.576 9.21	0.5933 0.1595 0.0847 0.1416 0.5798 0.0913 0.2062	Equal Var Equal Var Normal D Normal D Normal D Normal D	riances riances istributio istributio istributio istributio	on on on on	CV%	%Effect
Variances Variances Distribution Distribution Distribution Distribution Distribution Mean Length C-%	Mod Leven Levene Ec Shapiro-W Kolmogoro D'Agostino D'Agostino D'Agostino Anderson-	ne Equal quality of /ilk W No ov-Smirn o Skewne o Kurtosis o-Pearso Darling / Count	ity of Varian Variance ormality ov D ess s n K2 Omnit A2 Normalit Mean 14.24	nce 0.6582 1.968 0.9165 0.1687 0.5537 1.689 pus 3.158 y 0.7194	5.953 5.292 0.866 0.2235 2.576 2.576 9.21 3.878 95% UCL 14.47	0.5933 0.1595 0.0847 0.1416 0.5798 0.0913 0.2062 0.0604 Median 14.2	Equal Van Equal Van Normal D Normal D Normal D Normal D Normal D Min 14	riances riances istributio istributio istributio istributio <u>Max</u> 14.5	on on on on Std Err 0.08124	1.28%	0.0%
Variances Variances Distribution Distribution Distribution Distribution Distribution Mean Length C-% 0 25	Mod Leven Levene Ec Shapiro-W Kolmogoro D'Agostino D'Agostino Anderson- Summary Control Type	ne Equal quality of /ilk W No ov-Smirn o Skewne o Kurtosis o-Pearso Darling <i>A</i> <u>Count</u> 5 5	ity of Varian Variance ormality ov D ess s n K2 Omnit A2 Normalit Mean 14.24 14.32	nce 0.6582 1.968 0.9165 0.1687 0.5537 1.689 pous 3.158 y 0.7194 95% LCL 14.01 13.95	5.953 5.292 0.866 0.2235 2.576 9.21 3.878 95% UCL 14.47 14.69	0.5933 0.1595 0.0847 0.1416 0.5798 0.0913 0.2062 0.0604 Median 14.2 14.5	Equal Van Equal Van Normal D Normal D Normal D Normal D Normal D Min 14	riances riances istributio istributio istributio istributio Max 14.5 14.6	on on on on Std Err 0.08124 0.1319	1.28% 2.06%	0.0% -0.56%
Variances Variances Distribution Distribution Distribution Distribution Distribution Mean Length C-% D 25 50	Mod Leven Levene Ec Shapiro-W Kolmogoro D'Agostino D'Agostino Anderson- Summary Control Type	ne Equal quality of /ilk W No ov-Smirn o Skewne o Kurtosis o-Pearso Darling <i>A</i> <u>Count</u> 5 5 5 5	ity of Varian Variance ormality ov D ess s n K2 Omnit A2 Normalit Mean 14.24 14.32 14.5	nce 0.6582 1.968 0.9165 0.1687 0.5537 1.689 0.7194 95% LCL 14.01 13.95 14.28	5.953 5.292 0.866 0.2235 2.576 9.21 3.878 95% UCL 14.47 14.69 14.72	0.5933 0.1595 0.0847 0.1416 0.5798 0.0913 0.2062 0.0604 Median 14.2 14.5 14.6	Equal Var Equal Var Normal D Normal D Normal D Normal D Normal D Normal D Normal D Normal 14	riances riances istributio istributio istributio istributio istributio Max 14.5 14.6 14.6	Std Err 0.08124 0.07745	1.28% 2.06% 1.19%	0.0% -0.56% -1.83%
Variances Variances Distribution Distribution Distribution Distribution Distribution Mean Length C-% D 25 50	Mod Leven Levene Ec Shapiro-W Kolmogoro D'Agostino D'Agostino Anderson- Summary Control Type	ne Equal quality of /ilk W No ov-Smirn o Skewne o Kurtosis o-Pearso Darling <i>A</i> <u>Count</u> 5 5	ity of Varian Variance ormality ov D ess s n K2 Omnit A2 Normalit Mean 14.24 14.32	nce 0.6582 1.968 0.9165 0.1687 0.5537 1.689 pous 3.158 y 0.7194 95% LCL 14.01 13.95	5.953 5.292 0.866 0.2235 2.576 9.21 3.878 95% UCL 14.47 14.69	0.5933 0.1595 0.0847 0.1416 0.5798 0.0913 0.2062 0.0604 Median 14.2 14.5	Equal Van Equal Van Normal D Normal D Normal D Normal D Normal D Min 14	riances riances istributio istributio istributio istributio Max 14.5 14.6	on on on on Std Err 0.08124 0.1319	1.28% 2.06%	0.0% -0.56%
Variances Variances Distribution Distribution Distribution Distribution Distribution Mean Length C-% D 25 50 100	Mod Lever Levene Ec Shapiro-W Kolmogord D'Agostind D'Agostind D'Agostind Anderson- Summary Control Type Negative Control	ne Equal quality of /ilk W No ov-Smirn o Skewne o Kurtosis o-Pearso Darling <i>A</i> <u>Count</u> 5 5 5 5	ity of Varian Variance ormality ov D ess s n K2 Omnit A2 Normalit Mean 14.24 14.32 14.5	nce 0.6582 1.968 0.9165 0.1687 0.5537 1.689 0.7194 95% LCL 14.01 13.95 14.28	5.953 5.292 0.866 0.2235 2.576 9.21 3.878 95% UCL 14.47 14.69 14.72	0.5933 0.1595 0.0847 0.1416 0.5798 0.0913 0.2062 0.0604 Median 14.2 14.5 14.6	Equal Var Equal Var Normal D Normal D Normal D Normal D Normal D Normal D Normal D Normal 14	riances riances istributio istributio istributio istributio istributio Max 14.5 14.6 14.6	Std Err 0.08124 0.07745	1.28% 2.06% 1.19%	0.0% -0.56% -1.83%
Variances Variances Distribution Distribution Distribution Distribution Distribution Mean Length C-% 0 25 50 100 Mean Length C-%	Mod Lever Levene Ec Shapiro-W Kolmogord D'Agostind D'Agostind D'Agostind Anderson- Summary Control Type Negative Control Detail Control Type	ne Equal quality of /ilk W Nc ov-Smirn o Skewne o Kurtosis o-Pearso Darling / Count 5 5 5 5 5 5 5 5	ity of Variar Variance ormality ov D ess s n K2 Omnit A2 Normalit 14.24 14.32 14.5 14.46 Rep 2	nce 0.6582 1.968 0.9165 0.1687 0.5537 1.689 ous 3.158 y 0.7194 95% LCL 14.01 13.95 14.28 14.14 Rep 3	5.953 5.292 0.866 0.2235 2.576 9.21 3.878 95% UCL 14.47 14.69 14.72 14.78 Rep 4	0.5933 0.1595 0.0847 0.1416 0.5798 0.0913 0.2062 0.0604 Median 14.2 14.5 14.6 14.5 14.5	Equal Var Equal Var Normal D Normal D Normal D Normal D Normal D Normal D Normal D Normal 14	riances riances istributio istributio istributio istributio istributio Max 14.5 14.6 14.6	Std Err 0.08124 0.07745	1.28% 2.06% 1.19%	-0.56% -1.83%
Variances Variances Distribution Distribution Distribution Distribution Distribution Mean Length C-% 0 25 50 100 Mean Length C-% 0	Mod Lever Levene Ec Shapiro-W Kolmogord D'Agostind D'Agostind D'Agostind Anderson- Summary Control Type Negative Control	ne Equal quality of /ilk W Nc ov-Smirn o Skewne o Kurtosio -Pearso Darling A Count 5 5 5 5 5 7 8 8 8 8 8 1 14	ity of Variar Variance ormality ov D ess s n K2 Omnit A2 Normalit Mean 14.24 14.32 14.5 14.46 Rep 2 14.2	nce 0.6582 1.968 0.9165 0.1687 0.5537 1.689 ous 3.158 y 0.7194 95% LCL 14.01 13.95 14.28 14.14 Rep 3 14.3	5.953 5.292 0.866 0.2235 2.576 9.21 3.878 95% UCL 14.47 14.69 14.72 14.78 Rep 4 14.5	0.5933 0.1595 0.0847 0.1416 0.5798 0.0913 0.2062 0.0604 Median 14.2 14.5 14.6 14.5 14.6 14.5 14.2	Equal Var Equal Var Normal D Normal D Normal D Normal D Normal D Normal D Normal D Normal 14	riances riances istributio istributio istributio istributio istributio Max 14.5 14.6 14.6	Std Err 0.08124 0.07745	1.28% 2.06% 1.19%	0.0% -0.56% -1.83%
Variances Variances Distribution Distribution Distribution Distribution Distribution Mean Length C-% 0 25 50 100 Mean Length C-% 0 25	Mod Lever Levene Ec Shapiro-W Kolmogord D'Agostind D'Agostind D'Agostind Anderson- Summary Control Type Negative Control Detail Control Type	ne Equal quality of /ilk W Nc ov-Smirn o Skewne o Kurtosis o-Pearso Darling A Count 5 5 5 5 5 7 8 8 8 9 8 9 14 14	ity of Variar Variance ormality ov D ess s n K2 Omnit A2 Normalit 14.24 14.32 14.5 14.46 Rep 2 14.2 14.6	nce 0.6582 1.968 0.9165 0.1687 0.5537 1.689 0.7194 95% LCL 14.01 13.95 14.28 14.14 Rep 3 14.3 14.5	5.953 5.292 0.866 0.2235 2.576 9.21 3.878 95% UCL 14.47 14.69 14.72 14.78 Rep 4 14.5 14.5	0.5933 0.1595 0.0847 0.1416 0.5798 0.0913 0.2062 0.0604 Median 14.2 14.5 14.6 14.5 14.6 14.5 14.2 14.2 14.2	Equal Var Equal Var Normal D Normal D Normal D Normal D Normal D Normal D Normal D Normal 14	riances riances istributio istributio istributio istributio istributio Max 14.5 14.6 14.6	Std Err 0.08124 0.07745	1.28% 2.06% 1.19%	0.0% -0.56% -1.83%
0 25 50 100 Mean Length C-%	Mod Lever Levene Ec Shapiro-W Kolmogord D'Agostind D'Agostind D'Agostind Anderson- Summary Control Type Negative Control Detail Control Type	ne Equal quality of /ilk W Nc ov-Smirn o Skewne o Kurtosio -Pearso Darling A Count 5 5 5 5 5 7 8 8 8 8 8 1 14	ity of Variar Variance ormality ov D ess s n K2 Omnit A2 Normalit Mean 14.24 14.32 14.5 14.46 Rep 2 14.2	nce 0.6582 1.968 0.9165 0.1687 0.5537 1.689 ous 3.158 y 0.7194 95% LCL 14.01 13.95 14.28 14.14 Rep 3 14.3	5.953 5.292 0.866 0.2235 2.576 9.21 3.878 95% UCL 14.47 14.69 14.72 14.78 Rep 4 14.5	0.5933 0.1595 0.0847 0.1416 0.5798 0.0913 0.2062 0.0604 Median 14.2 14.5 14.6 14.5 14.6 14.5 14.2	Equal Var Equal Var Normal D Normal D Normal D Normal D Normal D Normal D Normal D Normal 14	riances riances istributio istributio istributio istributio istributio Max 14.5 14.6 14.6	Std Err 0.08124 0.07745	1.28% 2.06% 1.19%	0.0% -0.56% -1.83%

	ilylical Report				Test Code:	WST0316.052klp 00-1704-6117
Aacrocystis C	Germination and Ger	m Tube Grow	/th Test		Aquatic Bi	oassay & Consulting Labs, Inc.
Analysis ID: Analyzed:	01-4072-2856 13 May-16 10:52	Endpoint: Analysis:	Mean Length Parametric-Control vs T	reatments	CETIS Version: Official Results:	CETISv1.8.7 Yes
Graphics						
16				Catabade Catabade Untransformed 010 010 010 010 010 010 010 010 010 01		
	0 N 25	50	100	-2.0 -1.	5 -1.0 -0.5 0.0	0.5 1.0 1.5 2.0

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CETIS Analytical Report

CETIS™ v1.8.7.11

Analyst:_____ QA:_____

13 May-16 10:53 (p 4 of 4)

Report Date:

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CETIS	6 Ana	lytical Repo	ort						port Date: st Code:		•	:53 (p 1 of 4) 00-1704-6117	
Macro	cystis G	ermination and	Germ Tub	e Grow	/th Test				Aquatic Bioassay & Consulting Labs, Inc.				
Analys Analyz		02-6794-7528 13 May-16 10:5		point: lysis:	Germination Ra Linear Interpola				TIS Version Icial Resul		.8.7		
Batch	ID:	21-3175-0769	Tes	t Type:	Growth-Germin	ation		An	alyst: Jo	e Freas			
Start D	ate:	08 Mar-16 13:00		tocol:	EPA/600/R-95/			Dil		aboratory Sea	water		
Ending	J Date:	10 Mar-16 13:00	D Spe	cies:	Macrocystis py			Bri	ne: No	ot Applicable			
Duratio	on:	48h	Sol	rce:	Aquatic Bioass	ay Labs Coll	ection	Ag	e:				
Sample		18-8651-9264	Coc		WST0316.052	ζ.				eston Solutio			
		06 Mar-16		erial:	Sample Water			Pro	oject: LA	CDPW MALI	BU ASBS		
		08 Mar-16 10:20		rce:	Bioassay Repo								
Sample	e Age:	61h (1 °C)	Star	ion:	LACDPW-0306	16-ASBS-S	J1-Post						
Linear	Interpo	lation Options											
X Tran	sform	Y Transform			Resamples	Exp 95%							
Linear		Linear	179	9585	280	Yes	Two-	Point Inter	polation				
Test Ac	cceptab	ility Criteria											
Attribu	te	Test Stat	TAC Limi	ts	Overlap	Decision							
Control	Resp	0.934	0.7 - NL		Yes	Passes Ac	ceptability	Criteria					
Point E	Stimate	s											
Level	%	95% LCL	95% UCL	τU	95% LCL	95% UCL		,					
EC5	>100	N/A	N/A	<1	NA	NA							
EC10	>100	N/A	N/A	<1	NA	NA							
EC15 EC20	>100 >100	N/A N/A	N/A N/A	<1 <1	NA NA	NA NA							
EC25	>100	N/A	N/A N/A	<1	NA	NA							
EC40	>100	N/A	N/A	<1	NA	NA							
EC50	>100	N/A	N/A	<1	NA	NA	•						
Germir	nation R	ate Summary				Calcu	lated Varia	te(A/B)					
C-%	С	ontrol Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	Α	в	
0	N	egative Control	5	0.934	0.91	0.95	0.008124	0.01817	1.95%	0.0%	467	500	
25			5	0.93	0.91	0.96	0.008944	0.02	2.15%	0.43%	465	500	
50			5	0.926		0.95	0.009273			0.86%	463	500	
100			5	0.93	0.91	0.97	0.01049	0.02345	2.52%	0.43%	465	500	
Germin	nation R	ate Detail											
C-%		ontrol Type	Rep 1	Rep 2		Rep 4	Rep 5						
0	N	egative Control	0.92	0.91	0.95	0.94	0.95						
25			0.92	0.91	0.96	0.94	0.92						
50			0.91	0.9	0.93	0.95	0.94						
100			0.92	0.93	0.91	0.97	0.92						
Germin	nation R	ate Binomials											
C-%		Control Type	Rep 1	Rep 2		Rep 4	Rep 5						
)		Negative Control		91/10		94/100	95/100						
25			92/100	91/10		94/100	92/100						
50			91/100	90/10		95/100	94/100						
100			92/100	93/10	0 91/100	97/100	92/100						

Analyst: _____ QA:_____

				Test Code:	VVST0316.052Kip	00-1704-011	
Macrocystis	Germination and Ger	m Tube Grow	Aquatic Bi	Aquatic Bioassay & Consulting Labs, Inc			
Analysis ID: Analyzed:	02-6794-7528 13 May-16 10:52	Endpoint: Analysis:	Germination Rate Linear Interpolation (ICPIN)	CETIS Version: Official Results:	CETISv1.8.7 Yes		
iraphics							
1.0 E							
0.9	••••	0	@				
0.8							
0.7 - 8							
Germination Rate							
0.4							
0.3							
0.2							
0.0 Ē							
0	20 40 C-4/	60,	80 100				
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Analyst:_____ QA:_____

13 May-16 10:53 (p 2 of 4)

WST0316.052klp | 00-1704-6117

Report Date:

Test Code:

CETIS Analytical Report

								1	est Code:		WS10316.052Kip	00-1704-011
Macro	cystis G	ermination and	Germ Tube	e Grow	th Test				Aqua	tic Bi	ioassay & Consulti	ng Labs, Inc.
Analys	is ID:	09-5289-7306	End	point:	Mean Length			c	ETIS Vers	ion:	CETISv1.8.7	
Analyz	ed:	13 May-16 10:5	52 Anal	ysis:	Linear Interpola	ation (ICPIN)		c	fficial Res	sults:	Yes	
Batch I	ID:	21-3175-0769	Test	Туре:	Growth-Germin	ation		A	nalyst:	Joe F	Freas	
Start D	ate:	08 Mar-16 13:0	0 Prot	ocol:	EPA/600/R-95/	136 (1995)		D	iluent:	Labo	ratory Seawater	
Ending	Date:	10 Mar-16 13:0	0 Spe	cies:	Macrocystis py	rifera		E	rine:	Not A	Applicable	
Duratio	on:	48h	Sou	rce:	Aquatic Bioass	ay Labs Coll	ection	A	ge:			
Sample		18-8651-9264	Cod	e:	WST0316.052k	c .		C	lient:		ton Solutions	
		06 Mar-16	Mate	erial:	Sample Water			P	roject:	LACI	DPW MALIBU ASBS	6
		08 Mar-16 10:2	0 Sou	rce:	Bioassay Repo	rt						
Sample	e Age:	61h (1 °C)	Stati	on:	LACDPW-0306	16-ASBS-S	01-Post					
_inear	Interpo	lation Options										
X Tran	sform	Y Transform			Resamples	Exp 95%		ethod				
Linear		Linear	1354	081	280	Yes	Tw	o-Point In	erpolation			
Test Ac	cceptab	ility Criteria										
Attribu	te	Test Stat	TAC Limit	s	Overlap	Decision						
Control	Resp	14.24	10 - NL		Yes	Passes Ac	ceptabili	ty Criteria				
Point E	stimate	s										
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL						
C5	>100	N/A	N/A	<1	NA	NA						
C10	>100	N/A	N/A	<1	NA	NA						
C15	>100	N/A	N/A	<1	NA	NA						
C20	>100	N/A	N/A	<1	NA	NA						
C25	>100	N/A	N/A	<1	NA	NA						
C40 C50	>100 >100	N/A N/A	N/A N/A	<1 <1	NA NA	NA NA						
	_		IN/A	~1								
		Summary	0		N Ø1		culated \				0/ 5554	
C-%		ontrol Type egative Control	Count 5	Mean 14.24		Max 14.5	Std Err 0.08124				%Effect 0.0%	
25	IN	egative control	5	14.24		14.5 14.6	0.08124	0.1817	2.06%		-0.56%	
50			5	14.52	14.2	14.0 14.6	0.07745				-1.83%	
100			5	14.46		14.8	0.1166	0.2608			-1.55%	
Mean L	.ength [Detail									· · · · ·	
C-%	-	ontrol Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
)		egative Control	14	14.2	14.3	14.5	14.2					
,		-	14	14.6	14.5	14.5	14					
25 50			14.6	14.6	14.5	14.2	14.6					

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CETIS Ana	alytical Report			Report Date: Test Code:	13 May-16 10:53 (p 4 of 4) WST0316.052klp 00-1704-6117
Macrocystis (Germination and Ger	m Tube Grow	/th Test	Aquatic Bi	oassay & Consulting Labs, Inc.
Analysis ID: Analyzed:	09-5289-7306 13 May-16 10:52	Endpoint: Analysis:	Mean Length Linear Interpolation (ICPIN)	CETIS Version: Official Results:	CETISv1.8.7 Yes
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Mean Length					
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CETIS™ v1.8.7.11

Analyst:

___ QA:___

CETIS Measurement Report

13 May-16 10:54 (p 1 of 2) WST0316.052klp | 00-1704-6117

Batch ID: 21-3175-0769 Test Type: Growth-Germination Analyst: Joe Free Start Date: 08 Mar-16 13:00 Protocol: EPA/600/R-95/136 (1995) Diluent: Laborat Ending Date: 10 Mar-16 13:00 Species: Macrocystis pyrifera Brine: Not App Duration: 48h Source: Aquatic Bioassay Labs Collection Age: Client: Weston Sample ID: 18-8651-9264 Code: WST0316.052k Client: Weston Sample Date: 06 Mar-16 Material: Sample Water Project: .LACDP Receive Date: 08 Mar-16 10:20 Source: Bioassay Report Station: LACDPW-030616-ASBS-S01-Post Project: .LACDP Dissolved Oxygen-mg/L Control Type Count Mean 95% LCL 95% UCL Min Max Std Err Std 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0 2 6.55 5.915 7.185	assay & Consulting Labs eas tory Seawater plicable	s, Inc.
Start Date: 08 Mar-16 13:00 Protocol: EPA/600/R-95/136 (1995) Diluent: Laborat Ending Date: 10 Mar-16 13:00 Species: Macrocystis pyrifera Brine: Not App Duration: 48h Source: Aquatic Bioassay Labs Collection Age: Item in: Not App Sample ID: 18-8651-9264 Code: WST0316.052k Client: Westor Sample Date: 06 Mar-16 Material: Sample Water Project: LACDP Receive Date: 08 Mar-16 10:20 Source: Bioassay Report Sample Age: 61h (1 °C) Station: LACDPW-030616-ASBS-S01-Post Vertex Vertex Std Err St Dissolved Oxygen-mg/L Control Type Count Mean 95% LCL 95% UCL Min Max Std Err St 0 Negative Contro 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0 25 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0 <th>tory Seawater</th> <th></th>	tory Seawater	
Sample ID: 18-8651-9264 Code: WST0316.052k Client: Weston Sample Date: 06 Mar-16 Material: Sample Water Project: .LACDP Receive Date: 08 Mar-16 10:20 Source: Bioassay Report LACDPW-030616-ASBS-S01-Post Project: .LACDP Dissolved Oxygen-mg/L Control Type Count Mean 95% LCL 95% UCL Min Max Std Err St 0 Negative Contro 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0 25 2 6.35 5.915 7.185 6.5 6.6 0.04999 0.0 25 2 6.35 5.915 7.185 6.5 6.6 0.04999 0.0 25 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0 26 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0 27 6.55 5.915 7.185 6.5 6.6 0.04999 0.0 0.0 <		
Sample Date: 06 Mar-16 Material: Sample Water Project: LACDP Receive Date: 08 Mar-16 10:20 Source: Bioassay Report Bioassay Report Source: Source: Source: Source: Source: Source: Source: Source: Source: Bioassay Report Source: Source:		
C-% Control Type Count Mean 95% LCL 95% UCL Min Max Std Err St 0 Negative Contro 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0 25 2 6.55 2.103 11 6.2 6.9 0.35 0.4 100 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0 25 2 6.55 5.915 7.185 6.5 0.2 0.2 100 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0 Overall 8 6.488 6.1 6.9 0.2 <		
Sample Age: 61h (1 °C) Station: LACDPW-030616-ASBS-S01-Post Dissolved Oxygen-mg/L C-% Control Type Count Mean 95% LCL 95% UCL Min Max Std Err St 0 Negative Contro 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0 25 2 6.55 2.103 11 6.2 6.9 0.35 0.4 50 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0 100 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0 Overall 8 6.488 6.1 6.9 0.0 0	W MALIBU ASBS	
Dissolved Oxygen-mg/L C-% Control Type Count Mean 95% LCL 95% UCL Min Max Std Err St 0 Negative Contro 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0 25 2 6.55 2.103 11 6.2 6.9 0.35 0.4 50 2 6.3 3.759 8.841 6.1 6.5 0.2 0.2 100 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0 Overall 8 6.488 6.1 6.9 0.4		
C-% Control Type Count Mean 95% LCL 95% UCL Min Max Std Err St 0 Negative Contro 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0 25 2 6.55 2.103 11 6.2 6.9 0.35 0.4 50 2 6.3 3.759 8.841 6.1 6.5 0.2 0.2 100 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0 Overall 8 6.488 6.1 6.9 0.3 0.4 pH-Units 3 5.915 7.185 6.5 6.6 0.04999 0.0	A H(-111	
0 Negative Contro 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0 25 2 6.55 2.103 11 6.2 6.9 0.35 0.4 50 2 6.3 3.759 8.841 6.1 6.5 0.2 0.2 100 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0 Overall 8 6.488 6.1 6.9 0.4		C
25 2 6.55 2.103 11 6.2 6.9 0.35 0.4 50 2 6.3 3.759 8.841 6.1 6.5 0.2 0.2 100 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0 Overall 8 6.488 6.1 6.9 0.4999 0.0	td Dev CV% QA (0707 1.08% 0	Coun
50 2 6.3 3.759 8.841 6.1 6.5 0.2 0.2 100 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0 Overall 8 6.488 6.1 6.9		
100 2 6.55 5.915 7.185 6.5 6.6 0.04999 0.0 Overall 8 6.488 6.1 6.9 6.9 6.1 6.9 6.1 6.9 6.1 6.9 6.1 6.1 6.9 6.1 <t< td=""><td></td><td></td></t<>		
Overall 8 6.488 6.1 6.9 pH-Units		
pH-Units	0707 1.08% 0 0 (0%	9/.)
C % Control Type Count Mean DEV/ LCL DEV/ LCL Min May Std Fry St	0(0)	
C-% Control Type Count Mean 95% LCL 95% UCL Min Max Std Err St	d Dev CV% QA C	Coun
0 Negative Contro 2 7.9 7.884 7.916 7.9 7.9 0 0	0.0% 0	
25 2 7.85 7.215 8.485 7.8 7.9 0.05 0.0	07071 0.9% 0	
50 2 7.8 7.787 7.813 7.8 7.8 0 0	0.0% 0	
100 2 7.7 7.698 7.702 7.7 7.7 0 0	0.0% 0	
Overall 8 7.813 7.7 7.9	0 (0%	%)
Salinity-ppt		
	d Dev CV% QA C	Coun
0 Negative Contro 2 34 34 34 34 34 0 0	0.0% 0	
25 2 34 34 34 34 34 0 0	0.0% 0	
50 2 34 34 34 34 34 0 0	0.0% 0	
<u>100</u> 2 34 34 34 34 34 0 0	0.0% 0	
Overall 8 34 34 34	0 (0%	%)
Temperature-°C		
		Coun
-	07077 0.48% 0	
	07077 0.48% 0	۱.
	07077 0.48% 0	
Overall 8 14.85 14.8 14.9	07077 0.48% 0 0 (0%	

005-312-647-5

Analyst:_____QA:____

Test Code: WST0316.052klp | 00-1704-6117 Macrocystis Germination and Germ Tube Growth Test Aquatic Bioassay & Consulting Labs, Inc. Dissolved Oxygen-mg/L C-% **Control Type** 1 2 0 Negative Contr 6.6 6.5 25 6.9 6.2 50 6.5 6.1 100 6.6 6.5 pH-Units C-% **Control Type** 2 1 0 Negative Contr 7.9 7.9 25 7.9 7.8 50 7.8 7.8 100 7.7 7.7 Salinity-ppt C-% **Control Type** 1 2 0 34 **Negative Contr** 34 25 34 34 50 34 34 100 34 34 Temperature-°C

C-%	Control Type	1	2
0	Negative Contr	14.8	14.9
25		14.8	14.9
50		14.8	14.9
100		14.8	14.9

005-312-647-5



May 13, 2016

Mr. Dan McCoy Weston Solutions 5817 Dryden Place Carlsbad, CA 92008

Dear Mr. McCoy:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms, EPA/R-95/136.* "The concentration-response was normal. Test was set at 38 hours holding time which is beyond the prescribed 36 hour hold but within 72 hours. Reference toxicant was within limits and all other test acceptability criteria was met. This is a valid test." Results were as follows:

CLIENT: SAMPLE I.D.: DATE RECEIVED: ABC LAB. NO.: Weston Solutions LACDPW-030616-ASBS-S01-Post 3/8/2016 WST0316.052

CHRONIC SEA URCHIN FERTILIZATION BIOASSAY

NOEC =	100.00~%
TUc =	1.00
EC25 =	>100.00 %
EC50 =	>100.00 %

Yours very truly, cott Johnson Laboratory Director

CETIS Summary Report

								restu				
Purple Sea Ur	rchin Sperm Cell	Fertilizat	tion Test						Aquatic I	Bioassay & C	Consulting	j Labs, Inc
Batch ID: Start Date: Ending Date: Duration:	01-7089-7442 08 Mar-16 13:00 08 Mar-16 13:40 40m) Pro	st Type: otocol: ecies: urce:	Fertilization EPA/600/R-95 Strongylocentr David Gutoff	· · ·	tus		Analys Diluen Brine: Age:	t: Lab	Freas oratory Seaw Applicable	vater	
Sample ID:	00-2045-9441	Co	de:	WST0316.052	uf			Client:	We	ston Solution	IS	
Sample Date:	06 Mar-16	Ma	terial:	Sample Water				Project	t: LAC		BU ASBS	
Receive Date:	08 Mar-16 10:20) So	urce:	Bioassay Repo	ort							
Sample Age:	61h (1 °C)	Sta	ation:	LACDPW-030	616-ASBS-S	01-Post						
Comparison S	Summary											
Analysis ID	Endpoint		NOEL	LOEL	TOEL	PMSD	TU		Method			
16-1132-4759	Fertilization Rate	e	100	>100	NA	4.36%	1		Dunnett N	Aultiple Comp	parison Te	st
Point Estimat	e Summary											
Analysis ID	Endpoint		Level	%	95% LCL	95% UCL	TU		Method			
17-4576-1071	Fertilization Rate	e	EC5	>100	N/A	N/A	<1		Linear Int	erpolation (IC	CPIN)	
			EC10		N/A	N/A	<1					
			EC15		N/A	N/A	<1					
			EC20		N/A	N/A	<1					
			EC25		N/A	N/A	<1					
			EC40	>100	N/A	N/A	<1					
						N1/A	- 4					
			EC50		N/A	N/A	<1					
	bility		EC50	>100	N/A							
Analysis ID	Endpoint		EC50 Attrib	>100 ute	N/A Test Stat	TAC Limi			Overlap	Decision		0.11
Analysis ID 16-1132-4759	Endpoint Fertilization Rate		EC50 Attrib	>100 ute ol Resp	N/A Test Stat 0.92	TAC Limi 0.7 - NL			Yes	Passes Ac		
Analysis ID 16-1132-4759 17-4576-1071	Endpoint Fertilization Rate Fertilization Rate	e	EC50 Attrib Contro Contro	>100 ute ol Resp ol Resp	N/A Test Stat 0.92 0.92	TAC Limi 0.7 - NL 0.7 - NL		,	Yes Yes	Passes Ac Passes Ac	ceptability	Criteria
Analysis ID 16-1132-4759 17-4576-1071 16-1132-4759	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate	e	EC50 Attrib	>100 ute ol Resp ol Resp	N/A Test Stat 0.92	TAC Limi 0.7 - NL		,	Yes	Passes Ac	ceptability	Criteria
Analysis ID 16-1132-4759 17-4576-1071 16-1132-4759 Fertilization R	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Rate Summary	e e	EC50 Attrib Contro PMSE	>100 ute ol Resp ol Resp o)	N/A Test Stat 0.92 0.92 0.04361	TAC Limi 0.7 - NL 0.7 - NL NL - 0.25	ts	1	Yes Yes No	Passes Ac Passes Ac Passes Ac	cceptability	Criteria Criteria
Analysis ID 16-1132-4759 17-4576-1071 16-1132-4759 Fertilization R C-%	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Rate Summary Control Type	e e Count	EC50 Attrib Contro Contro PMSE	>100 ute ol Resp ol Resp o) 95% LCL	N/A Test Stat 0.92 0.04361 95% UCL	TAC Limi 0.7 - NL 0.7 - NL NL - 0.25 Min	ts Ma>		Yes Yes No Std Err	Passes Ac Passes Ac Passes Ac Std Dev	cceptability cceptability CV%	Criteria Criteria %Effec
Analysis ID 16-1132-4759 17-4576-1071 16-1132-4759 Fertilization R C-% 0	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Rate Summary	e e Count 4	EC50 Attrib Contro Contro PMSE Mean 0.92	>100 ute ol Resp ol Resp o) 95% LCL 0.894	N/A Test Stat 0.92 0.04361 95% UCL 0.946	TAC Limi 0.7 - NL 0.7 - NL NL - 0.25 Min 0.9	ts <u>Max</u> 0.94	() ()	Yes Yes No Std Err 0.008165	Passes Ac Passes Ac Passes Ac Std Dev 0.01633	cceptability cceptability CV% 1.78%	Criteria Criteria %Effec 0.0%
Analysis ID 16-1132-4759 17-4576-1071 16-1132-4759 Fertilization R C-% 0 25	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Rate Summary Control Type	e e <u>Count</u> 4 4	Attrib Contre Contre PMSE Mean 0.92 0.947	>100 ute ol Resp ol Resp o) 95% LCL 0.894 5 0.9077	N/A Test Stat 0.92 0.92 0.04361 95% UCL 0.946 0.9873	TAC Limi 0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.92	Max 0.94 0.98	() () () ()	Yes Yes No Std Err 0.008165 0.0125	Passes Ac Passes Ac Passes Ac Std Dev 0.01633 0.025	CV% 1.78% 2.64%	Criteria Criteria %Effec 0.0% -2.99%
Analysis ID 16-1132-4759 17-4576-1071 16-1132-4759 Fertilization R C-% 0 25 50	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Rate Summary Control Type	e Count 4 4 4	Attrib Contro Contro PMSE Mean 0.92 0.9475 0.9325	>100 ute ol Resp ol Resp ol 95% LCL 0.894 5 0.9077 5 0.8972	N/A Test Stat 0.92 0.92 0.04361 95% UCL 0.946 0.9873 0.9678	TAC Limi 0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.92 0.91	Max 0.94 0.98 0.96	() () () () () () () () () ()	Yes Yes No Std Err 0.008165 0.0125 0.01109	Passes Ac Passes Ac Passes Ac Std Dev 0.01633 0.025 0.02217	CV% 1.78% 2.64% 2.38%	Criteria Criteria %Effec 0.0% -2.99% -1.36%
Analysis ID 16-1132-4759 17-4576-1071 16-1132-4759 Fertilization R C-% D 25 50 100	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Rate Summary Control Type Negative Control	e e <u>Count</u> 4 4	Attrib Contre Contre PMSE Mean 0.92 0.947	>100 ute ol Resp ol Resp o) 95% LCL 0.894 5 0.9077	N/A Test Stat 0.92 0.92 0.04361 95% UCL 0.946 0.9873	TAC Limi 0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.92	Max 0.94 0.98	() () () () () () () () () ()	Yes Yes No Std Err 0.008165 0.0125	Passes Ac Passes Ac Passes Ac Std Dev 0.01633 0.025 0.02217	CV% 1.78% 2.64%	Criteria Criteria %Effect 0.0% -2.99%
Analysis ID 16-1132-4759 17-4576-1071 16-1132-4759 Fertilization R C-% 0 25 50 100 Fertilization R	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Rate Summary Control Type Negative Control	e e Count 4 4 4 4 4	Attrib Contro Contro PMSE Mean 0.92 0.947 0.932 0.95	>100 ute ol Resp ol Resp o 95% LCL 0.894 5 0.9077 5 0.8972 0.937	N/A Test Stat 0.92 0.04361 95% UCL 0.946 0.9873 0.9678 0.963	TAC Limi 0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.92 0.91	Max 0.94 0.98 0.96	() () () () () () () () () ()	Yes Yes No Std Err 0.008165 0.0125 0.01109	Passes Ac Passes Ac Passes Ac Std Dev 0.01633 0.025 0.02217	CV% 1.78% 2.64% 2.38%	Criteria Criteria %Effec 0.0% -2.99% -1.36%
Analysis ID 16-1132-4759 17-4576-1071 16-1132-4759 Fertilization R C-% 25 50 100 Fertilization R C-%	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Rate Summary Control Type Negative Control	e e Count 4 4 4 4 8 8 8 9	Attrib Contro Contro PMSE Mean 0.92 0.9475 0.9325	>100 ute ol Resp ol Resp o 95% LCL 0.894 5 0.9077 5 0.8972 0.937	N/A Test Stat 0.92 0.92 0.04361 95% UCL 0.946 0.9873 0.9678	TAC Limi 0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.92 0.91	Max 0.94 0.98 0.96	() () () () () () () () () ()	Yes Yes No Std Err 0.008165 0.0125 0.01109	Passes Ac Passes Ac Passes Ac Std Dev 0.01633 0.025 0.02217	CV% 1.78% 2.64% 2.38%	Criteria Criteria %Effec 0.0% -2.99% -1.36%
Analysis ID 16-1132-4759 17-4576-1071 16-1132-4759 Fertilization R C-% 0 25 50 100 Fertilization R C-% 0	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Rate Summary Control Type Negative Control	e e Count 4 4 4 4 8 8 8 9	Attrib Contro Contro PMSE Mean 0.92 0.9479 0.9329 0.95 Rep 2	>100 ute ol Resp ol Re	N/A Test Stat 0.92 0.04361 95% UCL 0.946 0.9873 0.9678 0.963 Rep 4	TAC Limi 0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.92 0.91	Max 0.94 0.98 0.96	() () () () () () () () () ()	Yes Yes No Std Err 0.008165 0.0125 0.01109	Passes Ac Passes Ac Passes Ac Std Dev 0.01633 0.025 0.02217	CV% 1.78% 2.64% 2.38%	Criteria Criteria %Effec 0.0% -2.99% -1.36%
Analysis ID 16-1132-4759 17-4576-1071 16-1132-4759 Fertilization R C-% 0 25 50 100 Fertilization R C-% 0 25	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Rate Summary Control Type Negative Control	e e Count 4 4 4 4 4 8 ep 1 0.9	EC50 Attrib Contro PMSE Mean 0.92 0.947 0.932 0.932 0.95 Rep 2 0.92	>100 ute ol Resp ol Resp o 95% LCL 0.894 5 0.9077 5 0.8972 0.937 2 Rep 3 0.94	N/A Test Stat 0.92 0.92 0.04361 95% UCL 0.946 0.9873 0.9678 0.963 Rep 4 0.92	TAC Limi 0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.92 0.91	Max 0.94 0.98 0.96	() () () () () () () () () ()	Yes Yes No Std Err 0.008165 0.0125 0.01109	Passes Ac Passes Ac Passes Ac Std Dev 0.01633 0.025 0.02217	CV% 1.78% 2.64% 2.38%	Criteria Criteria %Effec 0.0% -2.99% -1.36%
Analysis ID 16-1132-4759 17-4576-1071 16-1132-4759 Fertilization R C-% 0 25 50 100 Fertilization R C-% 0 25 50 50	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Rate Summary Control Type Negative Control	e e <u>Count</u> 4 4 4 4 4 <u>Rep 1</u> 0.9 0.94	EC50 Attrib Contro PMSE Mean 0.92 0.9475 0.9325 0.9325 0.932 0.932 0.932 0.932 0.932 0.932	>100 ute ol Resp ol Resp ol Resp ol Resp ol Resp ol Resp ol Resp 0.894 5 0.9077 5 0.8972 0.937 2 Rep 3 0.94 0.95	N/A Test Stat 0.92 0.04361 95% UCL 0.946 0.9873 0.9678 0.963 Rep 4 0.92 0.92	TAC Limi 0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.92 0.91	Max 0.94 0.98 0.96	() () () () () () () () () ()	Yes Yes No Std Err 0.008165 0.0125 0.01109	Passes Ac Passes Ac Passes Ac Std Dev 0.01633 0.025 0.02217	CV% 1.78% 2.64% 2.38%	Criteria Criteria %Effec 0.0% -2.99% -1.36%
Analysis ID 16-1132-4759 17-4576-1071 16-1132-4759 Fertilization R C-% 0 25 50 100 Fertilization R C-% 0 25 50 100	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Rate Summary Control Type Negative Control	e e 2 4 4 4 4 4 4 8 0.9 0.94 0.94	EC50 Attrib Contro PMSE Mean 0.92 0.9475 0.9325 0.95 Rep 2 0.95 Rep 2 0.98 0.96	>100 ute ol Resp ol Resp ol Resp ol Resp ol Resp 0.894 5 0.9077 5 0.8972 0.937 2 Rep 3 0.94 0.95 0.92	N/A Test Stat 0.92 0.04361 95% UCL 0.946 0.9873 0.9678 0.963 Rep 4 0.92 0.92 0.92 0.91	TAC Limi 0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.92 0.91	Max 0.94 0.98 0.96	() () () () () () () () () ()	Yes Yes No Std Err 0.008165 0.0125 0.01109	Passes Ac Passes Ac Passes Ac Std Dev 0.01633 0.025 0.02217	CV% 1.78% 2.64% 2.38%	Criteria Criteria %Effec 0.0% -2.99% -1.36%
Analysis ID 16-1132-4759 17-4576-1071 16-1132-4759 Fertilization R C-% 0 25 50 100 Fertilization R C-% 0 25 50 100 Fertilization R Fertilization R	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Control Type Negative Control	e e 2 4 4 4 4 4 4 4 2 8 8 9 0.9 0.94 0.94 0.95	EC50 Attrib Contro PMSE Mean 0.92 0.947 0.932 0.93 0.95 Rep 2 0.92 0.98 0.96 0.95	>100 ute ol Resp ol Resp o 95% LCL 0.894 5 0.9077 5 0.8972 0.937 2 Rep 3 0.94 0.95 0.92 0.94	N/A Test Stat 0.92 0.04361 95% UCL 0.946 0.9873 0.9678 0.963 Rep 4 0.92 0.92 0.92 0.91	TAC Limi 0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.92 0.91	Max 0.94 0.98 0.96	() () () () () () () () () ()	Yes Yes No Std Err 0.008165 0.0125 0.01109	Passes Ac Passes Ac Passes Ac Std Dev 0.01633 0.025 0.02217	CV% 1.78% 2.64% 2.38%	Criteria Criteria %Effec 0.0% -2.99% -1.36%
Analysis ID 16-1132-4759 17-4576-1071 16-1132-4759 Fertilization R C-% 0 25 50 100 Fertilization R C-% 0 25 50 100 Fertilization R C-%	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Fertilization Rate Control Type Negative Control Rate Detail Control Type Negative Control	e e 2 4 4 4 4 4 4 4 8 8 9 0.9 0.94 0.95 8 8 9 1	EC50 Attrib Contro PMSE Mean 0.92 0.9475 0.9325 0.95 Rep 2 0.95 Rep 2 0.98 0.96	>100 ute ol Resp ol Resp ol Resp o 95% LCL 0.894 5 0.9077 5 0.8972 0.937 2 Rep 3 0.94 0.92 0.94 0.92 0.94 2.92 0.94	N/A Test Stat 0.92 0.04361 95% UCL 0.946 0.9873 0.9678 0.963 Rep 4 0.92 0.92 0.91 0.96	TAC Limi 0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.92 0.91	Max 0.94 0.98 0.96	() () () () () () () () () ()	Yes Yes No Std Err 0.008165 0.0125 0.01109	Passes Ac Passes Ac Passes Ac Std Dev 0.01633 0.025 0.02217	CV% 1.78% 2.64% 2.38%	Criteria Criteria %Effec 0.0% -2.99% -1.36%
Analysis ID 16-1132-4759 17-4576-1071 16-1132-4759 Fertilization R C-% 0 25 50 100 Fertilization R C-% 0 25 50 100 Fertilization R C-% 0 25 50 100	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Rate Summary Control Type Negative Control Rate Detail Control Type Negative Control Regative Control Regative Control	e e 2 4 4 4 4 4 4 4 8 8 9 0.9 0.94 0.95 8 8 9 1	EC50 Attrib Contro PMSE Mean 0.92 0.947 0.932 0.95 Rep 2 0.92 0.98 0.96 0.95 Rep 2	>100 ute ol Resp ol Resp ol Resp o 95% LCL 0.894 5 0.9077 5 0.8972 0.937 2 Rep 3 0.94 0.92 0.94 0.94 0.94	N/A Test Stat 0.92 0.04361 95% UCL 0.946 0.9873 0.9678 0.963 Rep 4 0.92 0.91 0.96 Rep 4	TAC Limi 0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.92 0.91	Max 0.94 0.98 0.96	() () () () () () () () () ()	Yes Yes No Std Err 0.008165 0.0125 0.01109	Passes Ac Passes Ac Passes Ac Std Dev 0.01633 0.025 0.02217	CV% 1.78% 2.64% 2.38%	Criteria Criteria %Effec 0.0% -2.99% -1.36%
0 25 50 100 Fertilization R C-% 50 100 Fertilization R C-%	Endpoint Fertilization Rate Fertilization Rate Fertilization Rate Rate Summary Control Type Negative Control Rate Detail Control Type Negative Control Regative Control Regative Control	e e 2 4 4 4 4 4 4 4 4 0.9 0.94 0.94 0.95 Rep 1 90/100	EC50 Attrib Contro Contro PMSE Mean 0.92 0.947 0.932 0.947 0.932 0.95 Rep 2 0.92 0.98 0.96 0.95 Rep 2 92/100	>100 ute ol Resp ol Resp ol Resp o 95% LCL 0.894 5 0.9077 5 0.8972 0.937 2 Rep 3 0.94 0.92 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.92 0.94 0.94 0.94 0.92 0.94 0.94 0.92 0.94 0.94 0.95 0.92 0.94 0.94 0.94 0.95 0.92 0.94 0.94 0.95 0.92 0.94 0.94 0.94 0.95 0.92 0.94 0.94 0.94 0.95 0.92 0.94 0.94 0.94 0.95 0.92 0.94 0.94 0.94 0.95 0.94 0.94 0.95 0.94 0.94 0.95 0.94 0.94 0.95 0.94 0.94 0.95 0.94 0.94 0.95 0.94 0.94 0.95 0.94 0.95 0.94 0.95 0.94 0.95 0.94 0.95 0.94 0.95 0.94 0.95 0.94 0.95 0.94 0.94 0.95 0.94 0.94 0.95 0.94 0.94 0.95 0.94 0.95 0.94 0.94 0.95 0.94 0.95 0.94 0.95 0.94 0.95 0.94 0.95 0.95 0.94 0.95 0.94 0.95 0.94 0.95 0.94 0.95 0.94 0.95 0.94 0.95 0.94 0.95 0.95 0.94 0.95 0.55 0.55 0.55 0.55 0.5	N/A Test Stat 0.92 0.92 0.04361 95% UCL 0.946 0.9873 0.9678 0.963 Rep 4 0.92 0.91 0.96 Rep 4 92/100	TAC Limi 0.7 - NL 0.7 - NL NL - 0.25 Min 0.9 0.92 0.91	Max 0.94 0.98 0.96	() () () () () () () () () ()	Yes Yes No Std Err 0.008165 0.0125 0.01109	Passes Ac Passes Ac Passes Ac Std Dev 0.01633 0.025 0.02217	CV% 1.78% 2.64% 2.38%	Criteria Criteria %Effect 0.0% -2.99% -1.36%

Analyst:_____ QA:____

13 May-16 10:53 (p 1 of 2) -7618

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	alytical Repo	ort					-	ort Date: Code:	13 N WST0316.0		53 (p 1 of 0-0824-76 ⁻
Purple Sea U	rchin Sperm Cel	l Fertiliz	ation Test						Bioassay & C		
Analysis ID:	16-1132-4759	E	ndpoint: Fe	tilization Ra	te		CET	S Versior	n: CETISv1.	8.7	
Analyzed:	13 May-16 10:5	2 A	nalysis: Pa	rametric-Cor	ntrol vs Treal	iments	Offic	ial Result	s: Yes		
Batch ID:	01-7089-7442	т	est Type: Fe	tilization			Anal	yst: Jo	e Freas		
Start Date:	08 Mar-16 13:00			A/600/R-95/	136 (1995)		Dilue	ent: La	boratory Seaw	/ater	
Ending Date:	08 Mar-16 13:40	D 5			otus purpural	tus	Brine	e: No	ot Applicable		
Duration:	40m	s	ource: Da	vid Gutoff			Age:				
Sample ID:	00-2045-9441	c	ode: W	ST0316.052L	ıf		Clier	nt: W	eston Solution	s	
Sample Date:	: 06 Mar-16	N	laterial: Sa	mple Water			Proje	əct: LA	CDPW MALIE	BU ASBS	
Receive Date	: 08 Mar-16 10:20	D S	ource: Bio	assay Repo	rt						
Sample Age:	61h (1 °C)	S	itation: LA	CDPW-0306	16-ASBS-S	01-Post					
Data Transfo	rm	Zeta	Alt Hyp	Trials	Seed		PMSD	NOEL	LOEL	TOEL	TU
Angular (Corre	ected)	NA	C > T	NA	NA		4.36%	100	>100	NA	1
Dunnett Mult	iple Comparison	Test									
Control	vs C-%		Test Stat	Critical	MSD DF	P-Value	P-Type	Decisio	n(α:5%)		
Negative Cont	trol 25		-2.02	2.287	0.068 6	0.9965	CDF	Non-Sig	nificant Effect		
	50		-0.8586	2.287	0.068 6	0.9465	CDF	Ų	nificant Effect		
	100		-2.035	2.287	0.068 6	0.9966	CDF	Non-Sig	nificant Effect		
Test Accepta	bility Criteria										
Attribute	Test Stat	TAC Li	mits	Overlap	Decision						
Control Resp	0.92	0.7 - N	L	Yes	Passes Ac	ceptability	Criteria				
PMSD	0.04361	NL - 0.:	25	No	Passes Ac	ceptability	Criteria				
ANOVA Table)										
Source	Sum Squa	res	Mean Sq	uare	DF	F Stat	P-Value	Decisio			
Between	0.0104098	6	0.003469	953	3	1.949	0.1756	Non-Sig	nificant Effect		
Error	0.0213615		0.001780	125	12	_					
Total	0.0317713	6			15						
Distributiona	l Tests										
Attribute	Test			Test Stat	Critical	P-Value	Decision				
Variances	Bartlett Ed	quality of	f Variance	3.588	11.34	0.3095	Equal Var				
Variances		-	lity of Variance		5.953	0.3557	Equal Var				
Variances	Levene E			1.287	5.953	0.3235	Equal Var				
Distribution	Shapiro-V		•	0.9579	0.8408	0.6244	Normal Di				
			NOV D	0.1886	0.2471	0.1340	Normal Di				
Distribution	Kolmogor										
Distribution Distribution	D'Agostin	o Skewn	ess	1.162	2.576	0.2451	Normal Di				
Distribution Distribution Distribution	D'Agostin Anderson	o Skewn		1.162 0.4024	2.576 3.878	0.2451 0.3625	Normal Di Normal Di				
Distribution Distribution Distribution Fertilization F	D'Agostin Anderson Rate Summary	o Skewn -Darling	ess	0.4024	3.878	0.3625	Normal Di	stribution			
Distribution Distribution Distribution Fertilization F	D'Agostin Anderson Rate Summary Control Type	o Skewn -Darling Count	ess A2 Normality Mean	0.4024 95% LCL	3.878 95% UCL	0.3625 Median	Normal Di Min	stribution Max	Std Err	CV%	
Distribution Distribution Distribution Fertilization F C-% 0	D'Agostin Anderson Rate Summary	o Skewn -Darling Count	ess A2 Normality Mean 0.92	0.4024 95% LCL 0.894	3.878 95% UCL 0.946	0.3625 Median 0.92	Normal Di Min 0.9	Max 0.94	0.008165	1.78%	0.0%
Distribution Distribution Distribution Fertilization F C-% 0 25	D'Agostin Anderson Rate Summary Control Type	o Skewn -Darling Count 4 4	ess A2 Normality Mean 0.92 0.9475	0.4024 95% LCL 0.894 0.9077	3.878 95% UCL 0.946 0.9873	0.3625 Median 0.92 0.945	Normal Di Min 0.9 0.92	Max 0.94 0.98	0.008165 0.0125	1.78% 2.64%	0.0% -2.99%
Distribution Distribution Distribution Fertilization F C-% 0 25 50	D'Agostin Anderson Rate Summary Control Type	o Skewn -Darling Count 4 4 4	ess A2 Normality Mean 0.92 0.9475 0.9325	0.4024 95% LCL 0.894 0.9077 0.8972	3.878 95% UCL 0.946 0.9873 0.9678	0.3625 Median 0.92 0.945 0.93	Normal Di Min 0.9 0.92 0.91	Max 0.94 0.98 0.96	0.008165 0.0125 0.01109	1.78% 2.64% 2.38%	-2.99% -1.36%
Distribution Distribution Distribution Fertilization F C-% 0 25 50 100	D'Agostin Anderson Rate Summary Control Type Negative Control	o Skewn -Darling Count 4 4 4 4 4	ess A2 Normality Mean 0.92 0.9475 0.9325 0.95	0.4024 95% LCL 0.894 0.9077	3.878 95% UCL 0.946 0.9873	0.3625 Median 0.92 0.945	Normal Di Min 0.9 0.92	Max 0.94 0.98	0.008165 0.0125	1.78% 2.64%	0.0% -2.99%
Distribution Distribution Distribution Fertilization F C-% 0 25 50 100 Angular (Cort	D'Agostin Anderson Rate Summary Control Type Negative Control	o Skewn Darling Count 4 4 4 4 4 ned Sur	ess A2 Normality 0.92 0.9475 0.9325 0.95 nmary	0.4024 95% LCL 0.894 0.9077 0.8972 0.937	3.878 95% UCL 0.946 0.9873 0.9678 0.963	0.3625 Median 0.92 0.945 0.93 0.95	Normal Di Min 0.9 0.92 0.91 0.94	Max 0.94 0.98 0.96 0.96	0.008165 0.0125 0.01109 0.004083	1.78% 2.64% 2.38% 0.86%	0.0% -2.99% -1.36% -3.26%
Distribution Distribution Fertilization F C-% 0 25 50 100 Angular (Corr C-%	D'Agostin Anderson Rate Summary Control Type Negative Control rected) Transforr Control Type	o Skewn Darling Count 4 4 4 4 4 ned Sur Count	ess A2 Normality 0.92 0.9475 0.9325 0.95 nmary Mean	0.4024 95% LCL 0.894 0.9077 0.8972 0.937 95% LCL	3.878 95% UCL 0.946 0.9873 0.9678 0.963 95% UCL	0.3625 Median 0.92 0.945 0.93 0.95 Median	Normal Di Min 0.9 0.92 0.91 0.94 Min	Max 0.94 0.98 0.96 0.96 Max	0.008165 0.0125 0.01109 0.004083 Std Err	1.78% 2.64% 2.38% 0.86%	0.0% -2.99% -1.36% -3.26%
Distribution Distribution Fertilization F C-% 0 25 50 100 Angular (Corr C-% 0	D'Agostin Anderson Rate Summary Control Type Negative Control	o Skewn Darling Count 4 4 4 4 4 ned Sur Count 4	ess A2 Normality 0.92 0.9475 0.9325 0.95 nmary Mean 1.285	0.4024 95% LCL 0.894 0.9077 0.8972 0.937 95% LCL 1.237	3.878 95% UCL 0.946 0.9873 0.9678 0.963 95% UCL 1.333	0.3625 Median 0.92 0.945 0.93 0.95 Median 1.284	Normal Di Min 0.9 0.92 0.91 0.94 Min 1.249	Max 0.94 0.98 0.96 0.96 1.323	0.008165 0.0125 0.01109 0.004083 Std Err 0.01518	1.78% 2.64% 2.38% 0.86% CV% 2.36%	0.0% -2.99% -1.36% -3.26% %Effec: 0.0%
Distribution Distribution Fertilization F C-% 0 25 50 100 Angular (Corr C-%	D'Agostin Anderson Rate Summary Control Type Negative Control rected) Transforr Control Type	o Skewn Darling Count 4 4 4 4 4 ned Sur Count	ess A2 Normality 0.92 0.9475 0.9325 0.95 nmary Mean	0.4024 95% LCL 0.894 0.9077 0.8972 0.937 95% LCL	3.878 95% UCL 0.946 0.9873 0.9678 0.963 95% UCL	0.3625 Median 0.92 0.945 0.93 0.95 Median	Normal Di Min 0.9 0.92 0.91 0.94 Min	Max 0.94 0.98 0.96 0.96 Max	0.008165 0.0125 0.01109 0.004083 Std Err	1.78% 2.64% 2.38% 0.86%	0.0% -2.99% -1.36% -3.26% %Effec

CETIS™ v1.8.7.11

Analyst: _____ QA:____

Report Date:

13 May-16 10:53 (p 2 of 2) WST0316.052urcf | 10-0824-7618

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						Test Code:	WST0316.052urcf 10-0824-7618
Purple Sea L	Jrchin Sperm Cell	Fertil	ization Test	t		Aquatic B	ioassay & Consulting Labs, Inc.
Analysis ID:	16-1132-4759		Endpoint:	Fertilization R	ate	CETIS Version:	CETISv1.8.7
Analyzed:	13 May-16 10:5	2	Analysis:	Parametric-Co	ontrol vs Treatments	Official Results:	Yes
Fertilization	Rate Detail						
C-%	Control Type	Rep 1	I Rep 2	2 Rep 3	Rep 4		
0	Negative Control	0.9	0.92	0.94	0.92		
25		0.94	0.98	0.95	0.92		
50		0.94	0.96	0.92	0.91		
100		0.95	0.95	0.94	0.96		
Angular (Co	rrected) Transform	ned De	etail				
C-%	Control Type	Rep ^r	1 Rep 2	2 Rep 3	Rep 4		
0	Negative Control	1.249	1.284	1.323	1.284		
25		1.323	1.429	1.345	1.284		
50		1.323	1.369	1.284	1.266		
100		1.345	1.345	1.323	1.369		
Fertilization	Rate Binomials						
C-%	Control Type	Rep 1	l Rep 2	2 Rep 3	Rep 4		
0	Negative Control	90/10	0 92/10	0 94/100	92/100		

94/100

94/100

95/100

98/100

96/100

95/100

95/100

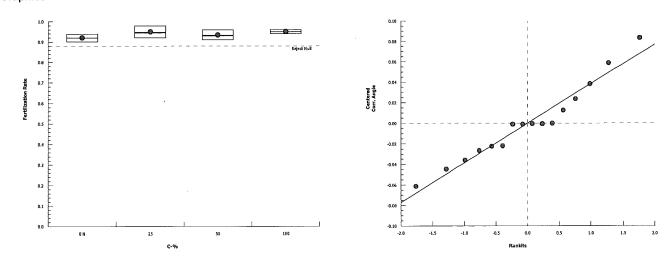
92/100

94/100

25

50

100



92/100

91/100

96/100

V QA: 1 Analyst:_

Report Date: 13 May-16 10:53 (p 1 of 2) Test Code:

WST0316.052urcf | 10-0824-7618

								Te	st Code	:	WST0316	.052urcf 1	10-0824-761
Purple	Sea Ur	chin Sperm Cell	Fertilizatio	on Test					Aqu	atic Bi	oassay &	Consultin	g Labs, Inc
Analysi	is ID:	17-4576-1071	End	point:	Fertilization Rat	e		CE	TIS Ver	sion:	CETISv1	.8.7	
Analyze	ed:	13 May-16 10:5	2 Anal	ysis:	Linear Interpola	tion (ICPIN)		Of	ficial Re	sults:	Yes		
Batch I	D:	01-7089-7442	Test	Type:	Fertilization			An	alyst:	Joe F	reas		
Start D	ate:	08 Mar-16 13:00) Prot	ocol:	EPA/600/R-95/	136 (1995)		Di	uent:	Labo	ratory Sea	water	
Ending	Date:	08 Mar-16 13:40) Spec	cies:	Strongylocentro	otus purpural	tus	Br	ine:	Not A	Applicable		
Duratio	on:	40m	Sou	rce:	David Gutoff			Ag	e:				
Sample		00-2045-9441	Cod		WST0316.052u	ıf			ent:		on Solutio		
		06 Mar-16	Mate		Sample Water			Pr	oject:	LACE	OPW MALI	BU ASBS	
		08 Mar-16 10:20			Bioassay Repo								
Sample	e Age:	61h (1 °C)	Stati	on:	LACDPW-0306	16-ASBS-S0	01-Post						
	-	lation Options	-	_									
K Trans	sform	Y Transform Linear	Seed 0	1	Resamples 280	Exp 95% Yes		hod -Point Inte	rnolation)			
					200	100				•			
lest Ac Attribut		ility Criteria	TAC Limit	-	Overlap	Decision							
Control		Test Stat 0.92	0.7 - NL	5	Yes	Passes Ac	ceptability	Criteria					
	stimate	S											
.evel	%	95% LCL	95% UCL	τυ	95% LCL	95% UCL							
EC5	>100	N/A	N/A	<1	NA	NA							
EC10	>100	N/A	N/A	<1	NA	NA							
EC15	>100	N/A	N/A	<1	NA	NA							
EC20	>100	N/A	N/A	<1	NA	NA							
EC25	>100	N/A	N/A	<1	NA	NA							
EC40	>100	N/A	N/A –	<1	NA	NA							
EC50	>100	N/A	N/A	<1	NA	NA							
Fertiliza	ation Ra	ate Summary				Calcu	lated Vari	ate(A/B)				-	
C-%		ontrol Type	Count	Mean		Max	Std Err	Std Dev			%Effect	A	B
))	N	egative Control	4	0.92	0.9	0.94	0.008165				0.0%	368	400
25			4	0.947		0.98	0.0125	0.025	2.64		-2.99%	379	400
i0 00			4 4	0.932 0.95	5 0.91 0.94	0.96 0.96	0.01109	0.02217 0.00816			-1.36% -3.26%	373 380	400 400
			4	0.95	0.54	0.90	0.004000		0.00	70	-3.2078	500	400
·ertiliza C-%		ate Detail ontrol Type	Rep 1	Rep 2	Rep 3	Rep 4							
))		egative Control	0.9	0.92	0.94	0.92							
, 25	IN	Sauve Control	0.9 0.94	0.92	0.94	0.92							
50 50			0.94	0.96	0.93	0.92							
100			0.94 0.95	0.90	0.92	0.96							
	ation R	ate Binomials											
C-%		Control Type	Rep 1	Rep 2	Rep 3	Rep 4							
)		Negative Control		92/100		92/100							
		U	94/100	98/100		92/100							
(D			94/100	96/100		91/100							
25 50													

Analyst:_____ QA:____

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CETIS Ana	alytical Report			Report Date: Test Code:	13 May-16 10:53 (p 2 of 2) WST0316.052urcf 10-0824-7618
Purple Sea U	rchin Sperm Cell Fe	rtilization Tes	t	Aquatic B	ioassay & Consulting Labs, Inc.
Analysis ID: Analyzed:	17-4576-1071 13 May-16 10:52	Endpoint: Analysis:	Fertilization Rate Linear Interpolation (ICPIN)	CETIS Version: Official Results:	CETISv1.8.7 Yes
Graphics					
1.0 F	•				
0.9					
0.8					
0.7 - 8 - 2 0.6 -					
Ferditization Rate					
0.3					
0.2					
0.1					
ao E	<u>1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 </u>	60	80 100		
	C-4	ńs.			

Analyst:_____ QA:____

CETIS Measurement Report

 Report Date:
 13 May-16 10:53 (p 1 of 2)

 Test Code:
 WST0316.052urcf | 10-0824-7618

erm Cel 9-7442 16 13:0 16 13:4 5-9441 16 16 10:2 °C) ty Crite		zation Tes Test Type: Protocol: Species: Source: Code: Material: Source: Station:	Fertilizatio EPA/600/F Strongyloc David Guto WST0316 Sample W Bioassay F	R-95/136 entrotus off .052uf	• •	atus	D B	nalyst: luent:	tic Bioassay & Joe Freas Laboratory Sea Not Applicable		g Labs, Inc.
16 13:0 16 13:4 5-9441 16 16 10:2 °C)		Protocol: Species: Source: Code: Material: Source:	EPA/600/F Strongyloc David Guto WST0316 Sample W Bioassay F	R-95/136 entrotus off .052uf	• •	atus	D B	luent: rine:	Laboratory Sea	ıwater	
16 13:4 5-9441 16 16 10:2 °C)		Species: Source: Code: Material: Source:	Strongyloc David Guto WST0316 Sample W Bioassay F	entrotus off .052uf	• •	atus	В	rine:	•	water	
5-9441 16 16 10:2 'C)	20 \$	Source: Code: Material: Source:	David Guto WST0316 Sample W Bioassay F	off .052uf	s purpura	atus			Not Applicable		
16 16 10:2 °C)	0 20	Code: Material: Source:	WST0316. Sample W Bioassay F	.052uf			A	ge:			
16 16 10:2 °C)	1 20 \$	Material: Source:	Sample W Bioassay F					-			
16 10:2 C)	:0 :	Source:	Bioassay F	ater			C	ient:	Weston Solutio	ons	
'C)	;		•				P	oject:	LACDPW MAL	IBU ASBS	
		Station:		Report							
ty Crite	ria		LACDPW-	030616	-ASBS-S	601-Post					
		Min	Max		tability I	Limits	Overlap	Decisio			
		34	34	32 - 36			Yes		Within Limits		
		14.8	14.9	11 - 13			Yes	Results	Above Limit		
/L											
Туре	Count		95% L	CL 95	5% UCL	Min	Max	Std Er	r Std Dev	CV%	QA Count
e Contro	2	6.7	5.429	7.9	971	6.6	6.8	0.0999	9 0.1414	2.11%	0
	2	6.35	4.444		256	6.2	6.5	0.15	0.2121	3.34%	0
	2	6.4	5.129		671	6.3	6.5	0.1	0.1414	2.21%	0
	2	6.55	5.915	7.	185	6.5	6.6	0.0499	9 0.0707	1.08%	0
	8	6.5				6.2	6.8				0 (0%)
Туре	Count	Mean	95% L	CL 95	5% UCL	Min	Max	Std Er	r Std Dev	CV%	QA Count
Contro	2	7.9	7.884	7.9	916	7.9	7.9	0	0	0.0%	0
	2	7.8	7.787	7.8	813	7.8	7.8	0	0	0.0%	0
	2	7.75	7.115	8.3	385	7.7	7.8	0.0500	1 0.07072	0.91%	0
	2	7.7	7.698	7.	702	7.7	7.7	0	0	0.0%	0
	8	7.788				7.7	7.9				0 (0%)
	Count	Mean	95% L		5% UCL	Min	Max	Std Er	r Std Dev	CV%	QA Count
Contro	2	34	34	34		34	34	0	0	0.0%	0
	2	34	34	34		34	34	0	0	0.0%	0
	2	34	34	34		34	34	0	0	0.0%	0
	2	34	34	34		34	34	0	0	0.0%	0
	8	34				34	34				0 (0%)
		Mean					Max			CV%	QA Count
Contro											0
											0
											0
			14.21	15	5.49			0.0500	4 0.07077	0.48%	0 (0%)
-		Type Count Contro 2 2 2 2 8	Type Count Mean Contro 2 14.85 2 14.85 2 14.85 2 14.85 2 14.85 2 14.85 2 14.85 2 14.85	Type Count Mean 95% L Contro 2 14.85 14.21 2 14.85 14.21 2 14.85 14.21 2 14.85 14.21 2 14.85 14.21 2 14.85 14.21 2 14.85 14.21	Type Count Mean 95% LCL 95 Contro 2 14.85 14.21 15 2 14.85 14.21 15 2 14.85 14.21 15 2 14.85 14.21 15 2 14.85 14.21 15 2 14.85 14.21 15	Type Count Mean 95% LCL 95% UCL Contro 2 14.85 14.21 15.49 2 14.85 14.21 15.49 2 14.85 14.21 15.49 2 14.85 14.21 15.49 2 14.85 14.21 15.49 2 14.85 14.21 15.49 2 14.85 14.21 15.49	Type Count Mean 95% LCL 95% UCL Min Contro 2 14.85 14.21 15.49 14.8 2 14.85 14.21 15.49 14.8 2 14.85 14.21 15.49 14.8 2 14.85 14.21 15.49 14.8 2 14.85 14.21 15.49 14.8 2 14.85 14.21 15.49 14.8	Type Count Mean 95% LCL 95% UCL Min Max Contro 2 14.85 14.21 15.49 14.8 14.9 2 14.85 14.21 15.49 14.8 14.9 2 14.85 14.21 15.49 14.8 14.9 2 14.85 14.21 15.49 14.8 14.9 2 14.85 14.21 15.49 14.8 14.9 2 14.85 14.21 15.49 14.8 14.9	Type Count Mean 95% LCL 95% UCL Min Max Std Err Contro 2 14.85 14.21 15.49 14.8 14.9 0.0500 2 14.85 14.21 15.49 14.8 14.9 0.0500 2 14.85 14.21 15.49 14.8 14.9 0.0500 2 14.85 14.21 15.49 14.8 14.9 0.0500 2 14.85 14.21 15.49 14.8 14.9 0.0500	Type Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev Contro 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077 2 14.85 14.21 15.49 14.8 14.9 0.05004 0.07077	TypeCountMean95% LCL95% UCLMinMaxStd ErrStd DevCV%Contro 214.8514.2115.4914.814.90.050040.070770.48%214.8514.2115.4914.814.90.050040.070770.48%214.8514.2115.4914.814.90.050040.070770.48%214.8514.2115.4914.814.90.050040.070770.48%214.8514.2115.4914.814.90.050040.070770.48%

Analyst:_____QA:____

Dissolved Oxygen-mg/L

Dissolved	Oxygen-mg/L					
C-%	Control Type	1	2			
0	Negative Contr	6.6	6.8			
25		6.5	6.2			
50		6.3	6.5			
100		6.6	6.5			
pH-Units						
C-%	Control Type	1	2			
0	Negative Contr	7.9	7.9			
25		7.8	7.8			
50		7.8	7.7			
100		7.7	7.7			
Salinity-pp	t					
C-%	Control Type	1	2			
0	Negative Contr	34	34			
25		34	34			
50		34	34			
100		34	34			
Temperatu	re-°C					
C-%	Control Type	1	2			
^		44.0	44.0		 	

C-%	Control Type	1	2	
0	Negative Contr	14.8	14.9	
25		14.8	14.9	
50		14.8	14.9	
100		14.8	14.9	

Report Date: 13 May-16 10:53 (p 2 of 2) Test Code: WST0316.052urcf | 10-0824-7618

Aquatic Bioassay & Consulting Labs, Inc.

Analyst:________QA:_____

Set Drypto Set Drypto R. 516 101 Cantabatic 2433 Impala Drive Carisbad, CA 92010 1 2433 Impala Drive Carisbad, CA 92010	かいよういい 0 • 、、、、0) 795-6 cland, CA 94612	Con 1037 1 2 4 720 2 700 7 10 7 1 2 6 9 0 2 7 4 31-15 5 6 1 1 5 5 6 1 5 5 6 1 5 5 6 1 5 5 6 1 5 5 6 1 5 5 6 1 5 5 6 1 5 5 6 1 5 5 6 1 5 5 6 1 5 5 6 1 5 5 6 1 5 5 6 1 5 7 6 1 5 7 6 1 5 7 8 10 1 5 7 8 1 5 7 8 10 1 1 5 7 8 10 1 5 7 8 10 1 1 5 7 8 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		CHAIN OF C STODY	торү
solutions.	-		DATE 3/6	\sim	<u></u> OF
PROJECT NAME / SUPPLET NUMBER	ЭМІ	ANALYSIS/TEST REQUESTED		FOR WESTON USE ONLY	ONLY
PROJECT MANAGER / CONTACT					
CLIENT WESTAN SOLUTIONS	HO A B	NIH			
ADDRESS COL MONG	BMUN	ŋ.	- 		
PHONE / FAX / EMAIL /}	ATNOC JATO ATNOC	-X91	PRESERVED	SAMPLE TEMP. (°C) UPON	
SITE ID (Location) SAMPLE ID DATE TIME MATRIX A CRC - Crvi - NY DOU) - N2 NATE-Acros Kni OKT - i Infin-		4)	1	RECEIPT WESTON LAB I	
12/ 2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/ 2	-			5	8
			$1, 2^{\circ}$		
		Temp. deg. C			
		Chining (mg/L)	= 20,1		
		A A A A A A A A A A A A A A A A A A A	,		
		NHI3 (mg/L)	t 0.0		
Constitution Color Each under Ottersonind under Official under Otterson under Utterson under			SIGNATUR		
BIO=biologic SS=soil T=tissue O=other (specify)	ļ				
Container Code: G=glass P=bags □ 0=other		UAN MUCOY		SWX	
D Other	COMME	COMMENTS / SPECIAL INSTRUCTIONS		+	
Turmaround Time: D 2-day D 5-day D 17-day D 10-day D 14-day A Standard D Other	m	CONC FOR AL -D	125,52,10	1001)	
		bint Nome	RECEIVED BY		Dete (Timo
1. DAN MERY SCALATON WESTON 317/16/0	3:	MANN COMPANY		AC UNS. 73	8-74112-V
4.					
5.					
6. WHTE – retrim to originator •	• YELLOW - lab •	PINK – retained by originator			